Appendix A NOP and NOP Comments

Appendices

This page intentionally left blank.

CITY OF BREA
NOTICE OF PREPARATION
of a DRAFT ENVIRONMENTAL IMPACT REPORT for the BREA PLAZA HOTEL AND APARTMENTS EXPANSION PROJECT and NOTICE OF SCOPING MEETING

Date:	July 27, 2020
Subject:	Notice of Preparation (NOP) and Scoping Meeting for the Brea Plaza Hotel and Apartments Expansion Project Draft Environmental Impact Report
To:	State Clearinghouse, State Responsible Agencies, State Trustee Agencies, Other Public Agencies, Interested Organizations
Lead Agency/Sponsor:	City of Brea, Planning Division
Project Title:	Brea Plaza Hotel and Apartments Expansion Project

NOTICE IS HEREBY GIVEN that the City of Brea will prepare an environmental impact report (EIR) for the Brea Plaza Hotel and Apartments Expansion Project. The City is the lead agency for the project. The purpose of this notice is to (1) serve as a Notice of Preparation of an EIR pursuant to the California Environmental Quality Act (CEQA) Guidelines § 15082, (2) advise and solicit comments and suggestions regarding the scope and content of the EIR to be prepared for the project, and (3) notice the public scoping meeting.

NOTICE OF PREPARATION: The City of Brea, as Lead Agency, requests that responsible and trustee agencies respond in a manner consistent with § 15082(b) of the CEQA Guidelines. Pursuant to CEQA § 21080.4, responsible agencies must submit any comments in response to this notice no later than 30 days after receipt. The public review period will commence on **Monday, July 27, 2020**, and will close on **Wednesday, August 26, 2020**. A copy of the NOP can be viewed electronically on the City's webpage at: www.cityofbrea.net/projectsinprocess

WRITTEN COMMENTS: We ask that any person wishing to comment on the NOP provide written comments by the end of the public review period **at 5:00 p.m., Wednesday, August 26, 2020**, addressed to Sheri Vander Dussen, Contract Planner, City of Brea – Planning Division, at sheri.vanderdussen@kimley-horn.com, or by mail to the City of Brea, Planning Division Level 3, 1 Civic Center Circle, Brea, CA 92821.

PUBLIC SCOPING MEETING: The City will hold a scoping meeting in conjunction with this NOP in order to present the project and the EIR process, and to provide an opportunity for agency representatives and the public to assist the lead agency in determining the scope and content of the environmental analysis for the EIR. As a result of the expanding outbreak of COVID-19 and restrictions placed on in-person gatherings throughout the State of California under Executive Order N-29-20, the City will host an online public meeting to receive public comments on the scope of the EIR, rather than an in-person event. **The online public meeting will be hosted on the evening of Wednesday, August 12, 2020, at 6:30 PM** and conducted via a live Zoom meeting. In order to participate in the scoping meeting, please email your full name and physical address to sheri.vanderdussen@kimley-horn.com by 5 PM on Wednesday, August 12, 2020 to obtain the Zoom meeting invite. The scoping meeting will begin with a presentation at 6:30 PM and will be followed by questions from the public.

POSTED
JUL 28 2020
ORANGE COUNTY CLERK-RECORDER DEPARTMENT
BY: CF DEPUTY

PROPERTY LOCATION: As shown on Figure 1, *Aerial Photograph*, and Figure 2, *Regional Location*, The Brea Plaza Shopping Center—1639 East Imperial Highway—encompasses approximately 16 acres in the City of Brea. The Brea Plaza Shopping Center is east of State Route 57 (SR-57) and is generally bounded by the Mercury Insurance office development to the north, South Associated Road and a single-family residential neighborhood to the east, Imperial Highway/SR-90, and commercial development in the City of Fullerton to the south, and SR-57 to the west.

EXISTING CONDITIONS: Based on a review of historical aerial photographs, the Brea Plaza Shopping Center began operations in the early 1980s. The Brea Plaza Shopping Center is developed with 165,329 square feet of commercial space and includes a mix of tenants, including Mothers Market (north side), Buca di Beppo (west side), Lucille's Smokehouse Bar-B-Que (south side), Chick-fil-A (south side), Friar Tux (northeast side), Total Wine and More (west side), Custom Comfort Mattress (northwest side), Grand Salon (west side), and Brea Plaza 5 Cinemas (northwest side). There are 725 parking spaces within the Brea Plaza Shopping Center. Additionally, the applicant has an easement with Mercury Insurance for approximately 180 spaces during business hours, an all surface spaces (approximately 500 spaces) after 5 pm and on weekends. Vehicular access to Brea Plaza Shopping Center is provided via a right-turn only and a full access driveway on Associated Road, and a right-turn only on Imperial Highway plus the signalized intersection of Imperial Highway at SR-57 northbound (NB) ramps/Brea Plaza.

PROJECT DESCRIPTION: The proposed project would require the demolition of the 18,450-square-foot- Brea Plaza 5 Cinemas (1,110 seats), the 7,500-square-foot Buca di Beppo, and 149 surface parking spaces, and subsequent development of an L-shaped building on approximately 3.8 acres in the northwestern portion of the 16-acre Brea Plaza Shopping Center to accommodate the proposed hotel, residential, restaurant, and office uses, and parking. Table 1, *Brea Plaza Hotel and Apartments Expansion Project Land Use Summary,* identifies the existing and proposed improvements. The proposed project would result in a net increase of 150 hotel rooms, 194 residential units, 198 parking spaces, and a reduction of 3,068 commercial square feet on the 3.8-acre portion of the 16-acre site. Figure 3, *Conceptual Site Plan,* shows the overall conceptual site plan, including office, residential, hotel, and restaurant uses, and parking. Figure 4, *Conceptual Mixed-Use Building Cross Section,* shows the conceptual building cross-sections, with their respective square footages, in relation to the existing commercial uses onsite. The proposed project would require a general plan amendment (GPA), a zone change from General Commercial (C-G) to Mixed Use II; the applicant would submit a request for a development agreement (DA).

POTENTIAL SIGNIFICANT EFFECTS: As authorized by the State CEQA Guidelines, based on preliminary review, the City determined that it would prepare an EIR for the proposed project, and therefore, it is beginning work directly on the EIR process and will focus on potentially significant effects of the proposed project in that EIR, while briefly indicating the reasons that other effects will not be potentially significant. An Initial Study is not required to determine that an EIR will be prepared and is therefore not attached. The City EIR will discuss potential environmental impacts of the proposed project, including potential pre-construction, construction, and operations impacts. The DEIR will analyze potential environmental effects of the proposed project, including: Air Quality, Cultural Resources, Greenhouse Gas Emissions, Land Use and Planning, Population and Housing, Noise, Transportation, and Tribal Cultural Resources. The project site is not on a list compiled pursuant to Government Code section 65962.5.

Date: July 27, 2020

Signature:

Tracy Steinkruger, Community Development Director

ATTACHMENTS:
Figure 1- Aerial Photograph
Figure 2 - Regional Location
Figure 3 - Conceptual Site Plan
Figure 4 - Conceptual Mixed-Use Building Cross Section

POSTED
JUL 28 2020
ORANGE COUNTY CLERK-RECORDER DEPARTMENT
BY: _____ DEPUTY

Table 1 Brea Plaza Hotel and Apartments Expansion Project Land Use Summary

Tenant	Existing (SQFT.)	Demolition (SQFT)	New Construction		Total Site	
			Units or Rooms	SQFT	Units or Rooms	SQFT
Residential						
Residential[1]	—	—	194[2]	229,855	194	229,855
Hotel						
Hotel	—	—	150	92,538	150	92,538
Commercial						
Office	—	—	—	17,863	—	17,863
Medical Office	1,596	—	—	—	—	1,596
Restaurants[1]	42,649	7,500	—	5,019	—	40,168
1,100 Seat Movie Theater	18,450	18,450	—	—	—	0
Grocery Store	16,206	—	—	—	—	16,206
Retail	68,415	—	—	—	—	68,415
Liquor Store	18,013	—	—	—	—	18,013
Subtotal Commercial	165,329	25,950	—	22,882	—	162,261
Parking						
3-Level Parking Structure (BG, L1, L2)	—	—	347 spaces	342,275	347 spaces	342,275
Surface Parking	725[4]	149 spaces	347 spaces	NA	198 spaces	NA
Total[3]	**165,329**	**25,950**	**150 rooms 194 units**	**345,275**	**150 rooms 194 units**	**484,654**
Net Change[3]	**150 hotel rooms; 194 residential units; -3,068 Commercial SQFT; 198 parking spaces**					

Notes: SQFT = square footage; BG = below ground; L1 = Level 1, L2 = Level 2

[1] The residential building includes 3,000 square feet of self-storage space for the exclusive use of the residences.

[2] Co-living bedrooms are not counted as individual apartments. If the co-living unit bedrooms were counted as individual units, then the total apartment count goes to 220.

[3] The total square footage includes the square footage of the hotel and residential building, but excludes the parking structure. The 'net changed' total includes only the commercial component since the residential component is reflected as rooms and the hotel component is reflected as square feet.

[4] There are a total of 725 stalls on the 16-acre site plus an additional 180 spaces during business hours and all surface spaces after 5 PM and weekend (roughly 500) though an easement with Mercury Insurance.

POSTED
JUL 28 2020
ORANGE COUNTY CLERK-RECORDER DEPARTMENT
BY: CF DEPUTY

Figure 1 - Aerial Photograph

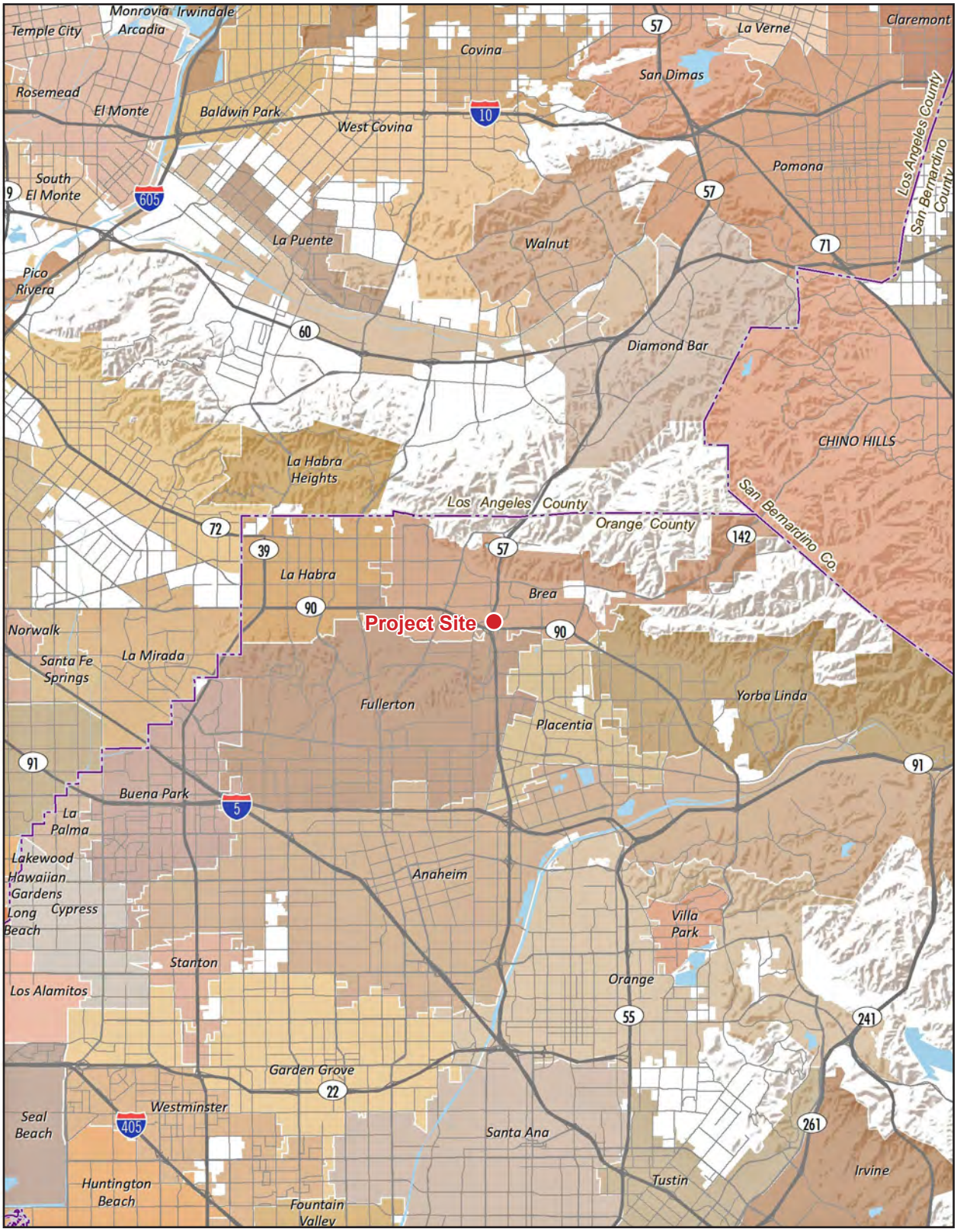
Area of Disturbance

Project Boundary

Source: Nearmap, 2020

0 400
Scale (Feet)

Figure 2 - Regional Location



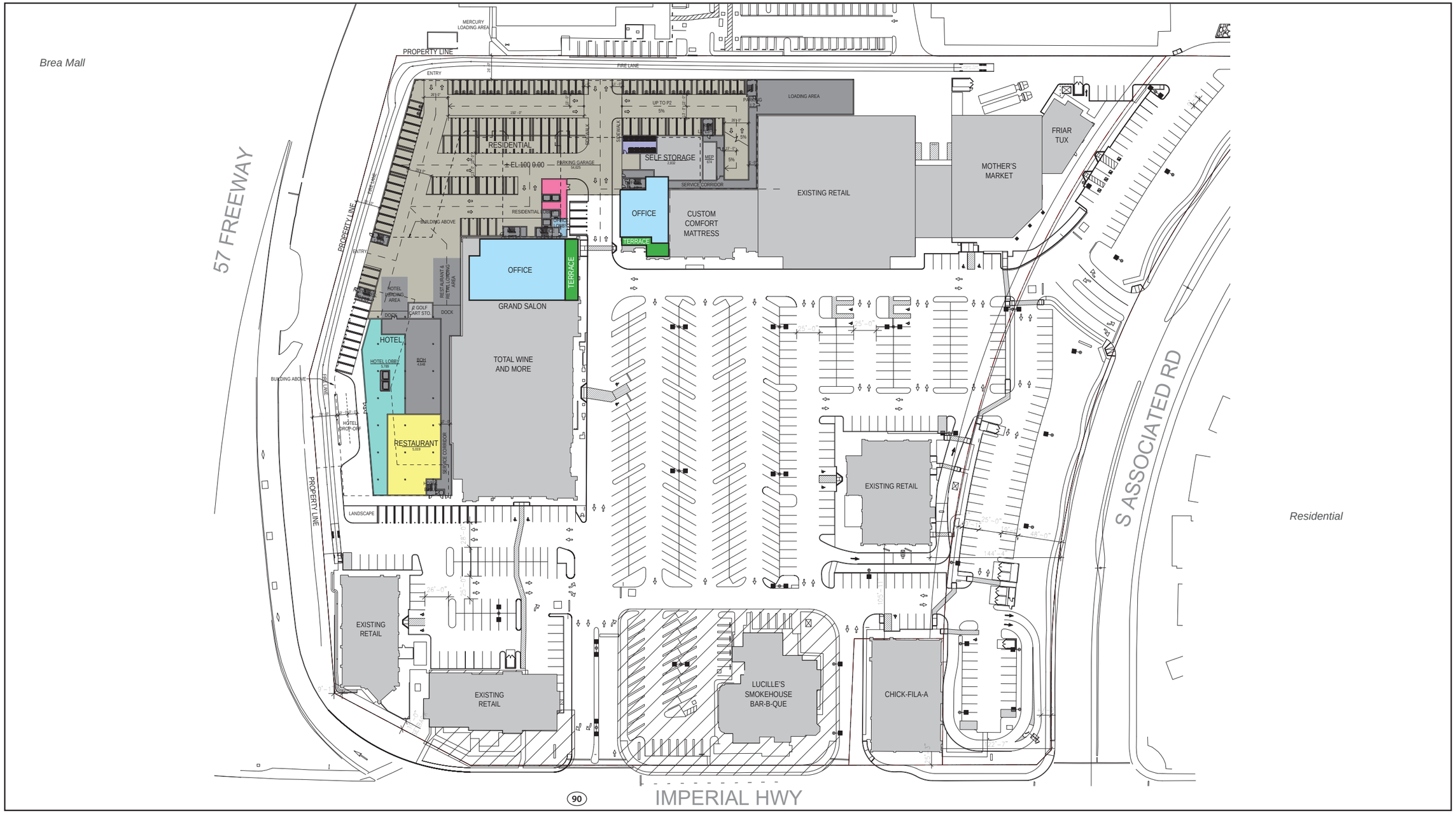
Note: Unincorporated county areas are shown in white.

Source: ESRI, 2020

0 3
Scale (Miles)

PlaceWorks

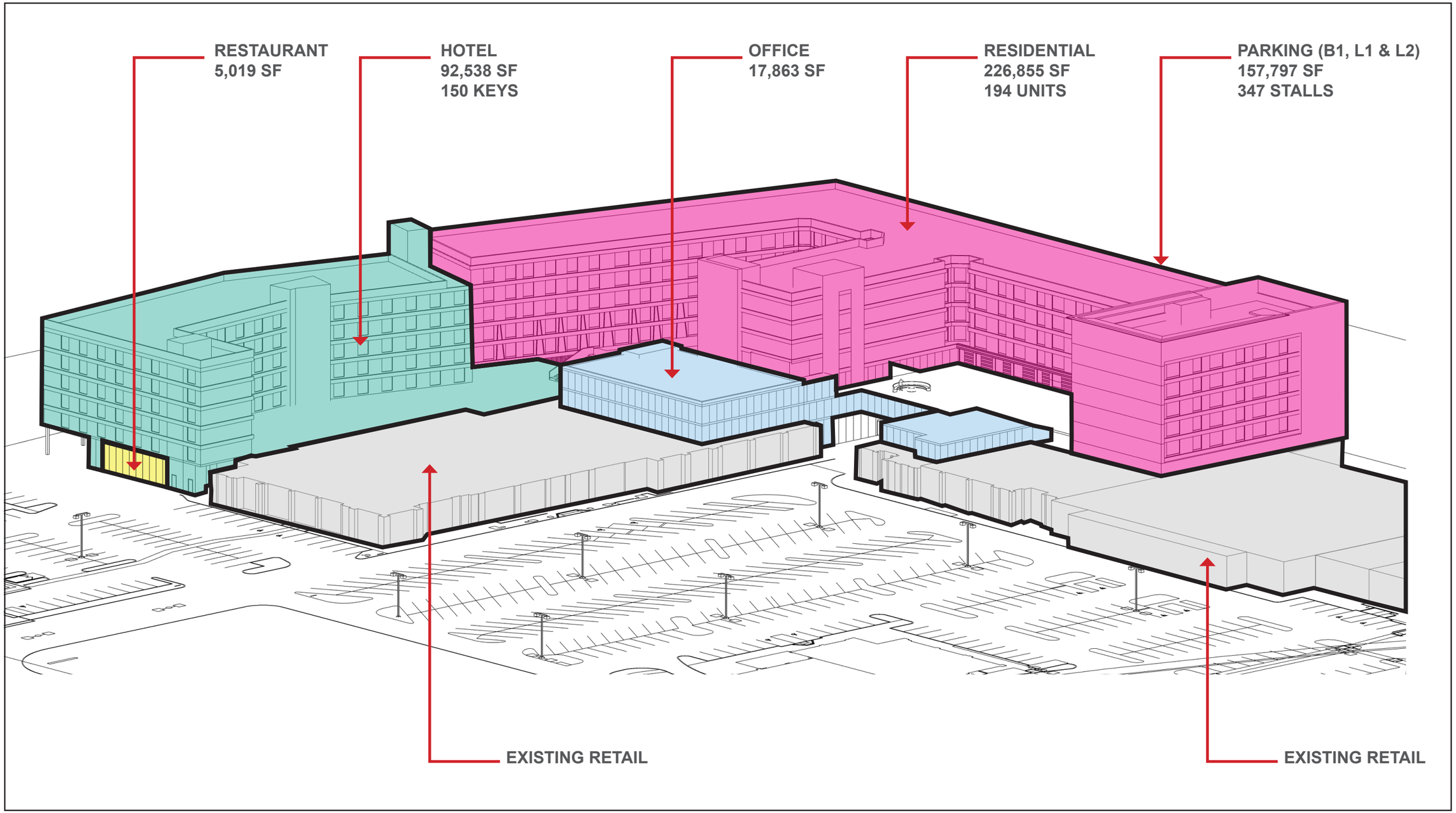
Figure 3 - Conceptual Site Plan



0 100
Scale (Feet)

Source: Architects Orange, 2019

Figure 4 - Conceptual Mixed-Use Building Cross Section



NOT TO SCALE

Source: Architects Orange, 2019

GABRIELENO BAND OF MISSION INDIANS - KIZH NATION
Historically known as The Gabrielino Tribal Council - San Gabriel Band of Mission Indians
recognized by the State of California as the aboriginal tribe of the Los Angeles basin

July 27, 2020

Project Name: Brea Plaza Hotel and Apartments Expansion Project

Dear Tracy Steinkruger,

Thank you for your letter dated July 27, 2020 regarding AB52 consultation. The above proposed project location is within our Ancestral Tribal Territory; therefore, our Tribal Government requests to schedule a consultation with you as the lead agency, to discuss the project and the surrounding location in further detail.

Please contact us at your earliest convenience. ***Please Note:AB 52, "consultation" shall have the same meaning as provided in SB 18 (Govt. Code Section 65352.4).***

Thank you for your time,

Andrew Salas, Chairman
Gabrieleno Band of Mission Indians – Kizh Nation
1(844)390-0787

Andrew Salas, Chairman | Nadine Salas, Vice-Chairman | Dr. Christina Swindall Martinez, secretary
Albert Perez, treasurer I | Martha Gonzalez Lemos, treasurer II | Richard Gradias, Chairman of the council of Elders

PO Box 393 Covina, CA 91723 admin@gabrielenoindians.org

From:	Vander Dussen, Sheri
To:	Nicole Vermilion; Jasmine Osman; Franco, Estefany
Subject:	Fwd: Notice of Preparation (NOP) and Scoping Meeting for the Brea Plaza Hotel and Apartments Expansion Project Draft Environmental Impact Report
Date:	Tuesday, July 28, 2020 12:00:43 PM

Hi Ladies,
Please see note below.

Sheri
Get Outlook for iOS

From: Joyce Perry [redacted]
Sent: Tuesday, July 28, 2020 11:51 AM
To: Vander Dussen, Sheri
Subject: Re: Notice of Preparation (NOP) and Scoping Meeting for the Brea Plaza Hotel and Apartments Expansion Project Draft Environmental Impact Report

Good Afternoon,

I am writing on behalf of the Juaneno Band of Mission Indians, Acjachemen Nation- Belardes in response to a July 27th NOP of an Environmental Impact Report for the Brea Plaza Hotel and Apartments Expansion Project. We wish to consult on this project and look forward to reviewing the DEIR when it becomes available. Can you please provide information regarding the following:

- When was the initial structure slated for demolition built? If it was before 1980 when CEQA guidelines were in place, the soil was likely not monitored.
- What are the results from a Sacred Lands File Search?
- What are the results from a search with the California Historic Resources Information Systems?

Thank you, and I look forward to hearing from you.

Húu'uni 'óomaqati yáamaqati.
Teach peace
Joyce Stanfield Perry
Payomkawichum Kaamalam - President
Juaneño Band of Mission Indians, Acjachemen Nation
Tribal Manager, Cultural Resource Director

LOZEAU DRURY LLP
T 510.836.4200
F 510.836.4205
1939 Harrison Street, Ste. 150
Oakland, CA 94612
www.lozeaudrury.com
richard@lozeaudrury.com

Via Email

July 29, 2020

Tracy Steinkruger, Director
Community Development Dept.
City of Brea
1 Civic Center Circle
Brea, CA 92821
tracys@cityofbrea.net

Lillian Harris-Neal, City Clerk
Office of the City Clerk
City of Brea
1 Civic Center Circle
Brea, CA 92821
cityclerksgroup@ci.brea.ca.us

Re: CEQA and Land Use Notice Request for Brea Plaza Hotel and Apartments Expansion Project aka SCH 2020079022

Dear Ms. Steinkruger and Ms. Harris-Neal:

I am writing on behalf of Supporters Alliance For Environmental Responsibility ("SAFER"), regarding the project known as Brea Plaza Hotel and Apartments Expansion Project aka SCH 2020079022, including all actions related or referring to the proposed demolition of existing uses/buildings and the construction of proposed hotel, residential, restaurant, and office uses, and parking, resulting in a net increase of 150 hotel rooms, 194 residential units, 198 parking spaces, and a reduction of 3,068 commercial square space located on a 3.8 acre portion at 1639 E Imperial Highway in the City of Brea("Project").

We hereby request that the City of Brea ("City") send by electronic mail, if possible or U.S. Mail to our firm at the address below notice of any and all actions or hearings related to activities undertaken, authorized, approved, permitted, licensed, or certified by the City and any of its subdivisions, and/or supported, in whole or in part, through contracts, grants, subsidies, loans or other forms of assistance from the City including, but not limited to the following:

- Notice of any public hearing in connection with the Project as required by California Planning and Zoning Law pursuant to Government Code Section 65091.

- Any and all notices prepared for the Project pursuant to the California Environmental Quality Act ("CEQA"), including, but not limited to:

    - Notices of any public hearing held pursuant to CEQA.
    - Notices of determination that an Environmental Impact Report ("EIR") is required for the Project, prepared pursuant to Public Resources Code Section 21080.4.
    - Notices of any addenda prepared to a previously certified or approved EIR.
    - Notices of any scoping meeting held pursuant to Public Resources Code Section 21083.9.
    - Notices of preparation of an EIR or a negative declaration for the Project, prepared pursuant to Public Resources Code Section 21092.
    - Notices of availability of an EIR or a negative declaration for the Project, prepared pursuant to Public Resources Code Section 21152 and Section 15087 of Title 14 of the California Code of Regulations.

- Notices of approval and/or determination to carry out the Project, prepared pursuant to Public Resources Code Section 21152 or any other provision of law.
- Notices of approval or certification of any EIR or negative declaration, prepared pursuant to Public Resources Code Section 21152 or any other provision of law.
- Notices of determination that the Project is exempt from CEQA, prepared pursuant to Public Resources Code section 21152 or any other provision of law.
- Notice of any Final EIR prepared pursuant to CEQA.
- Notice of determination, prepared pursuant to Public Resources Code Section 21108 or Section 21152.

Please note that we are requesting notices of CEQA actions and notices of any public hearings to be held under any provision of Title 7 of the California Government Code governing California Planning and Zoning Law. **This request is filed pursuant to Public Resources Code Sections 21092.2 and 21167(f), and Government Code Section 65092**, which requires agencies to mail such notices to any person who has filed a written request for them with the clerk of the agency's governing body.

Please send notice by electronic mail, if possible or U.S. Mail to:

Richard Drury
Stacey Oborne
Komalpreet Toor
Lozeau Drury LLP
1939 Harrison Street, Suite 150
Oakland, CA 94612
510 836-4200
richard@lozeaudrury.com
stacey@lozeaudrury.com
komal@lozeaudrury.com

Please call if you have any questions. Thank you for your attention to this matter.

Sincerely,

Komalpreet Toor
Legal Assistant
Lozeau | Drury LLP

August 7, 2020

Sheri Vander Dussen, Contract Planner
City of Brea – Planning Division, Level 3
1 Civic Center Circle
Brea, CA 92821
Sheri.Vanderdussen@kimley-horn.com

RE: Brea Plaza Hotel and Apartments Expansion Project

Dear Ms. Vander Dussen:

As a representative of the 499 homeowners of the Brea Glenbrook Homeowners Association, I am writing this letter in opposition to the proposed project named above.

We are the single-family residential neighborhood bounded by Imperial Highway on the South, the 57 Freeway on the West, Birch St on the North, and the Birch Hills Golf Course and Brea Union Plaza on the East. As such, we are the closest neighbor to the proposed hotel and apartments expansion project at Brea Plaza.

Besides serious questions about the business case for an additional hotel in Brea beyond those already existing, under-construction, approved, and proposed, we have serious concerns about this project on multiple fronts including parking, traffic, and school occupancy.

Concern One—Parking: The Brea Plaza is a somewhat popular center given its location and diverse set of tenants. In normal non-pandemic times, it is common for the parking lots at the Plaza to be quite full. The project proposes to add approximately 200 parking spots more than currently exist. We see the 150 hotel rooms and 194 residences easily and drastically exceeding this allotment. The easement from Mercury Insurance is problematic to us because a) the surface spots nearest to Brea Plaza already were used as night/weekend overflow parking for the Plaza guests and b) the remaining surface spots are both relatively far from the proposed development and accessed via Greenbriar Lane.

Concern Two—Traffic: Besides the additional night and weekend traffic flows on Greenbriar Lane, we anticipate additional nuisance traffic through our neighborhood via Greenbriar Lane, Ravencrest Drive, and Castlegate Lane, which is already an issue due to Mercury Insurance employees using this route to bypass the oft-congested intersection of Associated Road and Imperial Highway. During traditional commuting hours as well as weekend evenings when Brea Plaza is busy, it is common for significant congestion to occur on both westbound and eastbound Imperial Highway, as well as within the Plaza itself. The turn from the Plaza to northbound Associated Road towards our neighborhood is already dangerous at nearly all hours of the day. Accessing the northbound 57 Freeway onramp at Imperial Highway can also be delayed due to vehicles blocking the intersections around the Plaza. The proposed development will exacerbate this already problematic situation, making it difficult for our

community to access the 57 Freeway or other areas to the West. Other significant new construction in the City constrains our other options for freeway access such as the Lambert onramp via Birch Street and State College Boulevard.

Concern Three—School Occupancy: The 194 residences likely will contribute to what many parents already feel are overcrowded conditions at Brea Country Hills Elementary School, Brea Jr. High School, and Brea-Olinda High School.

Combined with the other already under-construction and approved residential developments in the city, we see this additional proposal as nothing but a bad idea. We urge you to consider the voices of the proposed development's neighbors when preparing your impact report. We are prepared for, but would like to avoid a prolonged campaign against the approval of this development.

We look forward to hearing back from you or the city regarding our concerns at your earliest convenience.

Respectfully,

Ted Gribble, Community Relations Chair
Brea Glenbrook Homeowners Association
[redacted]
Brea, CA 92821
[redacted]

cc: Brea Glenbrook Homeowners Association Board of Directors

NATIVE AMERICAN HERITAGE COMMISSION

RECEIVED
AUG 10 2020
BY: ch

July 28, 2020

Sheri Vander Dussen
City of Brea
1 Civic Center Circle
Brea, CA 92821

Re: 2020079022, Brea Plaza Hotel and Apartments Expansion Project, Orange County

Dear Ms. Vander Dussen:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Merri Lopez-Keifer
Luiseño

PARLIAMENTARIAN
Russell Attebery
Karuk

COMMISSIONER
Marshall McKay
Wintun

COMMISSIONER
William Mungary
Paiute/White Mountain Apache

COMMISSIONER
Julie Tumamait-Stenslie
Chumash

COMMISSIONER
[Vacant]

COMMISSIONER
[Vacant]

EXECUTIVE SECRETARY
Christina Snider
Pomo

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
- **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
   a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

cc: State Clearinghouse

From: Nicole Vermilion
To: Jasmine Osman
Subject: FW: Brea Plaza NOP
Date: Wednesday, August 12, 2020 10:10:59 AM

From: Vander Dussen, Sheri <sheri.vanderdussen@kimley-horn.com>
Sent: Wednesday, August 12, 2020 10:07 AM
To: Nicole Vermilion <nvermilion@placeworks.com>; Waad Nadhir <wnadhir@bosc.com>; Steen, Jennifer <jennifer.steen@kimley-horn.com>
Subject: Fwd: Brea Plaza NOP

Get Outlook for iOS

From: Thomas Kwan [redacted]
Sent: Wednesday, August 12, 2020 9:28:18 AM
To: Vander Dussen, Sheri <sheri.vanderdussen@kimley-horn.com>
Subject: Brea Plaza NOP

Ms. Sheri Vanderdussen

In reference to the - Brea Plaza Hotel and Apartments Expansion Project NOP, the draft EIR should analyze the following:

Land use. In that the proposed project is located on a parcel zoned GC, and residential units are intended to be constructed thereat, the draft EIR should specifically address (i) why the General Plan should be amended and (ii) why a zoning change should be made with regards to such parcel to allow residential use in an area designated for commercial use. The Brea General Plan has been time tested and proven to be a successful master plan for orderly development in the city of Brea and as such is established precedent that should not be changed without a good and compelling reason.

The development of the proposed project that will have detrimental effects on **public health and safety**, especially in terms of traffic congestion and over dense use of such parcel. Those detrimental effects should be self-evident in the properly prepared draft EIR. While corporate landowners are stakeholders in Brea, it can't be overemphasized that the residents of Brea will be most affected by the detrimental effects of the proposed project.

While the City will have increased property tax revenues and other fees from the proposed project, the mid and long term costs would outweigh those benefits and most importantly adversely affect the quality of life of Brea residents because of overdevelopment issues, especially environmental issues. We have already seen evidence of this trend with the approval of the Central Park Village and Hines projects, and the proposals of the Brea 265 and Mercury Lane projects. While there is a serious shortage of housing in the metropolitan areas of California, the solution can't simply be solved by overdevelopment without the appropriate infrastructure improvements, especially mass transit which is sorely lacking in Orange County

and unlikely to be available in the next decade or more. The disruption of the order set forth in the General Plan will result in the disruption of orderly development in Brea and have an adverse effect of the quality of life for Brea residents.

Air quality. In particular, the high density residential structures will result in additional burden to air quality compared to its current zoning with its carbon and nitrogen footprint from car trips generated by residents and workers at the proposed project and the use of carbon fuels for heating water and likely living spaces. Though state mandated solar energy usage for the proposed project will reduce this impact, the net impact still must be determined using reasonable assumptions. The number of parking spaces for the proposed project is insufficient and cause overflow parking on nearby streets. In addition, the residents and guests at the hotel of the proposed project will be within 100 feet of the 57 freeway and the combustion emissions of motor vehicles including diesel exhaust. In addition, the proximity of the proposed project to the major arterial roads, State College Boulevard and Imperial Highway subjects and exposes the numerous densely populated proposed residents to much higher concentrations of air pollutants, especially CO, diesel exhaust, and particulate matter.

Population and housing. The proposed project will add far too many new housing units and a related number of residents and guests to the site. Why should the General Plan be amended or varied to allow such high density residential development when it would be inconsistent with established nonresidential use? While Brea is in need of more housing, the question is what is the impact to the environment due to this increase in residential units and people living therein, especially when the current General Plan specifies no residential use.

In view of the pandemic, it is a simple fact that over density allows for ready spread of human communicable pathogens. Residents in New York and other densely populated areas including Los Angeles are moving from the city to the suburbs to better protect their health from over densely populated areas. This is a serious public health concern that should receive your top priority and concern.

Public Services. To what extent will the proposed project have on the need for additional public services, the cost of such services, and how those services will be paid for not only in terms of upfront development fees but also long term estimated costs needed to provide future services to the extent not covered by upfront development fees or direct payment through specific funds for such services such as from a CFD for the proposed project?

The additional police, fire, paramedic, traffic and maintenance services required will need to be determined based on the estimated number of additional residents and units. In particular, it is expected that traffic along Imperial Highway, Birch Street, Lambert Road, State College Blvd. and Brea Blvd. will be much heavier and may require more dedicated police services to ensure smooth traffic flow despite certain limited traffic improvements to accommodate increased traffic volume and flow. Residents of Brea are complaining more and more about traffic congestion and about drivers speeding and going through red lights and resulting serious vehicular accidents on major arterial roads. With the tight municipal budget, the police are constrained as to enforcement of traffic laws, and having enough available officers to respond to calls from residents. How will the proposed project further dilute public services on a qualitative and quantitative basis?

Transportation and circulation. The geography of Brea is such that a long range of hills (Puente and Chino) along its northern border. There are only a few north to south highways

that go through these hills, namely Brea Canyon Road, the 57, and Carbon Canyon Road. Due to the differential in (1) wages and (2) market value per square foot of residential housing between the Inland Empire and Orange County, many worker-commuters travel southbound in the morning to work and northbound to go home in the evening during rush. While some may argue that many of those worker-commuters may move to the proposed project to shorten their drive, this will be unlikely unless they can afford Brea housing costs and want to pay that price, thus it is more likely there will not be very many of those that will move to the proposed project. There is no indication in the NOP that the proposed project is expected to provide affordable housing, and as such the proposed residential part of the project will be assumed to be premium apartments in line with the nearby Hines project apartments. As such it is unlikely many who work in Brea will be able to afford living in the proposed apartments and reduce traffic congestion in Brea.

In the recent draft EIR for the Mercury Lane proposed project, the impact of traffic was identified as significant. Specifically, it provided that the Level of Service of key intersections in Brea would decline and that the Brea Boulevard and Imperial Highway and State College Blvd. and Imperial Highway would in a year be "D" grade or in simple terms unacceptable. The traffic impact of the proposed project will also likely be significant.

The key intersections in Brea have so much traffic in all directions that little if any efficiency will be gained by developer suggestions or offers to mitigate traffic by providing smart signals using predictive AI and timing differentials to control the order and duration of the different signal lights and arrows. This is especially true when those same intersections are so close to the 57, Imperial Highway and other state controlled intersections where Brea has no jurisdiction to control because traffic flow on state routes is takes precedent over traffic flow on city roads. Gridlock will have a serious and possibly lethal consequence for residents of Brea that will need emergency medical services and are unable to receive those services in a timely manner.

Tom Kwan
Brea

Sent from Mail for Windows 10

From: Nicole Vermilion
To: Jasmine Osman
Subject: FW: project in Brea Plaza, at 57 & Imperial
Date: Wednesday, August 12, 2020 2:19:23 PM

From: Vander Dussen, Sheri <sheri.vanderdussen@kimley-horn.com>
Sent: Wednesday, August 12, 2020 1:55 PM
To: Steen, Jennifer <jennifer.steen@kimley-horn.com>; Waad Nadhir <wnadhir@bosc.com>; Nicole Vermilion <nvermilion@placeworks.com>
Subject: Fwd: project in Brea Plaza, at 57 & Imperial

I simply acknowledged receipt.

Get Outlook for iOS

From: Stasmung [redacted]
Sent: Wednesday, August 12, 2020 1:51:31 PM
To: Vander Dussen, Sheri <sheri.vanderdussen@kimley-horn.com>
Subject: project in Brea Plaza, at 57 & Imperial

Completely ridiculous

194 Residential
150 Hotel
plus some Commercial units

Parking spaces =198 out of your minds! during the day when there are few movies you can't get a spot!

Maybe think your need 194+150+ (Commercial Units X 5 spots for each 750 sq ft) = minimum parking spots.

Environmental impact we have the crazy Birch/state College project being built not complete so any study will be a total guess until its completed and full occupied! So wait until then to consider other projects of this scale it would be irresponsible to act on any Environmental Impact Report unitl the new project is completely occupied.

Please start to look around Brea

1. Sears has was vacant 1 year then partially occupied by so off brand store not sure if they are still there? no hearing Amazon wants to go in as a Distribution center, lots of little delivery truck drivers on a time schedule driving like manics!

2. Schools all busting at the seams and we still aren't requiring the Developers to build new school buildings at no cost to taxpayers to accommodate the additional students or is the plan to drive residents residents out by making Brea undesirable and overtaxed with school bonds that developers should be paying?

Don't guess on RE Taxes, Sales Tax, etc... if there is no one to occupy or you don't get full occupancy until 7-10 years where you getting the money from??? Look at how COVID is affecting State Gas Tax revenue, look to the North East and MidWest look at cities that thought they were invincible and people

would always.

Anastas Hatjygeorge
Homeowner
[redacted]

From: Vander Dussen, Sheri
To: Nicole Vermilion; Jasmine Osman; Steen, Jennifer
Subject: Fwd: Brea Plaza Hotel and Apartments Expansion Project
Date: Wednesday, August 19, 2020 1:26:58 PM

FYI. Jennifer, please add her to our public hearing and CEQA distribution lists.

Get Outlook for iOS

From: bennet/susan perlson [redacted]
Sent: Wednesday, August 19, 2020 1:14:26 PM
To: Vander Dussen, Sheri <sheri.vanderdussen@kimley-horn.com>
Subject: Brea Plaza Hotel and Apartments Expansion Project

Re: Brea Plaza Hotel and Apartments Expansion Project
City of Brea, Planning Division
8/19/20

Dear Sheri,

I would like to have my feedback submitted as part of the Brea Plaza Hotel and Apartments Expansion Project. Please also add me to the email list regarding updates.

I have always supported the building of affordable homes in Brea and I would hope that these proposed units would address low-income housing that we know is so desperately needed. A lot of people work as gig workers or independent contractors and one certainly cannot afford rent on entry-level wages. A lot of people work in fast-food services and one certainly cannot afford rent on entry-level wages. This is who housing needs to be built for - our community at large.

However, a major concern I have is about the location of the housing units near the freeway. The 57 freeway is a major thoroughfare with heavy commuter traffic and semi-trucks which are well known for their carcinogenic pollution. This is unhealthy air for anyone, particularly children. Proximity to the freeway is a very unfortunate aspect of this project.

Mitigation would be necessary with trees and a sound wall.

My other concern is the tearing down of the only lower-cost, affordable movie theater in Brea. Downtown prices are 2-3 times higher and part of that increase was due to adding unnecessary services: charging extra for reserving a seat, a recliner seat with a seat warmer, food/drink services delivered to you. These are not amenities that families can typically afford or want. Imagine the costs for a family of 4. The current theater in the proposed Plaza offers an affordable entertainment option for families that city officials should not overlook.

Thank you very much for your acceptance of my feedback.

Sincerely yours,

Susan Perlson
Brea resident
[redacted]

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SENT VIA E-MAIL:
Sheri.vanderdussen@kimley-horn.com
Sheri Vander Dussen, Contract Planner
City of Brea, Planning Division
1 Civic Center Circle, Level 3
Brea, CA 92821

August 25, 2020

Notice of Preparation of a Draft Environmental Impact Report for the Proposed Brea Plaza Hotel and Apartments Expansion Project (Proposed Project)

South Coast Air Quality Management District (South Coast AQMD) staff appreciates the opportunity to comment on the above-mentioned document. Our comments are recommendations on the analysis of potential air quality impacts from the Proposed Project that should be included in the Draft Environmental Impact Report (EIR). Please send a copy of the Draft EIR upon its completion and public release directly to South Coast AQMD as copies of the Draft EIR submitted to the State Clearinghouse are not forwarded. **In addition, please send all appendices and technical documents related to the air quality, health risk, and greenhouse gas analyses and electronic versions of all emission calculation spreadsheets, and air quality modeling and health risk assessment input and output files (not PDF files). Any delays in providing all supporting documentation for our review will require additional review time beyond the end of the comment period.**

CEQA Air Quality Analysis

Staff recommends that the Lead Agency use South Coast AQMD's CEQA Air Quality Handbook and website[1] as guidance when preparing the air quality and greenhouse gas analyses. It is also recommended that the Lead Agency use the CalEEMod[2] land use emissions software, which can estimate pollutant emissions from typical land use development and is the only software model maintained by the California Air Pollution Control Officers Association.

South Coast AQMD has developed both regional and localized significance thresholds. South Coast AQMD staff recommends that the Lead Agency quantify criteria pollutant emissions and compare the emissions to South Coast AQMD's CEQA regional pollutant emissions significance thresholds[3] and localized significance thresholds (LSTs)[4] to determine the Proposed Project's air quality impacts. The localized analysis can be conducted by either using the LST screening tables or performing dispersion modeling.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the Proposed Project and all air pollutant sources related to the Proposed Project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road

[1] South Coast AQMD's CEQA Handbook and other resources for preparing air quality analyses can be found at: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook
[2] CalEEMod is available free of charge at: www.caleemod.com.
[3] South Coast AQMD's CEQA regional pollutant emissions significance thresholds can be found at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf.
[4] South Coast AQMD's guidance for performing a localized air quality analysis can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds.

mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips, and hauling trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers and air pollution control devices), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, such as sources that generate or attract vehicular trips, should be included in the analysis. Furthermore, emissions from the overlapping construction and operational activities should be combined and compared to South Coast AQMD's regional air quality CEQA ***operational*** thresholds to determine the level of significance.

If the Proposed Project generates diesel emissions from long-term construction or attracts diesel-fueled vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the Lead Agency perform a mobile source health risk assessment[5].

Sensitive receptors are people that have an increased sensitivity to air pollution or environmental contaminants and include schools, daycare centers, nursing homes, elderly care facilities, hospitals, and residential dwelling units. The Proposed Project will include, among others, 194 residential units and is located in close proximity to State Route 57, and to facilitate the purpose of an EIR as an informational document, it is recommended that the Lead Agency perform a mobile source health risk assessment[5] to disclose the potential health risks[6].

The California Air Resources Board's (CARB) *Air Quality and Land Use Handbook: A Community Health Perspective*[7] is a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process with additional guidance on strategies to reduce air pollution exposure near high-volume roadways available in CARB's technical advisory[8].

Mitigation Measures

In the event that the Proposed Project results in significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized to minimize these impacts. Any impacts resulting from mitigation measures must also be analyzed. Several resources to assist the Lead Agency with identifying potential mitigation measures for the Proposed Project include South Coast AQMD's CEQA Air Quality Handbook[1], South Coast AQMD's Mitigation Monitoring and Reporting Plan for the 2016 Air Quality Management Plan[9], and Southern California Association of Government's Mitigation Monitoring and Reporting Plan for the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy[10].

Health Risk Reduction Strategies

Many strategies are available to reduce exposures, including, but are not limited to, building filtration systems with MERV 13 or better, or in some cases, MERV 15 or better is recommended; building design, orientation, location; vegetation barriers or landscaping screening, etc. Enhanced filtration units are capable of reducing exposures. However, enhanced filtration systems have limitations. For example, in a

[5] South Coast AQMD's guidance for performing a mobile source health risk assessment can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis.
[6] *Ibid.*
[7] CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* can be found at: http://www.arb.ca.gov/ch/handbook.pdf.
[8] CARB's technical advisory can be found at: https://www.arb.ca.gov/ch/landuse.htm.
[9] South Coast AQMD's 2016 Air Quality Management Plan can be found at: http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2017/2017-mar3-035.pdf (starting on page 86).
[10] Southern California Association of Governments' 2016-2040 RTP/SCS can be found at: http://scagrtpscs.net/Documents/2016/peir/final/2016fP EIR_ExhibitB_MMRP.pdf.

study that South Coast AQMD conducted to investigate filters[11], a cost burden is expected to be within the range of $120 to $240 per year to replace each filter panel. The initial start-up cost could substantially increase if an HVAC system needs to be installed and if standalone filter units are required. Installation costs may vary and include costs for conducting site assessments and obtaining permits and approvals before filters can be installed. Other costs may include filter life monitoring, annual maintenance, and training for conducting maintenance and reporting. In addition, because the filters would not have any effectiveness unless the HVAC system is running, there may be increased energy consumptions that the Lead Agency should evaluate in the Draft EIR. It is typically assumed that the filters operate 100 percent of the time while residents are indoors, and the environmental analysis does not generally account for the times when the residents have their windows or doors open or are in common space areas of the project. These filters have no ability to filter out any toxic gases. Furthermore, when used filters are replaced, it has the potential to result in emissions from the transportation of used filters at disposal sites and generate solid waste that the Lead Agency should evaluate in the Draft EIR. Therefore, the presumed effectiveness and feasibility of any filtration units should be carefully evaluated in more detail prior to assuming that they will sufficiently alleviate exposures to diesel particulate matter emissions.

South Coast AQMD staff is available to work with the Lead Agency to ensure that air quality, greenhouse gas, and health risk impacts from the Proposed Project are accurately evaluated and mitigated where feasible. If you have any questions regarding this letter, please contact me at lsun@aqmd.gov.

Sincerely,

Lijin Sun

Lijin Sun, J.D.
Program Supervisor, CEQA IGR
Planning, Rule Development & Area Sources

LS
ORC200724-02
Control Number

[11] This study evaluated filters rated MERV 13 or better. Accessed at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/aqmdpilotstudyfinalreport.pdf. Also see 2012 Peer Review Journal article by South Coast AQMD: https://onlinelibrary.wiley.com/doi/10.1111/ina.12013.

[redacted]

Brea, CA 92821

August 22, 2020

Dear Ms. Vander Dussen,

Thank you for allowing written comments to be submitted to the Brea City Planning Division regarding the proposed Brea Plaza Shopping Center redevelopment (or "reshaping," as it was called in the newspaper). We have lived in Brea Glenbrook (East) for over 40 years and have raised our family here.

As you know, Brea Glenbrook consists of approximately 500 homes situated on both sides of Associated. Along with our many neighbors, we patronize many of the shops and restaurants in Brea Plaza on a regular basis. We hope you are aware that already the parking spaces, shops, and restaurants in the Brea Plaza Shopping Center are usually busy and being used. The addition of *194 multistory apartment units, offices, 250 hotel rooms, and 198 parking spaces* means the people living in the 500 Glenbrook homes, the Gingerwood homes, and other nearby homes and businesses will compete with many more people for parking spaces and restaurant seating, etc. All this equates to more traffic and congestion!

Brea is already in the process of developing more buildings and apartments in our lovely city, even now creating more congestion, traffic, etc. (One example is taking place now on Birch near the Brea Shopping Mall.) We do not need even more traffic and congestion on Imperial Highway and other Brea streets.

We are one hundred per cent opposed to the plans we read about this ill-advised redevelopment or "reshaping" plan in the News Tribune newspaper, dated August 20-21. Please consider wisely and cancel plans to remake Brea Plaza Shopping Center.

Sincerely,

Richard Kilpatrick
Susan Kilpatrick

Richard & Susan Kilpatrick

[redacted]

[redacted]

From:	Vander Dussen, Sheri
To:	Jim Robinson
Cc:	Gabe Tirador; Ted Stalick; David Yeager; Bree El Fattal (belfattal@mercuryinsurance.com); Gary Goodgame; Jeremy Dee
Subject:	Re: Written Comments Re: NOP Brea Plaza Hotel and Apartments Expansion Project
Date:	Tuesday, August 25, 2020 2:21:08 PM

On behalf of the City, I acknowledge your comment letter. Thank you for reviewing the NOP. You will be advised when the Draft EIR is available for public review.

Sheri Vander Dussen

Get Outlook for iOS

From: Jim Robinson <jim@babokrobinson.com>
Sent: Tuesday, August 25, 2020 2:18:25 PM
To: Vander Dussen, Sheri <sheri.vanderdussen@kimley-horn.com>
Cc: Gabe Tirador <GTirador@MercuryInsurance.com>; Ted Stalick <TStalick@mercuryinsurance.com>; David Yeager <dyeager@mercuryinsurance.com>; Bree El Fattal (belfattal@mercuryinsurance.com) <belfattal@mercuryinsurance.com>; Gary Goodgame <GGoodgame@kennedywilson.com>; Jeremy Dee <JDee@kennedywilson.com>
Subject: Written Comments Re: NOP Brea Plaza Hotel and Apartments Expansion Project

Hi Sheri,

On behalf of Mercury Casualty Company ("Mercury"), we are submitting the following comments in response to the Notice of Preparation dated July 27, 2020 (the "NOP") in connection with the Brea Plaza Hotel and Apartments Expansion Project (the "Project") draft Environmental Impact Report.

In the "Existing Conditions" section of the NOP it states "Additionally, the applicant has an easement with Mercury Insurance for approximately 180 spaces during business hours, [and] all surface spaces (approximately 500 spaces) after 5 pm and on weekends."

Mercury does not believe the above statement from the NOP accurately reflects the parking rights the applicant maintains on Mercury's property. Mercury believes that the scope of the parking rights, although not specifically defined in any documents or agreements encumbering Mercury's property, is more limited and that any such rights remain in existence for only a limited duration (approximately another six years).

Accordingly, in assessing the environmental or other impacts of the Project, we do not believe the City of Brea, or its consultants, should consider any parking rights the applicant may have with respect to the Mercury property.

Regards, Jim

Jim Robinson
Babok & Robinson LLP

9201 Wilshire Boulevard
Suite 303
Beverly Hills, California 90210
310 860 1280
fax: 310 860 1218
email: jim@babokrobinson.com
CONFIDENTIALITY NOTICE: This e-mail transmission, and any documents, files or previous e-mail messages attached to it, may contain confidential information that is legally privileged. If you are not the intended recipient, or a person responsible for delivering it to the intended recipient, you are hereby notified that any disclosure, copying, distribution or use of any of the information contained in or attached to this message is STRICTLY PROHIBITED. If you have received this transmission in error, please immediately notify us by reply e-mail at jim@babokrobinson.com or by telephone at (310) 860-1280, and destroy the original transmission and its attachments without reading them or saving them to disk. Thank you.

IRS CIRCULAR 230 DISCLOSURE: To comply with requirements imposed by recently issued treasury regulations, I inform you that any U.S. tax advice contained in this communication (including any attachments) is not intended or written by me, and cannot be used by you, for the purpose of (i) avoiding penalties under the Internal Revenue Code or (ii) promoting, marketing or recommending to another person any transaction or matter addressed herein.

CITY OF FULLERTON
Community & Economic Development Department

August 26, 2020

Sheri Vander Dussen, Contract Planner
E-Mail: sheri.vanderdussen@kimley-horn.com
City of Brea
1 Civic Center Circle
Planning Division, Level 3
Brea, CA 92821

SUBJECT: Notice of Preparation for the Brea Plaza Hotel and Apartments Expansion Project Draft Environmental Impact Report

Dear Ms. Vander Dussen:

Thank you for the opportunity to comment on the Notice of Preparation (NOP). Staff has reviewed the NOP for the Brea Hotel and Apartments expansion project which proposes to demolish portions of the shopping center and movie theatre to construct a mixed-use concept including a 150-room hotel, 194 residential units, and restaurant uses. The City of Fullerton is located west of the project site.

Staff understands that under the current CEQA requirements for transportation/traffic, projects are now reviewed under Vehicle Miles Traveled (VMT) for CEQA purposes. However, due to the proximity of the project to the City of Fullerton, the City respectfully requests the following be reviewed and/or included as part of the analysis of the project:

1. The City of Fullerton's Transportation Assessment Policies and Procedures (TAPP) was approved by the Fullerton City Council in June of 2020. The TAPP outlines how traffic analysis is to be conducted in the City of Fullerton and should be the guiding document for the conduct of traffic analysis within the City (see attached). The TAPP is available through the City's website.

2. Please provide a detailed description in the traffic study of the co-living units and how trip generation and distribution is determined for such units.

3. It is suggested that as a minimum an LOS analysis be conducted for the signalized intersections along Imperial Highway from State College through the SR-57 interchange to Placentia Avenue. It is also requested that queuing analysis for key turning movements be conducted to assess if the new development's added traffic is likely to result in overflowing turn pockets or excessive delays under pre-Covid-19 traffic conditions.

4. It is also requested that the traffic study include a LOS assessment of traffic operations along Associated Road and State College between the Brea Plaza Shopping Center and California State Fullerton on a typical pre-Covid-19 weekday when classes are in session at the University.

5. Since the project is located immediately adjacent to the border between the City of Brea and the City of Fullerton, should it be determined that the proposed project has a VMT impact and/or a LOS impact, it is requested that the City of Brea consider discussing potential mitigation measures and/or conditions of the approval with the City of Fullerton before finalizing the traffic study.

If you have any questions regarding this correspondence, please contact Maribeth Tinio, Senior Planner at (714)738-6561 or by e-mail at maribeth.tinio@cityoffullerton.com.

Sincerely,

Matt Foulkes
Community & Economic Development Director

JUNE 16, 2020

TRANSPORTATION ASSESSMENT POLICIES AND PROCEDURES

ADOPTED BY CITY COUNCIL RESOLUTION NO. 2020-49

Table of Contents

1.0 – Background Information....2
2.0 – Applicability....3
3.0 – Thresholds....4
4.0 – LOS-Based Analysis Policies and Procedures....6
5.0 – VMT Screening Procedure....10
6.0 – VMT-Based Analysis Policies and Procedures....13

1.0 Background Information

The City of Fullerton completed a comprehensive update to the City's general plan, called The Fullerton Plan, in 2012. It includes an Action to monitor private development projects adjacent to the street intersections/segments with substandard (deficient) right-of-way, as analyzed to accommodate multi-modal transportation infrastructure, and facilitate dedication in accordance with City regulations (Table 13, Action 5.6) in support of the goal for a balanced system promoting transportation alternatives that enable mobility and an enhanced quality of life (Goal 5). The Fullerton Plan includes policies that support regional and sub regional efforts such as the Master Plan of Arterial Highways, the Orange County Congestion Management Plan, Signal Synchronization Master Plan, and the Growth Management Plan (P5.1) and operating and maintaining a comprehensive network of arterial highways and local roads supporting safe and efficient movement of people, goods and services to, through and within the City (P5.6). Furthermore, State and Federal laws require the correlation of building intensities and traffic capacity in a General Plan.

Separately, SB 743, signed by the Governor in 2013, changes the way transportation impacts are identified for environmental analysis purposes. Following the rule making process that was completed in December of 2018, the California Environmental Quality Act (CEQA) Guidelines identify that, by July of 2020 all lead agencies must use Vehicle Miles Traveled (VMT) as the new transportation metric for identifying impacts for land use projects. VMT replaces auto delay, Level of Service (LOS), and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts. This change is intended to assist in balancing the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions.

As noted in CEQA Guidelines Section 15064.7(b) below, lead agencies are encouraged to formally adopt their significance thresholds and this is key part of the SB 743 implementation process.

> *(b) Each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects. Thresholds of significance to be adopted for general use as part of the lead agency's environmental review process must be adopted by ordinance, resolution, rule, or regulation, and developed through a public review process and be supported by substantial evidence. Lead agencies may also use thresholds on a case-by-case basis as provided in Section 15064(b)(2).*

SB 743 does not prevent the City from continuing to analyze delay or LOS outside of CEQA review for other transportation planning or analysis purposes unrelated to CEQA traffic impacts such as land use adjacency, general plan consistency, safety, community benefits, and/or public health pursuant to the City's existing general plan (The Fullerton Plan) goals.

The purpose of this document is to establish the City's policy and procedure to evaluate a project for general plan consistency (LOS analysis) and CEQA compliance (VMT analysis) and address, through project conditions and mitigation measures, any corresponding effects on transportation or potential significant impacts.

2.0 Applicability

An applicant seeking discretionary project approval will submit the proposed project to the City's Community and Economic Development Department in accordance with published application submittal requirements. Written project comments are provided to the applicant within 30 days of the application submittal deadline (1st submittal review).

LOS Analysis
As part of the 1st submittal review, City staff (or City Traffic Engineer) will calculate a project's trip generation based on the latest Institute of Transportation Engineers (ITE) Trip Generation Manual and review that data against the following criteria.

An LOS analysis shall be required for a proposed project that meets any of the following criteria:

- Either the AM or PM peak hour trip generation is expected to exceed 40 net[1] new vehicle trips;
- Regardless of net new vehicle trips, the combination of the land use and location justify analysis at the City's discretion;

If a project does not meet any of the applicability criteria, no further analysis for LOS is needed.

Projects meeting any of the applicability criteria shall complete the necessary LOS analysis to determine if they have a potential effect on transportation. See Section 4.0, "LOS-Based Analysis Policy and Procedure", for details.

VMT Analysis
As part of the 1st submittal review, City staff will make a determination if the project is exempt from CEQA. The VMT Analysis is not required for projects that are exempt from CEQA. If a project is not exempt from CEQA, City staff (or City Traffic Engineer) will perform a screening test and associated secondary analysis.

A VMT analysis shall be required for a proposed project that does not meet any of the following criteria including the associated secondary analysis[2]:

- Located in a Transit Priority Area;
- Located in a Low VMT-generating area;
- Project type is presumed to have a less than significant impact.

If a project meets any of the screening criteria including the associated secondary analysis, no further analysis for VMT is needed. The results of the screening would be used in the transportation section of the CEQA analysis that will be prepared for the project.

Projects not meeting any of the screening criteria including the associated secondary analysis shall complete the VMT analysis to determine if they have a potentially significant VMT impact. See Section 6.0, "VMT-Based Analysis Policy and Procedure", for details.

---

[1] Net new trips include total in and out trips from the project site less trips attributed to the existing use.

[2] See Section 5.0, "VMT Screening Procedure", for screening and secondary analysis methodology.

3.0 Thresholds

The purpose of the analysis for applicable projects is to identify if there is a potential effect on transportation as determined by the LOS analysis and/or potential significant impact under CEQA as determined by the VMT analysis.

LOS Analysis

Level of Service (LOS) is a qualitative measure of describing operational conditions of an intersection in terms of congestion or delay experience by traffic. Service levels range from LOS A to LOS F with LOS A representing excellent operating conditions and free flow, and LOS F representing extreme congestion and delay. There are two accepted methods of determining LOS, Highway Capacity Manual (HCM) and Intersection Capacity Utilization (ICU). The City of Fullerton utilizes HCM methodology. Within Fullerton, there are facilities regulated by Orange County Transportation Authority (OCTA) and Caltrans. OCTA utilizes ICU while Caltrans utilizes HCM. A project is responsible for performing all applicable calculations. Therefore, while the City only sets its own policy, the effects on transportation are identified for all agencies for reference.

Highway Capacity Manual (HCM)

The City of Fullerton definition of acceptable operating conditions for signalized and unsignalized intersections is LOS D[3]; unacceptable operations is LOS E and LOS F.

However, based on the historic context in which they are developed, LOS E is acceptable and LOS F is unacceptable at the following intersections:

- Harbor Boulevard / Chapman Avenue
- Harbor Boulevard / Commonwealth Avenue

Therefore, an effect on transportation occurs if any of the following criteria are satisfied:

1. The project causes a signalized or unsignalized intersection operating at or above an acceptable operating condition to degrade to an unacceptable condition, or
2. The project causes a signalized or unsignalized intersection operating at an unacceptable operating condition to further degrade and for a signalized intersection the change is:
    a. From LOS E to LOS F,
    b. An increase of at least 4 seconds for an LOS E intersection, or
    c. An increase of at least 2 seconds for an LOS F intersection.

Intersection Capacity Utilization

The Orange County Transportation Authority's (OCTA) definition of acceptable operating conditions is LOS E for intersections that are part of the Orange County Congestion Management Program Highway System (CMPHS); unacceptable operation is LOS F. This applies to the following:

- Harbor Boulevard / Orangethorpe Avenue
- Harbor Boulevard / Imperial Highway
- State College Boulevard / Orangethorpe Avenue

[3] LOS D may also be considered an acceptable operating condition by Caltrans; consultation is recommended to determine the appropriate LOS by location.

An effect on transportation occurs if either of the following criteria are satisfied:

1. The project causes an intersection operating at or above an acceptable operating condition to degrade to an unacceptable condition, or
2. The project causes an intersection operating at an unacceptable operating condition to increase (worsen) the ICU rating by more than 0.10.

VMT Analysis

Land Use Project

A land use project would result in a potentially significant project-generated VMT impact if either of the following conditions are satisfied:

1. The project-generated average total daily VMT per service population in the baseline year[4] exceeds the City of Fullerton General Plan Buildout average total daily VMT per service population calculated with Origin/Destination VMT; or
2. The project-generated average total daily VMT per service population in the horizon year[5] exceeds the City of Fullerton General Plan Buildout average total daily VMT per service population calculated with Origin/Destination VMT.

Additionally, the land use project's[6] effect on VMT would be considered potentially significant for purposes of determining a cumulative impact if either of the following conditions are satisfied:

1. The addition of the project in the baseline year causes an increase in the citywide average total daily VMT per service population calculated with Boundary Method VMT; or
2. The addition of the project in the horizon year causes an increase in the citywide average total daily VMT per service population calculated with Boundary Method VMT.

Transportation Project

A transportation project's effect on VMT would be considered potentially significant for purposes of determining a cumulative impact if either of the following conditions are satisfied:

1. The addition of the project in the baseline year causes an increase in the citywide average total daily VMT per service population calculated; or
2. The addition of the project in the horizon year causes an increase in the citywide average total daily VMT per service population.

[4] "Baseline year" is the year in which the CEQA analysis for the project commenced.

[5] "Horizon year" is a year in the future corresponding to the forecast used for modeling purposes.

[6] For a long-range planning land use project such as a general plan, only the cumulative impact analysis of the project's effect on VMT is required.

4.0 LOS-Based Analysis Policies and Procedures

Prior to beginning the study, the Consultant preparing the Transportation Assessment (Consultant) shall coordinate with the City Traffic Engineer on the study area, ambient growth for opening year conditions, project trip distribution assumptions, and components of site access analysis. The Consultant shall prepare a Scope of Work (Scope), consistent with the procedures outlined below, for review and approval of the City Traffic Engineer prior to the commencement of the LOS-Based Analysis. The approved Scope shall be provided as an attachment to the Transportation Assessment[7].

Methodology

Within the study area identified by the City Traffic Engineer, Level of Service (LOS) analysis shall be conducted at identified intersections.

The City of Fullerton requires use of the latest Highway Capacity Manual (HCM) methodology for the traffic impact analysis with the following assumptions for signal timing parameters:

- Cycle length and pedestrian timing parameters – existing
- Minimum left turn split time, including clearance interval timing – 10 seconds
- Saturation flow rates (unless otherwise specified by City Traffic Engineer):
    - Thru and right turns – 1,900 vehicles per hour (vph)
    - Left Turns –
        - Single Lane – 1,800 vph
        - Dual Lanes – 3,500 vph
        - Triple Lanes – 5,100 vph

Programs such as Synchro, Vistro, or Highway Capacity Software (HCS) are acceptable to use for the HCM analysis. Any other program for HCM analysis will need to be first approved by the City Traffic Engineer.

Analysis Scenarios & Effects on Transportation

Four scenarios shall be evaluated in addition to establishing the existing conditions at the discretion of the City Traffic Engineer and may be summarized in a single table (see Table 4-1 for formatting) for each of the following analysis scenarios. Unacceptable operating conditions shall be identified in **bold.** Detailed calculations shall be supplied as an appendix to the Transportation Assessment.

TABLE 4-1 {INSERT ANALYSIS SCENARIO} PEAK HOUR INTERSECTION CAPACITY ANALYSIS

	Intersection	Minimum Acceptable LOS	Time Period	Control Type (Signalized/Unsignalized)	Delay Per Vehicle (seconds/ vehicle)	LOS
#			AM PM			

[7] Should preparation of both a LOS-Based and VMT-Based Analysis be required, these can be prepared together in one Transportation Assessment or in separate Transportation Assessment documents at the discretion of the applicant.

Analysis Scenarios:

a. Existing Conditions

Existing traffic conditions using data collected within the previous 24-month period unless otherwise directed by the City Traffic Engineer. The raw data from sources other than the City, on which existing conditions are based (i.e. traffic counts), must be supplied as an appendix to the Transportation Assessment, identifying the source.

b. Project Opening Year Without Project

Existing traffic conditions plus ambient growth and traffic from all the development within the study area for which an application has been submitted ("pending projects"), or that have been approved but not yet constructed.

c. Project Opening Year With Project

Existing traffic conditions plus ambient growth and traffic from all the development within the study area for which an application has been submitted ("pending projects"), or that have been approved but not yet constructed, plus traffic generated by the proposed project.

d. General Plan Development

Forecast traffic conditions of General Plan build-out based on OCTAM projections for a project that includes a zoning amendment, general plan revision, or otherwise proposes development that exceeds the land use intensity assumed for the General Plan and/or at the discretion of the City Traffic Engineer.

e. General Plan Development With Project

Forecast traffic conditions of General Plan build-out based on OCTAM projections plus traffic generated by the proposed project that includes a zoning amendment, general plan revision, or otherwise proposes development that exceeds the land use intensity assumed for the General Plan and/or at the discretion of the City Traffic Engineer.

Projects that are to be constructed in more than one phase shall require interim year future analysis to address each phase of the development and its associated traffic effects. The year(s) to be analyzed shall coincide with the scheduled phasing and shall be approved by the City Traffic Engineer or designee.

Trip Generation

Trip generation shall be calculated using the latest edition of the ITE Trip Generation Manual, unless directed otherwise by City Traffic Engineer. If the generation rates do not address proposed land use in sufficient detail, rates from other documented sources (i.e. SCAG) or from a similar existing site may be used with prior approval from the City Traffic Engineer. Internal capture and pass-by trip reductions, where applicable, shall be first approved by the City Traffic Engineer.

Trip Distribution/Assignment

The basic methodology and assumptions used to develop trip distribution and assignments must be clearly stated. This includes description of trip distribution and directional approach for vehicle trips to and from the site along with the specific roadways that will be utilized by site-generated traffic is required.

Intersection Improvements

When a transportation effect is identified (as defined in Section 3.0, Thresholds) at a signalized intersection, the Transportation Assessment shall (1) identify improvements to the intersection that will bring back the intersection to an acceptable LOS and (2) identify the project's fair share portion of the effect.

When a transportation effect is identified at an unsignalized intersection, the project shall be evaluated for installation of stop control (four way stop control) or traffic signal per the latest version of the California Manual on Uniform Traffic Control Devices (CA MUTCD) with identification of the project's fair share as applicable. For the traffic signal warrant analysis, the peak hour warrant shall be used. Signal warrant worksheets shall be included as an appendix to the Transportation Assessment.

Additionally when a transportation effect is identified at a signalized or unsignalized intersection, collision history shall be evaluated to see if the additional project traffic will affect any critical movements at the intersection. Improvements shall be identified as necessary. Collision history shall be included as an appendix to the Transportation Assessment.

Cost of Improvements

The cost improvements will be determined by the Consultant in cooperation with the City Traffic Engineer. The project shall be conditioned to contribute their fair share of the cost of improvement or construct the improvement if warranted and appropriate. In either case the project may also be conditioned to provide a dedication required to facilitate the improvement. If a feasible identified improvement(s) cannot be provided as determined by the City Traffic Engineer, then contribution of fair share towards an improvement established at an acceptable LOS will be considered. The fair share shall be determined on a case-by-case basis as warranted and appropriate by the City Traffic Engineer.

Additional LOS Analysis

OCTA

An additional LOS analysis utilizing the latest Intersection Capacity Utilization (ICU) methodology (see Table 4-2 for formatting) shall be required for a proposed project that meets any of the following criteria:

- Project Average Daily Trips (ADT) meets or exceeds 2,400; or
- Project ADT meets or exceeds 1,600 when the proposed development has direct access to Harbor Boulevard, Imperial Highway, Orangethorpe Avenue, and/or State College Boulevard[8].

TABLE 4-2 {INSERT ANALYSIS SCENARIO} PEAK HOUR INTERSECTION CAPACITY ANALYSIS

	Intersection	Minimum Acceptable LOS	Time Period	Control Type (Signalized/Unsignalized)	Volume/ Capacity Ratio	LOS
#			AM PM			

[8] These streets are part of the Orange County Congestion Management Program Highway System (CMPHS)

8

The Consultant shall consult OCTA and the current Congestion Management Program for updates on their requirements.

Caltrans

An additional analysis utilizing the latest Highway Capacity Manual (HCM) methodology shall be required for a project when either the AM or PM peak hour trip generation is expected meet or exceed 100 net new trips assigned to a State highway facility (facility) operating at any LOS, generate between 50 and 99 net new trips on a facility operating at LOS C or LOS D, or up to 49 net new trips on a facility operating at LOS E or LOS F.

The Consultant shall consult Caltrans for updates on their requirements.

Site Access Analysis

Based on the land use and/or location the analysis may also include any of the following evaluations, or as otherwise specified by the City Traffic Engineer:

- Curb radii, including corner cutoffs, for adequacy of turning maneuvers,
- Pocket storage lengths at driveways and/or site adjacent intersection(s) for adequacy of queuing,
- Site distance at project driveways for adequacy of vision clearance, and/or
- Potential turning conflicts between driveways and/or driveway(s) to street(s).

5.0 VMT Screening Procedure

If a project is not exempt from CEQA, City staff (or City Traffic Engineer) will perform a screening test and associated secondary analysis as required. The screening criteria and associated secondary analysis are detailed below.

Criteria 1: Transit Priority Area (TPA) Screening

Projects located within a TPA[9] may be presumed to have a less than significant impact absent substantial evidence to the contrary. A TPA is defined as a half mile area around an existing major transit stop or an existing stop along a high-quality transit corridor[10]. To identify if the project is in a TPA, the City will utilize "NOCC+", a spreadsheet tool developed for the use of North County Cities in identifying projects that could be considered for screening from project-generated VMT impacts.

For a project located in a TPA, City staff will perform the associated secondary analysis do determine if the project:

1. Has a Floor Area Ratio (FAR) of less than 0.75;
2. Includes more parking for use by residents, customers, or employees of the project than required by the City;
3. Is inconsistent with the applicable Sustainable Communities Strategy; or
4. Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

If the answer to any of these questions is yes, the project cannot be screened under Criteria 1. The project shall be considered for screening under Criteria 2 and 3.

Conversely, if the answer to all of these four questions is no, the project can be screened under Criteria 1 and no further analysis for VMT is needed.

Criteria 2: Low VMT Area Screening

Residential and office projects located within a low VMT area[11] may be presumed to have a less than significant impact absent substantial evidence to the contrary. In addition, other employment-related and mixed-use land use projects may qualify for the use of screening if the project can reasonably be expected to generate VMT per service population that is similar to the existing land uses in the low VMT area. A low VMT area is defined as an individual traffic analysis zone (TAZ) where total daily Origin/Destination VMT per service population is 15% or more less

[9] Project location is based on parcel number(s).

[10] Pub. Resources Code, § 21064.3 - 'Major transit stop' means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

Pub. Resources Code, § 21155 - For purposes of this section, a 'high-quality transit corridor' means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

[11] Project location is based on parcel number(s).

than the City average total daily Origin/Destination VMT per service population. [12] To identify if the project is in a low VMT area, the City will utilize "NOCC+", a spreadsheet tool developed for the use of North County Cities in identifying projects that could be considered for screening from project-generated VMT impacts.

For a project located in a low VMT area, City staff will perform the associated secondary analysis do determine if the project:

1. Is inconsistent with the existing land use (i.e. if the project is proposing single-family housing, there should be existing single-family housing of approximately the same density); or
2. Has a unique attribute that would otherwise be misrepresented utilizing the data from the travel demand model such as including land uses that would alter the existing built environment in such a way as to increase the rate or length of vehicle trips.

If the answer to any of these questions is yes, the project cannot be screened under Criteria 2. The project shall be considered for screening under Criteria 3.

Conversely, if the answer to both of these questions is no, the project can be screened under Criteria 2 and no further analysis for VMT is needed.

Criteria 3: Project Type Screening

Some project types have been identified as having the presumption of a less than significant impact. The following land uses can be presumed to have a less than significant impact absent substantial evidence to the contrary as their uses are local serving in nature:

- Local-serving K-12 public schools
- Local-serving parks
- Day care centers
- Local-serving retail uses less than 50,000 square feet
- Local-serving hotels (e.g. non-destination hotels)
- Local-serving student housing projects
- Local-serving assembly uses (places of worship, community organizations)
- Community institutions (public libraries, fire stations, local government)
- Affordable, supportive or transitional housing
- Assisted living facilities
- Senior housing (as defined by HUD)

[12] TAZs are geographic polygons similar to Census block groups used to represent areas of homogenous travel behavior. Service population is population plus employment. Used with VMT, it provides a normalized standard unit for comparison purposes while accounting for the population and/or employment in a given area.

- Projects generating less than 836 daily VMT[13]

For a project to be local serving , its users (residents, customers, employees, visitors) would be existing within the community, meeting existing demand that would shorten the distance users would need to travel.

If the project is not one or more of the identified land uses, the project cannot be screened under Criteria 3.

Conversely, if the project is for one or more of the identified land uses, the project can be screened under Criteria 3 and no further analysis for VMT is needed.

[13] This threshold ties directly to the OPR technical advisory and notes that CEQA provides a categorical exemption for existing facilities, including additions to existing structures of up to 10,000 square feet, so long as the project is in an area where public infrastructure is available to allow for maximum planned development and the project is not in an environmentally sensitive area. (CEQA Guidelines, § 15301, subd. (e)(2).) Typical project types for which trip generation increases relatively linearly with building footprint (i.e., general office building, single tenant office building, office park, and business park) generate or attract an additional 110-124 trips per 10,000 square feet. 2012 California Household Travel Survey (CHTS) average trip length of 7.6 miles was applied to 110 daily trips to determine the associated total VMT with 10,000 square feet of office.

6.0 VMT-Based Analysis Policies and Procedures

Prior to the beginning of the study, the Consultant preparing the Transportation Assessment shall prepare a Scope of Work (Scope), consistent with the procedures outlined below, for review and approval of the City Traffic Engineer prior to the commencement of the VMT-Based Analysis. The approved Scope shall be provided as an attachment to the Transportation Assessment[14].

Projects not screened through Criteria 1, 2 or 3 shall complete a VMT analysis through the OCTAM model[15] to determine if there is a potential significant VMT impact. This analysis shall include both "project generated VMT" for the project-level evaluation and "project effect on VMT" for the cumulative evaluation of transportation impacts.

Methodology

Project Generated VMT

The City has selected the Origin/Destination VMT methodology to provide a more complete capture of all travel (car and truck trips) within the study area, including trips that may begin or end outside of the study area. VMT per service population is utilized to normalize VMT into a standard unit for comparison purposes while accounting for the population and/or employment in a given area. To determine whether or not there is a potentially significant impact, the analysis shall compare the project-generated VMT to the VMT that is forecast to be generated from approved general plan growth and other transportation network modifications ("general plan buildout VMT"). The City has chosen general plan buildout as the basis for this threshold because the general plan was adopted through a public process to reflect the goals and values of the City. The general plan (The Fullerton Plan), adopted in 2012, includes policies and actions to facilitate infill development, a multi-modal transportation network, energy and resource efficient practices, and a reduction of greenhouse gas emissions. While accounting for growth in both population and employment, implementation of The Fullerton Plan reduces the citywide VMT per service population from 29.9 to 29.4[16]. Therefore, when a project generates a VMT per service population that exceeds the general plan buildout VMT in either the baseline year or horizon year, there is a significant impact.

---

[14] Should preparation of both a LOS-Based and VMT-Based Analysis be required, these can be prepared together in one Transportation Assessment or in separate Transportation Assessment documents at the discretion of the applicant.

[15] OCTAM is a travel demand model developed and maintained by OCTA, designed to provide a greater level of detail and sensitivity in Orange County compared to the regional model developed by the Southern California Association of Governments (SCAG) and the statewide model developed by Caltrans. It is provided to jurisdictions and traffic consultants under a modeling user agreement. Following review by Fehr & Peers of the *Technical Advisory on Evaluating Transportation Impacts in CEQA*, State of California, Governor's Office of Planning and Research, December 2018 as well as CEQA Guidelines, case law, and other relevant national guidance of model applications and forecasting, Fehr & Peers recommends that OCTAM be considered the best available model currently available to Orange County cities for SB 743 implementation. Additionally, its inputs and outputs are the framework for some of the analysis performed in the "NOCC+" tool.

[16] Source: Fehr & Peers

Project Effect on VMT

The City has selected the Boundary Method VMT[17] to capture all trips, including those trips that do not begin or end in the City (i.e. cut-through traffic) and/or displaced traffic, on the City's roadway network. VMT per service population is utilized to normalize VMT into a standard unit for comparison purposes while accounting for the population and/or employment in a given area. To determine whether or not there is a significant impact, the City proposes to compare the citywide VMT with and without the project. The City has chosen citywide VMT as the basis for this threshold because of its comprehensive geography and appropriateness for a City-wide analysis.

Analysis Scenarios & CEQA Impacts

The following analysis scenarios shall be evaluated and may be summarized in two tables (see Tables 6-1 and 6-2 for formatting). Total daily VMT per service population that exceeds the applicable comparative threshold shall be identified in **bold.** Detailed calculations shall be supplied as an appendix to the Transportation Assessment.

TABLE 6-1 PROJECT GENERATED VMT

Scenario	Average Total Daily VMT
	TAZ #
General Plan Buildout	
Baseline Year with Project	
Horizon Year with Project	

TABLE 6-2 PROJECT EFFECT ON VMT

Scenario	Average Total Daily VMT
	Citywide
Baseline Year	
Baseline Year with Project	
Horizon Year	
Horizon Year with Project	

[17] The appropriate methodology for transportation projects will be considered on a case by case basis.

Analysis Scenarios:

Project Generated VMT[18]

a. Baseline Year With Project

The project land use is added to the TAZ[19] and the average total daily VMT per service population in the baseline year, the year in which the CEQA analysis commenced, is compared to that of the general plan buildout in OCTAM.

b. Horizon Year With Project

The project land use is added to the TAZ[20] and the average total daily VMT per service population in the horizon year, a future year corresponding to the forecast used for modeling purposes, is compared to that of the general plan buildout in OCTAM.

Project Effect on VMT[21]

a. Baseline Year with Project

The project land use is added to the TAZ[22]and the change to the Citywide average total daily VMT in the baseline year is evaluated in OCTAM.

b. Horizon Year with Project

The project land use is added to the TAZ[23] and the change to the Citywide average total daily VMT in the horizon year is evaluated in OCTAM[24].

---

[18] The same model runs can be used for project-generated VMT and project effect on VMT, as long as the VMT is extracted correctly using the OD Method for project-generated VMT and the Boundary Method for project effect on VMT.

[19] The TAZ the project is added to (Project TAZ) should be empty, or have existing land uses reallocated to neighboring TAZs, when the project land use is added.

[20] The Project TAZ should be empty, or have existing land uses reallocated to neighboring TAZs, when the project land use is added. The growth in the Project TAZ should be reviewed to confirm if the Project is represented. In this case, the land use growth should be removed in the Horizon Year without Project condition.

[21] The same model runs can be used for project-generated VMT and project effect on VMT, as long as the VMT is extracted correctly using the OD Method for project-generated VMT and the Boundary Method for project effect on VMT.

[22] The TAZ the project is added to (Project TAZ) should be empty, or have existing land uses reallocated to neighboring TAZs, when the project land use is added.

[23] The Project TAZ should be empty, or have existing land uses reallocated to neighboring TAZs, when the project land use is added. The growth in the Project TAZ should be reviewed to confirm if the Project is represented. In this case, the land use growth should be removed in the Horizon Year without Project condition.

[24] For projects near the City boundary, a different boundary may be more applicable to make sure that VMT effects are not artificially truncated at the City boundary.

Mitigation Measures

When a potential significant impact is identified (as defined in Thresholds, Section 3.0), the study shall (1) identify mitigation measures to reduce VMT impacts and (2) evaluate the magnitude of the reduction and feasibility of implementation.

To mitigate VMT impacts, the following choices are available to the applicant:

1. Modify the project's built environment characteristics to reduce VMT generated by the project;
2. Implement strategies to reduce VMT generated by the project, commonly referred to at Transportation Demand Management (TDM) strategies;
3. Participate in a VMT fee program and/or VMT mitigation exchange/banking program (if available) to reduce VMT from the project or other land uses to achieve acceptable levels.

VMT reduction strategies can be quantified using currently available best practices such as the California Air Pollution Control Officers Association (CACPOA) calculation methodologies and Air Resource Board research findings. "NOCC+" includes information on the CACPOA strategies most relevant to the City and can be used to test which combination of measures can achieve the desired level of mitigation, where feasible. The City Traffic Engineer will provide a current menu of recommended strategies to the Consultant as available.

For a strategy to qualify as a feasible mitigation measure, however, the Transportation Assessment shall include a detailed description of how it would be implemented and maintained on a continuing basis. The source for the anticipated VMT reduction shall also be provided. In situations where strategies are identified that are not a commonly recognized best practice, the case study or other empirical data supporting the proposed VMT reduction shall be provided as an attachment to the Transportation Assessment.

Additional VMT Analysis

OCTA

At this time there is no additional VMT analysis required by OCTA.

The Consultant shall consult OCTA for updates on their requirements.

Caltrans

At this time there is no additional VMT analysis required by Caltrans.

The Consultant shall consult Caltrans for updates on their requirements.

Active Transportation and Public Transit Analysis

The CEQA Guidelines include the analysis of a project to evaluate if it conflicts with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. Separate from VMT, the Transportation Assessment must include an analysis of a project to examine if it is consistent with adopted policies, plans, or programs regarding active transportation or public transit facilities, or otherwise increases or decreases the performance or safety of such facilities and make a determination as to whether it has the potential to conflict with existing or proposed facilities supporting these travel modes.

When a potential significant impact is identified, the Transportation Assessment shall (1) identify mitigation measures to reduce the active transportation and/or public transit impacts and (2) evaluate the magnitude of the reduction and feasibility of implementation.

Site Access Analysis

Based on the land use and/or location the Transportation Assessment may also include any of the following evaluations, or as otherwise specified by the City Traffic Engineer[25]:

- Curb radii, including corner cutoffs, for adequacy of turning maneuvers,
- Pocket storage lengths at driveways and/or site adjacent intersection(s) for adequacy of queuing,
- Site distance at project driveways for adequacy of vision clearance, and/or
- Potential tuning conflicts between driveways and/or driveway(s) to street(s).

Construction-Related Traffic Impacts

The CEQA Guidelines include the analysis of a project to evaluate if it impairs the implementation of or physically interferes with an adopted emergency response plan or emergency evacuation plan, substantially increases transportation hazards, or results in inadequate emergency access.

The Transportation Assessment shall identify the number of daily trips associated with heavy construction vehicles and the duration servicing the site. The Consultant shall coordinate with the City Traffic Engineer on the suitable route(s) for construction vehicles based on truck routes and other relevant information.

The Transportation Assessment shall also identify construction activities that will require the closure of one or more lanes of traffic.

When a potential significant impact is identified, the Transportation Assessment shall identify mitigation measures such as the identification of specific travel routes and/or the preparation of Traffic Control Plans.

---

[25] Prior to the beginning of the Transportation Assessment, the Consultant shall coordinate with the City Traffic Engineer on the components of the site access analysis, if required.

City of Fullerton

RESOLUTION CERTIFICATION

STATE OF CALIFORNIA)
COUNTY OF ORANGE) SS
CITY OF FULLERTON)

RESOLUTION NO. 2020-49

I, Lucinda Williams, City Clerk and ex-officio Clerk of the City Council of the City of Fullerton, California, hereby certify that the whole number of the members of the City Council of the City of Fullerton is five and that the City Council adopted the above and foregoing Resolution No. 2020-49 at a regular meeting of the City Council held June 16, 2020 by the following vote:

COUNCIL MEMBER AYES:	Fitzgerald, Flory, Silva, Whitaker, Zahra
COUNCIL MEMBER NOES:	None
COUNCIL MEMBER ABSTAINED:	None
COUNCIL MEMBER ABSENT:	None

Lucinda Williams, MMC
City Clerk

DEPARTMENT OF TRANSPORTATION
DISTRICT 12
1750 EAST FOURTH STREET, SUITE 100
SANTA ANA, CA 92705
PHONE (657) 328-6368
FAX (657) 328-6510
TTY 711
www.dot.ca.gov

Making Conservation a California Way of Life.

August 26, 2020

Sheri Vander Dussen
City of Brea
Planning Division, Level 3
1 Civic Center Circle
Brea, CA. 92821

File: IGR/CEQA
12-ORA-2020-01417
Brea Plaza Hotel and Apartments
SCH# 2020079022
SR 57; 20.005
SR 90; 5.567

Dear Ms. Vander Dussen,

Thank you for including the California Department of Transportation (Caltrans) in the review of the Notice of Preparation (NOP), for the Brea Plaza Hotel and Apartments Expansion Project, in the City of Brea. The mission of Caltrans is to provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability.

The proposed project is a mixed-use project that would result in demolition of the existing 1,100-seat theater, 7,500 square feet of restaurant space, and 149 surface parking spaces and the subsequent development of a five- to six-story L-shaped structure with 194 residential units (including co-living units); 150 hotel rooms; 5,019 square feet of restaurant space; 17,863 square feet of co-working office space; and a 342,275-square-foot parking garage on 3.8 acres in the northwestern portion of the Brea Plaza Shopping Center site. The proposed project would result in a net increase of 194 residential units and 150 hotel rooms, and a net decrease of 3,068 square feet of commercial space. Approval of the project would require a general plan amendment and zone change from General Commercial to Mixed Used II, the applicant would submit a request for a development agreement.

The Brea Plaza Shopping Center-1639 East Imperial Highway-encompasses approximately 16 acres in the City of Brea. The Brea Plaza Shopping Center is east of State Route 57 (SR 57) and is generally bounded by the Mercury Insurance office development to the north, South Associated Road and a single-

family residential neighborhood to the east, Imperial Highway/SR 90, and commercial development in the City of Fullerton to the south, and SR 57 to the west. Both SR 57 and SR 90 are overseen by Caltrans, and as a responsible agency, Caltrans has the following comment:

Traffic Operations Comments:

1. Impacts to Caltrans facilities should be analyzed using Caltrans' Vehicle Miles Traveled-Focused Transpiration Impact Study Guide (May 20, 2020).

2. A safety analysis approach that reduces risks to all road users for this project is requested. The approach is outlined in Caltrans' INTERIM LAND DEVELOPMENT AND INTERGOVERNMENTAL REVIEW (LDIGR) SAFTY REVIEW PRACTIONERS GUIDANCE (JULY 2020).

3. Access to the project site is provided from a driveway along Imperial Hwy. Movements to/from the driveway are WB right-in, SB right-out, and NB through (from NB SR 57 off-ramp). The driveway is approximately 150 feet from the NB SR 57 on-ramp from WB Imperial Hwy. The project site SB right-out provides two right turn lanes; the inside lane turns into WB Imperial HWY and onto a lane that drops at the NB SR 57 on-ramp. This creates a short weave that needs to be analyzed with impacts from proposed project.

4. Caltrans has had requests from both the City of Brea and motorists regarding the lane assignments from the off-ramp. Drivers become confused/not aware of the movement required. We have updated signage, but proposed redevelopment may exacerbate condition and should be analyzed.

5. Please note that per the HDM (Index 504.8 Access Control): For new construction or major reconstruction, access rights shall be acquired on the opposite side of the local road from ramp terminals to preclude driveways or local roads within the ramp intersection.

Systems Planning

6. Include discussions on Active Transportation (i.e., bicycle and pedestrian) and transit impacts of the proposed project. There are several bicycle

facilities and transit stops in the project vicinity, including an existing Class II bike lane on Associated Road, directly adjacent to the project site.

a. The existing Class II bike lane on Associated Road connects to other nearby bicycle facilities, such as the Class I Brea Trail and the Class II bike lane on Birch Street, both of which are just north of the project site. Enhancing connections to the Class II bike lane on Associated Road ensures regional connectivity to county bikeways.
b. Connections to nearby bicycle and transit facilities promote improved first- and last-mile infrastructure. First- and last-mile infrastructure encourages residents to utilize multimodal modes of transportation, thus improving congestion, air quality, public health, regional connectivity, and safety.

7. Coordinate with Caltrans on Complete Streets improvements in the project vicinity. Caltrans supports the design of Complete Streets that include high-quality pedestrian, bicycle, and transit facilities that are safe and comfortable for users of all ages and abilities. Improvements may include pedestrian-oriented LED lighting and continental crosswalk striping. Complete Streets improvements also promote regional connectivity, improve air quality and public health, reduce congestion, promote improved first-/last-mile connections, and increase safety for all modes of transportation.

8. As part of state goals to increase active transportation, Caltrans recommends the inclusion of secure and functional short- and long-term bike parking. Short-term bike parking at public/commercial locations should be placed in visible areas that are close to main entrances and should be installed at least 24" away from walls and other objects (e.g. trash cans, plants, etc.). Long-term bike storage for residential units should be provided indoors and on the ground floor. Both short- and long-term bike parking should be designed to accommodate different types of bikes (e.g. cargo bike, bike with trailer).

9. For additional guidance on providing functional bike parking, see the "Essentials of Bike Parking" guidance created by the Association of Pedestrian and Bicycle Professionals (link to online PDF: https://www.apbp.org/Publications).

10. Please incorporate TDM Measures into the project to mitigate transportation impacts, which may include but are not limited to:

a. Addition of bicycle lanes to support the ingress/egress of the project site;
b. Employee transit subsidies and benefits; and flexible work schedules;
c. Parking priority for carpool vans; and
d. Facilities accommodating toward carsharing and bikesharing.

11. Please submit any impending Transportation Impact Study/Assessment (TIS/TIA) to Caltrans for review and comment. Caltrans would like for this transportation analysis document to include Caltrans intersections that may be impacted by the proposed project.

Transportation and Freight Planning

12. Please make sure the DEIR includes a discussion relating to the City's Multimodal Mobility Strategies such as Transit and Connectivity. We encourage the City to look at transit mobility opportunities to connect current/existing bus services to include nearby train stations connectivity for Metrolink and Amtrak Pacific Surfliner rail services. These rail services provide both commuter regional and interregional/intercity rail services.

13. Please encourage the use of transit among future residents, visitors, and workers of the development. Increasing multimodal transportation will lead to a reduction to congestion, Vehicle Miles Traveled, and improve air quality.

14. Please provide adequate wayfinding signage to transit stops within the project vicinity and local roadways.

15. Please consider incorporating designated areas/parking for freight delivery, package and transportation network companies pick up and drop off in the site plan design for this project.

Advanced Planning

16. The proposed improvement will create an increase in traffic circulation within the vicinity of the development and impacts both SR-90 and SR-57. Coordinate all efforts with Caltrans Project Manager and Asset Manager to minimize impacts to the traveling public.

Environmental/NPDES Compliance

17. Caltrans NPDES Storm Water Unit would like to see the proposed development's temporary and permanent water quality impacts. Please identify any impacts to Caltrans right-of-way in the upcoming Draft EIR.

Permits:

18. Any project work proposed in the vicinity of the State right of way will require an encroachment permit, and all environmental concerns must be adequately addressed. Please coordinate with Caltrans in order to meet the requirements for any work within or near State Right-of-Way. A fee may apply. If the cost of work within the State right of way is below one Million Dollars, the Encroachment Permit process will be handled by our Permits Branch; otherwise the permit should be authorized through the Caltrans's Project Development Department. When applying for Encroachment Permit, please incorporate all Environmental Documentation, SWPPP/ WPCP, Hydraulic Calculations, R/W certification and all relevant design details including design exception approvals. For specific details for Encroachment Permits procedure, please refer to the Caltrans's Encroachment Permits Manual. The latest edition of the Manual is available on the web site: http://www.dot.ca.gov/hq/traffops/developserv/permits/

Please continue to coordinate with Caltrans for any future developments that could potentially impact State transportation facilities. If you have any questions, do not hesitate to contact Julie Lugaro at Julie.lugaro@dot.ca.gov.

Sincerely,

SCOTT SHELLEY
Branch Chief, Regional-IGR-Transit Planning
District 12

AFFILIATED AGENCIES

Orange County Transit District

Local Transportation Authority

Service Authority for Freeway Emergencies

Consolidated Transporation Service Agency

Congestion Management Agency

August 26, 2020

Ms. Sheri Vander Dussen
Contract Planner
City of Brea, Planning Division
1 Civic Center Circle
Brea, CA 92821

Subject: **Notice of Preparation and Scoping Meeting for the Brea Plaza Hotel and Apartments Expansion Project**

Dear Ms. Vander Dussen:

Thank you for providing the Orange County Transportation Authority (OCTA) with the Notice of Preparation (NOP) and scoping meeting for the Brea Plaza Hotel and Apartments Expansion Project. The following comments are provided for your consideration:

- The California Environmental Quality Act (CEQA) now uses vehicle miles traveled to identify transportation impacts. However, OCTA does require level of service analysis to monitor Congestion Management Program (CMP) highway system (HS) performance, per the CMP traffic impact analysis requirements. Such analysis may be submitted to OCTA separately from any CEQA documents. For more information, please refer to the 2019 CMP report available here: http://www.octa.net/Projects-and-Programs/Plans-and-Studies/Congestion-Management-Program/Overview/

- Please note that State Route 90 (SR-90) is part of the CMPHS. Additionally, the Imperial Highway/northbound ramps, Imperial Highway/southbound ramps, and SR-90/State College Boulevard intersections are CMP intersections. This roadway and these intersections should be analyzed as such for any potential traffic impacts consistent with the Orange County CMP.

Throughout the development of this project, we encourage communication with OCTA on any matters discussed herein. If you have any questions or comments, please contact me at (714) 560-5683 or clarwood@octa.net.

Sincerely,

Charlie Larwood
Department Manager, Transportation Planning

P: (626) 381-9248
F: (626) 389-5414
E: mitch@mitchtsailaw.com

Mitchell M. Tsai
Attorney At Law

155 South El Molino Avenue
Suite 104
Pasadena, California 91101

VIA U.S. MAIL & E-MAIL

August 26, 2020

Sheri Vander Dussen
City of Brea, Planning Division
1 Civic Center Circle
Brea, CA 92821
Em: sheri.vanderdussen@kimley-horn.com

RE: Notice of Scoping Meeting & Preparation of a Draft Environmental Impact Report for the Brea Plaza Hotel and Apartments Expansion Project

Dear Ms. Vander Dussen,

On behalf of the Southwest Regional Council of Carpenters ("**Commenter**" or "**Carpenters**"), my Office is submitting these comments on the City of Brea's ("**City**" or "**Lead Agency**") Notice of Preparation of an Environmental Impact Report ("**NOP**") (SCH No. 2020079022) for the Brea Plaza Hotel and Apartments Expansion Project, which proposes to 194 residential units, 150 hotel rooms, 5,019 square feet of restaurant space, 17,863 square feet of co-working space, and a 342,275 square foot parking garage on 3.8 acres in the northwestern portion of the Brea Plaza Shopping Center site in the City of Brea. ("**Project**").

The Southwest Carpenters is a labor union representing 50,000 union carpenters in six states, including in southern California, and has a strong interest in well ordered land use planning and addressing the environmental impacts of development projects.

Individual members of the Southwest live, work and recreate in the City and surrounding communities and would be directly affected by the Project's environmental impacts.

Commenter expressly reserves the right to supplement these comments at or prior to hearings on the Project, and at any later hearings and proceedings related to this Project. Cal. Gov. Code § 65009(b); Cal. Pub. Res. Code § 21177(a); *Bakersfield Citizens*

for Local Control v. Bakersfield (2004) 124 Cal. App. 4th 1184, 1199-1203; see *Galante Vineyards v. Monterey Water Dist.* (1997) 60 Cal. App. 4th 1109, 1121.

Commenter incorporates by reference all comments raising issues regarding the environmental impact report ("**EIR**") submitted prior to certification of the EIR for the Project. *Citizens for Clean Energy v City of Woodland* (2014) 225 CA4th 173, 191 (finding that any party who has objected to the Project's environmental documentation may assert any issue timely raised by other parties).

Moreover, Commenter requests that the Lead Agency provide notice for any and all notices referring or related to the Project issued under the California Environmental Quality Act ("**CEQA**"), Cal Public Resources Code ("**PRC**") § 21000 *et seq*, and the California Planning and Zoning Law ("**Planning and Zoning Law**"), Cal. Gov't Code §§ 65000–65010. California Public Resources Code Sections 21092.2, and 21167(f) and Government Code Section 65092 require agencies to mail such notices to any person who has filed a written request for them with the clerk of the agency's governing body.

The City should require the Applicant to provide additional community benefits such as requiring local hire and paying prevailing wages to benefit the City. Moreover, it would be beneficial for the City to require the Applicant to hire workers: (1) who have graduated from a Joint Labor Management apprenticeship training program approved by the State of California, or have at least as many hours of on-the-job experience in the applicable craft which would be required to graduate from such a state approved apprenticeship training program and; (2) who are registered apprentices in an apprenticeship training program approved by the State of California.

In addition, the City should require the Project to be built to standards exceeding the current 2019 California Green Building Code and 2020 County of Los Angeles Green Building Standards Code to mitigate the Project's environmental impacts and to advance progress towards the State of California's environmental goals.

I. THE PROJECT WOULD BE APPROVED IN VIOLATION OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

A. Background Concerning the California Environmental Quality Act

CEQA has two basic purposes. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental effects of a project. 14

California Code of Regulations ("**CCR**" or "**CEQA Guidelines**") § 15002(a)(1).[1] "Its purpose is to inform the public and its responsible officials of the environmental consequences of their decisions *before* they are made. Thus, the EIR 'protects not only the environment but also informed self-government.' [Citation.]" *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal. 3d 553, 564. The EIR has been described as "an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return." *Berkeley Keep Jets Over the Bay v. Bd. of Port Comm'rs.* (2001) 91 Cal. App. 4th 1344, 1354 (*"Berkeley Jets"*); *County of Inyo v. Yorty* (1973) 32 Cal. App. 3d 795, 810.

Second, CEQA directs public agencies to avoid or reduce environmental damage when possible by requiring alternatives or mitigation measures. CEQA Guidelines § 15002(a)(2) and (3). *See also, Berkeley Jets,* 91 Cal. App. 4th 1344, 1354; *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553; *Laurel Heights Improvement Ass'n v. Regents of the University of California* (1988) 47 Cal. 3d 376, 400. The EIR serves to provide public agencies and the public in general with information about the effect that a proposed project is likely to have on the environment and to "identify ways that environmental damage can be avoided or significantly reduced." CEQA Guidelines § 15002(a)(2). If the project has a significant effect on the environment, the agency may approve the project only upon finding that it has "eliminated or substantially lessened all significant effects on the environment where feasible" and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns" specified in CEQA section 21081. CEQA Guidelines § 15092(b)(2)(A–B).

While the courts review an EIR using an "abuse of discretion" standard, "the reviewing court is not to 'uncritically rely on every study or analysis presented by a project proponent in support of its position.' A 'clearly inadequate or unsupported study is entitled to no judicial deference.'" *Berkeley Jets*, 91 Cal. App. 4th 1344, 1355 (emphasis added) (quoting *Laurel Heights,* 47 Cal.3d at 391, 409 fn. 12). Drawing this line and determining whether the EIR complies with CEQA's information disclosure

[1] The CEQA Guidelines, codified in Title 14 of the California Code of Regulations, section 150000 et seq, are regulatory guidelines promulgated by the state Natural Resources Agency for the implementation of CEQA. (Cal. Pub. Res. Code § 21083.) The CEQA Guidelines are given "great weight in interpreting CEQA except when . . . clearly unauthorized or erroneous." *Center for Biological Diversity v. Department of Fish & Wildlife* (2015) 62 Cal. 4th 204, 217.

requirements presents a question of law subject to independent review by the courts. (*Sierra Club v. Cnty. of Fresno* (2018) 6 Cal. 5th 502, 515; *Madera Oversight Coalition, Inc. v. County of Madera* (2011) 199 Cal.App.4th 48, 102, 131.) As the court stated in *Berkeley Jets*, 91 Cal. App. 4th at 1355:

> A prejudicial abuse of discretion occurs "if the failure to include relevant information precludes informed decision-making and informed public participation, thereby thwarting the statutory goals of the EIR process.

The preparation and circulation of an EIR is more than a set of technical hurdles for agencies and developers to overcome. The EIR's function is to ensure that government officials who decide to build or approve a project do so with a full understanding of the environmental consequences and, equally important, that the public is assured those consequences have been considered. For the EIR to serve these goals it must present information so that the foreseeable impacts of pursuing the project can be understood and weighed, and the public must be given an adequate opportunity to comment on that presentation before the decision to go forward is made. *Communities for a Better Environment v. Richmond* (2010) 184 Cal. App. 4th 70, 80 (quoting *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 449–450).

B. Due to the COVID-19 Crisis, the City Must Adopt a Mandatory Finding of Significance that the Project May Cause a Substantial Adverse Effect on Human Beings and Mitigate COVID-19 Impacts

CEQA requires that an agency make a finding of significance when a Project may cause a significant adverse effect on human beings. PRC § 21083(b)(3); CEQA Guidelines § 15065(a)(4).

Public health risks related to construction work requires a mandatory finding of significance under CEQA. Construction work has been defined as a Lower to High-risk activity for COVID-19 spread by the Occupations Safety and Health Administration. Recently, several construction sites have been identified as sources of community spread of COVID-19.[2]

[2] Santa Clara County Public Health (June 12, 2020) COVID-19 CASES AT CONSTRUCTION SITES HIGHLIGHT NEED FOR CONTINUED VIGILANCE IN SECTORS THAT HAVE REOPENED, *available at* https://www.sccgov.org/sites/covid19/Pages/press-release-06-12-2020-cases-at-construction-sites.aspx.

SWRCC recommends that the Lead Agency adopt additional CEQA mitigation measures to mitigate public health risks from the Project's construction activities. SWRCC requests that the Lead Agency require safe on-site construction work practices as well as training and certification for any construction workers on the Project Site.

In particular, based upon SWRCC's experience with safe construction site work practices, SWRCC recommends that the Lead Agency require that while construction activities are being conducted at the Project Site:

Construction Site Design:

- The Project Site will be limited to two controlled entry points.
- Entry points will have temperature screening technicians taking temperature readings when the entry point is open.
- The Temperature Screening Site Plan shows details regarding access to the Project Site and Project Site logistics for conducting temperature screening.
- A 48-hour advance notice will be provided to all trades prior to the first day of temperature screening.
- The perimeter fence directly adjacent to the entry points will be clearly marked indicating the appropriate 6-foot social distancing position for when you approach the screening area. Please reference the Apex temperature screening site map for additional details.
- There will be clear signage posted at the project site directing you through temperature screening.
- Provide hand washing stations throughout the construction site.

Testing Procedures:

- The temperature screening being used are non-contact devices.
- Temperature readings will not be recorded.

- Personnel will be screened upon entering the testing center and should only take 1-2 seconds per individual.
- Hard hats, head coverings, sweat, dirt, sunscreen or any other cosmetics must be removed on the forehead before temperature screening.
- Anyone who refuses to submit to a temperature screening or does not answer the health screening questions will be refused access to the Project Site.
- Screening will be performed at both entrances from 5:30 am to 7:30 am.; main gate [ZONE 1] and personnel gate [ZONE 2]
- After 7:30 am only the main gate entrance [ZONE 1] will continue to be used for temperature testing for anybody gaining entry to the project site such as returning personnel, deliveries, and visitors.
- If the digital thermometer displays a temperature reading above 100.0 degrees Fahrenheit, a second reading will be taken to verify an accurate reading.
- If the second reading confirms an elevated temperature, DHS will instruct the individual that he/she will not be allowed to enter the Project Site. DHS will also instruct the individual to promptly notify his/her supervisor and his/her human resources (HR) representative and provide them with a copy of Annex A.

Planning

- Require the development of an Infectious Disease Preparedness and Response Plan that will include basic infection prevention measures (requiring the use of personal protection equipment), policies and procedures for prompt identification and isolation of sick individuals, social distancing (prohibiting gatherings of no more than 10 people including all-hands meetings and all-hands lunches) communication and training and workplace controls that

meet standards that may be promulgated by the Center for Disease Control, Occupational Safety and Health Administration, Cal/OSHA, California Department of Public Health or applicable local public health agencies.[3]

The United Brotherhood of Carpenters and Carpenters International Training Fund has developed COVID-19 Training and Certification to ensure that Carpenter union members and apprentices conduct safe work practices. The Agency should require that all construction workers undergo COVID-19 Training and Certification before being allowed to conduct construction activities at the Project Site.

If the City has any questions or concerns, feel free to contact my Office.

Sincerely,

Mitchell M. Tsai
Attorneys for Southwest Regional
Council of Carpenters

[3] *See also* The Center for Construction Research and Training, North America's Building Trades Unions (April 27 2020) NABTU and CPWR COVIC-19 Standards for U.S Constructions Sites, *available at* https://www.cpwr.com/sites/default/files/NABTU_CPWR_Standards_COVID-19.pdf; Los Angeles County Department of Public Works (2020) Guidelines for Construction Sites During COVID-19 Pandemic, *available at* https://dpw.lacounty.gov/building-and-safety/docs/pw_guidelines-construction-sites.pdf.

..

From: Vander Dussen, Sheri <sheri.vanderdussen@kimley-horn.com>
Sent: Tuesday, September 8, 2020 6:53 PM
To: Lugaro, Julie M@DOT <julie.lugaro@dot.ca.gov>; Dave Roseman <roseman@llgengineers.com>; Nicole Vermilion <nvermilion@placeworks.com>; Chapman, Ryan <ryanch@ci.brea.ca.us>; Chao, Hsing <HsingC@ci.brea.ca.us>
Subject: Re: Follow up to phone call regarding question for the Brea Plaza Hotel Project

Ms. Lugaro,

The proposed Brea Plaza Project, as submitted by the applicant, does not call for any modifications of the Caltrans owned and operated Imperial Highway & CA-57 Northbound Off-Ramp traffic signal nor the driveway across from the freeway off-ramp. The City Traffic Engineer also checked with the traffic consultant performing the CEQA required VMT Assessment Study and the non-CEQA Traffic Operational Assessment Study and they indicated that the preliminary study results do not suggest that any physical or operational changes will be required at the driveway or the ramp signal. Therefore, based on our current understanding of the project, environmental and operational studies underway, and potential City required conditions of approval, the applicant is unlikely to require a Caltrans permit for modification of the driveway or the traffic signal in question.

Please let me know if you have additional questions. We look forward to working with you when the traffic analyses are complete.

Regards,

Sheri Vander Dussen

Get Outlook for iOS

From: Lugaro, Julie M@DOT <julie.lugaro@dot.ca.gov>

Sent: Tuesday, September 8, 2020 4:09:16 PM
To: Vander Dussen, Sheri <sheri.vanderdussen@kimley-horn.com>
Cc: Rivera, Bartolome J@DOT <bartolome.rivera@dot.ca.gov>; Shelley, Scott@DOT <scott.shelley@dot.ca.gov>
Subject: Follow up to phone call regarding question for the Brea Plaza Hotel Project

Hello Sheri,

This is a follow-up to the voice mail I left for you regarding the Brea Plaza Hotel.
As I mentioned, Caltrans has a question regarding: "if there is a permit for the driveway along Imperial Hwy (across the NB SR 57 off ramp)"?

Also, please note that:

Per the HDM (Index 504.8 Access Control): "For new construction or major reconstruction, access rights shall be acquired on the opposite side of the local road from ramp terminals to preclude driveways or local roads within the ramp intersection."

So we believe that there will be permit requests in the future regarding the project, if they have not been submitted already.

Please let us know the status of the driveway permit, and any future permits that will be submitted for this project.

Thank you,

Julie Lugaro, M.S.
Associate Transportation Planner

California Department of Transportation; LD-IGR

Caltrans District 12
1750 E. 4th Street
Santa Ana, CA. 92705

(657) 328-6368

Appendix B Mitigation Monitoring Program

Appendices

This page intentionally left blank.

August 2021| Mitigation Monitoring Program
State Clearinghouse No. 2020079022

BREA PLAZA EXPANSION PROJECT

for City of Brea

Prepared for:

City of Brea
Contact: Juan Arauz, AICP, Senior Planner
1 Civic Center Circle
Brea, California 92821
714.990.7758

Prepared by:

PlaceWorks
Contact: Nicole Vermilion, Principal
3 MacArthur Place, Suite 1100
Santa Ana, California 92707
714.966.9220
info@placeworks.com
www.placeworks.com

Table of Contents

Section **Page**

1. INTRODUCTION 1

1.1 PURPOSE OF MITIGATION MONITORING PROGRAM 1

1.2 PROJECT LOCATION 1

1.3 PROJECT DESCRIPTION 1

1.4 ENVIRONMENTAL IMPACTS 2

2. MITIGATION MONITORING REQUIREMENTS 3

2.1 CATEGORIZED MITIGATION MEASURES/MATRIX 3

3. REPORT PREPARATION 21

3.1 LIST OF PREPARERS 21

Table of Contents

List of Tables

Table **Page**

Table 1 Mitigation Monitoring Requirements 5

1. Introduction

1.1 PURPOSE OF MITIGATION MONITORING PROGRAM

This Mitigation Monitoring Program (MMP) has been developed to provide a vehicle by which to monitor mitigation measures and conditions of approval outlined in the Draft Environmental Impact Report (DEIR), State Clearinghouse No. 2020079022. The Mitigation Monitoring Program has been prepared in conformance with Section 21081.6 of the Public Resources Code and City of Brea Monitoring Requirements. Section 21081.6 states:

> (a) When making findings required by paragraph (1) of subdivision (a) of Section 21081 or when adopting a mitigated negative declaration pursuant to paragraph (2) of subdivision (c) of Section 21080, the following requirements shall apply:
>
> (1) The public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation. For those changes which have been required or incorporated into the project at the request of a responsible agency or a public agency having jurisdiction by law over natural resources affected by the project, that agency shall, if so requested by the lead or responsible agency, prepare and submit a proposed reporting or monitoring program.
>
> (2) The lead agency shall specify the location and custodian of the documents or other material which constitute the record of proceedings upon which its decision is based.

1.2 PROJECT LOCATION

The proposed project would be on 2.2 acres in the northwest portion of the Brea Plaza Shopping Center—1639 East Imperial Highway—which encompasses approximately 16 acres in Brea. The Brea Plaza Shopping Center is bounded by the Mercury Insurance office development to the north, South Associated Road and a single-family residential neighborhood to the east, Imperial Highway/State Route 90 (SR-90) and commercial development in Fullerton to the south, and SR-57 to the west.

1.3 PROJECT DESCRIPTION

The proposed project would require the demolition of the 18,450-square-foot Brea Plaza 5 Cinemas (1,110 seats), and 139 surface parking spaces, and subsequent development of an L-shaped building on approximately 2.2 acres in the northwestern portion of the 16-acre Brea Plaza Shopping Center to accommodate the proposed residential and office uses and parking. The proposed project would result in a net increase of 189 residential units, 387 parking spaces (plus 10 tandem stalls), and a reduction of 2,905

commercial square feet on the 2.2-acre portion of the 16-acre site. Figure ES-4, *Conceptual Site Plan,* shows the overall conceptual site plan including office and residential uses, and parking. The proposed project would require a general plan amendment, a zone change from General Commercial (C-G) to Mixed Use II, and a variance; the applicant would submit a request for a development agreement. Additionally, the proposed project would include rental cars for the use by apartment residents and office tenants; create a rideshare waiting area; have rental bicycles available for use; and include a free Intra-Brea Transportation System for use by all people working, visiting, and living in Brea.

1.4 ENVIRONMENTAL IMPACTS

1.4.1 Impacts Considered No Impact or Less Than Significant

The EIR identified various thresholds from the CEQA Guidelines among a number of environmental categories that would not be significantly impacts by the proposed project in Chapter 5, *Environmental Analysis*, and Chapter 8, *Impacts Found Not to Be Significant*, and therefore, did not require mitigation. Impacts to the following environmental resources were found to be less than significant or no impact:

- Aesthetics
- Air Quality
- Agriculture and Forestry Resources
- Biological Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation
- Utilities and Service Systems
- Wildfire

1.4.2 Potentially Significant Adverse Impacts That Can Be Mitigated, Avoided, or Substantially Lessened

The EIR concluded that the proposed project could result in one or more potentially significant impacts in the following topic areas:

- Cultural and Paleontological Resources
- Tribal Cultural Resources

However, the EIR also found that these impacts would be reduced, avoided, or substantially lessened through the implementation of mitigation measures, which are listed in Table 1, *Mitigation Monitoring Requirements*.

1.4.3 Unavoidable Significant Adverse Impacts

The EIR did not identify any significant and unavoidable impacts.

2. Mitigation Monitoring Requirements

2.1 CATEGORIZED MITIGATION MEASURES/MATRIX

Project-specific mitigation measures (MM) and plans, programs, and policies (PPPs) have been categorized in matrix format, as shown in Table 1. The matrix identifies the environmental factor, specific mitigation measures, schedule, and responsible monitor. The mitigation matrix will serve as the basis for scheduling the implementation of, and compliance with, all mitigation measures.

2. Mitigation Monitoring Requirements

This page intentionally left blank.

2. Mitigation Monitoring Requirements

Table 1 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
AESTHETICS					
PPP AES-1	The proposed project is required to provide a minimum landscaped coverage of 15 percent of the net site area in accordance with municipal code Section 20.258.020, General Development Standards for the Mixed-Use Zoning Districts.	Project Applicant	Prior to issuance of building permits.	City of Brea Planning Division	
PPP AES-2	For parking areas, the proposed project is required to maintain an equivalent of one foot-candle of illumination on the average throughout the parking area. The lighting is required to be on a time-clock or photo-sensor system. The lighting shall be designed to confine direct rays to the premises. No spillover beyond the property line shall be permitted in accordance with municipal code Section 20.08.040(C)(5), Lighting.	Project Applicant	Prior to issuance of building permits.	City of Brea Planning Division	
PPP AES-3	All lighting, interior and exterior, shall be designed and located so as to confine all direct rays to the premises in accordance with municipal code Section 20.220.040(L), Lighting. Lighting for nonresidential uses shall be appropriately designed, located, and shielded to ensure that they do not negatively impact the residential uses in compliance with Section 20.08.040(C)(5).	Project Applicant	Prior to issuance of building permits.	City of Brea Planning Division	
PPP AES-4	Signs shall be located in a manner to ensure that sight distance is not impaired at any locations for vehicular traffic to and from the premises, in accordance with municipal code Section 20.28, Signs. The Brea Plaza comprehensive sign program will be amended, subject to Planning Commission approval. The proposed digital signage for the Brea Plaza Shopping Center on the southern façade of the structure requires review by the Planning Commission to ensure that its size, location, movement, content, coloring, or manner of illumination does not constitute a traffic hazard or a detriment to traffic safety by obstructing the vision of drivers, or detracting from the visibility of any official traffic control device, or by diverting or tending to divert the attention of drivers of moving vehicles from the traffic movement on the public streets and highway. Pursuant to Municipal Code Section 20.28.230, Sign Illumination, the approval of any illuminated sign shall not be final until 30 days after installation, during which period the Development Services Director or his or her designee may order the dimming of any illumination found to be excessively brilliant.	Project Applicant	Prior to issuance of building permits.	City of Brea Planning Division	

2. Mitigation Monitoring Requirements

Table 1 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP AES-5	Loading areas for nonresidential uses shall be located as far as possible from residential units and shall be completely screened from view from the residential portion of the project and streets, in compliance with subsections 20.236.040(E), Walls and Fences, and 20.220.040(F), Fences, Walls, and Hedges, and subparagraph K. Screening and buffering standards for loading areas shall be compatible in architectural design and details with the overall project. The location and design of loading areas shall mitigate nuisances from odors when residential uses might be impacted, in accordance with subsection 20.258.030(I)(3), Loading Areas..	Project Applicant	Prior to issuance of building permits.	City of Brea Planning Division	
PPP AES-6	Recycling and refuse storage facilities for nonresidential uses shall be as far as possible from residential units and shall be completely screened from view from the residential portion of the project and streets in compliance with the standards in subsections 20.236.040(E), Walls and Fences, and 20.220.040(F), Fences, Walls, and Hedges, and subparagraph K, Screening and Buffering. Recycling and refuse storage facilities for nonresidential uses should be compatible in architectural design and details with the overall project. The location and design of trash enclosures shall mitigate nuisances from odors when residential uses might be impacted, in accordance with the standards in subsection 20.258.030(J), Recycling and Refuse Storage Facilities.	Project Applicant	Prior to issuance of building permits.	City of Brea Planning Division	
PPP AES-7	In accordance with Section 20.258.030(D), Specific Development Standards for all Mixed-Use Projects, of the Brea Municipal Code, the architectural style and use of quality materials shall be consistent throughout the entire project; however, differences in architectural details and/or materials may occur to differentiate between the nonresidential and residential portions of the project.	Project Applicant	Prior to issuance of building permits.	City of Brea Planning Division	

Table 1 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP AES-8	In accordance with Section 20.258.030(D)(3.F), Specific Development Standards for all Mixed-Use Projects, of the Brea Municipal Code, the design of the residential portion of the project shall be consistent with the design guidelines for multi-family residential development. In accordance with Section 20.258.030(A)(2), Specific Development Standards for all Mixed-Used Projects MU-I Zoning Districts, of the Brea Municipal Code, nonresidential and residential uses shall be vertically integrated whenever possible; however, stand-alone residential projects and stand-alone nonresidential projects are allowed when planned and designed as an integrated element of a larger mixed-use development area.	Project Applicant	Prior to issuance of building permits.	City of Brea Planning Division	
AIR QUALITY					
PPP AIR-1	New buildings are required to achieve the current California Building Energy and Efficiency Standards (Title 24, Part 6) and California Green Building Standards Code (CALGreen) (Title 24, Part 11). The 2019 Building and Energy Efficiency Standards became effective January 1, 2020. The Building Energy and Efficiency Standards and CALGreen are updated tri-annually with a goal for nonresidential buildings to achieve zero net energy by 2030.	Project Applicant	Prior to issuance of building permits.	City of Brea Building and Safety Division	
PPP AIR-2	New buildings are required to adhere to the California Green Building Standards Code (CALGreen) requirement to provide bicycle parking for new nonresidential buildings, or meet local bicycle parking ordinances, whichever is stricter (CALGreen Sections 5.106.4.1, 14.106.4.1, and 5.106.4.1.2)..	Project Applicant	Prior to issuance of building permits.	City of Brea Building and Safety Division	
PPP AIR-3	New buildings are required to adhere to the California Green Building Standards Code (CALGreen) requirement to provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of MERV 13 filters (CALGreen Section 5.504).	Construction contractor	During construction activities	City of Brea Building and Safety Division	
PPP AIR-4	Construction activities will be conducted in compliance with California Code of Regulations Title 13 Section 2449, which requires that nonessential idling of construction equipment is restricted to five minutes or less.	Construction contractor	During construction activities	City of Brea Building and Safety Division	

2. Mitigation Monitoring Requirements

Table 1 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP AIR-5	Construction activities will be conducted in compliance with any applicable South Coast Air Quality Management District rules and regulations, including but not limited to: • Rule 403, Fugitive Dust, for controlling fugitive dust and avoiding nuisance. • Rule 402, Nuisance, which states that a project shall not "discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property." • Rule 1113, which limits the volatile organic compound content of architectural coatings.	Construction contractor	During construction activities	City of Brea Building and Safety Division	
BIOLOGICAL RESOURCES					
PPP BIO-1	In compliance with the California Fish and Game Code, birds and their active nests are protected; therefore, the trees on-site would be removed outside of the nesting season, either prior to February 15 or after August 15.	Project Applicant	During site preparation and grading activities.	City of Brea Building and Safety Division	
CULTURAL AND PALEONTOLOGICAL RESOURCES					
PPP CUL-1	Native American historical and cultural resources and sacred sites are protected under PRC Sections 5097.9 to 5097.991, which require that descendants be notified when Native American human remains are discovered and provide for treatment and disposition of human remains and associated grave goods.	Qualified Archaeologist and Project Applicant	Prior to issuance of grading permits and during construction activities	City of Brea Planning Division	
PPP CUL-2	The removal, without permission, of any paleontological site or feature is prohibited from lands under the jurisdiction of the state or any city, county, district, authority, or public corporation or any agency thereof (PRC Section 5097.5). This applies to agencies' own activities, including construction and maintenance, and permit actions by others.	Qualified Archaeologist and Project Applicant	Prior to issuance of grading permits and during construction activities	City of Brea Planning Division	

2. Mitigation Monitoring Requirements

Table 1 Mitigation Monitoring Requirements

Mitigation Measure		Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP CUL-3	Adverse impacts to paleontological resources from developments on public lands (state, county, city, and district) require reasonable mitigation. (PRC Section 5097.5)	Qualified Archaeologist and Project Applicant	Prior to issuance of grading permits and during construction activities	City of Brea Planning Division	
PPP CUL-4	If human remains are discovered within a project site, disturbance of the site must stop until the coroner has investigated and made recommendations for the treatment and disposition of the human remains to the person responsible for the excavation, or to his or her authorized representative. If the coroner has reason to believe the human remains are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission. (California Health and Safety Code Section 7050.5)	Tribal Monitor, Qualified Archaeologist, and Project Applicant	During site-grading activities	City of Brea Planning Division, Project Applicant	
CUL-1	If cultural resources are encountered during ground-disturbing activities, work in the immediate area shall cease, and an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology (National Park Service 1983) shall be contacted immediately to evaluate the find(s). If the discovery proves to be significant under CEQA, additional work such as data recovery excavation may be warranted and will be reported to the City.	Qualified Archaeologist and Project Applicant	During ground disturbing activities	City of Brea Planning Division	
CUL-2	Monitoring of mass grading and excavation activities in the areas identified as likely to contain paleontological resources by a qualified paleontologist. A paleontologist shall be on call in the event that paleontological resources are found during ground-disturbing activities. The paleontologist shall be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediments that are likely to contain the remains of small fossils. The paleontologist shall be empowered to temporarily halt or divert equipment to allow for the removal of abundant or large specimens in a timely manner.	Qualified Paleontologist and Project Applicant	During ground disturbing activities	City of Brea Planning Division	

2. Mitigation Monitoring Requirements

Table 1 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
ENERGY					
PPP E-1	New buildings are required to achieve the current California Building Energy Efficiency Standards (Title 24, Part 6) and California Green Building Standards Code (CALGreen) (Title 24, Part 11). The 2019 Building Energy Efficiency Standards became effective on January 1, 2020. The Building Energy Efficiency Standards and CALGreen are updated tri-annually with a goal to achieve zero net energy for residential buildings by 2020 and non-residential buildings by 2030.	Project Applicant	Prior to issuance of building permits.	City of Brea Engineering Division	
PPP E-2	New buildings are required to adhere to the California Green Building Standards Code (CALGreen) requirement to provide bicycle parking for new non-residential buildings, or meet local bicycle parking ordinances, whichever is stricter (CALGreen Sections 5.106.4.1, 14.106.4.1, and 5.106.4.1.2).	Project Applicant	Prior to issuance of building permits.	City of Brea Building and Safety Division	
PPP E-3	California's Green Building Standards Code (CALGreen) requires the recycling and/or salvaging for reuse at minimum of 65 percent of the nonhazardous construction and demolition waste generated during most "new construction" projects (CALGreen §§ 4.408 and 5.408). Construction contractors are required to submit a construction waste management plan that identifies the construction and demolition waste materials to be diverted from disposal by recycling, reuse on the project, or salvaged for future use or sale and the amount (by weight or volume).	Project Applicant	Prior to issuance of building permits and during construction.	City of Brea Engineering Department	
PPP E-4	Construction activities are required to adhere to Title 13 California Code of Regulations Section 2499, which requires that nonessential idling of construction equipment is restricted to five minutes or less.	Project Applicant	Prior to issuance of building permits.	City of Brea Building and Safety Division	
PPP E-5	New buildings are required to adhere to the California Green Building Standards Code and Water Efficient Landscape Ordinance requirements to increase water efficiency and reduce urban per capita water demand.	Project Applicant	Prior to issuance of building permits.	City of Brea Building and Safety Division	

Table 1 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP E-6	The California Air Resources Board's Renewable Portfolio Standard (RPS) is a foundational element of the State's emissions reduction plan. These mandates apply directly to investor-owned utilities, which in the case of the proposed project is Southern California Edison. On September 10, 2018, Senate Bill 100 was signed into law and established the following RPS targets: 50 percent renewable resources target by December 31, 2026, and 60 percent target by December 31, 2030. SB 100 also requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt hours of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024; 52 percent by December 31, 2027; and 60 percent by December 31, 2030.	Not Applicable	Not Applicable	Not Applicable	Not Applicable
PPP E-7	The 2007 Energy Bill creates new federal requirements for increases in fleetwide fuel economy for passenger vehicles and light trucks under the Federal Corporate Average Fuel Economy Standards. The federal legislation requires a fleetwide average of 35 miles per gallon (mpg) to be achieved by 2020. The National Highway Traffic Safety Administration is directed to phase in requirements to achieve this goal. Analysis by the California Air Resources Board suggests that this will require an annual improvement of approximately 3.4 percent between 2008 and 2020.	Not Applicable	Not Applicable	Not Applicable	Not Applicable
PPP E-8	SB 375 requires the reduction of GHG emissions from light trucks and automobiles through land use and transportation efforts that will reduce vehicle miles traveled. In essence, SB 375's goal is to control GHGs by curbing urban sprawl and through better land use planning. SB 375 essentially becomes the land use contribution to the GHG reduction requirements of AB 32, California's global warming bill enacted in 2006, and SB 32.	Not Applicable	Not Applicable	Not Applicable	Not Applicable

2. Mitigation Monitoring Requirements

Table 1 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
GREENHOUSE GAS EMISSIONS					
PPP GHG-1	New buildings are required to achieve the current California Building Energy Efficiency Standards (Title 24, Part 6) and California Green Building Standards Code (CALGreen) (Title 24, Part 11). The 2019 Building Energy Efficiency Standards will become effective on January 1, 2020. The Building Energy Efficiency Standards and CALGreen are updated tri-annually with a goal to achieve zero net energy for residential buildings by 2020 and non-residential buildings by 2030.	Project Applicant	Prior to issuance of building permits.	City of Brea Engineering Division	
PPP GHG-2	New buildings are required to adhere to the California Green Building Standards Code (CALGreen) requirement to provide bicycle parking for new nonresidential buildings, or meet local bicycle parking ordinances, whichever is stricter (CALGreen §§ 5.106.4.1, 14.106.4.1, and 5.106.4.1.2). Development of the project would require provision of anchored bicycle racks and long-term secured bicycle parking.	Project Applicant	Prior to issuance of building permits.	City of Brea Engineering Division	
PPP GHG-3	California's Green Building Standards Code (CALGreen) requires the recycling and/or salvaging for reuse at minimum of 65 percent of the nonhazardous construction and demolition waste generated during most "new construction" projects (CALGreen §§ 4.408 and 5.408). Construction contractors are required to submit a construction waste management plan that identifies the construction and demolition waste materials to be diverted from disposal by recycling, reuse on the project, or salvaged for future use or sale and the amount (by weight or volume).	Project Applicant	Prior to issuance of building permits and during construction.	City of Brea Engineering Division	
PPP GHG-4	Construction activities are required to adhere to California Code of Regulations, Title 13, Section 2449, which requires that nonessential idling of construction equipment be restricted to five minutes or less.	Project Applicant and Project Construction Contractor	During construction and operations	City of Brea Engineering Division	
PPP GHG-5	New buildings are required to adhere to the California Green Building Standards Code and Water Efficient Landscape Ordinance requirements to increase water efficiency and reduce urban per capita water demand.	Project Applicant	Prior to issuance of building permits.	City of Brea Building and Safety Division	
LAND USE AND PLANNING					
PPP LU-1	As part of the project review process, the City of Brea is requiring that the project applicant prepare a parking study	Project Applicant	Prior to issuance of building permits.	City of Brea Planning Division	

2. Mitigation Monitoring Requirements

Table 1 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
NOISE					
PPP NOI-1	Project-related construction activity will be limited to the hours of 7:00 am to 7:00 pm on weekdays and Saturdays. Construction is prohibited on Sundays.	Project Applicant	During construction activities	City of Brea Building and Safety Division	
PPP NOI-2	The project will comply with City of Brea's stationary exterior noise standards summarized above in Table 5.7-3.	Project Applicant	During operation	City of Brea Building and Safety Division	
PPP NOI-3	The project will comply with the City of Brea's vibration standards of 70 VdB at the property line of the sensitive receptor.	Project Applicant	During operation	City of Brea Building and Safety Division	
PPP NOI-4	The residential development will comply with the California Building Code (CBC), Title 24, Part 2, Volume 1, Chapter 12, Interior Environment, Section 1207.11.2, Allowable Interior Noise Levels. Non-residential development will comply with the CBC, Title 24, Building Standards Administrative Code, Part 11, CALGreen.	Project Applicant	During operation	City of Brea Building and Safety Division	
PPP NOI-5	Outdoor nonresidential uses in mixed-use projects shall be prohibited from operating between the hours of 10:00 p.m. and 7:00 a.m. in accordance with Section 20.258.030 (H)(1) Hours of Operation of the Brea Municipal Code.	Project Applicant	During operation	City of Brea Planning Division, Police Department	
PPP NOI-6	The covenants, conditions, and restrictions of a mixed-use project shall indicate the times when the loading and unloading of goods may occur on the street, provided that in no event shall loading or unloading take place after 10:00 p.m. or before 7:00 a.m. on any day of the week in accordance with Section 20.258.030 (H)(3) Loading and Unloading Activities, of the Brea Municipal Code.	Project Applicant	During operation	City of Brea Planning Division	
PPP NOI-7	Residents of a mixed-use development project shall be notified in writing before taking up residence that they will be living in an urban type of environment and that the noise levels may be higher than a typical residential area. The covenants, conditions, and restrictions of a mixed-use project shall require that the residents acknowledge their receipt of the written noise notification. Their signatures shall confirm receipt and understanding of this information in accordance with Section 20.258.030 (H)(4) Noise Notification, of the Brea Municipal Code.	Project Applicant	Prior to issuance of an occupancy permit. During leasing.	City of Brea Planning Division, Project Applicant	

2. Mitigation Monitoring Requirements

Table 1 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP NOI-8	Residential dwelling units shall be designed to be sound attenuated against present and future project noise. New projects or new nonresidential uses in existing projects shall provide an acoustical analysis report, by an acoustical engineer, describing the acoustical design features of the structure required to satisfy the exterior and interior noise standards in accordance with Section 20.258.030 (H)(6) Sound Mitigation, of the Brea Municipal Code.	Project Applicant	Prior to issuance of a building permit	City of Brea Building and Safety Division	
PPP NOI-9	Noise-generating equipment. Noise-generating equipment (e.g., refrigeration units, air conditioning, exhaust fans, etc.) shall require special consideration in their location and screening in order to avoid creating a nuisance in accordance with Section 20.258.030 (K)(3) Noise Generating Equipment.	Project Applicant	Prior to issuance of a building permit and during operation	City of Brea Building and Safety Division	
POPULATION AND HOUSING					
PPP POP-1	The project is required to adhere the City's Affordable Housing Ordinance (Municipal Code Chapter 20.40), which requires developers of residential projects with 20 or more units to provide 10 percent of the units for housing affordable to low- and moderate-income households or pay an in-lieu fee.	Project Applicant	Prior to issuance of an occupancy permit. During leasing.	City of Brea Planning Division, Project Applicant	
PUBLIC SERVICES					
PPP PS-1	New buildings are required to meet the fire regulations outlined in California Health and Safety Code (Sections 13000 et seq.).	Project Applicant	Prior to issuance of a building permit.	City of Brea Fire Department	
PPP PS-2	The project applicant is required to pay development impact fees (dispatch impact fees, fire impact fees, fire service fees).	Project Applicant	Prior to issuance of a building permit.	City of Brea Building and Safety Division	
PPP PS-3	As part of the project review process, the City of Brea Fire Department will require approval of Building Plan Check for Site Plan and Emergency Access as well as approval of Fire Master Plan. Additional design features to address the City of Brea Fire Department's requirements will be incorporated as conditions of approval for the project.	Project Applicant	Prior to issuance of a building permit	City of Brea Fire Department	
PPP PS-4	The project will be designed, built, and operated in accordance with the City of Brea's Municipal Code Chapter 15.08 Building Code and Chapter 16.04 Brea Fire Code.	Project Applicant	Prior to issuance of a building permit	City of Brea Building and Safety Division and Fire Department	

Table 1 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP PS-5	As part of the project review process, the City of Brea Fire Department may require project design features for fire safety. Additional design features to address the City of Brea Fire Department's service standards will be incorporated as conditions of approval for the project, such as funding for a new ladder truck to responsibly maintain its response requirements, provide adequate protection for this project and its intended residents, and aid in the overall execution of the Brea Fire Department's mission.	Project Applicant	Prior to issuance of an occupancy permit	City of Brea Police Department	
PPP PS-6	The project applicant is required to pay dispatch impact fees.	Project Applicant	Prior to issuance of a building permit	City of Brea Building and Safety Division	
PPP PS-7	As part of the project review process, the City of Brea Police Department may require project design features to improve security. Additional design features to address the City of Brea Police Department's service standards will be incorporated as conditions of approval for the project, such as: • ALPR (license plate reader system), • Fiber optic cable to connect to existing fiber network, • Funding for mixed mounted cameras for a citywide camera system which is currently under development.	Project Applicant	Prior to issuance of a building permit	City of Brea Police Department	
PPP PS-8	Pursuant to AB 2926, new development is required to pay development impact fees to assist in providing school facilities to serve students generated by new development.	Project Applicant	Prior to issuance of a building permit	City of Brea Building and Safety Division	
PPP PS-9	Pursuant to SB 50, new development is required to offset the costs associated with increasing school capacity, where the funds collected go to acquiring school sites, constructing new school facilities, and modernizing existing school facilities.	Project Applicant	Prior to issuance of a building permit	City of Brea Building and Safety Division	

2. Mitigation Monitoring Requirements

Table 1 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
RECREATION					
PPP REC-1	The proposed project is required to comply with Brea Municipal Code Section 18.64.080 that establishes the subdivision regulations for the provision of park and recreational facilities through land dedication, installation of improvements, payment of in-lieu fee thereof, or a combination. New development is required to fund park and recreational development and improvements through the payment of park development fees.	Project Applicant	Prior to issuance of a building permit	City of Brea Building and Safety Division	
TRANSPORTATION					
PPP TRAF-1	The proposed project is required to pay development impact fees to the City of Brea pursuant to the City's AB 1600 Transportation Improvement Nexus Program (Ordinance 996). Based on a transportation improvement nexus program study conducted in 2011, the City Council adopted Resolution 2011-096, which updated the impact fees, effective February 4, 2012. Fair-share fees offset or mitigate the cumulative traffic impacts caused by new development. The program ensures all future development in the City of Brea contributes on a fair-share basis.	Project Applicant	Prior to issuance of a building permit	City of Brea Engineering Division	
PPP TRAF-2	Modifications to the roadway network, including driveways, curbs, and sidewalks, are subject to approval of the City of Brea. Construction work within the right-of-way of a public roadway requires the issuance of a permit by the City of Brea.	Project Applicant	Prior to issuance of a building permit	City of Brea Engineering Division	
PPP TRAF-3	The proposed project is required to implement the following bicycle safety improvements as a condition of approval. The project shall restripe the west leg of the intersection of South Associated Road at Birch Street to provide an exclude east-bound right-turn pocket. To implement this improvement, the existing traffic signal at South Associated Road and Birch Street shall be modified to allow for an eastbound right-turn overlap phase. In addition, the existing R73-5(CA) sign for the northbound left-turn lanes shall be replaced with a R73-6(CA) sign to restrict U-turns in the northbound direction.	Project Applicant and City of Brea Public Works Department	Prior to issuance of an occupancy permit	City of Brea Public Works Department	

Table 1 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
TRIBAL CULTURAL RESOURCES					
PPP TCR-1	Pursuant to California Health and Safety Code Section 7050.5, if human remains are discovered on the project site, disturbance of the site shall halt and remain halted until the coroner has conducted an investigation. If the coroner determines that the remains are not subject to his or her authority and has reason to believe that they are those of a Native American, he or she shall contact the NAHC by telephone within 24 hours.	Tribal Monitor, Qualified Archaeologist, and Project Applicant	During site-grading activities	City of Brea Planning Division, Project Applicant	
TCR-1	Prior to the commencement of any ground disturbing activity at the project site, the project applicant shall retain a Native American Monitor approved by the Gabrieleno Band of Mission Indians-Kizh Nation – the tribe that consulted on this project pursuant to Assembly Bill A52 (the "Tribe" or the "Consulting Tribe"), and in concurrence with the City of Brea as the CEQA lead agency. A copy of the executed contract shall be submitted to the City of Brea Planning and Building Department prior to the issuance of any permit necessary to commence a ground-disturbing activity. • The Tribal monitor shall only be present on-site during the construction phases that involve ground-disturbing activities. Ground disturbing activities are defined by the Tribe as activities that may include, but are not limited to, pavement removal, potholing or auguring, grubbing, tree removals, boring, rading, excavation, drilling, and renching, within the project area. • The Tribal Monitor shall complete daily monitoring logs that provide descriptions of the day's activities, including construction activities, locations, soil, and any cultural materials identified. • The on-site monitoring shall be concluded when all ground-disturbing activities on the project site are completed, or when the Tribal Representatives and Tribal Monitor have indicated that all upcoming ground-disturbing activities at the project site have little to no potential for impacting Tribal Cultural Resources.	Tribal Monitor and Project Applicant	Prior to issuance of grading permit	City of Brea Planning Division, Project Applicant	

2. Mitigation Monitoring Requirements

Table 1 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
TCR-2	If tribal cultural resources are inadvertently discovered during ground disturbing activities for this project. The following procedures will be carried out for treatment and disposition of the discoveries: • Upon discovery of any Tribal Cultural Resources, construction activities shall cease in the immediate vicinity of the find (not less than the surrounding 100 feet) until the find can be assessed. • All Tribal Cultural Resources unearthed by project activities shall be evaluated by the qualified archaeologist and Tribal monitor approved by the Consulting Tribe. If the resources are Native American in origin, the Consulting Tribe will retain it/them in the form and/or manner the Tribe deems appropriate, for educational, cultural and/or historic purposes. • If human remains and/or grave goods are discovered or recognized at the Project Site, all ground disturbance shall immediately cease, and the county coroner shall be notified per Public Resources Code Section 5097.98, and Health & Safety Code Section 7050.5. Human remains and grave/burial goods shall be treated alike per California Public Resources Code section 5097.98(d)(1) and (2). • Work may continue on other parts of the Project Site while evaluation and, if necessary, mitigation takes place (CEQA Guidelines Section 15064.5[f]). If a non-Native American resource is determined by the qualified archaeologist to constitute a "historical resource" or "unique archaeological resource," time allotment and funding sufficient to allow for implementation of avoidance measures, or appropriate mitigation, must be available. The treatment plan established for the resources shall be in accordance with CEQA Guidelines Section 15064.5(f) for historical resources and PRC Sections 21083.2(b) for unique archaeological resources. • Preservation in place (i.e., avoidance) is the preferred manner of treatment. If preservation in place is not feasible, treatment may include implementation of archaeological data recovery excavations to remove the resource along with subsequent	Project Applicant and Qualified Archaeologist	During ground disturbing activities	City of Brea Planning Division, Project Applicant	

Table 1 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
	laboratory processing and analysis. Any historic archaeological material that is not Native American in origin shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, it shall be offered to a local school or historical society in the area for educational purposes.				
UTILITIES AND SERVICE SYSTEMS					
PPP USS-1	The project will pay the Sanitary Sewer Connection Fees collected by the City of Brea, which contribute to maintenance and installation of sewer improvements in the OCSD in accordance with Section 3.32.040, Sewer Service Fees and Charges, of the Brea Municipal Code.	Project Applicant	Prior to issuance of a building permit	City of Brea Engineering Division	
PPP USS-2	The project will pay the water impact fees and water connection fees collected by the City of Brea, which covers costs to purchase water supplies and to operate and maintain the water distribution system in accordance with Ordinance 967.	Project Applicant	Prior to issuance of a building permit	City of Brea Engineering Division	
PPP USS-3	Landscaping installed onsite shall conform to the California Green Building Standards Code and Water Efficient Landscape Ordinance requirements to increase landscape water efficiency.	Project Applicant	Prior to issuance of a building permit and during construction	City of Brea Building and Safety, Planning Division	
PPP USS-4	Plumbing fixtures installed onsite shall conform to California Green Building Standards Code requirements to increase water efficiency and reduce urban per capita water demand.	Project Applicant	Prior to issuance of a building permit and during construction	City of Brea Building and Safety	
PPP USS-5	The project would comply with the City's water conservation program during a drought or emergency situation, in accordance with Chapter 13.20, Water Management Program, of the City's Municipal Code.	Project Applicant	Prior to issuance of a building permit and during construction	City of Brea Engineering Division	

2. Mitigation Monitoring Requirements

Table 1 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP USS-6	The project will be constructed and operated in accordance with the Santa Ana Regional Water Quality Control Board Municipal Stormwater (MS4) Permit for Orange County. The MS4 Permit requires the proposed project to prepare and implement a WQMP to: • Control release of contaminants into storm drain systems. • Educate the public about stormwater impacts. • Detect and eliminate illicit discharges. • Control runoff from construction sites. • Implement BMPs and site-specific runoff controls and treatments.	Project Applicant	Prior to issuance of a building permit and during construction	City of Brea Engineering Division	
PPP USS-7	California's Green Building Standards Code (CALGreen) requires the recycling and/or salvaging for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste generated during most "new construction" projects (CALGreen Sections 4.408 and 5.408). Construction contractors are required to submit a construction waste management plan that identifies the construction and demolition waste materials to be diverted from disposal by recycling, reuse on the project, or salvage for future use or sale and the amount (by weight or volume).	Project Applicant	Prior to issuance of a building permit and during construction	City of Brea Engineering Division	
PPP USS-8	The project will abide by AB 341 and AB 1826. The project will store and collect recyclable materials in compliance with AB 341. Green waste will be handled in accordance with AB 1826.	Project Applicant	Prior to issuance of a building permit and during construction	City of Brea Engineering Division	

3. Report Preparation

3.1 LIST OF PREPARERS

City of Brea

Jason Killebrew, City Planner

Juan Arauz, AICP, Senior Planner

PlaceWorks

Nicole Vermilion, Principal

Jasmine A. Osman, Associate I

3. Report Preparation

This page intentionally left blank.

Appendix C1 Air Quality and Greenhouse Gas Emissions Modeling

Appendices

This page intentionally left blank.

Air Quality and Greenhouse Gas Appendix

Emissions Worksheet

Regional Construction Emissions Worksheet:

Building Demolition

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2022 Summer**						
	Off-Road		0.64	5.47	5.25	0.02	0.19	0.18
	Total		**0.64**	**5.47**	**5.25**	**0.02**	**0.19**	**0.18**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.01	0.36	0.10	0.00	0.02	0.01
	Worker		0.05	0.03	0.43	0.00	0.16	0.04
	Total		**0.06**	**0.38**	**0.52**	**0.00**	**0.18**	**0.05**
TOTAL			***0.71***	***5.85***	***5.78***	***0.02***	***0.37***	***0.23***
Onsite		**2022 Winter**						
	Off-Road		0.64	5.47	5.25	0.02	0.19	0.18
	Total		**0.64**	**5.47**	**5.25**	**0.02**	**0.19**	**0.18**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.01	0.35	0.11	0.00	0.02	0.01
	Worker		0.06	0.03	0.39	0.00	0.16	0.04
	Total		**0.07**	**0.39**	**0.50**	**0.00**	**0.18**	**0.05**
TOTAL			***0.71***	***5.85***	***5.75***	***0.02***	***0.37***	***0.23***
Onsite		**2022**						
	Off-Road		0.64	5.47	5.25	0.02	0.19	0.18
	Total		**0.64**	**5.47**	**5.25**	**0.02**	**0.19**	**0.18**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.01	0.36	0.11	0.00	0.02	0.01
	Worker		0.06	0.03	0.43	0.00	0.16	0.04
	Total		**0.07**	**0.39**	**0.52**	**0.00**	**0.18**	**0.05**
TOTAL			***0.71***	***5.85***	***5.78***	***0.02***	***0.37***	***0.23***

Building Demolition Haul

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2022** Summer						
	Fugitive Dust						1.84	0.28
	Off-Road		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.00**	**0.00**	**1.84**	**0.28**
Offsite								
	Hauling		0.35	10.78	3.61	0.04	0.95	0.29
	Vendor		0.03	0.89	0.25	0.00	0.06	0.02
	Worker		0.02	0.01	0.14	0.00	0.05	0.01
	Total		**0.39**	**11.68**	**4.00**	**0.04**	**1.06**	**0.32**
TOTAL			***0.39***	***11.68***	***4.00***	***0.04***	***2.91***	***0.60***
Onsite		**2022** Winter						
	Fugitive Dust						1.84	0.28
	Off-Road		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.00**	**0.00**	**1.84**	**0.28**
Offsite								
	Hauling		0.35	11.01	3.69	0.04	0.95	0.29
	Vendor		0.03	0.88	0.27	0.00	0.06	0.02
	Worker		0.02	0.01	0.13	0.00	0.05	0.01
	Total		**0.40**	**11.91**	**4.09**	**0.04**	**1.06**	**0.32**
TOTAL			***0.40***	***11.91***	***4.09***	***0.04***	***2.91***	***0.60***
Onsite		**2022**						
	Fugitive Dust		0.00	0.00	0.00	0.00	1.84	0.28
	Off-Road		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.00**	**0.00**	**1.84**	**0.28**
Offsite								
	Hauling		0.35	11.01	3.69	0.04	0.95	0.29
	Vendor		0.03	0.89	0.27	0.00	0.06	0.02
	Worker		0.02	0.01	0.14	0.00	0.05	0.01
	Total		**0.40**	**11.91**	**4.09**	**0.04**	**1.06**	**0.32**
TOTAL			***0.40***	***11.91***	***4.09***	***0.04***	***2.91***	***0.60***

Asphalt Demolition

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2022** Summer						
	Off-Road	0.64	5.47	5.25	0.02	0.19	0.18
	Total	**0.64**	**5.47**	**5.25**	**0.02**	**0.19**	**0.18**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.36	0.10	0.00	0.02	0.01
	Worker	0.02	0.01	0.14	0.00	0.05	0.01
	Total	**0.03**	**0.36**	**0.24**	**0.00**	**0.08**	**0.02**
TOTAL		***0.67***	***5.83***	***5.49***	***0.02***	***0.27***	***0.20***
Onsite	**2022** Winter						
	Off-Road	0.64	5.47	5.25	0.02	0.19	0.18
	Total	**0.64**	**5.47**	**5.25**	**0.02**	**0.19**	**0.18**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.35	0.11	0.00	0.02	0.01
	Worker	0.02	0.01	0.13	0.00	0.05	0.01
	Total	**0.03**	**0.36**	**0.24**	**0.00**	**0.08**	**0.02**
TOTAL		***0.67***	***5.83***	***5.49***	***0.02***	***0.27***	***0.20***
Onsite	**2022**						
	Off-Road	0.64	5.47	5.25	0.02	0.19	0.18
	Total	**0.64**	**5.47**	**5.25**	**0.02**	**0.19**	**0.18**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.36	0.11	0.00	0.02	0.01
	Worker	0.02	0.01	0.14	0.00	0.05	0.01
	Total	**0.03**	**0.36**	**0.24**	**0.00**	**0.08**	**0.02**
TOTAL		***0.67***	***5.83***	***5.49***	***0.02***	***0.27***	***0.20***

Asphalt Demolition Haul

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2022** Summer						
	Fugitive Dust					1.32	0.20
	Off-Road	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**0.00**	**0.00**	**0.00**	**0.00**	**1.32**	**0.20**
Offsite							
	Hauling	0.25	7.73	2.59	0.03	0.68	0.21
	Vendor	0.03	1.07	0.29	0.00	0.07	0.02
	Worker	0.02	0.01	0.14	0.00	0.05	0.01
	Total	**0.30**	**8.80**	**3.02**	**0.03**	**0.81**	**0.24**
TOTAL		***0.30***	***8.80***	***3.02***	***0.03***	***2.13***	***0.44***
Onsite	**2022** Winter						
	Fugitive Dust					1.32	0.20
	Off-Road	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**0.00**	**0.00**	**0.00**	**0.00**	**1.32**	**0.20**
Offsite							
	Hauling	0.25	7.89	2.65	0.03	0.68	0.21
	Vendor	0.03	1.06	0.32	0.00	0.07	0.02
	Worker	0.02	0.01	0.13	0.00	0.05	0.01
	Total	**0.30**	**8.97**	**3.10**	**0.03**	**0.81**	**0.24**
TOTAL		***0.30***	***8.97***	***3.10***	***0.03***	***2.13***	***0.44***
Onsite	**2022**						
	Fugitive Dust	0.00	0.00	0.00	0.00	1.32	0.20
	Off-Road	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**0.00**	**0.00**	**0.00**	**0.00**	**1.32**	**0.20**
Offsite							
	Hauling	0.25	7.89	2.65	0.03	0.68	0.21
	Vendor	0.03	1.07	0.32	0.00	0.07	0.02
	Worker	0.02	0.01	0.14	0.00	0.05	0.01
	Total	**0.30**	**8.97**	**3.10**	**0.03**	**0.81**	**0.24**
TOTAL		***0.30***	***8.97***	***3.10***	***0.03***	***2.13***	***0.44***

Site Preparation

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2022** Summer						
Fugitive Dust						0.00	0.00
Off-Road		0.80	7.07	7.40	0.03	0.28	0.26
Total		**0.80**	**7.07**	**7.40**	**0.03**	**0.28**	**0.26**
Offsite							
Hauling		0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.01	0.36	0.10	0.00	0.02	0.01
Worker		0.02	0.01	0.14	0.00	0.05	0.01
Total		**0.03**	**0.36**	**0.24**	**0.00**	**0.08**	**0.02**
TOTAL		***0.83***	***7.44***	***7.64***	***0.03***	***0.35***	***0.28***
Onsite	**2022** Winter						
Fugitive Dust						0.00	0.00
Off-Road		0.80	7.07	7.40	0.03	0.28	0.26
Total		**0.80**	**7.07**	**7.40**	**0.03**	**0.28**	**0.26**
Offsite							
Hauling		0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.01	0.35	0.11	0.00	0.02	0.01
Worker		0.02	0.01	0.13	0.00	0.05	0.01
Total		**0.03**	**0.36**	**0.24**	**0.00**	**0.08**	**0.02**
TOTAL		***0.83***	***7.44***	***7.64***	***0.03***	***0.35***	***0.28***
Onsite	**2022**						
Fugitive Dust		0.00	0.00	0.00	0.00	0.00	0.00
Off-Road		0.80	7.07	7.40	0.03	0.28	0.26
Total		**0.80**	**7.07**	**7.40**	**0.03**	**0.28**	**0.26**
Offsite							
Hauling		0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.01	0.36	0.11	0.00	0.02	0.01
Worker		0.02	0.01	0.14	0.00	0.05	0.01
Total		**0.03**	**0.36**	**0.24**	**0.00**	**0.08**	**0.02**
TOTAL		***0.83***	***7.44***	***7.64***	***0.03***	***0.35***	***0.28***

Rough Grading

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2022** Summer						
Fugitive Dust						0.00	0.00
Off-Road		0.59	5.75	7.16	0.02	0.25	0.23
Total		**0.59**	**5.75**	**7.16**	**0.02**	**0.25**	**0.23**
Offsite							
Hauling		0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.01	0.36	0.10	0.00	0.02	0.01
Worker		0.02	0.01	0.14	0.00	0.05	0.01
Total		**0.03**	**0.36**	**0.24**	**0.00**	**0.08**	**0.02**
TOTAL		***0.62***	***6.12***	***7.40***	***0.02***	***0.33***	***0.26***
Onsite	**2022** Winter						
Fugitive Dust						0.00	0.00
Off-Road		0.59	5.75	7.16	0.02	0.25	0.23
Total		**0.59**	**5.75**	**7.16**	**0.02**	**0.25**	**0.23**
Offsite							
Hauling		0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.01	0.35	0.11	0.00	0.02	0.01
Worker		0.02	0.01	0.13	0.00	0.05	0.01
Total		**0.03**	**0.36**	**0.24**	**0.00**	**0.08**	**0.02**
TOTAL		***0.62***	***6.12***	***7.40***	***0.02***	***0.33***	***0.26***
Onsite	**2022**						
Fugitive Dust		0.00	0.00	0.00	0.00	0.00	0.00
Off-Road		0.59	5.75	7.16	0.02	0.25	0.23
Total		**0.59**	**5.75**	**7.16**	**0.02**	**0.25**	**0.23**
Offsite							
Hauling		0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.01	0.36	0.11	0.00	0.02	0.01
Worker		0.02	0.01	0.14	0.00	0.05	0.01
Total		**0.03**	**0.36**	**0.24**	**0.00**	**0.08**	**0.02**
TOTAL		***0.62***	***6.12***	***7.40***	***0.02***	***0.33***	***0.26***

Rough Grading Soil Haul

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2022** Summer						
	Fugitive Dust					0.03	0.00
	Off-Road	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.03**	**0.00**
Offsite							
	Hauling	1.37	42.60	14.26	0.16	3.75	1.14
	Vendor	0.03	0.89	0.25	0.00	0.06	0.02
	Worker	0.02	0.01	0.14	0.00	0.05	0.01
	Total	**1.42**	**43.50**	**14.64**	**0.16**	**3.86**	**1.17**
TOTAL		***1.42***	***43.50***	***14.64***	***0.16***	***3.89***	***1.17***
Onsite	**2022** Winter						
	Fugitive Dust					0.03	0.00
	Off-Road	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.03**	**0.00**
Offsite							
	Hauling	1.39	43.50	14.59	0.15	3.75	1.14
	Vendor	0.03	0.88	0.27	0.00	0.06	0.02
	Worker	0.02	0.01	0.13	0.00	0.05	0.01
	Total	**1.44**	**44.39**	**14.99**	**0.16**	**3.86**	**1.17**
TOTAL		***1.44***	***44.39***	***14.99***	***0.16***	***3.89***	***1.17***
Onsite	**2022**						
	Fugitive Dust	0.00	0.00	0.00	0.00	0.03	0.00
	Off-Road	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.03**	**0.00**
Offsite							
	Hauling	1.39	43.50	14.59	0.16	3.75	1.14
	Vendor	0.03	0.89	0.27	0.00	0.06	0.02
	Worker	0.02	0.01	0.14	0.00	0.05	0.01
	Total	**1.44**	**44.39**	**14.99**	**0.16**	**3.86**	**1.17**
TOTAL		***1.44***	***44.39***	***14.99***	***0.16***	***3.89***	***1.17***

Utilities Trenching

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2022 Summer**						
	Off-Road	0.81	6.97	7.89	0.03	0.27	0.25
	Total	**0.81**	**6.97**	**7.89**	**0.03**	**0.27**	**0.25**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.36	0.10	0.00	0.02	0.01
	Worker	0.02	0.01	0.14	0.00	0.05	0.01
	Total	**0.03**	**0.36**	**0.24**	**0.00**	**0.08**	**0.02**
TOTAL		***0.84***	***7.33***	***8.13***	***0.03***	***0.34***	***0.27***
Onsite	**2022 Winter**						
	Off-Road	0.81	6.97	7.89	0.03	0.27	0.25
	Total	**0.81**	**6.97**	**7.89**	**0.03**	**0.27**	**0.25**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.35	0.11	0.00	0.02	0.01
	Worker	0.02	0.01	0.13	0.00	0.05	0.01
	Total	**0.03**	**0.36**	**0.24**	**0.00**	**0.08**	**0.02**
TOTAL		***0.84***	***7.33***	***8.13***	***0.03***	***0.34***	***0.27***
Onsite	**2022**						
	Off-Road	0.81	6.97	7.89	0.03	0.27	0.25
	Total	**0.81**	**6.97**	**7.89**	**0.03**	**0.27**	**0.25**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.36	0.11	0.00	0.02	0.01
	Worker	0.02	0.01	0.14	0.00	0.05	0.01
	Total	**0.03**	**0.36**	**0.24**	**0.00**	**0.08**	**0.02**
TOTAL		***0.84***	***7.33***	***8.13***	***0.03***	***0.34***	***0.27***

Fine Grading

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2022** Summer						
	Fugitive Dust					0.00	0.00
	Off-Road	0.59	5.75	7.16	0.02	0.25	0.23
	Total	**0.59**	**5.75**	**7.16**	**0.02**	**0.25**	**0.23**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.36	0.10	0.00	0.02	0.01
	Worker	0.02	0.01	0.14	0.00	0.05	0.01
	Total	**0.03**	**0.36**	**0.24**	**0.00**	**0.08**	**0.02**
TOTAL		***0.62***	***6.12***	***7.40***	***0.02***	***0.33***	***0.26***
Onsite	**2022** Winter						
	Fugitive Dust					0.00	0.00
	Off-Road	0.59	5.75	7.16	0.02	0.25	0.23
	Total	**0.59**	**5.75**	**7.16**	**0.02**	**0.25**	**0.23**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.35	0.11	0.00	0.02	0.01
	Worker	0.02	0.01	0.13	0.00	0.05	0.01
	Total	**0.03**	**0.36**	**0.24**	**0.00**	**0.08**	**0.02**
TOTAL		***0.62***	***6.12***	***7.40***	***0.02***	***0.33***	***0.26***
Onsite	**2022**						
	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
	Off-Road	0.59	5.75	7.16	0.02	0.25	0.23
	Total	**0.59**	**5.75**	**7.16**	**0.02**	**0.25**	**0.23**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.36	0.11	0.00	0.02	0.01
	Worker	0.02	0.01	0.14	0.00	0.05	0.01
	Total	**0.03**	**0.36**	**0.24**	**0.00**	**0.08**	**0.02**
TOTAL		***0.62***	***6.12***	***7.40***	***0.02***	***0.33***	***0.26***

Parking Structure Construction 2022

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2022 Summer**						
	Off-Road	0.65	6.89	6.33	0.01	0.30	0.28
	Total	**0.65**	**6.89**	**6.33**	**0.01**	**0.30**	**0.28**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.02	0.53	0.15	0.00	0.04	0.01
	Worker	0.26	0.15	2.13	0.01	0.78	0.21
	Total	**0.27**	**0.68**	**2.27**	**0.01**	**0.81**	**0.22**
TOTAL		***0.92***	***7.58***	***8.61***	***0.02***	***1.12***	***0.50***
Onsite	**2022 Winter**						
	Off-Road	0.65	6.89	6.33	0.01	0.30	0.28
	Total	**0.65**	**6.89**	**6.33**	**0.01**	**0.30**	**0.28**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.02	0.53	0.16	0.00	0.04	0.01
	Worker	0.29	0.16	1.96	0.01	0.78	0.21
	Total	**0.31**	**0.69**	**2.12**	**0.01**	**0.82**	**0.22**
TOTAL		***0.96***	***7.59***	***8.45***	***0.02***	***1.12***	***0.50***
Onsite	**2022**						
	Off-Road	0.65	6.89	6.33	0.01	0.30	0.28
	Total	**0.65**	**6.89**	**6.33**	**0.01**	**0.30**	**0.28**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.02	0.53	0.16	0.00	0.04	0.01
	Worker	0.29	0.16	2.13	0.01	0.78	0.21
	Total	**0.31**	**0.69**	**2.27**	**0.01**	**0.82**	**0.22**
TOTAL		***0.96***	***7.59***	***8.61***	***0.02***	***1.12***	***0.50***

Parking Structure Construction 2023

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2023 Summer**						
	Off-Road	0.61	6.24	6.26	0.01	0.27	0.25
	Total	**0.61**	**6.24**	**6.26**	**0.01**	**0.27**	**0.25**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.40	0.14	0.00	0.04	0.01
	Worker	0.24	0.13	1.98	0.01	0.78	0.21
	Total	**0.25**	**0.54**	**2.12**	**0.01**	**0.81**	**0.22**
TOTAL		***0.86***	***6.78***	***8.39***	***0.02***	***1.08***	***0.47***
Onsite	**2023 Winter**						
	Off-Road	0.61	6.24	6.26	0.01	0.27	0.25
	Total	**0.61**	**6.24**	**6.26**	**0.01**	**0.27**	**0.25**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.40	0.15	0.00	0.04	0.01
	Worker	0.28	0.15	1.82	0.01	0.78	0.21
	Total	**0.29**	**0.55**	**1.97**	**0.01**	**0.81**	**0.22**
TOTAL		***0.89***	***6.79***	***8.24***	***0.02***	***1.08***	***0.47***
Onsite	**2023**						
	Off-Road	0.61	6.24	6.26	0.01	0.27	0.25
	Total	**0.61**	**6.24**	**6.26**	**0.01**	**0.27**	**0.25**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.40	0.15	0.00	0.04	0.01
	Worker	0.28	0.15	1.98	0.01	0.78	0.21
	Total	**0.29**	**0.55**	**2.12**	**0.01**	**0.81**	**0.22**
TOTAL		***0.89***	***6.79***	***8.39***	***0.02***	***1.08***	***0.47***

Residential Construction 2023

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2023 Summer**						
	Off-Road	0.61	6.24	6.26	0.01	0.27	0.25
	Total	**0.61**	**6.24**	**6.26**	**0.01**	**0.27**	**0.25**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.27	0.09	0.00	0.02	0.01
	Worker	0.32	0.18	2.64	0.01	1.04	0.28
	Total	**0.33**	**0.45**	**2.74**	**0.01**	**1.06**	**0.29**
TOTAL		***0.94***	***6.69***	***9.00***	***0.02***	***1.33***	***0.54***
Onsite	**2023 Winter**						
	Off-Road	0.61	6.24	6.26	0.01	0.27	0.25
	Total	**0.61**	**6.24**	**6.26**	**0.01**	**0.27**	**0.25**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.27	0.10	0.00	0.02	0.01
	Worker	0.37	0.20	2.43	0.01	1.04	0.28
	Total	**0.38**	**0.46**	**2.53**	**0.01**	**1.06**	**0.29**
TOTAL		***0.98***	***6.71***	***8.80***	***0.02***	***1.33***	***0.54***
Onsite	**2023**						
	Off-Road	0.61	6.24	6.26	0.01	0.27	0.25
	Total	**0.61**	**6.24**	**6.26**	**0.01**	**0.27**	**0.25**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.27	0.10	0.00	0.02	0.01
	Worker	0.37	0.20	2.64	0.01	1.04	0.28
	Total	**0.38**	**0.46**	**2.74**	**0.01**	**1.06**	**0.29**
TOTAL		***0.98***	***6.71***	***9.00***	***0.02***	***1.33***	***0.54***

Residential Construction 2024

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2024 Summer**						
	Off-Road	0.58	5.75	6.21	0.01	0.25	0.23
	Total	**0.58**	**5.75**	**6.21**	**0.01**	**0.25**	**0.23**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.26	0.09	0.00	0.02	0.01
	Worker	0.31	0.16	2.46	0.01	1.04	0.28
	Total	**0.31**	**0.43**	**2.55**	**0.01**	**1.06**	**0.29**
TOTAL		***0.89***	***6.18***	***8.76***	***0.02***	***1.31***	***0.51***
Onsite	**2024 Winter**						
	Off-Road	0.58	5.75	6.21	0.01	0.25	0.23
	Total	**0.58**	**5.75**	**6.21**	**0.01**	**0.25**	**0.23**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.26	0.10	0.00	0.02	0.01
	Worker	0.35	0.18	2.26	0.01	1.04	0.28
	Total	**0.36**	**0.44**	**2.36**	**0.01**	**1.06**	**0.29**
TOTAL		***0.93***	***6.20***	***8.57***	***0.02***	***1.31***	***0.51***
Onsite	**2024**						
	Off-Road	0.58	5.75	6.21	0.01	0.25	0.23
	Total	**0.58**	**5.75**	**6.21**	**0.01**	**0.25**	**0.23**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.26	0.10	0.00	0.02	0.01
	Worker	0.35	0.18	2.46	0.01	1.04	0.28
	Total	**0.36**	**0.44**	**2.55**	**0.01**	**1.06**	**0.29**
TOTAL		***0.93***	***6.20***	***8.76***	***0.02***	***1.31***	***0.51***

Paving

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2024** Summer						
	Off-Road	0.67	6.52	10.60	0.02	0.32	0.29
	Paving	0.08				0.00	0.00
	Total	**0.75**	**6.52**	**10.60**	**0.02**	**0.32**	**0.29**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.02	0.79	0.27	0.00	0.07	0.02
	Worker	0.03	0.02	0.25	0.00	0.10	0.03
	Total	**0.05**	**0.81**	**0.52**	**0.00**	**0.18**	**0.05**
TOTAL		***0.80***	***7.33***	***11.11***	***0.02***	***0.49***	***0.34***
Onsite	**2024** Winter						
	Off-Road	0.67	6.52	10.60	0.02	0.32	0.29
	Paving	0.08				0.00	0.00
	Total	**0.75**	**6.52**	**10.60**	**0.02**	**0.32**	**0.29**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.02	0.79	0.29	0.00	0.07	0.02
	Worker	0.04	0.02	0.23	0.00	0.10	0.03
	Total	**0.06**	**0.81**	**0.52**	**0.00**	**0.18**	**0.05**
TOTAL		***0.81***	***7.32***	***11.11***	***0.02***	***0.49***	***0.34***
Onsite	**2024**						
	Off-Road	0.67	6.52	10.60	0.02	0.32	0.29
	Paving	0.08	0.00	0.00	0.00	0.00	0.00
	Total	**0.75**	**6.52**	**10.60**	**0.02**	**0.32**	**0.29**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.02	0.79	0.29	0.00	0.07	0.02
	Worker	0.04	0.02	0.25	0.00	0.10	0.03
	Total	**0.06**	**0.81**	**0.52**	**0.00**	**0.18**	**0.05**
TOTAL		***0.81***	***7.33***	***11.11***	***0.02***	***0.49***	***0.34***

Finishing/Landscaping

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2024 Summer**						
	Off-Road	0.29	2.57	4.78	0.01	0.12	0.11
	Total	**0.29**	**2.57**	**4.78**	**0.01**	**0.12**	**0.11**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.26	0.09	0.00	0.02	0.01
	Worker	0.09	0.05	0.74	0.00	0.31	0.08
	Total	**0.10**	**0.31**	**0.83**	**0.00**	**0.34**	**0.09**
TOTAL		***0.39***	***2.88***	***5.61***	***0.01***	***0.46***	***0.20***
Onsite	**2024 Winter**						
	Off-Road	0.29	2.57	4.78	0.01	0.12	0.11
	Total	**0.29**	**2.57**	**4.78**	**0.01**	**0.12**	**0.11**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.26	0.10	0.00	0.02	0.01
	Worker	0.11	0.05	0.68	0.00	0.31	0.08
	Total	**0.11**	**0.32**	**0.78**	**0.00**	**0.34**	**0.09**
TOTAL		***0.40***	***2.88***	***5.56***	***0.01***	***0.46***	***0.20***
Onsite	**2024**						
	Off-Road	0.29	2.57	4.78	0.01	0.12	0.11
	Total	**0.29**	**2.57**	**4.78**	**0.01**	**0.12**	**0.11**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.26	0.10	0.00	0.02	0.01
	Worker	0.11	0.05	0.74	0.00	0.31	0.08
	Total	**0.11**	**0.32**	**0.83**	**0.00**	**0.34**	**0.09**
TOTAL		***0.40***	***2.88***	***5.61***	***0.01***	***0.46***	***0.20***

Architectural Coating

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2024** Summer						
	Archit. Coating	35.62				0.00	0.00
	Off-Road	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**35.62**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.13	0.04	0.00	0.01	0.00
	Worker	0.03	0.02	0.25	0.00	0.10	0.03
	Total	**0.03**	**0.15**	**0.29**	**0.00**	**0.12**	**0.03**
TOTAL		***35.65***	***0.15***	***0.29***	***0.00***	***0.12***	***0.03***
Onsite	**2024** Winter						
	Archit. Coating	35.62				0.00	0.00
	Off-Road	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**35.62**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.13	0.05	0.00	0.01	0.00
	Worker	0.04	0.02	0.23	0.00	0.10	0.03
	Total	**0.04**	**0.15**	**0.27**	**0.00**	**0.12**	**0.03**
TOTAL		***35.66***	***0.15***	***0.27***	***0.00***	***0.12***	***0.03***
Onsite	**2024**						
	Archit. Coating	35.62	0.00	0.00	0.00	0.00	0.00
	Off-Road	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**35.62**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.13	0.05	0.00	0.01	0.00
	Worker	0.04	0.02	0.25	0.00	0.10	0.03
	Total	**0.04**	**0.15**	**0.29**	**0.00**	**0.12**	**0.03**
TOTAL		***35.66***	***0.15***	***0.29***	***0.00***	***0.12***	***0.03***

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Building Demolition	*1*	*6*	*6*	*0*	*0*	*0*
Building Demolition Haul	*0*	*12*	*4*	*0*	*3*	*1*
Building Demolition Haul and Asphalt Demolition	*1*	*18*	*10*	*0*	*3*	*1*
Asphalt Demolition	*1*	*6*	*5*	*0*	*0*	*0*
Asphalt Demolition and Debris Haul	*1*	*15*	*9*	*0*	*2*	*1*
Asphalt Demolition Debris Haul	*0*	*9*	*3*	*0*	*2*	*0*
Site Preparation	*1*	*7*	*8*	*0*	*0*	*0*
Site Preparation and Soil Haul and Rough Grading	*1*	*14*	*15*	*0*	*1*	*1*
Rough Grading	*1*	*6*	*7*	*0*	*0*	*0*
Rough Grading Soil Haul	*1*	*44*	*15*	*0*	*4*	*1*
Rough Grading Soil Haul and Utilities Trenching	*2*	*52*	*23*	*0*	*4*	*1*
Utility Trenching	*1*	*7*	*8*	*0*	*0*	*0*
Fine Grading and Soil Haul	*1*	*6*	*7*	*0*	*0*	*0*
Parking Structure Construction 2022	*1*	*8*	*9*	*0*	*1*	*1*
Parking Structure Construction 2023	*1*	*7*	*8*	*0*	*1*	*0*
Residential Construction 2023	*1*	*7*	*9*	*0*	*1*	*1*
Residential Construction 2024	*1*	*6*	*9*	*0*	*1*	*1*
Residential Construction 2024 and Paving	*2*	*14*	*20*	*0*	*2*	*1*
Residential Construction, Architectural Coating, Finishing/Landscaping	*37*	*9*	*15*	*0*	*2*	*1*
Architectural Coating and Finishing/Landscaping	*36*	*3*	*6*	*0*	*1*	*0*
MAX DAILY	**37**	**52**	**23**	**0**	**4**	**1**
Regional Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Exceeds Thresholds?	No	No	No	No	No	No

Construction LST Worksheet:

Building Demolition						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2022**				
	Off-Road		5.47	5.25	0.19	0.18
	Total		**5.47**	**5.25**	**0.19**	**0.18**
TOTAL			***5.47***	***5.25***	***0.19***	***0.18***
Onsite		**2022**				
	Off-Road		5.47	5.25	0.19	0.18
	Total		**5.47**	**5.25**	**0.19**	**0.18**
TOTAL			***5.47***	***5.25***	***0.19***	***0.18***
Onsite		**2022**				
	Off-Road		5.47	5.25	0.19	0.18
	Total		**5.47**	**5.25**	**0.19**	**0.18**
TOTAL			***5.47***	***5.25***	***0.19***	***0.18***

Building Demolition Haul						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2022**				
	Fugitive Dust				1.84	0.28
	Off-Road		0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**1.84**	**0.28**
TOTAL			***0.00***	***0.00***	***1.84***	***0.28***
Onsite		**2022**				
	Fugitive Dust				1.84	0.28
	Off-Road		0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**1.84**	**0.28**
TOTAL			***0.00***	***0.00***	***1.84***	***0.28***
Onsite		**2022**				
	Fugitive Dust		0.00	0.00	1.84	0.28
	Off-Road		0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**1.84**	**0.28**
TOTAL			***0.00***	***0.00***	***1.84***	***0.28***

Asphalt Demolition						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2022**				
	Off-Road		5.47	5.25	0.19	0.18
	Total		**5.47**	**5.25**	**0.19**	**0.18**
TOTAL			***5.47***	***5.25***	***0.19***	***0.18***
Onsite		**2022**				
	Off-Road		5.47	5.25	0.19	0.18
	Total		**5.47**	**5.25**	**0.19**	**0.18**
TOTAL			***5.47***	***5.25***	***0.19***	***0.18***
Onsite		**2022**				
	Off-Road		5.47	5.25	0.19	0.18
	Total		**5.47**	**5.25**	**0.19**	**0.18**
TOTAL			***5.47***	***5.25***	***0.19***	***0.18***

Asphalt Demolition Haul					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2022**				
	Fugitive Dust			1.32	0.20
	Off-Road	0.00	0.00	0.00	0.00
	Total	**0.00**	**0.00**	**1.32**	**0.20**
TOTAL		***0.00***	***0.00***	***1.32***	***0.20***
Onsite	**2022**				
	Fugitive Dust			1.32	0.20
	Off-Road	0.00	0.00	0.00	0.00
	Total	**0.00**	**0.00**	**1.32**	**0.20**
TOTAL		***0.00***	***0.00***	***1.32***	***0.20***
Onsite	**2022**				
	Fugitive Dust	0.00	0.00	1.32	0.20
	Off-Road	0.00	0.00	0.00	0.00
	Total	**0.00**	**0.00**	**1.32**	**0.20**
TOTAL		***0.00***	***0.00***	***1.32***	***0.20***

Site Preparation					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2022**				
	Fugitive Dust			0.00	0.00
	Off-Road	7.07	7.40	0.28	0.26
	Total	**7.07**	**7.40**	**0.28**	**0.26**
TOTAL		***7.07***	***7.40***	***0.28***	***0.26***
Onsite	**2022**				
	Fugitive Dust			0.00	0.00
	Off-Road	7.07	7.40	0.28	0.26
	Total	**7.07**	**7.40**	**0.28**	**0.26**
TOTAL		***7.07***	***7.40***	***0.28***	***0.26***
Onsite	**2022**				
	Fugitive Dust	0.00	0.00	0.00	0.00
	Off-Road	7.07	7.40	0.28	0.26
	Total	**7.07**	**7.40**	**0.28**	**0.26**
TOTAL		***7.07***	***7.40***	***0.28***	***0.26***

Rough Grading					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2022**				
	Fugitive Dust			0.00	0.00
	Off-Road	5.75	7.16	0.25	0.23
	Total	**5.75**	**7.16**	**0.25**	**0.23**
TOTAL		***5.75***	***7.16***	***0.25***	***0.23***
Onsite	**2022**				
	Fugitive Dust			0.00	0.00
	Off-Road	5.75	7.16	0.25	0.23
	Total	**5.75**	**7.16**	**0.25**	**0.23**
TOTAL		***5.75***	***7.16***	***0.25***	***0.23***
Onsite	**2022**				
	Fugitive Dust	0.00	0.00	0.00	0.00
	Off-Road	5.75	7.16	0.25	0.23
	Total	**5.75**	**7.16**	**0.25**	**0.23**
TOTAL		***5.75***	***7.16***	***0.25***	***0.23***

Rough Grading Soil Haul						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		2022				
	Fugitive Dust				0.03	0.00
	Off-Road		0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.03**	**0.00**
TOTAL			***0.00***	***0.00***	***0.03***	***0.00***
Onsite		2022				
	Fugitive Dust				0.03	0.00
	Off-Road		0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.03**	**0.00**
TOTAL			***0.00***	***0.00***	***0.03***	***0.00***
Onsite		2022				
	Fugitive Dust		0.00	0.00	0.03	0.00
	Off-Road		0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.03**	**0.00**
TOTAL			***0.00***	***0.00***	***0.03***	***0.00***

Utilities Trenching						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		2022				
	Off-Road		6.97	7.89	0.27	0.25
	Total		**6.97**	**7.89**	**0.27**	**0.25**
TOTAL			***6.97***	***7.89***	***0.27***	***0.25***
Onsite		2022				
	Off-Road		6.97	7.89	0.27	0.25
	Total		**6.97**	**7.89**	**0.27**	**0.25**
TOTAL			***6.97***	***7.89***	***0.27***	***0.25***
Onsite		2022				
	Off-Road		6.97	7.89	0.27	0.25
	Total		**6.97**	**7.89**	**0.27**	**0.25**
TOTAL			***6.97***	***7.89***	***0.27***	***0.25***

Fine Grading						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		2022				
	Fugitive Dust				0.00	0.00
	Off-Road		5.75	7.16	0.25	0.23
	Total		**5.75**	**7.16**	**0.25**	**0.23**
TOTAL			***5.75***	***7.16***	***0.25***	***0.23***
Onsite		2022				
	Fugitive Dust				0.00	0.00
	Off-Road		5.75	7.16	0.25	0.23
	Total		**5.75**	**7.16**	**0.25**	**0.23**
TOTAL			***5.75***	***7.16***	***0.25***	***0.23***
Onsite		2022				
	Fugitive Dust		0.00	0.00	0.00	0.00
	Off-Road		5.75	7.16	0.25	0.23
	Total		**5.75**	**7.16**	**0.25**	**0.23**
TOTAL			***5.75***	***7.16***	***0.25***	***0.23***

Parking Structure Construction 2022						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		2022				
	Off-Road		6.89	6.33	0.30	0.28
	Total		**6.89**	**6.33**	**0.30**	**0.28**
TOTAL			***6.89***	***6.33***	***0.30***	***0.28***
Onsite		2022				
	Off-Road		6.89	6.33	0.30	0.28
	Total		**6.89**	**6.33**	**0.30**	**0.28**
TOTAL			***6.89***	***6.33***	***0.30***	***0.28***
Onsite		2022				
	Off-Road		6.89	6.33	0.30	0.28
	Total		**6.89**	**6.33**	**0.30**	**0.28**
TOTAL			***6.89***	***6.33***	***0.30***	***0.28***

Parking Structure Construction 2023					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2023**				
Off-Road		6.24	6.26	0.27	0.25
Total		**6.24**	**6.26**	**0.27**	**0.25**
TOTAL		***6.24***	***6.26***	***0.27***	***0.25***
Onsite	**2023**				
Off-Road		6.24	6.26	0.27	0.25
Total		**6.24**	**6.26**	**0.27**	**0.25**
TOTAL		***6.24***	***6.26***	***0.27***	***0.25***
Onsite	**2023**				
Off-Road		6.24	6.26	0.27	0.25
Total		**6.24**	**6.26**	**0.27**	**0.25**
TOTAL		***6.24***	***6.26***	***0.27***	***0.25***

Residential Construction 2023					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2023**				
Off-Road		6.24	6.26	0.27	0.25
Total		**6.24**	**6.26**	**0.27**	**0.25**
TOTAL		***6.24***	***6.26***	***0.27***	***0.25***
Onsite	**2023**				
Off-Road		6.24	6.26	0.27	0.25
Total		**6.24**	**6.26**	**0.27**	**0.25**
TOTAL		***6.24***	***6.26***	***0.27***	***0.25***
Onsite	**2023**				
Off-Road		6.24	6.26	0.27	0.25
Total		**6.24**	**6.26**	**0.27**	**0.25**
TOTAL		***6.24***	***6.26***	***0.27***	***0.25***

Residential Construction 2024					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2024**				
Off-Road		5.75	6.21	0.25	0.23
Total		**5.75**	**6.21**	**0.25**	**0.23**
TOTAL		***5.75***	***6.21***	***0.25***	***0.23***
Onsite	**2024**				
Off-Road		5.75	6.21	0.25	0.23
Total		**5.75**	**6.21**	**0.25**	**0.23**
TOTAL		***5.75***	***6.21***	***0.25***	***0.23***
Onsite	**2024**				
Off-Road		5.75	6.21	0.25	0.23
Total		**5.75**	**6.21**	**0.25**	**0.23**
TOTAL		***5.75***	***6.21***	***0.25***	***0.23***

Paving					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2024**				
Off-Road		6.52	10.60	0.32	0.29
Paving				0.00	0.00
Total		**6.52**	**10.60**	**0.32**	**0.29**
TOTAL		***6.52***	***10.60***	***0.32***	***0.29***
Onsite	**2024**				
Off-Road		6.52	10.60	0.32	0.29
Paving				0.00	0.00
Total		**6.52**	**10.60**	**0.32**	**0.29**
TOTAL		***6.52***	***10.60***	***0.32***	***0.29***
Onsite	**2024**				
Off-Road		6.52	10.60	0.32	0.29
Paving		0.00	0.00	0.00	0.00
Total		**6.52**	**10.60**	**0.32**	**0.29**
TOTAL		***6.52***	***10.60***	***0.32***	***0.29***

Finishing/Landscaping

			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2024**				
	Off-Road		2.57	4.78	0.12	0.11
	Total		**2.57**	**4.78**	**0.12**	**0.11**
TOTAL			***2.57***	***4.78***	***0.12***	***0.11***
Onsite		**2024**				
	Off-Road		2.57	4.78	0.12	0.11
	Total		**2.57**	**4.78**	**0.12**	**0.11**
TOTAL			***2.57***	***4.78***	***0.12***	***0.11***
Onsite		**2024**				
	Off-Road		2.57	4.78	0.12	0.11
	Total		**2.57**	**4.78**	**0.12**	**0.11**
TOTAL			***2.57***	***4.78***	***0.12***	***0.11***

Architectural Coating

			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2024**				
	Archit. Coating				0.00	0.00
	Off-Road		0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.00**	**0.00**
TOTAL			***0.00***	***0.00***	***0.00***	***0.00***
Onsite		**2024**				
	Archit. Coating				0.00	0.00
	Off-Road		0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.00**	**0.00**
TOTAL			***0.00***	***0.00***	***0.00***	***0.00***
Onsite		**2024**				
	Archit. Coating		0.00	0.00	0.00	0.00
	Off-Road		0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.00**	**0.00**
TOTAL			***0.00***	***0.00***	***0.00***	***0.00***

	NOx	CO	PM10 Total	PM2.5 Total
Building Demolition	5	5	0.19	0.18
≤1.00 Acre LST	103	522	38.31	14.43
Exceeds LST?	no	no	no	no
Building Demolition Haul	0	0	1.84	0.28
≤1.00 Acre LST	103	522	38.31	14.43
Exceeds LST?	no	no	no	no
Building Demolition Haul and Asphalt Demolition	5	5	2.04	0.46
≤1.00 Acre LST	103	522	38.31	14.43
Exceeds LST?	no	no	no	no
Asphalt Demolition	5	5	0.19	0.18
≤1.00 Acre LST	103	522	38.31	14.43
Exceeds LST?	no	no	no	no
Asphalt Demolition and Debris Haul	5	5	1.51	0.38
≤1.00 Acre LST	103	522	38.31	14.43
Exceeds LST?	no	no	no	no
Asphalt Demolition Debris Haul	0	0	1.32	0.20
≤1.00 Acre LST	103	522	38.31	14.43
Exceeds LST?	no	no	no	no
Site Preparation	7	7	0.28	0.26
≤1.00 Acre LST	103	522	38.31	14.43
Exceeds LST?	no	no	no	no
Site Preparation and Rough Grading	13	15	0.53	0.49
2.00 Acre LST	147	762	45.31	17.42
Exceeds LST?	no	no	no	no
Rough Grading	6	7	0.25	0.23
≤1.00 Acre LST	103	522	38.31	14.43
Exceeds LST?	no	no	no	no
Rough Grading Soil Haul	0	0	0.03	0.00
≤1.00 Acre LST	103	522	38.31	14.43
Exceeds LST?	no	no	no	no
Rough Grading Soil Haul and Utilities Trenching	7	8	0.30	0.25
2.00 Acre LST	147	762	45.31	17.42
Exceeds LST?	no	no	no	no
Utility Trenching	7	8	0.27	0.25
≤1.00 Acre LST	103	522	38.31	14.43
Exceeds LST?	no	no	no	no
Fine Grading and Soil Haul	6	7	0.25	0.23
≤1.00 Acre LST	103	522	38.31	14.43
Exceeds LST?	no	no	no	no
Parking Structure Construction 2022	7	6	0.30	0.28
≤1.00 Acre LST	103	522	38.31	14.43
Exceeds LST?	no	no	no	no
Parking Structure Construction 2023	6	6	0.27	0.25
≤1.00 Acre LST	103	522	38.31	14.43
Exceeds LST?	no	no	no	no

Residential Construction 2023	*6*	*6*	*0.27*	*0.25*
≤1.00 Acre LST	*103*	*522*	*38.31*	*14.43*
Exceeds LST?	*no*	*no*	*no*	*no*
Residential Construction 2024	*6*	*6*	*0.25*	*0.23*
≤1.00 Acre LST	*103*	*522*	*38.31*	*14.43*
Exceeds LST?	*no*	*no*	*no*	*no*
Residential Construction 2024 and Paving	*12*	*17*	*0.56*	*0.52*
≤1.00 Acre LST	*103*	*522*	*38.31*	*14.43*
Exceeds LST?	*no*	*no*	*no*	*no*
Residential Construction, Architectural Coating, Finishing/Landscaping	*8*	*11*	*0.37*	*0.34*
≤1.00 Acre LST	*103*	*522*	*38.31*	*14.43*
Exceeds LST?	*no*	*no*	*no*	*no*
Architectural Coating and Finishing/Landscaping	*3*	*5*	*0.12*	*0.11*
≤1.00 Acre LST	*103*	*522*	*38.31*	*14.43*
Exceeds LST?	*no*	*no*	*no*	*no*

Regional Operation Emissions Worksheet[1]

[1] CalEEMod, Version 2016.3.2.25

Existing Conditions (2021)

Summer

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	3.93	0.00	0.18	0.00	0.00	0.00
Energy	0.37	3.38	2.84	0.02	0.26	0.26
Mobile	24.17	58.55	302.18	0.94	90.91	25.02
Total	**28.47**	**61.93**	**305.20**	**0.96**	**91.17**	**25.28**

Winter

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	3.93	0.00	0.18	0.00	0.00	0.00
Energy	0.37	3.38	2.84	0.02	0.26	0.26
Mobile	23.80	61.46	289.39	0.91	90.90	25.02
Total	**28.11**	**64.84**	**292.41**	**0.93**	**91.16**	**25.27**

Max Daily

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	3.93	0.00	0.18	0.00	0.00	0.00
Energy	0.37	3.38	2.84	0.02	0.26	0.26
Mobile	24.17	61.46	302.18	0.94	90.91	25.02
Total	**28.47**	**64.84**	**305.20**	**0.96**	**91.17**	**25.28**

Baseline Conditions (2024)

Summer

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	3.93	0.00	0.18	0.00	0.00	0.00
Energy	0.37	3.38	2.84	0.02	0.26	0.26
Mobile	19.11	40.32	248.99	0.86	90.41	24.53
Total	**23.41**	**43.70**	**252.01**	**0.88**	**90.66**	**24.78**

Winter

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	3.93	0.00	0.18	0.00	0.00	0.00
Energy	0.37	3.38	2.84	0.02	0.26	0.26
Mobile	18.73	42.39	238.90	0.82	90.39	24.52
Total	**23.03**	**45.78**	**241.93**	**0.84**	**90.65**	**24.78**

Max Daily

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	4	0	0	0	0	0
Energy	0	3	3	0	0	0
Mobile	19	42	249	1	90	25
Total	**23**	**46**	**252**	**1**	**91**	**25**

Proposed Project

Summer

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	9.98	0.37	19.03	0.00	0.12	0.12
Energy	0.44	3.97	3.07	0.02	0.30	0.30
Mobile	16.08	33.11	213.01	0.73	77.77	21.08
Total	**26.49**	**37.45**	**235.11**	**0.75**	**78.19**	**21.51**

Winter

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	9.98	0.37	19.03	0.00	0.12	0.12
Energy	0.44	3.97	3.07	0.02	0.30	0.30
Mobile	15.76	34.84	204.14	0.70	77.76	21.08
Total	**26.18**	**39.18**	**226.23**	**0.73**	**78.18**	**21.50**

Max Daily

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	9.98	0.37	19.03	0.00	0.12	0.12
Energy	0.44	3.97	3.07	0.02	0.30	0.30
Mobile	16.08	34.84	213.01	0.73	77.77	21.08
Total	**26.49**	**39.18**	**235.11**	**0.75**	**78.19**	**21.51**

Proposed Net Operations

Summer

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	6.04	0.37	18.85	0.00	0.12	0.12
Energy	0.07	0.59	0.23	0.00	0.05	0.05
Mobile	-3.03	-7.21	-35.98	-0.13	-12.63	-3.44
Total	**3.08**	**-6.25**	**-16.91**	**-0.12**	**-12.47**	**-3.28**

Winter

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	6.04	0.37	18.85	0.00	0.12	0.12
Energy	0.07	0.59	0.23	0.00	0.05	0.05
Mobile	-2.97	-7.55	-34.77	-0.12	-12.63	-3.44
Total	**3.15**	**-6.60**	**-15.69**	**-0.12**	**-12.47**	**-3.28**

Max Daily

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	6.04	0.37	18.85	0.00	0.12	0.12
Energy	0.07	0.59	0.23	0.00	0.05	0.05
Mobile	-2.97	-7.21	-34.77	-0.12	-12.63	-3.44
Total	**3.15**	**-6.25**	**-15.69**	**-0.12**	**-12.47**	**-3.28**

Regional Thresholds (lb/day)	**55**	**55**	**550**	**150**	**150**	**55**
Exceeds Thresholds?	No	No	No	No	No	No

GHG Emissions Inventory

Proposed Project Buildout

Construction

	$MTCO_2e$
2022	153
2023	226
2024	118
Total Construction	**497**
30-Year Amortization[1]	**17**

*CalEEMod, Version 2016.3.2.25

Operation*

Proposed Project						
	Existing Conditions (2021) $MTCO_2e$	**Percent of Emissions**	**Proposed Project $MTCO_2e$**	**Percent of Emissions**	**Net Change**	
Area	0	0.0%	13	0.1%	13	
Energy	1,812	13%	2,408	21%	596	
Mobile	11,179	83%	8,504	73%	-2,675	
Solid Waste	397	3%	460	4%	63	
Water	118	1%	179	2%	62	
30-Yr Amortized Construction Emissions[1]	NA	NA	17	0%	17	
Total	**13,505**	100%	**11,580**	100%	**-1,925**	
			South Coast AQMD Working Group Threshold		3,000	$MTCO_2e$/Year
			Exceed Threshold?		**No**	

*CalEEMod, Version 2016.3.2.25

** $MTCO_2e$=metric tons of carbon dioxide equivalent.

*** Total construction emissions are amortized over 30 years per SCAQMD methodology; SCAQMD. 2009, November 19. Greenhouse Gases (GHG) CEQA Significance Thresholds Working Group Meeting 14. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-14/ghg-meeting-14-main-presentation.pdf?sfvrsn=2.

Assumptions Worksheet

CalEEMod Inputs - Brea Plaza Hotel and Apartments Expansion Project, Construction

Name:	Brea Plaza Expansion Project
Project Number:	BREA-03.5
Project Location:	1639 E Imperial Hwy, Brea, CA 92821
County:	Orange County
Source Receptor Area (SRA):	16
Climate Zone:	8
Land Use Setting:	Urban
Operational Year:	2024
Utility Company:	Southern California Edison
Air Basin:	South Coast Air Basin
Air District:	South Coast AQMD

Project Site Acreage	16.00
Disturbed Site Acreage	2.20

Project Components			
Demolition	***SQFT***	***Tons***	
Theater	15,000	2,420	
Total Building Demolition:	**15,000**	**2,420**	
Total Asphalt Demolition		**1,298**	
New Construction	***SQFT***	***Acres***	***Stories***
Apartments*	241,718	0.00	5
Total Residential	**241,718**	**0.00**	
Office	21,355	0.49	1
Total Non-Residential	**21,355**	**0.49**	
Parking Structure	182,108	1.39	3
Total Other Asphalt Surfaces**	13,774	0.32	
Total	**238,592**	**2.20**	

*includes area of amenities deck

**assigning remaining land use area to other asphalt surfaces for most conservative results

CalEEMod Land Use Inputs

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet
Residential	Apartments (Mid-Rise)	229	units	0.00	241,718
Commercial	General Office Building	21.355	1000 sqft	0.49	21,355
Parking	Enclosed Parking Structure with Elevator	182.108	1000 sqft	1.39	182,108
Parking [2]	Other Asphalt Surfaces	13.774	1000 sqft	0.32	13,774
				2.20	

** based on info from applicant data

Demolition[1]

Component	Amount to be Demolished (Tons)	Haul Truck Capacity (tons)	Haul Distance (miles)	Total Trip Ends	Duration (days) check durations	Trip Ends/ day
Building Demolition Haul	2420	14	39	346	12	29
Asphalt Debris Haul	1298	14	39	186	9	21
Total	3,718			532		

[1] Haul Distance based on the distance to Prima Deschecha Landfill provided by applicant

Soil Haul [1]

Construction Activities	Volume (CY)	Haul Truck Capacity (cy)	Haul Distance (miles)	Total Trip Ends	Duration (days)	Trip Ends/ day
Rough Grading Soil Haul (Export)	5695	10	39	1139	10	114

[1] Haul Distance based provided by the Applicant

Architectural Coating

	Apartments	Office	Parking Structure
Percent Interior Painted (%):	100%	100%	25%
Percent Exterior Painted (%):	60%	25%	100%
Interior Paint VOC content (grams/liter):	50	100	100
Exterior Paint VOC content (grams/liter):	50	100	100

Structures	Land Use Square Feet	CalEEMod Factor[2]	Total Paintable Surface Area	Paintable Interior Area[1]	Paintable Exterior Area[1]
Non-Residential Structures					
Apartment	241,718	2.7	652,639	489,479	97,896
				489,479	**97,896**
Non-Residential Structures					
Office	21,355	2.0	42,710	32,033	2,669
Parking Structure	182,108	2.0	364,216	68,291	91,054
				100,323	**93,723**
Parking					
Parking Strucuture (Striping)	195,882	6%	11,753	-	11,753
			11,753		**11,753**

Notes

1 CalEEMod methodology calculates the paintable interior and exterior areas by multiplying the total paintable surface area by 75 and 25 percent, respectively.

2 The program assumes the total surface for painting equals 2.7 times the floor square footage for residential and 2 times that for nonresidential square footage defined by the user. Architectural coatings for the parking lot is based on CalEEMod methodology applied to a surface parking lot (i.e., striping), in which 6% of surface area is painted.

3 100% of the interior and exterior of buildings to be modernized will be painted

Mitigation Tab

SCAQMD Rule 403

Replace Ground Cover	PM10:	5	% Reduction
Replace Ground Cover	PM2.5:	5	% Reduction
Water Exposed Area	Frequency:	2	per day
	PM10:	55	% Reduction
	PM25:	55	% Reduction
Unpaved Roads	Vehicle Speed:	15	mph

SCAQMD Rule 1186

	Clean Paved Road	9	% PM Reduction

Southern California Edison Carbon Intensity Factors

	lbs/MWH
CO_2e[1]	534
CO2:[2]	531.44
CH4:[3]	0.029
N2O:[3]	0.00617

Notes:

1 Based on CO_2e intensity factor of 534 pounds per megawatt hour; Southern California Edison. 2019, May. 2018 Sustainability Report.

2 CO_2 back-calculated from CO_2e based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O.

3 CalEEMod default values.

Global Warming Potentials (GWP)		
	AR4	**AR5**
CO_2	1	1
CH_4	25	28
N_2O	298	265

Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC).

Construction Activities and Schedule Assumptions: Brea Plaza Hotel and Apartments Expansion Project

* based on info provided by applicant,

Construction Scheudle

		Construction Schedule		
Construction Activities	**Phase Type**	**Start Date**	**End Date**	**CalEEMod Duration (Workday)**
Building Demolition	Demolition	6/1/2022	7/1/2022	23
Building Demolition Haul	Demolition	7/15/2022	8/1/2022	12
Asphalt Demolition	Demolition	8/1/2022	8/15/2022	11
Asphalt Demolition Debris Haul	Demolition	8/15/2022	8/25/2022	9
Site Preparation	Site Preparation	9/1/2022	9/15/2022	11
Rough Grading	Grading	9/15/2022	9/25/2022	7
Rough Grading Soil Haul	Grading	9/26/2022	10/7/2022	10
Fine Grading	Grading	10/17/2022	10/21/2022	5
Utility Trenching	Trenching	10/1/2022	10/16/2022	10
Parking Structure Construction	Building Construction	11/1/2022	7/1/2023	174
Residential Construction	Building Construction	7/2/2023	4/1/2024	196
Paving	Paving	3/1/2024	3/15/2024	11
Architectural Coating	Architectural Coating	4/1/2024	6/30/2024	65
Finishing/Landscaping	Trenching	4/1/2024	6/30/2024	65

Overlapping Construction Schedule

1	Building Demolition	6/1/2022	7/1/2022	23
2	Building Demolition Haul	7/15/2022	7/30/2022	11
3	Building Demolition Haul and Asphalt Demolition	8/1/2022	8/1/2022	1
4	Asphalt Demolition	8/2/2022	8/14/2022	9
5	Asphalt Demolition and Debris Haul	8/15/2022	8/15/2022	1
6	Asphalt Demolition Debris Haul	8/16/2022	8/25/2022	8
7	Site Preparation	9/1/2022	9/14/2022	10
9	Site Preparationand Rough Grading	9/15/2022	9/15/2022	1
10	Rough Grading	9/16/2022	9/25/2022	6
11	Rough Grading Soil Haul	9/26/2022	9/30/2022	5
12	Rough Grading Soil Haul and Utilities Trenching	10/1/2022	10/7/2022	5
13	Utility Trenching	10/8/2022	10/16/2022	5
14	Fine Grading	10/17/2022	10/21/2022	5
15	Parking Structure Construction 2022	11/1/2022	12/31/2022	44
15	Parking Structure Construction 2023	1/1/2023	7/1/2023	130
16	Residential Construction 2023	7/2/2023	12/31/2023	130
16	Residential Construction 2024	1/1/2024	2/29/2024	44
17	Residential Construction and Paving	3/1/2024	3/15/2024	11
16	Residential Construction	3/16/2024	3/31/2024	10
18	Residential Construction, Architectural Coating, Finishing/Landscaping	4/1/2024	4/1/2024	1
19	Architectural Coating and Finishing/Landscaping	4/2/2024	6/30/2024	64

CalEEMod Construction Off-Road Equipment Inputs

**Based on CalEEMod defaults, assumed equipment would not be shared for most conservative result*

General Construction Hours: 8 hours btwn 7:00 AM to 4:00 PM (with 1 hr break), Mon-Fri

Construction Equipment Details							
	Equipment	**model**	**# of Equipment**	**hr/day**	**hp**	**load factor***	**total trips**
Building Demolition							
	Excavator	CAT 352	1	8	424	0.38	
	Loader	Deere 724L	1	8	268	0.37	
	Worker Trips*						15
	Vendor Trips*						2
	Hauling Trips						0
	Water Trucks (Added to Vendor Trips)						2
Building Demolition Haul							
	no additional equipment required for Demolition Hauling						
	Worker Trips						5
	Vendor Trips						10
	Hauling Trips						346
**trips from 10 Wheeler and High Side Dump Truck are included in the hauling trips*							
Asphalt Demolition							
	Excavator	CAT 352	1	8	424	0.38	
	Loader	Deere 724L	1	8	268	0.37	
	Worker Trips						5
	Vendor Trips						2
	Hauling Trips						0
	Water Trucks (Added to Vendor Trips)						2
Asphalt Demolition Haul							
	no additional equipment required for Demolition Hauling						
	Worker Trips						5
	Vendor Trips						10
	Hauling Trips						186
**trips from 10 Wheeler and High Side Dump Truck are included in the hauling trips*							
Site Preparation							
	Excavator	CAT 352	1	8	424	0.38	
	Loader	Deere 724L	1	8	268	0.37	
	Skiploader	Deere 210L	1	8	93	0.37	
	Worker Trips*						5
	Vendor Trips*						2
	Hauling Trips*						0
	Water Trucks (Added to Vendor Trips)						2
Rough Grading							
	Loader	Deere 724L	1	8	268	0.37	
	Skiploader	Deere 210L	1	8	93	0.37	
	Roller	CAT CB15	1	8	142	0.38	
	Worker Trips						5
	Vendor Trips						2
	Hauling Trips						0
	Water Trucks (Added to Vendor Trips)						2
Rough Grading Soil Haul							
	no additional equipment required for Rough Grading Soil Hauling						
	Worker Trips*						5
	Vendor Trips*						10
	Hauling Trips						1139
Utilities Trenching							
	Excavator	CAT 352	1	8	424	0.38	
	Backhoe	CAT 450	1	8	131	0.37	
	Loader	Deere 724L	1	8	268	0.37	
	Worker Trips*						5
	Vendor Trips*						2
	Hauling Trips						0
	Water Trucks (Added to Vendor Trips)						2

Fine Grading							
	Loader	Deere 724L	1	8	268	0.37	
	Skiploader	Deere 210L	1	8	93	0.37	
	Roller	CAT CB15	1	8	142	0.38	
	Worker Trips*						5
	Vendor Trips*						2
	Hauling Trips						0
	Water Trucks (Added to Vendor Trips)						2
Parking Structure Construction							
	Backhoe	CAT 450	1	8	131	0.37	
	Forklift	Mitsubishi FD40NB	1	8	55	0.2	
	Crane		1	8	231	0.29	
	Aerial Lifts		1	8	63	0.3082	
	Worker Trips*						75
	Vendor Trips*						4
	Hauling Trips						0
	Water Trucks (Added to Vendor Trips)						2
Residential Construction							
	Forklift	Mitsubishi FD40NB	1	8	55	0.2	
	Backhoe	CAT 450	1	8	131	0.37	
	Crane		1	8	231	0.29	
	Aerial Lifts		1	8	63	0.3082	
	Worker Trips*						100
	Vendor Trips*						4
	Hauling Trips						0
Paving							
	Paving Machine	Volvo Blawknox P5170B	1	8	173	0.36	
	Roller	CAT CB15	1	8	142	0.38	
	Roller	CAT CB8	1	8	100	0.38	
	Skiploader	Deere 210L	1	8	93	0.37	
	Worker Trips*						10
	Vendor Trips*						10
	Hauling Trips						0
	Water Trucks (Added to Vendor Trips)						2
Finishing/Landscaping							
	Skiploader	Deere 210L	1	8	93	0.37	
	Backhoe	CAT 450	1	8	131	0.37	
	Worker Trips*						30
	Vendor Trips*						4
	Hauling Trips						0
Architectural Coating (surface lots, etc…)							
	no additional diesel equipment required for Architectural Coating						
	Worker Trips*						10
	Vendor Trips*						2
	Hauling Trips						0

Construction Trips Worksheet

Phase Name	Worker Trip Ends Per Day	Vendor Trip Ends Per Day	Haul Truck Trip Ends Per Day	Total Haul Truck Trip Ends	Total Trip Ends Per Day	Start Date	End Date	Workdays
Building Demolition	15	4	0	0	19	6/1/2022	7/1/2022	23
Building Demolition Haul	5	10	29	346	44	7/15/2022	8/1/2022	12
Asphalt Demolition	5	4	0	0	9	8/1/2022	8/15/2022	11
Asphalt Demolition Debris Haul	5	10	21	186	36	8/15/2022	8/25/2022	9
Site Preparation	5	4	0	0	9	9/1/2022	9/15/2022	11
Rough Grading	5	4	0	0	9	9/15/2022	9/25/2022	7
Rough Grading Soil Haul	5	10	114	1139	129	9/26/2022	10/7/2022	10
Fine Grading	5	4	0	0	9	10/17/2022	10/21/2022	5
Utility Trenching	5	4	0	0	9	10/1/2022	10/16/2022	10
Parking Structure Construction	75	6	0	0	81	11/1/2022	7/1/2023	174
Residential Construction	100	4	0	0	104	7/2/2023	4/1/2024	196
Paving	10	12	0	0	22	3/1/2024	3/15/2024	11
Architectural Coating	10	2	0	0	12	4/1/2024	6/30/2024	65
Finishing/Landscaping	30	4	0	0	34	4/1/2024	6/30/2024	65

Construction Activity (Overlapping)	Worker Trip Ends Per Day	Vendor Trip Ends Per Day	Haul Truck Trip Ends Per Day	Total Trip Ends Per Day	Start Date	End Date	Workdays
Building Demolition	15	4	0	19	6/1/2022	7/1/2022	23
Building Demolition Haul	5	10	29	44	7/15/2022	7/30/2022	11
Building Demolition Haul and Asphalt Demolition	10	14	29	53	8/1/2022	8/1/2022	1
Asphalt Demolition	5	4	0	9	8/2/2022	8/14/2022	9
Asphalt Demolition and Debris Haul	10	14	21	45	8/15/2022	8/15/2022	1
Asphalt Demolition Debris Haul	5	10	21	36	8/16/2022	8/25/2022	8
Site Preparation	5	4	0	9	9/1/2022	9/14/2022	10
Site Preparationand Rough Grading	10	8	0	18	9/15/2022	9/15/2022	1
Rough Grading	5	4	0	9	9/16/2022	9/25/2022	6
Rough Grading Soil Haul	5	10	114	129	9/26/2022	9/30/2022	5
Rough Grading Soil Haul and Utilities Trenching	10	14	114	138	10/1/2022	10/7/2022	5
Utility Trenching	5	4	0	9	10/8/2022	10/16/2022	5
Fine Grading	5	4	0	9	10/17/2022	10/21/2022	5
Parking Structure Construction	75	6	0	81	11/1/2022	7/1/2023	174
Residential Construction	100	4	0	104	7/2/2023	2/29/2024	174
Residential Construction and Paving	110	16	0	126	3/1/2024	3/15/2024	11
Residential Construction	100	4	0	104	3/16/2024	3/31/2024	10
Residential Construction, Architectural Coating, Finishing/Landscaping	140	10	0	150	4/1/2024	4/1/2024	1
Architectural Coating and Finishing/Landscaping	40	6	0	46	4/2/2024	6/30/2024	64
Maximum Daily Trips	**140**	**16**	**114**	**150**			

CalEEMod Inputs - Brea Plaza Hotel and Apartments Expansion Project, Existing Conditions

Name:	Brea Plaza Expansion Project
Project Number:	BREA-03.5
Project Location:	1639 E Imperial Hwy, Brea, CA 92821
County:	Orange County
Source Receptor Area (SRA):	16
Climate Zone:	8
Land Use Setting:	Urban
Operational Year:	2024
Utility Company:	Southern California Edison
Air Basin:	South Coast Air Basin
Air District:	South Coast AQMD

Project Site Acreage	16.00
Disturbed Site Acreage	16.00

CalEEMod Land Use Inputs

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet
Retail	Regional Shopping Center	68.415	1000 sqft	1.57	68,415
Commercial	Medical Office Building	1.596	1000 sqft	0.04	1,596
Recreational	High Turnover (Sit Down) Restaurant	42.649	1000 sqft	0.98	42,649
Retail	Supermarket + Liquor Store	34.219	1000 sqft	0.79	34,219
Recreational	Movie Theater	1,100.000	seats	0.42	18,450
Parking*	Parking Lot	465.700	1000 sqft	10.69	465,700
Parking *	Other Non-Asphalt Surfaces	65.931	1000 sqft	1.51	65,931
				16.00	165,329

* based on Google Earth estimates

Trips - LLG

Land Use Type	Average Daily Trips	CalEEMod Trip Rate	Saturday Trips	CalEEMod Trip Rate	Sunday Trips	CalEEMod Trip Rate
Regional Shopping Center	7,027	**102.71**	10,180	**148.80**	4,683	**68.45**
Movie Theater	1,936	**1.76**	2,464	**2.24**	2,035	**1.85**
Total	**8,963**		**12,644**		**6,718**	

Source: LLG 2021

**all trips acounted for under 'Regional Shopping Center' except the movie theater*

	Weekday VMT	Annual Vehicle Miles Traveled*
Project VMT	**84,019**	**30,666,898**

Source: From CalEEMod. Weekday VMT calculated by dividing annual VMT from CalEEMod by 365 days.

	Trip Type Percentages		
	Primary	**Diverted**	**Passby**
Regional Shopping Center	66%	17%	17%
Movie Theater	54%	35%	11%
Adjusted Trip Type Percentages	**100%**	**0%**	**0%**

Water Use and Wastewater Generation

Wastewater is treated by the Orange County Sanitation District (OCSD), which provides tertiary treated wastewater throughout the County of Orange. Therefore, CalEEMod defaults reflect 100% aerobic treatment.

	Sewer Study	Indoor[1,2]	Outdoor[1,3]	Total
Regional Shopping Center	65,996	73,329		
Movie Theater	9,450	10,500		
Water Use (gallons/day)	75,446	83,829	2,338	86,167
Water Use (gallons/year)	**27,537,790**	30,597,544	853,528	31,451,073

Notes

1 *Assigned all water use for Brea Plaza to 'regional shopping center'*

Indoor water use is adjusted to reflect the water purveyor losses in getting the potable water to the customers of 90%. The 90% factor for indoor water to wastewater is due to I/I – inflow and infiltration due to leaks in the sewer pipes that transport the wastewater to the sewage treatment

2 *plants.*

3 *Outdoor water based on total landscaped area and calculations from California Department of Water Resources' MAWA worksheet.*

Solid Waste CalEEMod Defaults*

Land Use	Total Solid Waste (tons/yr)
High Turnover (Sit Down Restaurant)	507.54
Medical Office Building	17.28
Other Non-Asphalt Surfaces	0.00
Parking Lot	0.00
Regional Shopping Center	71.84
Supermarket	193.00
Movie Theater*	143.00
TOTAL	932.66

**Calculation based on CalEEMod Appendix D, movie theater generates 0.13 tons/seat/year of solid waste. Movie theater solid waste excluded from CalEEMod 2016 solid waste module as a result of module error. therefore, emissions from existing conditions are slightly higher than reported, resulting in a conservative GHG emissions estimate of the net increase in emissions from this sector due to the project.*

Architectural Coating

	Percent Painted
Interior Painted:	100%
Exterior Painted:	100%
CalEEMod Defaults	**g/L**
Interior Paint VOC content:	100
Exterior Paing VOC content:	100

Structures	Land Use Square Feet	CalEEMod Factor[2]	Total Paintable Surface Area	Paintable Interior Area[1]	Paintable Exterior Area[1]
Non-Residential Structures					
Shopping Center	165,329	2.0	330,658	247,994	82,665
				247,994	**82,665**
Parking					
Parking Lot	465,700	6%	27,942	-	27,942
			27,942		**27,942**

[3] 100% of the interior and exterior of buildings to be modernized will be painted

Electricity (Buildings)

Existing Energy

Existing non-residential modeled using historic energy demand rates in CalEEMod. Modeling is conservative because the net increase in energy use due to the project is likely smaller than reflected due to improved building energy efficiency between the project and existing land uses.

Default Historic CalEEMod Energy Use

Land Use Subtype	Title-24 Electricity Energy Intensity (kWhr/size/year)*	Nontitle-24 Electricity Energy Intensity (kWhr/size/year)	Lighting Energy Intensity (KWhr/size/year)	Title-24 Natural Gas Energy Intensity (KBTU/size/year)*	Nontitle-24 Natural Gas Energy Intensity (KBTU/size/year)
High Turnover (Sit Down Restaurant)	**11.27**	20.11	9.20	**83.70**	180.76
Medical Office Building	**6.17**	4.94	5.27	**10.28**	0.55
Movie Theater (No Matinee)	**2.12**	3.83	3.70	**15.24**	6.86
Other Non-Asphalt Surfaces	**0.00**	0.00	0.00	**0.00**	0.00
Parking Lot	**0.00**	0.00	0.88	**0.00**	0.00
Regional Shopping Center	**3.79**	2.80	6.85	**1.06**	1.05
Supermarket	**6.08**	25.23	10.35	**11.28**	10.60

Southern California Edison Carbon Intensity Factors

	lbs/MWH
CO_2e[1]	534
CO2:[2]	531.44
CH4:[3]	0.029
N2O:[3]	0.00617

Notes:

1 Based on CO_2e intensity factor of 534 pounds per megawatt hour; Southern California Edison. 2019, May. 2018 Sustainability Report.

2 CO_2 back-calculated from CO_2e based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O.

3 CalEEMod default values.

Global Warming Potentials (GWP)		
	AR4	**AR5**
CO_2	1	1
CH_4	25	28
N_2O	298	265

Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC).

CalEEMod Inputs - Brea Plaza Hotel and Apartments Expansion Project, Operations

Name:	Brea Plaza Expansion Project
Project Number:	BREA-03.5
Project Location:	1639 E Imperial Hwy, Brea, CA 92821
County:	Orange County
Source Receptor Area (SRA):	16
Climate Zone:	8
Land Use Setting:	Urban
Operational Year:	2024
Utility Company:	Southern California Edison
Air Basin:	South Coast Air Basin
Air District:	South Coast AQMD

Project Site Acreage	16.00
Disturbed Site Acreage	16.00

CalEEMod Land Use Inputs

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet
Continuing Uses					
Retail	Regional Shopping Mall	68.415	1000 sqft	1.57	68,415
Commercial	Medical Office Building	1.596	1000 sqft	0.04	1,596
Recreational	High Turnover (Sit Down) Restaurant	42.649	1000 sqft	0.98	42,649
Retail	Supermarket and Liquor Store	34.219	1000 sqft	0.79	34,219
Parking*	Parking Lot	388.318	1000 sqft	8.91	388,318
Parking *	Other Non-Asphalt Surfaces	65.931	1000 sqft	1.51	65,931
New Uses					
Residential	Apartments (Mid-Rise)	229.000	units	0.00	241,718
Commercial	General Office Building	21.355	1000 sqft	0.49	21,355
Parking	Enclosed Parking Structure with Elevator	182.108	1000 sqft	1.39	182,108
Parking [2]	Other Asphalt Surfaces	13.774	1000 sqft	0.32	13,774
				16.00	**168,234**

* based on Google Earth estimates

The proposed project includes 189 residential units. However, co-liviing units are modeled as individual units to provide a conservative estimate of emissions and trips.

Trips - LLG

Land Use Type	Average Daily Trips	CalEEMod Trip Rate	Saturday Trips	CalEEMod Trip Rate	Sunday Trips	CalEEMod Trip Rate
Regional Shopping Center (Existing)	6,485	**94.79**	9,724	**142.13**	4,308	**62.97**
Apartments (Mid-Rise)	670	**2.93**	616	**2.69**	521	**2.28**
General Office Building	128	**5.99**	22	**1.03**	7	**0.33**
Total	**7,283**		**10,362**		**4,836**	

Source: LLG 2021. Transportation Circulation Analysis Brea Plaza Expansion.

**all trips from existing remaining uses acounted for under 'Regional Shopping Center'*

	Weekday VMT	Annual Vehicle Miles Traveled*
Project VMT	**70,360**	**25,681,472**

Source: From CalEEMod. Weekday VMT calculated by dividing annual VMT from CalEEMod by 365 days.

	Trip Type Percentages		
	Primary	**Diverted**	**Passby**
Apartments (Mid-Rise)	86%	11%	3%
Regional Shopping Center	54%	35%	11%
General Office Building	77%	19%	4%
Adjusted Trip Type Percentages	**100%**	**0%**	**0%**

Water Use and Wastewater Generation

Wastewater is treated by the Orange County Sanitation District (OCSD), which provides tertiary treated wastewater throughout the County of Orange. Therefore, CalEEMod defaults reflect 100% aerobic treatment.

	Sewer Study	Indoor[1, 2]	Outdoor[1, 3]	Total
Apartments (Mid-Rise)	48,090	53,433		
Regional Shopping Center	65,996	73,329		
General Office Building	1,570	1,744		
Water Use (gpd)	115,656	128,506	2,741	131,247
Water Use (gpy)	42,214,291	46,904,768	1,000,352	47,905,120
Net Change (gpd)	40,210	44,677	402	45,080
Net Change (gpy)	14,676,501	16,307,224	146,824	16,454,048

Notes

1 *Assigned all water use for Brea Plaza to "regional shopping center"*

Indoor water use is adjusted to reflect the water purveyor losses in getting the potable water to the customers of 90%. The 90% factor for indoor water to wastewater is due to

2 *I/I – inflow and infiltration due to leaks in the sewer pipes that transport the wastewater to the sewage treatment plants.*

3 *Outdoor water based on total landscaped area and calculations from California Department of Water Resources' MAWA worksheet.*

Solid Waste CalEEMod Defaults*

Land Use	Total Solid Waste (tons/yr)
Apartments Mid Rise	105.34
Enclosed Parking with Elevator	0.00
General Office Building	19.86
High Turnover (Sit Down Restaurant)	507.54
Medical Office Building	17.28
Other Asphalt Surfaces	0.00
Other Non-Asphalt Surfaces	0.00
Parking Lot	0.00
Regional Shopping Center	71.84
Supermarket	193.00
Total	914.86

Fireplaces

**assuming no woodstoves*

Land Use	# Wood	# Gas	# Propane	# No Fireplace	Hours/Day	Days/Year[1]	BTU/hr/fireplace	KBTU
Grill[2]	0	6	0	220	3	104	60,000.00	112,320.00
Fire Pit[2]	0	3	0	220	3	104	60,000.00	56,160.00
Average Use	**0**	**9**	**0**	**220**	**3**	**104**	**60,000**	**168,480**

1 *assumes weekend use only*

2 *assumes grills and firepits will consume 60,000 BTU/hr (CalEEMod default BTU for fireplace)*

Architectural Coating

	Apartments	Office	Parking Structure	Continuing Land Uses
Percent Interior Painted (%):	100%	100%	25%	100%
Percent Exterior Painted (%):	60%	25%	100%	100%
Interior Paint VOC content (grams/liter):	50	100	100	100
Exterior Paint VOC content (grams/liter):	50	100	100	100

Structures	Land Use Square Feet	CalEEMod Factor[2]	Total Paintable Surface Area	Paintable Interior Area[1]	Paintable Exterior Area[1]
Non-Residential Structures					
Apartment	241,718	2.7	652,639	489,479	97,896
				489,479	**97,896**
Non-Residential Structures					
Continuing Land Uses	146,879	2.0	293,758	220,319	73,440
Office	21,355	2.0	42,710	32,033	2,669
Parking Structure	182,108	2.0	364,216	68,291	91,054
				320,642	**167,163**
Parking					
Surface Parking Lot	388,318	6%	23,299	-	23,299
Parking Strucuture (Striping)	182,108	6%	10,926	-	10,926
					34,226

Notes

1 CalEEMod methodology calculates the paintable interior and exterior areas by multiplying the total paintable surface area by 75 and 25 percent, respectively.

2 The program assumes the total surface for painting equals 2.7 times the floor square footage for residential and 2 times that for nonresidential square footage defined by the user. Architectural coatings for the parking lot is based on CalEEMod methodology applied to a surface parking lot (i.e., striping), in which 6% of surface area is painted.

3 100% of the interior and exterior of buildings to be modernized will be painted

Electricity (Buildings)

Historical Uses		
Multifamily Residential Additional Electricity Reductions[2]	**2.0%**	more efficient than 2016 Title 24 electricity rates
Multifamily Residential Additional Natural Gas Reductions[2]	**5%**	more efficient than 2016 Title 24 natural gas rates
Non-Residential Additional Electricity Reductions[2]	**11%**	more efficient than 2016 Title 24 electricity rates
Non-Residential Additional Natural Gas Reductions[2]	**1%**	more efficient than 2016 Title 24 natural gas rates

Sources:

[1] California Energy Commission (CEC). 2018. 2019 Building Energy and Efficiency Standards Frequently Asked Questions. Accessed on April 3, 2019. http://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf

[2] NORESCO. 2018. 2019 Update to the California Energy Efficiency Standards for Residential and Non-Residential Buildings

**Multi-family of 4 stories and higher are treated as non-residential for the Building and Energy Efficiency Standards.*

Default CalEEMod Energy Use

Land Use Subtype	Title-24 Electricity Energy Intensity (kWhr/size/year)*	Nontitle-24 Electricity Energy Intensity (kWhr/size/year)	Lighting Energy Intensity (KWhr/size/year)	Title-24 Natural Gas Energy Intensity (KBTU/size/year)*	Nontitle-24 Natural Gas Energy Intensity (KBTU/size/year)
Apartments Mid Rise	**179.76**	3,054.10	741.44	**5,911.46**	5,516.00
Enclosed Parking with Elevator	**3.92**	0.19	1.75	**0.00**	0.00
General Office Building	**4.71**	4.94	4.34	**8.59**	0.55
High Turnover (Sit Down Restaurant)	**11.27**	20.11	9.20	**83.70**	180.76
Medical Office Building	**6.17**	4.94	5.27	**10.28**	0.55
Other Asphalt Surfaces	**0.00**	0.00	0.00	**0.00**	0.00
Other Non-Asphalt Surfaces	**0.00**	0.00	0.00	**0.00**	0.00
Parking Lot	**0.00**	0.00	0.88	**0.00**	0.00
Regional Shopping Center	**3.79**	2.80	6.85	**1.06**	1.05
Supermarket	**6.08**	25.23	10.35	**11.28**	10.60

Adjusted CalEEMod Energy Use

Land Use Subtype	Title-24 Electricity Energy Intensity (kWhr/size/year)*	Nontitle-24 Electricity Energy Intensity (kWhr/size/year)	Lighting Energy Intensity (KWhr/size/year)	Title-24 Natural Gas Energy Intensity (KBTU/size/year)*	Nontitle-24 Natural Gas Energy Intensity (KBTU/size/year)
Apartments Mid Rise	**176.17**	3,054.10	741.44	**5,615.89**	5,516.00
Enclosed Parking with Elevator	**3.50**	0.19	1.75	**0.00**	0.00
General Office Building	**4.21**	4.94	4.34	**8.50**	0.55
High Turnover (Sit Down Restaurant)	**11.27**	20.11	9.20	**83.70**	180.76
Medical Office Building	**6.17**	4.94	5.27	**10.28**	0.55
Other Asphalt Surfaces	**0.00**	0.00	0.00	**0.00**	0.00
Other Non-Asphalt Surfaces	**0.00**	0.00	0.00	**0.00**	0.00
Parking Lot	**0.00**	0.00	0.88	**0.00**	0.00
Regional Shopping Center	**3.79**	2.80	6.85	**1.06**	1.05
Supermarket	**6.08**	25.23	10.35	**11.28**	10.60

Southern California Edison Carbon Intensity Factors

	lbs/MWH
CO_2e[1]	534
CO2:[2]	531.44
CH4:[3]	0.029
N2O:[3]	0.00617

Notes:

1 Based on CO_2e intensity factor of 534 pounds per megawatt hour; Southern California Edison. 2019, May. 2018 Sustainability Report. https://www.edison.com/content/dam/eix/documents/sustainability/eix-2019-

2 CO_2 back-calculated from CO_2e based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O.

3 CalEEMod default values.

Global Warming Potentials (GWP)		
	AR4	**AR5**
CO_2	1	1
CH_4	25	28
N_2O	298	265
Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC).		

Changes to the CalEEMod Defaults - Fleet Mix 2024 (Apartment Mid-Rise)

Trips 670

Default	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH	
FleetMix (Model Default)	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877	100%
Trips	379	29	140	73	10	4	18	12	1	1	3	0	1	670
Percent	82%			11%	7%									100%
without buses/MH	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0	0	0.004953	0.000602	0.000877	100%
Percent	82%			11%	7%									100%
Adjusted without buses/MH	0.565244	0.042904	0.209304	0.108392	0.015275	0.006062	0.027589	0.018724	0.000000	0.000000	0.005201	0.000632	0.000921	
Percent adjusted	82%			11%	7%									100%
Assumed Mix	97.0%			2.00%	1.00%									100%
adjusted with Assumed	0.666486	0.050589	0.246793	0.020000	0.002207	0.000876	0.003987	0.002706	0.000000	0.000000	0.006133	0.000091	0.000133	100%
Percent Check:	97%			2%	1%									
Trips	447	34	165	13	1	1	3	2	0	0	4	0	0	670
	650			*13*	*7*									

Fleet mix for the project is modified to reflect a higher proportion of passenger vehicles that the regional VMT. Assumes a mix of approximately 97% passenger vehicles, 2% medium duty trucks, and 1% heavy duty trucks and buses.

EMFAC2017 Derived CalEEMod Annual Emission Rates: Year 2021[1,2]

Season	Pollutant	LDA	LDT1	LDT2	MDV	LHDT1	LHDT2	MHDT	HHDT	OBUS	UBUS	MCY	SBUS	MH
Annual	CH4_IDLEX	0	0	0	0	0.0058183	0.00425282	0.004913457	0.029180728	0.00906	0	0	0.0714282	0
Annual	CH4_RUNEX	0.0026622	0.0062082	0.0040565	0.0056007	0.0050096	0.003663309	0.005611295	0.143488843	0.0093584	0.0012642	0.3521134	0.0114268	0.0096937
Annual	CH4_STREX	0.0511764	0.0727858	0.0690132	0.0837837	0.016229	0.011586755	0.01208686	8.15026E-07	0.0230147	0.0337336	0.2374018	0.0071319	0.0223705
Annual	CO_IDLEX	0	0	0	0	0.1898945	0.155572043	0.38643527	5.390923897	0.5515108	0	0	2.7963869	0
Annual	CO_RUNEX	0.6772983	1.2596582	0.9115226	1.116694	0.5725131	0.409306589	0.508562417	0.835157213	1.0077586	0.0909909	18.896761	1.0346099	1.1634717
Annual	CO_STREX	2.1133824	2.3237347	2.6897699	3.1190621	1.0861479	0.759714254	1.307966412	0.011132203	2.4359934	1.8117994	8.432182	1.0183561	1.9849567
Annual	CO2_NBIO_IDLEX	0	0	0	0	9.0516755	13.60684734	56.75144888	1057.870099	84.33171	0	0	356.18273	0
Annual	CO2_NBIO_RUNEX	266.12491	313.7664	341.79023	421.68217	667.71993	679.1017315	1086.342195	1517.437281	1422.0952	438.73091	214.48583	1128.8206	1462.9884
Annual	CO2_NBIO_STREX	54.351313	65.263011	71.476129	86.918885	12.4108	10.0115083	12.85582774	0.086566412	20.276829	22.756268	60.108064	5.7940876	18.140058
Annual	NOX_IDLEX	0	0	0	0	0.0605983	0.092760902	0.425018678	5.918100863	0.5205649	0	0	3.8198954	0
Annual	NOX_RUNEX	0.0383528	0.1007462	0.0735592	0.1026863	0.8116797	0.935087861	1.961193427	3.925745664	1.848041	0.0788058	1.120463	6.3320408	1.4399785
Annual	NOX_STREX[3]	0.1865516	0.263371	0.290118	0.3589188	0.3444016	0.248909147	1.103398402	1.993253306	0.6098473	0.2417472	0.2626822	0.550729	0.227852
Annual	PM10_IDLEX	0	0	0	0	0.0007559	0.001197431	0.001450524	0.008487913	0.0020433	0	0	0.0063356	0
Annual	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.089180026	0.130340037	0.060168391	0.13034	0.0245273	0.01176	0.7448002	0.13034
Annual	PM10_PMTW	0.008	0.008	0.008	0.008	0.0096464	0.010448076	0.012000003	0.035070902	0.012	0.0022582	0.004	0.0106332	0.0132121
Annual	PM10_RUNEX	0.0016723	0.002306	0.0016369	0.001785	0.0072149	0.01011673	0.053042719	0.050099556	0.0359005	8.972E-05	0.0021162	0.0434156	0.0305379
Annual	PM10_STREX	0.0019248	0.0026454	0.001821	0.0019836	0.0002553	0.000149385	0.000119066	1.47834E-06	0.0001951	3.968E-05	0.0032682	6.512E-05	0.0002471
Annual	PM25_IDLEX	0	0	0	0	0.0007232	0.001145631	0.001387775	0.00812073	0.0019549	0	0	0.0060616	0
Annual	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.038220011	0.055860016	0.025786453	0.05586	0.0105117	0.00504	0.3192001	0.05586
Annual	PM25_PMTW	0.002	0.002	0.002	0.002	0.0024116	0.002612019	0.003000001	0.008767726	0.003	0.0005645	0.001	0.0026583	0.003303
Annual	PM25_RUNEX	0.0015403	0.0021217	0.0015065	0.0016466	0.0068769	0.009664063	0.050742199	0.047932232	0.0343322	8.249E-05	0.0019796	0.0415199	0.0291823
Annual	PM25_STREX	0.0017699	0.0024325	0.0016744	0.0018249	0.0002348	0.000137354	0.000109476	1.35928E-06	0.0001794	3.648E-05	0.0030806	5.987E-05	0.0002272
Annual	ROG_DIURN	0.0503149	0.1236128	0.0717127	0.0823805	0.0022568	0.00145685	0.000487315	5.80304E-06	0.0018494	0.0026629	1.1565654	0.0011352	0.803119
Annual	ROG_HTSK	0.0959653	0.1943433	0.1224889	0.1402908	0.0719889	0.049492839	0.019666527	0.000242728	0.0212384	0.032411	0.7153915	0.0103435	0.0557098
Annual	ROG_IDLEX	0	0	0	0	0.0229506	0.018888472	0.023638021	0.412676086	0.0592205	0	0	0.3358753	0
Annual	ROG_RESTL	0.0483637	0.106141	0.0755152	0.0901415	0.0014216	0.000933696	0.00032888	4.10628E-06	0.0009779	0.0018538	0.7240955	0.000575	0.3468891
Annual	ROG_RUNEX	0.0102921	0.0271312	0.0162632	0.0246358	0.0467663	0.047975622	0.094206648	0.116035103	0.1001765	0.0042691	2.4024984	0.1364137	0.0593193
Annual	ROG_RUNLS	0.0251129	0.0819097	0.0489726	0.0538385	0.168717	0.107019455	0.019647438	9.90157E-05	0.0649773	0.0075402	0.5752928	0.0193012	0.01321
Annual	ROG_STREX	0.2292047	0.3627361	0.3183315	0.410922	0.0788576	0.056226993	0.061400734	4.2665E-06	0.1188067	0.1464465	1.8179911	0.0418849	0.0913064
Annual	SO2_IDLEX	0	0	0	0	8.794E-05	0.000130569	0.000540325	0.009694121	0.0008033	0	0	0.0033995	0
Annual	SO2_RUNEX	0.0026267	0.0030978	0.0033737	0.0041596	0.0065213	0.006578388	0.01039974	0.013431586	0.0138022	0.0043416	0.0021225	0.0107991	0.0143459
Annual	SO2_STREX	0.0005366	0.0006443	0.0007057	0.0008582	0.0001228	9.9072E-05	0.000127219	8.56645E-07	0.0002007	0.0002252	0.0005948	5.734E-05	0.0001795
Annual	TOG_DIURN	0.0503149	0.1236128	0.0717127	0.0823805	0.0022568	0.00145685	0.000487315	5.80304E-06	0.0018494	0.0026629	1.1565654	0.0011352	0.803119
Annual	TOG_HTSK	0.0959653	0.1943433	0.1224889	0.1402908	0.0719889	0.049492839	0.019666527	0.000242728	0.0212384	0.032411	0.7153915	0.0103435	0.0557098
Annual	TOG_IDLEX	0	0	0	0	0.0325212	0.026056394	0.032381138	0.479881628	0.076582	0	0	0.4823253	0
Annual	TOG_RESTL	0.0483637	0.106141	0.0755152	0.0901415	0.0014216	0.000933696	0.00032888	4.10628E-06	0.0009779	0.0018538	0.7240955	0.000575	0.3468891
Annual	TOG_RUNEX	0.0149616	0.039542	0.0236825	0.0348608	0.0586731	0.057075185	0.109620566	0.271310933	0.1233614	0.0062295	2.9688012	0.165971	0.0795263
Annual	TOG_RUNLS	0.0251129	0.0819097	0.0489726	0.0538385	0.168717	0.107019455	0.019647438	9.90157E-05	0.0649773	0.0075402	0.5752928	0.0193012	0.01321
Annual	TOG_STREX	0.2509488	0.3971475	0.3485321	0.4498754	0.0863392	0.06156148	0.067226075	4.67128E-06	0.1300784	0.1603404	1.9783863	0.0458587	0.099969
Summer	CH4_IDLEX	0	0	0	0	0.0058302	0.004261536	0.004651502	0.030213878	0.0090787	0	0	0.071437	0
Summer	CH4_RUNEX	0.0028325	0.0065571	0.0043054	0.0059079	0.0050977	0.003700791	0.005647391	0.143490635	0.009494	0.0012927	0.3453667	0.0115597	0.0098982
Summer	CH4_STREX	0.0464351	0.0657139	0.0625838	0.0759224	0.0157155	0.011220824	0.011684026	7.82825E-07	0.0221876	0.0314866	0.2132976	0.0064082	0.021477
Summer	CO_IDLEX	0	0	0	0	0.1898945	0.155572043	0.306998009	5.250641928	0.5262973	0	0	2.7492343	0

Summer	CO_RUNEX	0.738223	1.3602007	0.9898505	1.2032454	0.5814664	0.413051631	0.512509636	0.835641687	1.0234144	0.0926823	18.172488	1.0499407	1.1903254
Summer	CO_STREX	1.8219035	1.9979302	2.3171433	2.6860249	1.0419007	0.728861372	1.246574526	0.010609711	2.311646	1.6059776	7.7377408	0.8411907	1.8830973
Summer	CO2_NBIO_IDLEX	0	0	0	0	9.0516755	13.60684734	57.73082646	1057.017712	84.934254	0	0	367.48083	0
Summer	CO2_NBIO_RUNEX	277.0349	324.92208	352.80887	433.25061	667.73607	679.1083559	1086.349145	1517.438097	1422.1229	438.73395	213.12379	1128.8479	1463.0357
Summer	CO2_NBIO_STREX	53.811201	64.618923	70.77693	86.091841	12.33165	9.956181018	12.75090126	0.085737692	20.064702	22.39574	58.356221	5.4989568	17.966999
Summer	NOX_IDLEX	0	0	0	0	0.0605983	0.092760902	0.428196473	5.778824464	0.5205055	0	0	3.9282039	0
Summer	NOX_RUNEX	0.0339295	0.0885966	0.0648912	0.0906285	0.7638127	0.883071004	1.85324123	3.718998106	1.7355231	0.0697721	0.9847034	5.9792455	1.3460302
Summer	NOX_STREX[3]	0.1734844	0.2449821	0.2698104	0.3338083	0.3307364	0.239033078	1.098777747	1.993196651	0.5998071	0.2317825	0.2496622	0.54766	0.218397
Summer	PM10_IDLEX	0	0	0	0	0.0007559	0.001197431	0.001224758	0.007807302	0.0017267	0	0	0.005346	0
Summer	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.089180026	0.130340037	0.060168391	0.13034	0.0245273	0.01176	0.7448002	0.13034
Summer	PM10_PMTW	0.008	0.008	0.008	0.008	0.0096464	0.010448076	0.012000003	0.035070902	0.012	0.0022582	0.004	0.0106332	0.0132121
Summer	PM10_RUNEX	0.0016723	0.002306	0.0016369	0.001785	0.0072149	0.01011673	0.053042719	0.050099556	0.0359005	8.972E-05	0.0021162	0.0434156	0.0305379
Summer	PM10_STREX	0.0019248	0.0026454	0.001821	0.0019836	0.0002553	0.000149385	0.000119066	1.47834E-06	0.0001951	3.968E-05	0.0032682	6.512E-05	0.0002471
Summer	PM25_IDLEX	0	0	0	0	0.0007232	0.001145631	0.001171776	0.007469561	0.001652	0	0	0.0051148	0
Summer	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.038220011	0.055860016	0.025786453	0.05586	0.0105117	0.00504	0.3192001	0.05586
Summer	PM25_PMTW	0.002	0.002	0.002	0.002	0.0024116	0.002612019	0.003000001	0.008767726	0.003	0.0005645	0.001	0.0026583	0.003303
Summer	PM25_RUNEX	0.0015403	0.0021217	0.0015065	0.0016466	0.0068769	0.009664063	0.050742199	0.047932232	0.0343322	8.249E-05	0.0019796	0.0415199	0.0291823
Summer	PM25_STREX	0.0017699	0.0024325	0.0016744	0.0018249	0.0002348	0.000137354	0.000109476	1.35928E-06	0.0001794	3.648E-05	0.0030806	5.987E-05	0.0002272
Summer	ROG_DIURN	0.0739087	0.1813282	0.1053335	0.1209872	0.0031604	0.002040503	0.000689465	8.51979E-06	0.0025309	0.0036376	1.7396862	0.0015477	1.0783608
Summer	ROG_HTSK	0.0982598	0.2000683	0.1253615	0.1432665	0.0730327	0.050523824	0.02017116	0.000246164	0.0215333	0.0330443	0.7578991	0.0104269	0.055798
Summer	ROG_IDLEX	0	0	0	0	0.0229506	0.018888472	0.022512789	0.429090582	0.0592601	0	0	0.3350709	0
Summer	ROG_RESTL	0.0665299	0.1466542	0.1029879	0.1229141	0.001945	0.001276555	0.000456027	6.08571E-06	0.0013344	0.0024726	1.1382663	0.0007854	0.4662573
Summer	ROG_RUNEX	0.0108614	0.0284897	0.0171368	0.0256431	0.0472174	0.048135225	0.094367235	0.116046116	0.100848	0.0043508	2.3424882	0.1371051	0.0604015
Summer	ROG_RUNLS	0.0235989	0.0755458	0.0454329	0.0501419	0.1629153	0.103087395	0.018863252	9.72469E-05	0.0632405	0.0068077	0.5387149	0.0173921	0.0128906
Summer	ROG_STREX	0.2062335	0.3250569	0.2863729	0.3694684	0.0761719	0.054313389	0.05913185	4.10884E-06	0.11433	0.1362322	1.6220518	0.0376216	0.0878493
Summer	SO2_IDLEX	0	0	0	0	8.794E-05	0.000130569	0.000549754	0.009685096	0.000809	0	0	0.0035062	0
Summer	SO2_RUNEX	0.0027344	0.003208	0.0034825	0.0042738	0.0065214	0.006578454	0.010399809	0.013431594	0.0138025	0.0043416	0.002109	0.0107994	0.0143464
Summer	SO2_STREX	0.0005313	0.000638	0.0006988	0.00085	0.000122	9.85245E-05	0.000126181	8.48444E-07	0.0001986	0.0002216	0.0005775	5.442E-05	0.0001778
Summer	TOG_DIURN	0.0739087	0.1813282	0.1053335	0.1209872	0.0031604	0.002040503	0.000689465	8.51979E-06	0.0025309	0.0036376	1.7396862	0.0015477	1.0783608
Summer	TOG_HTSK	0.0982598	0.2000683	0.1253615	0.1432665	0.0730327	0.050523824	0.02017116	0.000246164	0.0215333	0.0330443	0.7578991	0.0104269	0.055798
Summer	TOG_IDLEX	0	0	0	0	0.0325212	0.026056394	0.030771904	0.498839249	0.076627	0	0	0.4814096	0
Summer	TOG_RESTL	0.0665299	0.1466542	0.1029879	0.1229141	0.001945	0.001276555	0.000456027	6.08571E-06	0.0013344	0.0024726	1.1382663	0.0007854	0.4662573
Summer	TOG_RUNEX	0.0157923	0.0415244	0.0249572	0.0363813	0.0593314	0.057308077	0.109854895	0.271327003	0.1243413	0.0063487	2.8968413	0.1669799	0.0811056
Summer	TOG_RUNLS	0.0235989	0.0755458	0.0454329	0.0501419	0.1629153	0.103087395	0.018863252	9.72469E-05	0.0632405	0.0068077	0.5387149	0.0173921	0.0128906
Summer	TOG_STREX	0.2257984	0.3558942	0.3135417	0.4044932	0.0833987	0.059466325	0.064741933	4.49866E-06	0.125177	0.1491571	1.7652286	0.0411909	0.0961839

Winter	CH4_IDLEX	0	0	0	0	0.0058161	0.004251174	0.005290456	0.018088907	0.0090542	0	0	0.0714766	0
Winter	CH4_RUNEX	0.0026083	0.0060953	0.0039776	0.0055001	0.0049859	0.003653327	0.005599216	0.005036142	0.0093186	0.0012576	0.3534373	0.0113893	0.0096321
Winter	CH4_STREX	0.0522025	0.0743172	0.0704044	0.0854827	0.0163345	0.011661969	0.012156186	8.22675E-07	0.0231971	0.0342054	0.2421179	0.0072358	0.0225693
Winter	CO_IDLEX	0	0	0	0	0.1898945	0.155572043	0.49740152	5.417119895	0.5863294	0	0	2.8615024	0
Winter	CO_RUNEX	0.6545061	1.2215436	0.8821253	1.0831327	0.5701406	0.408302138	0.507385586	0.459955504	1.003103	0.0905856	19.005068	1.0301974	1.1555486
Winter	CO_STREX	2.1772594	2.395117	2.7715626	3.2140513	1.0928188	0.764438278	1.319688181	0.011232219	2.4558962	1.8485389	8.5477794	1.0348692	2.000715
Winter	CO2_NBIO_IDLEX	0	0	0	0	9.0516755	13.60684734	55.39148043	1027.42313	83.499625	0	0	340.58058	0
Winter	CO2_NBIO_RUNEX	262.09948	309.64925	337.72445	417.41167	667.71564	679.0999518	1086.340122	1421.631547	1422.087	438.73019	214.69965	1128.8128	1462.9745
Winter	CO2_NBIO_STREX	54.46933	65.403476	71.629082	87.099573	12.42322	10.02031193	12.87617297	0.086725067	20.311668	22.821708	60.41943	5.822304	18.167523
Winter	NOX_IDLEX	0	0	0	0	0.0605983	0.092760902	0.420629275	5.916808043	0.520647	0	0	3.6703265	0
Winter	NOX_RUNEX	0.0371798	0.097822	0.0713481	0.099625	0.7971096	0.918535607	1.924443435	3.778199659	1.8137951	0.076774	1.0935445	6.222306	1.4119202
Winter	NOX_STREX[3]	0.1895455	0.2676021	0.2947739	0.3646814	0.3478185	0.251379846	1.104572503	1.993267702	0.6124416	0.2439934	0.2657706	0.5515208	0.2302951
Winter	PM10_IDLEX	0	0	0	0	0.0007559	0.001197431	0.001762295	0.008981556	0.0024806	0	0	0.0077023	0
Winter	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.089180026	0.130340037	0.058443069	0.13034	0.0245273	0.01176	0.7448002	0.13034
Winter	PM10_PMTW	0.008	0.008	0.008	0.008	0.0096464	0.010448076	0.012000003	0.034064883	0.012	0.0022582	0.004	0.0106332	0.0132121
Winter	PM10_RUNEX	0.0016723	0.002306	0.0016369	0.001785	0.0072149	0.01011673	0.053042719	0.049949536	0.0359005	8.972E-05	0.0021162	0.0434156	0.0305379
Winter	PM10_STREX	0.0019248	0.0026454	0.001821	0.0019836	0.0002553	0.000149385	0.000119066	1.47834E-06	0.0001951	3.968E-05	0.0032682	6.512E-05	0.0002471
Winter	PM25_IDLEX	0	0	0	0	0.0007232	0.001145631	0.001686059	0.008593018	0.0023733	0	0	0.0073691	0
Winter	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.038220011	0.055860016	0.025047029	0.05586	0.0105117	0.00504	0.3192001	0.05586
Winter	PM25_PMTW	0.002	0.002	0.002	0.002	0.0024116	0.002612019	0.003000001	0.008516221	0.003	0.0005645	0.001	0.0026583	0.003303
Winter	PM25_RUNEX	0.0015403	0.0021217	0.0015065	0.0016466	0.0068769	0.009664063	0.050742199	0.047788702	0.0343322	8.249E-05	0.0019796	0.0415199	0.0291823
Winter	PM25_STREX	0.0017699	0.0024325	0.0016744	0.0018249	0.0002348	0.000137354	0.000109476	1.35928E-06	0.0001794	3.648E-05	0.0030806	5.987E-05	0.0002272
Winter	ROG_DIURN	0.0500183	0.1261738	0.0694513	0.079104	0.0023614	0.001501557	0.000498498	6.05885E-06	0.0019065	0.0025391	1.2834672	0.0011729	0.8826119
Winter	ROG_HTSK	0.1035288	0.2175396	0.1315343	0.1494037	0.08193	0.055421142	0.021230999	0.000270177	0.0225292	0.0342366	0.917545	0.0112433	0.0666153
Winter	ROG_IDLEX	0	0	0	0	0.0229506	0.018888472	0.025211404	0.389449216	0.0591659	0	0	0.3369861	0
Winter	ROG_RESTL	0.0484021	0.1063707	0.0753015	0.0900122	0.0014457	0.000932936	0.000331178	4.29774E-06	0.0009818	0.0017546	0.7646011	0.0005683	0.3565712
Winter	ROG_RUNEX	0.0100992	0.0266602	0.015967	0.024262	0.046643	0.047932128	0.094158493	0.106892355	0.0999751	0.0042496	2.41436	0.1362141	0.0589941
Winter	ROG_RUNLS	0.0286025	0.096719	0.0571957	0.0624494	0.1829182	0.116677009	0.021602999	0.000105472	0.0694726	0.0092002	0.6596936	0.0234933	0.0139717
Winter	ROG_STREX	0.2341354	0.3707975	0.3251908	0.419798	0.0794077	0.05661897	0.061926669	4.30304E-06	0.1197873	0.1485929	1.8565479	0.0424932	0.0920473
Winter	SO2_IDLEX	0	0	0	0	8.794E-05	0.000130569	0.00052723	0.009706584	0.0007954	0	0	0.0032521	0
Winter	SO2_RUNEX	0.0025869	0.0030572	0.0033336	0.0041175	0.0065212	0.006578371	0.010399719	0.013431584	0.0138021	0.0043416	0.0021246	0.010799	0.0143458
Winter	SO2_STREX	0.0005378	0.0006457	0.0007072	0.0008599	0.0001229	9.91591E-05	0.00012742	8.58215E-07	0.000201	0.0002258	0.0005979	5.762E-05	0.0001798
Winter	TOG_DIURN	0.0500183	0.1261738	0.0694513	0.079104	0.0023614	0.001501557	0.000498498	6.05885E-06	0.0019065	0.0025391	1.2834672	0.0011729	0.8826119
Winter	TOG_HTSK	0.1035288	0.2175396	0.1315343	0.1494037	0.08193	0.055421142	0.021230999	0.000270177	0.0225292	0.0342366	0.917545	0.0112433	0.0666153
Winter	TOG_IDLEX	0	0	0	0	0.0325212	0.026056394	0.034631855	0.443358287	0.0765198	0	0	0.48359	0
Winter	TOG_RESTL	0.0484021	0.1063707	0.0753015	0.0900122	0.0014457	0.000932936	0.000331178	4.29774E-06	0.0009818	0.0017546	0.7646011	0.0005683	0.3565712
Winter	TOG_RUNEX	0.0146803	0.0388551	0.0232503	0.034307	0.0584933	0.05701172	0.1095503	0.121846151	0.1230676	0.006201	2.9829679	0.1656798	0.0790518
Winter	TOG_RUNLS	0.0286025	0.096719	0.0571957	0.0624494	0.1829182	0.116677009	0.021602999	0.000105472	0.0694726	0.0092002	0.6596936	0.0234933	0.0139717
Winter	TOG_STREX	0.2563472	0.4059737	0.3560422	0.4595926	0.0869414	0.061990646	0.067801908	4.71129E-06	0.1311521	0.1626905	2.0203338	0.0465247	0.1007802

1 Source: California Air Resources Board. EMFAC2017 Web Database. https://www.arb.ca.gov/emfac/2017/; California Air Pollution Control Officers Association (CAPCOA). 2017, November. California Emissions Estimator Model User's Guide, Version 2016.3.2, Appendix A.

2 Unless otherwise noted, per CalEEMod methodology, the calculated CalEEMod emission rates are derived from the emission rates obtained from EMFAC2017 Version 1.0.3.

3 Because EMFAC2017 provides vehicle trips data for MHDT and HHDT diesel trucks, the formula provided in Appendix A of the CalEEMod User's Guide in calculating the NO_x STREX emission rates are utilized.

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: Sub-Area
Region: Orange (SC)
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, gal/vehicle/day for IDLEX, RESTLOSS and DIURN

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RUNEX	PM2.5_IDLEX	PM2.5_STREX	PM2.5_PMTW	PM2.5_PMBW	PM10_RUNEX	PM10_IDLEX	PM10_STREX	PM10_PMTW	PM10_PMBW	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_RESTLOSS	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK	TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STREX	NOx_RUNEX	NOx_IDLEX	NOx_STREX
Orange (SC)		2021 HHDT		Aggregate	Aggregate	Gasoline	9,157,515.661	1000.457705	196.4250272	4.688663662	0	0.745656122	0.851216357	0	0.060597774	0.059000001	0.026460808	0.001163274	0	0.0808372	0.020000006	0.002726018	2004.975687	0	49.03353258	0.113959256	0	0.006061556	0.166021323	0	0.024913179	0.421725169	0	0.002416155	0.157359152	0.658963903	0.068127091	0.069752926	0.907232822	0	0.002416155	0.157359152	0.658963903	0.068127091	0.069752926	29.41603969	0	0.302266368	0.03586086	0	0.000585125
Orange (SC)		2021 HHDT		Aggregate	Aggregate	Diesel	19769.68522	1219.613.181	157870.4954	1.951561375	59.16896451	0.057995513	0.068321512	0.082132512	0	0.008761623	0.025768123	0.031126126	0.003985035	0	0.010302496	0.068521088	1662.857783	10598.67901	0	0.001638525	0.167752892	0	0.238831315	1.660995721	0	0.109501837	0.257535937	0	0	0	0	0	0	0	0.110718405	0.808420997	0	0	0	0	0	0.309618455	0.031817797	0.100312925	0
Orange (SC)		2021 LHDT		Aggregate	Aggregate	Natural Gas	864.7953825	151.995.863.36	9372.666382	2.760927858	24.61499537	0	0.005136173	0.005457259	0	0.000500003	0.026460808	0.005368838	0.007491763	0	0.056000001	0.002742018	5638.362663	4086.169815	0	0.954307317	1.295172689	0	0.499895152	0.802995251	0	0.327053169	0.268664657	0	0	0	0	0	0	0	5.160672598	1.374707398	0	0	0	0	0	33.42218561	20.3268775	0	0
Orange (SC)		2021 LDA		Aggregate	Gasoline	127,059.253	4999593.63	693379.512	0.038078956	0	0.145305905	0.001121751	0	0.001635398	0.000500001	0.001635398	0.000500001	0.001635398	0	0.001980501	0.058000002	0.058750211	271.272294	0	55.85351586	0.053775215	0	0.052549142	0.050139052	0	0.026269983	0.010251567	0	0.239429293	0.098697302	0.211695511	0.209581852	0.245332581	0.953077511	0	0.239529293	0.098697302	0.211695511	0.209581852	0.245332581	0.954928306	0	2.156924961	0.003983369	0	0.000552922
Orange (SC)		2021 LDA		Aggregate	Diesel	11968.55216	678208.5743	56896.26355	0.070159961	0	0	0.003772366	0	0	0.000000001	0.031570005	0.007705607	0	0	0	0.000000002	0.038750021	0	0	0.000979387	0	0	0	0.010999958	0	0	0	0.011758429	0	0	0.029581508	0.019416018	0	0	0.029971943	0	0	0.029581508	0.019416018	0	0	0.029971943	0	0	0.003983361	0	0
Orange (SC)		2021 LDT1		Aggregate	Electricity	1,000.000	39,000.000	5,460.000	0	0	0	0	0	0	0.000000001	0.031570005	0.005193238	0	0	0	0.000000002	0.038750021	0	0	0.000960378	0	0	0	0.010784552	0	0	0	0.011530341	0	0	0.029581508	0.019416018	0	0	0.029971943	0	0	0.029581508	0.019416018	0	0	0.029971943	0	0	0.003983361	0	0
Orange (SC)		2021 LDT1		Aggregate	Gasoline	139,898.6079	5314,185.362	699,673.8437	0.103133597	0	0.264999035	0.002999677	0	0.003183201	0.000500001	0.031570005	0.003183198	0	0	0.003983896	0.058000002	0.038750021	511.8309366	0	0.505903768	0.056233358	0	0.037323162	0.037556045	0	0.036481098	0.199489308	0.643099832	0	0.491835516	0.579171608	0.199722227	0	0.999566035

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: Sub-Area
Region: Orange (SC)
Calendar Year: 2025
Season: Summer
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX, RESTLOSS and DIURN

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RUNEX	PM2.5_IDLEX	PM2.5_STREX	PM2.5_PMTW	PM2.5_PMBW	PM10_RUNEX	PM10_IDLEX	PM10_STREX	PM10_PMTW	PM10_PMBW	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_RESTLOSS	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK	TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STREX	NOx_RUNEX	NOx_IDLEX	NOx_STREX
Orange (SC)		2021 HHDT		Aggregate	Aggregate	Gasoline	9,157,515.661	1000.457705	196.4256272	2.124267087	0	0.717182702	0.851216357	0	0.060197774	0.009000001	0.009400008	0.001142476	0	0.0868372	0.010000006	0.06276018	2006.002311	0	64.91999924	0.121167163	0	0.00004332	0.146729909	0	0.01495581	0.619590721	0	0.002156875	0.139826996	0.423802198	0.068955161	0.09615524	0.567452686	0	0.002156875	0.139826996	0.423802198	0.068955161	0.09615524	0.567452686	0	0.608387312	0.019853109	0	0.000548181
Orange (SC)		2021 HHDT		Aggregate	Aggregate	Diesel	19769.68522	1219.621.181	157870.4954	5.700282037	57.75891858	0.057994313	0.045921741	0.474597619	0	0.058761623	0.047166126	0.077308176	0	0.009329496	0.060121898	1662.857793	105689.03868	0	0.005088525	0.205927431	0	0.23983133	1.466446756	0	0.108950937	4.628887111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.024986523	0.074975526	0	0.018617957	0.160059764	0
Orange (SC)		2021 HHDT		Aggregate	Aggregate	Natural Gas	864.7861825	151.9913616	9372.1660382	2.802582452	24.03985629	0	0.005138173	0.036571297	0	0.009000003	0.004648008	0.006598838	0.040551532	0	0	0.016000001	0.002742018	5128.362663	4099.39616	0	0.954307317	1.325886856	0	0.498894152	0.805468993	0	0.027053169	0.268092014	0	0	0	0	0	5.368367298	1.456688531	0	0	0	0	0	19.42218616	39.43277866	0	0	0	0
Orange (SC)		2021 LDA		Aggregate	Aggregate	Gasoline	127239.252	49099163.62	6013795.512	3.616373838	0	0.37858035	0.351312751	0	0.001620368	0.002000001	0.001743728	0.001492108	0	0.001980001	0.002000001	0.00809001	0.008000002	0.006750211	262.4712366	0	0.217708998	0.203597761	0	0.042619989	0.031101372	0	0.212259178	0.103083215	0.198899717	0.324227456	0.399991216	0.054506466	0	0.212259178	0.103083215	0.198899717	0.324227456	0.399991216	0.757561611	0	1.876921189	0.002749221	0	0.000542712
Orange (SC)		2021 LDA		Aggregate	Aggregate	Diesel	11968.55216	678208.5743	56896.26355	0.096830211	0	0.007073346	0	0	0.000000001	0.000000001	0.007705607	0	0	0.000000002	0.000000001	0.000797687	0	0	0.000797687	0	0	0.000099938	0	0	0.000099938	0	0	0.000488136	0	0	0	0	0	0.000488136	0	0	0	0	0	0	0.016557768	0.009977048	0	0.000961361	0	0
Orange (SC)		2021 LDT1		Aggregate	Aggregate	Electricity	1.00E+08	1.00E+08	1.00E+08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)		2021 LDT1		Aggregate	Aggregate	Gasoline	130088.6079	53161285.362	6395373.8027	0.699907836	0	0.236612299	0.181099677	0	0.002492523	0.002000001	0.001750005	0.001393238	0	0.002683896	0.002000001	0.001750005	0.002000001	0	0.418835721	0.001099296	0	0.000213805	0.007203179	0	0.028326165	0.029611009	0	0.329854952	0.33523368	0.612783522	0.683588706	0.844268321	0.661715197	0	0.357972724	0.33523368	0.612783522	0.683588706	0.844268321	0.661715197	0	2.008991531	0.001224098	0	0.000418843
Orange (SC)		2021 LDT1		Aggregate	Aggregate	Diesel	52.59356429	3051.223722	175.5678352	0.749518889	0	0	0.361885846	0	0	0.000000001	0.000170005	0.001000007	0	0	0.000000002	0.000000001	0.000170021	412.7268699	0	0.009458751	0	0	0.068875213	0	0	0.212423283	0	0	0	0	0	0	0.343586642	0	0	0	0	0	0	0.342925809	0.000902772	0	0	0	0
Orange (SC)		2021 LDT1		Aggregate	Aggregate	Electricity	756.4099521	29866.56816	3686.952909	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)		2021 LDT2		Aggregate	Aggregate	Gasoline	451561.7914	169899388.78	21160917.763	3.006348853	0	0.277863885	0.381499386	0	0.001849933	0.002000001	0.001743005	0.001432004	0	0.001983509	0.002000002	0.001743005	0.002000001	0	71.61872393	0.004037889	0	0.002683982	0.009080896	0	0.00299581	0.011736178	0	0.296527902	0.127329657	0.369675284	0.489588995	0.630569056	0.205147403	0	0.317983384	0.127329657	0.369675284	0.489588995	0.630569056	0.205147403	0	2.168016972	0.003102798	0	0.000758616
Orange (SC)		2021 LDT2		Aggregate	Aggregate	Electricity	3067.282773	113487.7878	17148.88056	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)		2021 LHDT1		Aggregate	Aggregate	Gasoline	36669.95386	13455621.713	5459367.4644	0.104882277	0.009618616	0.009670044	0.009618616	0	0.000549895	0.000000001	0.000274009	0.000183116	0	0.000369369	0.000000002	0.000274009	0.000000002	121.8796972	16.85427519	0.009438683	0.012902656	0.034307986	0.003410281	0.002672802	0.009551997	0.014681858	0.111662203	0.687549967	0.004393161	0.073785647	0.005123621	0.062531805	0.127152075	0.111662203	0.687549967	0.004393161	0.073785647	0.005123621	0.062531805	0.127152075	0.711363057	3.376587601	0.009763138	0.005167085	0.005188578
Orange (SC)		2021 LHDT2		Aggregate	Aggregate	Diesel	22667.64228	9038161.6987	2873581.8153	1.610151837	2.168127979	0	0.151533579	0.026296026	0	0.000000001	0.000274009	0.001683738	0.027482961	0	0.000000002	0.000000001	0.000274009	0.000000002	874.6695752	134.1121618	0	0.055968188	0.002088218	0	0.019168301	0.003122756	0	0.537437555	0.109759755	0	0	0	0	0	0.982509412	0.110994127	0	0	0	0	0	0.995768827	0.009743278	0	0.004581664	0.001270681	0
Orange (SC)		2021 LHDT2		Aggregate	Aggregate	Gasoline	6632.282182	2282578.3716	958811.89052	0.172965637	0.009819076	0.017553376	0.009819076	0	0.000297356	0.000000001	0.000210001	0.000198013	0	0.000321293	0.000000002	0.000210001	0.000000002	21.54679163	0.004721696	0.130974222	0.024268685	0.011960302	0.000599976	0.001146201	0.025546211	0.057670185	0.113542998	0.109431756	0.452992211	0.067837057	0.132866778	0.109431756	0.452992211	0.067837057	0.132866778	0.109431756	0.452992211	0.067837057	0.132866778	0.109431756	0.452992211	0.001139706	0.763969113	1.577974393	0.001139508	0.763969113	1.577974393
Orange (SC)		2021 LHDT2		Aggregate	Aggregate	Natural Gas	8869.195116	3605587.5892	1123481.3939	1.933159521	2.168127979	0	0.021185391	0.026789016	0	0.000000001	0.000210001	0.001673499	0.028303089	0	0.012000001	0.009548036	504.3356751	215.8165113	0	0.055955631	0.002088218	0	0.002299628	0.000917751	0	0.006987708	0.109759755	0	0	0	0	0	0.376988012	0.112854127	0	0	0	0	0	0.382509227	0.003743278	0	0.000438665	0.000488057	0
Orange (SC)		2021 MCY		Aggregate	Aggregate	Gasoline	57618.81326	411997.9139	113237.6935	0.966703097	0	0.209662236	0.381979631	0	0.004080934	0.001	0.005043001	0.002316229	0	0.003436161	0.004000001	0.011743009	213.1237868	0	58.35623067	0.343598756	0	0.210975511	0.959529603	0	0.404668225	2.343388193	0	1.162351822	0.757999096	1.540039951	2.276533636	3.479572315	2.896831218	0	1.791228631	0.757999096	1.540039951	2.276533636	3.479572315	18.17387756	0	7.737700864	0.022109003	0	0.005579182
Orange (SC)		2021 MDV		Aggregate	Aggregate	Gasoline	85139.19925	2448318.3672	539642.49987	0.251783538	0	0.054727272	0	0	0.000000001	0.000376005	0.001352221	0	0	0.000000002	0.000000001	0.000376005	0.000000002	0.026758211	0.000000875	0	0.000095168	0	0	0.000095168	0	0	0.014124	0	0	0	0	0	0.014124	0	0	0	0	0	0	0.015377128	0.000000952	0	0.000002952	0	0
Orange (SC)		2021 MDV		Aggregate	Diesel	85139.19925	2448318.3672	539642.49987	0.251783538	0	0.054727272	0	0	0.000000001	0.000376005	0.001352221	0	0	0.000000002	0.000000001	0.000376005	0.000000002	0.026758211	0.000000875	0	0.000095168	0	0	0.000095168	0	0	0.014124	0	0	0	0	0	0.014124	0	0	0	0	0	0	0.015377128	0.000000952	0	0.000002952	0	0
Orange (SC)		2021 MDV		Aggregate	Electricity	1990.884885	69700.63936	7143.918226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)		2021 MH		Aggregate	Aggregate	Gasoline	4951.392672	81666.83707	695.2178239	0.322192747	0	0.101423216	0.181231568	0	0.000307836	0.000000001	0.000466016	0.000139364	0	0.000932581	0.012000001	0.130566337	3872.378996	0	0.410083294	0.012748094	0	0.009267162	0.001299122	0	0.009402299	0.001207369	0	0.079452181	0.015870369	0.749392616	0.868125169	0.918838206	0.080518518	0	0.337735166	0.079452181	0.749392616	0.868125169	0.918838206	1.737216225	0	2.485120541	0.016549526	0	0.002319151
Orange (SC)		2021 MH		Aggregate	Aggregate	Diesel	2962.130367	28041.01383	296.2130807	0.703188218	0	0.095638818	0	0	0.000000003	0.000000016	0.000771063	0	0	0.016000005	0.130566337	983.1322307	0	0.000358065	0	0	0.316385198	0	0	0.325568856	0	0	0.002766337	0	0	0	0	0	0.002766337	0	0	0	0	0	0	0.011858327	0	0	0.000279028	0	0
Orange (SC)		2021 MHDT		Aggregate	Aggregate	Gasoline	7541.101689	450523.4567	116985.9962	3.271535212	0.052987935	0.033765038	0.053823519	0	0.000023891	0.000000001	0.000060556	0.000018612	0	0.000032265	0.012000001	0.131000001	0.130566337	3674.859381	577.9189661	37.73213258	0.058806187	0.074728437	0.016350751	0.000802165	0.002810899	0.001577916	0.569357786	0.174843231	0.059677313	0.278143573	0.329956308	0.040812925	0.050789503	0.174843231	0.059677313	0.278143573	0.329956308	0.040812925	0.050789503	0.688585135	0.326170658	0.005673755	0.000157911	0	0
Orange (SC)		2021 MHDT		Aggregate	Aggregate	Diesel	2831.410987	19230262.277	299102.3212	1.203406221	6.794995221	1.499617619	0.361623517	0.019187577	0	0.000000001	0.000060556	0.000436662	0.019423996	0	0.012000001	0.130566337	991.9994731	761.8057995	0	0.004659651	0.000373912	0	0.010202234	0.129751666	0	0.003978708	0.002767525	0	0.169852992	0.023855178	0.216859202	0.262407312	0.326170658

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: Sub-Area
Region: Orange (SC)
Calendar Year: 2025
Season: Winter
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX, RESTLOSS and DIURN

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RUNEX	PM2.5_IDLEX	PM2.5_STREX	PM2.5_PMTW	PM2.5_PMBW	PM10_RUNEX	PM10_IDLEX	PM10_STREX	PM10_PMTW	PM10_PMBW	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_RESTLOSS	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK	TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNEX	SOx_IDLEX	SOx_STREX
Orange (SC)		2021 HHDT		Aggregate	Aggregate	Gasoline	9.81750516	1880.4577	196.4292472	0.57809556	0	0.75724307	0.00115035	0	0.00019776	0.00050001	0.02466008	0.00133425	0	0.00068722	0.00000006	0.00617881	0.00018	0	49.13318456	0.13861142?	0	0.00004888	0.14775992	0	0.01318961	0.41756786	0	0.00218051	0.15300376	0.47634885	0.00898699	0.06861028	0.90132413	0	0.02266835	0.15300376	0.47634885	0.00898699	0.06861028	29.21263552	0	0.36095351	0.00982782	0	0.00004835
Orange (SC)		2021 HHDT		Aggregate	Aggregate	Diesel	3.67881	1219.61	1.681	0.57809556	61.13451856	0.20799013	0.00052761	0.00897983	0	0.00074114	0.01576623	0.00122626	0.09277268	0	0.01655496	0.06921388	1.661	357.7703	138.12	0.00018855	0.38684705	0	0.12955115	1.44851757?	0	0.32955237	0.02771258	0	0	0	0	0	0.12471605	0.57955138	0	0	0	0	0	0	0.68966515	55.95473236	0	0.03198127797	0.10035186	0
Orange (SC)		2021 HHDT		Aggregate	Aggregate	Natural Gas	864.7854825	99299.86136	3577.660392	3.76344E-05	24.95673728	0.00015615	0.04549189	0	0.00990E-0003	0.03466E-0006	0.00596E-0006	0.00763E-0003	0	0.00600E-0003	0.00417E-0006	5638.362643	4067.886691	0	0.95465762?	1.34124E-0005	0	0.04898E-0012	0.82963E-0005	0	0.02700154?	0.07195917?	0	0	0	0	0	0	0	5.54886729?	1.30054586	0	0	0	0	0	0	15.42128E-0005	21.54899222	0	0	0	0
Orange (SC)		2021 LDA		Aggregate	Aggregate	Gasoline	127239.6	49999.566	6015.795	0.01	0.05769398	0	0.00512751	0	0.00182958	0.00000001	0.01570005	0.00164138	0	0.00169825	0.00000002	0.00675001	0.00000001	267.1373958	0	0.00537585	0.00007585	0	0.00000002	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001
Orange (SC)		2021 LDA		Aggregate	Aggregate	Diesel	11968.32216	4782.06	1.57	0.01	0.00000001	0	0.00000001	0	0.00000001	0.00000001	0.01570005	0.00000001	0	0.00000001	0.00000001	0.00675001	0.00000001	0	0.00000001	0.00000001	0	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001
Orange (SC)		2021 LDA		Aggregate	Aggregate	Battery Electric	1.2E-06	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)		2021 LDT1		Aggregate	Aggregate	Gasoline	2.53	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orange (SC)		2021 LDT1		Aggregate	Aggregate	Electricity	736.4389521	2966.6424	3686.952909	0	0	0	0	0	0	0.00000001	0.01570005	0	0	0	0.00000001	0.00675001	0	0	0	0	0	0	0	0	0	0	0	0	0.00577572	0.01570005?	0	0	0.00588E-0005	0	0	0.00577572	0.01570005?	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)		2021 LDT2		Aggregate	Aggregate	Gasoline	4513.61	7214	1499.8286	29	0.57809556	0	0.29686476	0	0.00169459	0.00000001	0.01570005	0.00167206	0	0.00164509	0.00000002	0.00675001	0	339.5324113	0	0.07141955	0.00932166	0	0.00431898	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001
Orange (SC)		2021 LDT2		Aggregate	Aggregate	Diesel	1.2E-06	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)		2021 LDT2		Aggregate	Aggregate	Electricity	1387.383773	1126.67	1718.849586	0	0	0	0	0	0	0.00000001	0.01570005	0	0	0	0.00000001	0.00675001	0	0	0	0	0	0	0	0	0	0	0	0	0.00577572	0.01570005?	0	0	0.00588E-0005	0	0	0.00577572	0.01570005?	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)		2021 LHDT1		Aggregate	Aggregate	Gasoline	5689.911	1397.6	1718.849586	0.01	0.08619863	0.01178145	0.00038599	0	0.00003855	0.00000001	0.01578009	0.00033116	0	0.00009098	0.00000002	0.00675001	0.00000001	121.9799672	0.19942796?	0.00611395?	0.12928552	0.01097554?	0.00167386	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001
Orange (SC)		2021 LHDT1		Aggregate	Aggregate	Diesel	2.2E-06	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)		2021 LHDT2		Aggregate	Aggregate	Gasoline	2.2E-06	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)		2021 LHDT2		Aggregate	Aggregate	Diesel	8688.395115	5695.87	5.5362	0.01	0.08619863	0.00017755	0	0.01510595	0.02678995	0.00000001	0.00421011	0.00159616	0	0.00013293	0.00000002	0.00675001	0.00000001	541.6172307	0	0.00000001	0.00000001	0	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001
Orange (SC)		2021 MCY		Aggregate	Aggregate	Gasoline	57918.41526	41699.7139	3237.073305	0	0.24577576	0.03379605	0	0.00398004	0.001	0.00000001	0.00421011	0.00211139	0	0.00324581	0.00000001	0.00117605	0.00000001	214.6996157	0	0.00000001	0.00000001	0	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001
Orange (SC)		2021 MDV		Aggregate	Aggregate	Gasoline	16126.38501	5284.1	1.57	0.01	0.17016825	0.00033275	0	0.00003855	0.00000001	0.01570005	0.00421011	0.00020215	0	0.00000001	0.00000001	0.00675001	0.00000001	0	0.00000001	0.00000001	0	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001
Orange (SC)		2021 MDV		Aggregate	Aggregate	Diesel	4536.189101	1583.71	0.4	0.01	0.00000001	0	0.00000001	0	0.00000001	0.00000001	0.01570005	0.00000001	0	0.00000001	0.00000001	0.00675001	0.00000001	0	0.00000001	0.00000001	0	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001
Orange (SC)		2021 MDV		Aggregate	Electricity	1.09E-06	0.00	0	0	0	0	0	0	0	0	0.00000001	0.01570005	0	0	0	0.00000001	0.00675001	0	0	0	0	0	0	0	0	0	0	0	0	0.00577572	0.01570005?	0	0	0.00588E-0005	0	0	0.00577572	0.01570005?	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)		2021 MH		Aggregate	Aggregate	Gasoline	6951.353272	6364.81573	685.2173228	0.35788706	0	0.02618158	0	0	0.00018226	0.00000001	0.00421011	0.00019526	0	0.00003125	0.00000001	0.00168107	0.00000001	167.2.289196	0	0.00000001	0.00000001	0	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001
Orange (SC)		2021 MH		Aggregate	Aggregate	Diesel	2962.150567	2854.215303	296.2130307	0.35788706	0	0.00618593	0	0	0.00018226	0.00000001	0.00421011	0.00019526	0	0.00003125	0.00000001	0.00168107	0.00000001	0.01600000	0.13050837	0.00000001	0.00000001	0	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001
Orange (SC)		2021 MHDT		Aggregate	Aggregate	Gasoline	7545.101609	4005.21497	3599.5982	0.00549867	0.08619863	0.00129533	0.00080159	0	0.00018226	0.00000001	0.00421011	0.00037352	0	0.00003125	0.00000001	0.00168107	0.00000001	1676.786231	517.4099267	88.09473476	0.00961951	0.29468387	0.00398439	0.01660709	0.00795192	0.00512556	0.00602952	1.09411795	0.18512763	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001
Orange (SC)		2021 MHDT		Aggregate	Aggregate	Natural Gas	2831.459987	1920.061377	2910.2.1913	2.28534217	0.64370822	1.49957E-05	0.00438E-0005	0.00739E-0005	0.00018226	0.00000001	0.00421011	0.00019526	0.02796876	0	0.01120000E-0005	0.00168107	0.00000001	1.93E+0005	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001
Orange (SC)		2021 OBUS		Aggregate	Aggregate	Gasoline	1.2E-06	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)		2021 OBUS		Aggregate	Aggregate	Diesel	636.2850636	6816.41108	6107.600707	0.11266707	21.68595867	0.57828675	0.09933219	0	0.00018226	0.00000001	0.00421011	0.00019526	0	0.01120000E-0005	0.00168107	1186.182876	2862.376776	0	0.08444099	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001
Orange (SC)		2021 OBUS		Aggregate	Aggregate	Natural Gas	552.9309776	2121.0.30254	2011.73991	0.90303612	0.57211852	0.55451116	0.00138E-0005	0	0.00018226	0.00000001	0.00421011	0.00019526	0	0.01120000E-0005	0.00168107	878.3245006	2618.251667	0	0.07233533	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001
Orange (SC)		2021 SBUS		Aggregate	Aggregate	Gasoline	1306.964021	4084.46099	1500.196203	0.11177071	47.64964837	0.55585497	0.09458121	0	0.00018226	0.00000001	0.00421011	0.00019526	0.02796876	0.00000001	0.01120000E-0005	0.00168107	0.00000001	1238.488659	3438.876163	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001
Orange (SC)		2021 UBUS		Aggregate	Aggregate	Gasoline	211.0172233	19915.56681	864.0680932	0.40779831	0	1.10259975?	0.00061987?	0	0.00018226	0.00000002	0.00421011	0.00019526	0	0.00017938	0.00000002	0.00168107	0.00000001	2301.161782	0	105.1651465	0.08848E-0011	0	0.13457384?	0.03156711?	0	0.68951898?	0.02258275?	0	0.67118588?	0.15477059?	1.15472838	0.05727575?	0.03827906	0.02129269?	0	0.79139015?	0.15477059?	1.15472838	0.05727575?	0.03827906	0.68197999	0.02307156?	0	0.00332056?	0
Orange (SC)		2021 UBUS		Aggregate	Aggregate	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)		2021 UBUS		Aggregate	Aggregate	Natural Gas	742.5582997	8680.816599	2970.216038	2.88211127?	0	0.00615E-0005	0.03383E-0006	0.00667E-0006	0	0.00018226	0.00000001	0.00421011	0.00019526	0.00000001	0.01120000E-0005	0.00168107	0.00000001	1978.162585	0	0.00000001	0.00000001	0	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001	0.00000001

EMFAC2017 Derived CalEEMod Annual Emission Rates: Year 2024[1,2]

Season	Pollutant	LDA	LDT1	LDT2	MDV	LHDT1	LHDT2	MHDT	HHDT	OBUS	UBUS	MCY	SBUS	MH
Annual	CH4_IDLEX	0	0	0	0	0.0051794	0.003711617	0.004604449	0.029583575	0.0086549	0	0	0.0859343	0
Annual	CH4_RUNEX	0.0018161	0.0041472	0.002981	0.0037207	0.0036571	0.002856565	0.001218983	0.14593139	0.0043817	0.0012913	0.3474174	0.0091574	0.0069351
Annual	CH4_STREX	0.0405883	0.0562346	0.0560526	0.0656744	0.0128844	0.009045488	0.010941558	7.24644E-07	0.0215233	0.0248517	0.2342184	0.0082302	0.0206319
Annual	CO_IDLEX	0	0	0	0	0.1832039	0.148683221	0.380265207	6.07383407	0.558015	0	0	3.339181	0
Annual	CO_RUNEX	0.5490508	0.9309465	0.7399746	0.8253101	0.4152353	0.312628766	0.167446192	0.643481547	0.5423233	0.0650294	18.156707	0.83551	0.7275493
Annual	CO_STREX	1.9257603	2.0956751	2.4459836	2.6984998	0.9596009	0.647629061	1.133930597	0.010098092	2.2569825	1.8117994	8.4980561	1.1162754	1.7515244
Annual	CO2_NBIO_IDLEX	0	0	0	0	8.8738413	13.45707094	52.64249846	1012.557005	78.181032	0	0	359.37366	0
Annual	CO2_NBIO_RUNEX	246.34953	293.90688	312.70607	387.65532	633.58173	642.3950474	993.2669111	1373.651772	1334.3301	385.94944	214.64231	1076.0623	1403.5064
Annual	CO2_NBIO_STREX	50.400165	61.090539	65.441412	79.610924	11.392286	8.944431846	11.92247774	0.077488632	19.405467	20.355859	59.143796	6.6553087	16.907635
Annual	NOX_IDLEX	0	0	0	0	0.0570844	0.084344237	0.245538424	5.26134621	0.2951177	0	0	3.465321	0
Annual	NOX_RUNEX	0.0267777	0.0676952	0.0509157	0.0659699	0.5838729	0.660258602	0.957563543	2.424212909	0.9803358	0.0472235	1.1164075	5.0933284	1.2661247
Annual	NOX_STREX[3]	0.1536693	0.2109582	0.2242368	0.2724634	0.2953565	0.209362684	1.550087922	2.475992843	0.7533751	0.1796417	0.2630615	0.7487952	0.226346
Annual	PM10_IDLEX	0	0	0	0	0.0008384	0.001280157	0.000174948	0.002953978	9.93E-05	0	0	0.0044776	0
Annual	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.089180026	0.130340037	0.060135978	0.13034	0.0245273	0.01176	0.7448002	0.13034
Annual	PM10_PMTW	0.008	0.008	0.008	0.008	0.0098001	0.010583582	0.012000003	0.035049658	0.012	0.0022582	0.004	0.0104748	0.0132356
Annual	PM10_RUNEX	0.0014317	0.0018512	0.0014663	0.0015464	0.0063814	0.009604047	0.006047813	0.017931995	0.0065545	0.0003603	0.0022317	0.0313098	0.0267964
Annual	PM10_STREX	0.0016847	0.0021801	0.0016633	0.0017228	0.0002218	0.000128003	0.000110935	1.09017E-06	0.0002023	0.0001705	0.0029927	7.712E-05	0.0002165
Annual	PM25_IDLEX	0	0	0	0	0.0008021	0.001224778	0.00016738	0.00282619	9.5E-05	0	0	0.0042839	0
Annual	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.038220011	0.055860016	0.025772562	0.05586	0.0105117	0.00504	0.3192001	0.05586
Annual	PM25_PMTW	0.002	0.002	0.002	0.002	0.00245	0.002645896	0.003000001	0.008762414	0.003	0.0005645	0.001	0.0026187	0.0033089
Annual	PM25_RUNEX	0.0013182	0.001703	0.0013496	0.0014259	0.0060816	0.009174932	0.005780834	0.017156222	0.0062545	0.0003313	0.0020841	0.0299374	0.0256058
Annual	PM25_STREX	0.001549	0.0020045	0.0015293	0.0015841	0.000204	0.000117694	0.000102	1.00237E-06	0.000186	0.0001567	0.0028105	7.09E-05	0.000199
Annual	ROG_DIURN	0.0401307	0.0968563	0.0659123	0.0762631	0.0018824	0.001205879	0.000468548	3.67101E-06	0.0017513	0.0011457	1.1461127	0.0011512	0.6194315
Annual	ROG_HTSK	0.0798613	0.1560489	0.1083631	0.1258503	0.0614712	0.041722743	0.019791746	0.000156022	0.0208698	0.0120904	0.6786807	0.0108187	0.0443599
Annual	ROG_IDLEX	0	0	0	0	0.0207335	0.017124893	0.02019854	0.40436447	0.0495767	0	0	0.3967175	0
Annual	ROG_RESTL	0.0398181	0.0869564	0.071458	0.0860035	0.0012383	0.000822543	0.000341218	2.63531E-06	0.00095	0.0007383	0.7049007	0.0006612	0.2840996
Annual	ROG_RUNEX	0.006589	0.01754	0.0115892	0.0150009	0.0383046	0.041535127	0.010329661	0.025140143	0.0251805	0.0042705	2.3503193	0.1081841	0.0450893
Annual	ROG_RUNLS	0.0232117	0.0697733	0.0477522	0.0523047	0.1482077	0.087701849	0.019622799	6.27846E-05	0.0649612	0.0027282	0.5344805	0.0166456	0.0101341
Annual	ROG_STREX	0.1740823	0.268504	0.2507788	0.3106548	0.0620754	0.043499508	0.054818777	3.79369E-06	0.1102001	0.1062956	1.7897045	0.0481005	0.0806662
Annual	SO2_IDLEX	0	0	0	0	8.606E-05	0.000128948	0.00050126	0.009246173	0.0007449	0	0	0.0034356	0
Annual	SO2_RUNEX	0.0023879	0.0028494	0.0030312	0.0037561	0.0061793	0.006213596	0.009499709	0.012002743	0.0129407	0.0038193	0.0021241	0.010312	0.0137591
Annual	SO2_STREX	0.0004886	0.0005923	0.0006345	0.0007718	0.0001127	8.85124E-05	0.000117983	7.66813E-07	0.000192	0.0002014	0.0005853	6.586E-05	0.0001673
Annual	TOG_DIURN	0.0401307	0.0968563	0.0659123	0.0762631	0.0018824	0.001205879	0.000468548	3.67101E-06	0.0017513	0.0011457	1.1461127	0.0011512	0.6194315
Annual	TOG_HTSK	0.0798613	0.1560489	0.1083631	0.1258503	0.0614712	0.041722743	0.019791746	0.000156022	0.0208698	0.0120904	0.6786807	0.0108187	0.0443599
Annual	TOG_IDLEX	0	0	0	0	0.0291769	0.0233728	0.028256281	0.471207149	0.0655891	0	0	0.5722361	0
Annual	TOG_RESTL	0.0398181	0.0869564	0.071458	0.0860035	0.0012383	0.000822543	0.000341218	2.63531E-06	0.00095	0.0007383	0.7049007	0.0006612	0.2840996
Annual	TOG_RUNEX	0.0095744	0.0255833	0.0168653	0.0217782	0.04706	0.048791781	0.013124501	0.174411278	0.0349038	0.0062315	2.9262901	0.1317719	0.0590487
Annual	TOG_RUNLS	0.0232117	0.0697733	0.0477522	0.0523047	0.1482077	0.087701849	0.019622799	6.27846E-05	0.0649612	0.0027282	0.5344805	0.0166456	0.0101341
Annual	TOG_STREX	0.1905982	0.2939779	0.2745711	0.3401272	0.0679647	0.047626486	0.060019661	4.15361E-06	0.1206552	0.1163803	1.9482705	0.052664	0.0883193
Summer	CH4_IDLEX	0	0	0	0	0.00519	0.003719241	0.004367492	0.031070346	0.0087318	0	0	0.0859807	0
Summer	CH4_RUNEX	0.001935	0.0043889	0.0031673	0.0039512	0.0037121	0.002880272	0.001240805	0.145932809	0.0044741	0.0013189	0.3415554	0.0092665	0.0070675
Summer	CH4_STREX	0.03688	0.0508788	0.050882	0.0595917	0.0124785	0.008761331	0.010582394	6.96013E-07	0.020755	0.0231775	0.2110523	0.0073961	0.019811
Summer	CO_IDLEX	0	0	0	0	0.1832039	0.148683221	0.313606302	5.984583234	0.5536254	0	0	3.3010861	0

Summer	CO_RUNEX	0.5988611	1.0076377	0.8043094	0.896093	0.420869	0.314928439	0.169621565	0.643994424	0.5523312	0.0662382	17.498764	0.847795	0.7430796
Summer	CO_STREX	1.6624362	1.806421	2.1089145	2.3242763	0.9210346	0.621668494	1.080708883	0.009624135	2.1418843	1.6059776	7.7781339	0.9220747	1.6619339
Summer	CO2_NBIO_IDLEX	0	0	0	0	8.8738413	13.45707094	52.57676065	1001.485806	77.318048	0	0	368.53942	0
Summer	CO2_NBIO_RUNEX	256.41061	304.24008	322.65371	397.98713	633.59181	642.3990949	993.2707438	1373.65262	1334.3479	385.95171	213.41139	1076.0842	1403.5339
Summer	CO2_NBIO_STREX	49.916869	60.530454	64.812753	78.901812	11.324084	8.898329582	11.83131798	0.076736905	19.209089	20.00473	57.378889	6.3310523	16.755404
Summer	NOX_IDLEX	0	0	0	0	0.0570844	0.084344237	0.237262712	5.036742708	0.2804631	0	0	3.5507892	0
Summer	NOX_RUNEX	0.0236957	0.0595773	0.0449321	0.058264	0.5502516	0.624008116	0.904423312	2.296151998	0.9183507	0.0418102	0.9815411	4.8080403	1.1866097
Summer	NOX_STREX[3]	0.1429048	0.1962177	0.2085389	0.2533835	0.2836354	0.201054365	1.545773536	2.475964683	0.7437098	0.172237	0.2501709	0.7450354	0.2169543
Summer	PM10_IDLEX	0	0	0	0	0.0008384	0.001280157	0.000149744	0.002569997	8.823E-05	0	0	0.0037807	0
Summer	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.089180026	0.130340037	0.060135978	0.13034	0.0245273	0.01176	0.7448002	0.13034
Summer	PM10_PMTW	0.008	0.008	0.008	0.008	0.0098001	0.010583582	0.012000003	0.035049658	0.012	0.0022582	0.004	0.0104748	0.0132356
Summer	PM10_RUNEX	0.0014317	0.0018512	0.0014663	0.0015464	0.0063814	0.009604047	0.006047813	0.017931995	0.0065545	0.0003603	0.0022317	0.0313098	0.0267964
Summer	PM10_STREX	0.0016847	0.0021801	0.0016633	0.0017228	0.0002218	0.000128003	0.000110935	1.09017E-06	0.0002023	0.0001705	0.0029927	7.712E-05	0.0002165
Summer	PM25_IDLEX	0	0	0	0	0.0008021	0.001224778	0.000143266	0.00245882	8.442E-05	0	0	0.0036171	0
Summer	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.038220011	0.055860016	0.025772562	0.05586	0.0105117	0.00504	0.3192001	0.05586
Summer	PM25_PMTW	0.002	0.002	0.002	0.002	0.00245	0.002645896	0.003000001	0.008762414	0.003	0.0005645	0.001	0.0026187	0.0033089
Summer	PM25_RUNEX	0.0013182	0.001703	0.0013496	0.0014259	0.0060816	0.009174932	0.005780834	0.017156222	0.0062545	0.0003313	0.0020841	0.0299374	0.0256058
Summer	PM25_STREX	0.001549	0.0020045	0.0015293	0.0015841	0.000204	0.000117694	0.000102	1.00237E-06	0.000186	0.0001567	0.0028105	7.09E-05	0.000199
Summer	ROG_DIURN	0.0589683	0.1418818	0.0967391	0.111904	0.0026308	0.001688748	0.000660997	5.36173E-06	0.0023945	0.001581	1.7225126	0.0015802	0.8337813
Summer	ROG_HTSK	0.0815719	0.1602582	0.1107361	0.1284177	0.0623066	0.042565761	0.020220218	0.00015842	0.0211417	0.0124813	0.7238885	0.0109233	0.0445636
Summer	ROG_IDLEX	0	0	0	0	0.0207335	0.017124893	0.019406192	0.427652017	0.0508393	0	0	0.3963739	0
Summer	ROG_RESTL	0.0544238	0.1189259	0.0966901	0.1162807	0.001673	0.001113463	0.000464143	3.85275E-06	0.0012838	0.0010195	1.1072151	0.0008951	0.38076
Summer	ROG_RUNEX	0.0069574	0.0184463	0.0122167	0.0157941	0.0385695	0.041628418	0.010418837	0.025148123	0.0256172	0.0043522	2.2982851	0.108742	0.0457445
Summer	ROG_RUNLS	0.0217364	0.0643693	0.0442398	0.0486395	0.1430572	0.084445165	0.018816047	6.14856E-05	0.0631789	0.0024623	0.4988228	0.0149828	0.0098866
Summer	ROG_STREX	0.1568033	0.2409918	0.2257343	0.2795896	0.0599686	0.042023952	0.05279311	3.6535E-06	0.1060477	0.0988817	1.6020976	0.0432045	0.0776203
Summer	SO2_IDLEX	0	0	0	0	8.606E-05	0.000128948	0.000500804	0.009142083	0.0007368	0	0	0.0035222	0
Summer	SO2_RUNEX	0.0024854	0.0029496	0.0031277	0.0038563	0.0061794	0.006213636	0.009499747	0.012002751	0.0129409	0.0038193	0.0021119	0.0103122	0.0137594
Summer	SO2_STREX	0.000484	0.0005869	0.0006284	0.000765	0.0001121	8.80562E-05	0.00011708	7.59374E-07	0.0001901	0.000198	0.0005678	6.265E-05	0.0001658
Summer	TOG_DIURN	0.0589683	0.1418818	0.0967391	0.111904	0.0026308	0.001688748	0.000660997	5.36173E-06	0.0023945	0.001581	1.7225126	0.0015802	0.8337813
Summer	TOG_HTSK	0.0815719	0.1602582	0.1107361	0.1284177	0.0623066	0.042565761	0.020220218	0.00015842	0.0211417	0.0124813	0.7238885	0.0109233	0.0445636
Summer	TOG_IDLEX	0	0	0	0	0.0291769	0.0233728	0.027038566	0.498124582	0.0670265	0	0	0.5718449	0
Summer	TOG_RESTL	0.0544238	0.1189259	0.0966901	0.1162807	0.001673	0.001113463	0.000464143	3.85275E-06	0.0012838	0.0010195	1.1072151	0.0008951	0.38076
Summer	TOG_RUNEX	0.0101119	0.0269058	0.017781	0.0229356	0.0474466	0.048927912	0.013254626	0.174422923	0.0355411	0.0063508	2.8630386	0.1325859	0.0600048
Summer	TOG_RUNLS	0.0217364	0.0643693	0.0442398	0.0486395	0.1430572	0.084445165	0.018816047	6.14856E-05	0.0631789	0.0024623	0.4988228	0.0149828	0.0098866
Summer	TOG_STREX	0.1716798	0.2638555	0.2471506	0.3061149	0.0656581	0.046010937	0.057801811	4.00012E-06	0.1161088	0.1082631	1.7441018	0.0473035	0.0849845

Winter	CH4_IDLEX	0	0	0	0	0.0051774	0.003710162	0.004947236	0.017267061	0.0085703	0	0	0.0859507	0
Winter	CH4_RUNEX	0.0017787	0.0040701	0.0029223	0.0036475	0.0036424	0.002850271	0.001211457	0.0008883	0.0043547	0.0012849	0.3485462	0.0091267	0.0068954
Winter	CH4_STREX	0.0413908	0.0573943	0.057171	0.0669892	0.0129679	0.009103904	0.011000661	7.31445E-07	0.0216926	0.0252036	0.2387814	0.0083498	0.0208158
Winter	CO_IDLEX	0	0	0	0	0.1832039	0.148683221	0.47353601	6.006958421	0.5640769	0	0	3.3917882	0
Winter	CO_RUNEX	0.5304426	0.9020821	0.7158835	0.7987249	0.41374	0.31200965	0.166796983	0.206874225	0.5393474	0.0647397	18.253485	0.8319742	0.7229615
Winter	CO_STREX	1.9834517	2.1590617	2.5199497	2.7806525	0.9654654	0.651612956	1.144112353	0.010188816	2.2755183	1.8485389	8.6197711	1.1343762	1.7656784
Winter	CO2_NBIO_IDLEX	0	0	0	0	8.8738413	13.45707094	52.72627943	993.9043734	79.372773	0	0	346.71619	0
Winter	CO2_NBIO_RUNEX	242.63743	290.09391	309.03566	383.843	633.57905	642.3939564	993.2657668	1270.383634	1334.3249	385.9489	214.83212	1076.056	1403.4983
Winter	CO2_NBIO_STREX	50.505813	61.212827	65.578973	79.766067	11.403031	8.951761912	11.94019269	0.077632547	19.4379	20.419323	59.46017	6.6863449	16.932289
Winter	NOX_IDLEX	0	0	0	0	0.0570844	0.084344237	0.256965807	5.372731512	0.3153551	0	0	3.3472935	0
Winter	NOX_RUNEX	0.0259549	0.0657129	0.0493825	0.0639863	0.5735963	0.64869795	0.939533208	2.319660366	0.9619237	0.0460059	1.0894864	5.0049231	1.2416364
Winter	NOX_STREX[3]	0.1561344	0.2143458	0.2278327	0.2768381	0.2982976	0.211447609	1.551184199	2.475999999	0.7558725	0.1813108	0.2661212	0.7497651	0.2287726
Winter	PM10_IDLEX	0	0	0	0	0.0008384	0.001280157	0.000209754	0.003144255	0.0001146	0	0	0.0054399	0
Winter	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.089180026	0.130340037	0.058192217	0.13034	0.0245273	0.01176	0.7448002	0.13034
Winter	PM10_PMTW	0.008	0.008	0.008	0.008	0.0098001	0.010583582	0.012000003	0.03391627	0.012	0.0022582	0.004	0.0104748	0.0132356
Winter	PM10_RUNEX	0.0014317	0.0018512	0.0014663	0.0015464	0.0063814	0.009604047	0.006047813	0.017790635	0.0065545	0.0003603	0.0022317	0.0313098	0.0267964
Winter	PM10_STREX	0.0016847	0.0021801	0.0016633	0.0017228	0.0002218	0.000128003	0.000110935	1.09017E-06	0.0002023	0.0001705	0.0029927	7.712E-05	0.0002165
Winter	PM25_IDLEX	0	0	0	0	0.0008021	0.001224778	0.00020068	0.003008236	0.0001096	0	0	0.0052046	0
Winter	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.038220011	0.055860016	0.024939522	0.05586	0.0105117	0.00504	0.3192001	0.05586
Winter	PM25_PMTW	0.002	0.002	0.002	0.002	0.00245	0.002645896	0.003000001	0.008479067	0.003	0.0005645	0.001	0.0026187	0.0033089
Winter	PM25_RUNEX	0.0013182	0.001703	0.0013496	0.0014259	0.0060816	0.009174932	0.005780834	0.017020977	0.0062545	0.0003313	0.0020841	0.0299374	0.0256058
Winter	PM25_STREX	0.001549	0.0020045	0.0015293	0.0015841	0.000204	0.000117694	0.000102	1.00237E-06	0.000186	0.0001567	0.0028105	7.09E-05	0.000199
Winter	ROG_DIURN	0.0394131	0.0975316	0.0630684	0.0722266	0.001932	0.001211491	0.000461971	3.786E-06	0.0017725	0.0011578	1.2722079	0.0011236	0.6640845
Winter	ROG_HTSK	0.0854976	0.1724701	0.1156786	0.1332774	0.0689649	0.045701476	0.021006651	0.00017191	0.0219507	0.0131717	0.8685215	0.0112129	0.0515594
Winter	ROG_IDLEX	0	0	0	0	0.0207335	0.017124893	0.02131148	0.37175508	0.0478331	0	0	0.3971921	0
Winter	ROG_RESTL	0.0397113	0.0867574	0.0710566	0.0855872	0.0012475	0.000813508	0.000338203	2.73135E-06	0.0009439	0.0007163	0.7419365	0.0006421	0.2870341
Winter	ROG_RUNEX	0.0064651	0.0172315	0.0113778	0.0147296	0.0382323	0.041509697	0.01030293	0.017840607	0.0250496	0.004251	2.3604327	0.1080231	0.0448925
Winter	ROG_RUNLS	0.0265988	0.0823365	0.0558992	0.0608212	0.1607463	0.095716408	0.021601249	6.71573E-05	0.0694984	0.0033316	0.6168803	0.0202969	0.0107274
Winter	ROG_STREX	0.177799	0.2744024	0.25616	0.3173205	0.0625072	0.043801988	0.055288334	3.82618E-06	0.1111097	0.1078536	1.826829	0.0487991	0.0813272
Winter	SO2_IDLEX	0	0	0	0	8.606E-05	0.000128948	0.000501821	0.009389916	0.0007562	0	0	0.003316	0
Winter	SO2_RUNEX	0.0023519	0.0028125	0.0029956	0.0037191	0.0061793	0.006213585	0.009499698	0.01200274	0.0129406	0.0038193	0.0021259	0.0103119	0.013759
Winter	SO2_STREX	0.0004897	0.0005935	0.0006358	0.0007733	0.0001128	8.85849E-05	0.000118158	7.68237E-07	0.0001924	0.0002021	0.0005884	6.617E-05	0.0001676
Winter	TOG_DIURN	0.0394131	0.0975316	0.0630684	0.0722266	0.001932	0.001211491	0.000461971	3.786E-06	0.0017725	0.0011578	1.2722079	0.0011236	0.6640845
Winter	TOG_HTSK	0.0854976	0.1724701	0.1156786	0.1332774	0.0689649	0.045701476	0.021006651	0.00017191	0.0219507	0.0131717	0.8685215	0.0112129	0.0515594
Winter	TOG_IDLEX	0	0	0	0	0.0291769	0.0233728	0.029965242	0.42321486	0.0636041	0	0	0.5727764	0
Winter	TOG_RESTL	0.0397113	0.0867574	0.0710566	0.0855872	0.0012475	0.000813508	0.000338203	2.73135E-06	0.0009439	0.0007163	0.7419365	0.0006421	0.2870341
Winter	TOG_RUNEX	0.0093936	0.0251331	0.0165568	0.0213825	0.0469546	0.048754673	0.013085495	0.020428108	0.0347128	0.006203	2.9385389	0.1315369	0.0587615
Winter	TOG_RUNLS	0.0265988	0.0823365	0.0558992	0.0608212	0.1607463	0.095716408	0.021601249	6.71573E-05	0.0694984	0.0033316	0.6168803	0.0202969	0.0107274
Winter	TOG_STREX	0.1946675	0.3004358	0.2804629	0.3474253	0.0684375	0.047957664	0.060533767	4.18919E-06	0.1216511	0.1180861	1.9886745	0.0534288	0.089043

1 Source: California Air Resources Board. EMFAC2017 Web Database. https://www.arb.ca.gov/emfac/2017/; California Air Pollution Control Officers Association (CAPCOA). 2017, November. California Emissions Estimator Model User's Guide, Version 2016.3.2, Appendix A.

2 Unless otherwise noted, per CalEEMod methodology, the calculated CalEEMod emission rates are derived from the emission rates obtained from EMFAC2017 Version 1.0.3.

3 Because EMFAC2017 provides vehicle trips data for MHDT and HHDT diesel trucks, the formula provided in Appendix A of the CalEEMod User's Guide in calculating the NO_x STREX emission rates are utilized.

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: Sub-Area
Region: Orange (SC)
Calendar Year: 2026
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX, RESTLOSS and DIURN

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RUNEX	PM2.5_IDLEX	PM2.5_STREX	PM2.5_PMTW	PM2.5_PMBW	PM10_RUNEX	PM10_IDLEX	PM10_STREX	PM10_PMTW	PM10_PMBW	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_RESTLOSS	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK	TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STREX	NOx_RUNEX	NOx_IDLEX	NOx_STREX
Orange (SC)		2016 HHDT		Aggregate	Aggregate	Gasoline	10.12464396	1269.902873	253.5738543	3.566656414	0	0.090524416	0.001113733	0	0.0009501	0.000500001	0.026460808	0.001238563	0	0.000842289	0.000500006	0.002728018	1869.62703	0	61.79570527	0.060351166	0	0.000628266	0.159852205	0	0.008866829	0.991953079	0	0.003162066	0.095209564	0.418573378	0.031162713	0.043168674	0.373979989	0	0.001047778	0.095228564	0.418573378	0.031162713	0.043168674	0.373979989	0	0.005455186
Orange (SC)		2016 HHDT		Aggregate	Aggregate	Diesel	13.6291.89565	1269.922.565	1.5569.2572	2.455362255	59.3873855	2.566852106	0.017795054	0.026775967	0	0.008758562	0.025709525	0.016858567	0.027986553	0	0.016503166	0.660582156	1511.163125	10251.75308	0	0.016858709	0.196525137	0	0.266395661	1.611420772	0	0.016858473	0.233153156	0	0	0	0	0	0	0	0.020558507	0.816852211	0	0	0	0	0	0	0.187734225	0.012158703	0.096852996	0
Orange (SC)		2016 HHDT		Aggregate	Aggregate	Natural Gas	1643.368775	42497.96297	4069.138227	2.35771523	23.07302905	0	0.464295835	0.010961533	0	0.000500001	0.026460808	0.004249052	0.032582358	0	0.016500001	0.001742018	9280.116489	3886.126626	0	0.400703296	1.241377161	0	0.66868732	0.792211071	0	0.23178066	0.049911245	0	0	0	0	0	0	0	0.466586283	1.303977168	0	0	0	0	0	0	13.56317925	20.88627966	0	0
Orange (SC)		2016 LDA		Aggregate	Aggregate	Gasoline	1197490.991	50207030.91	6163721.318	8.037401091	0	0.159809267	0.001319651	0	0.003455689	0.000500001	0.031750855	0.001319699	0	0.001705951	0.000500002	0.006750211	249.6914802	0	0.171859013	0.001687859	0	0.462312938	0.005671661	0	0.029166851	0.005675515	0	0.180514128	0.062861189	0.191394317	0.196072782	0.197177975	0.009619709	0	0.196086316	0.062861189	0.191394317	0.196072782	0.197177975	0.009619709	0	0.003418382	0.022051161	0	0.003418382	0
Orange (SC)		2016 LDA		Aggregate	Aggregate	Diesel	16052.75216	5432578.7011	666588.88216	0.006969726	0	0.000419162	0	0	0.000005002	0.000500001	0.000473508	0	0	0.000005002	0.000500001	0.000869139	195.8735055	0	0.000869139	0	0	0.000869139	0.000473515	0	0.000869139	0.011258642	0	0	0	0	0	0	0.011879958	0	0	0	0	0	0	0.000418382	0	0	0	0
Orange (SC)		2016 LDT1		Aggregate	Aggregate	Electricity	1.07E+06	38.5	0.000000	0	0	0	0	0	0	0.000000000	0.000000000	0	0	0	0.000000000	0.000000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)		2016 LDT1		Aggregate	Aggregate	Gasoline	169721.3368	5656825.518	690761.265	0.666642725	0	0.121896567	0.001369818	0	0.000359625	0.000500001	0.031750855	0.001369899	0	0.002396714	0.000500002	0.009750211	251.9960952	0	60.41593899	0.059235218	0	0.094953362	0.059551214	0	0.029166729	0.057703667	0	0.271632928	0.157821669	0.569503527	0.020519557	0.016433709	0.010498512	0	0.297933159	0.157821669	0.569503527	0.020519557	0.016433709	0.010498512	0	0.211527781	0.021899506	0	0.020299961	0
Orange (SC)		2016 LDT1		Aggregate	Aggregate	Diesel	64.28303123	9663.970988	1511.005.8228	0.767853683	0	0	0.013769878	0	0	0.000500001	0.031750855	0.123333366	0	0	0.000500002	0.009750211	388.8784226	0	0	0.007153575	0	0	0.661126271	0	0	0.157681959	0	0	0	0	0	0	0.179905566	0	0	0	0	0	0	0.892230968	0	0.009676299	0	0
Orange (SC)		2016 LDT2		Aggregate	Aggregate	Electricity	1716.879788	76222.38505	8727.218095	0	0	0	0	0	0	0.000000000	0.031750855	0	0	0	0.000000000	0.009750211	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)		2016 LDT2		Aggregate	Aggregate	Gasoline	69.2937.1411	3140.98675.72	2167.952.981	0.003633306	0	0.229211109	0.001319726	0	0.000359562	0.000500001	0.031751725	0.001319699	0	0.002396714	0.000500002	0.009750211	310.4312728	0	61.61313099	0.060398713	0	0.097564792	0.060503088	0	0.029619958	0.011675782	0	0.278439507	0.113372529	0.377854965	0.042263356	0.016392014	0.754262.1955	0	0.291277761	0.083073988	0	0.020569.9115
Orange (SC)		2016 LDT2		Aggregate	Aggregate	Diesel	1.6.6.3.3.3.3	1.6.6.3.3.3.3	1.6.6.3.3.3.3	0.006.3.3.3.3	0	0.0.3.3.3.3.3	0.0.1.3.3.3.3	0	0.0.0.3.5.5.5	0.0.0.0.0.0.1	0.0.3.3.3.3.3	0.0.1.3.3.3.3	0	0.0.0.3.5.5.5	0.0.0.0.0.0.2	0.0.3.3.3.3.3	0.0.3.3.3.3.3	0	0.0.0.3.5.5.5	0.0.0.0.0.0.1	0.0.3.3.3.3.3	0.0.1

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: Sub-Area
Region: Orange (SC)
Calendar Year: 2026
Season: Summer
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX, RESTLOSS and DIURN

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RUNEX	PM2.5_IDLEX	PM2.5_STREX	PM2.5_PMTW	PM2.5_PMBW	PM10_RUNEX	PM10_IDLEX	PM10_STREX	PM10_PMTW	PM10_PMBW	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_RESTLOSS	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK	TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STREX	NOx_RUNEX	NOx_IDLEX	NOx_STREX
Orange (SC)		2016 HHDT		Aggregate	Aggregate	Gasoline	16.12464396	1349.902873	253.0738543	2.565582216	0	0.073623147	0.001113731	0	0.00095501	0.000555001	0.026436008	0.001238563	0	0.000842289	0.020000006	0.002726018	1866.227753	0	0.351140496	0.260513806	0	0.030611165	0.131656537	0	0.009640978	0.681859696	0	0.002159231	0.009626161	0.409713205	0.001557606	0.063430561	27.91914371	0	5.685781678	0.035616605	0	0.000168789
Orange (SC)		2026 HHDT		Aggregate	Aggregate	Diesel	13.6291.68565	1339.922.565	1.5169.2.572	1.937663999	50.79566669	0.568952336	0.017595254	0.023168765	0	0.018395167	0.016182579	0	0.019031566	0.000582336	1.611.122.121	1016.1.29.218	0	0.050858749	0.267865757	0	0.268291662	1.991208751	0	0.018358473	0.473163687	0	0.006463727	0	0	0	0	0	0	0.022160207	0.094937257	0	0	0	0	0	0.187.72.626	0.014.013.856	0.012.182.723	0.095.762.862	0
Orange (SC)		2016 HHDT		Aggregate	Aggregate	Natural Gas	1643.368776	42497.96297	4069.138227	1.943.986.515	21.3369.661	0	0.062.459.835	0.216.388.986	0	0.000.000.003	0.026.460.008	0.004.490.562	0.027.582.178	0	0.016.000.001	0.002.420.218	3280.116.669	3879.4963.08	0	0.400.703.296	1.298.203.605	0	0.6.68.67.52	0.7.909.98.37	0	0.23.178.566	0.048.630.576	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)		2026 LDA		Aggregate	Gasoline	1.9.9.7.9.8.9.9.5.	9.0.9.3.7.9.3.5.	8.9.8.7.3.1.8.	0.0.1.8.6.9.2.1.8.	0.0.1.8.6.9.2.1.5.	0	0.1.4.8.5.9.2.1.8.	0.0.1.1.7.4.9.5.	0	0.0.0.0.0.0.0.0.3.	0.0.1.5.7.6.0.0.5.	0.0.1.5.1.4.3.9.9.	0.0.1.5.1.4.3.9.9.	0	0.0.0.0.0.0.0.0.3.	0.0.1.5.7.6.0.0.5.	0.0.1.5.1.4.3.9.9.

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: Sub-Area
Region: Orange (SC)
Calendar Year: 2026
Season: Winter
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX, RESTLOSS and DIURN

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RUNEX	PM2.5_IDLEX	PM2.5_STREX	PM2.5_PMTW	PM2.5_PMBW	PM10_RUNEX	PM10_IDLEX	PM10_STREX	PM10_PMTW	PM10_PMBW	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	NO2_RUNEX	N2O_IDLEX	N2O_STREX	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS	ROG_RESTLOSS	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK	TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNEX	SOx_IDLEX	SOx_STREX
Orange (SC)		2024 HHDT		Aggregate	Aggregate	Gasoline	10.11842786	1369.902573	200.5738565	1.296216103	0	0.056235666	0.001115179	0	0.000915	0.000550001	0.020460008	0.001235956	0	0.000614289	0.000550006	0.001726918	1865.938186	0	41.88077681	0.065155275	0	0.000432266	0.116166202	0	0.020861276	0.190809747	0	0.002161369	0	0.467589958	0.052297388	0.064758152	0.570266665	0	0.022473835	0.10319979

CalEEMod Construction Model

Brea Plaza Expansion Project, Construction

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	21.36	1000sqft	0.49	21,355.00	0
Enclosed Parking with Elevator	182.11	1000sqft	1.39	182,108.00	0
Other Asphalt Surfaces	13.77	1000sqft	0.32	13,774.00	0
Apartments Mid Rise	229.00	Dwelling Unit	0.00	241,718.00	541

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	531.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustainability Report

Land Use - based on info from applicant, apartments built on top of parking structure

Construction Phase - based on information provided by applicant

Off-road Equipment - no additional equipment required for Architectural Coating

Off-road Equipment - based on info from applicant

Off-road Equipment - no additional equipment required for Demolition Hauling

Off-road Equipment - based on info from applicant

Off-road Equipment - no additional equipment required for Demolition Hauling

Off-road Equipment - based on info from applicant

Off-road Equipment - no additional equipment required for Fine Grading Soil Hauling

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - no additional equipment required for Rough Grading Soil Hauling

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Trips and VMT - based on info provided by applicant. See assumptions file.

Demolition -

Grading -

Architectural Coating - based on info from applicant

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 and Rule 1186

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	10,678.00	93,723.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	32,033.00	100,323.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	163,160.00	97,896.00
tblAreaCoating	Area_Residential_Exterior	163160	150152
tblAreaCoating	Area_Residential_Interior	489479	450455
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	65.00
tblConstructionPhase	NumDays	220.00	174.00
tblConstructionPhase	NumDays	220.00	196.00

tblConstructionPhase	NumDays	20.00	23.00
tblConstructionPhase	NumDays	20.00	12.00
tblConstructionPhase	NumDays	20.00	11.00
tblConstructionPhase	NumDays	20.00	9.00
tblConstructionPhase	NumDays	6.00	7.00
tblConstructionPhase	NumDays	6.00	10.00
tblConstructionPhase	NumDays	6.00	5.00
tblConstructionPhase	NumDays	10.00	11.00
tblConstructionPhase	NumDays	3.00	11.00
tblFireplaces	NumberGas	194.65	160.65
tblFireplaces	NumberNoFireplace	22.90	18.90
tblFireplaces	NumberWood	11.45	9.45
tblGrading	MaterialExported	0.00	5,695.00
tblLandUse	LandUseSquareFeet	21,360.00	21,355.00
tblLandUse	LandUseSquareFeet	182,110.00	182,108.00
tblLandUse	LandUseSquareFeet	13,770.00	13,774.00
tblLandUse	LandUseSquareFeet	229,000.00	241,718.00
tblLandUse	LotAcreage	4.18	1.39
tblLandUse	LotAcreage	6.03	0.00
tblLandUse	Population	655.00	541.00
tblOffRoadEquipment	HorsePower	89.00	55.00
tblOffRoadEquipment	HorsePower	89.00	55.00
tblOffRoadEquipment	HorsePower	132.00	173.00
tblOffRoadEquipment	HorsePower	80.00	142.00
tblOffRoadEquipment	HorsePower	80.00	100.00
tblOffRoadEquipment	HorsePower	97.00	131.00
tblOffRoadEquipment	HorsePower	97.00	131.00
tblOffRoadEquipment	HorsePower	97.00	268.00
tblOffRoadEquipment	HorsePower	97.00	268.00

tblOffRoadEquipment	HorsePower	97.00	268.00
tblOffRoadEquipment	HorsePower	97.00	93.00
tblOffRoadEquipment	HorsePower	97.00	268.00
tblOffRoadEquipment	HorsePower	97.00	93.00
tblOffRoadEquipment	HorsePower	97.00	93.00
tblOffRoadEquipment	HorsePower	97.00	268.00
tblOffRoadEquipment	HorsePower	97.00	93.00
tblOffRoadEquipment	HorsePower	158.00	424.00
tblOffRoadEquipment	HorsePower	158.00	424.00
tblOffRoadEquipment	HorsePower	158.00	424.00
tblOffRoadEquipment	HorsePower	158.00	424.00
tblOffRoadEquipment	HorsePower	80.00	142.00
tblOffRoadEquipment	HorsePower	80.00	142.00
tblOffRoadEquipment	HorsePower	97.00	93.00
tblOffRoadEquipment	HorsePower	97.00	131.00
tblOffRoadEquipment	HorsePower	97.00	131.00
tblOffRoadEquipment	HorsePower	97.00	268.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00

tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	531.44
tblSolidWaste	SolidWasteGenerationRate	105.34	86.94
tblTripsAndVMT	HaulingTripLength	20.00	39.00
tblTripsAndVMT	HaulingTripLength	20.00	39.00
tblTripsAndVMT	HaulingTripLength	20.00	39.00
tblTripsAndVMT	HaulingTripNumber	239.00	346.00
tblTripsAndVMT	HaulingTripNumber	128.00	186.00
tblTripsAndVMT	HaulingTripNumber	712.00	1,139.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	60.00	6.00
tblTripsAndVMT	VendorTripNumber	60.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	15.00
tblTripsAndVMT	WorkerTripNumber	254.00	75.00

tblTripsAndVMT	WorkerTripNumber	254.00	100.00
tblTripsAndVMT	WorkerTripNumber	5.00	30.00
tblTripsAndVMT	WorkerTripNumber	51.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	8.00	5.00
tblTripsAndVMT	WorkerTripNumber	8.00	5.00
tblTripsAndVMT	WorkerTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	8.00	5.00
tblTripsAndVMT	WorkerTripNumber	8.00	5.00
tblWater	IndoorWaterUseRate	14,920,271.87	12,314,110.84
tblWater	OutdoorWaterUseRate	9,406,258.35	7,763,243.79
tblWoodstoves	NumberCatalytic	11.45	9.45
tblWoodstoves	NumberNoncatalytic	11.45	9.45

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	2.2571	50.8270	22.7717	0.1862	5.4950	0.5342	5.7278	1.1228	0.4915	1.5156	0.0000	20,426.6372	20,426.6372	2.6221	0.0000	20,492.1895
2023	0.9375	6.7787	9.0003	0.0233	1.1433	0.2779	1.4212	0.3038	0.2557	0.5595	0.0000	2,291.1733	2,291.1733	0.4187	0.0000	2,301.6405
2024	36.9289	13.5067	19.8761	0.0428	1.6288	0.5706	2.0064	0.4334	0.5250	0.8805	0.0000	4,226.2204	4,226.2204	0.9500	0.0000	4,249.9692
Maximum	**36.9289**	**50.8270**	**22.7717**	**0.1862**	**5.4950**	**0.5706**	**5.7278**	**1.1228**	**0.5250**	**1.5156**	**0.0000**	**20,426.6372**	**20,426.6372**	**2.6221**	**0.0000**	**20,492.1895**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	2.2571	50.8270	22.7717	0.1862	3.8144	0.5342	4.2353	1.0488	0.4915	1.4416	0.0000	20,426.6372	20,426.6372	2.6221	0.0000	20,492.1895
2023	0.9375	6.7787	9.0003	0.0233	1.0542	0.2779	1.3321	0.2819	0.2557	0.5376	0.0000	2,291.1733	2,291.1733	0.4187	0.0000	2,301.6405
2024	36.9289	13.5067	19.8761	0.0428	1.5022	0.5706	1.8798	0.4023	0.5250	0.8553	0.0000	4,226.2204	4,226.2204	0.9500	0.0000	4,249.9692
Maximum	**36.9289**	**50.8270**	**22.7717**	**0.1862**	**3.8144**	**0.5706**	**4.2353**	**1.0488**	**0.5250**	**1.4416**	**0.0000**	**20,426.6372**	**20,426.6372**	**2.6221**	**0.0000**	**20,492.1895**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**22.94**	**0.00**	**18.66**	**6.82**	**0.00**	**4.10**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building Demolition	Demolition	6/1/2022	7/1/2022	5	23	
2	Building Demolition Haul	Demolition	7/15/2022	8/1/2022	5	12	
3	Asphalt Demolition	Demolition	8/1/2022	8/15/2022	5	11	
4	Asphalt Demolition Debris Haul	Demolition	8/15/2022	8/25/2022	5	9	
5	Site Preparation	Site Preparation	9/1/2022	9/15/2022	5	11	
6	Rough Grading	Grading	9/15/2022	9/23/2022	5	7	
7	Rough Grading Soil Haul	Grading	9/25/2022	10/7/2022	5	10	

8	Utility Trenching	Trenching	10/1/2022	10/14/2022	5	10	
9	Fine Grading	Grading	10/17/2022	10/21/2022	5	5	
10	Parking Structure Construction	Building Construction	11/1/2022	6/30/2023	5	174	
11	Residential Construction	Building Construction	7/1/2023	4/1/2024	5	196	
12	Paving	Paving	3/1/2024	3/15/2024	5	11	
13	Finishing/Landscaping	Trenching	4/1/2024	6/28/2024	5	65	
14	Architectural Coating	Architectural Coating	4/1/2024	6/28/2024	5	65	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.71

Residential Indoor: 489,479; Residential Outdoor: 97,896; Non-Residential Indoor: 100,323; Non-Residential Outdoor: 93,723; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Building Demolition	Excavators	1	8.00	424	0.38
Building Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Building Demolition	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Building Demolition Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Building Demolition Haul	Rubber Tired Dozers	0	8.00	247	0.40
Building Demolition Haul	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Asphalt Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Asphalt Demolition	Excavators	1	8.00	424	0.38
Asphalt Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Asphalt Demolition	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Asphalt Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Asphalt Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Asphalt Demolition Debris Haul	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Site Preparation	Excavators	1	8.00	424	0.38
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Scrapers	0	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	93	0.37
Rough Grading	Graders	0	8.00	187	0.41
Rough Grading	Rollers	1	8.00	142	0.38
Rough Grading	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Rough Grading	Tractors/Loaders/Backhoes	1	8.00	93	0.37
Rough Grading Soil Haul	Graders	0	8.00	187	0.41
Rough Grading Soil Haul	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading Soil Haul	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Utility Trenching	Excavators	1	8.00	424	0.38
Utility Trenching	Tractors/Loaders/Backhoes	1	8.00	131	0.37
Utility Trenching	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Fine Grading	Graders	0	8.00	187	0.41
Fine Grading	Rollers	1	8.00	142	0.38
Fine Grading	Rubber Tired Dozers	0	8.00	247	0.40
Fine Grading	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Fine Grading	Tractors/Loaders/Backhoes	1	8.00	93	0.37
Parking Structure Construction	Aerial Lifts	1	8.00	63	0.31
Parking Structure Construction	Cranes	1	8.00	231	0.29
Parking Structure Construction	Forklifts	1	8.00	55	0.20
Parking Structure Construction	Generator Sets	0	8.00	84	0.74
Parking Structure Construction	Tractors/Loaders/Backhoes	1	8.00	131	0.37
Parking Structure Construction	Welders	0	8.00	46	0.45
Residential Construction	Aerial Lifts	1	8.00	63	0.31
Residential Construction	Cranes	1	8.00	231	0.29

Residential Construction	Forklifts	1	8.00	55	0.20
Residential Construction	Generator Sets	0	8.00	84	0.74
Residential Construction	Tractors/Loaders/Backhoes	1	8.00	131	0.37
Residential Construction	Welders	0	8.00	46	0.45
Paving	Cement and Mortar Mixers	0	8.00	9	0.56
Paving	Pavers	0	8.00	130	0.42
Paving	Paving Equipment	1	8.00	173	0.36
Paving	Rollers	1	8.00	142	0.38
Paving	Rollers	1	8.00	100	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	93	0.37
Finishing/Landscaping	Tractors/Loaders/Backhoes	1	8.00	93	0.37
Finishing/Landscaping	Tractors/Loaders/Backhoes	1	8.00	131	0.37
Architectural Coating	Air Compressors	0	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Demolition	2	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Demolition Haul	0	5.00	10.00	346.00	14.70	6.90	39.00	LD_Mix	HDT_Mix	HHDT
Asphalt Demolition	2	5.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Asphalt Demolition Debris Haul	0	5.00	12.00	186.00	14.70	6.90	39.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	5.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading	3	5.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Haul	0	5.00	10.00	1,139.00	14.70	6.90	39.00	LD_Mix	HDT_Mix	HHDT
Utility Trenching	3	5.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Fine Grading	3	5.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Parking Structure Construction	4	75.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Residential Construction	4	100.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	4	10.00	12.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Finishing/Landscaping	2	30.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	10.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Building Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6439	5.4681	5.2548	0.0223		0.1918	0.1918		0.1765	0.1765		2,155.4368	2,155.4368	0.6971		2,172.8646
Total	**0.6439**	**5.4681**	**5.2548**	**0.0223**		**0.1918**	**0.1918**		**0.1765**	**0.1765**		**2,155.4368**	**2,155.4368**	**0.6971**		**2,172.8646**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0100	0.3550	0.0983	9.8000e-004	0.0256	6.8000e-004	0.0262	7.3500e-003	6.5000e-004	8.0000e-003		106.4610	106.4610	8.1700e-003		106.6652
Worker	0.0512	0.0297	0.4252	1.5200e-003	0.1677	1.0600e-003	0.1687	0.0445	9.8000e-004	0.0455		151.9802	151.9802	3.0700e-003		152.0569
Total	**0.0612**	**0.3847**	**0.5235**	**2.5000e-003**	**0.1932**	**1.7400e-003**	**0.1950**	**0.0518**	**1.6300e-003**	**0.0535**		**258.4412**	**258.4412**	**0.0112**		**258.7221**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6439	5.4681	5.2548	0.0223		0.1918	0.1918		0.1765	0.1765	0.0000	2,155.4368	2,155.4368	0.6971		2,172.8646
Total	**0.6439**	**5.4681**	**5.2548**	**0.0223**		**0.1918**	**0.1918**		**0.1765**	**0.1765**	**0.0000**	**2,155.4368**	**2,155.4368**	**0.6971**		**2,172.8646**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0100	0.3550	0.0983	9.8000e-004	0.0239	6.8000e-004	0.0246	6.9500e-003	6.5000e-004	7.6000e-003		106.4610	106.4610	8.1700e-003		106.6652
Worker	0.0512	0.0297	0.4252	1.5200e-003	0.1546	1.0600e-003	0.1556	0.0413	9.8000e-004	0.0422		151.9802	151.9802	3.0700e-003		152.0569
Total	**0.0612**	**0.3847**	**0.5235**	**2.5000e-003**	**0.1785**	**1.7400e-003**	**0.1802**	**0.0482**	**1.6300e-003**	**0.0498**		**258.4412**	**258.4412**	**0.0112**		**258.7221**

3.3 Building Demolition Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.3155	0.0000	4.3155	0.6534	0.0000	0.6534			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.3155**	**0.0000**	**4.3155**	**0.6534**	**0.0000**	**0.6534**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3476	10.7836	3.6091	0.0393	0.9783	0.0379	1.0162	0.2677	0.0363	0.3040		4,404.0729	4,404.0729	0.4468		4,415.2430
Vendor	0.0251	0.8876	0.2457	2.4400e-003	0.0639	1.7000e-003	0.0656	0.0184	1.6200e-003	0.0200		266.1526	266.1526	0.0204		266.6630
Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		50.6601	50.6601	1.0200e-003		50.6856
Total	**0.3897**	**11.6810**	**3.9965**	**0.0423**	**1.0981**	**0.0400**	**1.1380**	**0.3010**	**0.0382**	**0.3392**		**4,720.8856**	**4,720.8856**	**0.4683**		**4,732.5917**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.8449	0.0000	1.8449	0.2793	0.0000	0.2793			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.8449**	**0.0000**	**1.8449**	**0.2793**	**0.0000**	**0.2793**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3476	10.7836	3.6091	0.0393	0.9114	0.0379	0.9493	0.2513	0.0363	0.2876		4,404.0729	4,404.0729	0.4468		4,415.2430
Vendor	0.0251	0.8876	0.2457	2.4400e-003	0.0598	1.7000e-003	0.0615	0.0174	1.6200e-003	0.0190		266.1526	266.1526	0.0204		266.6630
Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0515	3.5000e-004	0.0519	0.0138	3.3000e-004	0.0141		50.6601	50.6601	1.0200e-003		50.6856
Total	**0.3897**	**11.6810**	**3.9965**	**0.0423**	**1.0227**	**0.0400**	**1.0626**	**0.2825**	**0.0382**	**0.3207**		**4,720.8856**	**4,720.8856**	**0.4683**		**4,732.5917**

3.4 Asphalt Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	0.6439	5.4681	5.2548	0.0223		0.1918	0.1918		0.1765	0.1765		2,155.4368	2,155.4368	0.6971		2,172.8646
Total	**0.6439**	**5.4681**	**5.2548**	**0.0223**		**0.1918**	**0.1918**		**0.1765**	**0.1765**		**2,155.4368**	**2,155.4368**	**0.6971**		**2,172.8646**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0100	0.3550	0.0983	9.8000e-004	0.0256	6.8000e-004	0.0262	7.3500e-003	6.5000e-004	8.0000e-003		106.4610	106.4610	8.1700e-003		106.6652
Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		50.6601	50.6601	1.0200e-003		50.6856
Total	**0.0271**	**0.3649**	**0.2400**	**1.4900e-003**	**0.0815**	**1.0300e-003**	**0.0825**	**0.0222**	**9.8000e-004**	**0.0232**		**157.1211**	**157.1211**	**9.1900e-003**		**157.3509**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6439	5.4681	5.2548	0.0223		0.1918	0.1918		0.1765	0.1765	0.0000	2,155.4368	2,155.4368	0.6971		2,172.8646

Total	**0.6439**	**5.4681**	**5.2548**	**0.0223**		**0.1918**	**0.1918**		**0.1765**	**0.1765**	**0.0000**	**2,155.4368**	**2,155.4368**	**0.6971**		**2,172.8646**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0100	0.3550	0.0983	9.8000e-004	0.0239	6.8000e-004	0.0246	6.9500e-003	6.5000e-004	7.6000e-003		106.4610	106.4610	8.1700e-003		106.6652
Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0515	3.5000e-004	0.0519	0.0138	3.3000e-004	0.0141		50.6601	50.6601	1.0200e-003		50.6856
Total	**0.0271**	**0.3649**	**0.2400**	**1.4900e-003**	**0.0754**	**1.0300e-003**	**0.0765**	**0.0207**	**9.8000e-004**	**0.0217**		**157.1211**	**157.1211**	**9.1900e-003**		**157.3509**

3.5 Asphalt Demolition Debris Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0862	0.0000	3.0862	0.4673	0.0000	0.4673			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.0862**	**0.0000**	**3.0862**	**0.4673**	**0.0000**	**0.4673**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2491	7.7293	2.5869	0.0282	0.7012	0.0272	0.7284	0.1919	0.0260	0.2179		3,156.6765	3,156.6765	0.3203		3,164.6829
Vendor	0.0301	1.0651	0.2948	2.9300e-003	0.0767	2.0300e-003	0.0787	0.0221	1.9500e-003	0.0240		319.3831	319.3831	0.0245		319.9956
Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		50.6601	50.6601	1.0200e-003		50.6856
Total	**0.2963**	**8.8042**	**3.0234**	**0.0316**	**0.8338**	**0.0296**	**0.8633**	**0.2288**	**0.0283**	**0.2571**		**3,526.7197**	**3,526.7197**	**0.3458**		**3,535.3641**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.3194	0.0000	1.3194	0.1998	0.0000	0.1998			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.3194**	**0.0000**	**1.3194**	**0.1998**	**0.0000**	**0.1998**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2491	7.7293	2.5869	0.0282	0.6532	0.0272	0.6804	0.1801	0.0260	0.2061		3,156.6765	3,156.6765	0.3203		3,164.6829
Vendor	0.0301	1.0651	0.2948	2.9300e-003	0.0717	2.0300e-003	0.0738	0.0209	1.9500e-003	0.0228		319.3831	319.3831	0.0245		319.9956
Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0515	3.5000e-004	0.0519	0.0138	3.3000e-004	0.0141		50.6601	50.6601	1.0200e-003		50.6856
Total	**0.2963**	**8.8042**	**3.0234**	**0.0316**	**0.7765**	**0.0296**	**0.8061**	**0.2147**	**0.0283**	**0.2430**		**3,526.7197**	**3,526.7197**	**0.3458**		**3,535.3641**

3.6 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.8018	7.0746	7.4004	0.0253		0.2782	0.2782		0.2560	0.2560		2,444.2535	2,444.2535	0.7905		2,464.0165
Total	**0.8018**	**7.0746**	**7.4004**	**0.0253**	**0.0000**	**0.2782**	**0.2782**	**0.0000**	**0.2560**	**0.2560**		**2,444.2535**	**2,444.2535**	**0.7905**		**2,464.0165**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0100	0.3550	0.0983	9.8000e-004	0.0256	6.8000e-004	0.0262	7.3500e-003	6.5000e-004	8.0000e-003		106.4610	106.4610	8.1700e-003		106.6652
Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		50.6601	50.6601	1.0200e-003		50.6856
Total	**0.0271**	**0.3649**	**0.2400**	**1.4900e-003**	**0.0815**	**1.0300e-003**	**0.0825**	**0.0222**	**9.8000e-004**	**0.0232**		**157.1211**	**157.1211**	**9.1900e-003**		**157.3509**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.8018	7.0746	7.4004	0.0253		0.2782	0.2782		0.2560	0.2560	0.0000	2,444.2535	2,444.2535	0.7905		2,464.0165
Total	**0.8018**	**7.0746**	**7.4004**	**0.0253**	**0.0000**	**0.2782**	**0.2782**	**0.0000**	**0.2560**	**0.2560**	**0.0000**	**2,444.2535**	**2,444.2535**	**0.7905**		**2,464.0165**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0100	0.3550	0.0983	9.8000e-004	0.0239	6.8000e-004	0.0246	6.9500e-003	6.5000e-004	7.6000e-003		106.4610	106.4610	8.1700e-003		106.6652
Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0515	3.5000e-004	0.0519	0.0138	3.3000e-004	0.0141		50.6601	50.6601	1.0200e-003		50.6856

Total	**0.0271**	**0.3649**	**0.2400**	**1.4900e-003**	**0.0754**	**1.0300e-003**	**0.0765**	**0.0207**	**9.8000e-004**	**0.0217**		**157.1211**	**157.1211**	**9.1900e-003**		**157.3509**

3.7 Rough Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.5946	5.7509	7.1573	0.0161		0.2539	0.2539		0.2336	0.2336		1,558.6394	1,558.6394	0.5041		1,571.2418
Total	**0.5946**	**5.7509**	**7.1573**	**0.0161**	**0.0000**	**0.2539**	**0.2539**	**0.0000**	**0.2336**	**0.2336**		**1,558.6394**	**1,558.6394**	**0.5041**		**1,571.2418**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0100	0.3550	0.0983	9.8000e-004	0.0256	6.8000e-004	0.0262	7.3500e-003	6.5000e-004	8.0000e-003		106.4610	106.4610	8.1700e-003		106.6652
Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		50.6601	50.6601	1.0200e-003		50.6856
Total	**0.0271**	**0.3649**	**0.2400**	**1.4900e-003**	**0.0815**	**1.0300e-003**	**0.0825**	**0.0222**	**9.8000e-004**	**0.0232**		**157.1211**	**157.1211**	**9.1900e-003**		**157.3509**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.5946	5.7509	7.1573	0.0161		0.2539	0.2539		0.2336	0.2336	0.0000	1,558.6394	1,558.6394	0.5041		1,571.2418
Total	**0.5946**	**5.7509**	**7.1573**	**0.0161**	**0.0000**	**0.2539**	**0.2539**	**0.0000**	**0.2336**	**0.2336**	**0.0000**	**1,558.6394**	**1,558.6394**	**0.5041**		**1,571.2418**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0100	0.3550	0.0983	9.8000e-004	0.0239	6.8000e-004	0.0246	6.9500e-003	6.5000e-004	7.6000e-003		106.4610	106.4610	8.1700e-003		106.6652
Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0515	3.5000e-004	0.0519	0.0138	3.3000e-004	0.0141		50.6601	50.6601	1.0200e-003		50.6856
Total	**0.0271**	**0.3649**	**0.2400**	**1.4900e-003**	**0.0754**	**1.0300e-003**	**0.0765**	**0.0207**	**9.8000e-004**	**0.0217**		**157.1211**	**157.1211**	**9.1900e-003**		**157.3509**

3.8 Rough Grading Soil Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					0.0644	0.0000	0.0644	9.7500e-003	0.0000	9.7500e-003			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0644**	**0.0000**	**0.0644**	**9.7500e-003**	**0.0000**	**9.7500e-003**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.3731	42.5982	14.2570	0.1554	3.8645	0.1498	4.0142	1.0577	0.1433	1.2009		17,397.3608	17,397.3608	1.7650		17,441.4860
Vendor	0.0251	0.8876	0.2457	2.4400e-003	0.0639	1.7000e-003	0.0656	0.0184	1.6200e-003	0.0200		266.1526	266.1526	0.0204		266.6630
Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		50.6601	50.6601	1.0200e-003		50.6856
Total	**1.4152**	**43.4957**	**14.6444**	**0.1583**	**3.9842**	**0.1518**	**4.1360**	**1.0909**	**0.1452**	**1.2361**		**17,714.1734**	**17,714.1734**	**1.7865**		**17,758.8347**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0275	0.0000	0.0275	4.1700e-003	0.0000	4.1700e-003			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0275**	**0.0000**	**0.0275**	**4.1700e-003**	**0.0000**	**4.1700e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.3731	42.5982	14.2570	0.1554	3.6002	0.1498	3.7499	0.9928	0.1433	1.1361		17,397.3608	17,397.3608	1.7650		17,441.4860
Vendor	0.0251	0.8876	0.2457	2.4400e-003	0.0598	1.7000e-003	0.0615	0.0174	1.6200e-003	0.0190		266.1526	266.1526	0.0204		266.6630
Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0515	3.5000e-004	0.0519	0.0138	3.3000e-004	0.0141		50.6601	50.6601	1.0200e-003		50.6856
Total	**1.4152**	**43.4957**	**14.6444**	**0.1583**	**3.7115**	**0.1518**	**3.8633**	**1.0239**	**0.1452**	**1.1691**		**17,714.1734**	**17,714.1734**	**1.7865**		**17,758.8347**

3.9 Utility Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8148	6.9664	7.8873	0.0264		0.2681	0.2681		0.2466	0.2466		2,555.3427	2,555.3427	0.8265		2,576.0040
Total	**0.8148**	**6.9664**	**7.8873**	**0.0264**		**0.2681**	**0.2681**		**0.2466**	**0.2466**		**2,555.3427**	**2,555.3427**	**0.8265**		**2,576.0040**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0100	0.3550	0.0983	9.8000e-004	0.0256	6.8000e-004	0.0262	7.3500e-003	6.5000e-004	8.0000e-003		106.4610	106.4610	8.1700e-003		106.6652
Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		50.6601	50.6601	1.0200e-003		50.6856
Total	**0.0271**	**0.3649**	**0.2400**	**1.4900e-003**	**0.0815**	**1.0300e-003**	**0.0825**	**0.0222**	**9.8000e-004**	**0.0232**		**157.1211**	**157.1211**	**9.1900e-003**		**157.3509**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8148	6.9664	7.8873	0.0264		0.2681	0.2681		0.2466	0.2466	0.0000	2,555.3427	2,555.3427	0.8265		2,576.0040
Total	**0.8148**	**6.9664**	**7.8873**	**0.0264**		**0.2681**	**0.2681**		**0.2466**	**0.2466**	**0.0000**	**2,555.3427**	**2,555.3427**	**0.8265**		**2,576.0040**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0100	0.3550	0.0983	9.8000e-004	0.0239	6.8000e-004	0.0246	6.9500e-003	6.5000e-004	7.6000e-003		106.4610	106.4610	8.1700e-003		106.6652
Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0515	3.5000e-004	0.0519	0.0138	3.3000e-004	0.0141		50.6601	50.6601	1.0200e-003		50.6856
Total	**0.0271**	**0.3649**	**0.2400**	**1.4900e-003**	**0.0754**	**1.0300e-003**	**0.0765**	**0.0207**	**9.8000e-004**	**0.0217**		**157.1211**	**157.1211**	**9.1900e-003**		**157.3509**

3.10 Fine Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.5946	5.7509	7.1573	0.0161		0.2539	0.2539		0.2336	0.2336		1,558.6394	1,558.6394	0.5041		1,571.2418
Total	**0.5946**	**5.7509**	**7.1573**	**0.0161**	**0.0000**	**0.2539**	**0.2539**	**0.0000**	**0.2336**	**0.2336**		**1,558.6394**	**1,558.6394**	**0.5041**		**1,571.2418**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0100	0.3550	0.0983	9.8000e-004	0.0256	6.8000e-004	0.0262	7.3500e-003	6.5000e-004	8.0000e-003		106.4610	106.4610	8.1700e-003		106.6652

Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		50.6601	50.6601	1.0200e-003		50.6856
Total	**0.0271**	**0.3649**	**0.2400**	**1.4900e-003**	**0.0815**	**1.0300e-003**	**0.0825**	**0.0222**	**9.8000e-004**	**0.0232**		**157.1211**	**157.1211**	**9.1900e-003**		**157.3509**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.5946	5.7509	7.1573	0.0161		0.2539	0.2539		0.2336	0.2336	0.0000	1,558.6394	1,558.6394	0.5041		1,571.2418
Total	**0.5946**	**5.7509**	**7.1573**	**0.0161**	**0.0000**	**0.2539**	**0.2539**	**0.0000**	**0.2336**	**0.2336**	**0.0000**	**1,558.6394**	**1,558.6394**	**0.5041**		**1,571.2418**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0100	0.3550	0.0983	9.8000e-004	0.0239	6.8000e-004	0.0246	6.9500e-003	6.5000e-004	7.6000e-003		106.4610	106.4610	8.1700e-003		106.6652
Worker	0.0171	9.8900e-003	0.1417	5.1000e-004	0.0515	3.5000e-004	0.0519	0.0138	3.3000e-004	0.0141		50.6601	50.6601	1.0200e-003		50.6856
Total	**0.0271**	**0.3649**	**0.2400**	**1.4900e-003**	**0.0754**	**1.0300e-003**	**0.0765**	**0.0207**	**9.8000e-004**	**0.0217**		**157.1211**	**157.1211**	**9.1900e-003**		**157.3509**

3.11 Parking Structure Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6502	6.8948	6.3318	0.0125		0.3035	0.3035		0.2793	0.2793		1,212.8359	1,212.8359	0.3923		1,222.6423
Total	**0.6502**	**6.8948**	**6.3318**	**0.0125**		**0.3035**	**0.3035**		**0.2793**	**0.2793**		**1,212.8359**	**1,212.8359**	**0.3923**		**1,222.6423**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0151	0.5325	0.1474	1.4600e-003	0.0383	1.0200e-003	0.0394	0.0110	9.7000e-004	0.0120		159.6916	159.6916	0.0123		159.9978
Worker	0.2558	0.1484	2.1261	7.6200e-003	0.8383	5.3200e-003	0.8436	0.2223	4.9000e-003	0.2272		759.9009	759.9009	0.0154		760.2846
Total	**0.2709**	**0.6809**	**2.2735**	**9.0800e-003**	**0.8767**	**6.3400e-003**	**0.8830**	**0.2334**	**5.8700e-003**	**0.2392**		**919.5925**	**919.5925**	**0.0276**		**920.2824**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6502	6.8948	6.3318	0.0125		0.3035	0.3035		0.2793	0.2793	0.0000	1,212.8359	1,212.8359	0.3923		1,222.6423
Total	**0.6502**	**6.8948**	**6.3318**	**0.0125**		**0.3035**	**0.3035**		**0.2793**	**0.2793**	**0.0000**	**1,212.8359**	**1,212.8359**	**0.3923**		**1,222.6423**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0151	0.5325	0.1474	1.4600e-003	0.0359	1.0200e-003	0.0369	0.0104	9.7000e-004	0.0114		159.6916	159.6916	0.0123		159.9978
Worker	0.2558	0.1484	2.1261	7.6200e-003	0.7727	5.3200e-003	0.7781	0.2062	4.9000e-003	0.2111		759.9009	759.9009	0.0154		760.2846
Total	**0.2709**	**0.6809**	**2.2735**	**9.0800e-003**	**0.8086**	**6.3400e-003**	**0.8149**	**0.2167**	**5.8700e-003**	**0.2225**		**919.5925**	**919.5925**	**0.0276**		**920.2824**

3.11 Parking Structure Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	0.6069	6.2420	6.2649	0.0125		0.2706	0.2706		0.2490	0.2490		1,213.6972	1,213.6972	0.3925		1,223.5106
Total	**0.6069**	**6.2420**	**6.2649**	**0.0125**		**0.2706**	**0.2706**		**0.2490**	**0.2490**		**1,213.6972**	**1,213.6972**	**0.3925**		**1,223.5106**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0115	0.4019	0.1376	1.4200e-003	0.0383	4.8000e-004	0.0388	0.0110	4.6000e-004	0.0115		154.8399	154.8399	0.0114		155.1246
Worker	0.2423	0.1347	1.9827	7.3200e-003	0.8383	5.2300e-003	0.8436	0.2223	4.8100e-003	0.2271		730.6871	730.6871	0.0139		731.0351
Total	**0.2537**	**0.5367**	**2.1203**	**8.7400e-003**	**0.8767**	**5.7100e-003**	**0.8824**	**0.2334**	**5.2700e-003**	**0.2386**		**885.5270**	**885.5270**	**0.0253**		**886.1598**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6069	6.2420	6.2649	0.0125		0.2706	0.2706		0.2490	0.2490	0.0000	1,213.6972	1,213.6972	0.3925		1,223.5106
Total	**0.6069**	**6.2420**	**6.2649**	**0.0125**		**0.2706**	**0.2706**		**0.2490**	**0.2490**	**0.0000**	**1,213.6972**	**1,213.6972**	**0.3925**		**1,223.5106**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0115	0.4019	0.1376	1.4200e-003	0.0359	4.8000e-004	0.0364	0.0104	4.6000e-004	0.0109		154.8399	154.8399	0.0114		155.1246
Worker	0.2423	0.1347	1.9827	7.3200e-003	0.7727	5.2300e-003	0.7780	0.2062	4.8100e-003	0.2110		730.6871	730.6871	0.0139		731.0351
Total	**0.2537**	**0.5367**	**2.1203**	**8.7400e-003**	**0.8086**	**5.7100e-003**	**0.8143**	**0.2167**	**5.2700e-003**	**0.2219**		**885.5270**	**885.5270**	**0.0253**		**886.1598**

3.12 Residential Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6069	6.2420	6.2649	0.0125		0.2706	0.2706		0.2490	0.2490		1,213.6972	1,213.6972	0.3925		1,223.5106
Total	**0.6069**	**6.2420**	**6.2649**	**0.0125**		**0.2706**	**0.2706**		**0.2490**	**0.2490**		**1,213.6972**	**1,213.6972**	**0.3925**		**1,223.5106**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.6400e-003	0.2680	0.0917	9.4000e-004	0.0256	3.2000e-004	0.0259	7.3500e-003	3.1000e-004	7.6600e-003		103.2266	103.2266	7.5900e-003		103.4164
Worker	0.3230	0.1796	2.6437	9.7700e-003	1.1178	6.9700e-003	1.1247	0.2964	6.4200e-003	0.3029		974.2495	974.2495	0.0186		974.7135
Total	**0.3307**	**0.4476**	**2.7354**	**0.0107**	**1.1433**	**7.2900e-003**	**1.1506**	**0.3038**	**6.7300e-003**	**0.3105**		**1,077.4761**	**1,077.4761**	**0.0262**		**1,078.1300**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6069	6.2420	6.2649	0.0125		0.2706	0.2706		0.2490	0.2490	0.0000	1,213.6972	1,213.6972	0.3925		1,223.5106
Total	**0.6069**	**6.2420**	**6.2649**	**0.0125**		**0.2706**	**0.2706**		**0.2490**	**0.2490**	**0.0000**	**1,213.6972**	**1,213.6972**	**0.3925**		**1,223.5106**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.6400e-003	0.2680	0.0917	9.4000e-004	0.0239	3.2000e-004	0.0242	6.9500e-003	3.1000e-004	7.2600e-003		103.2266	103.2266	7.5900e-003		103.4164
Worker	0.3230	0.1796	2.6437	9.7700e-003	1.0303	6.9700e-003	1.0373	0.2750	6.4200e-003	0.2814		974.2495	974.2495	0.0186		974.7135
Total	**0.3307**	**0.4476**	**2.7354**	**0.0107**	**1.0542**	**7.2900e-003**	**1.0615**	**0.2819**	**6.7300e-003**	**0.2887**		**1,077.4761**	**1,077.4761**	**0.0262**		**1,078.1300**

3.12 Residential Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Off-Road	0.5750	5.7532	6.2124	0.0125		0.2450	0.2450		0.2254	0.2254		1,214.1828	1,214.1828	0.3927		1,224.0001
Total	**0.5750**	**5.7532**	**6.2124**	**0.0125**		**0.2450**	**0.2450**		**0.2254**	**0.2254**		**1,214.1828**	**1,214.1828**	**0.3927**		**1,224.0001**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.3800e-003	0.2646	0.0898	9.3000e-004	0.0256	3.2000e-004	0.0259	7.3500e-003	3.0000e-004	7.6600e-003		102.4066	102.4066	7.4800e-003		102.5936

Worker	0.3070	0.1636	2.4609	9.3800e-003	1.1178	6.8500e-003	1.1246	0.2964	6.3100e-003	0.3027		935.6430	935.6430	0.0169		936.0644
Total	**0.3144**	**0.4282**	**2.5507**	**0.0103**	**1.1433**	**7.1700e-003**	**1.1505**	**0.3038**	**6.6100e-003**	**0.3104**		**1,038.0497**	**1,038.0497**	**0.0243**		**1,038.6580**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5750	5.7532	6.2124	0.0125		0.2450	0.2450		0.2254	0.2254	0.0000	1,214.1828	1,214.1828	0.3927		1,224.0001
Total	**0.5750**	**5.7532**	**6.2124**	**0.0125**		**0.2450**	**0.2450**		**0.2254**	**0.2254**	**0.0000**	**1,214.1828**	**1,214.1828**	**0.3927**		**1,224.0001**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.3800e-003	0.2646	0.0898	9.3000e-004	0.0239	3.2000e-004	0.0242	6.9500e-003	3.0000e-004	7.2500e-003		102.4066	102.4066	7.4800e-003		102.5936
Worker	0.3070	0.1636	2.4609	9.3800e-003	1.0303	6.8500e-003	1.0372	0.2750	6.3100e-003	0.2813		935.6430	935.6430	0.0169		936.0644
Total	**0.3144**	**0.4282**	**2.5507**	**0.0103**	**1.0542**	**7.1700e-003**	**1.0614**	**0.2819**	**6.6100e-003**	**0.2885**		**1,038.0497**	**1,038.0497**	**0.0243**		**1,038.6580**

3.13 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6706	6.5151	10.5975	0.0163		0.3168	0.3168		0.2915	0.2915		1,573.2038	1,573.2038	0.5088		1,585.9239
Paving	0.0762					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.7468**	**6.5151**	**10.5975**	**0.0163**		**0.3168**	**0.3168**		**0.2915**	**0.2915**		**1,573.2038**	**1,573.2038**	**0.5088**		**1,585.9239**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0221	0.7938	0.2694	2.8000e-003	0.0767	9.5000e-004	0.0776	0.0221	9.1000e-004	0.0230		307.2199	307.2199	0.0224		307.7807
Worker	0.0307	0.0164	0.2461	9.4000e-004	0.1118	6.9000e-004	0.1125	0.0296	6.3000e-004	0.0303		93.5643	93.5643	1.6900e-003		93.6064
Total	**0.0528**	**0.8102**	**0.5155**	**3.7400e-003**	**0.1884**	**1.6400e-003**	**0.1901**	**0.0517**	**1.5400e-003**	**0.0532**		**400.7842**	**400.7842**	**0.0241**		**401.3872**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6706	6.5151	10.5975	0.0163		0.3168	0.3168		0.2915	0.2915	0.0000	1,573.2038	1,573.2038	0.5088		1,585.9239
Paving	0.0762					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.7468**	**6.5151**	**10.5975**	**0.0163**		**0.3168**	**0.3168**		**0.2915**	**0.2915**	**0.0000**	**1,573.2038**	**1,573.2038**	**0.5088**		**1,585.9239**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0221	0.7938	0.2694	2.8000e-003	0.0717	9.5000e-004	0.0727	0.0209	9.1000e-004	0.0218		307.2199	307.2199	0.0224		307.7807
Worker	0.0307	0.0164	0.2461	9.4000e-004	0.1030	6.9000e-004	0.1037	0.0275	6.3000e-004	0.0281		93.5643	93.5643	1.6900e-003		93.6064
Total	**0.0528**	**0.8102**	**0.5155**	**3.7400e-003**	**0.1748**	**1.6400e-003**	**0.1764**	**0.0484**	**1.5400e-003**	**0.0499**		**400.7842**	**400.7842**	**0.0241**		**401.3872**

3.14 Finishing/Landscaping - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	0.2884	2.5652	4.7842	7.1300e-003		0.1223	0.1223		0.1125	0.1125		690.5986	690.5986	0.2234		696.1825
Total	**0.2884**	**2.5652**	**4.7842**	**7.1300e-003**		**0.1223**	**0.1223**		**0.1125**	**0.1125**		**690.5986**	**690.5986**	**0.2234**		**696.1825**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.3800e-003	0.2646	0.0898	9.3000e-004	0.0256	3.2000e-004	0.0259	7.3500e-003	3.0000e-004	7.6600e-003		102.4066	102.4066	7.4800e-003		102.5936
Worker	0.0921	0.0491	0.7383	2.8100e-003	0.3353	2.0600e-003	0.3374	0.0889	1.8900e-003	0.0908		280.6929	280.6929	5.0600e-003		280.8193
Total	**0.0995**	**0.3137**	**0.8281**	**3.7400e-003**	**0.3609**	**2.3800e-003**	**0.3633**	**0.0963**	**2.1900e-003**	**0.0985**		**383.0995**	**383.0995**	**0.0125**		**383.4129**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2884	2.5652	4.7842	7.1300e-003		0.1223	0.1223		0.1125	0.1125	0.0000	690.5986	690.5986	0.2234		696.1825
Total	**0.2884**	**2.5652**	**4.7842**	**7.1300e-003**		**0.1223**	**0.1223**		**0.1125**	**0.1125**	**0.0000**	**690.5986**	**690.5986**	**0.2234**		**696.1825**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.3800e-003	0.2646	0.0898	9.3000e-004	0.0239	3.2000e-004	0.0242	6.9500e-003	3.0000e-004	7.2500e-003		102.4066	102.4066	7.4800e-003		102.5936
Worker	0.0921	0.0491	0.7383	2.8100e-003	0.3091	2.0600e-003	0.3112	0.0825	1.8900e-003	0.0844		280.6929	280.6929	5.0600e-003		280.8193
Total	**0.0995**	**0.3137**	**0.8281**	**3.7400e-003**	**0.3330**	**2.3800e-003**	**0.3354**	**0.0894**	**2.1900e-003**	**0.0916**		**383.0995**	**383.0995**	**0.0125**		**383.4129**

3.15 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	35.6172					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**35.6172**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.6900e-003	0.1323	0.0449	4.7000e-004	0.0128	1.6000e-004	0.0129	3.6800e-003	1.5000e-004	3.8300e-003		51.2033	51.2033	3.7400e-003		51.2968
Worker	0.0307	0.0164	0.2461	9.4000e-004	0.1118	6.9000e-004	0.1125	0.0296	6.3000e-004	0.0303		93.5643	93.5643	1.6900e-003		93.6064
Total	**0.0344**	**0.1487**	**0.2910**	**1.4100e-003**	**0.1246**	**8.5000e-004**	**0.1254**	**0.0333**	**7.8000e-004**	**0.0341**		**144.7676**	**144.7676**	**5.4300e-003**		**144.9032**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	35.6172					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**35.6172**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.6900e-003	0.1323	0.0449	4.7000e-004	0.0120	1.6000e-004	0.0121	3.4800e-003	1.5000e-004	3.6300e-003		51.2033	51.2033	3.7400e-003		51.2968
Worker	0.0307	0.0164	0.2461	9.4000e-004	0.1030	6.9000e-004	0.1037	0.0275	6.3000e-004	0.0281		93.5643	93.5643	1.6900e-003		93.6064
Total	**0.0344**	**0.1487**	**0.2910**	**1.4100e-003**	**0.1150**	**8.5000e-004**	**0.1158**	**0.0310**	**7.8000e-004**	**0.0318**		**144.7676**	**144.7676**	**5.4300e-003**		**144.9032**

Brea Plaza Expansion Project, Construction

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	21.36	1000sqft	0.49	21,355.00	0
Enclosed Parking with Elevator	182.11	1000sqft	1.39	182,108.00	0
Other Asphalt Surfaces	13.77	1000sqft	0.32	13,774.00	0
Apartments Mid Rise	229.00	Dwelling Unit	0.00	241,718.00	541

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	531.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustainability Report

Land Use - based on info from applicant, apartments built on top of parking structure

Construction Phase - based on information provided by applicant

Off-road Equipment - no additional equipment required for Architectural Coating

Off-road Equipment - based on info from applicant

Off-road Equipment - no additional equipment required for Demolition Hauling

Off-road Equipment - based on info from applicant

Off-road Equipment - no additional equipment required for Demolition Hauling

Off-road Equipment - based on info from applicant

Off-road Equipment - no additional equipment required for Fine Grading Soil Hauling

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - no additional equipment required for Rough Grading Soil Hauling

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Trips and VMT - based on info provided by applicant. See assumptions file.

Demolition -

Grading -

Architectural Coating - based on info from applicant

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 and Rule 1186

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	10,678.00	93,723.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	32,033.00	100,323.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	163,160.00	97,896.00
tblAreaCoating	Area_Residential_Exterior	163160	150152
tblAreaCoating	Area_Residential_Interior	489479	450455
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	65.00
tblConstructionPhase	NumDays	220.00	174.00
tblConstructionPhase	NumDays	220.00	196.00

tblConstructionPhase	NumDays	20.00	23.00
tblConstructionPhase	NumDays	20.00	12.00
tblConstructionPhase	NumDays	20.00	11.00
tblConstructionPhase	NumDays	20.00	9.00
tblConstructionPhase	NumDays	6.00	7.00
tblConstructionPhase	NumDays	6.00	10.00
tblConstructionPhase	NumDays	6.00	5.00
tblConstructionPhase	NumDays	10.00	11.00
tblConstructionPhase	NumDays	3.00	11.00
tblFireplaces	NumberGas	194.65	160.65
tblFireplaces	NumberNoFireplace	22.90	18.90
tblFireplaces	NumberWood	11.45	9.45
tblGrading	MaterialExported	0.00	5,695.00
tblLandUse	LandUseSquareFeet	21,360.00	21,355.00
tblLandUse	LandUseSquareFeet	182,110.00	182,108.00
tblLandUse	LandUseSquareFeet	13,770.00	13,774.00
tblLandUse	LandUseSquareFeet	229,000.00	241,718.00
tblLandUse	LotAcreage	4.18	1.39
tblLandUse	LotAcreage	6.03	0.00
tblLandUse	Population	655.00	541.00
tblOffRoadEquipment	HorsePower	89.00	55.00
tblOffRoadEquipment	HorsePower	89.00	55.00
tblOffRoadEquipment	HorsePower	132.00	173.00
tblOffRoadEquipment	HorsePower	80.00	142.00
tblOffRoadEquipment	HorsePower	80.00	100.00
tblOffRoadEquipment	HorsePower	97.00	131.00
tblOffRoadEquipment	HorsePower	97.00	131.00
tblOffRoadEquipment	HorsePower	97.00	268.00
tblOffRoadEquipment	HorsePower	97.00	268.00

tblOffRoadEquipment	HorsePower	97.00	268.00
tblOffRoadEquipment	HorsePower	97.00	93.00
tblOffRoadEquipment	HorsePower	97.00	268.00
tblOffRoadEquipment	HorsePower	97.00	93.00
tblOffRoadEquipment	HorsePower	97.00	93.00
tblOffRoadEquipment	HorsePower	97.00	268.00
tblOffRoadEquipment	HorsePower	97.00	93.00
tblOffRoadEquipment	HorsePower	158.00	424.00
tblOffRoadEquipment	HorsePower	158.00	424.00
tblOffRoadEquipment	HorsePower	158.00	424.00
tblOffRoadEquipment	HorsePower	158.00	424.00
tblOffRoadEquipment	HorsePower	80.00	142.00
tblOffRoadEquipment	HorsePower	80.00	142.00
tblOffRoadEquipment	HorsePower	97.00	93.00
tblOffRoadEquipment	HorsePower	97.00	131.00
tblOffRoadEquipment	HorsePower	97.00	131.00
tblOffRoadEquipment	HorsePower	97.00	268.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00

tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	531.44
tblSolidWaste	SolidWasteGenerationRate	105.34	86.94
tblTripsAndVMT	HaulingTripLength	20.00	39.00
tblTripsAndVMT	HaulingTripLength	20.00	39.00
tblTripsAndVMT	HaulingTripLength	20.00	39.00
tblTripsAndVMT	HaulingTripNumber	239.00	346.00
tblTripsAndVMT	HaulingTripNumber	128.00	186.00
tblTripsAndVMT	HaulingTripNumber	712.00	1,139.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	60.00	6.00
tblTripsAndVMT	VendorTripNumber	60.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	15.00
tblTripsAndVMT	WorkerTripNumber	254.00	75.00

tblTripsAndVMT	WorkerTripNumber	254.00	100.00
tblTripsAndVMT	WorkerTripNumber	5.00	30.00
tblTripsAndVMT	WorkerTripNumber	51.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	8.00	5.00
tblTripsAndVMT	WorkerTripNumber	8.00	5.00
tblTripsAndVMT	WorkerTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	8.00	5.00
tblTripsAndVMT	WorkerTripNumber	8.00	5.00
tblWater	IndoorWaterUseRate	14,920,271.87	12,314,110.84
tblWater	OutdoorWaterUseRate	9,406,258.35	7,763,243.79
tblWoodstoves	NumberCatalytic	11.45	9.45
tblWoodstoves	NumberNoncatalytic	11.45	9.45

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	2.2824	51.7243	23.1158	0.1848	5.4950	0.5343	5.7282	1.1228	0.4916	1.5171	0.0000	20,267.5972	20,267.5972	2.6438	0.0000	20,333.6908
2023	0.9827	6.7897	8.7957	0.0227	1.1433	0.2779	1.4213	0.3038	0.2557	0.5595	0.0000	2,236.5793	2,236.5793	0.4180	0.0000	2,247.0287
2024	36.9910	13.5184	19.6847	0.0422	1.6288	0.5707	2.0064	0.4334	0.5251	0.8806	0.0000	4,161.3192	4,161.3192	0.9501	0.0000	4,185.0714
Maximum	**36.9910**	**51.7243**	**23.1158**	**0.1848**	**5.4950**	**0.5707**	**5.7282**	**1.1228**	**0.5251**	**1.5171**	**0.0000**	**20,267.5972**	**20,267.5972**	**2.6438**	**0.0000**	**20,333.6908**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	2.2824	51.7243	23.1158	0.1848	3.8144	0.5343	4.2369	1.0488	0.4916	1.4431	0.0000	20,267.5972	20,267.5972	2.6438	0.0000	20,333.6908
2023	0.9827	6.7897	8.7957	0.0227	1.0542	0.2779	1.3322	0.2819	0.2557	0.5376	0.0000	2,236.5793	2,236.5793	0.4180	0.0000	2,247.0287
2024	36.9910	13.5184	19.6847	0.0422	1.5022	0.5707	1.8799	0.4023	0.5251	0.8554	0.0000	4,161.3192	4,161.3192	0.9501	0.0000	4,185.0714
Maximum	**36.9910**	**51.7243**	**23.1158**	**0.1848**	**3.8144**	**0.5707**	**4.2369**	**1.0488**	**0.5251**	**1.4431**	**0.0000**	**20,267.5972**	**20,267.5972**	**2.6438**	**0.0000**	**20,333.6908**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**22.94**	**0.00**	**18.64**	**6.82**	**0.00**	**4.09**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building Demolition	Demolition	6/1/2022	7/1/2022	5	23	
2	Building Demolition Haul	Demolition	7/15/2022	8/1/2022	5	12	
3	Asphalt Demolition	Demolition	8/1/2022	8/15/2022	5	11	
4	Asphalt Demolition Debris Haul	Demolition	8/15/2022	8/25/2022	5	9	
5	Site Preparation	Site Preparation	9/1/2022	9/15/2022	5	11	
6	Rough Grading	Grading	9/15/2022	9/23/2022	5	7	
7	Rough Grading Soil Haul	Grading	9/25/2022	10/7/2022	5	10	

8	Utility Trenching	Trenching	10/1/2022	10/14/2022	5	10	
9	Fine Grading	Grading	10/17/2022	10/21/2022	5	5	
10	Parking Structure Construction	Building Construction	11/1/2022	6/30/2023	5	174	
11	Residential Construction	Building Construction	7/1/2023	4/1/2024	5	196	
12	Paving	Paving	3/1/2024	3/15/2024	5	11	
13	Finishing/Landscaping	Trenching	4/1/2024	6/28/2024	5	65	
14	Architectural Coating	Architectural Coating	4/1/2024	6/28/2024	5	65	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.71

Residential Indoor: 489,479; Residential Outdoor: 97,896; Non-Residential Indoor: 100,323; Non-Residential Outdoor: 93,723; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Building Demolition	Excavators	1	8.00	424	0.38
Building Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Building Demolition	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Building Demolition Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Building Demolition Haul	Rubber Tired Dozers	0	8.00	247	0.40
Building Demolition Haul	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Asphalt Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Asphalt Demolition	Excavators	1	8.00	424	0.38
Asphalt Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Asphalt Demolition	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Asphalt Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Asphalt Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Asphalt Demolition Debris Haul	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Site Preparation	Excavators	1	8.00	424	0.38
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Scrapers	0	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	93	0.37
Rough Grading	Graders	0	8.00	187	0.41
Rough Grading	Rollers	1	8.00	142	0.38
Rough Grading	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Rough Grading	Tractors/Loaders/Backhoes	1	8.00	93	0.37
Rough Grading Soil Haul	Graders	0	8.00	187	0.41
Rough Grading Soil Haul	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading Soil Haul	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Utility Trenching	Excavators	1	8.00	424	0.38
Utility Trenching	Tractors/Loaders/Backhoes	1	8.00	131	0.37
Utility Trenching	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Fine Grading	Graders	0	8.00	187	0.41
Fine Grading	Rollers	1	8.00	142	0.38
Fine Grading	Rubber Tired Dozers	0	8.00	247	0.40
Fine Grading	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Fine Grading	Tractors/Loaders/Backhoes	1	8.00	93	0.37
Parking Structure Construction	Aerial Lifts	1	8.00	63	0.31
Parking Structure Construction	Cranes	1	8.00	231	0.29
Parking Structure Construction	Forklifts	1	8.00	55	0.20
Parking Structure Construction	Generator Sets	0	8.00	84	0.74
Parking Structure Construction	Tractors/Loaders/Backhoes	1	8.00	131	0.37
Parking Structure Construction	Welders	0	8.00	46	0.45
Residential Construction	Aerial Lifts	1	8.00	63	0.31
Residential Construction	Cranes	1	8.00	231	0.29

Residential Construction	Forklifts	1	8.00	55	0.20
Residential Construction	Generator Sets	0	8.00	84	0.74
Residential Construction	Tractors/Loaders/Backhoes	1	8.00	131	0.37
Residential Construction	Welders	0	8.00	46	0.45
Paving	Cement and Mortar Mixers	0	8.00	9	0.56
Paving	Pavers	0	8.00	130	0.42
Paving	Paving Equipment	1	8.00	173	0.36
Paving	Rollers	1	8.00	142	0.38
Paving	Rollers	1	8.00	100	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	93	0.37
Finishing/Landscaping	Tractors/Loaders/Backhoes	1	8.00	93	0.37
Finishing/Landscaping	Tractors/Loaders/Backhoes	1	8.00	131	0.37
Architectural Coating	Air Compressors	0	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Demolition	2	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Demolition Haul	0	5.00	10.00	346.00	14.70	6.90	39.00	LD_Mix	HDT_Mix	HHDT
Asphalt Demolition	2	5.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Asphalt Demolition Debris Haul	0	5.00	12.00	186.00	14.70	6.90	39.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	5.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading	3	5.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Haul	0	5.00	10.00	1,139.00	14.70	6.90	39.00	LD_Mix	HDT_Mix	HHDT
Utility Trenching	3	5.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Fine Grading	3	5.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Parking Structure Construction	4	75.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Residential Construction	4	100.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	4	10.00	12.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Finishing/Landscaping	2	30.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	10.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Building Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6439	5.4681	5.2548	0.0223		0.1918	0.1918		0.1765	0.1765		2,155.4368	2,155.4368	0.6971		2,172.8646
Total	**0.6439**	**5.4681**	**5.2548**	**0.0223**		**0.1918**	**0.1918**		**0.1765**	**0.1765**		**2,155.4368**	**2,155.4368**	**0.6971**		**2,172.8646**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0105	0.3539	0.1077	9.5000e-004	0.0256	7.0000e-004	0.0263	7.3500e-003	6.7000e-004	8.0300e-003		103.8357	103.8357	8.5500e-003		104.0495
Worker	0.0581	0.0326	0.3918	1.4400e-003	0.1677	1.0600e-003	0.1687	0.0445	9.8000e-004	0.0455		143.8468	143.8468	2.9000e-003		143.9194
Total	**0.0686**	**0.3866**	**0.4994**	**2.3900e-003**	**0.1932**	**1.7600e-003**	**0.1950**	**0.0518**	**1.6500e-003**	**0.0535**		**247.6825**	**247.6825**	**0.0115**		**247.9688**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6439	5.4681	5.2548	0.0223		0.1918	0.1918		0.1765	0.1765	0.0000	2,155.4368	2,155.4368	0.6971		2,172.8646
Total	**0.6439**	**5.4681**	**5.2548**	**0.0223**		**0.1918**	**0.1918**		**0.1765**	**0.1765**	**0.0000**	**2,155.4368**	**2,155.4368**	**0.6971**		**2,172.8646**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0105	0.3539	0.1077	9.5000e-004	0.0239	7.0000e-004	0.0246	6.9500e-003	6.7000e-004	7.6200e-003		103.8357	103.8357	8.5500e-003		104.0495
Worker	0.0581	0.0326	0.3918	1.4400e-003	0.1546	1.0600e-003	0.1556	0.0413	9.8000e-004	0.0422		143.8468	143.8468	2.9000e-003		143.9194
Total	**0.0686**	**0.3866**	**0.4994**	**2.3900e-003**	**0.1785**	**1.7600e-003**	**0.1802**	**0.0482**	**1.6500e-003**	**0.0499**		**247.6825**	**247.6825**	**0.0115**		**247.9688**

3.3 Building Demolition Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.3155	0.0000	4.3155	0.6534	0.0000	0.6534			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.3155**	**0.0000**	**4.3155**	**0.6534**	**0.0000**	**0.6534**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3524	11.0112	3.6936	0.0390	0.9783	0.0383	1.0166	0.2677	0.0366	0.3044		4,367.5112	4,367.5112	0.4520		4,378.8106
Vendor	0.0263	0.8849	0.2691	2.3800e-003	0.0639	1.7600e-003	0.0657	0.0184	1.6800e-003	0.0201		259.5893	259.5893	0.0214		260.1236
Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		47.9489	47.9489	9.7000e-004		47.9731
Total	**0.3981**	**11.9069**	**4.0933**	**0.0419**	**1.0981**	**0.0404**	**1.1384**	**0.3010**	**0.0386**	**0.3396**		**4,675.0494**	**4,675.0494**	**0.4743**		**4,686.9074**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.8449	0.0000	1.8449	0.2793	0.0000	0.2793			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.8449**	**0.0000**	**1.8449**	**0.2793**	**0.0000**	**0.2793**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3524	11.0112	3.6936	0.0390	0.9114	0.0383	0.9497	0.2513	0.0366	0.2879		4,367.5112	4,367.5112	0.4520		4,378.8106
Vendor	0.0263	0.8849	0.2691	2.3800e-003	0.0598	1.7600e-003	0.0615	0.0174	1.6800e-003	0.0191		259.5893	259.5893	0.0214		260.1236
Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0515	3.5000e-004	0.0519	0.0138	3.3000e-004	0.0141		47.9489	47.9489	9.7000e-004		47.9731
Total	**0.3981**	**11.9069**	**4.0933**	**0.0419**	**1.0227**	**0.0404**	**1.0631**	**0.2825**	**0.0386**	**0.3211**		**4,675.0494**	**4,675.0494**	**0.4743**		**4,686.9074**

3.4 Asphalt Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	0.6439	5.4681	5.2548	0.0223		0.1918	0.1918		0.1765	0.1765		2,155.4368	2,155.4368	0.6971		2,172.8646
Total	**0.6439**	**5.4681**	**5.2548**	**0.0223**		**0.1918**	**0.1918**		**0.1765**	**0.1765**		**2,155.4368**	**2,155.4368**	**0.6971**		**2,172.8646**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0105	0.3539	0.1077	9.5000e-004	0.0256	7.0000e-004	0.0263	7.3500e-003	6.7000e-004	8.0300e-003		103.8357	103.8357	8.5500e-003		104.0495
Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		47.9489	47.9489	9.7000e-004		47.9731
Total	**0.0299**	**0.3648**	**0.2382**	**1.4300e-003**	**0.0815**	**1.0500e-003**	**0.0825**	**0.0222**	**1.0000e-003**	**0.0232**		**151.7847**	**151.7847**	**9.5200e-003**		**152.0226**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6439	5.4681	5.2548	0.0223		0.1918	0.1918		0.1765	0.1765	0.0000	2,155.4368	2,155.4368	0.6971		2,172.8646

Total	**0.6439**	**5.4681**	**5.2548**	**0.0223**		**0.1918**	**0.1918**		**0.1765**	**0.1765**	**0.0000**	**2,155.4368**	**2,155.4368**	**0.6971**		**2,172.8646**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0105	0.3539	0.1077	9.5000e-004	0.0239	7.0000e-004	0.0246	6.9500e-003	6.7000e-004	7.6200e-003		103.8357	103.8357	8.5500e-003		104.0495
Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0515	3.5000e-004	0.0519	0.0138	3.3000e-004	0.0141		47.9489	47.9489	9.7000e-004		47.9731
Total	**0.0299**	**0.3648**	**0.2382**	**1.4300e-003**	**0.0754**	**1.0500e-003**	**0.0765**	**0.0207**	**1.0000e-003**	**0.0217**		**151.7847**	**151.7847**	**9.5200e-003**		**152.0226**

3.5 Asphalt Demolition Debris Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0862	0.0000	3.0862	0.4673	0.0000	0.4673			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.0862**	**0.0000**	**3.0862**	**0.4673**	**0.0000**	**0.4673**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2526	7.8924	2.6474	0.0280	0.7012	0.0274	0.7286	0.1919	0.0263	0.2182		3,130.4705	3,130.4705	0.3240		3,138.5695
Vendor	0.0316	1.0618	0.3230	2.8600e-003	0.0767	2.1100e-003	0.0788	0.0221	2.0200e-003	0.0241		311.5072	311.5072	0.0257		312.1484
Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		47.9489	47.9489	9.7000e-004		47.9731
Total	**0.3035**	**8.9651**	**3.1010**	**0.0313**	**0.8338**	**0.0299**	**0.8637**	**0.2288**	**0.0286**	**0.2574**		**3,489.9266**	**3,489.9266**	**0.3506**		**3,498.6910**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.3194	0.0000	1.3194	0.1998	0.0000	0.1998			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.3194**	**0.0000**	**1.3194**	**0.1998**	**0.0000**	**0.1998**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2526	7.8924	2.6474	0.0280	0.6532	0.0274	0.6807	0.1801	0.0263	0.2064		3,130.4705	3,130.4705	0.3240		3,138.5695
Vendor	0.0316	1.0618	0.3230	2.8600e-003	0.0717	2.1100e-003	0.0739	0.0209	2.0200e-003	0.0229		311.5072	311.5072	0.0257		312.1484
Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0515	3.5000e-004	0.0519	0.0138	3.3000e-004	0.0141		47.9489	47.9489	9.7000e-004		47.9731
Total	**0.3035**	**8.9651**	**3.1010**	**0.0313**	**0.7765**	**0.0299**	**0.8064**	**0.2147**	**0.0286**	**0.2433**		**3,489.9266**	**3,489.9266**	**0.3506**		**3,498.6910**

3.6 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.8018	7.0746	7.4004	0.0253		0.2782	0.2782		0.2560	0.2560		2,444.2535	2,444.2535	0.7905		2,464.0165
Total	**0.8018**	**7.0746**	**7.4004**	**0.0253**	**0.0000**	**0.2782**	**0.2782**	**0.0000**	**0.2560**	**0.2560**		**2,444.2535**	**2,444.2535**	**0.7905**		**2,464.0165**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0105	0.3539	0.1077	9.5000e-004	0.0256	7.0000e-004	0.0263	7.3500e-003	6.7000e-004	8.0300e-003		103.8357	103.8357	8.5500e-003		104.0495
Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		47.9489	47.9489	9.7000e-004		47.9731
Total	**0.0299**	**0.3648**	**0.2382**	**1.4300e-003**	**0.0815**	**1.0500e-003**	**0.0825**	**0.0222**	**1.0000e-003**	**0.0232**		**151.7847**	**151.7847**	**9.5200e-003**		**152.0226**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.8018	7.0746	7.4004	0.0253		0.2782	0.2782		0.2560	0.2560	0.0000	2,444.2535	2,444.2535	0.7905		2,464.0165
Total	**0.8018**	**7.0746**	**7.4004**	**0.0253**	**0.0000**	**0.2782**	**0.2782**	**0.0000**	**0.2560**	**0.2560**	**0.0000**	**2,444.2535**	**2,444.2535**	**0.7905**		**2,464.0165**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0105	0.3539	0.1077	9.5000e-004	0.0239	7.0000e-004	0.0246	6.9500e-003	6.7000e-004	7.6200e-003		103.8357	103.8357	8.5500e-003		104.0495
Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0515	3.5000e-004	0.0519	0.0138	3.3000e-004	0.0141		47.9489	47.9489	9.7000e-004		47.9731

Total	**0.0299**	**0.3648**	**0.2382**	**1.4300e-003**	**0.0754**	**1.0500e-003**	**0.0765**	**0.0207**	**1.0000e-003**	**0.0217**		**151.7847**	**151.7847**	**9.5200e-003**		**152.0226**

3.7 Rough Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.5946	5.7509	7.1573	0.0161		0.2539	0.2539		0.2336	0.2336		1,558.6394	1,558.6394	0.5041		1,571.2418
Total	**0.5946**	**5.7509**	**7.1573**	**0.0161**	**0.0000**	**0.2539**	**0.2539**	**0.0000**	**0.2336**	**0.2336**		**1,558.6394**	**1,558.6394**	**0.5041**		**1,571.2418**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0105	0.3539	0.1077	9.5000e-004	0.0256	7.0000e-004	0.0263	7.3500e-003	6.7000e-004	8.0300e-003		103.8357	103.8357	8.5500e-003		104.0495
Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		47.9489	47.9489	9.7000e-004		47.9731
Total	**0.0299**	**0.3648**	**0.2382**	**1.4300e-003**	**0.0815**	**1.0500e-003**	**0.0825**	**0.0222**	**1.0000e-003**	**0.0232**		**151.7847**	**151.7847**	**9.5200e-003**		**152.0226**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.5946	5.7509	7.1573	0.0161		0.2539	0.2539		0.2336	0.2336	0.0000	1,558.6394	1,558.6394	0.5041		1,571.2418
Total	**0.5946**	**5.7509**	**7.1573**	**0.0161**	**0.0000**	**0.2539**	**0.2539**	**0.0000**	**0.2336**	**0.2336**	**0.0000**	**1,558.6394**	**1,558.6394**	**0.5041**		**1,571.2418**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0105	0.3539	0.1077	9.5000e-004	0.0239	7.0000e-004	0.0246	6.9500e-003	6.7000e-004	7.6200e-003		103.8357	103.8357	8.5500e-003		104.0495
Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0515	3.5000e-004	0.0519	0.0138	3.3000e-004	0.0141		47.9489	47.9489	9.7000e-004		47.9731
Total	**0.0299**	**0.3648**	**0.2382**	**1.4300e-003**	**0.0754**	**1.0500e-003**	**0.0765**	**0.0207**	**1.0000e-003**	**0.0217**		**151.7847**	**151.7847**	**9.5200e-003**		**152.0226**

3.8 Rough Grading Soil Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					0.0644	0.0000	0.0644	9.7500e-003	0.0000	9.7500e-003			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0644**	**0.0000**	**0.0644**	**9.7500e-003**	**0.0000**	**9.7500e-003**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.3920	43.4973	14.5906	0.1541	3.8645	0.1512	4.0157	1.0577	0.1447	1.2023		17,252.9316	17,252.9316	1.7854		17,297.5675
Vendor	0.0263	0.8849	0.2691	2.3800e-003	0.0639	1.7600e-003	0.0657	0.0184	1.6800e-003	0.0201		259.5893	259.5893	0.0214		260.1236
Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		47.9489	47.9489	9.7000e-004		47.9731
Total	**1.4377**	**44.3931**	**14.9903**	**0.1569**	**3.9842**	**0.1533**	**4.1376**	**1.0909**	**0.1467**	**1.2376**		**17,560.4698**	**17,560.4698**	**1.8078**		**17,605.6642**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0275	0.0000	0.0275	4.1700e-003	0.0000	4.1700e-003			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0275**	**0.0000**	**0.0275**	**4.1700e-003**	**0.0000**	**4.1700e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.3920	43.4973	14.5906	0.1541	3.6002	0.1512	3.7514	0.9928	0.1447	1.1375		17,252.9316	17,252.9316	1.7854		17,297.5675
Vendor	0.0263	0.8849	0.2691	2.3800e-003	0.0598	1.7600e-003	0.0615	0.0174	1.6800e-003	0.0191		259.5893	259.5893	0.0214		260.1236
Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0515	3.5000e-004	0.0519	0.0138	3.3000e-004	0.0141		47.9489	47.9489	9.7000e-004		47.9731
Total	**1.4377**	**44.3931**	**14.9903**	**0.1569**	**3.7115**	**0.1533**	**3.8648**	**1.0239**	**0.1467**	**1.1706**		**17,560.4698**	**17,560.4698**	**1.8078**		**17,605.6642**

3.9 Utility Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8148	6.9664	7.8873	0.0264		0.2681	0.2681		0.2466	0.2466		2,555.3427	2,555.3427	0.8265		2,576.0040
Total	**0.8148**	**6.9664**	**7.8873**	**0.0264**		**0.2681**	**0.2681**		**0.2466**	**0.2466**		**2,555.3427**	**2,555.3427**	**0.8265**		**2,576.0040**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0105	0.3539	0.1077	9.5000e-004	0.0256	7.0000e-004	0.0263	7.3500e-003	6.7000e-004	8.0300e-003		103.8357	103.8357	8.5500e-003		104.0495
Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		47.9489	47.9489	9.7000e-004		47.9731
Total	**0.0299**	**0.3648**	**0.2382**	**1.4300e-003**	**0.0815**	**1.0500e-003**	**0.0825**	**0.0222**	**1.0000e-003**	**0.0232**		**151.7847**	**151.7847**	**9.5200e-003**		**152.0226**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8148	6.9664	7.8873	0.0264		0.2681	0.2681		0.2466	0.2466	0.0000	2,555.3427	2,555.3427	0.8265		2,576.0040
Total	**0.8148**	**6.9664**	**7.8873**	**0.0264**		**0.2681**	**0.2681**		**0.2466**	**0.2466**	**0.0000**	**2,555.3427**	**2,555.3427**	**0.8265**		**2,576.0040**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0105	0.3539	0.1077	9.5000e-004	0.0239	7.0000e-004	0.0246	6.9500e-003	6.7000e-004	7.6200e-003		103.8357	103.8357	8.5500e-003		104.0495
Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0515	3.5000e-004	0.0519	0.0138	3.3000e-004	0.0141		47.9489	47.9489	9.7000e-004		47.9731
Total	**0.0299**	**0.3648**	**0.2382**	**1.4300e-003**	**0.0754**	**1.0500e-003**	**0.0765**	**0.0207**	**1.0000e-003**	**0.0217**		**151.7847**	**151.7847**	**9.5200e-003**		**152.0226**

3.10 Fine Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.5946	5.7509	7.1573	0.0161		0.2539	0.2539		0.2336	0.2336		1,558.6394	1,558.6394	0.5041		1,571.2418
Total	**0.5946**	**5.7509**	**7.1573**	**0.0161**	**0.0000**	**0.2539**	**0.2539**	**0.0000**	**0.2336**	**0.2336**		**1,558.6394**	**1,558.6394**	**0.5041**		**1,571.2418**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0105	0.3539	0.1077	9.5000e-004	0.0256	7.0000e-004	0.0263	7.3500e-003	6.7000e-004	8.0300e-003		103.8357	103.8357	8.5500e-003		104.0495

Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0559	3.5000e-004	0.0562	0.0148	3.3000e-004	0.0152		47.9489	47.9489	9.7000e-004		47.9731
Total	**0.0299**	**0.3648**	**0.2382**	**1.4300e-003**	**0.0815**	**1.0500e-003**	**0.0825**	**0.0222**	**1.0000e-003**	**0.0232**		**151.7847**	**151.7847**	**9.5200e-003**		**152.0226**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.5946	5.7509	7.1573	0.0161		0.2539	0.2539		0.2336	0.2336	0.0000	1,558.6394	1,558.6394	0.5041		1,571.2418
Total	**0.5946**	**5.7509**	**7.1573**	**0.0161**	**0.0000**	**0.2539**	**0.2539**	**0.0000**	**0.2336**	**0.2336**	**0.0000**	**1,558.6394**	**1,558.6394**	**0.5041**		**1,571.2418**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0105	0.3539	0.1077	9.5000e-004	0.0239	7.0000e-004	0.0246	6.9500e-003	6.7000e-004	7.6200e-003		103.8357	103.8357	8.5500e-003		104.0495
Worker	0.0194	0.0109	0.1306	4.8000e-004	0.0515	3.5000e-004	0.0519	0.0138	3.3000e-004	0.0141		47.9489	47.9489	9.7000e-004		47.9731
Total	**0.0299**	**0.3648**	**0.2382**	**1.4300e-003**	**0.0754**	**1.0500e-003**	**0.0765**	**0.0207**	**1.0000e-003**	**0.0217**		**151.7847**	**151.7847**	**9.5200e-003**		**152.0226**

3.11 Parking Structure Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6502	6.8948	6.3318	0.0125		0.3035	0.3035		0.2793	0.2793		1,212.8359	1,212.8359	0.3923		1,222.6423
Total	**0.6502**	**6.8948**	**6.3318**	**0.0125**		**0.3035**	**0.3035**		**0.2793**	**0.2793**		**1,212.8359**	**1,212.8359**	**0.3923**		**1,222.6423**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0158	0.5309	0.1615	1.4300e-003	0.0383	1.0600e-003	0.0394	0.0110	1.0100e-003	0.0120		155.7536	155.7536	0.0128		156.0742
Worker	0.2904	0.1630	1.9589	7.2100e-003	0.8383	5.3200e-003	0.8436	0.2223	4.9000e-003	0.2272		719.2341	719.2341	0.0145		719.5969
Total	**0.3062**	**0.6940**	**2.1203**	**8.6400e-003**	**0.8767**	**6.3800e-003**	**0.8830**	**0.2334**	**5.9100e-003**	**0.2393**		**874.9877**	**874.9877**	**0.0273**		**875.6711**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6502	6.8948	6.3318	0.0125		0.3035	0.3035		0.2793	0.2793	0.0000	1,212.8359	1,212.8359	0.3923		1,222.6423
Total	**0.6502**	**6.8948**	**6.3318**	**0.0125**		**0.3035**	**0.3035**		**0.2793**	**0.2793**	**0.0000**	**1,212.8359**	**1,212.8359**	**0.3923**		**1,222.6423**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0158	0.5309	0.1615	1.4300e-003	0.0359	1.0600e-003	0.0369	0.0104	1.0100e-003	0.0114		155.7536	155.7536	0.0128		156.0742
Worker	0.2904	0.1630	1.9589	7.2100e-003	0.7727	5.3200e-003	0.7781	0.2062	4.9000e-003	0.2111		719.2341	719.2341	0.0145		719.5969
Total	**0.3062**	**0.6940**	**2.1203**	**8.6400e-003**	**0.8086**	**6.3800e-003**	**0.8150**	**0.2167**	**5.9100e-003**	**0.2226**		**874.9877**	**874.9877**	**0.0273**		**875.6711**

3.11 Parking Structure Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	0.6069	6.2420	6.2649	0.0125		0.2706	0.2706		0.2490	0.2490		1,213.6972	1,213.6972	0.3925		1,223.5106
Total	**0.6069**	**6.2420**	**6.2649**	**0.0125**		**0.2706**	**0.2706**		**0.2490**	**0.2490**		**1,213.6972**	**1,213.6972**	**0.3925**		**1,223.5106**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0120	0.3996	0.1484	1.3800e-003	0.0383	5.1000e-004	0.0389	0.0110	4.9000e-004	0.0115		151.0856	151.0856	0.0119		151.3820
Worker	0.2758	0.1480	1.8239	6.9300e-003	0.8383	5.2300e-003	0.8436	0.2223	4.8100e-003	0.2271		691.6188	691.6188	0.0132		691.9476
Total	**0.2879**	**0.5476**	**1.9723**	**8.3100e-003**	**0.8767**	**5.7400e-003**	**0.8824**	**0.2334**	**5.3000e-003**	**0.2387**		**842.7043**	**842.7043**	**0.0250**		**843.3296**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6069	6.2420	6.2649	0.0125		0.2706	0.2706		0.2490	0.2490	0.0000	1,213.6972	1,213.6972	0.3925		1,223.5106
Total	**0.6069**	**6.2420**	**6.2649**	**0.0125**		**0.2706**	**0.2706**		**0.2490**	**0.2490**	**0.0000**	**1,213.6972**	**1,213.6972**	**0.3925**		**1,223.5106**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0120	0.3996	0.1484	1.3800e-003	0.0359	5.1000e-004	0.0364	0.0104	4.9000e-004	0.0109		151.0856	151.0856	0.0119		151.3820
Worker	0.2758	0.1480	1.8239	6.9300e-003	0.7727	5.2300e-003	0.7780	0.2062	4.8100e-003	0.2110		691.6188	691.6188	0.0132		691.9476
Total	**0.2879**	**0.5476**	**1.9723**	**8.3100e-003**	**0.8086**	**5.7400e-003**	**0.8143**	**0.2167**	**5.3000e-003**	**0.2220**		**842.7043**	**842.7043**	**0.0250**		**843.3296**

3.12 Residential Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6069	6.2420	6.2649	0.0125		0.2706	0.2706		0.2490	0.2490		1,213.6972	1,213.6972	0.3925		1,223.5106
Total	**0.6069**	**6.2420**	**6.2649**	**0.0125**		**0.2706**	**0.2706**		**0.2490**	**0.2490**		**1,213.6972**	**1,213.6972**	**0.3925**		**1,223.5106**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	8.0200e-003	0.2664	0.0989	9.2000e-004	0.0256	3.4000e-004	0.0259	7.3500e-003	3.3000e-004	7.6800e-003		100.7237	100.7237	7.9100e-003		100.9213
Worker	0.3678	0.1973	2.4319	9.2400e-003	1.1178	6.9700e-003	1.1247	0.2964	6.4200e-003	0.3029		922.1584	922.1584	0.0175		922.5968
Total	**0.3758**	**0.4638**	**2.5308**	**0.0102**	**1.1433**	**7.3100e-003**	**1.1506**	**0.3038**	**6.7500e-003**	**0.3105**		**1,022.8821**	**1,022.8821**	**0.0255**		**1,023.5181**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6069	6.2420	6.2649	0.0125		0.2706	0.2706		0.2490	0.2490	0.0000	1,213.6972	1,213.6972	0.3925		1,223.5106
Total	**0.6069**	**6.2420**	**6.2649**	**0.0125**		**0.2706**	**0.2706**		**0.2490**	**0.2490**	**0.0000**	**1,213.6972**	**1,213.6972**	**0.3925**		**1,223.5106**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	8.0200e-003	0.2664	0.0989	9.2000e-004	0.0239	3.4000e-004	0.0243	6.9500e-003	3.3000e-004	7.2800e-003		100.7237	100.7237	7.9100e-003		100.9213
Worker	0.3678	0.1973	2.4319	9.2400e-003	1.0303	6.9700e-003	1.0373	0.2750	6.4200e-003	0.2814		922.1584	922.1584	0.0175		922.5968
Total	**0.3758**	**0.4638**	**2.5308**	**0.0102**	**1.0542**	**7.3100e-003**	**1.0615**	**0.2819**	**6.7500e-003**	**0.2887**		**1,022.8821**	**1,022.8821**	**0.0255**		**1,023.5181**

3.12 Residential Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Off-Road	0.5750	5.7532	6.2124	0.0125		0.2450	0.2450		0.2254	0.2254		1,214.1828	1,214.1828	0.3927		1,224.0001
Total	**0.5750**	**5.7532**	**6.2124**	**0.0125**		**0.2450**	**0.2450**		**0.2254**	**0.2254**		**1,214.1828**	**1,214.1828**	**0.3927**		**1,224.0001**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.7500e-003	0.2631	0.0968	9.1000e-004	0.0256	3.3000e-004	0.0259	7.3500e-003	3.2000e-004	7.6700e-003		99.9360	99.9360	7.7700e-003		100.1303

Worker	0.3507	0.1797	2.2615	8.8800e-003	1.1178	6.8500e-003	1.1246	0.2964	6.3100e-003	0.3027		885.6261	885.6261	0.0159		886.0238
Total	**0.3584**	**0.4428**	**2.3583**	**9.7900e-003**	**1.1433**	**7.1800e-003**	**1.1505**	**0.3038**	**6.6300e-003**	**0.3104**		**985.5621**	**985.5621**	**0.0237**		**986.1541**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5750	5.7532	6.2124	0.0125		0.2450	0.2450		0.2254	0.2254	0.0000	1,214.1828	1,214.1828	0.3927		1,224.0001
Total	**0.5750**	**5.7532**	**6.2124**	**0.0125**		**0.2450**	**0.2450**		**0.2254**	**0.2254**	**0.0000**	**1,214.1828**	**1,214.1828**	**0.3927**		**1,224.0001**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.7500e-003	0.2631	0.0968	9.1000e-004	0.0239	3.3000e-004	0.0243	6.9500e-003	3.2000e-004	7.2700e-003		99.9360	99.9360	7.7700e-003		100.1303
Worker	0.3507	0.1797	2.2615	8.8800e-003	1.0303	6.8500e-003	1.0372	0.2750	6.3100e-003	0.2813		885.6261	885.6261	0.0159		886.0238
Total	**0.3584**	**0.4428**	**2.3583**	**9.7900e-003**	**1.0542**	**7.1800e-003**	**1.0614**	**0.2819**	**6.6300e-003**	**0.2886**		**985.5621**	**985.5621**	**0.0237**		**986.1541**

3.13 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6706	6.5151	10.5975	0.0163		0.3168	0.3168		0.2915	0.2915		1,573.2038	1,573.2038	0.5088		1,585.9239
Paving	0.0762					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.7468**	**6.5151**	**10.5975**	**0.0163**		**0.3168**	**0.3168**		**0.2915**	**0.2915**		**1,573.2038**	**1,573.2038**	**0.5088**		**1,585.9239**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0233	0.7894	0.2904	2.7400e-003	0.0767	1.0000e-003	0.0777	0.0221	9.6000e-004	0.0230		299.8079	299.8079	0.0233		300.3909
Worker	0.0351	0.0180	0.2262	8.9000e-004	0.1118	6.9000e-004	0.1125	0.0296	6.3000e-004	0.0303		88.5626	88.5626	1.5900e-003		88.6024
Total	**0.0583**	**0.8073**	**0.5166**	**3.6300e-003**	**0.1884**	**1.6900e-003**	**0.1901**	**0.0517**	**1.5900e-003**	**0.0533**		**388.3705**	**388.3705**	**0.0249**		**388.9933**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6706	6.5151	10.5975	0.0163		0.3168	0.3168		0.2915	0.2915	0.0000	1,573.2038	1,573.2038	0.5088		1,585.9239
Paving	0.0762					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.7468**	**6.5151**	**10.5975**	**0.0163**		**0.3168**	**0.3168**		**0.2915**	**0.2915**	**0.0000**	**1,573.2038**	**1,573.2038**	**0.5088**		**1,585.9239**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0233	0.7894	0.2904	2.7400e-003	0.0717	1.0000e-003	0.0727	0.0209	9.6000e-004	0.0218		299.8079	299.8079	0.0233		300.3909
Worker	0.0351	0.0180	0.2262	8.9000e-004	0.1030	6.9000e-004	0.1037	0.0275	6.3000e-004	0.0281		88.5626	88.5626	1.5900e-003		88.6024
Total	**0.0583**	**0.8073**	**0.5166**	**3.6300e-003**	**0.1748**	**1.6900e-003**	**0.1765**	**0.0484**	**1.5900e-003**	**0.0499**		**388.3705**	**388.3705**	**0.0249**		**388.9933**

3.14 Finishing/Landscaping - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	0.2884	2.5652	4.7842	7.1300e-003		0.1223	0.1223		0.1125	0.1125		690.5986	690.5986	0.2234		696.1825
Total	**0.2884**	**2.5652**	**4.7842**	**7.1300e-003**		**0.1223**	**0.1223**		**0.1125**	**0.1125**		**690.5986**	**690.5986**	**0.2234**		**696.1825**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.7500e-003	0.2631	0.0968	9.1000e-004	0.0256	3.3000e-004	0.0259	7.3500e-003	3.2000e-004	7.6700e-003		99.9360	99.9360	7.7700e-003		100.1303
Worker	0.1052	0.0539	0.6784	2.6600e-003	0.3353	2.0600e-003	0.3374	0.0889	1.8900e-003	0.0908		265.6878	265.6878	4.7700e-003		265.8071
Total	**0.1130**	**0.3170**	**0.7752**	**3.5700e-003**	**0.3609**	**2.3900e-003**	**0.3633**	**0.0963**	**2.2100e-003**	**0.0985**		**365.6238**	**365.6238**	**0.0125**		**365.9374**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2884	2.5652	4.7842	7.1300e-003		0.1223	0.1223		0.1125	0.1125	0.0000	690.5986	690.5986	0.2234		696.1825
Total	**0.2884**	**2.5652**	**4.7842**	**7.1300e-003**		**0.1223**	**0.1223**		**0.1125**	**0.1125**	**0.0000**	**690.5986**	**690.5986**	**0.2234**		**696.1825**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.7500e-003	0.2631	0.0968	9.1000e-004	0.0239	3.3000e-004	0.0243	6.9500e-003	3.2000e-004	7.2700e-003		99.9360	99.9360	7.7700e-003		100.1303
Worker	0.1052	0.0539	0.6784	2.6600e-003	0.3091	2.0600e-003	0.3112	0.0825	1.8900e-003	0.0844		265.6878	265.6878	4.7700e-003		265.8071
Total	**0.1130**	**0.3170**	**0.7752**	**3.5700e-003**	**0.3330**	**2.3900e-003**	**0.3354**	**0.0894**	**2.2100e-003**	**0.0917**		**365.6238**	**365.6238**	**0.0125**		**365.9374**

3.15 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	35.6172					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**35.6172**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.8700e-003	0.1316	0.0484	4.6000e-004	0.0128	1.7000e-004	0.0129	3.6800e-003	1.6000e-004	3.8400e-003		49.9680	49.9680	3.8900e-003		50.0652
Worker	0.0351	0.0180	0.2262	8.9000e-004	0.1118	6.9000e-004	0.1125	0.0296	6.3000e-004	0.0303		88.5626	88.5626	1.5900e-003		88.6024
Total	**0.0389**	**0.1495**	**0.2746**	**1.3500e-003**	**0.1246**	**8.6000e-004**	**0.1254**	**0.0333**	**7.9000e-004**	**0.0341**		**138.5306**	**138.5306**	**5.4800e-003**		**138.6675**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	35.6172					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**35.6172**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.8700e-003	0.1316	0.0484	4.6000e-004	0.0120	1.7000e-004	0.0121	3.4800e-003	1.6000e-004	3.6300e-003		49.9680	49.9680	3.8900e-003		50.0652
Worker	0.0351	0.0180	0.2262	8.9000e-004	0.1030	6.9000e-004	0.1037	0.0275	6.3000e-004	0.0281		88.5626	88.5626	1.5900e-003		88.6024
Total	**0.0389**	**0.1495**	**0.2746**	**1.3500e-003**	**0.1150**	**8.6000e-004**	**0.1158**	**0.0310**	**7.9000e-004**	**0.0318**		**138.5306**	**138.5306**	**5.4800e-003**		**138.6675**

Brea Plaza Expansion Project, Construction

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	21.36	1000sqft	0.49	21,355.00	0
Enclosed Parking with Elevator	182.11	1000sqft	1.39	182,108.00	0
Other Asphalt Surfaces	13.77	1000sqft	0.32	13,774.00	0
Apartments Mid Rise	229.00	Dwelling Unit	0.00	241,718.00	541

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	531.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustainability Report

Land Use - based on info from applicant, apartments built on top of parking structure

Construction Phase - based on information provided by applicant

Off-road Equipment - no additional equipment required for Architectural Coating

Off-road Equipment - based on info from applicant

Off-road Equipment - no additional equipment required for Demolition Hauling

Off-road Equipment - based on info from applicant

Off-road Equipment - no additional equipment required for Demolition Hauling

Off-road Equipment - based on info from applicant

Off-road Equipment - no additional equipment required for Fine Grading Soil Hauling

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - no additional equipment required for Rough Grading Soil Hauling

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Trips and VMT - based on info provided by applicant. See assumptions file.

Demolition -

Grading -

Architectural Coating - based on info from applicant

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 and Rule 1186

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	10,678.00	93,723.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	32,033.00	100,323.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	163,160.00	97,896.00
tblAreaCoating	Area_Residential_Exterior	163160	150152
tblAreaCoating	Area_Residential_Interior	489479	450455
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	65.00
tblConstructionPhase	NumDays	220.00	174.00

tblConstructionPhase	NumDays	220.00	196.00
tblConstructionPhase	NumDays	20.00	23.00
tblConstructionPhase	NumDays	20.00	12.00
tblConstructionPhase	NumDays	20.00	11.00
tblConstructionPhase	NumDays	20.00	9.00
tblConstructionPhase	NumDays	6.00	7.00
tblConstructionPhase	NumDays	6.00	10.00
tblConstructionPhase	NumDays	6.00	5.00
tblConstructionPhase	NumDays	10.00	11.00
tblConstructionPhase	NumDays	3.00	11.00
tblFireplaces	NumberGas	194.65	160.65
tblFireplaces	NumberNoFireplace	22.90	18.90
tblFireplaces	NumberWood	11.45	9.45
tblGrading	MaterialExported	0.00	5,695.00
tblLandUse	LandUseSquareFeet	21,360.00	21,355.00
tblLandUse	LandUseSquareFeet	182,110.00	182,108.00
tblLandUse	LandUseSquareFeet	13,770.00	13,774.00
tblLandUse	LandUseSquareFeet	229,000.00	241,718.00
tblLandUse	LotAcreage	4.18	1.39
tblLandUse	LotAcreage	6.03	0.00
tblLandUse	Population	655.00	541.00
tblOffRoadEquipment	HorsePower	89.00	55.00
tblOffRoadEquipment	HorsePower	89.00	55.00
tblOffRoadEquipment	HorsePower	132.00	173.00
tblOffRoadEquipment	HorsePower	80.00	142.00
tblOffRoadEquipment	HorsePower	80.00	100.00
tblOffRoadEquipment	HorsePower	97.00	131.00
tblOffRoadEquipment	HorsePower	97.00	131.00
tblOffRoadEquipment	HorsePower	97.00	268.00

tblOffRoadEquipment	HorsePower	97.00	268.00
tblOffRoadEquipment	HorsePower	97.00	268.00
tblOffRoadEquipment	HorsePower	97.00	93.00
tblOffRoadEquipment	HorsePower	97.00	268.00
tblOffRoadEquipment	HorsePower	97.00	93.00
tblOffRoadEquipment	HorsePower	97.00	93.00
tblOffRoadEquipment	HorsePower	97.00	268.00
tblOffRoadEquipment	HorsePower	97.00	93.00
tblOffRoadEquipment	HorsePower	158.00	424.00
tblOffRoadEquipment	HorsePower	158.00	424.00
tblOffRoadEquipment	HorsePower	158.00	424.00
tblOffRoadEquipment	HorsePower	158.00	424.00
tblOffRoadEquipment	HorsePower	80.00	142.00
tblOffRoadEquipment	HorsePower	80.00	142.00
tblOffRoadEquipment	HorsePower	97.00	93.00
tblOffRoadEquipment	HorsePower	97.00	131.00
tblOffRoadEquipment	HorsePower	97.00	131.00
tblOffRoadEquipment	HorsePower	97.00	268.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00

tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	531.44
tblSolidWaste	SolidWasteGenerationRate	105.34	86.94
tblTripsAndVMT	HaulingTripLength	20.00	39.00
tblTripsAndVMT	HaulingTripLength	20.00	39.00
tblTripsAndVMT	HaulingTripLength	20.00	39.00
tblTripsAndVMT	HaulingTripNumber	239.00	346.00
tblTripsAndVMT	HaulingTripNumber	128.00	186.00
tblTripsAndVMT	HaulingTripNumber	712.00	1,139.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	60.00	6.00
tblTripsAndVMT	VendorTripNumber	60.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	15.00

tblTripsAndVMT	WorkerTripNumber	254.00	75.00
tblTripsAndVMT	WorkerTripNumber	254.00	100.00
tblTripsAndVMT	WorkerTripNumber	5.00	30.00
tblTripsAndVMT	WorkerTripNumber	51.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	8.00	5.00
tblTripsAndVMT	WorkerTripNumber	8.00	5.00
tblTripsAndVMT	WorkerTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	8.00	5.00
tblTripsAndVMT	WorkerTripNumber	8.00	5.00
tblWater	IndoorWaterUseRate	14,920,271.87	12,314,110.84
tblWater	OutdoorWaterUseRate	9,406,258.35	7,763,243.79
tblWoodstoves	NumberCatalytic	11.45	9.45
tblWoodstoves	NumberNoncatalytic	11.45	9.45

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0555	0.7210	0.5222	2.4600e-003	0.0928	0.0157	0.1084	0.0204	0.0144	0.0348	0.0000	233.1133	233.1133	0.0420	0.0000	234.1631
2023	0.1176	0.8785	1.1137	2.8500e-003	0.1290	0.0360	0.1650	0.0343	0.0332	0.0675	0.0000	254.8076	254.8076	0.0493	0.0000	256.0393
2024	1.2053	0.3439	0.5360	1.2500e-003	0.0536	0.0142	0.0677	0.0143	0.0130	0.0273	0.0000	111.5640	111.5640	0.0222	0.0000	112.1200

Maximum	**1.2053**	**0.8785**	**1.1137**	**2.8500e-003**	**0.1290**	**0.0360**	**0.1650**	**0.0343**	**0.0332**	**0.0675**	**0.0000**	**254.8076**	**254.8076**	**0.0493**	**0.0000**	**256.0393**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0555	0.7210	0.5222	2.4600e-003	0.0660	0.0157	0.0817	0.0160	0.0144	0.0304	0.0000	233.1132	233.1132	0.0420	0.0000	234.1630
2023	0.1176	0.8785	1.1137	2.8500e-003	0.1190	0.0360	0.1550	0.0319	0.0332	0.0650	0.0000	254.8074	254.8074	0.0493	0.0000	256.0392
2024	1.2053	0.3439	0.5360	1.2500e-003	0.0494	0.0142	0.0636	0.0133	0.0130	0.0263	0.0000	111.5639	111.5639	0.0222	0.0000	112.1199
Maximum	**1.2053**	**0.8785**	**1.1137**	**2.8500e-003**	**0.1190**	**0.0360**	**0.1550**	**0.0319**	**0.0332**	**0.0650**	**0.0000**	**254.8074**	**254.8074**	**0.0493**	**0.0000**	**256.0392**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**14.86**	**0.00**	**11.99**	**11.41**	**0.00**	**6.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**6-1-2022**	**8-31-2022**	0.4032	0.4032
2	**9-1-2022**	**11-30-2022**	0.5656	0.5656
3	**12-1-2022**	**2-28-2023**	0.2565	0.2565
4	**3-1-2023**	**5-31-2023**	0.2515	0.2515
5	**6-1-2023**	**8-31-2023**	0.2507	0.2507
6	**9-1-2023**	**11-30-2023**	0.2492	0.2492
7	**12-1-2023**	**2-29-2024**	0.2379	0.2379
8	**3-1-2024**	**5-31-2024**	0.9761	0.9761
9	**6-1-2024**	**8-31-2024**	0.3907	0.3907

		Highest	0.9761	0.9761

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building Demolition	Demolition	6/1/2022	7/1/2022	5	23	
2	Building Demolition Haul	Demolition	7/15/2022	8/1/2022	5	12	
3	Asphalt Demolition	Demolition	8/1/2022	8/15/2022	5	11	
4	Asphalt Demolition Debris Haul	Demolition	8/15/2022	8/25/2022	5	9	
5	Site Preparation	Site Preparation	9/1/2022	9/15/2022	5	11	
6	Rough Grading	Grading	9/15/2022	9/23/2022	5	7	
7	Rough Grading Soil Haul	Grading	9/25/2022	10/7/2022	5	10	
8	Utility Trenching	Trenching	10/1/2022	10/14/2022	5	10	
9	Fine Grading	Grading	10/17/2022	10/21/2022	5	5	
10	Parking Structure Construction	Building Construction	11/1/2022	6/30/2023	5	174	
11	Residential Construction	Building Construction	7/1/2023	4/1/2024	5	196	
12	Paving	Paving	3/1/2024	3/15/2024	5	11	
13	Finishing/Landscaping	Trenching	4/1/2024	6/28/2024	5	65	
14	Architectural Coating	Architectural Coating	4/1/2024	6/28/2024	5	65	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.71

Residential Indoor: 489,479; Residential Outdoor: 97,896; Non-Residential Indoor: 100,323; Non-Residential Outdoor: 93,723; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor

Building Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Building Demolition	Excavators	1	8.00	424	0.38
Building Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Building Demolition	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Building Demolition Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Building Demolition Haul	Rubber Tired Dozers	0	8.00	247	0.40
Building Demolition Haul	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Asphalt Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Asphalt Demolition	Excavators	1	8.00	424	0.38
Asphalt Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Asphalt Demolition	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Asphalt Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Asphalt Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Asphalt Demolition Debris Haul	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Site Preparation	Excavators	1	8.00	424	0.38
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Scrapers	0	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	93	0.37
Rough Grading	Graders	0	8.00	187	0.41
Rough Grading	Rollers	1	8.00	142	0.38
Rough Grading	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Rough Grading	Tractors/Loaders/Backhoes	1	8.00	93	0.37
Rough Grading Soil Haul	Graders	0	8.00	187	0.41
Rough Grading Soil Haul	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading Soil Haul	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Utility Trenching	Excavators	1	8.00	424	0.38
Utility Trenching	Tractors/Loaders/Backhoes	1	8.00	131	0.37

Utility Trenching	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Fine Grading	Graders	0	8.00	187	0.41
Fine Grading	Rollers	1	8.00	142	0.38
Fine Grading	Rubber Tired Dozers	0	8.00	247	0.40
Fine Grading	Tractors/Loaders/Backhoes	1	8.00	268	0.37
Fine Grading	Tractors/Loaders/Backhoes	1	8.00	93	0.37
Parking Structure Construction	Aerial Lifts	1	8.00	63	0.31
Parking Structure Construction	Cranes	1	8.00	231	0.29
Parking Structure Construction	Forklifts	1	8.00	55	0.20
Parking Structure Construction	Generator Sets	0	8.00	84	0.74
Parking Structure Construction	Tractors/Loaders/Backhoes	1	8.00	131	0.37
Parking Structure Construction	Welders	0	8.00	46	0.45
Residential Construction	Aerial Lifts	1	8.00	63	0.31
Residential Construction	Cranes	1	8.00	231	0.29
Residential Construction	Forklifts	1	8.00	55	0.20
Residential Construction	Generator Sets	0	8.00	84	0.74
Residential Construction	Tractors/Loaders/Backhoes	1	8.00	131	0.37
Residential Construction	Welders	0	8.00	46	0.45
Paving	Cement and Mortar Mixers	0	8.00	9	0.56
Paving	Pavers	0	8.00	130	0.42
Paving	Paving Equipment	1	8.00	173	0.36
Paving	Rollers	1	8.00	142	0.38
Paving	Rollers	1	8.00	100	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	93	0.37
Finishing/Landscaping	Tractors/Loaders/Backhoes	1	8.00	93	0.37
Finishing/Landscaping	Tractors/Loaders/Backhoes	1	8.00	131	0.37
Architectural Coating	Air Compressors	0	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Demolition	2	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Demolition Haul	0	5.00	10.00	346.00	14.70	6.90	39.00	LD_Mix	HDT_Mix	HHDT
Asphalt Demolition	2	5.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Asphalt Demolition Debris Haul	0	5.00	12.00	186.00	14.70	6.90	39.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	5.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading	3	5.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Haul	0	5.00	10.00	1,139.00	14.70	6.90	39.00	LD_Mix	HDT_Mix	HHDT
Utility Trenching	3	5.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Fine Grading	3	5.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Parking Structure Construction	4	75.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Residential Construction	4	100.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	4	10.00	12.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Finishing/Landscaping	2	30.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	10.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Building Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Off-Road	7.4100e-003	0.0629	0.0604	2.6000e-004		2.2100e-003	2.2100e-003		2.0300e-003	2.0300e-003	0.0000	22.4869	22.4869	7.2700e-003	0.0000	22.6687
Total	**7.4100e-003**	**0.0629**	**0.0604**	**2.6000e-004**		**2.2100e-003**	**2.2100e-003**		**2.0300e-003**	**2.0300e-003**	**0.0000**	**22.4869**	**22.4869**	**7.2700e-003**	**0.0000**	**22.6687**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	4.1400e-003	1.1900e-003	1.0000e-005	2.9000e-004	1.0000e-005	3.0000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	1.0992	1.0992	9.0000e-005	0.0000	1.1013
Worker	6.0000e-004	3.8000e-004	4.6200e-003	2.0000e-005	1.8900e-003	1.0000e-005	1.9100e-003	5.0000e-004	1.0000e-005	5.1000e-004	0.0000	1.5236	1.5236	3.0000e-005	0.0000	1.5244
Total	**7.2000e-004**	**4.5200e-003**	**5.8100e-003**	**3.0000e-005**	**2.1800e-003**	**2.0000e-005**	**2.2100e-003**	**5.8000e-004**	**2.0000e-005**	**6.0000e-004**	**0.0000**	**2.6227**	**2.6227**	**1.2000e-004**	**0.0000**	**2.6257**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.4100e-003	0.0629	0.0604	2.6000e-004		2.2100e-003	2.2100e-003		2.0300e-003	2.0300e-003	0.0000	22.4868	22.4868	7.2700e-003	0.0000	22.6687

Total	**7.4100e-003**	**0.0629**	**0.0604**	**2.6000e-004**		**2.2100e-003**	**2.2100e-003**		**2.0300e-003**	**2.0300e-003**	**0.0000**	**22.4868**	**22.4868**	**7.2700e-003**	**0.0000**	**22.6687**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	4.1400e-003	1.1900e-003	1.0000e-005	2.7000e-004	1.0000e-005	2.8000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	1.0992	1.0992	9.0000e-005	0.0000	1.1013
Worker	6.0000e-004	3.8000e-004	4.6200e-003	2.0000e-005	1.7500e-003	1.0000e-005	1.7600e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.5236	1.5236	3.0000e-005	0.0000	1.5244
Total	**7.2000e-004**	**4.5200e-003**	**5.8100e-003**	**3.0000e-005**	**2.0200e-003**	**2.0000e-005**	**2.0400e-003**	**5.5000e-004**	**2.0000e-005**	**5.7000e-004**	**0.0000**	**2.6227**	**2.6227**	**1.2000e-004**	**0.0000**	**2.6257**

3.3 Building Demolition Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0259	0.0000	0.0259	3.9200e-003	0.0000	3.9200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0259**	**0.0000**	**0.0259**	**3.9200e-003**	**0.0000**	**3.9200e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.1000e-003	0.0673	0.0219	2.4000e-004	5.7800e-003	2.3000e-004	6.0100e-003	1.5800e-003	2.2000e-004	1.8000e-003	0.0000	23.8883	23.8883	2.4400e-003	0.0000	23.9494
Vendor	1.5000e-004	5.4000e-003	1.5500e-003	1.0000e-005	3.8000e-004	1.0000e-005	3.9000e-004	1.1000e-004	1.0000e-005	1.2000e-004	0.0000	1.4337	1.4337	1.1000e-004	0.0000	1.4365
Worker	1.0000e-004	7.0000e-005	8.0000e-004	0.0000	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2650	0.2650	1.0000e-005	0.0000	0.2651
Total	**2.3500e-003**	**0.0728**	**0.0242**	**2.5000e-004**	**6.4900e-003**	**2.4000e-004**	**6.7300e-003**	**1.7800e-003**	**2.3000e-004**	**2.0100e-003**	**0.0000**	**25.5869**	**25.5869**	**2.5600e-003**	**0.0000**	**25.6510**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0111	0.0000	0.0111	1.6800e-003	0.0000	1.6800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0111**	**0.0000**	**0.0111**	**1.6800e-003**	**0.0000**	**1.6800e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.1000e-003	0.0673	0.0219	2.4000e-004	5.3800e-003	2.3000e-004	5.6100e-003	1.4900e-003	2.2000e-004	1.7100e-003	0.0000	23.8883	23.8883	2.4400e-003	0.0000	23.9494
Vendor	1.5000e-004	5.4000e-003	1.5500e-003	1.0000e-005	3.5000e-004	1.0000e-005	3.6000e-004	1.0000e-004	1.0000e-005	1.1000e-004	0.0000	1.4337	1.4337	1.1000e-004	0.0000	1.4365
Worker	1.0000e-004	7.0000e-005	8.0000e-004	0.0000	3.0000e-004	0.0000	3.1000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2650	0.2650	1.0000e-005	0.0000	0.2651
Total	**2.3500e-003**	**0.0728**	**0.0242**	**2.5000e-004**	**6.0300e-003**	**2.4000e-004**	**6.2800e-003**	**1.6700e-003**	**2.3000e-004**	**1.9000e-003**	**0.0000**	**25.5869**	**25.5869**	**2.5600e-003**	**0.0000**	**25.6510**

3.4 Asphalt Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.5400e-003	0.0301	0.0289	1.2000e-004		1.0600e-003	1.0600e-003		9.7000e-004	9.7000e-004	0.0000	10.7546	10.7546	3.4800e-003	0.0000	10.8415
Total	**3.5400e-003**	**0.0301**	**0.0289**	**1.2000e-004**		**1.0600e-003**	**1.0600e-003**		**9.7000e-004**	**9.7000e-004**	**0.0000**	**10.7546**	**10.7546**	**3.4800e-003**	**0.0000**	**10.8415**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	1.9800e-003	5.7000e-004	1.0000e-005	1.4000e-004	0.0000	1.4000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.5257	0.5257	4.0000e-005	0.0000	0.5267
Worker	1.0000e-004	6.0000e-005	7.4000e-004	0.0000	3.0000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2429	0.2429	0.0000	0.0000	0.2430
Total	**1.6000e-004**	**2.0400e-003**	**1.3100e-003**	**1.0000e-005**	**4.4000e-004**	**0.0000**	**4.4000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.7686**	**0.7686**	**4.0000e-005**	**0.0000**	**0.7697**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.5400e-003	0.0301	0.0289	1.2000e-004		1.0600e-003	1.0600e-003		9.7000e-004	9.7000e-004	0.0000	10.7546	10.7546	3.4800e-003	0.0000	10.8415
Total	**3.5400e-003**	**0.0301**	**0.0289**	**1.2000e-004**		**1.0600e-003**	**1.0600e-003**		**9.7000e-004**	**9.7000e-004**	**0.0000**	**10.7546**	**10.7546**	**3.4800e-003**	**0.0000**	**10.8415**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	1.9800e-003	5.7000e-004	1.0000e-005	1.3000e-004	0.0000	1.3000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.5257	0.5257	4.0000e-005	0.0000	0.5267
Worker	1.0000e-004	6.0000e-005	7.4000e-004	0.0000	2.8000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	8.0000e-005	0.0000	0.2429	0.2429	0.0000	0.0000	0.2430

Total	**1.6000e-004**	**2.0400e-003**	**1.3100e-003**	**1.0000e-005**	**4.1000e-004**	**0.0000**	**4.1000e-004**	**1.1000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.7686**	**0.7686**	**4.0000e-005**	**0.0000**	**0.7697**

3.5 Asphalt Demolition Debris Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0139	0.0000	0.0139	2.1000e-003	0.0000	2.1000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0139**	**0.0000**	**0.0139**	**2.1000e-003**	**0.0000**	**2.1000e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1300e-003	0.0362	0.0118	1.3000e-004	3.1100e-003	1.2000e-004	3.2300e-003	8.5000e-004	1.2000e-004	9.7000e-004	0.0000	12.8417	12.8417	1.3100e-003	0.0000	12.8745
Vendor	1.4000e-004	4.8600e-003	1.3900e-003	1.0000e-005	3.4000e-004	1.0000e-005	3.5000e-004	1.0000e-004	1.0000e-005	1.1000e-004	0.0000	1.2903	1.2903	1.0000e-004	0.0000	1.2929
Worker	8.0000e-005	5.0000e-005	6.0000e-004	0.0000	2.5000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.1987	0.1987	0.0000	0.0000	0.1988
Total	**1.3500e-003**	**0.0411**	**0.0137**	**1.4000e-004**	**3.7000e-003**	**1.3000e-004**	**3.8300e-003**	**1.0200e-003**	**1.3000e-004**	**1.1500e-003**	**0.0000**	**14.3307**	**14.3307**	**1.4100e-003**	**0.0000**	**14.3662**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.9400e-003	0.0000	5.9400e-003	9.0000e-004	0.0000	9.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**5.9400e-003**	**0.0000**	**5.9400e-003**	**9.0000e-004**	**0.0000**	**9.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1300e-003	0.0362	0.0118	1.3000e-004	2.8900e-003	1.2000e-004	3.0200e-003	8.0000e-004	1.2000e-004	9.2000e-004	0.0000	12.8417	12.8417	1.3100e-003	0.0000	12.8745
Vendor	1.4000e-004	4.8600e-003	1.3900e-003	1.0000e-005	3.2000e-004	1.0000e-005	3.3000e-004	9.0000e-005	1.0000e-005	1.0000e-004	0.0000	1.2903	1.2903	1.0000e-004	0.0000	1.2929
Worker	8.0000e-005	5.0000e-005	6.0000e-004	0.0000	2.3000e-004	0.0000	2.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1987	0.1987	0.0000	0.0000	0.1988
Total	**1.3500e-003**	**0.0411**	**0.0137**	**1.4000e-004**	**3.4400e-003**	**1.3000e-004**	**3.5800e-003**	**9.5000e-004**	**1.3000e-004**	**1.0800e-003**	**0.0000**	**14.3307**	**14.3307**	**1.4100e-003**	**0.0000**	**14.3662**

3.6 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.4100e-003	0.0389	0.0407	1.4000e-004		1.5300e-003	1.5300e-003		1.4100e-003	1.4100e-003	0.0000	12.1956	12.1956	3.9400e-003	0.0000	12.2943
Total	**4.4100e-003**	**0.0389**	**0.0407**	**1.4000e-004**	**0.0000**	**1.5300e-003**	**1.5300e-003**	**0.0000**	**1.4100e-003**	**1.4100e-003**	**0.0000**	**12.1956**	**12.1956**	**3.9400e-003**	**0.0000**	**12.2943**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	1.9800e-003	5.7000e-004	1.0000e-005	1.4000e-004	0.0000	1.4000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.5257	0.5257	4.0000e-005	0.0000	0.5267
Worker	1.0000e-004	6.0000e-005	7.4000e-004	0.0000	3.0000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2429	0.2429	0.0000	0.0000	0.2430
Total	**1.6000e-004**	**2.0400e-003**	**1.3100e-003**	**1.0000e-005**	**4.4000e-004**	**0.0000**	**4.4000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.7686**	**0.7686**	**4.0000e-005**	**0.0000**	**0.7697**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	4.4100e-003	0.0389	0.0407	1.4000e-004		1.5300e-003	1.5300e-003		1.4100e-003	1.4100e-003	0.0000	12.1956	12.1956	3.9400e-003	0.0000	12.2942
Total	**4.4100e-003**	**0.0389**	**0.0407**	**1.4000e-004**	**0.0000**	**1.5300e-003**	**1.5300e-003**	**0.0000**	**1.4100e-003**	**1.4100e-003**	**0.0000**	**12.1956**	**12.1956**	**3.9400e-003**	**0.0000**	**12.2942**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	1.9800e-003	5.7000e-004	1.0000e-005	1.3000e-004	0.0000	1.3000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.5257	0.5257	4.0000e-005	0.0000	0.5267
Worker	1.0000e-004	6.0000e-005	7.4000e-004	0.0000	2.8000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	8.0000e-005	0.0000	0.2429	0.2429	0.0000	0.0000	0.2430
Total	**1.6000e-004**	**2.0400e-003**	**1.3100e-003**	**1.0000e-005**	**4.1000e-004**	**0.0000**	**4.1000e-004**	**1.1000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.7686**	**0.7686**	**4.0000e-005**	**0.0000**	**0.7697**

3.7 Rough Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0800e-003	0.0201	0.0251	6.0000e-005		8.9000e-004	8.9000e-004		8.2000e-004	8.2000e-004	0.0000	4.9489	4.9489	1.6000e-003	0.0000	4.9889
Total	**2.0800e-003**	**0.0201**	**0.0251**	**6.0000e-005**	**0.0000**	**8.9000e-004**	**8.9000e-004**	**0.0000**	**8.2000e-004**	**8.2000e-004**	**0.0000**	**4.9489**	**4.9489**	**1.6000e-003**	**0.0000**	**4.9889**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.2600e-003	3.6000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	3.0000e-005	0.0000	3.0000e-005	0.0000	0.3345	0.3345	3.0000e-005	0.0000	0.3352
Worker	6.0000e-005	4.0000e-005	4.7000e-004	0.0000	1.9000e-004	0.0000	1.9000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1546	0.1546	0.0000	0.0000	0.1546
Total	**1.0000e-004**	**1.3000e-003**	**8.3000e-004**	**0.0000**	**2.8000e-004**	**0.0000**	**2.8000e-004**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.4891**	**0.4891**	**3.0000e-005**	**0.0000**	**0.4898**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0800e-003	0.0201	0.0251	6.0000e-005		8.9000e-004	8.9000e-004		8.2000e-004	8.2000e-004	0.0000	4.9489	4.9489	1.6000e-003	0.0000	4.9889
Total	**2.0800e-003**	**0.0201**	**0.0251**	**6.0000e-005**	**0.0000**	**8.9000e-004**	**8.9000e-004**	**0.0000**	**8.2000e-004**	**8.2000e-004**	**0.0000**	**4.9489**	**4.9489**	**1.6000e-003**	**0.0000**	**4.9889**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.2600e-003	3.6000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	3.0000e-005	0.0000	0.3345	0.3345	3.0000e-005	0.0000	0.3352
Worker	6.0000e-005	4.0000e-005	4.7000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1546	0.1546	0.0000	0.0000	0.1546
Total	**1.0000e-004**	**1.3000e-003**	**8.3000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**7.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.4891**	**0.4891**	**3.0000e-005**	**0.0000**	**0.4898**

3.8 Rough Grading Soil Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.2000e-004	0.0000	3.2000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.2000e-004**	**0.0000**	**3.2000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	6.9000e-003	0.2215	0.0720	7.7000e-004	0.0190	7.5000e-004	0.0198	5.2100e-003	7.2000e-004	5.9300e-003	0.0000	78.6380	78.6380	8.0500e-003	0.0000	78.8391
Vendor	1.3000e-004	4.5000e-003	1.2900e-003	1.0000e-005	3.1000e-004	1.0000e-005	3.2000e-004	9.0000e-005	1.0000e-005	1.0000e-004	0.0000	1.1947	1.1947	9.0000e-005	0.0000	1.1971
Worker	9.0000e-005	6.0000e-005	6.7000e-004	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2208	0.2208	0.0000	0.0000	0.2209
Total	**7.1200e-003**	**0.2260**	**0.0739**	**7.8000e-004**	**0.0196**	**7.6000e-004**	**0.0204**	**5.3700e-003**	**7.3000e-004**	**6.1000e-003**	**0.0000**	**80.0535**	**80.0535**	**8.1400e-003**	**0.0000**	**80.2571**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.4000e-004	0.0000	1.4000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.9000e-003	0.2215	0.0720	7.7000e-004	0.0177	7.5000e-004	0.0185	4.9000e-003	7.2000e-004	5.6200e-003	0.0000	78.6380	78.6380	8.0500e-003	0.0000	78.8391
Vendor	1.3000e-004	4.5000e-003	1.2900e-003	1.0000e-005	2.9000e-004	1.0000e-005	3.0000e-004	9.0000e-005	1.0000e-005	9.0000e-005	0.0000	1.1947	1.1947	9.0000e-005	0.0000	1.1971
Worker	9.0000e-005	6.0000e-005	6.7000e-004	0.0000	2.5000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2208	0.2208	0.0000	0.0000	0.2209

Total	**7.1200e-003**	**0.2260**	**0.0739**	**7.8000e-004**	**0.0183**	**7.6000e-004**	**0.0190**	**5.0600e-003**	**7.3000e-004**	**5.7800e-003**	**0.0000**	**80.0535**	**80.0535**	**8.1400e-003**	**0.0000**	**80.2571**

3.9 Utility Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.0700e-003	0.0348	0.0394	1.3000e-004		1.3400e-003	1.3400e-003		1.2300e-003	1.2300e-003	0.0000	11.5908	11.5908	3.7500e-003	0.0000	11.6846
Total	**4.0700e-003**	**0.0348**	**0.0394**	**1.3000e-004**		**1.3400e-003**	**1.3400e-003**		**1.2300e-003**	**1.2300e-003**	**0.0000**	**11.5908**	**11.5908**	**3.7500e-003**	**0.0000**	**11.6846**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0000e-005	1.8000e-003	5.2000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.4779	0.4779	4.0000e-005	0.0000	0.4788
Worker	9.0000e-005	6.0000e-005	6.7000e-004	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2208	0.2208	0.0000	0.0000	0.2209
Total	**1.4000e-004**	**1.8600e-003**	**1.1900e-003**	**0.0000**	**4.0000e-004**	**0.0000**	**4.1000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.6987**	**0.6987**	**4.0000e-005**	**0.0000**	**0.6998**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.0700e-003	0.0348	0.0394	1.3000e-004		1.3400e-003	1.3400e-003		1.2300e-003	1.2300e-003	0.0000	11.5908	11.5908	3.7500e-003	0.0000	11.6845
Total	**4.0700e-003**	**0.0348**	**0.0394**	**1.3000e-004**		**1.3400e-003**	**1.3400e-003**		**1.2300e-003**	**1.2300e-003**	**0.0000**	**11.5908**	**11.5908**	**3.7500e-003**	**0.0000**	**11.6845**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0000e-005	1.8000e-003	5.2000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.4779	0.4779	4.0000e-005	0.0000	0.4788
Worker	9.0000e-005	6.0000e-005	6.7000e-004	0.0000	2.5000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2208	0.2208	0.0000	0.0000	0.2209
Total	**1.4000e-004**	**1.8600e-003**	**1.1900e-003**	**0.0000**	**3.7000e-004**	**0.0000**	**3.7000e-004**	**1.0000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.6987**	**0.6987**	**4.0000e-005**	**0.0000**	**0.6998**

3.10 Fine Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.4900e-003	0.0144	0.0179	4.0000e-005		6.3000e-004	6.3000e-004		5.8000e-004	5.8000e-004	0.0000	3.5349	3.5349	1.1400e-003	0.0000	3.5635
Total	**1.4900e-003**	**0.0144**	**0.0179**	**4.0000e-005**	**0.0000**	**6.3000e-004**	**6.3000e-004**	**0.0000**	**5.8000e-004**	**5.8000e-004**	**0.0000**	**3.5349**	**3.5349**	**1.1400e-003**	**0.0000**	**3.5635**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	9.0000e-004	2.6000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.2390	0.2390	2.0000e-005	0.0000	0.2394
Worker	4.0000e-005	3.0000e-005	3.3000e-004	0.0000	1.4000e-004	0.0000	1.4000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1104	0.1104	0.0000	0.0000	0.1105
Total	**7.0000e-005**	**9.3000e-004**	**5.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**2.0000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.3494**	**0.3494**	**2.0000e-005**	**0.0000**	**0.3499**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	1.4900e-003	0.0144	0.0179	4.0000e-005		6.3000e-004	6.3000e-004		5.8000e-004	5.8000e-004	0.0000	3.5349	3.5349	1.1400e-003	0.0000	3.5635
Total	**1.4900e-003**	**0.0144**	**0.0179**	**4.0000e-005**	**0.0000**	**6.3000e-004**	**6.3000e-004**	**0.0000**	**5.8000e-004**	**5.8000e-004**	**0.0000**	**3.5349**	**3.5349**	**1.1400e-003**	**0.0000**	**3.5635**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	9.0000e-004	2.6000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.2390	0.2390	2.0000e-005	0.0000	0.2394
Worker	4.0000e-005	3.0000e-005	3.3000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1104	0.1104	0.0000	0.0000	0.1105
Total	**7.0000e-005**	**9.3000e-004**	**5.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.3494**	**0.3494**	**2.0000e-005**	**0.0000**	**0.3499**

3.11 Parking Structure Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0143	0.1517	0.1393	2.8000e-004		6.6800e-003	6.6800e-003		6.1400e-003	6.1400e-003	0.0000	24.2059	24.2059	7.8300e-003	0.0000	24.4016
Total	**0.0143**	**0.1517**	**0.1393**	**2.8000e-004**		**6.6800e-003**	**6.6800e-003**		**6.1400e-003**	**6.1400e-003**	**0.0000**	**24.2059**	**24.2059**	**7.8300e-003**	**0.0000**	**24.4016**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.4000e-004	0.0119	3.4000e-003	3.0000e-005	8.3000e-004	2.0000e-005	8.5000e-004	2.4000e-004	2.0000e-005	2.6000e-004	0.0000	3.1541	3.1541	2.5000e-004	0.0000	3.1604
Worker	5.7200e-003	3.6800e-003	0.0442	1.6000e-004	0.0181	1.2000e-004	0.0182	4.8100e-003	1.1000e-004	4.9200e-003	0.0000	14.5734	14.5734	2.9000e-004	0.0000	14.5807
Total	**6.0600e-003**	**0.0156**	**0.0476**	**1.9000e-004**	**0.0189**	**1.4000e-004**	**0.0191**	**5.0500e-003**	**1.3000e-004**	**5.1800e-003**	**0.0000**	**17.7275**	**17.7275**	**5.4000e-004**	**0.0000**	**17.7411**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0143	0.1517	0.1393	2.8000e-004		6.6800e-003	6.6800e-003		6.1400e-003	6.1400e-003	0.0000	24.2058	24.2058	7.8300e-003	0.0000	24.4015
Total	**0.0143**	**0.1517**	**0.1393**	**2.8000e-004**		**6.6800e-003**	**6.6800e-003**		**6.1400e-003**	**6.1400e-003**	**0.0000**	**24.2058**	**24.2058**	**7.8300e-003**	**0.0000**	**24.4015**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.4000e-004	0.0119	3.4000e-003	3.0000e-005	7.8000e-004	2.0000e-005	8.0000e-004	2.3000e-004	2.0000e-005	2.5000e-004	0.0000	3.1541	3.1541	2.5000e-004	0.0000	3.1604
Worker	5.7200e-003	3.6800e-003	0.0442	1.6000e-004	0.0167	1.2000e-004	0.0168	4.4600e-003	1.1000e-004	4.5700e-003	0.0000	14.5734	14.5734	2.9000e-004	0.0000	14.5807
Total	**6.0600e-003**	**0.0156**	**0.0476**	**1.9000e-004**	**0.0175**	**1.4000e-004**	**0.0176**	**4.6900e-003**	**1.3000e-004**	**4.8200e-003**	**0.0000**	**17.7275**	**17.7275**	**5.4000e-004**	**0.0000**	**17.7411**

3.11 Parking Structure Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0395	0.4057	0.4072	8.1000e-004		0.0176	0.0176		0.0162	0.0162	0.0000	71.5681	71.5681	0.0232	0.0000	72.1468
Total	**0.0395**	**0.4057**	**0.4072**	**8.1000e-004**		**0.0176**	**0.0176**		**0.0162**	**0.0162**	**0.0000**	**71.5681**	**71.5681**	**0.0232**	**0.0000**	**72.1468**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.6000e-004	0.0264	9.3200e-003	9.0000e-005	2.4600e-003	3.0000e-005	2.4900e-003	7.1000e-004	3.0000e-005	7.4000e-004	0.0000	9.0375	9.0375	6.8000e-004	0.0000	9.0546
Worker	0.0160	9.8800e-003	0.1216	4.6000e-004	0.0535	3.4000e-004	0.0539	0.0142	3.1000e-004	0.0145	0.0000	41.4038	41.4038	7.9000e-004	0.0000	41.4235
Total	**0.0168**	**0.0363**	**0.1309**	**5.5000e-004**	**0.0560**	**3.7000e-004**	**0.0564**	**0.0149**	**3.4000e-004**	**0.0153**	**0.0000**	**50.4413**	**50.4413**	**1.4700e-003**	**0.0000**	**50.4781**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0395	0.4057	0.4072	8.1000e-004		0.0176	0.0176		0.0162	0.0162	0.0000	71.5680	71.5680	0.0232	0.0000	72.1467
Total	**0.0395**	**0.4057**	**0.4072**	**8.1000e-004**		**0.0176**	**0.0176**		**0.0162**	**0.0162**	**0.0000**	**71.5680**	**71.5680**	**0.0232**	**0.0000**	**72.1467**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.6000e-004	0.0264	9.3200e-003	9.0000e-005	2.3000e-003	3.0000e-005	2.3300e-003	6.7000e-004	3.0000e-005	7.0000e-004	0.0000	9.0375	9.0375	6.8000e-004	0.0000	9.0546
Worker	0.0160	9.8800e-003	0.1216	4.6000e-004	0.0493	3.4000e-004	0.0497	0.0132	3.1000e-004	0.0135	0.0000	41.4038	41.4038	7.9000e-004	0.0000	41.4235

Total	**0.0168**	**0.0363**	**0.1309**	**5.5000e-004**	**0.0516**	**3.7000e-004**	**0.0520**	**0.0139**	**3.4000e-004**	**0.0142**	**0.0000**	**50.4413**	**50.4413**	**1.4700e-003**	**0.0000**	**50.4781**

3.12 Residential Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0395	0.4057	0.4072	8.1000e-004		0.0176	0.0176		0.0162	0.0162	0.0000	71.5681	71.5681	0.0232	0.0000	72.1468
Total	**0.0395**	**0.4057**	**0.4072**	**8.1000e-004**		**0.0176**	**0.0176**		**0.0162**	**0.0162**	**0.0000**	**71.5681**	**71.5681**	**0.0232**	**0.0000**	**72.1468**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.1000e-004	0.0176	6.2100e-003	6.0000e-005	1.6400e-003	2.0000e-005	1.6600e-003	4.7000e-004	2.0000e-005	4.9000e-004	0.0000	6.0250	6.0250	4.6000e-004	0.0000	6.0364
Worker	0.0214	0.0132	0.1621	6.1000e-004	0.0714	4.5000e-004	0.0718	0.0190	4.2000e-004	0.0194	0.0000	55.2051	55.2051	1.0500e-003	0.0000	55.2314
Total	**0.0219**	**0.0308**	**0.1684**	**6.7000e-004**	**0.0730**	**4.7000e-004**	**0.0735**	**0.0194**	**4.4000e-004**	**0.0199**	**0.0000**	**61.2301**	**61.2301**	**1.5100e-003**	**0.0000**	**61.2677**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0395	0.4057	0.4072	8.1000e-004		0.0176	0.0176		0.0162	0.0162	0.0000	71.5680	71.5680	0.0232	0.0000	72.1467
Total	**0.0395**	**0.4057**	**0.4072**	**8.1000e-004**		**0.0176**	**0.0176**		**0.0162**	**0.0162**	**0.0000**	**71.5680**	**71.5680**	**0.0232**	**0.0000**	**72.1467**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.1000e-004	0.0176	6.2100e-003	6.0000e-005	1.5300e-003	2.0000e-005	1.5500e-003	4.5000e-004	2.0000e-005	4.7000e-004	0.0000	6.0250	6.0250	4.6000e-004	0.0000	6.0364
Worker	0.0214	0.0132	0.1621	6.1000e-004	0.0658	4.5000e-004	0.0662	0.0176	4.2000e-004	0.0180	0.0000	55.2051	55.2051	1.0500e-003	0.0000	55.2314
Total	**0.0219**	**0.0308**	**0.1684**	**6.7000e-004**	**0.0673**	**4.7000e-004**	**0.0678**	**0.0180**	**4.4000e-004**	**0.0185**	**0.0000**	**61.2301**	**61.2301**	**1.5100e-003**	**0.0000**	**61.2677**

3.12 Residential Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Off-Road	0.0190	0.1899	0.2050	4.1000e-004		8.0800e-003	8.0800e-003		7.4400e-003	7.4400e-003	0.0000	36.3491	36.3491	0.0118	0.0000	36.6430
Total	**0.0190**	**0.1899**	**0.2050**	**4.1000e-004**		**8.0800e-003**	**8.0800e-003**		**7.4400e-003**	**7.4400e-003**	**0.0000**	**36.3491**	**36.3491**	**0.0118**	**0.0000**	**36.6430**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.5000e-004	8.8100e-003	3.0900e-003	3.0000e-005	8.3000e-004	1.0000e-005	8.4000e-004	2.4000e-004	1.0000e-005	2.5000e-004	0.0000	3.0347	3.0347	2.3000e-004	0.0000	3.0404
Worker	0.0103	6.0900e-003	0.0766	3.0000e-004	0.0362	2.3000e-004	0.0365	9.6200e-003	2.1000e-004	9.8300e-003	0.0000	26.9168	26.9168	4.8000e-004	0.0000	26.9289
Total	**0.0106**	**0.0149**	**0.0797**	**3.3000e-004**	**0.0371**	**2.4000e-004**	**0.0373**	**9.8600e-003**	**2.2000e-004**	**0.0101**	**0.0000**	**29.9515**	**29.9515**	**7.1000e-004**	**0.0000**	**29.9693**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0190	0.1899	0.2050	4.1000e-004		8.0800e-003	8.0800e-003		7.4400e-003	7.4400e-003	0.0000	36.3491	36.3491	0.0118	0.0000	36.6430

Total	**0.0190**	**0.1899**	**0.2050**	**4.1000e-004**		**8.0800e-003**	**8.0800e-003**		**7.4400e-003**	**7.4400e-003**	**0.0000**	**36.3491**	**36.3491**	**0.0118**	**0.0000**	**36.6430**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.5000e-004	8.8100e-003	3.0900e-003	3.0000e-005	7.8000e-004	1.0000e-005	7.9000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	3.0347	3.0347	2.3000e-004	0.0000	3.0404
Worker	0.0103	6.0900e-003	0.0766	3.0000e-004	0.0334	2.3000e-004	0.0336	8.9300e-003	2.1000e-004	9.1300e-003	0.0000	26.9168	26.9168	4.8000e-004	0.0000	26.9289
Total	**0.0106**	**0.0149**	**0.0797**	**3.3000e-004**	**0.0342**	**2.4000e-004**	**0.0344**	**9.1600e-003**	**2.2000e-004**	**9.3700e-003**	**0.0000**	**29.9515**	**29.9515**	**7.1000e-004**	**0.0000**	**29.9693**

3.13 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6900e-003	0.0358	0.0583	9.0000e-005		1.7400e-003	1.7400e-003		1.6000e-003	1.6000e-003	0.0000	7.8495	7.8495	2.5400e-003	0.0000	7.9130
Paving	4.2000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.1100e-003**	**0.0358**	**0.0583**	**9.0000e-005**		**1.7400e-003**	**1.7400e-003**		**1.6000e-003**	**1.6000e-003**	**0.0000**	**7.8495**	**7.8495**	**2.5400e-003**	**0.0000**	**7.9130**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	4.4100e-003	1.5400e-003	2.0000e-005	4.2000e-004	1.0000e-005	4.2000e-004	1.2000e-004	1.0000e-005	1.2000e-004	0.0000	1.5174	1.5174	1.1000e-004	0.0000	1.5202
Worker	1.7000e-004	1.0000e-004	1.2800e-003	0.0000	6.0000e-004	0.0000	6.1000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.4486	0.4486	1.0000e-005	0.0000	0.4488
Total	**2.9000e-004**	**4.5100e-003**	**2.8200e-003**	**2.0000e-005**	**1.0200e-003**	**1.0000e-005**	**1.0300e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**1.9660**	**1.9660**	**1.2000e-004**	**0.0000**	**1.9690**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6900e-003	0.0358	0.0583	9.0000e-005		1.7400e-003	1.7400e-003		1.6000e-003	1.6000e-003	0.0000	7.8495	7.8495	2.5400e-003	0.0000	7.9130
Paving	4.2000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.1100e-003**	**0.0358**	**0.0583**	**9.0000e-005**		**1.7400e-003**	**1.7400e-003**		**1.6000e-003**	**1.6000e-003**	**0.0000**	**7.8495**	**7.8495**	**2.5400e-003**	**0.0000**	**7.9130**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	4.4100e-003	1.5400e-003	2.0000e-005	3.9000e-004	1.0000e-005	3.9000e-004	1.1000e-004	1.0000e-005	1.2000e-004	0.0000	1.5174	1.5174	1.1000e-004	0.0000	1.5202
Worker	1.7000e-004	1.0000e-004	1.2800e-003	0.0000	5.6000e-004	0.0000	5.6000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4486	0.4486	1.0000e-005	0.0000	0.4488
Total	**2.9000e-004**	**4.5100e-003**	**2.8200e-003**	**2.0000e-005**	**9.5000e-004**	**1.0000e-005**	**9.5000e-004**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**1.9660**	**1.9660**	**1.2000e-004**	**0.0000**	**1.9690**

3.14 Finishing/Landscaping - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.3700e-003	0.0834	0.1555	2.3000e-004		3.9700e-003	3.9700e-003		3.6600e-003	3.6600e-003	0.0000	20.3613	20.3613	6.5900e-003	0.0000	20.5259
Total	**9.3700e-003**	**0.0834**	**0.1555**	**2.3000e-004**		**3.9700e-003**	**3.9700e-003**		**3.6600e-003**	**3.6600e-003**	**0.0000**	**20.3613**	**20.3613**	**6.5900e-003**	**0.0000**	**20.5259**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.5000e-004	8.6800e-003	3.0400e-003	3.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.4000e-004	1.0000e-005	2.5000e-004	0.0000	2.9887	2.9887	2.2000e-004	0.0000	2.9943
Worker	3.0500e-003	1.8000e-003	0.0226	9.0000e-005	0.0107	7.0000e-005	0.0108	2.8400e-003	6.0000e-005	2.9000e-003	0.0000	7.9527	7.9527	1.4000e-004	0.0000	7.9563
Total	**3.3000e-003**	**0.0105**	**0.0257**	**1.2000e-004**	**0.0115**	**8.0000e-005**	**0.0116**	**3.0800e-003**	**7.0000e-005**	**3.1500e-003**	**0.0000**	**10.9414**	**10.9414**	**3.6000e-004**	**0.0000**	**10.9506**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.3700e-003	0.0834	0.1555	2.3000e-004		3.9700e-003	3.9700e-003		3.6600e-003	3.6600e-003	0.0000	20.3612	20.3612	6.5900e-003	0.0000	20.5259
Total	**9.3700e-003**	**0.0834**	**0.1555**	**2.3000e-004**		**3.9700e-003**	**3.9700e-003**		**3.6600e-003**	**3.6600e-003**	**0.0000**	**20.3612**	**20.3612**	**6.5900e-003**	**0.0000**	**20.5259**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.5000e-004	8.6800e-003	3.0400e-003	3.0000e-005	7.7000e-004	1.0000e-005	7.8000e-004	2.2000e-004	1.0000e-005	2.3000e-004	0.0000	2.9887	2.9887	2.2000e-004	0.0000	2.9943
Worker	3.0500e-003	1.8000e-003	0.0226	9.0000e-005	9.8700e-003	7.0000e-005	9.9400e-003	2.6400e-003	6.0000e-005	2.7000e-003	0.0000	7.9527	7.9527	1.4000e-004	0.0000	7.9563

Total	**3.3000e-003**	**0.0105**	**0.0257**	**1.2000e-004**	**0.0106**	**8.0000e-005**	**0.0107**	**2.8600e-003**	**7.0000e-005**	**2.9300e-003**	**0.0000**	**10.9414**	**10.9414**	**3.6000e-004**	**0.0000**	**10.9506**

3.15 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.1576					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.1576**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	4.3400e-003	1.5200e-003	2.0000e-005	4.1000e-004	1.0000e-005	4.1000e-004	1.2000e-004	1.0000e-005	1.2000e-004	0.0000	1.4944	1.4944	1.1000e-004	0.0000	1.4972
Worker	1.0200e-003	6.0000e-004	7.5400e-003	3.0000e-005	3.5700e-003	2.0000e-005	3.5900e-003	9.5000e-004	2.0000e-005	9.7000e-004	0.0000	2.6509	2.6509	5.0000e-005	0.0000	2.6521
Total	**1.1400e-003**	**4.9400e-003**	**9.0600e-003**	**5.0000e-005**	**3.9800e-003**	**3.0000e-005**	**4.0000e-003**	**1.0700e-003**	**3.0000e-005**	**1.0900e-003**	**0.0000**	**4.1453**	**4.1453**	**1.6000e-004**	**0.0000**	**4.1493**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.1576					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.1576**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	4.3400e-003	1.5200e-003	2.0000e-005	3.8000e-004	1.0000e-005	3.9000e-004	1.1000e-004	1.0000e-005	1.2000e-004	0.0000	1.4944	1.4944	1.1000e-004	0.0000	1.4972
Worker	1.0200e-003	6.0000e-004	7.5400e-003	3.0000e-005	3.2900e-003	2.0000e-005	3.3100e-003	8.8000e-004	2.0000e-005	9.0000e-004	0.0000	2.6509	2.6509	5.0000e-005	0.0000	2.6521
Total	**1.1400e-003**	**4.9400e-003**	**9.0600e-003**	**5.0000e-005**	**3.6700e-003**	**3.0000e-005**	**3.7000e-003**	**9.9000e-004**	**3.0000e-005**	**1.0200e-003**	**0.0000**	**4.1453**	**4.1453**	**1.6000e-004**	**0.0000**	**4.1493**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3757	1.4579	5.2185	0.0216	2.1480	0.0151	2.1631	0.5752	0.0140	0.5892	0.0000	1,995.9768	1,995.9768	0.0781	0.0000	1,997.9287
Unmitigated	0.3757	1.4579	5.2185	0.0216	2.1480	0.0151	2.1631	0.5752	0.0140	0.5892	0.0000	1,995.9768	1,995.9768	0.0781	0.0000	1,997.9287

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,522.85	1,463.31	1341.94	5,086,431	5,086,431
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	235.60	52.55	22.43	576,631	576,631
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	1,758.45	1,515.86	1,364.37	5,663,062	5,663,062

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877

Enclosed Parking with Elevator	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
General Office Building	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Other Asphalt Surfaces	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	548.7070	548.7070	0.0299	6.1900e-003	551.3017
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	548.7070	548.7070	0.0299	6.1900e-003	551.3017
NaturalGas Mitigated	0.0152	0.1302	0.0594	8.3000e-004		0.0105	0.0105		0.0105	0.0105	0.0000	150.0629	150.0629	2.8800e-003	2.7500e-003	150.9547
NaturalGas Unmitigated	0.0152	0.1302	0.0594	8.3000e-004		0.0105	0.0105		0.0105	0.0105	0.0000	150.0629	150.0629	2.8800e-003	2.7500e-003	150.9547

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					

Apartments Mid Rise	2.61689e+006	0.0141	0.1206	0.0513	7.7000e-004		9.7500e-003	9.7500e-003		9.7500e-003	9.7500e-003	0.0000	139.6471	139.6471	2.6800e-003	2.5600e-003	140.4770
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	195185	1.0500e-003	9.5700e-003	8.0400e-003	6.0000e-005		7.3000e-004	7.3000e-004		7.3000e-004	7.3000e-004	0.0000	10.4158	10.4158	2.0000e-004	1.9000e-004	10.4777
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0152**	**0.1302**	**0.0594**	**8.3000e-004**		**0.0105**	**0.0105**		**0.0105**	**0.0105**	**0.0000**	**150.0629**	**150.0629**	**2.8800e-003**	**2.7500e-003**	**150.9547**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.61689e+006	0.0141	0.1206	0.0513	7.7000e-004		9.7500e-003	9.7500e-003		9.7500e-003	9.7500e-003	0.0000	139.6471	139.6471	2.6800e-003	2.5600e-003	140.4770
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	195185	1.0500e-003	9.5700e-003	8.0400e-003	6.0000e-005		7.3000e-004	7.3000e-004		7.3000e-004	7.3000e-004	0.0000	10.4158	10.4158	2.0000e-004	1.9000e-004	10.4777
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0152**	**0.1302**	**0.0594**	**8.3000e-004**		**0.0105**	**0.0105**		**0.0105**	**0.0105**	**0.0000**	**150.0629**	**150.0629**	**2.8800e-003**	**2.7500e-003**	**150.9547**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			

Apartments Mid Rise	910344	219.4448	0.0120	2.4800e-003	220.4825
Enclosed Parking with Elevator	1.06715e+006	257.2448	0.0140	2.9000e-003	258.4612
General Office Building	298756	72.0174	3.9300e-003	8.1000e-004	72.3579
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**548.7070**	**0.0299**	**6.1900e-003**	**551.3017**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	910344	219.4448	0.0120	2.4800e-003	220.4825
Enclosed Parking with Elevator	1.06715e+006	257.2448	0.0140	2.9000e-003	258.4612
General Office Building	298756	72.0174	3.9300e-003	8.1000e-004	72.3579
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**548.7070**	**0.0299**	**6.1900e-003**	**551.3017**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.7358	0.0762	3.5648	3.1900e-003		0.1936	0.1936		0.1936	0.1936	20.0754	42.4411	62.5165	0.0636	1.3600e-003	64.5121
Unmitigated	1.7358	0.0762	3.5648	3.1900e-003		0.1936	0.1936		0.1936	0.1936	20.0754	42.4411	62.5165	0.0636	1.3600e-003	64.5121

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0822					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9633					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.6191	0.0490	1.2015	3.0700e-003		0.1805	0.1805		0.1805	0.1805	20.0754	38.5780	58.6534	0.0599	1.3600e-003	60.5562
Landscaping	0.0712	0.0272	2.3634	1.2000e-004		0.0131	0.0131		0.0131	0.0131	0.0000	3.8630	3.8630	3.7200e-003	0.0000	3.9559
Total	**1.7358**	**0.0762**	**3.5648**	**3.1900e-003**		**0.1936**	**0.1936**		**0.1936**	**0.1936**	**20.0754**	**42.4411**	**62.5165**	**0.0636**	**1.3600e-003**	**64.5121**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					

Architectural Coating	0.0822					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9633					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.6191	0.0490	1.2015	3.0700e-003		0.1805	0.1805		0.1805	0.1805	20.0754	38.5780	58.6534	0.0599	1.3600e-003	60.5562
Landscaping	0.0712	0.0272	2.3634	1.2000e-004		0.0131	0.0131		0.0131	0.0131	0.0000	3.8630	3.8630	3.7200e-003	0.0000	3.9559
Total	**1.7358**	**0.0762**	**3.5648**	**3.1900e-003**		**0.1936**	**0.1936**		**0.1936**	**0.1936**	**20.0754**	**42.4411**	**62.5165**	**0.0636**	**1.3600e-003**	**64.5121**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	82.7015	0.5292	0.0133	99.8863
Unmitigated	82.7015	0.5292	0.0133	99.8863

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			

Apartments Mid Rise	12.3141 / 7.76324	63.3494	0.4045	0.0102	76.4853
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	3.79639 / 2.32682	19.3521	0.1247	3.1300e-003	23.4010
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**82.7015**	**0.5292**	**0.0133**	**99.8863**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	12.3141 / 7.76324	63.3494	0.4045	0.0102	76.4853
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	3.79639 / 2.32682	19.3521	0.1247	3.1300e-003	23.4010
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**82.7015**	**0.5292**	**0.0133**	**99.8863**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	21.6794	1.2812	0.0000	53.7099
Unmitigated	21.6794	1.2812	0.0000	53.7099

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	86.94	17.6480	1.0430	0.0000	43.7223
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	19.86	4.0314	0.2383	0.0000	9.9876
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**21.6794**	**1.2812**	**0.0000**	**53.7099**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			

Apartments Mid Rise	86.94	17.6480	1.0430	0.0000	43.7223
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	19.86	4.0314	0.2383	0.0000	9.9876
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**21.6794**	**1.2812**	**0.0000**	**53.7099**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CalEEMod Existing Conditions Model

Brea Plaza Expansion Project, Existing Conditions (2021)

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Medical Office Building	1.60	1000sqft	0.04	1,596.00	0
Other Non-Asphalt Surfaces	65.93	1000sqft	1.51	65,931.00	0
Parking Lot	465.70	1000sqft	10.69	465,700.00	0
Regional Shopping Center	68.42	1000sqft	1.57	68,415.00	0
Supermarket	34.22	1000sqft	0.79	34,219.00	0
High Turnover (Sit Down Restaurant)	42.65	1000sqft	0.98	42,649.00	0
Movie Theater (No Matinee)	1,100.00	Seat	0.42	18,450.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	531.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustainability Report

Land Use - based on info from applicant

Construction Phase -

Vehicle Trips - based on info from LLG, see assumptions file for calculations

Vehicle Emission Factors - EMFAC2017 adjustment, see assumptions file

Woodstoves -

Area Coating - parking coating accounts only for parking area

Energy Use -

Water And Wastewater - assigning all water use to regional shopping center. Based on data from sewer study. Assumes 100% aerobic treatment.

Solid Waste -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	31898	27942
tblLandUse	LandUseSquareFeet	1,600.00	1,596.00
tblLandUse	LandUseSquareFeet	65,930.00	65,931.00
tblLandUse	LandUseSquareFeet	68,420.00	68,415.00
tblLandUse	LandUseSquareFeet	34,220.00	34,219.00
tblLandUse	LandUseSquareFeet	42,650.00	42,649.00
tblLandUse	LandUseSquareFeet	24,750.00	18,450.00
tblLandUse	LotAcreage	0.57	0.42
tblProjectCharacteristics	CO2IntensityFactor	702.44	531.44
tblVehicleEF	HHD	0.63	0.03
tblVehicleEF	HHD	0.16	0.14
tblVehicleEF	HHD	0.08	1.0000e-006
tblVehicleEF	HHD	2.36	5.39
tblVehicleEF	HHD	1.29	0.84
tblVehicleEF	HHD	3.99	0.01
tblVehicleEF	HHD	4,116.44	1,057.87
tblVehicleEF	HHD	1,683.99	1,517.44
tblVehicleEF	HHD	12.64	0.09
tblVehicleEF	HHD	20.04	5.92
tblVehicleEF	HHD	3.96	3.93

tblVehicleEF	HHD	19.26	1.99
tblVehicleEF	HHD	0.02	8.4880e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.1600e-004	1.0000e-006
tblVehicleEF	HHD	0.02	8.1210e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6750e-003	8.7680e-003
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.0700e-004	1.0000e-006
tblVehicleEF	HHD	1.1800e-004	6.0000e-006
tblVehicleEF	HHD	4.9160e-003	2.4300e-004
tblVehicleEF	HHD	0.57	0.41
tblVehicleEF	HHD	8.9000e-005	4.0000e-006
tblVehicleEF	HHD	0.13	0.12
tblVehicleEF	HHD	4.6300e-004	9.9000e-005
tblVehicleEF	HHD	0.10	4.0000e-006
tblVehicleEF	HHD	0.04	9.6940e-003
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.9200e-004	1.0000e-006
tblVehicleEF	HHD	1.1800e-004	6.0000e-006
tblVehicleEF	HHD	4.9160e-003	2.4300e-004
tblVehicleEF	HHD	0.68	0.48
tblVehicleEF	HHD	8.9000e-005	4.0000e-006
tblVehicleEF	HHD	0.31	0.27
tblVehicleEF	HHD	4.6300e-004	9.9000e-005
tblVehicleEF	HHD	0.11	5.0000e-006
tblVehicleEF	HHD	0.59	0.03

tblVehicleEF	HHD	0.16	0.14
tblVehicleEF	HHD	0.08	1.0000e-006
tblVehicleEF	HHD	1.72	5.25
tblVehicleEF	HHD	1.30	0.84
tblVehicleEF	HHD	3.80	0.01
tblVehicleEF	HHD	4,359.67	1,057.02
tblVehicleEF	HHD	1,683.99	1,517.44
tblVehicleEF	HHD	12.64	0.09
tblVehicleEF	HHD	20.68	5.78
tblVehicleEF	HHD	3.75	3.72
tblVehicleEF	HHD	19.25	1.99
tblVehicleEF	HHD	0.02	7.8070e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.1600e-004	1.0000e-006
tblVehicleEF	HHD	0.02	7.4700e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6750e-003	8.7680e-003
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.0700e-004	1.0000e-006
tblVehicleEF	HHD	1.6900e-004	9.0000e-006
tblVehicleEF	HHD	5.0090e-003	2.4600e-004
tblVehicleEF	HHD	0.54	0.43
tblVehicleEF	HHD	1.2500e-004	6.0000e-006
tblVehicleEF	HHD	0.13	0.12
tblVehicleEF	HHD	4.4900e-004	9.7000e-005
tblVehicleEF	HHD	0.09	4.0000e-006
tblVehicleEF	HHD	0.04	9.6850e-003

tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.8900e-004	1.0000e-006
tblVehicleEF	HHD	1.6900e-004	9.0000e-006
tblVehicleEF	HHD	5.0090e-003	2.4600e-004
tblVehicleEF	HHD	0.64	0.50
tblVehicleEF	HHD	1.2500e-004	6.0000e-006
tblVehicleEF	HHD	0.31	0.27
tblVehicleEF	HHD	4.4900e-004	9.7000e-005
tblVehicleEF	HHD	0.10	4.0000e-006
tblVehicleEF	HHD	0.68	0.02
tblVehicleEF	HHD	0.16	5.0360e-003
tblVehicleEF	HHD	0.08	1.0000e-006
tblVehicleEF	HHD	3.25	5.42
tblVehicleEF	HHD	1.29	0.46
tblVehicleEF	HHD	4.03	0.01
tblVehicleEF	HHD	3,780.54	1,027.42
tblVehicleEF	HHD	1,683.99	1,421.63
tblVehicleEF	HHD	12.64	0.09
tblVehicleEF	HHD	19.16	5.92
tblVehicleEF	HHD	3.89	3.78
tblVehicleEF	HHD	19.27	1.99
tblVehicleEF	HHD	0.02	8.9820e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.1600e-004	1.0000e-006
tblVehicleEF	HHD	0.02	8.5930e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6750e-003	8.5160e-003

tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.0700e-004	1.0000e-006
tblVehicleEF	HHD	1.1700e-004	6.0000e-006
tblVehicleEF	HHD	5.3110e-003	2.7000e-004
tblVehicleEF	HHD	0.61	0.39
tblVehicleEF	HHD	9.0000e-005	4.0000e-006
tblVehicleEF	HHD	0.13	0.11
tblVehicleEF	HHD	5.0200e-004	1.0500e-004
tblVehicleEF	HHD	0.10	4.0000e-006
tblVehicleEF	HHD	0.03	9.7070e-003
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.9300e-004	1.0000e-006
tblVehicleEF	HHD	1.1700e-004	6.0000e-006
tblVehicleEF	HHD	5.3110e-003	2.7000e-004
tblVehicleEF	HHD	0.73	0.44
tblVehicleEF	HHD	9.0000e-005	4.0000e-006
tblVehicleEF	HHD	0.31	0.12
tblVehicleEF	HHD	5.0200e-004	1.0500e-004
tblVehicleEF	HHD	0.11	5.0000e-006
tblVehicleEF	LDA	4.3340e-003	2.6620e-003
tblVehicleEF	LDA	5.1760e-003	0.05
tblVehicleEF	LDA	0.58	0.68
tblVehicleEF	LDA	1.10	2.11
tblVehicleEF	LDA	263.86	266.12
tblVehicleEF	LDA	58.33	54.35
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	0.07	0.19
tblVehicleEF	LDA	1.9130e-003	1.6720e-003
tblVehicleEF	LDA	2.2790e-003	1.9250e-003

tblVehicleEF	LDA	1.7630e-003	1.5400e-003
tblVehicleEF	LDA	2.0960e-003	1.7700e-003
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.09	0.10
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDA	2.6420e-003	2.6270e-003
tblVehicleEF	LDA	6.0200e-004	5.3700e-004
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.09	0.10
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.08	0.25
tblVehicleEF	LDA	4.5760e-003	2.8320e-003
tblVehicleEF	LDA	4.6500e-003	0.05
tblVehicleEF	LDA	0.63	0.74
tblVehicleEF	LDA	0.95	1.82
tblVehicleEF	LDA	274.96	277.03
tblVehicleEF	LDA	58.33	53.81
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.06	0.17
tblVehicleEF	LDA	1.9130e-003	1.6720e-003
tblVehicleEF	LDA	2.2790e-003	1.9250e-003
tblVehicleEF	LDA	1.7630e-003	1.5400e-003
tblVehicleEF	LDA	2.0960e-003	1.7700e-003
tblVehicleEF	LDA	0.05	0.07

tblVehicleEF	LDA	0.09	0.10
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.02
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	2.7540e-003	2.7340e-003
tblVehicleEF	LDA	5.9900e-004	5.3100e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.09	0.10
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.02
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDA	4.2520e-003	2.6080e-003
tblVehicleEF	LDA	5.2830e-003	0.05
tblVehicleEF	LDA	0.56	0.65
tblVehicleEF	LDA	1.13	2.18
tblVehicleEF	LDA	259.76	262.10
tblVehicleEF	LDA	58.33	54.47
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	0.07	0.19
tblVehicleEF	LDA	1.9130e-003	1.6720e-003
tblVehicleEF	LDA	2.2790e-003	1.9250e-003
tblVehicleEF	LDA	1.7630e-003	1.5400e-003
tblVehicleEF	LDA	2.0960e-003	1.7700e-003
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.10	0.10
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.01	0.01

tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDA	2.6010e-003	2.5870e-003
tblVehicleEF	LDA	6.0200e-004	5.3800e-004
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.10	0.10
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.08	0.26
tblVehicleEF	LDT1	9.9920e-003	6.2080e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.19	1.26
tblVehicleEF	LDT1	2.74	2.32
tblVehicleEF	LDT1	324.21	313.77
tblVehicleEF	LDT1	71.81	65.26
tblVehicleEF	LDT1	0.11	0.10
tblVehicleEF	LDT1	0.16	0.26
tblVehicleEF	LDT1	2.5570e-003	2.3060e-003
tblVehicleEF	LDT1	3.2780e-003	2.6450e-003
tblVehicleEF	LDT1	2.3530e-003	2.1220e-003
tblVehicleEF	LDT1	3.0150e-003	2.4330e-003
tblVehicleEF	LDT1	0.12	0.12
tblVehicleEF	LDT1	0.25	0.19
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.02	0.03
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.19	0.36
tblVehicleEF	LDT1	3.2560e-003	3.0980e-003

tblVehicleEF	LDT1	7.6600e-004	6.4400e-004
tblVehicleEF	LDT1	0.12	0.12
tblVehicleEF	LDT1	0.25	0.19
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.21	0.40
tblVehicleEF	LDT1	0.01	6.5570e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.28	1.36
tblVehicleEF	LDT1	2.36	2.00
tblVehicleEF	LDT1	337.31	324.92
tblVehicleEF	LDT1	71.81	64.62
tblVehicleEF	LDT1	0.10	0.09
tblVehicleEF	LDT1	0.15	0.24
tblVehicleEF	LDT1	2.5570e-003	2.3060e-003
tblVehicleEF	LDT1	3.2780e-003	2.6450e-003
tblVehicleEF	LDT1	2.3530e-003	2.1220e-003
tblVehicleEF	LDT1	3.0150e-003	2.4330e-003
tblVehicleEF	LDT1	0.17	0.18
tblVehicleEF	LDT1	0.26	0.20
tblVehicleEF	LDT1	0.14	0.15
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.14	0.08
tblVehicleEF	LDT1	0.17	0.33
tblVehicleEF	LDT1	3.3880e-003	3.2080e-003
tblVehicleEF	LDT1	7.5900e-004	6.3800e-004
tblVehicleEF	LDT1	0.17	0.18
tblVehicleEF	LDT1	0.26	0.20

tblVehicleEF	LDT1	0.14	0.15
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.14	0.08
tblVehicleEF	LDT1	0.19	0.36
tblVehicleEF	LDT1	9.8200e-003	6.0950e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.16	1.22
tblVehicleEF	LDT1	2.82	2.40
tblVehicleEF	LDT1	319.38	309.65
tblVehicleEF	LDT1	71.81	65.40
tblVehicleEF	LDT1	0.11	0.10
tblVehicleEF	LDT1	0.17	0.27
tblVehicleEF	LDT1	2.5570e-003	2.3060e-003
tblVehicleEF	LDT1	3.2780e-003	2.6450e-003
tblVehicleEF	LDT1	2.3530e-003	2.1220e-003
tblVehicleEF	LDT1	3.0150e-003	2.4330e-003
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.29	0.22
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.02	0.03
tblVehicleEF	LDT1	0.18	0.10
tblVehicleEF	LDT1	0.19	0.37
tblVehicleEF	LDT1	3.2070e-003	3.0570e-003
tblVehicleEF	LDT1	7.6700e-004	6.4600e-004
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.29	0.22
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.18	0.10

tblVehicleEF	LDT1	0.21	0.41
tblVehicleEF	LDT2	5.7840e-003	4.0560e-003
tblVehicleEF	LDT2	6.6620e-003	0.07
tblVehicleEF	LDT2	0.74	0.91
tblVehicleEF	LDT2	1.41	2.69
tblVehicleEF	LDT2	369.26	341.79
tblVehicleEF	LDT2	81.71	71.48
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.12	0.29
tblVehicleEF	LDT2	1.8090e-003	1.6370e-003
tblVehicleEF	LDT2	2.1990e-003	1.8210e-003
tblVehicleEF	LDT2	1.6640e-003	1.5060e-003
tblVehicleEF	LDT2	2.0220e-003	1.6740e-003
tblVehicleEF	LDT2	0.05	0.07
tblVehicleEF	LDT2	0.11	0.12
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.06	0.05
tblVehicleEF	LDT2	0.09	0.32
tblVehicleEF	LDT2	3.6980e-003	3.3740e-003
tblVehicleEF	LDT2	8.4100e-004	7.0600e-004
tblVehicleEF	LDT2	0.05	0.07
tblVehicleEF	LDT2	0.11	0.12
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.05
tblVehicleEF	LDT2	0.10	0.35
tblVehicleEF	LDT2	6.1050e-003	4.3050e-003
tblVehicleEF	LDT2	5.9960e-003	0.06

tblVehicleEF	LDT2	0.80	0.99
tblVehicleEF	LDT2	1.22	2.32
tblVehicleEF	LDT2	384.42	352.81
tblVehicleEF	LDT2	81.71	70.78
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.11	0.27
tblVehicleEF	LDT2	1.8090e-003	1.6370e-003
tblVehicleEF	LDT2	2.1990e-003	1.8210e-003
tblVehicleEF	LDT2	1.6640e-003	1.5060e-003
tblVehicleEF	LDT2	2.0220e-003	1.6740e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.07	0.10
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.08	0.29
tblVehicleEF	LDT2	3.8500e-003	3.4820e-003
tblVehicleEF	LDT2	8.3800e-004	6.9900e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.07	0.10
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.09	0.31
tblVehicleEF	LDT2	5.6750e-003	3.9780e-003
tblVehicleEF	LDT2	6.7990e-003	0.07
tblVehicleEF	LDT2	0.72	0.88
tblVehicleEF	LDT2	1.45	2.77
tblVehicleEF	LDT2	363.66	337.72

tblVehicleEF	LDT2	81.71	71.63
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.12	0.29
tblVehicleEF	LDT2	1.8090e-003	1.6370e-003
tblVehicleEF	LDT2	2.1990e-003	1.8210e-003
tblVehicleEF	LDT2	1.6640e-003	1.5060e-003
tblVehicleEF	LDT2	2.0220e-003	1.6740e-003
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.07	0.06
tblVehicleEF	LDT2	0.09	0.33
tblVehicleEF	LDT2	3.6420e-003	3.3340e-003
tblVehicleEF	LDT2	8.4100e-004	7.0700e-004
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.06
tblVehicleEF	LDT2	0.10	0.36
tblVehicleEF	LHD1	5.7990e-003	5.8180e-003
tblVehicleEF	LHD1	0.01	5.0100e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.19
tblVehicleEF	LHD1	0.78	0.57
tblVehicleEF	LHD1	2.55	1.09
tblVehicleEF	LHD1	9.03	9.05
tblVehicleEF	LHD1	603.73	667.72

tblVehicleEF	LHD1	33.13	12.41
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	1.27	0.81
tblVehicleEF	LHD1	1.04	0.34
tblVehicleEF	LHD1	8.6000e-004	7.5600e-004
tblVehicleEF	LHD1	0.01	9.6460e-003
tblVehicleEF	LHD1	0.01	7.2150e-003
tblVehicleEF	LHD1	9.1700e-004	2.5500e-004
tblVehicleEF	LHD1	8.2300e-004	7.2300e-004
tblVehicleEF	LHD1	2.5110e-003	2.4120e-003
tblVehicleEF	LHD1	9.9290e-003	6.8770e-003
tblVehicleEF	LHD1	8.4300e-004	2.3500e-004
tblVehicleEF	LHD1	2.8210e-003	2.2570e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.7870e-003	1.4220e-003
tblVehicleEF	LHD1	0.06	0.05
tblVehicleEF	LHD1	0.28	0.17
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.1000e-005	8.8000e-005
tblVehicleEF	LHD1	5.9280e-003	6.5210e-003
tblVehicleEF	LHD1	3.7900e-004	1.2300e-004
tblVehicleEF	LHD1	2.8210e-003	2.2570e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.7870e-003	1.4220e-003
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.28	0.17
tblVehicleEF	LHD1	0.29	0.09

tblVehicleEF	LHD1	5.7990e-003	5.8300e-003
tblVehicleEF	LHD1	0.01	5.0980e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.19
tblVehicleEF	LHD1	0.79	0.58
tblVehicleEF	LHD1	2.44	1.04
tblVehicleEF	LHD1	9.03	9.05
tblVehicleEF	LHD1	603.73	667.74
tblVehicleEF	LHD1	33.13	12.33
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	1.19	0.76
tblVehicleEF	LHD1	1.00	0.33
tblVehicleEF	LHD1	8.6000e-004	7.5600e-004
tblVehicleEF	LHD1	0.01	9.6460e-003
tblVehicleEF	LHD1	0.01	7.2150e-003
tblVehicleEF	LHD1	9.1700e-004	2.5500e-004
tblVehicleEF	LHD1	8.2300e-004	7.2300e-004
tblVehicleEF	LHD1	2.5110e-003	2.4120e-003
tblVehicleEF	LHD1	9.9290e-003	6.8770e-003
tblVehicleEF	LHD1	8.4300e-004	2.3500e-004
tblVehicleEF	LHD1	3.9390e-003	3.1600e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.4300e-003	1.9450e-003
tblVehicleEF	LHD1	0.06	0.05
tblVehicleEF	LHD1	0.27	0.16
tblVehicleEF	LHD1	0.26	0.08
tblVehicleEF	LHD1	9.1000e-005	8.8000e-005
tblVehicleEF	LHD1	5.9280e-003	6.5210e-003

tblVehicleEF	LHD1	3.7700e-004	1.2200e-004
tblVehicleEF	LHD1	3.9390e-003	3.1600e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	2.4300e-003	1.9450e-003
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.27	0.16
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	5.7990e-003	5.8160e-003
tblVehicleEF	LHD1	0.01	4.9860e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.19
tblVehicleEF	LHD1	0.77	0.57
tblVehicleEF	LHD1	2.56	1.09
tblVehicleEF	LHD1	9.03	9.05
tblVehicleEF	LHD1	603.73	667.72
tblVehicleEF	LHD1	33.13	12.42
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	1.24	0.80
tblVehicleEF	LHD1	1.05	0.35
tblVehicleEF	LHD1	8.6000e-004	7.5600e-004
tblVehicleEF	LHD1	0.01	9.6460e-003
tblVehicleEF	LHD1	0.01	7.2150e-003
tblVehicleEF	LHD1	9.1700e-004	2.5500e-004
tblVehicleEF	LHD1	8.2300e-004	7.2300e-004
tblVehicleEF	LHD1	2.5110e-003	2.4120e-003
tblVehicleEF	LHD1	9.9290e-003	6.8770e-003
tblVehicleEF	LHD1	8.4300e-004	2.3500e-004
tblVehicleEF	LHD1	2.9400e-003	2.3610e-003

tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8110e-003	1.4460e-003
tblVehicleEF	LHD1	0.06	0.05
tblVehicleEF	LHD1	0.30	0.18
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.1000e-005	8.8000e-005
tblVehicleEF	LHD1	5.9280e-003	6.5210e-003
tblVehicleEF	LHD1	3.8000e-004	1.2300e-004
tblVehicleEF	LHD1	2.9400e-003	2.3610e-003
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8110e-003	1.4460e-003
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.30	0.18
tblVehicleEF	LHD1	0.29	0.09
tblVehicleEF	LHD2	4.2890e-003	4.2530e-003
tblVehicleEF	LHD2	4.2710e-003	3.6630e-003
tblVehicleEF	LHD2	9.4470e-003	0.01
tblVehicleEF	LHD2	0.13	0.16
tblVehicleEF	LHD2	0.36	0.41
tblVehicleEF	LHD2	1.38	0.76
tblVehicleEF	LHD2	13.67	13.61
tblVehicleEF	LHD2	619.08	679.10
tblVehicleEF	LHD2	28.46	10.01
tblVehicleEF	LHD2	0.10	0.09
tblVehicleEF	LHD2	0.87	0.94
tblVehicleEF	LHD2	0.60	0.25
tblVehicleEF	LHD2	1.1890e-003	1.1970e-003

tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	9.7400e-003	0.01
tblVehicleEF	LHD2	4.6100e-004	1.4900e-004
tblVehicleEF	LHD2	1.1370e-003	1.1460e-003
tblVehicleEF	LHD2	2.6460e-003	2.6120e-003
tblVehicleEF	LHD2	9.3060e-003	9.6640e-003
tblVehicleEF	LHD2	4.2300e-004	1.3700e-004
tblVehicleEF	LHD2	1.1610e-003	1.4570e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.7900e-004	9.3400e-004
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.09	0.11
tblVehicleEF	LHD2	0.13	0.06
tblVehicleEF	LHD2	1.3400e-004	1.3100e-004
tblVehicleEF	LHD2	6.0340e-003	6.5780e-003
tblVehicleEF	LHD2	3.1000e-004	9.9000e-005
tblVehicleEF	LHD2	1.1610e-003	1.4570e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	7.7900e-004	9.3400e-004
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.09	0.11
tblVehicleEF	LHD2	0.14	0.06
tblVehicleEF	LHD2	4.2890e-003	4.2620e-003
tblVehicleEF	LHD2	4.3220e-003	3.7010e-003
tblVehicleEF	LHD2	9.1410e-003	0.01
tblVehicleEF	LHD2	0.13	0.16
tblVehicleEF	LHD2	0.37	0.41

tblVehicleEF	LHD2	1.32	0.73
tblVehicleEF	LHD2	13.67	13.61
tblVehicleEF	LHD2	619.08	679.11
tblVehicleEF	LHD2	28.46	9.96
tblVehicleEF	LHD2	0.10	0.09
tblVehicleEF	LHD2	0.82	0.88
tblVehicleEF	LHD2	0.58	0.24
tblVehicleEF	LHD2	1.1890e-003	1.1970e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	9.7400e-003	0.01
tblVehicleEF	LHD2	4.6100e-004	1.4900e-004
tblVehicleEF	LHD2	1.1370e-003	1.1460e-003
tblVehicleEF	LHD2	2.6460e-003	2.6120e-003
tblVehicleEF	LHD2	9.3060e-003	9.6640e-003
tblVehicleEF	LHD2	4.2300e-004	1.3700e-004
tblVehicleEF	LHD2	1.6270e-003	2.0410e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.0610e-003	1.2770e-003
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.08	0.10
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	1.3400e-004	1.3100e-004
tblVehicleEF	LHD2	6.0340e-003	6.5780e-003
tblVehicleEF	LHD2	3.0900e-004	9.9000e-005
tblVehicleEF	LHD2	1.6270e-003	2.0410e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	1.0610e-003	1.2770e-003

tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.08	0.10
tblVehicleEF	LHD2	0.13	0.06
tblVehicleEF	LHD2	4.2890e-003	4.2510e-003
tblVehicleEF	LHD2	4.2570e-003	3.6530e-003
tblVehicleEF	LHD2	9.5090e-003	0.01
tblVehicleEF	LHD2	0.13	0.16
tblVehicleEF	LHD2	0.36	0.41
tblVehicleEF	LHD2	1.38	0.76
tblVehicleEF	LHD2	13.67	13.61
tblVehicleEF	LHD2	619.08	679.10
tblVehicleEF	LHD2	28.46	10.02
tblVehicleEF	LHD2	0.10	0.09
tblVehicleEF	LHD2	0.85	0.92
tblVehicleEF	LHD2	0.61	0.25
tblVehicleEF	LHD2	1.1890e-003	1.1970e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	9.7400e-003	0.01
tblVehicleEF	LHD2	4.6100e-004	1.4900e-004
tblVehicleEF	LHD2	1.1370e-003	1.1460e-003
tblVehicleEF	LHD2	2.6460e-003	2.6120e-003
tblVehicleEF	LHD2	9.3060e-003	9.6640e-003
tblVehicleEF	LHD2	4.2300e-004	1.3700e-004
tblVehicleEF	LHD2	1.1810e-003	1.5020e-003
tblVehicleEF	LHD2	0.04	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.7800e-004	9.3300e-004
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.10	0.12

tblVehicleEF	LHD2	0.13	0.06
tblVehicleEF	LHD2	1.3400e-004	1.3100e-004
tblVehicleEF	LHD2	6.0340e-003	6.5780e-003
tblVehicleEF	LHD2	3.1000e-004	9.9000e-005
tblVehicleEF	LHD2	1.1810e-003	1.5020e-003
tblVehicleEF	LHD2	0.04	0.06
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	7.7800e-004	9.3300e-004
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.10	0.12
tblVehicleEF	LHD2	0.14	0.06
tblVehicleEF	MCY	0.48	0.35
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	18.61	18.90
tblVehicleEF	MCY	9.56	8.43
tblVehicleEF	MCY	177.57	214.49
tblVehicleEF	MCY	45.30	60.11
tblVehicleEF	MCY	1.12	1.12
tblVehicleEF	MCY	0.31	0.26
tblVehicleEF	MCY	2.1370e-003	2.1160e-003
tblVehicleEF	MCY	3.9240e-003	3.2680e-003
tblVehicleEF	MCY	1.9990e-003	1.9800e-003
tblVehicleEF	MCY	3.7000e-003	3.0810e-003
tblVehicleEF	MCY	1.13	1.16
tblVehicleEF	MCY	0.69	0.72
tblVehicleEF	MCY	0.71	0.72
tblVehicleEF	MCY	2.38	2.40
tblVehicleEF	MCY	0.65	0.58
tblVehicleEF	MCY	2.05	1.82

tblVehicleEF	MCY	2.1510e-003	2.1230e-003
tblVehicleEF	MCY	6.7000e-004	5.9500e-004
tblVehicleEF	MCY	1.13	1.16
tblVehicleEF	MCY	0.69	0.72
tblVehicleEF	MCY	0.71	0.72
tblVehicleEF	MCY	2.95	2.97
tblVehicleEF	MCY	0.65	0.58
tblVehicleEF	MCY	2.24	1.98
tblVehicleEF	MCY	0.47	0.35
tblVehicleEF	MCY	0.14	0.21
tblVehicleEF	MCY	17.91	18.17
tblVehicleEF	MCY	8.81	7.74
tblVehicleEF	MCY	177.57	213.12
tblVehicleEF	MCY	45.30	58.36
tblVehicleEF	MCY	0.98	0.98
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	2.1370e-003	2.1160e-003
tblVehicleEF	MCY	3.9240e-003	3.2680e-003
tblVehicleEF	MCY	1.9990e-003	1.9800e-003
tblVehicleEF	MCY	3.7000e-003	3.0810e-003
tblVehicleEF	MCY	1.71	1.74
tblVehicleEF	MCY	0.73	0.76
tblVehicleEF	MCY	1.12	1.14
tblVehicleEF	MCY	2.33	2.34
tblVehicleEF	MCY	0.61	0.54
tblVehicleEF	MCY	1.85	1.62
tblVehicleEF	MCY	2.1380e-003	2.1090e-003
tblVehicleEF	MCY	6.5100e-004	5.7700e-004
tblVehicleEF	MCY	1.71	1.74

tblVehicleEF	MCY	0.73	0.76
tblVehicleEF	MCY	1.12	1.14
tblVehicleEF	MCY	2.89	2.90
tblVehicleEF	MCY	0.61	0.54
tblVehicleEF	MCY	2.01	1.77
tblVehicleEF	MCY	0.48	0.35
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	18.72	19.01
tblVehicleEF	MCY	9.67	8.55
tblVehicleEF	MCY	177.57	214.70
tblVehicleEF	MCY	45.30	60.42
tblVehicleEF	MCY	1.09	1.09
tblVehicleEF	MCY	0.31	0.27
tblVehicleEF	MCY	2.1370e-003	2.1160e-003
tblVehicleEF	MCY	3.9240e-003	3.2680e-003
tblVehicleEF	MCY	1.9990e-003	1.9800e-003
tblVehicleEF	MCY	3.7000e-003	3.0810e-003
tblVehicleEF	MCY	1.26	1.28
tblVehicleEF	MCY	0.89	0.92
tblVehicleEF	MCY	0.75	0.76
tblVehicleEF	MCY	2.39	2.41
tblVehicleEF	MCY	0.75	0.66
tblVehicleEF	MCY	2.09	1.86
tblVehicleEF	MCY	2.1530e-003	2.1250e-003
tblVehicleEF	MCY	6.7300e-004	5.9800e-004
tblVehicleEF	MCY	1.26	1.28
tblVehicleEF	MCY	0.89	0.92
tblVehicleEF	MCY	0.75	0.76
tblVehicleEF	MCY	2.97	2.98

tblVehicleEF	MCY	0.75	0.66
tblVehicleEF	MCY	2.28	2.02
tblVehicleEF	MDV	0.01	5.6010e-003
tblVehicleEF	MDV	0.01	0.08
tblVehicleEF	MDV	1.26	1.12
tblVehicleEF	MDV	2.62	3.12
tblVehicleEF	MDV	500.02	421.68
tblVehicleEF	MDV	108.15	86.92
tblVehicleEF	MDV	0.14	0.10
tblVehicleEF	MDV	0.24	0.36
tblVehicleEF	MDV	1.9190e-003	1.7850e-003
tblVehicleEF	MDV	2.3090e-003	1.9840e-003
tblVehicleEF	MDV	1.7700e-003	1.6470e-003
tblVehicleEF	MDV	2.1250e-003	1.8250e-003
tblVehicleEF	MDV	0.07	0.08
tblVehicleEF	MDV	0.16	0.14
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.10	0.05
tblVehicleEF	MDV	0.20	0.41
tblVehicleEF	MDV	5.0080e-003	4.1600e-003
tblVehicleEF	MDV	1.1270e-003	8.5800e-004
tblVehicleEF	MDV	0.07	0.08
tblVehicleEF	MDV	0.16	0.14
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.10	0.05
tblVehicleEF	MDV	0.22	0.45
tblVehicleEF	MDV	0.01	5.9080e-003

tblVehicleEF	MDV	0.01	0.08
tblVehicleEF	MDV	1.36	1.20
tblVehicleEF	MDV	2.27	2.69
tblVehicleEF	MDV	519.96	433.25
tblVehicleEF	MDV	108.15	86.09
tblVehicleEF	MDV	0.12	0.09
tblVehicleEF	MDV	0.23	0.33
tblVehicleEF	MDV	1.9190e-003	1.7850e-003
tblVehicleEF	MDV	2.3090e-003	1.9840e-003
tblVehicleEF	MDV	1.7700e-003	1.6470e-003
tblVehicleEF	MDV	2.1250e-003	1.8250e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.16	0.14
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.03	0.03
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.18	0.37
tblVehicleEF	MDV	5.2090e-003	4.2740e-003
tblVehicleEF	MDV	1.1210e-003	8.5000e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.16	0.14
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.20	0.40
tblVehicleEF	MDV	0.01	5.5000e-003
tblVehicleEF	MDV	0.02	0.09
tblVehicleEF	MDV	1.23	1.08
tblVehicleEF	MDV	2.69	3.21

tblVehicleEF	MDV	492.66	417.41
tblVehicleEF	MDV	108.15	87.10
tblVehicleEF	MDV	0.13	0.10
tblVehicleEF	MDV	0.25	0.36
tblVehicleEF	MDV	1.9190e-003	1.7850e-003
tblVehicleEF	MDV	2.3090e-003	1.9840e-003
tblVehicleEF	MDV	1.7700e-003	1.6470e-003
tblVehicleEF	MDV	2.1250e-003	1.8250e-003
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.17	0.15
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.20	0.42
tblVehicleEF	MDV	4.9340e-003	4.1170e-003
tblVehicleEF	MDV	1.1290e-003	8.6000e-004
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.17	0.15
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.22	0.46
tblVehicleEF	MH	0.03	9.6940e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	2.15	1.16
tblVehicleEF	MH	5.50	1.98
tblVehicleEF	MH	1,108.90	1,462.99
tblVehicleEF	MH	57.43	18.14
tblVehicleEF	MH	1.43	1.44

tblVehicleEF	MH	0.78	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.0490e-003	2.4700e-004
tblVehicleEF	MH	3.2420e-003	3.3030e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.6500e-004	2.2700e-004
tblVehicleEF	MH	0.95	0.80
tblVehicleEF	MH	0.07	0.06
tblVehicleEF	MH	0.41	0.35
tblVehicleEF	MH	0.09	0.06
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.32	0.09
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.7000e-004	1.8000e-004
tblVehicleEF	MH	0.95	0.80
tblVehicleEF	MH	0.07	0.06
tblVehicleEF	MH	0.41	0.35
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.35	0.10
tblVehicleEF	MH	0.03	9.8980e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	2.21	1.19
tblVehicleEF	MH	5.21	1.88
tblVehicleEF	MH	1,108.90	1,463.04
tblVehicleEF	MH	57.43	17.97
tblVehicleEF	MH	1.33	1.35
tblVehicleEF	MH	0.75	0.22

tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.0490e-003	2.4700e-004
tblVehicleEF	MH	3.2420e-003	3.3030e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.6500e-004	2.2700e-004
tblVehicleEF	MH	1.28	1.08
tblVehicleEF	MH	0.07	0.06
tblVehicleEF	MH	0.56	0.47
tblVehicleEF	MH	0.09	0.06
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.31	0.09
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.6500e-004	1.7800e-004
tblVehicleEF	MH	1.28	1.08
tblVehicleEF	MH	0.07	0.06
tblVehicleEF	MH	0.56	0.47
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.03	9.6320e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	2.13	1.16
tblVehicleEF	MH	5.54	2.00
tblVehicleEF	MH	1,108.90	1,462.97
tblVehicleEF	MH	57.43	18.17
tblVehicleEF	MH	1.40	1.41
tblVehicleEF	MH	0.79	0.23
tblVehicleEF	MH	0.01	0.01

tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.0490e-003	2.4700e-004
tblVehicleEF	MH	3.2420e-003	3.3030e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.6500e-004	2.2700e-004
tblVehicleEF	MH	1.05	0.88
tblVehicleEF	MH	0.08	0.07
tblVehicleEF	MH	0.43	0.36
tblVehicleEF	MH	0.09	0.06
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.32	0.09
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.7100e-004	1.8000e-004
tblVehicleEF	MH	1.05	0.88
tblVehicleEF	MH	0.08	0.07
tblVehicleEF	MH	0.43	0.36
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.35	0.10
tblVehicleEF	MHD	0.02	4.9130e-003
tblVehicleEF	MHD	4.2090e-003	5.6110e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.36	0.39
tblVehicleEF	MHD	0.33	0.51
tblVehicleEF	MHD	6.12	1.31
tblVehicleEF	MHD	141.40	56.75
tblVehicleEF	MHD	1,144.82	1,086.34
tblVehicleEF	MHD	60.68	12.86
tblVehicleEF	MHD	0.54	0.43

tblVehicleEF	MHD	1.18	1.96
tblVehicleEF	MHD	10.59	1.10
tblVehicleEF	MHD	2.3000e-004	1.4510e-003
tblVehicleEF	MHD	5.5730e-003	0.05
tblVehicleEF	MHD	7.9300e-004	1.1900e-004
tblVehicleEF	MHD	2.2000e-004	1.3880e-003
tblVehicleEF	MHD	5.3290e-003	0.05
tblVehicleEF	MHD	7.2900e-004	1.0900e-004
tblVehicleEF	MHD	1.1360e-003	4.8700e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	7.3800e-004	3.2900e-004
tblVehicleEF	MHD	0.04	0.09
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.38	0.06
tblVehicleEF	MHD	1.3610e-003	5.4000e-004
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.1400e-004	1.2700e-004
tblVehicleEF	MHD	1.1360e-003	4.8700e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.3800e-004	3.2900e-004
tblVehicleEF	MHD	0.05	0.11
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.41	0.07
tblVehicleEF	MHD	0.02	4.6520e-003
tblVehicleEF	MHD	4.2610e-003	5.6470e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.26	0.31

tblVehicleEF	MHD	0.34	0.51
tblVehicleEF	MHD	5.83	1.25
tblVehicleEF	MHD	149.77	57.73
tblVehicleEF	MHD	1,144.82	1,086.35
tblVehicleEF	MHD	60.68	12.75
tblVehicleEF	MHD	0.56	0.43
tblVehicleEF	MHD	1.12	1.85
tblVehicleEF	MHD	10.55	1.10
tblVehicleEF	MHD	1.9400e-004	1.2250e-003
tblVehicleEF	MHD	5.5730e-003	0.05
tblVehicleEF	MHD	7.9300e-004	1.1900e-004
tblVehicleEF	MHD	1.8500e-004	1.1720e-003
tblVehicleEF	MHD	5.3290e-003	0.05
tblVehicleEF	MHD	7.2900e-004	1.0900e-004
tblVehicleEF	MHD	1.6040e-003	6.8900e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.0240e-003	4.5600e-004
tblVehicleEF	MHD	0.04	0.09
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.36	0.06
tblVehicleEF	MHD	1.4400e-003	5.5000e-004
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.0900e-004	1.2600e-004
tblVehicleEF	MHD	1.6040e-003	6.8900e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	1.0240e-003	4.5600e-004
tblVehicleEF	MHD	0.05	0.11

tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.40	0.06
tblVehicleEF	MHD	0.02	5.2900e-003
tblVehicleEF	MHD	4.1930e-003	5.5990e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.50	0.50
tblVehicleEF	MHD	0.33	0.51
tblVehicleEF	MHD	6.17	1.32
tblVehicleEF	MHD	129.83	55.39
tblVehicleEF	MHD	1,144.82	1,086.34
tblVehicleEF	MHD	60.68	12.88
tblVehicleEF	MHD	0.52	0.42
tblVehicleEF	MHD	1.16	1.92
tblVehicleEF	MHD	10.60	1.10
tblVehicleEF	MHD	2.8000e-004	1.7620e-003
tblVehicleEF	MHD	5.5730e-003	0.05
tblVehicleEF	MHD	7.9300e-004	1.1900e-004
tblVehicleEF	MHD	2.6800e-004	1.6860e-003
tblVehicleEF	MHD	5.3290e-003	0.05
tblVehicleEF	MHD	7.2900e-004	1.0900e-004
tblVehicleEF	MHD	1.1820e-003	4.9800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	7.5300e-004	3.3100e-004
tblVehicleEF	MHD	0.04	0.09
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.38	0.06
tblVehicleEF	MHD	1.2520e-003	5.2700e-004
tblVehicleEF	MHD	0.01	0.01

tblVehicleEF	MHD	7.1500e-004	1.2700e-004
tblVehicleEF	MHD	1.1820e-003	4.9800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.5300e-004	3.3100e-004
tblVehicleEF	MHD	0.05	0.11
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.42	0.07
tblVehicleEF	OBUS	0.01	9.0600e-003
tblVehicleEF	OBUS	8.4360e-003	9.3580e-003
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.28	0.55
tblVehicleEF	OBUS	0.58	1.01
tblVehicleEF	OBUS	5.60	2.44
tblVehicleEF	OBUS	84.68	84.33
tblVehicleEF	OBUS	1,226.51	1,422.10
tblVehicleEF	OBUS	69.78	20.28
tblVehicleEF	OBUS	0.42	0.52
tblVehicleEF	OBUS	1.44	1.85
tblVehicleEF	OBUS	2.11	0.61
tblVehicleEF	OBUS	1.4500e-004	2.0430e-003
tblVehicleEF	OBUS	7.3790e-003	0.04
tblVehicleEF	OBUS	8.3400e-004	1.9500e-004
tblVehicleEF	OBUS	1.3900e-004	1.9550e-003
tblVehicleEF	OBUS	7.0420e-003	0.03
tblVehicleEF	OBUS	7.6700e-004	1.7900e-004
tblVehicleEF	OBUS	1.4250e-003	1.8490e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.06

tblVehicleEF	OBUS	7.6500e-004	9.7800e-004
tblVehicleEF	OBUS	0.06	0.10
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.35	0.12
tblVehicleEF	OBUS	8.2000e-004	8.0300e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9600e-004	2.0100e-004
tblVehicleEF	OBUS	1.4250e-003	1.8490e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	7.6500e-004	9.7800e-004
tblVehicleEF	OBUS	0.07	0.12
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	OBUS	0.01	9.0790e-003
tblVehicleEF	OBUS	8.5800e-003	9.4940e-003
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.26	0.53
tblVehicleEF	OBUS	0.58	1.02
tblVehicleEF	OBUS	5.31	2.31
tblVehicleEF	OBUS	88.70	84.93
tblVehicleEF	OBUS	1,226.51	1,422.12
tblVehicleEF	OBUS	69.78	20.06
tblVehicleEF	OBUS	0.43	0.52
tblVehicleEF	OBUS	1.35	1.74
tblVehicleEF	OBUS	2.08	0.60
tblVehicleEF	OBUS	1.2200e-004	1.7270e-003
tblVehicleEF	OBUS	7.3790e-003	0.04
tblVehicleEF	OBUS	8.3400e-004	1.9500e-004

tblVehicleEF	OBUS	1.1700e-004	1.6520e-003
tblVehicleEF	OBUS	7.0420e-003	0.03
tblVehicleEF	OBUS	7.6700e-004	1.7900e-004
tblVehicleEF	OBUS	1.9610e-003	2.5310e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	1.0530e-003	1.3340e-003
tblVehicleEF	OBUS	0.06	0.10
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.34	0.11
tblVehicleEF	OBUS	8.5900e-004	8.0900e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9100e-004	1.9900e-004
tblVehicleEF	OBUS	1.9610e-003	2.5310e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	1.0530e-003	1.3340e-003
tblVehicleEF	OBUS	0.07	0.12
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.37	0.13
tblVehicleEF	OBUS	0.01	9.0540e-003
tblVehicleEF	OBUS	8.3930e-003	9.3190e-003
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.29	0.59
tblVehicleEF	OBUS	0.57	1.00
tblVehicleEF	OBUS	5.64	2.46
tblVehicleEF	OBUS	79.14	83.50
tblVehicleEF	OBUS	1,226.51	1,422.09
tblVehicleEF	OBUS	69.78	20.31

tblVehicleEF	OBUS	0.40	0.52
tblVehicleEF	OBUS	1.41	1.81
tblVehicleEF	OBUS	2.12	0.61
tblVehicleEF	OBUS	1.7600e-004	2.4810e-003
tblVehicleEF	OBUS	7.3790e-003	0.04
tblVehicleEF	OBUS	8.3400e-004	1.9500e-004
tblVehicleEF	OBUS	1.6900e-004	2.3730e-003
tblVehicleEF	OBUS	7.0420e-003	0.03
tblVehicleEF	OBUS	7.6700e-004	1.7900e-004
tblVehicleEF	OBUS	1.4580e-003	1.9070e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	7.6200e-004	9.8200e-004
tblVehicleEF	OBUS	0.06	0.10
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.36	0.12
tblVehicleEF	OBUS	7.6700e-004	7.9500e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9700e-004	2.0100e-004
tblVehicleEF	OBUS	1.4580e-003	1.9070e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	7.6200e-004	9.8200e-004
tblVehicleEF	OBUS	0.07	0.12
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	SBUS	0.87	0.07
tblVehicleEF	SBUS	0.02	0.01
tblVehicleEF	SBUS	0.09	7.1320e-003

tblVehicleEF	SBUS	8.16	2.80
tblVehicleEF	SBUS	1.19	1.03
tblVehicleEF	SBUS	9.61	1.02
tblVehicleEF	SBUS	1,131.05	356.18
tblVehicleEF	SBUS	1,090.69	1,128.82
tblVehicleEF	SBUS	54.18	5.79
tblVehicleEF	SBUS	9.79	3.82
tblVehicleEF	SBUS	4.65	6.33
tblVehicleEF	SBUS	12.50	0.55
tblVehicleEF	SBUS	0.01	6.3360e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.04
tblVehicleEF	SBUS	9.3500e-004	6.5000e-005
tblVehicleEF	SBUS	0.01	6.0620e-003
tblVehicleEF	SBUS	2.6810e-003	2.6580e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	8.6000e-004	6.0000e-005
tblVehicleEF	SBUS	3.6480e-003	1.1350e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	0.98	0.34
tblVehicleEF	SBUS	1.9360e-003	5.7500e-004
tblVehicleEF	SBUS	0.13	0.14
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.51	0.04
tblVehicleEF	SBUS	0.01	3.4000e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.0800e-004	5.7000e-005
tblVehicleEF	SBUS	3.6480e-003	1.1350e-003
tblVehicleEF	SBUS	0.04	0.01

tblVehicleEF	SBUS	1.42	0.48
tblVehicleEF	SBUS	1.9360e-003	5.7500e-004
tblVehicleEF	SBUS	0.16	0.17
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.56	0.05
tblVehicleEF	SBUS	0.87	0.07
tblVehicleEF	SBUS	0.02	0.01
tblVehicleEF	SBUS	0.08	6.4080e-003
tblVehicleEF	SBUS	8.04	2.75
tblVehicleEF	SBUS	1.21	1.05
tblVehicleEF	SBUS	7.94	0.84
tblVehicleEF	SBUS	1,182.37	367.48
tblVehicleEF	SBUS	1,090.69	1,128.85
tblVehicleEF	SBUS	54.18	5.50
tblVehicleEF	SBUS	10.10	3.93
tblVehicleEF	SBUS	4.39	5.98
tblVehicleEF	SBUS	12.46	0.55
tblVehicleEF	SBUS	8.9100e-003	5.3460e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.04
tblVehicleEF	SBUS	9.3500e-004	6.5000e-005
tblVehicleEF	SBUS	8.5240e-003	5.1150e-003
tblVehicleEF	SBUS	2.6810e-003	2.6580e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	8.6000e-004	6.0000e-005
tblVehicleEF	SBUS	4.9860e-003	1.5480e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	0.98	0.34
tblVehicleEF	SBUS	2.6570e-003	7.8500e-004

tblVehicleEF	SBUS	0.13	0.14
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.46	0.04
tblVehicleEF	SBUS	0.01	3.5060e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	6.8100e-004	5.4000e-005
tblVehicleEF	SBUS	4.9860e-003	1.5480e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	1.42	0.48
tblVehicleEF	SBUS	2.6570e-003	7.8500e-004
tblVehicleEF	SBUS	0.16	0.17
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.50	0.04
tblVehicleEF	SBUS	0.87	0.07
tblVehicleEF	SBUS	0.02	0.01
tblVehicleEF	SBUS	0.09	7.2360e-003
tblVehicleEF	SBUS	8.33	2.86
tblVehicleEF	SBUS	1.18	1.03
tblVehicleEF	SBUS	9.77	1.03
tblVehicleEF	SBUS	1,060.18	340.58
tblVehicleEF	SBUS	1,090.69	1,128.81
tblVehicleEF	SBUS	54.18	5.82
tblVehicleEF	SBUS	9.36	3.67
tblVehicleEF	SBUS	4.57	6.22
tblVehicleEF	SBUS	12.51	0.55
tblVehicleEF	SBUS	0.01	7.7020e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.04
tblVehicleEF	SBUS	9.3500e-004	6.5000e-005

tblVehicleEF	SBUS	0.01	7.3690e-003
tblVehicleEF	SBUS	2.6810e-003	2.6580e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	8.6000e-004	6.0000e-005
tblVehicleEF	SBUS	3.6990e-003	1.1730e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	0.99	0.34
tblVehicleEF	SBUS	1.8970e-003	5.6800e-004
tblVehicleEF	SBUS	0.13	0.14
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.51	0.04
tblVehicleEF	SBUS	0.01	3.2520e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.1100e-004	5.8000e-005
tblVehicleEF	SBUS	3.6990e-003	1.1730e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	1.42	0.48
tblVehicleEF	SBUS	1.8970e-003	5.6800e-004
tblVehicleEF	SBUS	0.16	0.17
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.56	0.05
tblVehicleEF	UBUS	1.93	1.2640e-003
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	8.96	0.09
tblVehicleEF	UBUS	13.19	1.81
tblVehicleEF	UBUS	1,828.32	438.73
tblVehicleEF	UBUS	133.38	22.76
tblVehicleEF	UBUS	4.82	0.08
tblVehicleEF	UBUS	13.49	0.24

tblVehicleEF	UBUS	0.53	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.04	9.0000e-005
tblVehicleEF	UBUS	1.1810e-003	4.0000e-005
tblVehicleEF	UBUS	0.23	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.04	8.2000e-005
tblVehicleEF	UBUS	1.0860e-003	3.6000e-005
tblVehicleEF	UBUS	6.1570e-003	2.6630e-003
tblVehicleEF	UBUS	0.10	0.03
tblVehicleEF	UBUS	3.6270e-003	1.8540e-003
tblVehicleEF	UBUS	0.53	4.2690e-003
tblVehicleEF	UBUS	0.03	7.5400e-003
tblVehicleEF	UBUS	0.96	0.15
tblVehicleEF	UBUS	8.6430e-003	4.3420e-003
tblVehicleEF	UBUS	1.5700e-003	2.2500e-004
tblVehicleEF	UBUS	6.1570e-003	2.6630e-003
tblVehicleEF	UBUS	0.10	0.03
tblVehicleEF	UBUS	3.6270e-003	1.8540e-003
tblVehicleEF	UBUS	2.52	6.2290e-003
tblVehicleEF	UBUS	0.03	7.5400e-003
tblVehicleEF	UBUS	1.05	0.16
tblVehicleEF	UBUS	1.94	1.2930e-003
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	9.02	0.09
tblVehicleEF	UBUS	11.63	1.61
tblVehicleEF	UBUS	1,828.32	438.73
tblVehicleEF	UBUS	133.38	22.40
tblVehicleEF	UBUS	4.53	0.07

tblVehicleEF	UBUS	13.42	0.23
tblVehicleEF	UBUS	0.53	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.04	9.0000e-005
tblVehicleEF	UBUS	1.1810e-003	4.0000e-005
tblVehicleEF	UBUS	0.23	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.04	8.2000e-005
tblVehicleEF	UBUS	1.0860e-003	3.6000e-005
tblVehicleEF	UBUS	8.2530e-003	3.6380e-003
tblVehicleEF	UBUS	0.10	0.03
tblVehicleEF	UBUS	4.8310e-003	2.4730e-003
tblVehicleEF	UBUS	0.53	4.3510e-003
tblVehicleEF	UBUS	0.03	6.8080e-003
tblVehicleEF	UBUS	0.89	0.14
tblVehicleEF	UBUS	8.6450e-003	4.3420e-003
tblVehicleEF	UBUS	1.5430e-003	2.2200e-004
tblVehicleEF	UBUS	8.2530e-003	3.6380e-003
tblVehicleEF	UBUS	0.10	0.03
tblVehicleEF	UBUS	4.8310e-003	2.4730e-003
tblVehicleEF	UBUS	2.53	6.3490e-003
tblVehicleEF	UBUS	0.03	6.8080e-003
tblVehicleEF	UBUS	0.98	0.15
tblVehicleEF	UBUS	1.93	1.2580e-003
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	8.95	0.09
tblVehicleEF	UBUS	13.46	1.85
tblVehicleEF	UBUS	1,828.32	438.73
tblVehicleEF	UBUS	133.38	22.82

tblVehicleEF	UBUS	4.73	0.08
tblVehicleEF	UBUS	13.51	0.24
tblVehicleEF	UBUS	0.53	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.04	9.0000e-005
tblVehicleEF	UBUS	1.1810e-003	4.0000e-005
tblVehicleEF	UBUS	0.23	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.04	8.2000e-005
tblVehicleEF	UBUS	1.0860e-003	3.6000e-005
tblVehicleEF	UBUS	6.9610e-003	2.5390e-003
tblVehicleEF	UBUS	0.12	0.03
tblVehicleEF	UBUS	3.8300e-003	1.7550e-003
tblVehicleEF	UBUS	0.52	4.2500e-003
tblVehicleEF	UBUS	0.04	9.2000e-003
tblVehicleEF	UBUS	0.98	0.15
tblVehicleEF	UBUS	8.6430e-003	4.3420e-003
tblVehicleEF	UBUS	1.5750e-003	2.2600e-004
tblVehicleEF	UBUS	6.9610e-003	2.5390e-003
tblVehicleEF	UBUS	0.12	0.03
tblVehicleEF	UBUS	3.8300e-003	1.7550e-003
tblVehicleEF	UBUS	2.52	6.2010e-003
tblVehicleEF	UBUS	0.04	9.2000e-003
tblVehicleEF	UBUS	1.07	0.16
tblVehicleTrips	DV_TP	17.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	17.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	66.00	100.00

tblVehicleTrips	PR_TP	54.00	100.00
tblVehicleTrips	ST_TR	158.37	0.00
tblVehicleTrips	ST_TR	8.96	0.00
tblVehicleTrips	ST_TR	49.97	148.80
tblVehicleTrips	ST_TR	177.59	0.00
tblVehicleTrips	SU_TR	131.84	0.00
tblVehicleTrips	SU_TR	1.55	0.00
tblVehicleTrips	SU_TR	25.24	68.45
tblVehicleTrips	SU_TR	166.44	0.00
tblVehicleTrips	WD_TR	127.15	0.00
tblVehicleTrips	WD_TR	36.13	0.00
tblVehicleTrips	WD_TR	42.70	102.71
tblVehicleTrips	WD_TR	102.24	0.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	12,945,712.84	0.00
tblWater	IndoorWaterUseRate	200,768.86	0.00
tblWater	IndoorWaterUseRate	9,939,636.18	0.00
tblWater	IndoorWaterUseRate	5,068,041.92	30,597,544.00
tblWater	IndoorWaterUseRate	4,218,238.31	0.00
tblWater	OutdoorWaterUseRate	826,322.10	0.00
tblWater	OutdoorWaterUseRate	38,241.69	0.00
tblWater	OutdoorWaterUseRate	634,444.86	0.00
tblWater	OutdoorWaterUseRate	3,106,219.24	853,528.00
tblWater	OutdoorWaterUseRate	130,460.98	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	3.9342	1.6700e-003	0.1823	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0300e-003		0.4151
Energy	0.3722	3.3836	2.8422	0.0203		0.2572	0.2572		0.2572	0.2572		4,060.2906	4,060.2906	0.0778	0.0744	4,084.4189
Mobile	24.1662	58.5467	302.1780	0.9408	89.8099	1.1016	90.9115	23.9836	1.0373	25.0209		96,312.8954	96,312.8954	3.4889		96,400.1184
Total	**28.4726**	**61.9319**	**305.2025**	**0.9611**	**89.8099**	**1.3594**	**91.1693**	**23.9836**	**1.2951**	**25.2787**		**100,373.5752**	**100,373.5752**	**3.5678**	**0.0744**	**100,484.9523**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	3.9342	1.6700e-003	0.1823	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0300e-003		0.4151
Energy	0.3722	3.3836	2.8422	0.0203		0.2572	0.2572		0.2572	0.2572		4,060.2906	4,060.2906	0.0778	0.0744	4,084.4189
Mobile	24.1662	58.5467	302.1780	0.9408	89.8099	1.1016	90.9115	23.9836	1.0373	25.0209		96,312.8954	96,312.8954	3.4889		96,400.1184
Total	**28.4726**	**61.9319**	**305.2025**	**0.9611**	**89.8099**	**1.3594**	**91.1693**	**23.9836**	**1.2951**	**25.2787**		**100,373.5752**	**100,373.5752**	**3.5678**	**0.0744**	**100,484.9523**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	24.1662	58.5467	302.1780	0.9408	89.8099	1.1016	90.9115	23.9836	1.0373	25.0209		96,312.8954	96,312.8954	3.4889		96,400.1184
Unmitigated	24.1662	58.5467	302.1780	0.9408	89.8099	1.1016	90.9115	23.9836	1.0373	25.0209		96,312.8954	96,312.8954	3.4889		96,400.1184

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Movie Theater (No Matinee)	1,936.00	2,464.00	2035.00	6,092,081	6,092,081
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Medical Office Building	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	7,027.42	10,180.90	4683.35	24,574,817	24,574,817
Supermarket	0.00	0.00	0.00		
Total	8,963.42	12,644.90	6,718.35	30,666,898	30,666,898

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Movie Theater (No Matinee)	16.60	8.40	6.90	1.80	79.20	19.00	100	0	0
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Medical Office Building	16.60	8.40	6.90	29.60	51.40	19.00	60	30	10
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	100	0	0
Supermarket	16.60	8.40	6.90	6.50	74.50	19.00	34	30	36

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High Turnover (Sit Down Restaurant)	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Medical Office Building	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Movie Theater (No Matinee)	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Other Non-Asphalt Surfaces	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Parking Lot	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Regional Shopping Center	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Supermarket	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.3722	3.3836	2.8422	0.0203		0.2572	0.2572		0.2572	0.2572		4,060.2906	4,060.2906	0.0778	0.0744	4,084.4189
NaturalGas Unmitigated	0.3722	3.3836	2.8422	0.0203		0.2572	0.2572		0.2572	0.2572		4,060.2906	4,060.2906	0.0778	0.0744	4,084.4189

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High Turnover (Sit Down Restaurant)	30901.2	0.3333	3.0295	2.5448	0.0182		0.2302	0.2302		0.2302	0.2302		3,635.4406	3,635.4406	0.0697	0.0667	3,657.0442
Medical Office Building	47.3553	5.1000e-004	4.6400e-003	3.9000e-003	3.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004		5.5712	5.5712	1.1000e-004	1.0000e-004	5.6043
Movie Theater (No Matinee)	1117.11	0.0121	0.1095	0.0920	6.6000e-004		8.3200e-003	8.3200e-003		8.3200e-003	8.3200e-003		131.4247	131.4247	2.5200e-003	2.4100e-003	132.2057
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	395.495	4.2700e-003	0.0388	0.0326	2.3000e-004		2.9500e-003	2.9500e-003		2.9500e-003	2.9500e-003		46.5288	46.5288	8.9000e-004	8.5000e-004	46.8053
Supermarket	2051.26	0.0221	0.2011	0.1689	1.2100e-003		0.0153	0.0153		0.0153	0.0153		241.3253	241.3253	4.6300e-003	4.4200e-003	242.7594
Total		**0.3722**	**3.3836**	**2.8422**	**0.0203**		**0.2571**	**0.2571**		**0.2571**	**0.2571**		**4,060.2906**	**4,060.2906**	**0.0778**	**0.0744**	**4,084.4189**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High Turnover (Sit Down Restaurant)	30.9012	0.3333	3.0295	2.5448	0.0182		0.2302	0.2302		0.2302	0.2302		3,635.4406	3,635.4406	0.0697	0.0667	3,657.0442
Medical Office Building	0.0473553	5.1000e-004	4.6400e-003	3.9000e-003	3.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004		5.5712	5.5712	1.1000e-004	1.0000e-004	5.6043
Movie Theater (No Matinee)	1.11711	0.0121	0.1095	0.0920	6.6000e-004		8.3200e-003	8.3200e-003		8.3200e-003	8.3200e-003		131.4247	131.4247	2.5200e-003	2.4100e-003	132.2057
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.395495	4.2700e-003	0.0388	0.0326	2.3000e-004		2.9500e-003	2.9500e-003		2.9500e-003	2.9500e-003		46.5288	46.5288	8.9000e-004	8.5000e-004	46.8053
Supermarket	2.05126	0.0221	0.2011	0.1689	1.2100e-003		0.0153	0.0153		0.0153	0.0153		241.3253	241.3253	4.6300e-003	4.4200e-003	242.7594
Total		**0.3722**	**3.3836**	**2.8422**	**0.0203**		**0.2571**	**0.2571**		**0.2571**	**0.2571**		**4,060.2906**	**4,060.2906**	**0.0778**	**0.0744**	**4,084.4189**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.9342	1.6700e-003	0.1823	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0300e-003		0.4151
Unmitigated	3.9342	1.6700e-003	0.1823	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0300e-003		0.4151

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4554					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.4618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0170	1.6700e-003	0.1823	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0300e-003		0.4151
Total	**3.9342**	**1.6700e-003**	**0.1823**	**1.0000e-005**		**6.5000e-004**	**6.5000e-004**		**6.5000e-004**	**6.5000e-004**		**0.3892**	**0.3892**	**1.0300e-003**		**0.4151**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4554					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.4618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0170	1.6700e-003	0.1823	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0300e-003		0.4151
Total	**3.9342**	**1.6700e-003**	**0.1823**	**1.0000e-005**		**6.5000e-004**	**6.5000e-004**		**6.5000e-004**	**6.5000e-004**		**0.3892**	**0.3892**	**1.0300e-003**		**0.4151**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

Brea Plaza Expansion Project, Existing Conditions (2021)

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Medical Office Building	1.60	1000sqft	0.04	1,596.00	0
Other Non-Asphalt Surfaces	65.93	1000sqft	1.51	65,931.00	0
Parking Lot	465.70	1000sqft	10.69	465,700.00	0
Regional Shopping Center	68.42	1000sqft	1.57	68,415.00	0
Supermarket	34.22	1000sqft	0.79	34,219.00	0
High Turnover (Sit Down Restaurant)	42.65	1000sqft	0.98	42,649.00	0
Movie Theater (No Matinee)	1,100.00	Seat	0.42	18,450.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	531.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustainability Report

Land Use - based on info from applicant

Construction Phase -

Vehicle Trips - based on info from LLG, see assumptions file for calculations

Vehicle Emission Factors - EMFAC2017 adjustment, see assumptions file

Woodstoves -

Area Coating - parking coating accounts only for parking area

Energy Use -

Water And Wastewater - assigning all water use to regional shopping center. Based on data from sewer study. Assumes 100% aerobic treatment.

Solid Waste -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	31898	27942
tblLandUse	LandUseSquareFeet	1,600.00	1,596.00
tblLandUse	LandUseSquareFeet	65,930.00	65,931.00
tblLandUse	LandUseSquareFeet	68,420.00	68,415.00
tblLandUse	LandUseSquareFeet	34,220.00	34,219.00
tblLandUse	LandUseSquareFeet	42,650.00	42,649.00
tblLandUse	LandUseSquareFeet	24,750.00	18,450.00
tblLandUse	LotAcreage	0.57	0.42
tblProjectCharacteristics	CO2IntensityFactor	702.44	531.44
tblVehicleEF	HHD	0.63	0.03
tblVehicleEF	HHD	0.16	0.14
tblVehicleEF	HHD	0.08	1.0000e-006
tblVehicleEF	HHD	2.36	5.39
tblVehicleEF	HHD	1.29	0.84
tblVehicleEF	HHD	3.99	0.01
tblVehicleEF	HHD	4,116.44	1,057.87
tblVehicleEF	HHD	1,683.99	1,517.44
tblVehicleEF	HHD	12.64	0.09
tblVehicleEF	HHD	20.04	5.92
tblVehicleEF	HHD	3.96	3.93

tblVehicleEF	HHD	19.26	1.99
tblVehicleEF	HHD	0.02	8.4880e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.1600e-004	1.0000e-006
tblVehicleEF	HHD	0.02	8.1210e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6750e-003	8.7680e-003
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.0700e-004	1.0000e-006
tblVehicleEF	HHD	1.1800e-004	6.0000e-006
tblVehicleEF	HHD	4.9160e-003	2.4300e-004
tblVehicleEF	HHD	0.57	0.41
tblVehicleEF	HHD	8.9000e-005	4.0000e-006
tblVehicleEF	HHD	0.13	0.12
tblVehicleEF	HHD	4.6300e-004	9.9000e-005
tblVehicleEF	HHD	0.10	4.0000e-006
tblVehicleEF	HHD	0.04	9.6940e-003
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.9200e-004	1.0000e-006
tblVehicleEF	HHD	1.1800e-004	6.0000e-006
tblVehicleEF	HHD	4.9160e-003	2.4300e-004
tblVehicleEF	HHD	0.68	0.48
tblVehicleEF	HHD	8.9000e-005	4.0000e-006
tblVehicleEF	HHD	0.31	0.27
tblVehicleEF	HHD	4.6300e-004	9.9000e-005
tblVehicleEF	HHD	0.11	5.0000e-006
tblVehicleEF	HHD	0.59	0.03

tblVehicleEF	HHD	0.16	0.14
tblVehicleEF	HHD	0.08	1.0000e-006
tblVehicleEF	HHD	1.72	5.25
tblVehicleEF	HHD	1.30	0.84
tblVehicleEF	HHD	3.80	0.01
tblVehicleEF	HHD	4,359.67	1,057.02
tblVehicleEF	HHD	1,683.99	1,517.44
tblVehicleEF	HHD	12.64	0.09
tblVehicleEF	HHD	20.68	5.78
tblVehicleEF	HHD	3.75	3.72
tblVehicleEF	HHD	19.25	1.99
tblVehicleEF	HHD	0.02	7.8070e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.1600e-004	1.0000e-006
tblVehicleEF	HHD	0.02	7.4700e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6750e-003	8.7680e-003
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.0700e-004	1.0000e-006
tblVehicleEF	HHD	1.6900e-004	9.0000e-006
tblVehicleEF	HHD	5.0090e-003	2.4600e-004
tblVehicleEF	HHD	0.54	0.43
tblVehicleEF	HHD	1.2500e-004	6.0000e-006
tblVehicleEF	HHD	0.13	0.12
tblVehicleEF	HHD	4.4900e-004	9.7000e-005
tblVehicleEF	HHD	0.09	4.0000e-006
tblVehicleEF	HHD	0.04	9.6850e-003

tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.8900e-004	1.0000e-006
tblVehicleEF	HHD	1.6900e-004	9.0000e-006
tblVehicleEF	HHD	5.0090e-003	2.4600e-004
tblVehicleEF	HHD	0.64	0.50
tblVehicleEF	HHD	1.2500e-004	6.0000e-006
tblVehicleEF	HHD	0.31	0.27
tblVehicleEF	HHD	4.4900e-004	9.7000e-005
tblVehicleEF	HHD	0.10	4.0000e-006
tblVehicleEF	HHD	0.68	0.02
tblVehicleEF	HHD	0.16	5.0360e-003
tblVehicleEF	HHD	0.08	1.0000e-006
tblVehicleEF	HHD	3.25	5.42
tblVehicleEF	HHD	1.29	0.46
tblVehicleEF	HHD	4.03	0.01
tblVehicleEF	HHD	3,780.54	1,027.42
tblVehicleEF	HHD	1,683.99	1,421.63
tblVehicleEF	HHD	12.64	0.09
tblVehicleEF	HHD	19.16	5.92
tblVehicleEF	HHD	3.89	3.78
tblVehicleEF	HHD	19.27	1.99
tblVehicleEF	HHD	0.02	8.9820e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.1600e-004	1.0000e-006
tblVehicleEF	HHD	0.02	8.5930e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6750e-003	8.5160e-003

tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.0700e-004	1.0000e-006
tblVehicleEF	HHD	1.1700e-004	6.0000e-006
tblVehicleEF	HHD	5.3110e-003	2.7000e-004
tblVehicleEF	HHD	0.61	0.39
tblVehicleEF	HHD	9.0000e-005	4.0000e-006
tblVehicleEF	HHD	0.13	0.11
tblVehicleEF	HHD	5.0200e-004	1.0500e-004
tblVehicleEF	HHD	0.10	4.0000e-006
tblVehicleEF	HHD	0.03	9.7070e-003
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.9300e-004	1.0000e-006
tblVehicleEF	HHD	1.1700e-004	6.0000e-006
tblVehicleEF	HHD	5.3110e-003	2.7000e-004
tblVehicleEF	HHD	0.73	0.44
tblVehicleEF	HHD	9.0000e-005	4.0000e-006
tblVehicleEF	HHD	0.31	0.12
tblVehicleEF	HHD	5.0200e-004	1.0500e-004
tblVehicleEF	HHD	0.11	5.0000e-006
tblVehicleEF	LDA	4.3340e-003	2.6620e-003
tblVehicleEF	LDA	5.1760e-003	0.05
tblVehicleEF	LDA	0.58	0.68
tblVehicleEF	LDA	1.10	2.11
tblVehicleEF	LDA	263.86	266.12
tblVehicleEF	LDA	58.33	54.35
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	0.07	0.19
tblVehicleEF	LDA	1.9130e-003	1.6720e-003
tblVehicleEF	LDA	2.2790e-003	1.9250e-003

tblVehicleEF	LDA	1.7630e-003	1.5400e-003
tblVehicleEF	LDA	2.0960e-003	1.7700e-003
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.09	0.10
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDA	2.6420e-003	2.6270e-003
tblVehicleEF	LDA	6.0200e-004	5.3700e-004
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.09	0.10
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.08	0.25
tblVehicleEF	LDA	4.5760e-003	2.8320e-003
tblVehicleEF	LDA	4.6500e-003	0.05
tblVehicleEF	LDA	0.63	0.74
tblVehicleEF	LDA	0.95	1.82
tblVehicleEF	LDA	274.96	277.03
tblVehicleEF	LDA	58.33	53.81
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.06	0.17
tblVehicleEF	LDA	1.9130e-003	1.6720e-003
tblVehicleEF	LDA	2.2790e-003	1.9250e-003
tblVehicleEF	LDA	1.7630e-003	1.5400e-003
tblVehicleEF	LDA	2.0960e-003	1.7700e-003
tblVehicleEF	LDA	0.05	0.07

tblVehicleEF	LDA	0.09	0.10
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.02
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	2.7540e-003	2.7340e-003
tblVehicleEF	LDA	5.9900e-004	5.3100e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.09	0.10
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.02
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDA	4.2520e-003	2.6080e-003
tblVehicleEF	LDA	5.2830e-003	0.05
tblVehicleEF	LDA	0.56	0.65
tblVehicleEF	LDA	1.13	2.18
tblVehicleEF	LDA	259.76	262.10
tblVehicleEF	LDA	58.33	54.47
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	0.07	0.19
tblVehicleEF	LDA	1.9130e-003	1.6720e-003
tblVehicleEF	LDA	2.2790e-003	1.9250e-003
tblVehicleEF	LDA	1.7630e-003	1.5400e-003
tblVehicleEF	LDA	2.0960e-003	1.7700e-003
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.10	0.10
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.01	0.01

tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDA	2.6010e-003	2.5870e-003
tblVehicleEF	LDA	6.0200e-004	5.3800e-004
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.10	0.10
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.08	0.26
tblVehicleEF	LDT1	9.9920e-003	6.2080e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.19	1.26
tblVehicleEF	LDT1	2.74	2.32
tblVehicleEF	LDT1	324.21	313.77
tblVehicleEF	LDT1	71.81	65.26
tblVehicleEF	LDT1	0.11	0.10
tblVehicleEF	LDT1	0.16	0.26
tblVehicleEF	LDT1	2.5570e-003	2.3060e-003
tblVehicleEF	LDT1	3.2780e-003	2.6450e-003
tblVehicleEF	LDT1	2.3530e-003	2.1220e-003
tblVehicleEF	LDT1	3.0150e-003	2.4330e-003
tblVehicleEF	LDT1	0.12	0.12
tblVehicleEF	LDT1	0.25	0.19
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.02	0.03
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.19	0.36
tblVehicleEF	LDT1	3.2560e-003	3.0980e-003

tblVehicleEF	LDT1	7.6600e-004	6.4400e-004
tblVehicleEF	LDT1	0.12	0.12
tblVehicleEF	LDT1	0.25	0.19
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.21	0.40
tblVehicleEF	LDT1	0.01	6.5570e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.28	1.36
tblVehicleEF	LDT1	2.36	2.00
tblVehicleEF	LDT1	337.31	324.92
tblVehicleEF	LDT1	71.81	64.62
tblVehicleEF	LDT1	0.10	0.09
tblVehicleEF	LDT1	0.15	0.24
tblVehicleEF	LDT1	2.5570e-003	2.3060e-003
tblVehicleEF	LDT1	3.2780e-003	2.6450e-003
tblVehicleEF	LDT1	2.3530e-003	2.1220e-003
tblVehicleEF	LDT1	3.0150e-003	2.4330e-003
tblVehicleEF	LDT1	0.17	0.18
tblVehicleEF	LDT1	0.26	0.20
tblVehicleEF	LDT1	0.14	0.15
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.14	0.08
tblVehicleEF	LDT1	0.17	0.33
tblVehicleEF	LDT1	3.3880e-003	3.2080e-003
tblVehicleEF	LDT1	7.5900e-004	6.3800e-004
tblVehicleEF	LDT1	0.17	0.18
tblVehicleEF	LDT1	0.26	0.20

tblVehicleEF	LDT1	0.14	0.15
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.14	0.08
tblVehicleEF	LDT1	0.19	0.36
tblVehicleEF	LDT1	9.8200e-003	6.0950e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.16	1.22
tblVehicleEF	LDT1	2.82	2.40
tblVehicleEF	LDT1	319.38	309.65
tblVehicleEF	LDT1	71.81	65.40
tblVehicleEF	LDT1	0.11	0.10
tblVehicleEF	LDT1	0.17	0.27
tblVehicleEF	LDT1	2.5570e-003	2.3060e-003
tblVehicleEF	LDT1	3.2780e-003	2.6450e-003
tblVehicleEF	LDT1	2.3530e-003	2.1220e-003
tblVehicleEF	LDT1	3.0150e-003	2.4330e-003
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.29	0.22
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.02	0.03
tblVehicleEF	LDT1	0.18	0.10
tblVehicleEF	LDT1	0.19	0.37
tblVehicleEF	LDT1	3.2070e-003	3.0570e-003
tblVehicleEF	LDT1	7.6700e-004	6.4600e-004
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.29	0.22
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.18	0.10

tblVehicleEF	LDT1	0.21	0.41
tblVehicleEF	LDT2	5.7840e-003	4.0560e-003
tblVehicleEF	LDT2	6.6620e-003	0.07
tblVehicleEF	LDT2	0.74	0.91
tblVehicleEF	LDT2	1.41	2.69
tblVehicleEF	LDT2	369.26	341.79
tblVehicleEF	LDT2	81.71	71.48
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.12	0.29
tblVehicleEF	LDT2	1.8090e-003	1.6370e-003
tblVehicleEF	LDT2	2.1990e-003	1.8210e-003
tblVehicleEF	LDT2	1.6640e-003	1.5060e-003
tblVehicleEF	LDT2	2.0220e-003	1.6740e-003
tblVehicleEF	LDT2	0.05	0.07
tblVehicleEF	LDT2	0.11	0.12
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.06	0.05
tblVehicleEF	LDT2	0.09	0.32
tblVehicleEF	LDT2	3.6980e-003	3.3740e-003
tblVehicleEF	LDT2	8.4100e-004	7.0600e-004
tblVehicleEF	LDT2	0.05	0.07
tblVehicleEF	LDT2	0.11	0.12
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.05
tblVehicleEF	LDT2	0.10	0.35
tblVehicleEF	LDT2	6.1050e-003	4.3050e-003
tblVehicleEF	LDT2	5.9960e-003	0.06

tblVehicleEF	LDT2	0.80	0.99
tblVehicleEF	LDT2	1.22	2.32
tblVehicleEF	LDT2	384.42	352.81
tblVehicleEF	LDT2	81.71	70.78
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.11	0.27
tblVehicleEF	LDT2	1.8090e-003	1.6370e-003
tblVehicleEF	LDT2	2.1990e-003	1.8210e-003
tblVehicleEF	LDT2	1.6640e-003	1.5060e-003
tblVehicleEF	LDT2	2.0220e-003	1.6740e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.07	0.10
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.08	0.29
tblVehicleEF	LDT2	3.8500e-003	3.4820e-003
tblVehicleEF	LDT2	8.3800e-004	6.9900e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.07	0.10
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.09	0.31
tblVehicleEF	LDT2	5.6750e-003	3.9780e-003
tblVehicleEF	LDT2	6.7990e-003	0.07
tblVehicleEF	LDT2	0.72	0.88
tblVehicleEF	LDT2	1.45	2.77
tblVehicleEF	LDT2	363.66	337.72

tblVehicleEF	LDT2	81.71	71.63
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.12	0.29
tblVehicleEF	LDT2	1.8090e-003	1.6370e-003
tblVehicleEF	LDT2	2.1990e-003	1.8210e-003
tblVehicleEF	LDT2	1.6640e-003	1.5060e-003
tblVehicleEF	LDT2	2.0220e-003	1.6740e-003
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.07	0.06
tblVehicleEF	LDT2	0.09	0.33
tblVehicleEF	LDT2	3.6420e-003	3.3340e-003
tblVehicleEF	LDT2	8.4100e-004	7.0700e-004
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.06
tblVehicleEF	LDT2	0.10	0.36
tblVehicleEF	LHD1	5.7990e-003	5.8180e-003
tblVehicleEF	LHD1	0.01	5.0100e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.19
tblVehicleEF	LHD1	0.78	0.57
tblVehicleEF	LHD1	2.55	1.09
tblVehicleEF	LHD1	9.03	9.05
tblVehicleEF	LHD1	603.73	667.72

tblVehicleEF	LHD1	33.13	12.41
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	1.27	0.81
tblVehicleEF	LHD1	1.04	0.34
tblVehicleEF	LHD1	8.6000e-004	7.5600e-004
tblVehicleEF	LHD1	0.01	9.6460e-003
tblVehicleEF	LHD1	0.01	7.2150e-003
tblVehicleEF	LHD1	9.1700e-004	2.5500e-004
tblVehicleEF	LHD1	8.2300e-004	7.2300e-004
tblVehicleEF	LHD1	2.5110e-003	2.4120e-003
tblVehicleEF	LHD1	9.9290e-003	6.8770e-003
tblVehicleEF	LHD1	8.4300e-004	2.3500e-004
tblVehicleEF	LHD1	2.8210e-003	2.2570e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.7870e-003	1.4220e-003
tblVehicleEF	LHD1	0.06	0.05
tblVehicleEF	LHD1	0.28	0.17
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.1000e-005	8.8000e-005
tblVehicleEF	LHD1	5.9280e-003	6.5210e-003
tblVehicleEF	LHD1	3.7900e-004	1.2300e-004
tblVehicleEF	LHD1	2.8210e-003	2.2570e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.7870e-003	1.4220e-003
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.28	0.17
tblVehicleEF	LHD1	0.29	0.09

tblVehicleEF	LHD1	5.7990e-003	5.8300e-003
tblVehicleEF	LHD1	0.01	5.0980e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.19
tblVehicleEF	LHD1	0.79	0.58
tblVehicleEF	LHD1	2.44	1.04
tblVehicleEF	LHD1	9.03	9.05
tblVehicleEF	LHD1	603.73	667.74
tblVehicleEF	LHD1	33.13	12.33
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	1.19	0.76
tblVehicleEF	LHD1	1.00	0.33
tblVehicleEF	LHD1	8.6000e-004	7.5600e-004
tblVehicleEF	LHD1	0.01	9.6460e-003
tblVehicleEF	LHD1	0.01	7.2150e-003
tblVehicleEF	LHD1	9.1700e-004	2.5500e-004
tblVehicleEF	LHD1	8.2300e-004	7.2300e-004
tblVehicleEF	LHD1	2.5110e-003	2.4120e-003
tblVehicleEF	LHD1	9.9290e-003	6.8770e-003
tblVehicleEF	LHD1	8.4300e-004	2.3500e-004
tblVehicleEF	LHD1	3.9390e-003	3.1600e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.4300e-003	1.9450e-003
tblVehicleEF	LHD1	0.06	0.05
tblVehicleEF	LHD1	0.27	0.16
tblVehicleEF	LHD1	0.26	0.08
tblVehicleEF	LHD1	9.1000e-005	8.8000e-005
tblVehicleEF	LHD1	5.9280e-003	6.5210e-003

tblVehicleEF	LHD1	3.7700e-004	1.2200e-004
tblVehicleEF	LHD1	3.9390e-003	3.1600e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	2.4300e-003	1.9450e-003
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.27	0.16
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	5.7990e-003	5.8160e-003
tblVehicleEF	LHD1	0.01	4.9860e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.19
tblVehicleEF	LHD1	0.77	0.57
tblVehicleEF	LHD1	2.56	1.09
tblVehicleEF	LHD1	9.03	9.05
tblVehicleEF	LHD1	603.73	667.72
tblVehicleEF	LHD1	33.13	12.42
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	1.24	0.80
tblVehicleEF	LHD1	1.05	0.35
tblVehicleEF	LHD1	8.6000e-004	7.5600e-004
tblVehicleEF	LHD1	0.01	9.6460e-003
tblVehicleEF	LHD1	0.01	7.2150e-003
tblVehicleEF	LHD1	9.1700e-004	2.5500e-004
tblVehicleEF	LHD1	8.2300e-004	7.2300e-004
tblVehicleEF	LHD1	2.5110e-003	2.4120e-003
tblVehicleEF	LHD1	9.9290e-003	6.8770e-003
tblVehicleEF	LHD1	8.4300e-004	2.3500e-004
tblVehicleEF	LHD1	2.9400e-003	2.3610e-003

tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8110e-003	1.4460e-003
tblVehicleEF	LHD1	0.06	0.05
tblVehicleEF	LHD1	0.30	0.18
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.1000e-005	8.8000e-005
tblVehicleEF	LHD1	5.9280e-003	6.5210e-003
tblVehicleEF	LHD1	3.8000e-004	1.2300e-004
tblVehicleEF	LHD1	2.9400e-003	2.3610e-003
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8110e-003	1.4460e-003
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.30	0.18
tblVehicleEF	LHD1	0.29	0.09
tblVehicleEF	LHD2	4.2890e-003	4.2530e-003
tblVehicleEF	LHD2	4.2710e-003	3.6630e-003
tblVehicleEF	LHD2	9.4470e-003	0.01
tblVehicleEF	LHD2	0.13	0.16
tblVehicleEF	LHD2	0.36	0.41
tblVehicleEF	LHD2	1.38	0.76
tblVehicleEF	LHD2	13.67	13.61
tblVehicleEF	LHD2	619.08	679.10
tblVehicleEF	LHD2	28.46	10.01
tblVehicleEF	LHD2	0.10	0.09
tblVehicleEF	LHD2	0.87	0.94
tblVehicleEF	LHD2	0.60	0.25
tblVehicleEF	LHD2	1.1890e-003	1.1970e-003

tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	9.7400e-003	0.01
tblVehicleEF	LHD2	4.6100e-004	1.4900e-004
tblVehicleEF	LHD2	1.1370e-003	1.1460e-003
tblVehicleEF	LHD2	2.6460e-003	2.6120e-003
tblVehicleEF	LHD2	9.3060e-003	9.6640e-003
tblVehicleEF	LHD2	4.2300e-004	1.3700e-004
tblVehicleEF	LHD2	1.1610e-003	1.4570e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.7900e-004	9.3400e-004
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.09	0.11
tblVehicleEF	LHD2	0.13	0.06
tblVehicleEF	LHD2	1.3400e-004	1.3100e-004
tblVehicleEF	LHD2	6.0340e-003	6.5780e-003
tblVehicleEF	LHD2	3.1000e-004	9.9000e-005
tblVehicleEF	LHD2	1.1610e-003	1.4570e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	7.7900e-004	9.3400e-004
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.09	0.11
tblVehicleEF	LHD2	0.14	0.06
tblVehicleEF	LHD2	4.2890e-003	4.2620e-003
tblVehicleEF	LHD2	4.3220e-003	3.7010e-003
tblVehicleEF	LHD2	9.1410e-003	0.01
tblVehicleEF	LHD2	0.13	0.16
tblVehicleEF	LHD2	0.37	0.41

tblVehicleEF	LHD2	1.32	0.73
tblVehicleEF	LHD2	13.67	13.61
tblVehicleEF	LHD2	619.08	679.11
tblVehicleEF	LHD2	28.46	9.96
tblVehicleEF	LHD2	0.10	0.09
tblVehicleEF	LHD2	0.82	0.88
tblVehicleEF	LHD2	0.58	0.24
tblVehicleEF	LHD2	1.1890e-003	1.1970e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	9.7400e-003	0.01
tblVehicleEF	LHD2	4.6100e-004	1.4900e-004
tblVehicleEF	LHD2	1.1370e-003	1.1460e-003
tblVehicleEF	LHD2	2.6460e-003	2.6120e-003
tblVehicleEF	LHD2	9.3060e-003	9.6640e-003
tblVehicleEF	LHD2	4.2300e-004	1.3700e-004
tblVehicleEF	LHD2	1.6270e-003	2.0410e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.0610e-003	1.2770e-003
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.08	0.10
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	1.3400e-004	1.3100e-004
tblVehicleEF	LHD2	6.0340e-003	6.5780e-003
tblVehicleEF	LHD2	3.0900e-004	9.9000e-005
tblVehicleEF	LHD2	1.6270e-003	2.0410e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	1.0610e-003	1.2770e-003

tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.08	0.10
tblVehicleEF	LHD2	0.13	0.06
tblVehicleEF	LHD2	4.2890e-003	4.2510e-003
tblVehicleEF	LHD2	4.2570e-003	3.6530e-003
tblVehicleEF	LHD2	9.5090e-003	0.01
tblVehicleEF	LHD2	0.13	0.16
tblVehicleEF	LHD2	0.36	0.41
tblVehicleEF	LHD2	1.38	0.76
tblVehicleEF	LHD2	13.67	13.61
tblVehicleEF	LHD2	619.08	679.10
tblVehicleEF	LHD2	28.46	10.02
tblVehicleEF	LHD2	0.10	0.09
tblVehicleEF	LHD2	0.85	0.92
tblVehicleEF	LHD2	0.61	0.25
tblVehicleEF	LHD2	1.1890e-003	1.1970e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	9.7400e-003	0.01
tblVehicleEF	LHD2	4.6100e-004	1.4900e-004
tblVehicleEF	LHD2	1.1370e-003	1.1460e-003
tblVehicleEF	LHD2	2.6460e-003	2.6120e-003
tblVehicleEF	LHD2	9.3060e-003	9.6640e-003
tblVehicleEF	LHD2	4.2300e-004	1.3700e-004
tblVehicleEF	LHD2	1.1810e-003	1.5020e-003
tblVehicleEF	LHD2	0.04	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.7800e-004	9.3300e-004
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.10	0.12

tblVehicleEF	LHD2	0.13	0.06
tblVehicleEF	LHD2	1.3400e-004	1.3100e-004
tblVehicleEF	LHD2	6.0340e-003	6.5780e-003
tblVehicleEF	LHD2	3.1000e-004	9.9000e-005
tblVehicleEF	LHD2	1.1810e-003	1.5020e-003
tblVehicleEF	LHD2	0.04	0.06
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	7.7800e-004	9.3300e-004
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.10	0.12
tblVehicleEF	LHD2	0.14	0.06
tblVehicleEF	MCY	0.48	0.35
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	18.61	18.90
tblVehicleEF	MCY	9.56	8.43
tblVehicleEF	MCY	177.57	214.49
tblVehicleEF	MCY	45.30	60.11
tblVehicleEF	MCY	1.12	1.12
tblVehicleEF	MCY	0.31	0.26
tblVehicleEF	MCY	2.1370e-003	2.1160e-003
tblVehicleEF	MCY	3.9240e-003	3.2680e-003
tblVehicleEF	MCY	1.9990e-003	1.9800e-003
tblVehicleEF	MCY	3.7000e-003	3.0810e-003
tblVehicleEF	MCY	1.13	1.16
tblVehicleEF	MCY	0.69	0.72
tblVehicleEF	MCY	0.71	0.72
tblVehicleEF	MCY	2.38	2.40
tblVehicleEF	MCY	0.65	0.58
tblVehicleEF	MCY	2.05	1.82

tblVehicleEF	MCY	2.1510e-003	2.1230e-003
tblVehicleEF	MCY	6.7000e-004	5.9500e-004
tblVehicleEF	MCY	1.13	1.16
tblVehicleEF	MCY	0.69	0.72
tblVehicleEF	MCY	0.71	0.72
tblVehicleEF	MCY	2.95	2.97
tblVehicleEF	MCY	0.65	0.58
tblVehicleEF	MCY	2.24	1.98
tblVehicleEF	MCY	0.47	0.35
tblVehicleEF	MCY	0.14	0.21
tblVehicleEF	MCY	17.91	18.17
tblVehicleEF	MCY	8.81	7.74
tblVehicleEF	MCY	177.57	213.12
tblVehicleEF	MCY	45.30	58.36
tblVehicleEF	MCY	0.98	0.98
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	2.1370e-003	2.1160e-003
tblVehicleEF	MCY	3.9240e-003	3.2680e-003
tblVehicleEF	MCY	1.9990e-003	1.9800e-003
tblVehicleEF	MCY	3.7000e-003	3.0810e-003
tblVehicleEF	MCY	1.71	1.74
tblVehicleEF	MCY	0.73	0.76
tblVehicleEF	MCY	1.12	1.14
tblVehicleEF	MCY	2.33	2.34
tblVehicleEF	MCY	0.61	0.54
tblVehicleEF	MCY	1.85	1.62
tblVehicleEF	MCY	2.1380e-003	2.1090e-003
tblVehicleEF	MCY	6.5100e-004	5.7700e-004
tblVehicleEF	MCY	1.71	1.74

tblVehicleEF	MCY	0.73	0.76
tblVehicleEF	MCY	1.12	1.14
tblVehicleEF	MCY	2.89	2.90
tblVehicleEF	MCY	0.61	0.54
tblVehicleEF	MCY	2.01	1.77
tblVehicleEF	MCY	0.48	0.35
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	18.72	19.01
tblVehicleEF	MCY	9.67	8.55
tblVehicleEF	MCY	177.57	214.70
tblVehicleEF	MCY	45.30	60.42
tblVehicleEF	MCY	1.09	1.09
tblVehicleEF	MCY	0.31	0.27
tblVehicleEF	MCY	2.1370e-003	2.1160e-003
tblVehicleEF	MCY	3.9240e-003	3.2680e-003
tblVehicleEF	MCY	1.9990e-003	1.9800e-003
tblVehicleEF	MCY	3.7000e-003	3.0810e-003
tblVehicleEF	MCY	1.26	1.28
tblVehicleEF	MCY	0.89	0.92
tblVehicleEF	MCY	0.75	0.76
tblVehicleEF	MCY	2.39	2.41
tblVehicleEF	MCY	0.75	0.66
tblVehicleEF	MCY	2.09	1.86
tblVehicleEF	MCY	2.1530e-003	2.1250e-003
tblVehicleEF	MCY	6.7300e-004	5.9800e-004
tblVehicleEF	MCY	1.26	1.28
tblVehicleEF	MCY	0.89	0.92
tblVehicleEF	MCY	0.75	0.76
tblVehicleEF	MCY	2.97	2.98

tblVehicleEF	MCY	0.75	0.66
tblVehicleEF	MCY	2.28	2.02
tblVehicleEF	MDV	0.01	5.6010e-003
tblVehicleEF	MDV	0.01	0.08
tblVehicleEF	MDV	1.26	1.12
tblVehicleEF	MDV	2.62	3.12
tblVehicleEF	MDV	500.02	421.68
tblVehicleEF	MDV	108.15	86.92
tblVehicleEF	MDV	0.14	0.10
tblVehicleEF	MDV	0.24	0.36
tblVehicleEF	MDV	1.9190e-003	1.7850e-003
tblVehicleEF	MDV	2.3090e-003	1.9840e-003
tblVehicleEF	MDV	1.7700e-003	1.6470e-003
tblVehicleEF	MDV	2.1250e-003	1.8250e-003
tblVehicleEF	MDV	0.07	0.08
tblVehicleEF	MDV	0.16	0.14
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.10	0.05
tblVehicleEF	MDV	0.20	0.41
tblVehicleEF	MDV	5.0080e-003	4.1600e-003
tblVehicleEF	MDV	1.1270e-003	8.5800e-004
tblVehicleEF	MDV	0.07	0.08
tblVehicleEF	MDV	0.16	0.14
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.10	0.05
tblVehicleEF	MDV	0.22	0.45
tblVehicleEF	MDV	0.01	5.9080e-003

tblVehicleEF	MDV	0.01	0.08
tblVehicleEF	MDV	1.36	1.20
tblVehicleEF	MDV	2.27	2.69
tblVehicleEF	MDV	519.96	433.25
tblVehicleEF	MDV	108.15	86.09
tblVehicleEF	MDV	0.12	0.09
tblVehicleEF	MDV	0.23	0.33
tblVehicleEF	MDV	1.9190e-003	1.7850e-003
tblVehicleEF	MDV	2.3090e-003	1.9840e-003
tblVehicleEF	MDV	1.7700e-003	1.6470e-003
tblVehicleEF	MDV	2.1250e-003	1.8250e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.16	0.14
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.03	0.03
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.18	0.37
tblVehicleEF	MDV	5.2090e-003	4.2740e-003
tblVehicleEF	MDV	1.1210e-003	8.5000e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.16	0.14
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.20	0.40
tblVehicleEF	MDV	0.01	5.5000e-003
tblVehicleEF	MDV	0.02	0.09
tblVehicleEF	MDV	1.23	1.08
tblVehicleEF	MDV	2.69	3.21

tblVehicleEF	MDV	492.66	417.41
tblVehicleEF	MDV	108.15	87.10
tblVehicleEF	MDV	0.13	0.10
tblVehicleEF	MDV	0.25	0.36
tblVehicleEF	MDV	1.9190e-003	1.7850e-003
tblVehicleEF	MDV	2.3090e-003	1.9840e-003
tblVehicleEF	MDV	1.7700e-003	1.6470e-003
tblVehicleEF	MDV	2.1250e-003	1.8250e-003
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.17	0.15
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.20	0.42
tblVehicleEF	MDV	4.9340e-003	4.1170e-003
tblVehicleEF	MDV	1.1290e-003	8.6000e-004
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.17	0.15
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.22	0.46
tblVehicleEF	MH	0.03	9.6940e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	2.15	1.16
tblVehicleEF	MH	5.50	1.98
tblVehicleEF	MH	1,108.90	1,462.99
tblVehicleEF	MH	57.43	18.14
tblVehicleEF	MH	1.43	1.44

tblVehicleEF	MH	0.78	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.0490e-003	2.4700e-004
tblVehicleEF	MH	3.2420e-003	3.3030e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.6500e-004	2.2700e-004
tblVehicleEF	MH	0.95	0.80
tblVehicleEF	MH	0.07	0.06
tblVehicleEF	MH	0.41	0.35
tblVehicleEF	MH	0.09	0.06
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.32	0.09
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.7000e-004	1.8000e-004
tblVehicleEF	MH	0.95	0.80
tblVehicleEF	MH	0.07	0.06
tblVehicleEF	MH	0.41	0.35
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.35	0.10
tblVehicleEF	MH	0.03	9.8980e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	2.21	1.19
tblVehicleEF	MH	5.21	1.88
tblVehicleEF	MH	1,108.90	1,463.04
tblVehicleEF	MH	57.43	17.97
tblVehicleEF	MH	1.33	1.35
tblVehicleEF	MH	0.75	0.22

tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.0490e-003	2.4700e-004
tblVehicleEF	MH	3.2420e-003	3.3030e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.6500e-004	2.2700e-004
tblVehicleEF	MH	1.28	1.08
tblVehicleEF	MH	0.07	0.06
tblVehicleEF	MH	0.56	0.47
tblVehicleEF	MH	0.09	0.06
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.31	0.09
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.6500e-004	1.7800e-004
tblVehicleEF	MH	1.28	1.08
tblVehicleEF	MH	0.07	0.06
tblVehicleEF	MH	0.56	0.47
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.03	9.6320e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	2.13	1.16
tblVehicleEF	MH	5.54	2.00
tblVehicleEF	MH	1,108.90	1,462.97
tblVehicleEF	MH	57.43	18.17
tblVehicleEF	MH	1.40	1.41
tblVehicleEF	MH	0.79	0.23
tblVehicleEF	MH	0.01	0.01

tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.0490e-003	2.4700e-004
tblVehicleEF	MH	3.2420e-003	3.3030e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.6500e-004	2.2700e-004
tblVehicleEF	MH	1.05	0.88
tblVehicleEF	MH	0.08	0.07
tblVehicleEF	MH	0.43	0.36
tblVehicleEF	MH	0.09	0.06
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.32	0.09
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.7100e-004	1.8000e-004
tblVehicleEF	MH	1.05	0.88
tblVehicleEF	MH	0.08	0.07
tblVehicleEF	MH	0.43	0.36
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.35	0.10
tblVehicleEF	MHD	0.02	4.9130e-003
tblVehicleEF	MHD	4.2090e-003	5.6110e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.36	0.39
tblVehicleEF	MHD	0.33	0.51
tblVehicleEF	MHD	6.12	1.31
tblVehicleEF	MHD	141.40	56.75
tblVehicleEF	MHD	1,144.82	1,086.34
tblVehicleEF	MHD	60.68	12.86
tblVehicleEF	MHD	0.54	0.43

tblVehicleEF	MHD	1.18	1.96
tblVehicleEF	MHD	10.59	1.10
tblVehicleEF	MHD	2.3000e-004	1.4510e-003
tblVehicleEF	MHD	5.5730e-003	0.05
tblVehicleEF	MHD	7.9300e-004	1.1900e-004
tblVehicleEF	MHD	2.2000e-004	1.3880e-003
tblVehicleEF	MHD	5.3290e-003	0.05
tblVehicleEF	MHD	7.2900e-004	1.0900e-004
tblVehicleEF	MHD	1.1360e-003	4.8700e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	7.3800e-004	3.2900e-004
tblVehicleEF	MHD	0.04	0.09
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.38	0.06
tblVehicleEF	MHD	1.3610e-003	5.4000e-004
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.1400e-004	1.2700e-004
tblVehicleEF	MHD	1.1360e-003	4.8700e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.3800e-004	3.2900e-004
tblVehicleEF	MHD	0.05	0.11
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.41	0.07
tblVehicleEF	MHD	0.02	4.6520e-003
tblVehicleEF	MHD	4.2610e-003	5.6470e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.26	0.31

tblVehicleEF	MHD	0.34	0.51
tblVehicleEF	MHD	5.83	1.25
tblVehicleEF	MHD	149.77	57.73
tblVehicleEF	MHD	1,144.82	1,086.35
tblVehicleEF	MHD	60.68	12.75
tblVehicleEF	MHD	0.56	0.43
tblVehicleEF	MHD	1.12	1.85
tblVehicleEF	MHD	10.55	1.10
tblVehicleEF	MHD	1.9400e-004	1.2250e-003
tblVehicleEF	MHD	5.5730e-003	0.05
tblVehicleEF	MHD	7.9300e-004	1.1900e-004
tblVehicleEF	MHD	1.8500e-004	1.1720e-003
tblVehicleEF	MHD	5.3290e-003	0.05
tblVehicleEF	MHD	7.2900e-004	1.0900e-004
tblVehicleEF	MHD	1.6040e-003	6.8900e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.0240e-003	4.5600e-004
tblVehicleEF	MHD	0.04	0.09
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.36	0.06
tblVehicleEF	MHD	1.4400e-003	5.5000e-004
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.0900e-004	1.2600e-004
tblVehicleEF	MHD	1.6040e-003	6.8900e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	1.0240e-003	4.5600e-004
tblVehicleEF	MHD	0.05	0.11

tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.40	0.06
tblVehicleEF	MHD	0.02	5.2900e-003
tblVehicleEF	MHD	4.1930e-003	5.5990e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.50	0.50
tblVehicleEF	MHD	0.33	0.51
tblVehicleEF	MHD	6.17	1.32
tblVehicleEF	MHD	129.83	55.39
tblVehicleEF	MHD	1,144.82	1,086.34
tblVehicleEF	MHD	60.68	12.88
tblVehicleEF	MHD	0.52	0.42
tblVehicleEF	MHD	1.16	1.92
tblVehicleEF	MHD	10.60	1.10
tblVehicleEF	MHD	2.8000e-004	1.7620e-003
tblVehicleEF	MHD	5.5730e-003	0.05
tblVehicleEF	MHD	7.9300e-004	1.1900e-004
tblVehicleEF	MHD	2.6800e-004	1.6860e-003
tblVehicleEF	MHD	5.3290e-003	0.05
tblVehicleEF	MHD	7.2900e-004	1.0900e-004
tblVehicleEF	MHD	1.1820e-003	4.9800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	7.5300e-004	3.3100e-004
tblVehicleEF	MHD	0.04	0.09
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.38	0.06
tblVehicleEF	MHD	1.2520e-003	5.2700e-004
tblVehicleEF	MHD	0.01	0.01

tblVehicleEF	MHD	7.1500e-004	1.2700e-004
tblVehicleEF	MHD	1.1820e-003	4.9800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.5300e-004	3.3100e-004
tblVehicleEF	MHD	0.05	0.11
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.42	0.07
tblVehicleEF	OBUS	0.01	9.0600e-003
tblVehicleEF	OBUS	8.4360e-003	9.3580e-003
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.28	0.55
tblVehicleEF	OBUS	0.58	1.01
tblVehicleEF	OBUS	5.60	2.44
tblVehicleEF	OBUS	84.68	84.33
tblVehicleEF	OBUS	1,226.51	1,422.10
tblVehicleEF	OBUS	69.78	20.28
tblVehicleEF	OBUS	0.42	0.52
tblVehicleEF	OBUS	1.44	1.85
tblVehicleEF	OBUS	2.11	0.61
tblVehicleEF	OBUS	1.4500e-004	2.0430e-003
tblVehicleEF	OBUS	7.3790e-003	0.04
tblVehicleEF	OBUS	8.3400e-004	1.9500e-004
tblVehicleEF	OBUS	1.3900e-004	1.9550e-003
tblVehicleEF	OBUS	7.0420e-003	0.03
tblVehicleEF	OBUS	7.6700e-004	1.7900e-004
tblVehicleEF	OBUS	1.4250e-003	1.8490e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.06

tblVehicleEF	OBUS	7.6500e-004	9.7800e-004
tblVehicleEF	OBUS	0.06	0.10
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.35	0.12
tblVehicleEF	OBUS	8.2000e-004	8.0300e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9600e-004	2.0100e-004
tblVehicleEF	OBUS	1.4250e-003	1.8490e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	7.6500e-004	9.7800e-004
tblVehicleEF	OBUS	0.07	0.12
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	OBUS	0.01	9.0790e-003
tblVehicleEF	OBUS	8.5800e-003	9.4940e-003
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.26	0.53
tblVehicleEF	OBUS	0.58	1.02
tblVehicleEF	OBUS	5.31	2.31
tblVehicleEF	OBUS	88.70	84.93
tblVehicleEF	OBUS	1,226.51	1,422.12
tblVehicleEF	OBUS	69.78	20.06
tblVehicleEF	OBUS	0.43	0.52
tblVehicleEF	OBUS	1.35	1.74
tblVehicleEF	OBUS	2.08	0.60
tblVehicleEF	OBUS	1.2200e-004	1.7270e-003
tblVehicleEF	OBUS	7.3790e-003	0.04
tblVehicleEF	OBUS	8.3400e-004	1.9500e-004

tblVehicleEF	OBUS	1.1700e-004	1.6520e-003
tblVehicleEF	OBUS	7.0420e-003	0.03
tblVehicleEF	OBUS	7.6700e-004	1.7900e-004
tblVehicleEF	OBUS	1.9610e-003	2.5310e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	1.0530e-003	1.3340e-003
tblVehicleEF	OBUS	0.06	0.10
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.34	0.11
tblVehicleEF	OBUS	8.5900e-004	8.0900e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9100e-004	1.9900e-004
tblVehicleEF	OBUS	1.9610e-003	2.5310e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	1.0530e-003	1.3340e-003
tblVehicleEF	OBUS	0.07	0.12
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.37	0.13
tblVehicleEF	OBUS	0.01	9.0540e-003
tblVehicleEF	OBUS	8.3930e-003	9.3190e-003
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.29	0.59
tblVehicleEF	OBUS	0.57	1.00
tblVehicleEF	OBUS	5.64	2.46
tblVehicleEF	OBUS	79.14	83.50
tblVehicleEF	OBUS	1,226.51	1,422.09
tblVehicleEF	OBUS	69.78	20.31

tblVehicleEF	OBUS	0.40	0.52
tblVehicleEF	OBUS	1.41	1.81
tblVehicleEF	OBUS	2.12	0.61
tblVehicleEF	OBUS	1.7600e-004	2.4810e-003
tblVehicleEF	OBUS	7.3790e-003	0.04
tblVehicleEF	OBUS	8.3400e-004	1.9500e-004
tblVehicleEF	OBUS	1.6900e-004	2.3730e-003
tblVehicleEF	OBUS	7.0420e-003	0.03
tblVehicleEF	OBUS	7.6700e-004	1.7900e-004
tblVehicleEF	OBUS	1.4580e-003	1.9070e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	7.6200e-004	9.8200e-004
tblVehicleEF	OBUS	0.06	0.10
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.36	0.12
tblVehicleEF	OBUS	7.6700e-004	7.9500e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9700e-004	2.0100e-004
tblVehicleEF	OBUS	1.4580e-003	1.9070e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	7.6200e-004	9.8200e-004
tblVehicleEF	OBUS	0.07	0.12
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	SBUS	0.87	0.07
tblVehicleEF	SBUS	0.02	0.01
tblVehicleEF	SBUS	0.09	7.1320e-003

tblVehicleEF	SBUS	8.16	2.80
tblVehicleEF	SBUS	1.19	1.03
tblVehicleEF	SBUS	9.61	1.02
tblVehicleEF	SBUS	1,131.05	356.18
tblVehicleEF	SBUS	1,090.69	1,128.82
tblVehicleEF	SBUS	54.18	5.79
tblVehicleEF	SBUS	9.79	3.82
tblVehicleEF	SBUS	4.65	6.33
tblVehicleEF	SBUS	12.50	0.55
tblVehicleEF	SBUS	0.01	6.3360e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.04
tblVehicleEF	SBUS	9.3500e-004	6.5000e-005
tblVehicleEF	SBUS	0.01	6.0620e-003
tblVehicleEF	SBUS	2.6810e-003	2.6580e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	8.6000e-004	6.0000e-005
tblVehicleEF	SBUS	3.6480e-003	1.1350e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	0.98	0.34
tblVehicleEF	SBUS	1.9360e-003	5.7500e-004
tblVehicleEF	SBUS	0.13	0.14
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.51	0.04
tblVehicleEF	SBUS	0.01	3.4000e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.0800e-004	5.7000e-005
tblVehicleEF	SBUS	3.6480e-003	1.1350e-003
tblVehicleEF	SBUS	0.04	0.01

tblVehicleEF	SBUS	1.42	0.48
tblVehicleEF	SBUS	1.9360e-003	5.7500e-004
tblVehicleEF	SBUS	0.16	0.17
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.56	0.05
tblVehicleEF	SBUS	0.87	0.07
tblVehicleEF	SBUS	0.02	0.01
tblVehicleEF	SBUS	0.08	6.4080e-003
tblVehicleEF	SBUS	8.04	2.75
tblVehicleEF	SBUS	1.21	1.05
tblVehicleEF	SBUS	7.94	0.84
tblVehicleEF	SBUS	1,182.37	367.48
tblVehicleEF	SBUS	1,090.69	1,128.85
tblVehicleEF	SBUS	54.18	5.50
tblVehicleEF	SBUS	10.10	3.93
tblVehicleEF	SBUS	4.39	5.98
tblVehicleEF	SBUS	12.46	0.55
tblVehicleEF	SBUS	8.9100e-003	5.3460e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.04
tblVehicleEF	SBUS	9.3500e-004	6.5000e-005
tblVehicleEF	SBUS	8.5240e-003	5.1150e-003
tblVehicleEF	SBUS	2.6810e-003	2.6580e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	8.6000e-004	6.0000e-005
tblVehicleEF	SBUS	4.9860e-003	1.5480e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	0.98	0.34
tblVehicleEF	SBUS	2.6570e-003	7.8500e-004

tblVehicleEF	SBUS	0.13	0.14
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.46	0.04
tblVehicleEF	SBUS	0.01	3.5060e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	6.8100e-004	5.4000e-005
tblVehicleEF	SBUS	4.9860e-003	1.5480e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	1.42	0.48
tblVehicleEF	SBUS	2.6570e-003	7.8500e-004
tblVehicleEF	SBUS	0.16	0.17
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.50	0.04
tblVehicleEF	SBUS	0.87	0.07
tblVehicleEF	SBUS	0.02	0.01
tblVehicleEF	SBUS	0.09	7.2360e-003
tblVehicleEF	SBUS	8.33	2.86
tblVehicleEF	SBUS	1.18	1.03
tblVehicleEF	SBUS	9.77	1.03
tblVehicleEF	SBUS	1,060.18	340.58
tblVehicleEF	SBUS	1,090.69	1,128.81
tblVehicleEF	SBUS	54.18	5.82
tblVehicleEF	SBUS	9.36	3.67
tblVehicleEF	SBUS	4.57	6.22
tblVehicleEF	SBUS	12.51	0.55
tblVehicleEF	SBUS	0.01	7.7020e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.04
tblVehicleEF	SBUS	9.3500e-004	6.5000e-005

tblVehicleEF	SBUS	0.01	7.3690e-003
tblVehicleEF	SBUS	2.6810e-003	2.6580e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	8.6000e-004	6.0000e-005
tblVehicleEF	SBUS	3.6990e-003	1.1730e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	0.99	0.34
tblVehicleEF	SBUS	1.8970e-003	5.6800e-004
tblVehicleEF	SBUS	0.13	0.14
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.51	0.04
tblVehicleEF	SBUS	0.01	3.2520e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.1100e-004	5.8000e-005
tblVehicleEF	SBUS	3.6990e-003	1.1730e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	1.42	0.48
tblVehicleEF	SBUS	1.8970e-003	5.6800e-004
tblVehicleEF	SBUS	0.16	0.17
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.56	0.05
tblVehicleEF	UBUS	1.93	1.2640e-003
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	8.96	0.09
tblVehicleEF	UBUS	13.19	1.81
tblVehicleEF	UBUS	1,828.32	438.73
tblVehicleEF	UBUS	133.38	22.76
tblVehicleEF	UBUS	4.82	0.08
tblVehicleEF	UBUS	13.49	0.24

tblVehicleEF	UBUS	0.53	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.04	9.0000e-005
tblVehicleEF	UBUS	1.1810e-003	4.0000e-005
tblVehicleEF	UBUS	0.23	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.04	8.2000e-005
tblVehicleEF	UBUS	1.0860e-003	3.6000e-005
tblVehicleEF	UBUS	6.1570e-003	2.6630e-003
tblVehicleEF	UBUS	0.10	0.03
tblVehicleEF	UBUS	3.6270e-003	1.8540e-003
tblVehicleEF	UBUS	0.53	4.2690e-003
tblVehicleEF	UBUS	0.03	7.5400e-003
tblVehicleEF	UBUS	0.96	0.15
tblVehicleEF	UBUS	8.6430e-003	4.3420e-003
tblVehicleEF	UBUS	1.5700e-003	2.2500e-004
tblVehicleEF	UBUS	6.1570e-003	2.6630e-003
tblVehicleEF	UBUS	0.10	0.03
tblVehicleEF	UBUS	3.6270e-003	1.8540e-003
tblVehicleEF	UBUS	2.52	6.2290e-003
tblVehicleEF	UBUS	0.03	7.5400e-003
tblVehicleEF	UBUS	1.05	0.16
tblVehicleEF	UBUS	1.94	1.2930e-003
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	9.02	0.09
tblVehicleEF	UBUS	11.63	1.61
tblVehicleEF	UBUS	1,828.32	438.73
tblVehicleEF	UBUS	133.38	22.40
tblVehicleEF	UBUS	4.53	0.07

tblVehicleEF	UBUS	13.42	0.23
tblVehicleEF	UBUS	0.53	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.04	9.0000e-005
tblVehicleEF	UBUS	1.1810e-003	4.0000e-005
tblVehicleEF	UBUS	0.23	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.04	8.2000e-005
tblVehicleEF	UBUS	1.0860e-003	3.6000e-005
tblVehicleEF	UBUS	8.2530e-003	3.6380e-003
tblVehicleEF	UBUS	0.10	0.03
tblVehicleEF	UBUS	4.8310e-003	2.4730e-003
tblVehicleEF	UBUS	0.53	4.3510e-003
tblVehicleEF	UBUS	0.03	6.8080e-003
tblVehicleEF	UBUS	0.89	0.14
tblVehicleEF	UBUS	8.6450e-003	4.3420e-003
tblVehicleEF	UBUS	1.5430e-003	2.2200e-004
tblVehicleEF	UBUS	8.2530e-003	3.6380e-003
tblVehicleEF	UBUS	0.10	0.03
tblVehicleEF	UBUS	4.8310e-003	2.4730e-003
tblVehicleEF	UBUS	2.53	6.3490e-003
tblVehicleEF	UBUS	0.03	6.8080e-003
tblVehicleEF	UBUS	0.98	0.15
tblVehicleEF	UBUS	1.93	1.2580e-003
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	8.95	0.09
tblVehicleEF	UBUS	13.46	1.85
tblVehicleEF	UBUS	1,828.32	438.73
tblVehicleEF	UBUS	133.38	22.82

tblVehicleEF	UBUS	4.73	0.08
tblVehicleEF	UBUS	13.51	0.24
tblVehicleEF	UBUS	0.53	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.04	9.0000e-005
tblVehicleEF	UBUS	1.1810e-003	4.0000e-005
tblVehicleEF	UBUS	0.23	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.04	8.2000e-005
tblVehicleEF	UBUS	1.0860e-003	3.6000e-005
tblVehicleEF	UBUS	6.9610e-003	2.5390e-003
tblVehicleEF	UBUS	0.12	0.03
tblVehicleEF	UBUS	3.8300e-003	1.7550e-003
tblVehicleEF	UBUS	0.52	4.2500e-003
tblVehicleEF	UBUS	0.04	9.2000e-003
tblVehicleEF	UBUS	0.98	0.15
tblVehicleEF	UBUS	8.6430e-003	4.3420e-003
tblVehicleEF	UBUS	1.5750e-003	2.2600e-004
tblVehicleEF	UBUS	6.9610e-003	2.5390e-003
tblVehicleEF	UBUS	0.12	0.03
tblVehicleEF	UBUS	3.8300e-003	1.7550e-003
tblVehicleEF	UBUS	2.52	6.2010e-003
tblVehicleEF	UBUS	0.04	9.2000e-003
tblVehicleEF	UBUS	1.07	0.16
tblVehicleTrips	DV_TP	17.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	17.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	66.00	100.00

tblVehicleTrips	PR_TP	54.00	100.00
tblVehicleTrips	ST_TR	158.37	0.00
tblVehicleTrips	ST_TR	8.96	0.00
tblVehicleTrips	ST_TR	49.97	148.80
tblVehicleTrips	ST_TR	177.59	0.00
tblVehicleTrips	SU_TR	131.84	0.00
tblVehicleTrips	SU_TR	1.55	0.00
tblVehicleTrips	SU_TR	25.24	68.45
tblVehicleTrips	SU_TR	166.44	0.00
tblVehicleTrips	WD_TR	127.15	0.00
tblVehicleTrips	WD_TR	36.13	0.00
tblVehicleTrips	WD_TR	42.70	102.71
tblVehicleTrips	WD_TR	102.24	0.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	12,945,712.84	0.00
tblWater	IndoorWaterUseRate	200,768.86	0.00
tblWater	IndoorWaterUseRate	9,939,636.18	0.00
tblWater	IndoorWaterUseRate	5,068,041.92	30,597,544.00
tblWater	IndoorWaterUseRate	4,218,238.31	0.00
tblWater	OutdoorWaterUseRate	826,322.10	0.00
tblWater	OutdoorWaterUseRate	38,241.69	0.00
tblWater	OutdoorWaterUseRate	634,444.86	0.00
tblWater	OutdoorWaterUseRate	3,106,219.24	853,528.00
tblWater	OutdoorWaterUseRate	130,460.98	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	3.9342	1.6700e-003	0.1823	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0300e-003		0.4151
Energy	0.3722	3.3836	2.8422	0.0203		0.2572	0.2572		0.2572	0.2572		4,060.2906	4,060.2906	0.0778	0.0744	4,084.4189
Mobile	23.8027	61.4597	289.3891	0.9056	89.7982	1.1020	90.9001	23.9793	1.0376	25.0170		92,314.4690	92,314.4690	3.0145		92,389.8322
Total	**28.1091**	**64.8449**	**292.4136**	**0.9259**	**89.7982**	**1.3598**	**91.1579**	**23.9793**	**1.2954**	**25.2748**		**96,375.1488**	**96,375.1488**	**3.0934**	**0.0744**	**96,474.6661**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	3.9342	1.6700e-003	0.1823	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0300e-003		0.4151
Energy	0.3722	3.3836	2.8422	0.0203		0.2572	0.2572		0.2572	0.2572		4,060.2906	4,060.2906	0.0778	0.0744	4,084.4189
Mobile	23.8027	61.4597	289.3891	0.9056	89.7982	1.1020	90.9001	23.9793	1.0376	25.0170		92,314.4690	92,314.4690	3.0145		92,389.8322
Total	**28.1091**	**64.8449**	**292.4136**	**0.9259**	**89.7982**	**1.3598**	**91.1579**	**23.9793**	**1.2954**	**25.2748**		**96,375.1488**	**96,375.1488**	**3.0934**	**0.0744**	**96,474.6661**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	23.8027	61.4597	289.3891	0.9056	89.7982	1.1020	90.9001	23.9793	1.0376	25.0170		92,314.4690	92,314.4690	3.0145		92,389.8322
Unmitigated	23.8027	61.4597	289.3891	0.9056	89.7982	1.1020	90.9001	23.9793	1.0376	25.0170		92,314.4690	92,314.4690	3.0145		92,389.8322

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Movie Theater (No Matinee)	1,936.00	2,464.00	2035.00	6,092,081	6,092,081
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Medical Office Building	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	7,027.42	10,180.90	4683.35	24,574,817	24,574,817
Supermarket	0.00	0.00	0.00		
Total	8,963.42	12,644.90	6,718.35	30,666,898	30,666,898

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Movie Theater (No Matinee)	16.60	8.40	6.90	1.80	79.20	19.00	100	0	0
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Medical Office Building	16.60	8.40	6.90	29.60	51.40	19.00	60	30	10
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	100	0	0
Supermarket	16.60	8.40	6.90	6.50	74.50	19.00	34	30	36

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High Turnover (Sit Down Restaurant)	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Medical Office Building	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Movie Theater (No Matinee)	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Other Non-Asphalt Surfaces	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Parking Lot	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Regional Shopping Center	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Supermarket	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.3722	3.3836	2.8422	0.0203		0.2572	0.2572		0.2572	0.2572		4,060.2906	4,060.2906	0.0778	0.0744	4,084.4189
NaturalGas Unmitigated	0.3722	3.3836	2.8422	0.0203		0.2572	0.2572		0.2572	0.2572		4,060.2906	4,060.2906	0.0778	0.0744	4,084.4189

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High Turnover (Sit Down Restaurant)	30901.2	0.3333	3.0295	2.5448	0.0182		0.2302	0.2302		0.2302	0.2302		3,635.4406	3,635.4406	0.0697	0.0667	3,657.0442
Medical Office Building	47.3553	5.1000e-004	4.6400e-003	3.9000e-003	3.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004		5.5712	5.5712	1.1000e-004	1.0000e-004	5.6043
Movie Theater (No Matinee)	1117.11	0.0121	0.1095	0.0920	6.6000e-004		8.3200e-003	8.3200e-003		8.3200e-003	8.3200e-003		131.4247	131.4247	2.5200e-003	2.4100e-003	132.2057
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	395.495	4.2700e-003	0.0388	0.0326	2.3000e-004		2.9500e-003	2.9500e-003		2.9500e-003	2.9500e-003		46.5288	46.5288	8.9000e-004	8.5000e-004	46.8053
Supermarket	2051.26	0.0221	0.2011	0.1689	1.2100e-003		0.0153	0.0153		0.0153	0.0153		241.3253	241.3253	4.6300e-003	4.4200e-003	242.7594
Total		**0.3722**	**3.3836**	**2.8422**	**0.0203**		**0.2571**	**0.2571**		**0.2571**	**0.2571**		**4,060.2906**	**4,060.2906**	**0.0778**	**0.0744**	**4,084.4189**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High Turnover (Sit Down Restaurant)	30.9012	0.3333	3.0295	2.5448	0.0182		0.2302	0.2302		0.2302	0.2302		3,635.4406	3,635.4406	0.0697	0.0667	3,657.0442
Medical Office Building	0.0473553	5.1000e-004	4.6400e-003	3.9000e-003	3.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004		5.5712	5.5712	1.1000e-004	1.0000e-004	5.6043
Movie Theater (No Matinee)	1.11711	0.0121	0.1095	0.0920	6.6000e-004		8.3200e-003	8.3200e-003		8.3200e-003	8.3200e-003		131.4247	131.4247	2.5200e-003	2.4100e-003	132.2057
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.395495	4.2700e-003	0.0388	0.0326	2.3000e-004		2.9500e-003	2.9500e-003		2.9500e-003	2.9500e-003		46.5288	46.5288	8.9000e-004	8.5000e-004	46.8053
Supermarket	2.05126	0.0221	0.2011	0.1689	1.2100e-003		0.0153	0.0153		0.0153	0.0153		241.3253	241.3253	4.6300e-003	4.4200e-003	242.7594
Total		**0.3722**	**3.3836**	**2.8422**	**0.0203**		**0.2571**	**0.2571**		**0.2571**	**0.2571**		**4,060.2906**	**4,060.2906**	**0.0778**	**0.0744**	**4,084.4189**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.9342	1.6700e-003	0.1823	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0300e-003		0.4151
Unmitigated	3.9342	1.6700e-003	0.1823	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0300e-003		0.4151

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4554					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.4618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0170	1.6700e-003	0.1823	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0300e-003		0.4151
Total	**3.9342**	**1.6700e-003**	**0.1823**	**1.0000e-005**		**6.5000e-004**	**6.5000e-004**		**6.5000e-004**	**6.5000e-004**		**0.3892**	**0.3892**	**1.0300e-003**		**0.4151**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4554					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.4618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0170	1.6700e-003	0.1823	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0300e-003		0.4151
Total	**3.9342**	**1.6700e-003**	**0.1823**	**1.0000e-005**		**6.5000e-004**	**6.5000e-004**		**6.5000e-004**	**6.5000e-004**		**0.3892**	**0.3892**	**1.0300e-003**		**0.4151**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

Brea Plaza Expansion Project, Baseline Conditions (2024)

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Medical Office Building	1.60	1000sqft	0.04	1,596.00	0
Other Non-Asphalt Surfaces	65.93	1000sqft	1.51	65,931.00	0
Parking Lot	465.70	1000sqft	10.69	465,700.00	0
High Turnover (Sit Down Restaurant)	42.65	1000sqft	0.98	42,649.00	0
Movie Theater (No Matinee)	1,100.00	Seat	0.42	18,450.00	0
Regional Shopping Center	68.42	1000sqft	1.57	68,415.00	0
Supermarket	34.22	1000sqft	0.79	34,219.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	531.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustainability Report

Land Use - based on info from applicant

Construction Phase -

Vehicle Trips - based on info from LLG, see assumptions file for calculations

Vehicle Emission Factors - EMFAC2017 adjustment, see assumptions file

Woodstoves -

Area Coating - parking coating accounts only for parking area

Energy Use -

Water And Wastewater - assigning all water use to regional shopping center. Based on data from sewer study. Assumes 100% aerobic treatment.

Solid Waste -

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	31898	27942
tblLandUse	LandUseSquareFeet	1,600.00	1,596.00
tblLandUse	LandUseSquareFeet	65,930.00	65,931.00
tblLandUse	LandUseSquareFeet	42,650.00	42,649.00
tblLandUse	LandUseSquareFeet	24,750.00	18,450.00
tblLandUse	LandUseSquareFeet	68,420.00	68,415.00
tblLandUse	LandUseSquareFeet	34,220.00	34,219.00
tblLandUse	LotAcreage	0.57	0.42
tblProjectCharacteristics	CO2IntensityFactor	702.44	531.44
tblVehicleEF	HHD	0.44	0.03
tblVehicleEF	HHD	0.16	0.15
tblVehicleEF	HHD	0.06	7.2464e-007
tblVehicleEF	HHD	1.47	6.07
tblVehicleEF	HHD	1.26	0.64
tblVehicleEF	HHD	4.25	0.01
tblVehicleEF	HHD	3,818.18	1,012.56
tblVehicleEF	HHD	1,584.91	1,373.65
tblVehicleEF	HHD	13.84	0.08
tblVehicleEF	HHD	12.98	5.26

tblVehicleEF	HHD	1.77	2.42
tblVehicleEF	HHD	19.03	2.48
tblVehicleEF	HHD	0.01	2.9540e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	6.0110e-003	0.02
tblVehicleEF	HHD	1.3200e-004	1.0902e-006
tblVehicleEF	HHD	0.01	2.8262e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6690e-003	8.7624e-003
tblVehicleEF	HHD	5.7510e-003	0.02
tblVehicleEF	HHD	1.2100e-004	1.0024e-006
tblVehicleEF	HHD	1.1600e-004	3.6710e-006
tblVehicleEF	HHD	4.7330e-003	1.5602e-004
tblVehicleEF	HHD	0.35	0.40
tblVehicleEF	HHD	8.9000e-005	2.6353e-006
tblVehicleEF	HHD	0.08	0.03
tblVehicleEF	HHD	4.2800e-004	6.2785e-005
tblVehicleEF	HHD	0.09	3.7937e-006
tblVehicleEF	HHD	0.03	9.2462e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0800e-004	7.6681e-007
tblVehicleEF	HHD	1.1600e-004	3.6710e-006
tblVehicleEF	HHD	4.7330e-003	1.5602e-004
tblVehicleEF	HHD	0.43	0.47
tblVehicleEF	HHD	8.9000e-005	2.6353e-006
tblVehicleEF	HHD	0.25	0.17
tblVehicleEF	HHD	4.2800e-004	6.2785e-005
tblVehicleEF	HHD	0.09	4.1536e-006

tblVehicleEF	HHD	0.42	0.03
tblVehicleEF	HHD	0.16	0.15
tblVehicleEF	HHD	0.06	6.9601e-007
tblVehicleEF	HHD	1.07	5.98
tblVehicleEF	HHD	1.27	0.64
tblVehicleEF	HHD	4.05	9.6241e-003
tblVehicleEF	HHD	4,045.03	1,001.49
tblVehicleEF	HHD	1,584.91	1,373.65
tblVehicleEF	HHD	13.84	0.08
tblVehicleEF	HHD	13.40	5.04
tblVehicleEF	HHD	1.67	2.30
tblVehicleEF	HHD	19.02	2.48
tblVehicleEF	HHD	9.0000e-003	2.5700e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	6.0110e-003	0.02
tblVehicleEF	HHD	1.3200e-004	1.0902e-006
tblVehicleEF	HHD	8.6100e-003	2.4588e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6690e-003	8.7624e-003
tblVehicleEF	HHD	5.7510e-003	0.02
tblVehicleEF	HHD	1.2100e-004	1.0024e-006
tblVehicleEF	HHD	1.6500e-004	5.3617e-006
tblVehicleEF	HHD	4.8270e-003	1.5842e-004
tblVehicleEF	HHD	0.33	0.43
tblVehicleEF	HHD	1.2300e-004	3.8527e-006
tblVehicleEF	HHD	0.08	0.03
tblVehicleEF	HHD	4.1200e-004	6.1486e-005
tblVehicleEF	HHD	0.08	3.6535e-006

tblVehicleEF	HHD	0.04	9.1421e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0400e-004	7.5937e-007
tblVehicleEF	HHD	1.6500e-004	5.3617e-006
tblVehicleEF	HHD	4.8270e-003	1.5842e-004
tblVehicleEF	HHD	0.41	0.50
tblVehicleEF	HHD	1.2300e-004	3.8527e-006
tblVehicleEF	HHD	0.26	0.17
tblVehicleEF	HHD	4.1200e-004	6.1486e-005
tblVehicleEF	HHD	0.09	4.0001e-006
tblVehicleEF	HHD	0.48	0.02
tblVehicleEF	HHD	0.16	8.8830e-004
tblVehicleEF	HHD	0.06	7.3145e-007
tblVehicleEF	HHD	2.03	6.01
tblVehicleEF	HHD	1.26	0.21
tblVehicleEF	HHD	4.29	0.01
tblVehicleEF	HHD	3,504.93	993.90
tblVehicleEF	HHD	1,584.91	1,270.38
tblVehicleEF	HHD	13.84	0.08
tblVehicleEF	HHD	12.41	5.37
tblVehicleEF	HHD	1.74	2.32
tblVehicleEF	HHD	19.03	2.48
tblVehicleEF	HHD	0.01	3.1443e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	6.0110e-003	0.02
tblVehicleEF	HHD	1.3200e-004	1.0902e-006
tblVehicleEF	HHD	0.01	3.0082e-003
tblVehicleEF	HHD	0.03	0.02

tblVehicleEF	HHD	8.6690e-003	8.4791e-003
tblVehicleEF	HHD	5.7510e-003	0.02
tblVehicleEF	HHD	1.2100e-004	1.0024e-006
tblVehicleEF	HHD	1.1300e-004	3.7860e-006
tblVehicleEF	HHD	5.0410e-003	1.7191e-004
tblVehicleEF	HHD	0.38	0.37
tblVehicleEF	HHD	8.9000e-005	2.7313e-006
tblVehicleEF	HHD	0.08	0.02
tblVehicleEF	HHD	4.6700e-004	6.7157e-005
tblVehicleEF	HHD	0.09	3.8262e-006
tblVehicleEF	HHD	0.03	9.3899e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0800e-004	7.6824e-007
tblVehicleEF	HHD	1.1300e-004	3.7860e-006
tblVehicleEF	HHD	5.0410e-003	1.7191e-004
tblVehicleEF	HHD	0.46	0.42
tblVehicleEF	HHD	8.9000e-005	2.7313e-006
tblVehicleEF	HHD	0.25	0.02
tblVehicleEF	HHD	4.6700e-004	6.7157e-005
tblVehicleEF	HHD	0.09	4.1892e-006
tblVehicleEF	LDA	3.2540e-003	1.8161e-003
tblVehicleEF	LDA	3.5200e-003	0.04
tblVehicleEF	LDA	0.48	0.55
tblVehicleEF	LDA	0.84	1.93
tblVehicleEF	LDA	231.86	246.35
tblVehicleEF	LDA	51.83	50.40
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.15
tblVehicleEF	LDA	0.04	0.04

tblVehicleEF	LDA	8.0000e-003	8.0000e-003
tblVehicleEF	LDA	1.8000e-003	1.4317e-003
tblVehicleEF	LDA	2.2330e-003	1.6847e-003
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	2.0000e-003	2.0000e-003
tblVehicleEF	LDA	1.6580e-003	1.3182e-003
tblVehicleEF	LDA	2.0530e-003	1.5490e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	8.1920e-003	6.5890e-003
tblVehicleEF	LDA	0.04	0.02
tblVehicleEF	LDA	0.05	0.17
tblVehicleEF	LDA	2.3210e-003	2.3879e-003
tblVehicleEF	LDA	5.3200e-004	4.8864e-004
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	9.5744e-003
tblVehicleEF	LDA	0.04	0.02
tblVehicleEF	LDA	0.05	0.19
tblVehicleEF	LDA	3.4390e-003	1.9350e-003
tblVehicleEF	LDA	3.1700e-003	0.04
tblVehicleEF	LDA	0.52	0.60
tblVehicleEF	LDA	0.73	1.66
tblVehicleEF	LDA	241.58	256.41
tblVehicleEF	LDA	51.83	49.92
tblVehicleEF	LDA	0.03	0.02
tblVehicleEF	LDA	0.04	0.14

tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	8.0000e-003	8.0000e-003
tblVehicleEF	LDA	1.8000e-003	1.4317e-003
tblVehicleEF	LDA	2.2330e-003	1.6847e-003
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	2.0000e-003	2.0000e-003
tblVehicleEF	LDA	1.6580e-003	1.3182e-003
tblVehicleEF	LDA	2.0530e-003	1.5490e-003
tblVehicleEF	LDA	0.04	0.06
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	8.6510e-003	6.9574e-003
tblVehicleEF	LDA	0.03	0.02
tblVehicleEF	LDA	0.04	0.16
tblVehicleEF	LDA	2.4190e-003	2.4854e-003
tblVehicleEF	LDA	5.3000e-004	4.8395e-004
tblVehicleEF	LDA	0.04	0.06
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.03	0.02
tblVehicleEF	LDA	0.05	0.17
tblVehicleEF	LDA	3.1920e-003	1.7787e-003
tblVehicleEF	LDA	3.5920e-003	0.04
tblVehicleEF	LDA	0.47	0.53
tblVehicleEF	LDA	0.87	1.98
tblVehicleEF	LDA	228.27	242.64
tblVehicleEF	LDA	51.83	50.51
tblVehicleEF	LDA	0.04	0.03

tblVehicleEF	LDA	0.05	0.16
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	8.0000e-003	8.0000e-003
tblVehicleEF	LDA	1.8000e-003	1.4317e-003
tblVehicleEF	LDA	2.2330e-003	1.6847e-003
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	2.0000e-003	2.0000e-003
tblVehicleEF	LDA	1.6580e-003	1.3182e-003
tblVehicleEF	LDA	2.0530e-003	1.5490e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	8.0370e-003	6.4651e-003
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.18
tblVehicleEF	LDA	2.2850e-003	2.3519e-003
tblVehicleEF	LDA	5.3300e-004	4.8966e-004
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	9.3936e-003
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.19
tblVehicleEF	LDT1	7.2360e-003	4.1472e-003
tblVehicleEF	LDT1	9.9520e-003	0.06
tblVehicleEF	LDT1	0.92	0.93
tblVehicleEF	LDT1	2.03	2.10
tblVehicleEF	LDT1	292.62	293.91
tblVehicleEF	LDT1	65.95	61.09

tblVehicleEF	LDT1	0.08	0.07
tblVehicleEF	LDT1	0.12	0.21
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	8.0000e-003	8.0000e-003
tblVehicleEF	LDT1	2.2960e-003	1.8512e-003
tblVehicleEF	LDT1	2.9420e-003	2.1801e-003
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	2.0000e-003	2.0000e-003
tblVehicleEF	LDT1	2.1130e-003	1.7030e-003
tblVehicleEF	LDT1	2.7050e-003	2.0045e-003
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.21	0.16
tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.14	0.07
tblVehicleEF	LDT1	0.13	0.27
tblVehicleEF	LDT1	2.9360e-003	2.8494e-003
tblVehicleEF	LDT1	6.9500e-004	5.9228e-004
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.21	0.16
tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.14	0.07
tblVehicleEF	LDT1	0.15	0.29
tblVehicleEF	LDT1	7.6070e-003	4.3889e-003
tblVehicleEF	LDT1	8.9270e-003	0.05
tblVehicleEF	LDT1	0.99	1.01
tblVehicleEF	LDT1	1.75	1.81
tblVehicleEF	LDT1	304.46	304.24

tblVehicleEF	LDT1	65.95	60.53
tblVehicleEF	LDT1	0.07	0.06
tblVehicleEF	LDT1	0.11	0.20
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	8.0000e-003	8.0000e-003
tblVehicleEF	LDT1	2.2960e-003	1.8512e-003
tblVehicleEF	LDT1	2.9420e-003	2.1801e-003
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	2.0000e-003	2.0000e-003
tblVehicleEF	LDT1	2.1130e-003	1.7030e-003
tblVehicleEF	LDT1	2.7050e-003	2.0045e-003
tblVehicleEF	LDT1	0.14	0.14
tblVehicleEF	LDT1	0.22	0.16
tblVehicleEF	LDT1	0.12	0.12
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.13	0.06
tblVehicleEF	LDT1	0.12	0.24
tblVehicleEF	LDT1	3.0550e-003	2.9496e-003
tblVehicleEF	LDT1	6.9000e-004	5.8685e-004
tblVehicleEF	LDT1	0.14	0.14
tblVehicleEF	LDT1	0.22	0.16
tblVehicleEF	LDT1	0.12	0.12
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.13	0.06
tblVehicleEF	LDT1	0.13	0.26
tblVehicleEF	LDT1	7.1090e-003	4.0701e-003
tblVehicleEF	LDT1	0.01	0.06
tblVehicleEF	LDT1	0.89	0.90
tblVehicleEF	LDT1	2.09	2.16

tblVehicleEF	LDT1	288.25	290.09
tblVehicleEF	LDT1	65.95	61.21
tblVehicleEF	LDT1	0.08	0.07
tblVehicleEF	LDT1	0.12	0.21
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	8.0000e-003	8.0000e-003
tblVehicleEF	LDT1	2.2960e-003	1.8512e-003
tblVehicleEF	LDT1	2.9420e-003	2.1801e-003
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	2.0000e-003	2.0000e-003
tblVehicleEF	LDT1	2.1130e-003	1.7030e-003
tblVehicleEF	LDT1	2.7050e-003	2.0045e-003
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.24	0.17
tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.14	0.27
tblVehicleEF	LDT1	2.8920e-003	2.8125e-003
tblVehicleEF	LDT1	6.9600e-004	5.9347e-004
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.24	0.17
tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.15	0.30
tblVehicleEF	LDT2	4.5940e-003	2.9810e-003
tblVehicleEF	LDT2	4.8100e-003	0.06
tblVehicleEF	LDT2	0.64	0.74

tblVehicleEF	LDT2	1.11	2.45
tblVehicleEF	LDT2	329.48	312.71
tblVehicleEF	LDT2	73.66	65.44
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.08	0.22
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	8.0000e-003	8.0000e-003
tblVehicleEF	LDT2	1.8470e-003	1.4663e-003
tblVehicleEF	LDT2	2.3090e-003	1.6633e-003
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	2.0000e-003	2.0000e-003
tblVehicleEF	LDT2	1.6990e-003	1.3496e-003
tblVehicleEF	LDT2	2.1230e-003	1.5293e-003
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.06	0.25
tblVehicleEF	LDT2	3.2990e-003	3.0312e-003
tblVehicleEF	LDT2	7.5500e-004	6.3446e-004
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.07	0.27
tblVehicleEF	LDT2	4.8530e-003	3.1673e-003
tblVehicleEF	LDT2	4.3330e-003	0.05

tblVehicleEF	LDT2	0.69	0.80
tblVehicleEF	LDT2	0.96	2.11
tblVehicleEF	LDT2	342.98	322.65
tblVehicleEF	LDT2	73.66	64.81
tblVehicleEF	LDT2	0.05	0.04
tblVehicleEF	LDT2	0.07	0.21
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	8.0000e-003	8.0000e-003
tblVehicleEF	LDT2	1.8470e-003	1.4663e-003
tblVehicleEF	LDT2	2.3090e-003	1.6633e-003
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	2.0000e-003	2.0000e-003
tblVehicleEF	LDT2	1.6990e-003	1.3496e-003
tblVehicleEF	LDT2	2.1230e-003	1.5293e-003
tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.05	0.04
tblVehicleEF	LDT2	0.06	0.23
tblVehicleEF	LDT2	3.4350e-003	3.1277e-003
tblVehicleEF	LDT2	7.5200e-004	6.2837e-004
tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.05	0.04
tblVehicleEF	LDT2	0.06	0.25
tblVehicleEF	LDT2	4.5070e-003	2.9223e-003

tblVehicleEF	LDT2	4.9080e-003	0.06
tblVehicleEF	LDT2	0.62	0.72
tblVehicleEF	LDT2	1.14	2.52
tblVehicleEF	LDT2	324.49	309.04
tblVehicleEF	LDT2	73.66	65.58
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.08	0.23
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	8.0000e-003	8.0000e-003
tblVehicleEF	LDT2	1.8470e-003	1.4663e-003
tblVehicleEF	LDT2	2.3090e-003	1.6633e-003
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	2.0000e-003	2.0000e-003
tblVehicleEF	LDT2	1.6990e-003	1.3496e-003
tblVehicleEF	LDT2	2.1230e-003	1.5293e-003
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.09	0.12
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.07	0.26
tblVehicleEF	LDT2	3.2490e-003	2.9956e-003
tblVehicleEF	LDT2	7.5500e-004	6.3580e-004
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.09	0.12
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.07	0.28

tblVehicleEF	LHD1	4.8760e-003	5.1794e-003
tblVehicleEF	LHD1	7.3850e-003	3.6571e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	0.58	0.42
tblVehicleEF	LHD1	2.05	0.96
tblVehicleEF	LHD1	9.05	8.87
tblVehicleEF	LHD1	582.71	633.58
tblVehicleEF	LHD1	30.08	11.39
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.97	0.58
tblVehicleEF	LHD1	0.88	0.30
tblVehicleEF	LHD1	8.7700e-004	8.3837e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	0.01	9.8001e-003
tblVehicleEF	LHD1	9.4650e-003	6.3814e-003
tblVehicleEF	LHD1	7.7100e-004	2.2183e-004
tblVehicleEF	LHD1	8.3900e-004	8.0210e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.5630e-003	2.4500e-003
tblVehicleEF	LHD1	9.0360e-003	6.0816e-003
tblVehicleEF	LHD1	7.0900e-004	2.0396e-004
tblVehicleEF	LHD1	2.4720e-003	1.8824e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.6210e-003	1.2383e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.26	0.15
tblVehicleEF	LHD1	0.21	0.06

tblVehicleEF	LHD1	9.0000e-005	8.6064e-005
tblVehicleEF	LHD1	5.7060e-003	6.1793e-003
tblVehicleEF	LHD1	3.3900e-004	1.1274e-004
tblVehicleEF	LHD1	2.4720e-003	1.8824e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.6210e-003	1.2383e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.26	0.15
tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD1	4.8760e-003	5.1900e-003
tblVehicleEF	LHD1	7.5120e-003	3.7121e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	0.59	0.42
tblVehicleEF	LHD1	1.97	0.92
tblVehicleEF	LHD1	9.05	8.87
tblVehicleEF	LHD1	582.71	633.59
tblVehicleEF	LHD1	30.08	11.32
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.92	0.55
tblVehicleEF	LHD1	0.84	0.28
tblVehicleEF	LHD1	8.7700e-004	8.3837e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	0.01	9.8001e-003
tblVehicleEF	LHD1	9.4650e-003	6.3814e-003
tblVehicleEF	LHD1	7.7100e-004	2.2183e-004
tblVehicleEF	LHD1	8.3900e-004	8.0210e-004
tblVehicleEF	LHD1	0.03	0.03

tblVehicleEF	LHD1	2.5630e-003	2.4500e-003
tblVehicleEF	LHD1	9.0360e-003	6.0816e-003
tblVehicleEF	LHD1	7.0900e-004	2.0396e-004
tblVehicleEF	LHD1	3.4440e-003	2.6308e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.1800e-003	1.6730e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.25	0.14
tblVehicleEF	LHD1	0.20	0.06
tblVehicleEF	LHD1	9.0000e-005	8.6064e-005
tblVehicleEF	LHD1	5.7070e-003	6.1794e-003
tblVehicleEF	LHD1	3.3800e-004	1.1206e-004
tblVehicleEF	LHD1	3.4440e-003	2.6308e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	2.1800e-003	1.6730e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.25	0.14
tblVehicleEF	LHD1	0.22	0.07
tblVehicleEF	LHD1	4.8760e-003	5.1774e-003
tblVehicleEF	LHD1	7.3500e-003	3.6424e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	0.58	0.41
tblVehicleEF	LHD1	2.06	0.97
tblVehicleEF	LHD1	9.05	8.87
tblVehicleEF	LHD1	582.71	633.58
tblVehicleEF	LHD1	30.08	11.40

tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.96	0.57
tblVehicleEF	LHD1	0.89	0.30
tblVehicleEF	LHD1	8.7700e-004	8.3837e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	0.01	9.8001e-003
tblVehicleEF	LHD1	9.4650e-003	6.3814e-003
tblVehicleEF	LHD1	7.7100e-004	2.2183e-004
tblVehicleEF	LHD1	8.3900e-004	8.0210e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.5630e-003	2.4500e-003
tblVehicleEF	LHD1	9.0360e-003	6.0816e-003
tblVehicleEF	LHD1	7.0900e-004	2.0396e-004
tblVehicleEF	LHD1	2.5350e-003	1.9320e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.6290e-003	1.2475e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.29	0.16
tblVehicleEF	LHD1	0.21	0.06
tblVehicleEF	LHD1	9.0000e-005	8.6064e-005
tblVehicleEF	LHD1	5.7060e-003	6.1793e-003
tblVehicleEF	LHD1	3.4000e-004	1.1284e-004
tblVehicleEF	LHD1	2.5350e-003	1.9320e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.6290e-003	1.2475e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.29	0.16

tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD2	3.5130e-003	3.7116e-003
tblVehicleEF	LHD2	3.0250e-003	2.8566e-003
tblVehicleEF	LHD2	6.4370e-003	9.0455e-003
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.27	0.31
tblVehicleEF	LHD2	1.11	0.65
tblVehicleEF	LHD2	13.66	13.46
tblVehicleEF	LHD2	600.10	642.40
tblVehicleEF	LHD2	25.96	8.94
tblVehicleEF	LHD2	0.09	0.08
tblVehicleEF	LHD2	0.55	0.66
tblVehicleEF	LHD2	0.47	0.21
tblVehicleEF	LHD2	1.1390e-003	1.2802e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.3740e-003	9.6040e-003
tblVehicleEF	LHD2	3.9500e-004	1.2800e-004
tblVehicleEF	LHD2	1.0900e-003	1.2248e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	2.6730e-003	2.6459e-003
tblVehicleEF	LHD2	7.9990e-003	9.1749e-003
tblVehicleEF	LHD2	3.6300e-004	1.1769e-004
tblVehicleEF	LHD2	9.0300e-004	1.2059e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	6.4300e-004	8.2254e-004
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.06	0.09

tblVehicleEF	LHD2	0.09	0.04
tblVehicleEF	LHD2	1.3300e-004	1.2895e-004
tblVehicleEF	LHD2	5.8410e-003	6.2136e-003
tblVehicleEF	LHD2	2.7900e-004	8.8512e-005
tblVehicleEF	LHD2	9.0300e-004	1.2059e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	6.4300e-004	8.2254e-004
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.06	0.09
tblVehicleEF	LHD2	0.10	0.05
tblVehicleEF	LHD2	3.5130e-003	3.7192e-003
tblVehicleEF	LHD2	3.0530e-003	2.8803e-003
tblVehicleEF	LHD2	6.2440e-003	8.7613e-003
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.27	0.31
tblVehicleEF	LHD2	1.06	0.62
tblVehicleEF	LHD2	13.66	13.46
tblVehicleEF	LHD2	600.10	642.40
tblVehicleEF	LHD2	25.96	8.90
tblVehicleEF	LHD2	0.09	0.08
tblVehicleEF	LHD2	0.52	0.62
tblVehicleEF	LHD2	0.45	0.20
tblVehicleEF	LHD2	1.1390e-003	1.2802e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.3740e-003	9.6040e-003
tblVehicleEF	LHD2	3.9500e-004	1.2800e-004
tblVehicleEF	LHD2	1.0900e-003	1.2248e-003

tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	2.6730e-003	2.6459e-003
tblVehicleEF	LHD2	7.9990e-003	9.1749e-003
tblVehicleEF	LHD2	3.6300e-004	1.1769e-004
tblVehicleEF	LHD2	1.2670e-003	1.6887e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	8.6800e-004	1.1135e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.08	0.04
tblVehicleEF	LHD2	1.3300e-004	1.2895e-004
tblVehicleEF	LHD2	5.8410e-003	6.2136e-003
tblVehicleEF	LHD2	2.7900e-004	8.8056e-005
tblVehicleEF	LHD2	1.2670e-003	1.6887e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	8.6800e-004	1.1135e-003
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.09	0.05
tblVehicleEF	LHD2	3.5130e-003	3.7102e-003
tblVehicleEF	LHD2	3.0170e-003	2.8503e-003
tblVehicleEF	LHD2	6.4770e-003	9.1039e-003
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.27	0.31
tblVehicleEF	LHD2	1.11	0.65
tblVehicleEF	LHD2	13.66	13.46
tblVehicleEF	LHD2	600.10	642.39

tblVehicleEF	LHD2	25.96	8.95
tblVehicleEF	LHD2	0.09	0.08
tblVehicleEF	LHD2	0.54	0.65
tblVehicleEF	LHD2	0.47	0.21
tblVehicleEF	LHD2	1.1390e-003	1.2802e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.3740e-003	9.6040e-003
tblVehicleEF	LHD2	3.9500e-004	1.2800e-004
tblVehicleEF	LHD2	1.0900e-003	1.2248e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	2.6730e-003	2.6459e-003
tblVehicleEF	LHD2	7.9990e-003	9.1749e-003
tblVehicleEF	LHD2	3.6300e-004	1.1769e-004
tblVehicleEF	LHD2	8.9600e-004	1.2115e-003
tblVehicleEF	LHD2	0.03	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	6.3600e-004	8.1351e-004
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.09	0.04
tblVehicleEF	LHD2	1.3300e-004	1.2895e-004
tblVehicleEF	LHD2	5.8410e-003	6.2136e-003
tblVehicleEF	LHD2	2.8000e-004	8.8585e-005
tblVehicleEF	LHD2	8.9600e-004	1.2115e-003
tblVehicleEF	LHD2	0.03	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	6.3600e-004	8.1351e-004
tblVehicleEF	LHD2	0.05	0.05

tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.10	0.05
tblVehicleEF	MCY	0.49	0.35
tblVehicleEF	MCY	0.15	0.23
tblVehicleEF	MCY	17.95	18.16
tblVehicleEF	MCY	9.61	8.50
tblVehicleEF	MCY	178.67	214.64
tblVehicleEF	MCY	44.17	59.14
tblVehicleEF	MCY	1.11	1.12
tblVehicleEF	MCY	0.31	0.26
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	4.0000e-003	4.0000e-003
tblVehicleEF	MCY	2.2470e-003	2.2317e-003
tblVehicleEF	MCY	3.4860e-003	2.9927e-003
tblVehicleEF	MCY	5.0400e-003	5.0400e-003
tblVehicleEF	MCY	1.0000e-003	1.0000e-003
tblVehicleEF	MCY	2.0980e-003	2.0841e-003
tblVehicleEF	MCY	3.2740e-003	2.8105e-003
tblVehicleEF	MCY	1.12	1.15
tblVehicleEF	MCY	0.65	0.68
tblVehicleEF	MCY	0.69	0.70
tblVehicleEF	MCY	2.34	2.35
tblVehicleEF	MCY	0.60	0.53
tblVehicleEF	MCY	2.02	1.79
tblVehicleEF	MCY	2.1510e-003	2.1241e-003
tblVehicleEF	MCY	6.5800e-004	5.8528e-004
tblVehicleEF	MCY	1.12	1.15
tblVehicleEF	MCY	0.65	0.68
tblVehicleEF	MCY	0.69	0.70

tblVehicleEF	MCY	2.92	2.93
tblVehicleEF	MCY	0.60	0.53
tblVehicleEF	MCY	2.20	1.95
tblVehicleEF	MCY	0.48	0.34
tblVehicleEF	MCY	0.13	0.21
tblVehicleEF	MCY	17.31	17.50
tblVehicleEF	MCY	8.84	7.78
tblVehicleEF	MCY	178.67	213.41
tblVehicleEF	MCY	44.17	57.38
tblVehicleEF	MCY	0.98	0.98
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	4.0000e-003	4.0000e-003
tblVehicleEF	MCY	2.2470e-003	2.2317e-003
tblVehicleEF	MCY	3.4860e-003	2.9927e-003
tblVehicleEF	MCY	5.0400e-003	5.0400e-003
tblVehicleEF	MCY	1.0000e-003	1.0000e-003
tblVehicleEF	MCY	2.0980e-003	2.0841e-003
tblVehicleEF	MCY	3.2740e-003	2.8105e-003
tblVehicleEF	MCY	1.69	1.72
tblVehicleEF	MCY	0.70	0.72
tblVehicleEF	MCY	1.09	1.11
tblVehicleEF	MCY	2.29	2.30
tblVehicleEF	MCY	0.56	0.50
tblVehicleEF	MCY	1.82	1.60
tblVehicleEF	MCY	2.1390e-003	2.1119e-003
tblVehicleEF	MCY	6.3900e-004	5.6781e-004
tblVehicleEF	MCY	1.69	1.72
tblVehicleEF	MCY	0.70	0.72

tblVehicleEF	MCY	1.09	1.11
tblVehicleEF	MCY	2.85	2.86
tblVehicleEF	MCY	0.56	0.50
tblVehicleEF	MCY	1.98	1.74
tblVehicleEF	MCY	0.49	0.35
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	18.04	18.25
tblVehicleEF	MCY	9.73	8.62
tblVehicleEF	MCY	178.67	214.83
tblVehicleEF	MCY	44.17	59.46
tblVehicleEF	MCY	1.09	1.09
tblVehicleEF	MCY	0.31	0.27
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	4.0000e-003	4.0000e-003
tblVehicleEF	MCY	2.2470e-003	2.2317e-003
tblVehicleEF	MCY	3.4860e-003	2.9927e-003
tblVehicleEF	MCY	5.0400e-003	5.0400e-003
tblVehicleEF	MCY	1.0000e-003	1.0000e-003
tblVehicleEF	MCY	2.0980e-003	2.0841e-003
tblVehicleEF	MCY	3.2740e-003	2.8105e-003
tblVehicleEF	MCY	1.25	1.27
tblVehicleEF	MCY	0.84	0.87
tblVehicleEF	MCY	0.73	0.74
tblVehicleEF	MCY	2.35	2.36
tblVehicleEF	MCY	0.69	0.62
tblVehicleEF	MCY	2.06	1.83
tblVehicleEF	MCY	2.1520e-003	2.1259e-003
tblVehicleEF	MCY	6.6100e-004	5.8841e-004
tblVehicleEF	MCY	1.25	1.27

tblVehicleEF	MCY	0.84	0.87
tblVehicleEF	MCY	0.73	0.74
tblVehicleEF	MCY	2.93	2.94
tblVehicleEF	MCY	0.69	0.62
tblVehicleEF	MCY	2.24	1.99
tblVehicleEF	MDV	8.2720e-003	3.7207e-003
tblVehicleEF	MDV	0.01	0.07
tblVehicleEF	MDV	0.96	0.83
tblVehicleEF	MDV	1.95	2.70
tblVehicleEF	MDV	450.89	387.66
tblVehicleEF	MDV	98.57	79.61
tblVehicleEF	MDV	0.10	0.07
tblVehicleEF	MDV	0.17	0.27
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	8.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.8710e-003	1.5464e-003
tblVehicleEF	MDV	2.2680e-003	1.7228e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	1.7240e-003	1.4259e-003
tblVehicleEF	MDV	2.0860e-003	1.5841e-003
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.14	0.31
tblVehicleEF	MDV	4.5120e-003	3.7561e-003
tblVehicleEF	MDV	1.0190e-003	7.7184e-004

tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.15	0.34
tblVehicleEF	MDV	8.7240e-003	3.9512e-003
tblVehicleEF	MDV	9.3780e-003	0.06
tblVehicleEF	MDV	1.04	0.90
tblVehicleEF	MDV	1.69	2.32
tblVehicleEF	MDV	468.83	397.99
tblVehicleEF	MDV	98.57	78.90
tblVehicleEF	MDV	0.09	0.06
tblVehicleEF	MDV	0.16	0.25
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	8.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.8710e-003	1.5464e-003
tblVehicleEF	MDV	2.2680e-003	1.7228e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	1.7240e-003	1.4259e-003
tblVehicleEF	MDV	2.0860e-003	1.5841e-003
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.09	0.12
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.13	0.28
tblVehicleEF	MDV	4.6930e-003	3.8563e-003

tblVehicleEF	MDV	1.0150e-003	7.6496e-004
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.09	0.12
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.14	0.31
tblVehicleEF	MDV	8.1180e-003	3.6475e-003
tblVehicleEF	MDV	0.01	0.07
tblVehicleEF	MDV	0.93	0.80
tblVehicleEF	MDV	2.00	2.78
tblVehicleEF	MDV	444.26	383.84
tblVehicleEF	MDV	98.57	79.77
tblVehicleEF	MDV	0.09	0.06
tblVehicleEF	MDV	0.17	0.28
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	8.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.8710e-003	1.5464e-003
tblVehicleEF	MDV	2.2680e-003	1.7228e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	1.7240e-003	1.4259e-003
tblVehicleEF	MDV	2.0860e-003	1.5841e-003
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.15	0.13
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.02	0.01
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.14	0.32

tblVehicleEF	MDV	4.4460e-003	3.7191e-003
tblVehicleEF	MDV	1.0200e-003	7.7334e-004
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.15	0.13
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.16	0.35
tblVehicleEF	MH	0.02	6.9351e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.27	0.73
tblVehicleEF	MH	4.43	1.75
tblVehicleEF	MH	1,096.02	1,403.51
tblVehicleEF	MH	56.63	16.91
tblVehicleEF	MH	1.16	1.27
tblVehicleEF	MH	0.68	0.23
tblVehicleEF	MH	0.13	0.13
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.0200e-004	2.1646e-004
tblVehicleEF	MH	0.06	0.06
tblVehicleEF	MH	3.2400e-003	3.3089e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	8.2900e-004	1.9902e-004
tblVehicleEF	MH	0.74	0.62
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.33	0.28
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.02	0.01

tblVehicleEF	MH	0.26	0.08
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.4300e-004	1.6731e-004
tblVehicleEF	MH	0.74	0.62
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.33	0.28
tblVehicleEF	MH	0.08	0.06
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.29	0.09
tblVehicleEF	MH	0.02	7.0675e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.30	0.74
tblVehicleEF	MH	4.20	1.66
tblVehicleEF	MH	1,096.02	1,403.53
tblVehicleEF	MH	56.63	16.76
tblVehicleEF	MH	1.08	1.19
tblVehicleEF	MH	0.65	0.22
tblVehicleEF	MH	0.13	0.13
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.0200e-004	2.1646e-004
tblVehicleEF	MH	0.06	0.06
tblVehicleEF	MH	3.2400e-003	3.3089e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	8.2900e-004	1.9902e-004
tblVehicleEF	MH	0.99	0.83
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.45	0.38
tblVehicleEF	MH	0.06	0.05

tblVehicleEF	MH	0.02	9.8866e-003
tblVehicleEF	MH	0.25	0.08
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.3900e-004	1.6581e-004
tblVehicleEF	MH	0.99	0.83
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.45	0.38
tblVehicleEF	MH	0.08	0.06
tblVehicleEF	MH	0.02	9.8866e-003
tblVehicleEF	MH	0.27	0.08
tblVehicleEF	MH	0.02	6.8954e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.26	0.72
tblVehicleEF	MH	4.46	1.77
tblVehicleEF	MH	1,096.02	1,403.50
tblVehicleEF	MH	56.63	16.93
tblVehicleEF	MH	1.14	1.24
tblVehicleEF	MH	0.68	0.23
tblVehicleEF	MH	0.13	0.13
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.0200e-004	2.1646e-004
tblVehicleEF	MH	0.06	0.06
tblVehicleEF	MH	3.2400e-003	3.3089e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	8.2900e-004	1.9902e-004
tblVehicleEF	MH	0.80	0.66
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.34	0.29

tblVehicleEF	MH	0.06	0.04
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.26	0.08
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.4400e-004	1.6756e-004
tblVehicleEF	MH	0.80	0.66
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.34	0.29
tblVehicleEF	MH	0.08	0.06
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.29	0.09
tblVehicleEF	MHD	0.02	4.6044e-003
tblVehicleEF	MHD	2.6670e-003	1.2190e-003
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.32	0.38
tblVehicleEF	MHD	0.24	0.17
tblVehicleEF	MHD	4.63	1.13
tblVehicleEF	MHD	143.49	52.64
tblVehicleEF	MHD	1,123.36	993.27
tblVehicleEF	MHD	56.66	11.92
tblVehicleEF	MHD	0.37	0.25
tblVehicleEF	MHD	0.68	0.96
tblVehicleEF	MHD	11.00	1.55
tblVehicleEF	MHD	6.9000e-005	1.7495e-004
tblVehicleEF	MHD	0.13	0.13
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	2.8070e-003	6.0478e-003
tblVehicleEF	MHD	6.9200e-004	1.1093e-004
tblVehicleEF	MHD	6.6000e-005	1.6738e-004

tblVehicleEF	MHD	0.06	0.06
tblVehicleEF	MHD	3.0000e-003	3.0000e-003
tblVehicleEF	MHD	2.6820e-003	5.7808e-003
tblVehicleEF	MHD	6.3600e-004	1.0200e-004
tblVehicleEF	MHD	9.3500e-004	4.6855e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	6.5100e-004	3.4122e-004
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.29	0.05
tblVehicleEF	MHD	1.3800e-003	5.0126e-004
tblVehicleEF	MHD	0.01	9.4997e-003
tblVehicleEF	MHD	6.4800e-004	1.1798e-004
tblVehicleEF	MHD	9.3500e-004	4.6855e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	6.5100e-004	3.4122e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.31	0.06
tblVehicleEF	MHD	0.01	4.3675e-003
tblVehicleEF	MHD	2.6950e-003	1.2408e-003
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.24	0.31
tblVehicleEF	MHD	0.24	0.17
tblVehicleEF	MHD	4.41	1.08
tblVehicleEF	MHD	151.98	52.58
tblVehicleEF	MHD	1,123.36	993.27

tblVehicleEF	MHD	56.66	11.83
tblVehicleEF	MHD	0.38	0.24
tblVehicleEF	MHD	0.65	0.90
tblVehicleEF	MHD	10.97	1.55
tblVehicleEF	MHD	5.8000e-005	1.4974e-004
tblVehicleEF	MHD	0.13	0.13
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	2.8070e-003	6.0478e-003
tblVehicleEF	MHD	6.9200e-004	1.1093e-004
tblVehicleEF	MHD	5.5000e-005	1.4327e-004
tblVehicleEF	MHD	0.06	0.06
tblVehicleEF	MHD	3.0000e-003	3.0000e-003
tblVehicleEF	MHD	2.6820e-003	5.7808e-003
tblVehicleEF	MHD	6.3600e-004	1.0200e-004
tblVehicleEF	MHD	1.3170e-003	6.6100e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	8.8900e-004	4.6414e-004
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.28	0.05
tblVehicleEF	MHD	1.4600e-003	5.0080e-004
tblVehicleEF	MHD	0.01	9.4997e-003
tblVehicleEF	MHD	6.4400e-004	1.1708e-004
tblVehicleEF	MHD	1.3170e-003	6.6100e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	8.8900e-004	4.6414e-004
tblVehicleEF	MHD	0.04	0.01

tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.30	0.06
tblVehicleEF	MHD	0.02	4.9472e-003
tblVehicleEF	MHD	2.6590e-003	1.2115e-003
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.45	0.47
tblVehicleEF	MHD	0.24	0.17
tblVehicleEF	MHD	4.67	1.14
tblVehicleEF	MHD	131.74	52.73
tblVehicleEF	MHD	1,123.36	993.27
tblVehicleEF	MHD	56.66	11.94
tblVehicleEF	MHD	0.35	0.26
tblVehicleEF	MHD	0.67	0.94
tblVehicleEF	MHD	11.01	1.55
tblVehicleEF	MHD	8.4000e-005	2.0975e-004
tblVehicleEF	MHD	0.13	0.13
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	2.8070e-003	6.0478e-003
tblVehicleEF	MHD	6.9200e-004	1.1093e-004
tblVehicleEF	MHD	8.0000e-005	2.0068e-004
tblVehicleEF	MHD	0.06	0.06
tblVehicleEF	MHD	3.0000e-003	3.0000e-003
tblVehicleEF	MHD	2.6820e-003	5.7808e-003
tblVehicleEF	MHD	6.3600e-004	1.0200e-004
tblVehicleEF	MHD	9.4200e-004	4.6197e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	6.5200e-004	3.3820e-004
tblVehicleEF	MHD	0.03	0.01

tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.29	0.06
tblVehicleEF	MHD	1.2700e-003	5.0182e-004
tblVehicleEF	MHD	0.01	9.4997e-003
tblVehicleEF	MHD	6.4800e-004	1.1816e-004
tblVehicleEF	MHD	9.4200e-004	4.6197e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	6.5200e-004	3.3820e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.32	0.06
tblVehicleEF	OBUS	0.01	8.6549e-003
tblVehicleEF	OBUS	5.2770e-003	4.3817e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.25	0.56
tblVehicleEF	OBUS	0.39	0.54
tblVehicleEF	OBUS	4.82	2.26
tblVehicleEF	OBUS	76.59	78.18
tblVehicleEF	OBUS	1,203.91	1,334.33
tblVehicleEF	OBUS	69.07	19.41
tblVehicleEF	OBUS	0.15	0.30
tblVehicleEF	OBUS	0.55	0.98
tblVehicleEF	OBUS	1.95	0.75
tblVehicleEF	OBUS	1.4000e-005	9.9299e-005
tblVehicleEF	OBUS	0.13	0.13
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	2.4030e-003	6.5545e-003
tblVehicleEF	OBUS	8.9600e-004	2.0231e-004

tblVehicleEF	OBUS	1.3000e-005	9.5003e-005
tblVehicleEF	OBUS	0.06	0.06
tblVehicleEF	OBUS	3.0000e-003	3.0000e-003
tblVehicleEF	OBUS	2.2790e-003	6.2545e-003
tblVehicleEF	OBUS	8.2400e-004	1.8602e-004
tblVehicleEF	OBUS	1.3360e-003	1.7513e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	7.4000e-004	9.5000e-004
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.30	0.11
tblVehicleEF	OBUS	7.4300e-004	7.4495e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.7500e-004	1.9203e-004
tblVehicleEF	OBUS	1.3360e-003	1.7513e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	7.4000e-004	9.5000e-004
tblVehicleEF	OBUS	0.04	0.03
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.33	0.12
tblVehicleEF	OBUS	0.01	8.7318e-003
tblVehicleEF	OBUS	5.3660e-003	4.4741e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.24	0.55
tblVehicleEF	OBUS	0.39	0.55
tblVehicleEF	OBUS	4.58	2.14
tblVehicleEF	OBUS	80.14	77.32

tblVehicleEF	OBUS	1,203.91	1,334.35
tblVehicleEF	OBUS	69.07	19.21
tblVehicleEF	OBUS	0.16	0.28
tblVehicleEF	OBUS	0.52	0.92
tblVehicleEF	OBUS	1.92	0.74
tblVehicleEF	OBUS	1.2000e-005	8.8234e-005
tblVehicleEF	OBUS	0.13	0.13
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	2.4030e-003	6.5545e-003
tblVehicleEF	OBUS	8.9600e-004	2.0231e-004
tblVehicleEF	OBUS	1.1000e-005	8.4417e-005
tblVehicleEF	OBUS	0.06	0.06
tblVehicleEF	OBUS	3.0000e-003	3.0000e-003
tblVehicleEF	OBUS	2.2790e-003	6.2545e-003
tblVehicleEF	OBUS	8.2400e-004	1.8602e-004
tblVehicleEF	OBUS	1.8380e-003	2.3945e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	1.0100e-003	1.2838e-003
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.29	0.11
tblVehicleEF	OBUS	7.7700e-004	7.3679e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.7100e-004	1.9009e-004
tblVehicleEF	OBUS	1.8380e-003	2.3945e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	1.0100e-003	1.2838e-003

tblVehicleEF	OBUS	0.04	0.04
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.32	0.12
tblVehicleEF	OBUS	0.01	8.5703e-003
tblVehicleEF	OBUS	5.2500e-003	4.3547e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.25	0.56
tblVehicleEF	OBUS	0.38	0.54
tblVehicleEF	OBUS	4.86	2.28
tblVehicleEF	OBUS	71.70	79.37
tblVehicleEF	OBUS	1,203.91	1,334.32
tblVehicleEF	OBUS	69.07	19.44
tblVehicleEF	OBUS	0.15	0.32
tblVehicleEF	OBUS	0.54	0.96
tblVehicleEF	OBUS	1.96	0.76
tblVehicleEF	OBUS	1.7000e-005	1.1458e-004
tblVehicleEF	OBUS	0.13	0.13
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	2.4030e-003	6.5545e-003
tblVehicleEF	OBUS	8.9600e-004	2.0231e-004
tblVehicleEF	OBUS	1.6000e-005	1.0962e-004
tblVehicleEF	OBUS	0.06	0.06
tblVehicleEF	OBUS	3.0000e-003	3.0000e-003
tblVehicleEF	OBUS	2.2790e-003	6.2545e-003
tblVehicleEF	OBUS	8.2400e-004	1.8602e-004
tblVehicleEF	OBUS	1.3380e-003	1.7725e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	7.3000e-004	9.4389e-004

tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.31	0.11
tblVehicleEF	OBUS	6.9600e-004	7.5620e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.7600e-004	1.9235e-004
tblVehicleEF	OBUS	1.3380e-003	1.7725e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	7.3000e-004	9.4389e-004
tblVehicleEF	OBUS	0.04	0.03
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.34	0.12
tblVehicleEF	SBUS	0.83	0.09
tblVehicleEF	SBUS	0.02	9.1574e-003
tblVehicleEF	SBUS	0.07	8.2302e-003
tblVehicleEF	SBUS	8.49	3.34
tblVehicleEF	SBUS	0.94	0.84
tblVehicleEF	SBUS	8.61	1.12
tblVehicleEF	SBUS	1,085.60	359.37
tblVehicleEF	SBUS	1,065.54	1,076.06
tblVehicleEF	SBUS	58.07	6.66
tblVehicleEF	SBUS	7.75	3.47
tblVehicleEF	SBUS	3.55	5.09
tblVehicleEF	SBUS	11.66	0.75
tblVehicleEF	SBUS	6.9310e-003	4.4776e-003
tblVehicleEF	SBUS	0.74	0.74
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03

tblVehicleEF	SBUS	1.0190e-003	7.7115e-005
tblVehicleEF	SBUS	6.6310e-003	4.2839e-003
tblVehicleEF	SBUS	0.32	0.32
tblVehicleEF	SBUS	2.6550e-003	2.6187e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	9.3700e-004	7.0905e-005
tblVehicleEF	SBUS	3.3910e-003	1.1512e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.01	0.40
tblVehicleEF	SBUS	1.9710e-003	6.6121e-004
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.45	0.05
tblVehicleEF	SBUS	0.01	3.4356e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.3000e-004	6.5860e-005
tblVehicleEF	SBUS	3.3910e-003	1.1512e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.46	0.57
tblVehicleEF	SBUS	1.9710e-003	6.6121e-004
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.50	0.05
tblVehicleEF	SBUS	0.83	0.09
tblVehicleEF	SBUS	0.02	9.2665e-003
tblVehicleEF	SBUS	0.06	7.3961e-003
tblVehicleEF	SBUS	8.40	3.30
tblVehicleEF	SBUS	0.95	0.85
tblVehicleEF	SBUS	7.12	0.92

tblVehicleEF	SBUS	1,133.08	368.54
tblVehicleEF	SBUS	1,065.54	1,076.08
tblVehicleEF	SBUS	58.07	6.33
tblVehicleEF	SBUS	8.00	3.55
tblVehicleEF	SBUS	3.35	4.81
tblVehicleEF	SBUS	11.63	0.75
tblVehicleEF	SBUS	5.8420e-003	3.7807e-003
tblVehicleEF	SBUS	0.74	0.74
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	1.0190e-003	7.7115e-005
tblVehicleEF	SBUS	5.5900e-003	3.6171e-003
tblVehicleEF	SBUS	0.32	0.32
tblVehicleEF	SBUS	2.6550e-003	2.6187e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	9.3700e-004	7.0905e-005
tblVehicleEF	SBUS	4.6620e-003	1.5802e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.01	0.40
tblVehicleEF	SBUS	2.6790e-003	8.9511e-004
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.41	0.04
tblVehicleEF	SBUS	0.01	3.5222e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.0500e-004	6.2651e-005
tblVehicleEF	SBUS	4.6620e-003	1.5802e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.46	0.57

tblVehicleEF	SBUS	2.6790e-003	8.9511e-004
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.45	0.05
tblVehicleEF	SBUS	0.83	0.09
tblVehicleEF	SBUS	0.02	9.1267e-003
tblVehicleEF	SBUS	0.07	8.3498e-003
tblVehicleEF	SBUS	8.63	3.39
tblVehicleEF	SBUS	0.93	0.83
tblVehicleEF	SBUS	8.75	1.13
tblVehicleEF	SBUS	1,020.03	346.72
tblVehicleEF	SBUS	1,065.54	1,076.06
tblVehicleEF	SBUS	58.07	6.69
tblVehicleEF	SBUS	7.41	3.35
tblVehicleEF	SBUS	3.49	5.00
tblVehicleEF	SBUS	11.67	0.75
tblVehicleEF	SBUS	8.4330e-003	5.4399e-003
tblVehicleEF	SBUS	0.74	0.74
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	1.0190e-003	7.7115e-005
tblVehicleEF	SBUS	8.0680e-003	5.2046e-003
tblVehicleEF	SBUS	0.32	0.32
tblVehicleEF	SBUS	2.6550e-003	2.6187e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	9.3700e-004	7.0905e-005
tblVehicleEF	SBUS	3.3080e-003	1.1236e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.01	0.40

tblVehicleEF	SBUS	1.9200e-003	6.4214e-004
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.46	0.05
tblVehicleEF	SBUS	0.01	3.3160e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.3200e-004	6.6167e-005
tblVehicleEF	SBUS	3.3080e-003	1.1236e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.47	0.57
tblVehicleEF	SBUS	1.9200e-003	6.4214e-004
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.51	0.05
tblVehicleEF	UBUS	1.60	1.2913e-003
tblVehicleEF	UBUS	0.07	0.02
tblVehicleEF	UBUS	7.75	0.07
tblVehicleEF	UBUS	12.30	1.81
tblVehicleEF	UBUS	1,792.86	385.95
tblVehicleEF	UBUS	138.24	20.36
tblVehicleEF	UBUS	3.61	0.05
tblVehicleEF	UBUS	13.00	0.18
tblVehicleEF	UBUS	0.52	0.02
tblVehicleEF	UBUS	0.01	2.2582e-003
tblVehicleEF	UBUS	0.03	3.6033e-004
tblVehicleEF	UBUS	1.3330e-003	1.7046e-004
tblVehicleEF	UBUS	0.22	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6454e-004
tblVehicleEF	UBUS	0.03	3.3131e-004

tblVehicleEF	UBUS	1.2250e-003	1.5673e-004
tblVehicleEF	UBUS	5.7880e-003	1.1457e-003
tblVehicleEF	UBUS	0.09	0.01
tblVehicleEF	UBUS	3.5780e-003	7.3833e-004
tblVehicleEF	UBUS	0.41	4.2705e-003
tblVehicleEF	UBUS	0.03	2.7282e-003
tblVehicleEF	UBUS	0.94	0.11
tblVehicleEF	UBUS	8.5520e-003	3.8193e-003
tblVehicleEF	UBUS	1.6040e-003	2.0144e-004
tblVehicleEF	UBUS	5.7880e-003	1.1457e-003
tblVehicleEF	UBUS	0.09	0.01
tblVehicleEF	UBUS	3.5780e-003	7.3833e-004
tblVehicleEF	UBUS	2.05	6.2315e-003
tblVehicleEF	UBUS	0.03	2.7282e-003
tblVehicleEF	UBUS	1.03	0.12
tblVehicleEF	UBUS	1.60	1.3189e-003
tblVehicleEF	UBUS	0.06	0.02
tblVehicleEF	UBUS	7.80	0.07
tblVehicleEF	UBUS	10.86	1.61
tblVehicleEF	UBUS	1,792.86	385.95
tblVehicleEF	UBUS	138.24	20.00
tblVehicleEF	UBUS	3.38	0.04
tblVehicleEF	UBUS	12.93	0.17
tblVehicleEF	UBUS	0.52	0.02
tblVehicleEF	UBUS	0.01	2.2582e-003
tblVehicleEF	UBUS	0.03	3.6033e-004
tblVehicleEF	UBUS	1.3330e-003	1.7046e-004
tblVehicleEF	UBUS	0.22	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6454e-004

tblVehicleEF	UBUS	0.03	3.3131e-004
tblVehicleEF	UBUS	1.2250e-003	1.5673e-004
tblVehicleEF	UBUS	7.7730e-003	1.5810e-003
tblVehicleEF	UBUS	0.09	0.01
tblVehicleEF	UBUS	4.7590e-003	1.0195e-003
tblVehicleEF	UBUS	0.41	4.3522e-003
tblVehicleEF	UBUS	0.03	2.4623e-003
tblVehicleEF	UBUS	0.87	0.10
tblVehicleEF	UBUS	8.5530e-003	3.8193e-003
tblVehicleEF	UBUS	1.5790e-003	1.9796e-004
tblVehicleEF	UBUS	7.7730e-003	1.5810e-003
tblVehicleEF	UBUS	0.09	0.01
tblVehicleEF	UBUS	4.7590e-003	1.0195e-003
tblVehicleEF	UBUS	2.06	6.3508e-003
tblVehicleEF	UBUS	0.03	2.4623e-003
tblVehicleEF	UBUS	0.96	0.11
tblVehicleEF	UBUS	1.60	1.2849e-003
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	7.74	0.06
tblVehicleEF	UBUS	12.55	1.85
tblVehicleEF	UBUS	1,792.86	385.95
tblVehicleEF	UBUS	138.24	20.42
tblVehicleEF	UBUS	3.54	0.05
tblVehicleEF	UBUS	13.02	0.18
tblVehicleEF	UBUS	0.52	0.02
tblVehicleEF	UBUS	0.01	2.2582e-003
tblVehicleEF	UBUS	0.03	3.6033e-004
tblVehicleEF	UBUS	1.3330e-003	1.7046e-004
tblVehicleEF	UBUS	0.22	0.01

tblVehicleEF	UBUS	3.0000e-003	5.6454e-004
tblVehicleEF	UBUS	0.03	3.3131e-004
tblVehicleEF	UBUS	1.2250e-003	1.5673e-004
tblVehicleEF	UBUS	6.4170e-003	1.1578e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	3.7120e-003	7.1632e-004
tblVehicleEF	UBUS	0.40	4.2510e-003
tblVehicleEF	UBUS	0.04	3.3316e-003
tblVehicleEF	UBUS	0.96	0.11
tblVehicleEF	UBUS	8.5520e-003	3.8193e-003
tblVehicleEF	UBUS	1.6080e-003	2.0207e-004
tblVehicleEF	UBUS	6.4170e-003	1.1578e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	3.7120e-003	7.1632e-004
tblVehicleEF	UBUS	2.05	6.2030e-003
tblVehicleEF	UBUS	0.04	3.3316e-003
tblVehicleEF	UBUS	1.05	0.12
tblVehicleTrips	DV_TP	17.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	17.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	66.00	100.00
tblVehicleTrips	PR_TP	54.00	100.00
tblVehicleTrips	ST_TR	158.37	0.00
tblVehicleTrips	ST_TR	8.96	0.00
tblVehicleTrips	ST_TR	49.97	148.80
tblVehicleTrips	ST_TR	177.59	0.00
tblVehicleTrips	SU_TR	131.84	0.00
tblVehicleTrips	SU_TR	1.55	0.00

tblVehicleTrips	SU_TR	25.24	68.45
tblVehicleTrips	SU_TR	166.44	0.00
tblVehicleTrips	WD_TR	127.15	0.00
tblVehicleTrips	WD_TR	36.13	0.00
tblVehicleTrips	WD_TR	42.70	102.71
tblVehicleTrips	WD_TR	102.24	0.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	12,945,712.84	0.00
tblWater	IndoorWaterUseRate	200,768.86	0.00
tblWater	IndoorWaterUseRate	9,939,636.18	0.00
tblWater	IndoorWaterUseRate	5,068,041.92	30,597,544.00
tblWater	IndoorWaterUseRate	4,218,238.31	0.00
tblWater	OutdoorWaterUseRate	826,322.10	0.00
tblWater	OutdoorWaterUseRate	38,241.69	0.00
tblWater	OutdoorWaterUseRate	634,444.86	0.00
tblWater	OutdoorWaterUseRate	3,106,219.24	853,528.00
tblWater	OutdoorWaterUseRate	130,460.98	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	3.9339	1.6500e-003	0.1813	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0200e-003		0.4146

Energy	0.3722	3.3836	2.8422	0.0203		0.2572	0.2572		0.2572	0.2572		4,060.2906	4,060.2906	0.0778	0.0744	4,084.4189
Mobile	19.1073	40.3177	248.9872	0.8552	89.8312	0.5751	90.4062	23.9911	0.5357	24.5268		88,948.5691	88,948.5691	2.9339		89,021.9166
Total	**23.4135**	**43.7029**	**252.0107**	**0.8755**	**89.8312**	**0.8329**	**90.6640**	**23.9911**	**0.7935**	**24.7846**		**93,009.2490**	**93,009.2490**	**3.0127**	**0.0744**	**93,106.7501**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	3.9339	1.6500e-003	0.1813	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0200e-003		0.4146
Energy	0.3722	3.3836	2.8422	0.0203		0.2572	0.2572		0.2572	0.2572		4,060.2906	4,060.2906	0.0778	0.0744	4,084.4189
Mobile	19.1073	40.3177	248.9872	0.8552	89.8312	0.5751	90.4062	23.9911	0.5357	24.5268		88,948.5691	88,948.5691	2.9339		89,021.9166
Total	**23.4135**	**43.7029**	**252.0107**	**0.8755**	**89.8312**	**0.8329**	**90.6640**	**23.9911**	**0.7935**	**24.7846**		**93,009.2490**	**93,009.2490**	**3.0127**	**0.0744**	**93,106.7501**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	19.1073	40.3177	248.9872	0.8552	89.8312	0.5751	90.4062	23.9911	0.5357	24.5268		88,948.5691	88,948.5691	2.9339		89,021.9166
Unmitigated	19.1073	40.3177	248.9872	0.8552	89.8312	0.5751	90.4062	23.9911	0.5357	24.5268		88,948.5691	88,948.5691	2.9339		89,021.9166

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Medical Office Building	0.00	0.00	0.00		
Movie Theater (No Matinee)	1,936.00	2,464.00	2035.00	6,092,081	6,092,081
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	7,027.42	10,180.90	4683.35	24,574,817	24,574,817
Supermarket	0.00	0.00	0.00		
Total	8,963.42	12,644.90	6,718.35	30,666,898	30,666,898

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
High Turnover (Sit Down Restaurant)	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Medical Office Building	16.60	8.40	6.90	29.60	51.40	19.00	60	30	10
Movie Theater (No Matinee)	16.60	8.40	6.90	1.80	79.20	19.00	100	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	100	0	0
Supermarket	16.60	8.40	6.90	6.50	74.50	19.00	34	30	36

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High Turnover (Sit Down Restaurant)	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Medical Office Building	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Movie Theater (No Matinee)	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Other Non-Asphalt Surfaces	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Parking Lot	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Regional Shopping Center	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Supermarket	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.3722	3.3836	2.8422	0.0203		0.2572	0.2572		0.2572	0.2572		4,060.2906	4,060.2906	0.0778	0.0744	4,084.4189
NaturalGas Unmitigated	0.3722	3.3836	2.8422	0.0203		0.2572	0.2572		0.2572	0.2572		4,060.2906	4,060.2906	0.0778	0.0744	4,084.4189

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High Turnover (Sit Down Restaurant)	30901.2	0.3333	3.0295	2.5448	0.0182		0.2302	0.2302		0.2302	0.2302		3,635.4406	3,635.4406	0.0697	0.0667	3,657.0442
Medical Office Building	47.3553	5.1000e-004	4.6400e-003	3.9000e-003	3.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004		5.5712	5.5712	1.1000e-004	1.0000e-004	5.6043
Movie Theater (No Matinee)	1117.11	0.0121	0.1095	0.0920	6.6000e-004		8.3200e-003	8.3200e-003		8.3200e-003	8.3200e-003		131.4247	131.4247	2.5200e-003	2.4100e-003	132.2057

Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	395.495	4.2700e-003	0.0388	0.0326	2.3000e-004		2.9500e-003	2.9500e-003		2.9500e-003	2.9500e-003		46.5288	46.5288	8.9000e-004	8.5000e-004	46.8053
Supermarket	2051.26	0.0221	0.2011	0.1689	1.2100e-003		0.0153	0.0153		0.0153	0.0153		241.3253	241.3253	4.6300e-003	4.4200e-003	242.7594
Total		**0.3722**	**3.3836**	**2.8422**	**0.0203**		**0.2571**	**0.2571**		**0.2571**	**0.2571**		**4,060.2906**	**4,060.2906**	**0.0778**	**0.0744**	**4,084.4189**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High Turnover (Sit Down Restaurant)	30.9012	0.3333	3.0295	2.5448	0.0182		0.2302	0.2302		0.2302	0.2302		3,635.4406	3,635.4406	0.0697	0.0667	3,657.0442
Medical Office Building	0.0473553	5.1000e-004	4.6400e-003	3.9000e-003	3.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004		5.5712	5.5712	1.1000e-004	1.0000e-004	5.6043
Movie Theater (No Matinee)	1.11711	0.0121	0.1095	0.0920	6.6000e-004		8.3200e-003	8.3200e-003		8.3200e-003	8.3200e-003		131.4247	131.4247	2.5200e-003	2.4100e-003	132.2057
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.395495	4.2700e-003	0.0388	0.0326	2.3000e-004		2.9500e-003	2.9500e-003		2.9500e-003	2.9500e-003		46.5288	46.5288	8.9000e-004	8.5000e-004	46.8053
Supermarket	2.05126	0.0221	0.2011	0.1689	1.2100e-003		0.0153	0.0153		0.0153	0.0153		241.3253	241.3253	4.6300e-003	4.4200e-003	242.7594
Total		**0.3722**	**3.3836**	**2.8422**	**0.0203**		**0.2571**	**0.2571**		**0.2571**	**0.2571**		**4,060.2906**	**4,060.2906**	**0.0778**	**0.0744**	**4,084.4189**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.9339	1.6500e-003	0.1813	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0200e-003		0.4146
Unmitigated	3.9339	1.6500e-003	0.1813	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0200e-003		0.4146

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4554					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.4618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0167	1.6500e-003	0.1813	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0200e-003		0.4146
Total	**3.9339**	**1.6500e-003**	**0.1813**	**1.0000e-005**		**6.5000e-004**	**6.5000e-004**		**6.5000e-004**	**6.5000e-004**		**0.3892**	**0.3892**	**1.0200e-003**		**0.4146**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4554					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.4618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0167	1.6500e-003	0.1813	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0200e-003		0.4146
Total	**3.9339**	**1.6500e-003**	**0.1813**	**1.0000e-005**		**6.5000e-004**	**6.5000e-004**		**6.5000e-004**	**6.5000e-004**		**0.3892**	**0.3892**	**1.0200e-003**		**0.4146**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

Brea Plaza Expansion Project, Baseline Conditions (2024)

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Medical Office Building	1.60	1000sqft	0.04	1,596.00	0
Other Non-Asphalt Surfaces	65.93	1000sqft	1.51	65,931.00	0
Parking Lot	465.70	1000sqft	10.69	465,700.00	0
High Turnover (Sit Down Restaurant)	42.65	1000sqft	0.98	42,649.00	0
Movie Theater (No Matinee)	1,100.00	Seat	0.42	18,450.00	0
Regional Shopping Center	68.42	1000sqft	1.57	68,415.00	0
Supermarket	34.22	1000sqft	0.79	34,219.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	531.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustainability Report

Land Use - based on info from applicant

Construction Phase -

Vehicle Trips - based on info from LLG, see assumptions file for calculations

Vehicle Emission Factors - EMFAC2017 adjustment, see assumptions file

Woodstoves -

Area Coating - parking coating accounts only for parking area

Energy Use -

Water And Wastewater - assigning all water use to regional shopping center. Based on data from sewer study. Assumes 100% aerobic treatment.

Solid Waste -

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	31898	27942
tblLandUse	LandUseSquareFeet	1,600.00	1,596.00
tblLandUse	LandUseSquareFeet	65,930.00	65,931.00
tblLandUse	LandUseSquareFeet	42,650.00	42,649.00
tblLandUse	LandUseSquareFeet	24,750.00	18,450.00
tblLandUse	LandUseSquareFeet	68,420.00	68,415.00
tblLandUse	LandUseSquareFeet	34,220.00	34,219.00
tblLandUse	LotAcreage	0.57	0.42
tblProjectCharacteristics	CO2IntensityFactor	702.44	531.44
tblVehicleEF	HHD	0.44	0.03
tblVehicleEF	HHD	0.16	0.15
tblVehicleEF	HHD	0.06	7.2464e-007
tblVehicleEF	HHD	1.47	6.07
tblVehicleEF	HHD	1.26	0.64
tblVehicleEF	HHD	4.25	0.01
tblVehicleEF	HHD	3,818.18	1,012.56
tblVehicleEF	HHD	1,584.91	1,373.65
tblVehicleEF	HHD	13.84	0.08
tblVehicleEF	HHD	12.98	5.26

tblVehicleEF	HHD	1.77	2.42
tblVehicleEF	HHD	19.03	2.48
tblVehicleEF	HHD	0.01	2.9540e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	6.0110e-003	0.02
tblVehicleEF	HHD	1.3200e-004	1.0902e-006
tblVehicleEF	HHD	0.01	2.8262e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6690e-003	8.7624e-003
tblVehicleEF	HHD	5.7510e-003	0.02
tblVehicleEF	HHD	1.2100e-004	1.0024e-006
tblVehicleEF	HHD	1.1600e-004	3.6710e-006
tblVehicleEF	HHD	4.7330e-003	1.5602e-004
tblVehicleEF	HHD	0.35	0.40
tblVehicleEF	HHD	8.9000e-005	2.6353e-006
tblVehicleEF	HHD	0.08	0.03
tblVehicleEF	HHD	4.2800e-004	6.2785e-005
tblVehicleEF	HHD	0.09	3.7937e-006
tblVehicleEF	HHD	0.03	9.2462e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0800e-004	7.6681e-007
tblVehicleEF	HHD	1.1600e-004	3.6710e-006
tblVehicleEF	HHD	4.7330e-003	1.5602e-004
tblVehicleEF	HHD	0.43	0.47
tblVehicleEF	HHD	8.9000e-005	2.6353e-006
tblVehicleEF	HHD	0.25	0.17
tblVehicleEF	HHD	4.2800e-004	6.2785e-005
tblVehicleEF	HHD	0.09	4.1536e-006

tblVehicleEF	HHD	0.42	0.03
tblVehicleEF	HHD	0.16	0.15
tblVehicleEF	HHD	0.06	6.9601e-007
tblVehicleEF	HHD	1.07	5.98
tblVehicleEF	HHD	1.27	0.64
tblVehicleEF	HHD	4.05	9.6241e-003
tblVehicleEF	HHD	4,045.03	1,001.49
tblVehicleEF	HHD	1,584.91	1,373.65
tblVehicleEF	HHD	13.84	0.08
tblVehicleEF	HHD	13.40	5.04
tblVehicleEF	HHD	1.67	2.30
tblVehicleEF	HHD	19.02	2.48
tblVehicleEF	HHD	9.0000e-003	2.5700e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	6.0110e-003	0.02
tblVehicleEF	HHD	1.3200e-004	1.0902e-006
tblVehicleEF	HHD	8.6100e-003	2.4588e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6690e-003	8.7624e-003
tblVehicleEF	HHD	5.7510e-003	0.02
tblVehicleEF	HHD	1.2100e-004	1.0024e-006
tblVehicleEF	HHD	1.6500e-004	5.3617e-006
tblVehicleEF	HHD	4.8270e-003	1.5842e-004
tblVehicleEF	HHD	0.33	0.43
tblVehicleEF	HHD	1.2300e-004	3.8527e-006
tblVehicleEF	HHD	0.08	0.03
tblVehicleEF	HHD	4.1200e-004	6.1486e-005
tblVehicleEF	HHD	0.08	3.6535e-006

tblVehicleEF	HHD	0.04	9.1421e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0400e-004	7.5937e-007
tblVehicleEF	HHD	1.6500e-004	5.3617e-006
tblVehicleEF	HHD	4.8270e-003	1.5842e-004
tblVehicleEF	HHD	0.41	0.50
tblVehicleEF	HHD	1.2300e-004	3.8527e-006
tblVehicleEF	HHD	0.26	0.17
tblVehicleEF	HHD	4.1200e-004	6.1486e-005
tblVehicleEF	HHD	0.09	4.0001e-006
tblVehicleEF	HHD	0.48	0.02
tblVehicleEF	HHD	0.16	8.8830e-004
tblVehicleEF	HHD	0.06	7.3145e-007
tblVehicleEF	HHD	2.03	6.01
tblVehicleEF	HHD	1.26	0.21
tblVehicleEF	HHD	4.29	0.01
tblVehicleEF	HHD	3,504.93	993.90
tblVehicleEF	HHD	1,584.91	1,270.38
tblVehicleEF	HHD	13.84	0.08
tblVehicleEF	HHD	12.41	5.37
tblVehicleEF	HHD	1.74	2.32
tblVehicleEF	HHD	19.03	2.48
tblVehicleEF	HHD	0.01	3.1443e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	6.0110e-003	0.02
tblVehicleEF	HHD	1.3200e-004	1.0902e-006
tblVehicleEF	HHD	0.01	3.0082e-003
tblVehicleEF	HHD	0.03	0.02

tblVehicleEF	HHD	8.6690e-003	8.4791e-003
tblVehicleEF	HHD	5.7510e-003	0.02
tblVehicleEF	HHD	1.2100e-004	1.0024e-006
tblVehicleEF	HHD	1.1300e-004	3.7860e-006
tblVehicleEF	HHD	5.0410e-003	1.7191e-004
tblVehicleEF	HHD	0.38	0.37
tblVehicleEF	HHD	8.9000e-005	2.7313e-006
tblVehicleEF	HHD	0.08	0.02
tblVehicleEF	HHD	4.6700e-004	6.7157e-005
tblVehicleEF	HHD	0.09	3.8262e-006
tblVehicleEF	HHD	0.03	9.3899e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0800e-004	7.6824e-007
tblVehicleEF	HHD	1.1300e-004	3.7860e-006
tblVehicleEF	HHD	5.0410e-003	1.7191e-004
tblVehicleEF	HHD	0.46	0.42
tblVehicleEF	HHD	8.9000e-005	2.7313e-006
tblVehicleEF	HHD	0.25	0.02
tblVehicleEF	HHD	4.6700e-004	6.7157e-005
tblVehicleEF	HHD	0.09	4.1892e-006
tblVehicleEF	LDA	3.2540e-003	1.8161e-003
tblVehicleEF	LDA	3.5200e-003	0.04
tblVehicleEF	LDA	0.48	0.55
tblVehicleEF	LDA	0.84	1.93
tblVehicleEF	LDA	231.86	246.35
tblVehicleEF	LDA	51.83	50.40
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.15
tblVehicleEF	LDA	0.04	0.04

tblVehicleEF	LDA	8.0000e-003	8.0000e-003
tblVehicleEF	LDA	1.8000e-003	1.4317e-003
tblVehicleEF	LDA	2.2330e-003	1.6847e-003
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	2.0000e-003	2.0000e-003
tblVehicleEF	LDA	1.6580e-003	1.3182e-003
tblVehicleEF	LDA	2.0530e-003	1.5490e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	8.1920e-003	6.5890e-003
tblVehicleEF	LDA	0.04	0.02
tblVehicleEF	LDA	0.05	0.17
tblVehicleEF	LDA	2.3210e-003	2.3879e-003
tblVehicleEF	LDA	5.3200e-004	4.8864e-004
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	9.5744e-003
tblVehicleEF	LDA	0.04	0.02
tblVehicleEF	LDA	0.05	0.19
tblVehicleEF	LDA	3.4390e-003	1.9350e-003
tblVehicleEF	LDA	3.1700e-003	0.04
tblVehicleEF	LDA	0.52	0.60
tblVehicleEF	LDA	0.73	1.66
tblVehicleEF	LDA	241.58	256.41
tblVehicleEF	LDA	51.83	49.92
tblVehicleEF	LDA	0.03	0.02
tblVehicleEF	LDA	0.04	0.14

tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	8.0000e-003	8.0000e-003
tblVehicleEF	LDA	1.8000e-003	1.4317e-003
tblVehicleEF	LDA	2.2330e-003	1.6847e-003
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	2.0000e-003	2.0000e-003
tblVehicleEF	LDA	1.6580e-003	1.3182e-003
tblVehicleEF	LDA	2.0530e-003	1.5490e-003
tblVehicleEF	LDA	0.04	0.06
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	8.6510e-003	6.9574e-003
tblVehicleEF	LDA	0.03	0.02
tblVehicleEF	LDA	0.04	0.16
tblVehicleEF	LDA	2.4190e-003	2.4854e-003
tblVehicleEF	LDA	5.3000e-004	4.8395e-004
tblVehicleEF	LDA	0.04	0.06
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.03	0.02
tblVehicleEF	LDA	0.05	0.17
tblVehicleEF	LDA	3.1920e-003	1.7787e-003
tblVehicleEF	LDA	3.5920e-003	0.04
tblVehicleEF	LDA	0.47	0.53
tblVehicleEF	LDA	0.87	1.98
tblVehicleEF	LDA	228.27	242.64
tblVehicleEF	LDA	51.83	50.51
tblVehicleEF	LDA	0.04	0.03

tblVehicleEF	LDA	0.05	0.16
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	8.0000e-003	8.0000e-003
tblVehicleEF	LDA	1.8000e-003	1.4317e-003
tblVehicleEF	LDA	2.2330e-003	1.6847e-003
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	2.0000e-003	2.0000e-003
tblVehicleEF	LDA	1.6580e-003	1.3182e-003
tblVehicleEF	LDA	2.0530e-003	1.5490e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	8.0370e-003	6.4651e-003
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.18
tblVehicleEF	LDA	2.2850e-003	2.3519e-003
tblVehicleEF	LDA	5.3300e-004	4.8966e-004
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	9.3936e-003
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.19
tblVehicleEF	LDT1	7.2360e-003	4.1472e-003
tblVehicleEF	LDT1	9.9520e-003	0.06
tblVehicleEF	LDT1	0.92	0.93
tblVehicleEF	LDT1	2.03	2.10
tblVehicleEF	LDT1	292.62	293.91
tblVehicleEF	LDT1	65.95	61.09

tblVehicleEF	LDT1	0.08	0.07
tblVehicleEF	LDT1	0.12	0.21
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	8.0000e-003	8.0000e-003
tblVehicleEF	LDT1	2.2960e-003	1.8512e-003
tblVehicleEF	LDT1	2.9420e-003	2.1801e-003
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	2.0000e-003	2.0000e-003
tblVehicleEF	LDT1	2.1130e-003	1.7030e-003
tblVehicleEF	LDT1	2.7050e-003	2.0045e-003
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.21	0.16
tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.14	0.07
tblVehicleEF	LDT1	0.13	0.27
tblVehicleEF	LDT1	2.9360e-003	2.8494e-003
tblVehicleEF	LDT1	6.9500e-004	5.9228e-004
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.21	0.16
tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.14	0.07
tblVehicleEF	LDT1	0.15	0.29
tblVehicleEF	LDT1	7.6070e-003	4.3889e-003
tblVehicleEF	LDT1	8.9270e-003	0.05
tblVehicleEF	LDT1	0.99	1.01
tblVehicleEF	LDT1	1.75	1.81
tblVehicleEF	LDT1	304.46	304.24

tblVehicleEF	LDT1	65.95	60.53
tblVehicleEF	LDT1	0.07	0.06
tblVehicleEF	LDT1	0.11	0.20
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	8.0000e-003	8.0000e-003
tblVehicleEF	LDT1	2.2960e-003	1.8512e-003
tblVehicleEF	LDT1	2.9420e-003	2.1801e-003
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	2.0000e-003	2.0000e-003
tblVehicleEF	LDT1	2.1130e-003	1.7030e-003
tblVehicleEF	LDT1	2.7050e-003	2.0045e-003
tblVehicleEF	LDT1	0.14	0.14
tblVehicleEF	LDT1	0.22	0.16
tblVehicleEF	LDT1	0.12	0.12
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.13	0.06
tblVehicleEF	LDT1	0.12	0.24
tblVehicleEF	LDT1	3.0550e-003	2.9496e-003
tblVehicleEF	LDT1	6.9000e-004	5.8685e-004
tblVehicleEF	LDT1	0.14	0.14
tblVehicleEF	LDT1	0.22	0.16
tblVehicleEF	LDT1	0.12	0.12
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.13	0.06
tblVehicleEF	LDT1	0.13	0.26
tblVehicleEF	LDT1	7.1090e-003	4.0701e-003
tblVehicleEF	LDT1	0.01	0.06
tblVehicleEF	LDT1	0.89	0.90
tblVehicleEF	LDT1	2.09	2.16

tblVehicleEF	LDT1	288.25	290.09
tblVehicleEF	LDT1	65.95	61.21
tblVehicleEF	LDT1	0.08	0.07
tblVehicleEF	LDT1	0.12	0.21
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	8.0000e-003	8.0000e-003
tblVehicleEF	LDT1	2.2960e-003	1.8512e-003
tblVehicleEF	LDT1	2.9420e-003	2.1801e-003
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	2.0000e-003	2.0000e-003
tblVehicleEF	LDT1	2.1130e-003	1.7030e-003
tblVehicleEF	LDT1	2.7050e-003	2.0045e-003
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.24	0.17
tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.14	0.27
tblVehicleEF	LDT1	2.8920e-003	2.8125e-003
tblVehicleEF	LDT1	6.9600e-004	5.9347e-004
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.24	0.17
tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.15	0.30
tblVehicleEF	LDT2	4.5940e-003	2.9810e-003
tblVehicleEF	LDT2	4.8100e-003	0.06
tblVehicleEF	LDT2	0.64	0.74

tblVehicleEF	LDT2	1.11	2.45
tblVehicleEF	LDT2	329.48	312.71
tblVehicleEF	LDT2	73.66	65.44
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.08	0.22
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	8.0000e-003	8.0000e-003
tblVehicleEF	LDT2	1.8470e-003	1.4663e-003
tblVehicleEF	LDT2	2.3090e-003	1.6633e-003
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	2.0000e-003	2.0000e-003
tblVehicleEF	LDT2	1.6990e-003	1.3496e-003
tblVehicleEF	LDT2	2.1230e-003	1.5293e-003
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.06	0.25
tblVehicleEF	LDT2	3.2990e-003	3.0312e-003
tblVehicleEF	LDT2	7.5500e-004	6.3446e-004
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.07	0.27
tblVehicleEF	LDT2	4.8530e-003	3.1673e-003
tblVehicleEF	LDT2	4.3330e-003	0.05

tblVehicleEF	LDT2	0.69	0.80
tblVehicleEF	LDT2	0.96	2.11
tblVehicleEF	LDT2	342.98	322.65
tblVehicleEF	LDT2	73.66	64.81
tblVehicleEF	LDT2	0.05	0.04
tblVehicleEF	LDT2	0.07	0.21
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	8.0000e-003	8.0000e-003
tblVehicleEF	LDT2	1.8470e-003	1.4663e-003
tblVehicleEF	LDT2	2.3090e-003	1.6633e-003
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	2.0000e-003	2.0000e-003
tblVehicleEF	LDT2	1.6990e-003	1.3496e-003
tblVehicleEF	LDT2	2.1230e-003	1.5293e-003
tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.05	0.04
tblVehicleEF	LDT2	0.06	0.23
tblVehicleEF	LDT2	3.4350e-003	3.1277e-003
tblVehicleEF	LDT2	7.5200e-004	6.2837e-004
tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.05	0.04
tblVehicleEF	LDT2	0.06	0.25
tblVehicleEF	LDT2	4.5070e-003	2.9223e-003

tblVehicleEF	LDT2	4.9080e-003	0.06
tblVehicleEF	LDT2	0.62	0.72
tblVehicleEF	LDT2	1.14	2.52
tblVehicleEF	LDT2	324.49	309.04
tblVehicleEF	LDT2	73.66	65.58
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.08	0.23
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	8.0000e-003	8.0000e-003
tblVehicleEF	LDT2	1.8470e-003	1.4663e-003
tblVehicleEF	LDT2	2.3090e-003	1.6633e-003
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	2.0000e-003	2.0000e-003
tblVehicleEF	LDT2	1.6990e-003	1.3496e-003
tblVehicleEF	LDT2	2.1230e-003	1.5293e-003
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.09	0.12
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.07	0.26
tblVehicleEF	LDT2	3.2490e-003	2.9956e-003
tblVehicleEF	LDT2	7.5500e-004	6.3580e-004
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.09	0.12
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.07	0.28

tblVehicleEF	LHD1	4.8760e-003	5.1794e-003
tblVehicleEF	LHD1	7.3850e-003	3.6571e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	0.58	0.42
tblVehicleEF	LHD1	2.05	0.96
tblVehicleEF	LHD1	9.05	8.87
tblVehicleEF	LHD1	582.71	633.58
tblVehicleEF	LHD1	30.08	11.39
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.97	0.58
tblVehicleEF	LHD1	0.88	0.30
tblVehicleEF	LHD1	8.7700e-004	8.3837e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	0.01	9.8001e-003
tblVehicleEF	LHD1	9.4650e-003	6.3814e-003
tblVehicleEF	LHD1	7.7100e-004	2.2183e-004
tblVehicleEF	LHD1	8.3900e-004	8.0210e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.5630e-003	2.4500e-003
tblVehicleEF	LHD1	9.0360e-003	6.0816e-003
tblVehicleEF	LHD1	7.0900e-004	2.0396e-004
tblVehicleEF	LHD1	2.4720e-003	1.8824e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.6210e-003	1.2383e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.26	0.15
tblVehicleEF	LHD1	0.21	0.06

tblVehicleEF	LHD1	9.0000e-005	8.6064e-005
tblVehicleEF	LHD1	5.7060e-003	6.1793e-003
tblVehicleEF	LHD1	3.3900e-004	1.1274e-004
tblVehicleEF	LHD1	2.4720e-003	1.8824e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.6210e-003	1.2383e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.26	0.15
tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD1	4.8760e-003	5.1900e-003
tblVehicleEF	LHD1	7.5120e-003	3.7121e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	0.59	0.42
tblVehicleEF	LHD1	1.97	0.92
tblVehicleEF	LHD1	9.05	8.87
tblVehicleEF	LHD1	582.71	633.59
tblVehicleEF	LHD1	30.08	11.32
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.92	0.55
tblVehicleEF	LHD1	0.84	0.28
tblVehicleEF	LHD1	8.7700e-004	8.3837e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	0.01	9.8001e-003
tblVehicleEF	LHD1	9.4650e-003	6.3814e-003
tblVehicleEF	LHD1	7.7100e-004	2.2183e-004
tblVehicleEF	LHD1	8.3900e-004	8.0210e-004
tblVehicleEF	LHD1	0.03	0.03

tblVehicleEF	LHD1	2.5630e-003	2.4500e-003
tblVehicleEF	LHD1	9.0360e-003	6.0816e-003
tblVehicleEF	LHD1	7.0900e-004	2.0396e-004
tblVehicleEF	LHD1	3.4440e-003	2.6308e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.1800e-003	1.6730e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.25	0.14
tblVehicleEF	LHD1	0.20	0.06
tblVehicleEF	LHD1	9.0000e-005	8.6064e-005
tblVehicleEF	LHD1	5.7070e-003	6.1794e-003
tblVehicleEF	LHD1	3.3800e-004	1.1206e-004
tblVehicleEF	LHD1	3.4440e-003	2.6308e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	2.1800e-003	1.6730e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.25	0.14
tblVehicleEF	LHD1	0.22	0.07
tblVehicleEF	LHD1	4.8760e-003	5.1774e-003
tblVehicleEF	LHD1	7.3500e-003	3.6424e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	0.58	0.41
tblVehicleEF	LHD1	2.06	0.97
tblVehicleEF	LHD1	9.05	8.87
tblVehicleEF	LHD1	582.71	633.58
tblVehicleEF	LHD1	30.08	11.40

tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.96	0.57
tblVehicleEF	LHD1	0.89	0.30
tblVehicleEF	LHD1	8.7700e-004	8.3837e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	0.01	9.8001e-003
tblVehicleEF	LHD1	9.4650e-003	6.3814e-003
tblVehicleEF	LHD1	7.7100e-004	2.2183e-004
tblVehicleEF	LHD1	8.3900e-004	8.0210e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.5630e-003	2.4500e-003
tblVehicleEF	LHD1	9.0360e-003	6.0816e-003
tblVehicleEF	LHD1	7.0900e-004	2.0396e-004
tblVehicleEF	LHD1	2.5350e-003	1.9320e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.6290e-003	1.2475e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.29	0.16
tblVehicleEF	LHD1	0.21	0.06
tblVehicleEF	LHD1	9.0000e-005	8.6064e-005
tblVehicleEF	LHD1	5.7060e-003	6.1793e-003
tblVehicleEF	LHD1	3.4000e-004	1.1284e-004
tblVehicleEF	LHD1	2.5350e-003	1.9320e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.6290e-003	1.2475e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.29	0.16

tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD2	3.5130e-003	3.7116e-003
tblVehicleEF	LHD2	3.0250e-003	2.8566e-003
tblVehicleEF	LHD2	6.4370e-003	9.0455e-003
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.27	0.31
tblVehicleEF	LHD2	1.11	0.65
tblVehicleEF	LHD2	13.66	13.46
tblVehicleEF	LHD2	600.10	642.40
tblVehicleEF	LHD2	25.96	8.94
tblVehicleEF	LHD2	0.09	0.08
tblVehicleEF	LHD2	0.55	0.66
tblVehicleEF	LHD2	0.47	0.21
tblVehicleEF	LHD2	1.1390e-003	1.2802e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.3740e-003	9.6040e-003
tblVehicleEF	LHD2	3.9500e-004	1.2800e-004
tblVehicleEF	LHD2	1.0900e-003	1.2248e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	2.6730e-003	2.6459e-003
tblVehicleEF	LHD2	7.9990e-003	9.1749e-003
tblVehicleEF	LHD2	3.6300e-004	1.1769e-004
tblVehicleEF	LHD2	9.0300e-004	1.2059e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	6.4300e-004	8.2254e-004
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.06	0.09

tblVehicleEF	LHD2	0.09	0.04
tblVehicleEF	LHD2	1.3300e-004	1.2895e-004
tblVehicleEF	LHD2	5.8410e-003	6.2136e-003
tblVehicleEF	LHD2	2.7900e-004	8.8512e-005
tblVehicleEF	LHD2	9.0300e-004	1.2059e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	6.4300e-004	8.2254e-004
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.06	0.09
tblVehicleEF	LHD2	0.10	0.05
tblVehicleEF	LHD2	3.5130e-003	3.7192e-003
tblVehicleEF	LHD2	3.0530e-003	2.8803e-003
tblVehicleEF	LHD2	6.2440e-003	8.7613e-003
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.27	0.31
tblVehicleEF	LHD2	1.06	0.62
tblVehicleEF	LHD2	13.66	13.46
tblVehicleEF	LHD2	600.10	642.40
tblVehicleEF	LHD2	25.96	8.90
tblVehicleEF	LHD2	0.09	0.08
tblVehicleEF	LHD2	0.52	0.62
tblVehicleEF	LHD2	0.45	0.20
tblVehicleEF	LHD2	1.1390e-003	1.2802e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.3740e-003	9.6040e-003
tblVehicleEF	LHD2	3.9500e-004	1.2800e-004
tblVehicleEF	LHD2	1.0900e-003	1.2248e-003

tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	2.6730e-003	2.6459e-003
tblVehicleEF	LHD2	7.9990e-003	9.1749e-003
tblVehicleEF	LHD2	3.6300e-004	1.1769e-004
tblVehicleEF	LHD2	1.2670e-003	1.6887e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	8.6800e-004	1.1135e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.08	0.04
tblVehicleEF	LHD2	1.3300e-004	1.2895e-004
tblVehicleEF	LHD2	5.8410e-003	6.2136e-003
tblVehicleEF	LHD2	2.7900e-004	8.8056e-005
tblVehicleEF	LHD2	1.2670e-003	1.6887e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	8.6800e-004	1.1135e-003
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.09	0.05
tblVehicleEF	LHD2	3.5130e-003	3.7102e-003
tblVehicleEF	LHD2	3.0170e-003	2.8503e-003
tblVehicleEF	LHD2	6.4770e-003	9.1039e-003
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.27	0.31
tblVehicleEF	LHD2	1.11	0.65
tblVehicleEF	LHD2	13.66	13.46
tblVehicleEF	LHD2	600.10	642.39

tblVehicleEF	LHD2	25.96	8.95
tblVehicleEF	LHD2	0.09	0.08
tblVehicleEF	LHD2	0.54	0.65
tblVehicleEF	LHD2	0.47	0.21
tblVehicleEF	LHD2	1.1390e-003	1.2802e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.3740e-003	9.6040e-003
tblVehicleEF	LHD2	3.9500e-004	1.2800e-004
tblVehicleEF	LHD2	1.0900e-003	1.2248e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	2.6730e-003	2.6459e-003
tblVehicleEF	LHD2	7.9990e-003	9.1749e-003
tblVehicleEF	LHD2	3.6300e-004	1.1769e-004
tblVehicleEF	LHD2	8.9600e-004	1.2115e-003
tblVehicleEF	LHD2	0.03	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	6.3600e-004	8.1351e-004
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.09	0.04
tblVehicleEF	LHD2	1.3300e-004	1.2895e-004
tblVehicleEF	LHD2	5.8410e-003	6.2136e-003
tblVehicleEF	LHD2	2.8000e-004	8.8585e-005
tblVehicleEF	LHD2	8.9600e-004	1.2115e-003
tblVehicleEF	LHD2	0.03	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	6.3600e-004	8.1351e-004
tblVehicleEF	LHD2	0.05	0.05

tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.10	0.05
tblVehicleEF	MCY	0.49	0.35
tblVehicleEF	MCY	0.15	0.23
tblVehicleEF	MCY	17.95	18.16
tblVehicleEF	MCY	9.61	8.50
tblVehicleEF	MCY	178.67	214.64
tblVehicleEF	MCY	44.17	59.14
tblVehicleEF	MCY	1.11	1.12
tblVehicleEF	MCY	0.31	0.26
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	4.0000e-003	4.0000e-003
tblVehicleEF	MCY	2.2470e-003	2.2317e-003
tblVehicleEF	MCY	3.4860e-003	2.9927e-003
tblVehicleEF	MCY	5.0400e-003	5.0400e-003
tblVehicleEF	MCY	1.0000e-003	1.0000e-003
tblVehicleEF	MCY	2.0980e-003	2.0841e-003
tblVehicleEF	MCY	3.2740e-003	2.8105e-003
tblVehicleEF	MCY	1.12	1.15
tblVehicleEF	MCY	0.65	0.68
tblVehicleEF	MCY	0.69	0.70
tblVehicleEF	MCY	2.34	2.35
tblVehicleEF	MCY	0.60	0.53
tblVehicleEF	MCY	2.02	1.79
tblVehicleEF	MCY	2.1510e-003	2.1241e-003
tblVehicleEF	MCY	6.5800e-004	5.8528e-004
tblVehicleEF	MCY	1.12	1.15
tblVehicleEF	MCY	0.65	0.68
tblVehicleEF	MCY	0.69	0.70

tblVehicleEF	MCY	2.92	2.93
tblVehicleEF	MCY	0.60	0.53
tblVehicleEF	MCY	2.20	1.95
tblVehicleEF	MCY	0.48	0.34
tblVehicleEF	MCY	0.13	0.21
tblVehicleEF	MCY	17.31	17.50
tblVehicleEF	MCY	8.84	7.78
tblVehicleEF	MCY	178.67	213.41
tblVehicleEF	MCY	44.17	57.38
tblVehicleEF	MCY	0.98	0.98
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	4.0000e-003	4.0000e-003
tblVehicleEF	MCY	2.2470e-003	2.2317e-003
tblVehicleEF	MCY	3.4860e-003	2.9927e-003
tblVehicleEF	MCY	5.0400e-003	5.0400e-003
tblVehicleEF	MCY	1.0000e-003	1.0000e-003
tblVehicleEF	MCY	2.0980e-003	2.0841e-003
tblVehicleEF	MCY	3.2740e-003	2.8105e-003
tblVehicleEF	MCY	1.69	1.72
tblVehicleEF	MCY	0.70	0.72
tblVehicleEF	MCY	1.09	1.11
tblVehicleEF	MCY	2.29	2.30
tblVehicleEF	MCY	0.56	0.50
tblVehicleEF	MCY	1.82	1.60
tblVehicleEF	MCY	2.1390e-003	2.1119e-003
tblVehicleEF	MCY	6.3900e-004	5.6781e-004
tblVehicleEF	MCY	1.69	1.72
tblVehicleEF	MCY	0.70	0.72

tblVehicleEF	MCY	1.09	1.11
tblVehicleEF	MCY	2.85	2.86
tblVehicleEF	MCY	0.56	0.50
tblVehicleEF	MCY	1.98	1.74
tblVehicleEF	MCY	0.49	0.35
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	18.04	18.25
tblVehicleEF	MCY	9.73	8.62
tblVehicleEF	MCY	178.67	214.83
tblVehicleEF	MCY	44.17	59.46
tblVehicleEF	MCY	1.09	1.09
tblVehicleEF	MCY	0.31	0.27
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	4.0000e-003	4.0000e-003
tblVehicleEF	MCY	2.2470e-003	2.2317e-003
tblVehicleEF	MCY	3.4860e-003	2.9927e-003
tblVehicleEF	MCY	5.0400e-003	5.0400e-003
tblVehicleEF	MCY	1.0000e-003	1.0000e-003
tblVehicleEF	MCY	2.0980e-003	2.0841e-003
tblVehicleEF	MCY	3.2740e-003	2.8105e-003
tblVehicleEF	MCY	1.25	1.27
tblVehicleEF	MCY	0.84	0.87
tblVehicleEF	MCY	0.73	0.74
tblVehicleEF	MCY	2.35	2.36
tblVehicleEF	MCY	0.69	0.62
tblVehicleEF	MCY	2.06	1.83
tblVehicleEF	MCY	2.1520e-003	2.1259e-003
tblVehicleEF	MCY	6.6100e-004	5.8841e-004
tblVehicleEF	MCY	1.25	1.27

tblVehicleEF	MCY	0.84	0.87
tblVehicleEF	MCY	0.73	0.74
tblVehicleEF	MCY	2.93	2.94
tblVehicleEF	MCY	0.69	0.62
tblVehicleEF	MCY	2.24	1.99
tblVehicleEF	MDV	8.2720e-003	3.7207e-003
tblVehicleEF	MDV	0.01	0.07
tblVehicleEF	MDV	0.96	0.83
tblVehicleEF	MDV	1.95	2.70
tblVehicleEF	MDV	450.89	387.66
tblVehicleEF	MDV	98.57	79.61
tblVehicleEF	MDV	0.10	0.07
tblVehicleEF	MDV	0.17	0.27
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	8.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.8710e-003	1.5464e-003
tblVehicleEF	MDV	2.2680e-003	1.7228e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	1.7240e-003	1.4259e-003
tblVehicleEF	MDV	2.0860e-003	1.5841e-003
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.14	0.31
tblVehicleEF	MDV	4.5120e-003	3.7561e-003
tblVehicleEF	MDV	1.0190e-003	7.7184e-004

tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.15	0.34
tblVehicleEF	MDV	8.7240e-003	3.9512e-003
tblVehicleEF	MDV	9.3780e-003	0.06
tblVehicleEF	MDV	1.04	0.90
tblVehicleEF	MDV	1.69	2.32
tblVehicleEF	MDV	468.83	397.99
tblVehicleEF	MDV	98.57	78.90
tblVehicleEF	MDV	0.09	0.06
tblVehicleEF	MDV	0.16	0.25
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	8.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.8710e-003	1.5464e-003
tblVehicleEF	MDV	2.2680e-003	1.7228e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	1.7240e-003	1.4259e-003
tblVehicleEF	MDV	2.0860e-003	1.5841e-003
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.09	0.12
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.13	0.28
tblVehicleEF	MDV	4.6930e-003	3.8563e-003

tblVehicleEF	MDV	1.0150e-003	7.6496e-004
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.09	0.12
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.14	0.31
tblVehicleEF	MDV	8.1180e-003	3.6475e-003
tblVehicleEF	MDV	0.01	0.07
tblVehicleEF	MDV	0.93	0.80
tblVehicleEF	MDV	2.00	2.78
tblVehicleEF	MDV	444.26	383.84
tblVehicleEF	MDV	98.57	79.77
tblVehicleEF	MDV	0.09	0.06
tblVehicleEF	MDV	0.17	0.28
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	8.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.8710e-003	1.5464e-003
tblVehicleEF	MDV	2.2680e-003	1.7228e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	1.7240e-003	1.4259e-003
tblVehicleEF	MDV	2.0860e-003	1.5841e-003
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.15	0.13
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.02	0.01
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.14	0.32

tblVehicleEF	MDV	4.4460e-003	3.7191e-003
tblVehicleEF	MDV	1.0200e-003	7.7334e-004
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.15	0.13
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.16	0.35
tblVehicleEF	MH	0.02	6.9351e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.27	0.73
tblVehicleEF	MH	4.43	1.75
tblVehicleEF	MH	1,096.02	1,403.51
tblVehicleEF	MH	56.63	16.91
tblVehicleEF	MH	1.16	1.27
tblVehicleEF	MH	0.68	0.23
tblVehicleEF	MH	0.13	0.13
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.0200e-004	2.1646e-004
tblVehicleEF	MH	0.06	0.06
tblVehicleEF	MH	3.2400e-003	3.3089e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	8.2900e-004	1.9902e-004
tblVehicleEF	MH	0.74	0.62
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.33	0.28
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.02	0.01

tblVehicleEF	MH	0.26	0.08
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.4300e-004	1.6731e-004
tblVehicleEF	MH	0.74	0.62
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.33	0.28
tblVehicleEF	MH	0.08	0.06
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.29	0.09
tblVehicleEF	MH	0.02	7.0675e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.30	0.74
tblVehicleEF	MH	4.20	1.66
tblVehicleEF	MH	1,096.02	1,403.53
tblVehicleEF	MH	56.63	16.76
tblVehicleEF	MH	1.08	1.19
tblVehicleEF	MH	0.65	0.22
tblVehicleEF	MH	0.13	0.13
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.0200e-004	2.1646e-004
tblVehicleEF	MH	0.06	0.06
tblVehicleEF	MH	3.2400e-003	3.3089e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	8.2900e-004	1.9902e-004
tblVehicleEF	MH	0.99	0.83
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.45	0.38
tblVehicleEF	MH	0.06	0.05

tblVehicleEF	MH	0.02	9.8866e-003
tblVehicleEF	MH	0.25	0.08
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.3900e-004	1.6581e-004
tblVehicleEF	MH	0.99	0.83
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.45	0.38
tblVehicleEF	MH	0.08	0.06
tblVehicleEF	MH	0.02	9.8866e-003
tblVehicleEF	MH	0.27	0.08
tblVehicleEF	MH	0.02	6.8954e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.26	0.72
tblVehicleEF	MH	4.46	1.77
tblVehicleEF	MH	1,096.02	1,403.50
tblVehicleEF	MH	56.63	16.93
tblVehicleEF	MH	1.14	1.24
tblVehicleEF	MH	0.68	0.23
tblVehicleEF	MH	0.13	0.13
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.0200e-004	2.1646e-004
tblVehicleEF	MH	0.06	0.06
tblVehicleEF	MH	3.2400e-003	3.3089e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	8.2900e-004	1.9902e-004
tblVehicleEF	MH	0.80	0.66
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.34	0.29

tblVehicleEF	MH	0.06	0.04
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.26	0.08
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.4400e-004	1.6756e-004
tblVehicleEF	MH	0.80	0.66
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.34	0.29
tblVehicleEF	MH	0.08	0.06
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.29	0.09
tblVehicleEF	MHD	0.02	4.6044e-003
tblVehicleEF	MHD	2.6670e-003	1.2190e-003
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.32	0.38
tblVehicleEF	MHD	0.24	0.17
tblVehicleEF	MHD	4.63	1.13
tblVehicleEF	MHD	143.49	52.64
tblVehicleEF	MHD	1,123.36	993.27
tblVehicleEF	MHD	56.66	11.92
tblVehicleEF	MHD	0.37	0.25
tblVehicleEF	MHD	0.68	0.96
tblVehicleEF	MHD	11.00	1.55
tblVehicleEF	MHD	6.9000e-005	1.7495e-004
tblVehicleEF	MHD	0.13	0.13
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	2.8070e-003	6.0478e-003
tblVehicleEF	MHD	6.9200e-004	1.1093e-004
tblVehicleEF	MHD	6.6000e-005	1.6738e-004

tblVehicleEF	MHD	0.06	0.06
tblVehicleEF	MHD	3.0000e-003	3.0000e-003
tblVehicleEF	MHD	2.6820e-003	5.7808e-003
tblVehicleEF	MHD	6.3600e-004	1.0200e-004
tblVehicleEF	MHD	9.3500e-004	4.6855e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	6.5100e-004	3.4122e-004
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.29	0.05
tblVehicleEF	MHD	1.3800e-003	5.0126e-004
tblVehicleEF	MHD	0.01	9.4997e-003
tblVehicleEF	MHD	6.4800e-004	1.1798e-004
tblVehicleEF	MHD	9.3500e-004	4.6855e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	6.5100e-004	3.4122e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.31	0.06
tblVehicleEF	MHD	0.01	4.3675e-003
tblVehicleEF	MHD	2.6950e-003	1.2408e-003
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.24	0.31
tblVehicleEF	MHD	0.24	0.17
tblVehicleEF	MHD	4.41	1.08
tblVehicleEF	MHD	151.98	52.58
tblVehicleEF	MHD	1,123.36	993.27

tblVehicleEF	MHD	56.66	11.83
tblVehicleEF	MHD	0.38	0.24
tblVehicleEF	MHD	0.65	0.90
tblVehicleEF	MHD	10.97	1.55
tblVehicleEF	MHD	5.8000e-005	1.4974e-004
tblVehicleEF	MHD	0.13	0.13
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	2.8070e-003	6.0478e-003
tblVehicleEF	MHD	6.9200e-004	1.1093e-004
tblVehicleEF	MHD	5.5000e-005	1.4327e-004
tblVehicleEF	MHD	0.06	0.06
tblVehicleEF	MHD	3.0000e-003	3.0000e-003
tblVehicleEF	MHD	2.6820e-003	5.7808e-003
tblVehicleEF	MHD	6.3600e-004	1.0200e-004
tblVehicleEF	MHD	1.3170e-003	6.6100e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	8.8900e-004	4.6414e-004
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.28	0.05
tblVehicleEF	MHD	1.4600e-003	5.0080e-004
tblVehicleEF	MHD	0.01	9.4997e-003
tblVehicleEF	MHD	6.4400e-004	1.1708e-004
tblVehicleEF	MHD	1.3170e-003	6.6100e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	8.8900e-004	4.6414e-004
tblVehicleEF	MHD	0.04	0.01

tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.30	0.06
tblVehicleEF	MHD	0.02	4.9472e-003
tblVehicleEF	MHD	2.6590e-003	1.2115e-003
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.45	0.47
tblVehicleEF	MHD	0.24	0.17
tblVehicleEF	MHD	4.67	1.14
tblVehicleEF	MHD	131.74	52.73
tblVehicleEF	MHD	1,123.36	993.27
tblVehicleEF	MHD	56.66	11.94
tblVehicleEF	MHD	0.35	0.26
tblVehicleEF	MHD	0.67	0.94
tblVehicleEF	MHD	11.01	1.55
tblVehicleEF	MHD	8.4000e-005	2.0975e-004
tblVehicleEF	MHD	0.13	0.13
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	2.8070e-003	6.0478e-003
tblVehicleEF	MHD	6.9200e-004	1.1093e-004
tblVehicleEF	MHD	8.0000e-005	2.0068e-004
tblVehicleEF	MHD	0.06	0.06
tblVehicleEF	MHD	3.0000e-003	3.0000e-003
tblVehicleEF	MHD	2.6820e-003	5.7808e-003
tblVehicleEF	MHD	6.3600e-004	1.0200e-004
tblVehicleEF	MHD	9.4200e-004	4.6197e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	6.5200e-004	3.3820e-004
tblVehicleEF	MHD	0.03	0.01

tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.29	0.06
tblVehicleEF	MHD	1.2700e-003	5.0182e-004
tblVehicleEF	MHD	0.01	9.4997e-003
tblVehicleEF	MHD	6.4800e-004	1.1816e-004
tblVehicleEF	MHD	9.4200e-004	4.6197e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	6.5200e-004	3.3820e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.32	0.06
tblVehicleEF	OBUS	0.01	8.6549e-003
tblVehicleEF	OBUS	5.2770e-003	4.3817e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.25	0.56
tblVehicleEF	OBUS	0.39	0.54
tblVehicleEF	OBUS	4.82	2.26
tblVehicleEF	OBUS	76.59	78.18
tblVehicleEF	OBUS	1,203.91	1,334.33
tblVehicleEF	OBUS	69.07	19.41
tblVehicleEF	OBUS	0.15	0.30
tblVehicleEF	OBUS	0.55	0.98
tblVehicleEF	OBUS	1.95	0.75
tblVehicleEF	OBUS	1.4000e-005	9.9299e-005
tblVehicleEF	OBUS	0.13	0.13
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	2.4030e-003	6.5545e-003
tblVehicleEF	OBUS	8.9600e-004	2.0231e-004

tblVehicleEF	OBUS	1.3000e-005	9.5003e-005
tblVehicleEF	OBUS	0.06	0.06
tblVehicleEF	OBUS	3.0000e-003	3.0000e-003
tblVehicleEF	OBUS	2.2790e-003	6.2545e-003
tblVehicleEF	OBUS	8.2400e-004	1.8602e-004
tblVehicleEF	OBUS	1.3360e-003	1.7513e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	7.4000e-004	9.5000e-004
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.30	0.11
tblVehicleEF	OBUS	7.4300e-004	7.4495e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.7500e-004	1.9203e-004
tblVehicleEF	OBUS	1.3360e-003	1.7513e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	7.4000e-004	9.5000e-004
tblVehicleEF	OBUS	0.04	0.03
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.33	0.12
tblVehicleEF	OBUS	0.01	8.7318e-003
tblVehicleEF	OBUS	5.3660e-003	4.4741e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.24	0.55
tblVehicleEF	OBUS	0.39	0.55
tblVehicleEF	OBUS	4.58	2.14
tblVehicleEF	OBUS	80.14	77.32

tblVehicleEF	OBUS	1,203.91	1,334.35
tblVehicleEF	OBUS	69.07	19.21
tblVehicleEF	OBUS	0.16	0.28
tblVehicleEF	OBUS	0.52	0.92
tblVehicleEF	OBUS	1.92	0.74
tblVehicleEF	OBUS	1.2000e-005	8.8234e-005
tblVehicleEF	OBUS	0.13	0.13
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	2.4030e-003	6.5545e-003
tblVehicleEF	OBUS	8.9600e-004	2.0231e-004
tblVehicleEF	OBUS	1.1000e-005	8.4417e-005
tblVehicleEF	OBUS	0.06	0.06
tblVehicleEF	OBUS	3.0000e-003	3.0000e-003
tblVehicleEF	OBUS	2.2790e-003	6.2545e-003
tblVehicleEF	OBUS	8.2400e-004	1.8602e-004
tblVehicleEF	OBUS	1.8380e-003	2.3945e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	1.0100e-003	1.2838e-003
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.29	0.11
tblVehicleEF	OBUS	7.7700e-004	7.3679e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.7100e-004	1.9009e-004
tblVehicleEF	OBUS	1.8380e-003	2.3945e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	1.0100e-003	1.2838e-003

tblVehicleEF	OBUS	0.04	0.04
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.32	0.12
tblVehicleEF	OBUS	0.01	8.5703e-003
tblVehicleEF	OBUS	5.2500e-003	4.3547e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.25	0.56
tblVehicleEF	OBUS	0.38	0.54
tblVehicleEF	OBUS	4.86	2.28
tblVehicleEF	OBUS	71.70	79.37
tblVehicleEF	OBUS	1,203.91	1,334.32
tblVehicleEF	OBUS	69.07	19.44
tblVehicleEF	OBUS	0.15	0.32
tblVehicleEF	OBUS	0.54	0.96
tblVehicleEF	OBUS	1.96	0.76
tblVehicleEF	OBUS	1.7000e-005	1.1458e-004
tblVehicleEF	OBUS	0.13	0.13
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	2.4030e-003	6.5545e-003
tblVehicleEF	OBUS	8.9600e-004	2.0231e-004
tblVehicleEF	OBUS	1.6000e-005	1.0962e-004
tblVehicleEF	OBUS	0.06	0.06
tblVehicleEF	OBUS	3.0000e-003	3.0000e-003
tblVehicleEF	OBUS	2.2790e-003	6.2545e-003
tblVehicleEF	OBUS	8.2400e-004	1.8602e-004
tblVehicleEF	OBUS	1.3380e-003	1.7725e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	7.3000e-004	9.4389e-004

tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.31	0.11
tblVehicleEF	OBUS	6.9600e-004	7.5620e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.7600e-004	1.9235e-004
tblVehicleEF	OBUS	1.3380e-003	1.7725e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	7.3000e-004	9.4389e-004
tblVehicleEF	OBUS	0.04	0.03
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.34	0.12
tblVehicleEF	SBUS	0.83	0.09
tblVehicleEF	SBUS	0.02	9.1574e-003
tblVehicleEF	SBUS	0.07	8.2302e-003
tblVehicleEF	SBUS	8.49	3.34
tblVehicleEF	SBUS	0.94	0.84
tblVehicleEF	SBUS	8.61	1.12
tblVehicleEF	SBUS	1,085.60	359.37
tblVehicleEF	SBUS	1,065.54	1,076.06
tblVehicleEF	SBUS	58.07	6.66
tblVehicleEF	SBUS	7.75	3.47
tblVehicleEF	SBUS	3.55	5.09
tblVehicleEF	SBUS	11.66	0.75
tblVehicleEF	SBUS	6.9310e-003	4.4776e-003
tblVehicleEF	SBUS	0.74	0.74
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03

tblVehicleEF	SBUS	1.0190e-003	7.7115e-005
tblVehicleEF	SBUS	6.6310e-003	4.2839e-003
tblVehicleEF	SBUS	0.32	0.32
tblVehicleEF	SBUS	2.6550e-003	2.6187e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	9.3700e-004	7.0905e-005
tblVehicleEF	SBUS	3.3910e-003	1.1512e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.01	0.40
tblVehicleEF	SBUS	1.9710e-003	6.6121e-004
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.45	0.05
tblVehicleEF	SBUS	0.01	3.4356e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.3000e-004	6.5860e-005
tblVehicleEF	SBUS	3.3910e-003	1.1512e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.46	0.57
tblVehicleEF	SBUS	1.9710e-003	6.6121e-004
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.50	0.05
tblVehicleEF	SBUS	0.83	0.09
tblVehicleEF	SBUS	0.02	9.2665e-003
tblVehicleEF	SBUS	0.06	7.3961e-003
tblVehicleEF	SBUS	8.40	3.30
tblVehicleEF	SBUS	0.95	0.85
tblVehicleEF	SBUS	7.12	0.92

tblVehicleEF	SBUS	1,133.08	368.54
tblVehicleEF	SBUS	1,065.54	1,076.08
tblVehicleEF	SBUS	58.07	6.33
tblVehicleEF	SBUS	8.00	3.55
tblVehicleEF	SBUS	3.35	4.81
tblVehicleEF	SBUS	11.63	0.75
tblVehicleEF	SBUS	5.8420e-003	3.7807e-003
tblVehicleEF	SBUS	0.74	0.74
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	1.0190e-003	7.7115e-005
tblVehicleEF	SBUS	5.5900e-003	3.6171e-003
tblVehicleEF	SBUS	0.32	0.32
tblVehicleEF	SBUS	2.6550e-003	2.6187e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	9.3700e-004	7.0905e-005
tblVehicleEF	SBUS	4.6620e-003	1.5802e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.01	0.40
tblVehicleEF	SBUS	2.6790e-003	8.9511e-004
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.41	0.04
tblVehicleEF	SBUS	0.01	3.5222e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.0500e-004	6.2651e-005
tblVehicleEF	SBUS	4.6620e-003	1.5802e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.46	0.57

tblVehicleEF	SBUS	2.6790e-003	8.9511e-004
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.45	0.05
tblVehicleEF	SBUS	0.83	0.09
tblVehicleEF	SBUS	0.02	9.1267e-003
tblVehicleEF	SBUS	0.07	8.3498e-003
tblVehicleEF	SBUS	8.63	3.39
tblVehicleEF	SBUS	0.93	0.83
tblVehicleEF	SBUS	8.75	1.13
tblVehicleEF	SBUS	1,020.03	346.72
tblVehicleEF	SBUS	1,065.54	1,076.06
tblVehicleEF	SBUS	58.07	6.69
tblVehicleEF	SBUS	7.41	3.35
tblVehicleEF	SBUS	3.49	5.00
tblVehicleEF	SBUS	11.67	0.75
tblVehicleEF	SBUS	8.4330e-003	5.4399e-003
tblVehicleEF	SBUS	0.74	0.74
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	1.0190e-003	7.7115e-005
tblVehicleEF	SBUS	8.0680e-003	5.2046e-003
tblVehicleEF	SBUS	0.32	0.32
tblVehicleEF	SBUS	2.6550e-003	2.6187e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	9.3700e-004	7.0905e-005
tblVehicleEF	SBUS	3.3080e-003	1.1236e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.01	0.40

tblVehicleEF	SBUS	1.9200e-003	6.4214e-004
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.46	0.05
tblVehicleEF	SBUS	0.01	3.3160e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.3200e-004	6.6167e-005
tblVehicleEF	SBUS	3.3080e-003	1.1236e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.47	0.57
tblVehicleEF	SBUS	1.9200e-003	6.4214e-004
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.51	0.05
tblVehicleEF	UBUS	1.60	1.2913e-003
tblVehicleEF	UBUS	0.07	0.02
tblVehicleEF	UBUS	7.75	0.07
tblVehicleEF	UBUS	12.30	1.81
tblVehicleEF	UBUS	1,792.86	385.95
tblVehicleEF	UBUS	138.24	20.36
tblVehicleEF	UBUS	3.61	0.05
tblVehicleEF	UBUS	13.00	0.18
tblVehicleEF	UBUS	0.52	0.02
tblVehicleEF	UBUS	0.01	2.2582e-003
tblVehicleEF	UBUS	0.03	3.6033e-004
tblVehicleEF	UBUS	1.3330e-003	1.7046e-004
tblVehicleEF	UBUS	0.22	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6454e-004
tblVehicleEF	UBUS	0.03	3.3131e-004

tblVehicleEF	UBUS	1.2250e-003	1.5673e-004
tblVehicleEF	UBUS	5.7880e-003	1.1457e-003
tblVehicleEF	UBUS	0.09	0.01
tblVehicleEF	UBUS	3.5780e-003	7.3833e-004
tblVehicleEF	UBUS	0.41	4.2705e-003
tblVehicleEF	UBUS	0.03	2.7282e-003
tblVehicleEF	UBUS	0.94	0.11
tblVehicleEF	UBUS	8.5520e-003	3.8193e-003
tblVehicleEF	UBUS	1.6040e-003	2.0144e-004
tblVehicleEF	UBUS	5.7880e-003	1.1457e-003
tblVehicleEF	UBUS	0.09	0.01
tblVehicleEF	UBUS	3.5780e-003	7.3833e-004
tblVehicleEF	UBUS	2.05	6.2315e-003
tblVehicleEF	UBUS	0.03	2.7282e-003
tblVehicleEF	UBUS	1.03	0.12
tblVehicleEF	UBUS	1.60	1.3189e-003
tblVehicleEF	UBUS	0.06	0.02
tblVehicleEF	UBUS	7.80	0.07
tblVehicleEF	UBUS	10.86	1.61
tblVehicleEF	UBUS	1,792.86	385.95
tblVehicleEF	UBUS	138.24	20.00
tblVehicleEF	UBUS	3.38	0.04
tblVehicleEF	UBUS	12.93	0.17
tblVehicleEF	UBUS	0.52	0.02
tblVehicleEF	UBUS	0.01	2.2582e-003
tblVehicleEF	UBUS	0.03	3.6033e-004
tblVehicleEF	UBUS	1.3330e-003	1.7046e-004
tblVehicleEF	UBUS	0.22	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6454e-004

tblVehicleEF	UBUS	0.03	3.3131e-004
tblVehicleEF	UBUS	1.2250e-003	1.5673e-004
tblVehicleEF	UBUS	7.7730e-003	1.5810e-003
tblVehicleEF	UBUS	0.09	0.01
tblVehicleEF	UBUS	4.7590e-003	1.0195e-003
tblVehicleEF	UBUS	0.41	4.3522e-003
tblVehicleEF	UBUS	0.03	2.4623e-003
tblVehicleEF	UBUS	0.87	0.10
tblVehicleEF	UBUS	8.5530e-003	3.8193e-003
tblVehicleEF	UBUS	1.5790e-003	1.9796e-004
tblVehicleEF	UBUS	7.7730e-003	1.5810e-003
tblVehicleEF	UBUS	0.09	0.01
tblVehicleEF	UBUS	4.7590e-003	1.0195e-003
tblVehicleEF	UBUS	2.06	6.3508e-003
tblVehicleEF	UBUS	0.03	2.4623e-003
tblVehicleEF	UBUS	0.96	0.11
tblVehicleEF	UBUS	1.60	1.2849e-003
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	7.74	0.06
tblVehicleEF	UBUS	12.55	1.85
tblVehicleEF	UBUS	1,792.86	385.95
tblVehicleEF	UBUS	138.24	20.42
tblVehicleEF	UBUS	3.54	0.05
tblVehicleEF	UBUS	13.02	0.18
tblVehicleEF	UBUS	0.52	0.02
tblVehicleEF	UBUS	0.01	2.2582e-003
tblVehicleEF	UBUS	0.03	3.6033e-004
tblVehicleEF	UBUS	1.3330e-003	1.7046e-004
tblVehicleEF	UBUS	0.22	0.01

tblVehicleEF	UBUS	3.0000e-003	5.6454e-004
tblVehicleEF	UBUS	0.03	3.3131e-004
tblVehicleEF	UBUS	1.2250e-003	1.5673e-004
tblVehicleEF	UBUS	6.4170e-003	1.1578e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	3.7120e-003	7.1632e-004
tblVehicleEF	UBUS	0.40	4.2510e-003
tblVehicleEF	UBUS	0.04	3.3316e-003
tblVehicleEF	UBUS	0.96	0.11
tblVehicleEF	UBUS	8.5520e-003	3.8193e-003
tblVehicleEF	UBUS	1.6080e-003	2.0207e-004
tblVehicleEF	UBUS	6.4170e-003	1.1578e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	3.7120e-003	7.1632e-004
tblVehicleEF	UBUS	2.05	6.2030e-003
tblVehicleEF	UBUS	0.04	3.3316e-003
tblVehicleEF	UBUS	1.05	0.12
tblVehicleTrips	DV_TP	17.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	17.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	66.00	100.00
tblVehicleTrips	PR_TP	54.00	100.00
tblVehicleTrips	ST_TR	158.37	0.00
tblVehicleTrips	ST_TR	8.96	0.00
tblVehicleTrips	ST_TR	49.97	148.80
tblVehicleTrips	ST_TR	177.59	0.00
tblVehicleTrips	SU_TR	131.84	0.00
tblVehicleTrips	SU_TR	1.55	0.00

tblVehicleTrips	SU_TR	25.24	68.45
tblVehicleTrips	SU_TR	166.44	0.00
tblVehicleTrips	WD_TR	127.15	0.00
tblVehicleTrips	WD_TR	36.13	0.00
tblVehicleTrips	WD_TR	42.70	102.71
tblVehicleTrips	WD_TR	102.24	0.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	12,945,712.84	0.00
tblWater	IndoorWaterUseRate	200,768.86	0.00
tblWater	IndoorWaterUseRate	9,939,636.18	0.00
tblWater	IndoorWaterUseRate	5,068,041.92	30,597,544.00
tblWater	IndoorWaterUseRate	4,218,238.31	0.00
tblWater	OutdoorWaterUseRate	826,322.10	0.00
tblWater	OutdoorWaterUseRate	38,241.69	0.00
tblWater	OutdoorWaterUseRate	634,444.86	0.00
tblWater	OutdoorWaterUseRate	3,106,219.24	853,528.00
tblWater	OutdoorWaterUseRate	130,460.98	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	3.9339	1.6500e-003	0.1813	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0200e-003		0.4146
Energy	0.3722	3.3836	2.8422	0.0203		0.2572	0.2572		0.2572	0.2572		4,060.2906	4,060.2906	0.0778	0.0744	4,084.4189
Mobile	18.7262	42.3917	238.9040	0.8237	89.8171	0.5748	90.3919	23.9860	0.5354	24.5214		85,207.0403	85,207.0403	2.3656		85,266.1799
Total	**23.0323**	**45.7769**	**241.9275**	**0.8440**	**89.8171**	**0.8326**	**90.6497**	**23.9860**	**0.7932**	**24.7792**		**89,267.7202**	**89,267.7202**	**2.4444**	**0.0744**	**89,351.0135**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	3.9339	1.6500e-003	0.1813	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0200e-003		0.4146
Energy	0.3722	3.3836	2.8422	0.0203		0.2572	0.2572		0.2572	0.2572		4,060.2906	4,060.2906	0.0778	0.0744	4,084.4189
Mobile	18.7262	42.3917	238.9040	0.8237	89.8171	0.5748	90.3919	23.9860	0.5354	24.5214		85,207.0403	85,207.0403	2.3656		85,266.1799
Total	**23.0323**	**45.7769**	**241.9275**	**0.8440**	**89.8171**	**0.8326**	**90.6497**	**23.9860**	**0.7932**	**24.7792**		**89,267.7202**	**89,267.7202**	**2.4444**	**0.0744**	**89,351.0135**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	18.7262	42.3917	238.9040	0.8237	89.8171	0.5748	90.3919	23.9860	0.5354	24.5214		85,207.0403	85,207.0403	2.3656		85,266.1799
Unmitigated	18.7262	42.3917	238.9040	0.8237	89.8171	0.5748	90.3919	23.9860	0.5354	24.5214		85,207.0403	85,207.0403	2.3656		85,266.1799

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Medical Office Building	0.00	0.00	0.00		
Movie Theater (No Matinee)	1,936.00	2,464.00	2035.00	6,092,081	6,092,081
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	7,027.42	10,180.90	4683.35	24,574,817	24,574,817
Supermarket	0.00	0.00	0.00		
Total	8,963.42	12,644.90	6,718.35	30,666,898	30,666,898

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Medical Office Building	16.60	8.40	6.90	29.60	51.40	19.00	60	30	10
Movie Theater (No Matinee)	16.60	8.40	6.90	1.80	79.20	19.00	100	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	100	0	0
Supermarket	16.60	8.40	6.90	6.50	74.50	19.00	34	30	36

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High Turnover (Sit Down Restaurant)	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Medical Office Building	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Movie Theater (No Matinee)	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Other Non-Asphalt Surfaces	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Parking Lot	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Regional Shopping Center	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Supermarket	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.3722	3.3836	2.8422	0.0203		0.2572	0.2572		0.2572	0.2572		4,060.2906	4,060.2906	0.0778	0.0744	4,084.4189
NaturalGas Unmitigated	0.3722	3.3836	2.8422	0.0203		0.2572	0.2572		0.2572	0.2572		4,060.2906	4,060.2906	0.0778	0.0744	4,084.4189

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High Turnover (Sit Down Restaurant)	30901.2	0.3333	3.0295	2.5448	0.0182		0.2302	0.2302		0.2302	0.2302		3,635.4406	3,635.4406	0.0697	0.0667	3,657.0442
Medical Office Building	47.3553	5.1000e-004	4.6400e-003	3.9000e-003	3.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004		5.5712	5.5712	1.1000e-004	1.0000e-004	5.6043
Movie Theater (No Matinee)	1117.11	0.0121	0.1095	0.0920	6.6000e-004		8.3200e-003	8.3200e-003		8.3200e-003	8.3200e-003		131.4247	131.4247	2.5200e-003	2.4100e-003	132.2057

Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	395.495	4.2700e-003	0.0388	0.0326	2.3000e-004		2.9500e-003	2.9500e-003		2.9500e-003	2.9500e-003		46.5288	46.5288	8.9000e-004	8.5000e-004	46.8053
Supermarket	2051.26	0.0221	0.2011	0.1689	1.2100e-003		0.0153	0.0153		0.0153	0.0153		241.3253	241.3253	4.6300e-003	4.4200e-003	242.7594
Total		**0.3722**	**3.3836**	**2.8422**	**0.0203**		**0.2571**	**0.2571**		**0.2571**	**0.2571**		**4,060.2906**	**4,060.2906**	**0.0778**	**0.0744**	**4,084.4189**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High Turnover (Sit Down Restaurant)	30.9012	0.3333	3.0295	2.5448	0.0182		0.2302	0.2302		0.2302	0.2302		3,635.4406	3,635.4406	0.0697	0.0667	3,657.0442
Medical Office Building	0.0473553	5.1000e-004	4.6400e-003	3.9000e-003	3.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004		5.5712	5.5712	1.1000e-004	1.0000e-004	5.6043
Movie Theater (No Matinee)	1.11711	0.0121	0.1095	0.0920	6.6000e-004		8.3200e-003	8.3200e-003		8.3200e-003	8.3200e-003		131.4247	131.4247	2.5200e-003	2.4100e-003	132.2057
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.395495	4.2700e-003	0.0388	0.0326	2.3000e-004		2.9500e-003	2.9500e-003		2.9500e-003	2.9500e-003		46.5288	46.5288	8.9000e-004	8.5000e-004	46.8053
Supermarket	2.05126	0.0221	0.2011	0.1689	1.2100e-003		0.0153	0.0153		0.0153	0.0153		241.3253	241.3253	4.6300e-003	4.4200e-003	242.7594
Total		**0.3722**	**3.3836**	**2.8422**	**0.0203**		**0.2571**	**0.2571**		**0.2571**	**0.2571**		**4,060.2906**	**4,060.2906**	**0.0778**	**0.0744**	**4,084.4189**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.9339	1.6500e-003	0.1813	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0200e-003		0.4146
Unmitigated	3.9339	1.6500e-003	0.1813	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0200e-003		0.4146

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4554					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.4618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0167	1.6500e-003	0.1813	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0200e-003		0.4146
Total	**3.9339**	**1.6500e-003**	**0.1813**	**1.0000e-005**		**6.5000e-004**	**6.5000e-004**		**6.5000e-004**	**6.5000e-004**		**0.3892**	**0.3892**	**1.0200e-003**		**0.4146**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4554					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.4618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0167	1.6500e-003	0.1813	1.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004		0.3892	0.3892	1.0200e-003		0.4146
Total	**3.9339**	**1.6500e-003**	**0.1813**	**1.0000e-005**		**6.5000e-004**	**6.5000e-004**		**6.5000e-004**	**6.5000e-004**		**0.3892**	**0.3892**	**1.0200e-003**		**0.4146**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

Brea Plaza Expansion Project, Existing Conditions (2021) - Orange County, Annual

Brea Plaza Expansion Project, Existing Conditions (2021)

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Medical Office Building	1.60	1000sqft	0.04	1,596.00	0
Other Non-Asphalt Surfaces	65.93	1000sqft	1.51	65,931.00	0
Parking Lot	465.70	1000sqft	10.69	465,700.00	0
Regional Shopping Center	68.42	1000sqft	1.57	68,415.00	0
Supermarket	34.22	1000sqft	0.79	34,219.00	0
High Turnover (Sit Down Restaurant)	42.65	1000sqft	0.98	42,649.00	0
Movie Theater (No Matinee)	1,100.00	Seat	0.42	18,450.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	531.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustainability Report

Land Use - based on info from applicant

Construction Phase -

Vehicle Trips - based on info from LLG, see assumptions file for calculations

Vehicle Emission Factors - EMFAC2017 adjustment, see assumptions file

Woodstoves -

Area Coating - parking coating accounts only for parking area

Energy Use -

Water And Wastewater - assigning all water use to regional shopping center. Based on data from sewer study. Assumes 100% aerobic treatment.

Solid Waste -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	31898	27942
tblLandUse	LandUseSquareFeet	1,600.00	1,596.00
tblLandUse	LandUseSquareFeet	65,930.00	65,931.00
tblLandUse	LandUseSquareFeet	68,420.00	68,415.00
tblLandUse	LandUseSquareFeet	34,220.00	34,219.00
tblLandUse	LandUseSquareFeet	42,650.00	42,649.00
tblLandUse	LandUseSquareFeet	24,750.00	18,450.00
tblLandUse	LotAcreage	0.57	0.42
tblProjectCharacteristics	CO2IntensityFactor	702.44	531.44
tblVehicleEF	HHD	0.63	0.03
tblVehicleEF	HHD	0.16	0.14
tblVehicleEF	HHD	0.08	1.0000e-006
tblVehicleEF	HHD	2.36	5.39
tblVehicleEF	HHD	1.29	0.84
tblVehicleEF	HHD	3.99	0.01
tblVehicleEF	HHD	4,116.44	1,057.87
tblVehicleEF	HHD	1,683.99	1,517.44
tblVehicleEF	HHD	12.64	0.09
tblVehicleEF	HHD	20.04	5.92

tblVehicleEF	HHD	3.96	3.93
tblVehicleEF	HHD	19.26	1.99
tblVehicleEF	HHD	0.02	8.4880e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.1600e-004	1.0000e-006
tblVehicleEF	HHD	0.02	8.1210e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6750e-003	8.7680e-003
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.0700e-004	1.0000e-006
tblVehicleEF	HHD	1.1800e-004	6.0000e-006
tblVehicleEF	HHD	4.9160e-003	2.4300e-004
tblVehicleEF	HHD	0.57	0.41
tblVehicleEF	HHD	8.9000e-005	4.0000e-006
tblVehicleEF	HHD	0.13	0.12
tblVehicleEF	HHD	4.6300e-004	9.9000e-005
tblVehicleEF	HHD	0.10	4.0000e-006
tblVehicleEF	HHD	0.04	9.6940e-003
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.9200e-004	1.0000e-006
tblVehicleEF	HHD	1.1800e-004	6.0000e-006
tblVehicleEF	HHD	4.9160e-003	2.4300e-004
tblVehicleEF	HHD	0.68	0.48
tblVehicleEF	HHD	8.9000e-005	4.0000e-006
tblVehicleEF	HHD	0.31	0.27
tblVehicleEF	HHD	4.6300e-004	9.9000e-005
tblVehicleEF	HHD	0.11	5.0000e-006

tblVehicleEF	HHD	0.59	0.03
tblVehicleEF	HHD	0.16	0.14
tblVehicleEF	HHD	0.08	1.0000e-006
tblVehicleEF	HHD	1.72	5.25
tblVehicleEF	HHD	1.30	0.84
tblVehicleEF	HHD	3.80	0.01
tblVehicleEF	HHD	4,359.67	1,057.02
tblVehicleEF	HHD	1,683.99	1,517.44
tblVehicleEF	HHD	12.64	0.09
tblVehicleEF	HHD	20.68	5.78
tblVehicleEF	HHD	3.75	3.72
tblVehicleEF	HHD	19.25	1.99
tblVehicleEF	HHD	0.02	7.8070e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.1600e-004	1.0000e-006
tblVehicleEF	HHD	0.02	7.4700e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6750e-003	8.7680e-003
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.0700e-004	1.0000e-006
tblVehicleEF	HHD	1.6900e-004	9.0000e-006
tblVehicleEF	HHD	5.0090e-003	2.4600e-004
tblVehicleEF	HHD	0.54	0.43
tblVehicleEF	HHD	1.2500e-004	6.0000e-006
tblVehicleEF	HHD	0.13	0.12
tblVehicleEF	HHD	4.4900e-004	9.7000e-005
tblVehicleEF	HHD	0.09	4.0000e-006

tblVehicleEF	HHD	0.04	9.6850e-003
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.8900e-004	1.0000e-006
tblVehicleEF	HHD	1.6900e-004	9.0000e-006
tblVehicleEF	HHD	5.0090e-003	2.4600e-004
tblVehicleEF	HHD	0.64	0.50
tblVehicleEF	HHD	1.2500e-004	6.0000e-006
tblVehicleEF	HHD	0.31	0.27
tblVehicleEF	HHD	4.4900e-004	9.7000e-005
tblVehicleEF	HHD	0.10	4.0000e-006
tblVehicleEF	HHD	0.68	0.02
tblVehicleEF	HHD	0.16	5.0360e-003
tblVehicleEF	HHD	0.08	1.0000e-006
tblVehicleEF	HHD	3.25	5.42
tblVehicleEF	HHD	1.29	0.46
tblVehicleEF	HHD	4.03	0.01
tblVehicleEF	HHD	3,780.54	1,027.42
tblVehicleEF	HHD	1,683.99	1,421.63
tblVehicleEF	HHD	12.64	0.09
tblVehicleEF	HHD	19.16	5.92
tblVehicleEF	HHD	3.89	3.78
tblVehicleEF	HHD	19.27	1.99
tblVehicleEF	HHD	0.02	8.9820e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.1600e-004	1.0000e-006
tblVehicleEF	HHD	0.02	8.5930e-003
tblVehicleEF	HHD	0.03	0.03

tblVehicleEF	HHD	8.6750e-003	8.5160e-003
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	1.0700e-004	1.0000e-006
tblVehicleEF	HHD	1.1700e-004	6.0000e-006
tblVehicleEF	HHD	5.3110e-003	2.7000e-004
tblVehicleEF	HHD	0.61	0.39
tblVehicleEF	HHD	9.0000e-005	4.0000e-006
tblVehicleEF	HHD	0.13	0.11
tblVehicleEF	HHD	5.0200e-004	1.0500e-004
tblVehicleEF	HHD	0.10	4.0000e-006
tblVehicleEF	HHD	0.03	9.7070e-003
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.9300e-004	1.0000e-006
tblVehicleEF	HHD	1.1700e-004	6.0000e-006
tblVehicleEF	HHD	5.3110e-003	2.7000e-004
tblVehicleEF	HHD	0.73	0.44
tblVehicleEF	HHD	9.0000e-005	4.0000e-006
tblVehicleEF	HHD	0.31	0.12
tblVehicleEF	HHD	5.0200e-004	1.0500e-004
tblVehicleEF	HHD	0.11	5.0000e-006
tblVehicleEF	LDA	4.3340e-003	2.6620e-003
tblVehicleEF	LDA	5.1760e-003	0.05
tblVehicleEF	LDA	0.58	0.68
tblVehicleEF	LDA	1.10	2.11
tblVehicleEF	LDA	263.86	266.12
tblVehicleEF	LDA	58.33	54.35
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	0.07	0.19
tblVehicleEF	LDA	1.9130e-003	1.6720e-003

tblVehicleEF	LDA	2.2790e-003	1.9250e-003
tblVehicleEF	LDA	1.7630e-003	1.5400e-003
tblVehicleEF	LDA	2.0960e-003	1.7700e-003
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.09	0.10
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDA	2.6420e-003	2.6270e-003
tblVehicleEF	LDA	6.0200e-004	5.3700e-004
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.09	0.10
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.08	0.25
tblVehicleEF	LDA	4.5760e-003	2.8320e-003
tblVehicleEF	LDA	4.6500e-003	0.05
tblVehicleEF	LDA	0.63	0.74
tblVehicleEF	LDA	0.95	1.82
tblVehicleEF	LDA	274.96	277.03
tblVehicleEF	LDA	58.33	53.81
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.06	0.17
tblVehicleEF	LDA	1.9130e-003	1.6720e-003
tblVehicleEF	LDA	2.2790e-003	1.9250e-003
tblVehicleEF	LDA	1.7630e-003	1.5400e-003
tblVehicleEF	LDA	2.0960e-003	1.7700e-003

tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.09	0.10
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.02
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	2.7540e-003	2.7340e-003
tblVehicleEF	LDA	5.9900e-004	5.3100e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.09	0.10
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.02
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDA	4.2520e-003	2.6080e-003
tblVehicleEF	LDA	5.2830e-003	0.05
tblVehicleEF	LDA	0.56	0.65
tblVehicleEF	LDA	1.13	2.18
tblVehicleEF	LDA	259.76	262.10
tblVehicleEF	LDA	58.33	54.47
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	0.07	0.19
tblVehicleEF	LDA	1.9130e-003	1.6720e-003
tblVehicleEF	LDA	2.2790e-003	1.9250e-003
tblVehicleEF	LDA	1.7630e-003	1.5400e-003
tblVehicleEF	LDA	2.0960e-003	1.7700e-003
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.10	0.10
tblVehicleEF	LDA	0.03	0.05

tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDA	2.6010e-003	2.5870e-003
tblVehicleEF	LDA	6.0200e-004	5.3800e-004
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.10	0.10
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.01
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.08	0.26
tblVehicleEF	LDT1	9.9920e-003	6.2080e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.19	1.26
tblVehicleEF	LDT1	2.74	2.32
tblVehicleEF	LDT1	324.21	313.77
tblVehicleEF	LDT1	71.81	65.26
tblVehicleEF	LDT1	0.11	0.10
tblVehicleEF	LDT1	0.16	0.26
tblVehicleEF	LDT1	2.5570e-003	2.3060e-003
tblVehicleEF	LDT1	3.2780e-003	2.6450e-003
tblVehicleEF	LDT1	2.3530e-003	2.1220e-003
tblVehicleEF	LDT1	3.0150e-003	2.4330e-003
tblVehicleEF	LDT1	0.12	0.12
tblVehicleEF	LDT1	0.25	0.19
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.02	0.03
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.19	0.36

tblVehicleEF	LDT1	3.2560e-003	3.0980e-003
tblVehicleEF	LDT1	7.6600e-004	6.4400e-004
tblVehicleEF	LDT1	0.12	0.12
tblVehicleEF	LDT1	0.25	0.19
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.21	0.40
tblVehicleEF	LDT1	0.01	6.5570e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.28	1.36
tblVehicleEF	LDT1	2.36	2.00
tblVehicleEF	LDT1	337.31	324.92
tblVehicleEF	LDT1	71.81	64.62
tblVehicleEF	LDT1	0.10	0.09
tblVehicleEF	LDT1	0.15	0.24
tblVehicleEF	LDT1	2.5570e-003	2.3060e-003
tblVehicleEF	LDT1	3.2780e-003	2.6450e-003
tblVehicleEF	LDT1	2.3530e-003	2.1220e-003
tblVehicleEF	LDT1	3.0150e-003	2.4330e-003
tblVehicleEF	LDT1	0.17	0.18
tblVehicleEF	LDT1	0.26	0.20
tblVehicleEF	LDT1	0.14	0.15
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.14	0.08
tblVehicleEF	LDT1	0.17	0.33
tblVehicleEF	LDT1	3.3880e-003	3.2080e-003
tblVehicleEF	LDT1	7.5900e-004	6.3800e-004
tblVehicleEF	LDT1	0.17	0.18

tblVehicleEF	LDT1	0.26	0.20
tblVehicleEF	LDT1	0.14	0.15
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.14	0.08
tblVehicleEF	LDT1	0.19	0.36
tblVehicleEF	LDT1	9.8200e-003	6.0950e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.16	1.22
tblVehicleEF	LDT1	2.82	2.40
tblVehicleEF	LDT1	319.38	309.65
tblVehicleEF	LDT1	71.81	65.40
tblVehicleEF	LDT1	0.11	0.10
tblVehicleEF	LDT1	0.17	0.27
tblVehicleEF	LDT1	2.5570e-003	2.3060e-003
tblVehicleEF	LDT1	3.2780e-003	2.6450e-003
tblVehicleEF	LDT1	2.3530e-003	2.1220e-003
tblVehicleEF	LDT1	3.0150e-003	2.4330e-003
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.29	0.22
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.02	0.03
tblVehicleEF	LDT1	0.18	0.10
tblVehicleEF	LDT1	0.19	0.37
tblVehicleEF	LDT1	3.2070e-003	3.0570e-003
tblVehicleEF	LDT1	7.6700e-004	6.4600e-004
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.29	0.22
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.04	0.04

tblVehicleEF	LDT1	0.18	0.10
tblVehicleEF	LDT1	0.21	0.41
tblVehicleEF	LDT2	5.7840e-003	4.0560e-003
tblVehicleEF	LDT2	6.6620e-003	0.07
tblVehicleEF	LDT2	0.74	0.91
tblVehicleEF	LDT2	1.41	2.69
tblVehicleEF	LDT2	369.26	341.79
tblVehicleEF	LDT2	81.71	71.48
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.12	0.29
tblVehicleEF	LDT2	1.8090e-003	1.6370e-003
tblVehicleEF	LDT2	2.1990e-003	1.8210e-003
tblVehicleEF	LDT2	1.6640e-003	1.5060e-003
tblVehicleEF	LDT2	2.0220e-003	1.6740e-003
tblVehicleEF	LDT2	0.05	0.07
tblVehicleEF	LDT2	0.11	0.12
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.06	0.05
tblVehicleEF	LDT2	0.09	0.32
tblVehicleEF	LDT2	3.6980e-003	3.3740e-003
tblVehicleEF	LDT2	8.4100e-004	7.0600e-004
tblVehicleEF	LDT2	0.05	0.07
tblVehicleEF	LDT2	0.11	0.12
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.05
tblVehicleEF	LDT2	0.10	0.35
tblVehicleEF	LDT2	6.1050e-003	4.3050e-003

tblVehicleEF	LDT2	5.9960e-003	0.06
tblVehicleEF	LDT2	0.80	0.99
tblVehicleEF	LDT2	1.22	2.32
tblVehicleEF	LDT2	384.42	352.81
tblVehicleEF	LDT2	81.71	70.78
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.11	0.27
tblVehicleEF	LDT2	1.8090e-003	1.6370e-003
tblVehicleEF	LDT2	2.1990e-003	1.8210e-003
tblVehicleEF	LDT2	1.6640e-003	1.5060e-003
tblVehicleEF	LDT2	2.0220e-003	1.6740e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.07	0.10
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.08	0.29
tblVehicleEF	LDT2	3.8500e-003	3.4820e-003
tblVehicleEF	LDT2	8.3800e-004	6.9900e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.07	0.10
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.09	0.31
tblVehicleEF	LDT2	5.6750e-003	3.9780e-003
tblVehicleEF	LDT2	6.7990e-003	0.07
tblVehicleEF	LDT2	0.72	0.88
tblVehicleEF	LDT2	1.45	2.77

tblVehicleEF	LDT2	363.66	337.72
tblVehicleEF	LDT2	81.71	71.63
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.12	0.29
tblVehicleEF	LDT2	1.8090e-003	1.6370e-003
tblVehicleEF	LDT2	2.1990e-003	1.8210e-003
tblVehicleEF	LDT2	1.6640e-003	1.5060e-003
tblVehicleEF	LDT2	2.0220e-003	1.6740e-003
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.01	0.02
tblVehicleEF	LDT2	0.07	0.06
tblVehicleEF	LDT2	0.09	0.33
tblVehicleEF	LDT2	3.6420e-003	3.3340e-003
tblVehicleEF	LDT2	8.4100e-004	7.0700e-004
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.06
tblVehicleEF	LDT2	0.10	0.36
tblVehicleEF	LHD1	5.7990e-003	5.8180e-003
tblVehicleEF	LHD1	0.01	5.0100e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.19
tblVehicleEF	LHD1	0.78	0.57
tblVehicleEF	LHD1	2.55	1.09
tblVehicleEF	LHD1	9.03	9.05

tblVehicleEF	LHD1	603.73	667.72
tblVehicleEF	LHD1	33.13	12.41
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	1.27	0.81
tblVehicleEF	LHD1	1.04	0.34
tblVehicleEF	LHD1	8.6000e-004	7.5600e-004
tblVehicleEF	LHD1	0.01	9.6460e-003
tblVehicleEF	LHD1	0.01	7.2150e-003
tblVehicleEF	LHD1	9.1700e-004	2.5500e-004
tblVehicleEF	LHD1	8.2300e-004	7.2300e-004
tblVehicleEF	LHD1	2.5110e-003	2.4120e-003
tblVehicleEF	LHD1	9.9290e-003	6.8770e-003
tblVehicleEF	LHD1	8.4300e-004	2.3500e-004
tblVehicleEF	LHD1	2.8210e-003	2.2570e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.7870e-003	1.4220e-003
tblVehicleEF	LHD1	0.06	0.05
tblVehicleEF	LHD1	0.28	0.17
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.1000e-005	8.8000e-005
tblVehicleEF	LHD1	5.9280e-003	6.5210e-003
tblVehicleEF	LHD1	3.7900e-004	1.2300e-004
tblVehicleEF	LHD1	2.8210e-003	2.2570e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.7870e-003	1.4220e-003
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.28	0.17

tblVehicleEF	LHD1	0.29	0.09
tblVehicleEF	LHD1	5.7990e-003	5.8300e-003
tblVehicleEF	LHD1	0.01	5.0980e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.19
tblVehicleEF	LHD1	0.79	0.58
tblVehicleEF	LHD1	2.44	1.04
tblVehicleEF	LHD1	9.03	9.05
tblVehicleEF	LHD1	603.73	667.74
tblVehicleEF	LHD1	33.13	12.33
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	1.19	0.76
tblVehicleEF	LHD1	1.00	0.33
tblVehicleEF	LHD1	8.6000e-004	7.5600e-004
tblVehicleEF	LHD1	0.01	9.6460e-003
tblVehicleEF	LHD1	0.01	7.2150e-003
tblVehicleEF	LHD1	9.1700e-004	2.5500e-004
tblVehicleEF	LHD1	8.2300e-004	7.2300e-004
tblVehicleEF	LHD1	2.5110e-003	2.4120e-003
tblVehicleEF	LHD1	9.9290e-003	6.8770e-003
tblVehicleEF	LHD1	8.4300e-004	2.3500e-004
tblVehicleEF	LHD1	3.9390e-003	3.1600e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.4300e-003	1.9450e-003
tblVehicleEF	LHD1	0.06	0.05
tblVehicleEF	LHD1	0.27	0.16
tblVehicleEF	LHD1	0.26	0.08
tblVehicleEF	LHD1	9.1000e-005	8.8000e-005

tblVehicleEF	LHD1	5.9280e-003	6.5210e-003
tblVehicleEF	LHD1	3.7700e-004	1.2200e-004
tblVehicleEF	LHD1	3.9390e-003	3.1600e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	2.4300e-003	1.9450e-003
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.27	0.16
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	5.7990e-003	5.8160e-003
tblVehicleEF	LHD1	0.01	4.9860e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.19
tblVehicleEF	LHD1	0.77	0.57
tblVehicleEF	LHD1	2.56	1.09
tblVehicleEF	LHD1	9.03	9.05
tblVehicleEF	LHD1	603.73	667.72
tblVehicleEF	LHD1	33.13	12.42
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	1.24	0.80
tblVehicleEF	LHD1	1.05	0.35
tblVehicleEF	LHD1	8.6000e-004	7.5600e-004
tblVehicleEF	LHD1	0.01	9.6460e-003
tblVehicleEF	LHD1	0.01	7.2150e-003
tblVehicleEF	LHD1	9.1700e-004	2.5500e-004
tblVehicleEF	LHD1	8.2300e-004	7.2300e-004
tblVehicleEF	LHD1	2.5110e-003	2.4120e-003
tblVehicleEF	LHD1	9.9290e-003	6.8770e-003
tblVehicleEF	LHD1	8.4300e-004	2.3500e-004

tblVehicleEF	LHD1	2.9400e-003	2.3610e-003
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8110e-003	1.4460e-003
tblVehicleEF	LHD1	0.06	0.05
tblVehicleEF	LHD1	0.30	0.18
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.1000e-005	8.8000e-005
tblVehicleEF	LHD1	5.9280e-003	6.5210e-003
tblVehicleEF	LHD1	3.8000e-004	1.2300e-004
tblVehicleEF	LHD1	2.9400e-003	2.3610e-003
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8110e-003	1.4460e-003
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.30	0.18
tblVehicleEF	LHD1	0.29	0.09
tblVehicleEF	LHD2	4.2890e-003	4.2530e-003
tblVehicleEF	LHD2	4.2710e-003	3.6630e-003
tblVehicleEF	LHD2	9.4470e-003	0.01
tblVehicleEF	LHD2	0.13	0.16
tblVehicleEF	LHD2	0.36	0.41
tblVehicleEF	LHD2	1.38	0.76
tblVehicleEF	LHD2	13.67	13.61
tblVehicleEF	LHD2	619.08	679.10
tblVehicleEF	LHD2	28.46	10.01
tblVehicleEF	LHD2	0.10	0.09
tblVehicleEF	LHD2	0.87	0.94
tblVehicleEF	LHD2	0.60	0.25

tblVehicleEF	LHD2	1.1890e-003	1.1970e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	9.7400e-003	0.01
tblVehicleEF	LHD2	4.6100e-004	1.4900e-004
tblVehicleEF	LHD2	1.1370e-003	1.1460e-003
tblVehicleEF	LHD2	2.6460e-003	2.6120e-003
tblVehicleEF	LHD2	9.3060e-003	9.6640e-003
tblVehicleEF	LHD2	4.2300e-004	1.3700e-004
tblVehicleEF	LHD2	1.1610e-003	1.4570e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.7900e-004	9.3400e-004
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.09	0.11
tblVehicleEF	LHD2	0.13	0.06
tblVehicleEF	LHD2	1.3400e-004	1.3100e-004
tblVehicleEF	LHD2	6.0340e-003	6.5780e-003
tblVehicleEF	LHD2	3.1000e-004	9.9000e-005
tblVehicleEF	LHD2	1.1610e-003	1.4570e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	7.7900e-004	9.3400e-004
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.09	0.11
tblVehicleEF	LHD2	0.14	0.06
tblVehicleEF	LHD2	4.2890e-003	4.2620e-003
tblVehicleEF	LHD2	4.3220e-003	3.7010e-003
tblVehicleEF	LHD2	9.1410e-003	0.01
tblVehicleEF	LHD2	0.13	0.16

tblVehicleEF	LHD2	0.37	0.41
tblVehicleEF	LHD2	1.32	0.73
tblVehicleEF	LHD2	13.67	13.61
tblVehicleEF	LHD2	619.08	679.11
tblVehicleEF	LHD2	28.46	9.96
tblVehicleEF	LHD2	0.10	0.09
tblVehicleEF	LHD2	0.82	0.88
tblVehicleEF	LHD2	0.58	0.24
tblVehicleEF	LHD2	1.1890e-003	1.1970e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	9.7400e-003	0.01
tblVehicleEF	LHD2	4.6100e-004	1.4900e-004
tblVehicleEF	LHD2	1.1370e-003	1.1460e-003
tblVehicleEF	LHD2	2.6460e-003	2.6120e-003
tblVehicleEF	LHD2	9.3060e-003	9.6640e-003
tblVehicleEF	LHD2	4.2300e-004	1.3700e-004
tblVehicleEF	LHD2	1.6270e-003	2.0410e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.0610e-003	1.2770e-003
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.08	0.10
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	1.3400e-004	1.3100e-004
tblVehicleEF	LHD2	6.0340e-003	6.5780e-003
tblVehicleEF	LHD2	3.0900e-004	9.9000e-005
tblVehicleEF	LHD2	1.6270e-003	2.0410e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.03

tblVehicleEF	LHD2	1.0610e-003	1.2770e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.08	0.10
tblVehicleEF	LHD2	0.13	0.06
tblVehicleEF	LHD2	4.2890e-003	4.2510e-003
tblVehicleEF	LHD2	4.2570e-003	3.6530e-003
tblVehicleEF	LHD2	9.5090e-003	0.01
tblVehicleEF	LHD2	0.13	0.16
tblVehicleEF	LHD2	0.36	0.41
tblVehicleEF	LHD2	1.38	0.76
tblVehicleEF	LHD2	13.67	13.61
tblVehicleEF	LHD2	619.08	679.10
tblVehicleEF	LHD2	28.46	10.02
tblVehicleEF	LHD2	0.10	0.09
tblVehicleEF	LHD2	0.85	0.92
tblVehicleEF	LHD2	0.61	0.25
tblVehicleEF	LHD2	1.1890e-003	1.1970e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	9.7400e-003	0.01
tblVehicleEF	LHD2	4.6100e-004	1.4900e-004
tblVehicleEF	LHD2	1.1370e-003	1.1460e-003
tblVehicleEF	LHD2	2.6460e-003	2.6120e-003
tblVehicleEF	LHD2	9.3060e-003	9.6640e-003
tblVehicleEF	LHD2	4.2300e-004	1.3700e-004
tblVehicleEF	LHD2	1.1810e-003	1.5020e-003
tblVehicleEF	LHD2	0.04	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.7800e-004	9.3300e-004
tblVehicleEF	LHD2	0.05	0.05

tblVehicleEF	LHD2	0.10	0.12
tblVehicleEF	LHD2	0.13	0.06
tblVehicleEF	LHD2	1.3400e-004	1.3100e-004
tblVehicleEF	LHD2	6.0340e-003	6.5780e-003
tblVehicleEF	LHD2	3.1000e-004	9.9000e-005
tblVehicleEF	LHD2	1.1810e-003	1.5020e-003
tblVehicleEF	LHD2	0.04	0.06
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	7.7800e-004	9.3300e-004
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.10	0.12
tblVehicleEF	LHD2	0.14	0.06
tblVehicleEF	MCY	0.48	0.35
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	18.61	18.90
tblVehicleEF	MCY	9.56	8.43
tblVehicleEF	MCY	177.57	214.49
tblVehicleEF	MCY	45.30	60.11
tblVehicleEF	MCY	1.12	1.12
tblVehicleEF	MCY	0.31	0.26
tblVehicleEF	MCY	2.1370e-003	2.1160e-003
tblVehicleEF	MCY	3.9240e-003	3.2680e-003
tblVehicleEF	MCY	1.9990e-003	1.9800e-003
tblVehicleEF	MCY	3.7000e-003	3.0810e-003
tblVehicleEF	MCY	1.13	1.16
tblVehicleEF	MCY	0.69	0.72
tblVehicleEF	MCY	0.71	0.72
tblVehicleEF	MCY	2.38	2.40
tblVehicleEF	MCY	0.65	0.58

tblVehicleEF	MCY	2.05	1.82
tblVehicleEF	MCY	2.1510e-003	2.1230e-003
tblVehicleEF	MCY	6.7000e-004	5.9500e-004
tblVehicleEF	MCY	1.13	1.16
tblVehicleEF	MCY	0.69	0.72
tblVehicleEF	MCY	0.71	0.72
tblVehicleEF	MCY	2.95	2.97
tblVehicleEF	MCY	0.65	0.58
tblVehicleEF	MCY	2.24	1.98
tblVehicleEF	MCY	0.47	0.35
tblVehicleEF	MCY	0.14	0.21
tblVehicleEF	MCY	17.91	18.17
tblVehicleEF	MCY	8.81	7.74
tblVehicleEF	MCY	177.57	213.12
tblVehicleEF	MCY	45.30	58.36
tblVehicleEF	MCY	0.98	0.98
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	2.1370e-003	2.1160e-003
tblVehicleEF	MCY	3.9240e-003	3.2680e-003
tblVehicleEF	MCY	1.9990e-003	1.9800e-003
tblVehicleEF	MCY	3.7000e-003	3.0810e-003
tblVehicleEF	MCY	1.71	1.74
tblVehicleEF	MCY	0.73	0.76
tblVehicleEF	MCY	1.12	1.14
tblVehicleEF	MCY	2.33	2.34
tblVehicleEF	MCY	0.61	0.54
tblVehicleEF	MCY	1.85	1.62
tblVehicleEF	MCY	2.1380e-003	2.1090e-003
tblVehicleEF	MCY	6.5100e-004	5.7700e-004

tblVehicleEF	MCY	1.71	1.74
tblVehicleEF	MCY	0.73	0.76
tblVehicleEF	MCY	1.12	1.14
tblVehicleEF	MCY	2.89	2.90
tblVehicleEF	MCY	0.61	0.54
tblVehicleEF	MCY	2.01	1.77
tblVehicleEF	MCY	0.48	0.35
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	18.72	19.01
tblVehicleEF	MCY	9.67	8.55
tblVehicleEF	MCY	177.57	214.70
tblVehicleEF	MCY	45.30	60.42
tblVehicleEF	MCY	1.09	1.09
tblVehicleEF	MCY	0.31	0.27
tblVehicleEF	MCY	2.1370e-003	2.1160e-003
tblVehicleEF	MCY	3.9240e-003	3.2680e-003
tblVehicleEF	MCY	1.9990e-003	1.9800e-003
tblVehicleEF	MCY	3.7000e-003	3.0810e-003
tblVehicleEF	MCY	1.26	1.28
tblVehicleEF	MCY	0.89	0.92
tblVehicleEF	MCY	0.75	0.76
tblVehicleEF	MCY	2.39	2.41
tblVehicleEF	MCY	0.75	0.66
tblVehicleEF	MCY	2.09	1.86
tblVehicleEF	MCY	2.1530e-003	2.1250e-003
tblVehicleEF	MCY	6.7300e-004	5.9800e-004
tblVehicleEF	MCY	1.26	1.28
tblVehicleEF	MCY	0.89	0.92
tblVehicleEF	MCY	0.75	0.76

tblVehicleEF	MCY	2.97	2.98
tblVehicleEF	MCY	0.75	0.66
tblVehicleEF	MCY	2.28	2.02
tblVehicleEF	MDV	0.01	5.6010e-003
tblVehicleEF	MDV	0.01	0.08
tblVehicleEF	MDV	1.26	1.12
tblVehicleEF	MDV	2.62	3.12
tblVehicleEF	MDV	500.02	421.68
tblVehicleEF	MDV	108.15	86.92
tblVehicleEF	MDV	0.14	0.10
tblVehicleEF	MDV	0.24	0.36
tblVehicleEF	MDV	1.9190e-003	1.7850e-003
tblVehicleEF	MDV	2.3090e-003	1.9840e-003
tblVehicleEF	MDV	1.7700e-003	1.6470e-003
tblVehicleEF	MDV	2.1250e-003	1.8250e-003
tblVehicleEF	MDV	0.07	0.08
tblVehicleEF	MDV	0.16	0.14
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.10	0.05
tblVehicleEF	MDV	0.20	0.41
tblVehicleEF	MDV	5.0080e-003	4.1600e-003
tblVehicleEF	MDV	1.1270e-003	8.5800e-004
tblVehicleEF	MDV	0.07	0.08
tblVehicleEF	MDV	0.16	0.14
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.10	0.05
tblVehicleEF	MDV	0.22	0.45

tblVehicleEF	MDV	0.01	5.9080e-003
tblVehicleEF	MDV	0.01	0.08
tblVehicleEF	MDV	1.36	1.20
tblVehicleEF	MDV	2.27	2.69
tblVehicleEF	MDV	519.96	433.25
tblVehicleEF	MDV	108.15	86.09
tblVehicleEF	MDV	0.12	0.09
tblVehicleEF	MDV	0.23	0.33
tblVehicleEF	MDV	1.9190e-003	1.7850e-003
tblVehicleEF	MDV	2.3090e-003	1.9840e-003
tblVehicleEF	MDV	1.7700e-003	1.6470e-003
tblVehicleEF	MDV	2.1250e-003	1.8250e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.16	0.14
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.03	0.03
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.18	0.37
tblVehicleEF	MDV	5.2090e-003	4.2740e-003
tblVehicleEF	MDV	1.1210e-003	8.5000e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.16	0.14
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.20	0.40
tblVehicleEF	MDV	0.01	5.5000e-003
tblVehicleEF	MDV	0.02	0.09
tblVehicleEF	MDV	1.23	1.08

tblVehicleEF	MDV	2.69	3.21
tblVehicleEF	MDV	492.66	417.41
tblVehicleEF	MDV	108.15	87.10
tblVehicleEF	MDV	0.13	0.10
tblVehicleEF	MDV	0.25	0.36
tblVehicleEF	MDV	1.9190e-003	1.7850e-003
tblVehicleEF	MDV	2.3090e-003	1.9840e-003
tblVehicleEF	MDV	1.7700e-003	1.6470e-003
tblVehicleEF	MDV	2.1250e-003	1.8250e-003
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.17	0.15
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.20	0.42
tblVehicleEF	MDV	4.9340e-003	4.1170e-003
tblVehicleEF	MDV	1.1290e-003	8.6000e-004
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.17	0.15
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.22	0.46
tblVehicleEF	MH	0.03	9.6940e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	2.15	1.16
tblVehicleEF	MH	5.50	1.98
tblVehicleEF	MH	1,108.90	1,462.99
tblVehicleEF	MH	57.43	18.14

tblVehicleEF	MH	1.43	1.44
tblVehicleEF	MH	0.78	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.0490e-003	2.4700e-004
tblVehicleEF	MH	3.2420e-003	3.3030e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.6500e-004	2.2700e-004
tblVehicleEF	MH	0.95	0.80
tblVehicleEF	MH	0.07	0.06
tblVehicleEF	MH	0.41	0.35
tblVehicleEF	MH	0.09	0.06
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.32	0.09
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.7000e-004	1.8000e-004
tblVehicleEF	MH	0.95	0.80
tblVehicleEF	MH	0.07	0.06
tblVehicleEF	MH	0.41	0.35
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.35	0.10
tblVehicleEF	MH	0.03	9.8980e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	2.21	1.19
tblVehicleEF	MH	5.21	1.88
tblVehicleEF	MH	1,108.90	1,463.04
tblVehicleEF	MH	57.43	17.97
tblVehicleEF	MH	1.33	1.35

tblVehicleEF	MH	0.75	0.22
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.0490e-003	2.4700e-004
tblVehicleEF	MH	3.2420e-003	3.3030e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.6500e-004	2.2700e-004
tblVehicleEF	MH	1.28	1.08
tblVehicleEF	MH	0.07	0.06
tblVehicleEF	MH	0.56	0.47
tblVehicleEF	MH	0.09	0.06
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.31	0.09
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.6500e-004	1.7800e-004
tblVehicleEF	MH	1.28	1.08
tblVehicleEF	MH	0.07	0.06
tblVehicleEF	MH	0.56	0.47
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.03	9.6320e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	2.13	1.16
tblVehicleEF	MH	5.54	2.00
tblVehicleEF	MH	1,108.90	1,462.97
tblVehicleEF	MH	57.43	18.17
tblVehicleEF	MH	1.40	1.41
tblVehicleEF	MH	0.79	0.23

tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.0490e-003	2.4700e-004
tblVehicleEF	MH	3.2420e-003	3.3030e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.6500e-004	2.2700e-004
tblVehicleEF	MH	1.05	0.88
tblVehicleEF	MH	0.08	0.07
tblVehicleEF	MH	0.43	0.36
tblVehicleEF	MH	0.09	0.06
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.32	0.09
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.7100e-004	1.8000e-004
tblVehicleEF	MH	1.05	0.88
tblVehicleEF	MH	0.08	0.07
tblVehicleEF	MH	0.43	0.36
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.35	0.10
tblVehicleEF	MHD	0.02	4.9130e-003
tblVehicleEF	MHD	4.2090e-003	5.6110e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.36	0.39
tblVehicleEF	MHD	0.33	0.51
tblVehicleEF	MHD	6.12	1.31
tblVehicleEF	MHD	141.40	56.75
tblVehicleEF	MHD	1,144.82	1,086.34
tblVehicleEF	MHD	60.68	12.86

tblVehicleEF	MHD	0.54	0.43
tblVehicleEF	MHD	1.18	1.96
tblVehicleEF	MHD	10.59	1.10
tblVehicleEF	MHD	2.3000e-004	1.4510e-003
tblVehicleEF	MHD	5.5730e-003	0.05
tblVehicleEF	MHD	7.9300e-004	1.1900e-004
tblVehicleEF	MHD	2.2000e-004	1.3880e-003
tblVehicleEF	MHD	5.3290e-003	0.05
tblVehicleEF	MHD	7.2900e-004	1.0900e-004
tblVehicleEF	MHD	1.1360e-003	4.8700e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	7.3800e-004	3.2900e-004
tblVehicleEF	MHD	0.04	0.09
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.38	0.06
tblVehicleEF	MHD	1.3610e-003	5.4000e-004
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.1400e-004	1.2700e-004
tblVehicleEF	MHD	1.1360e-003	4.8700e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.3800e-004	3.2900e-004
tblVehicleEF	MHD	0.05	0.11
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.41	0.07
tblVehicleEF	MHD	0.02	4.6520e-003
tblVehicleEF	MHD	4.2610e-003	5.6470e-003
tblVehicleEF	MHD	0.05	0.01

tblVehicleEF	MHD	0.26	0.31
tblVehicleEF	MHD	0.34	0.51
tblVehicleEF	MHD	5.83	1.25
tblVehicleEF	MHD	149.77	57.73
tblVehicleEF	MHD	1,144.82	1,086.35
tblVehicleEF	MHD	60.68	12.75
tblVehicleEF	MHD	0.56	0.43
tblVehicleEF	MHD	1.12	1.85
tblVehicleEF	MHD	10.55	1.10
tblVehicleEF	MHD	1.9400e-004	1.2250e-003
tblVehicleEF	MHD	5.5730e-003	0.05
tblVehicleEF	MHD	7.9300e-004	1.1900e-004
tblVehicleEF	MHD	1.8500e-004	1.1720e-003
tblVehicleEF	MHD	5.3290e-003	0.05
tblVehicleEF	MHD	7.2900e-004	1.0900e-004
tblVehicleEF	MHD	1.6040e-003	6.8900e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.0240e-003	4.5600e-004
tblVehicleEF	MHD	0.04	0.09
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.36	0.06
tblVehicleEF	MHD	1.4400e-003	5.5000e-004
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.0900e-004	1.2600e-004
tblVehicleEF	MHD	1.6040e-003	6.8900e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	1.0240e-003	4.5600e-004

tblVehicleEF	MHD	0.05	0.11
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.40	0.06
tblVehicleEF	MHD	0.02	5.2900e-003
tblVehicleEF	MHD	4.1930e-003	5.5990e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.50	0.50
tblVehicleEF	MHD	0.33	0.51
tblVehicleEF	MHD	6.17	1.32
tblVehicleEF	MHD	129.83	55.39
tblVehicleEF	MHD	1,144.82	1,086.34
tblVehicleEF	MHD	60.68	12.88
tblVehicleEF	MHD	0.52	0.42
tblVehicleEF	MHD	1.16	1.92
tblVehicleEF	MHD	10.60	1.10
tblVehicleEF	MHD	2.8000e-004	1.7620e-003
tblVehicleEF	MHD	5.5730e-003	0.05
tblVehicleEF	MHD	7.9300e-004	1.1900e-004
tblVehicleEF	MHD	2.6800e-004	1.6860e-003
tblVehicleEF	MHD	5.3290e-003	0.05
tblVehicleEF	MHD	7.2900e-004	1.0900e-004
tblVehicleEF	MHD	1.1820e-003	4.9800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	7.5300e-004	3.3100e-004
tblVehicleEF	MHD	0.04	0.09
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.38	0.06
tblVehicleEF	MHD	1.2520e-003	5.2700e-004

tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.1500e-004	1.2700e-004
tblVehicleEF	MHD	1.1820e-003	4.9800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.5300e-004	3.3100e-004
tblVehicleEF	MHD	0.05	0.11
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.42	0.07
tblVehicleEF	OBUS	0.01	9.0600e-003
tblVehicleEF	OBUS	8.4360e-003	9.3580e-003
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.28	0.55
tblVehicleEF	OBUS	0.58	1.01
tblVehicleEF	OBUS	5.60	2.44
tblVehicleEF	OBUS	84.68	84.33
tblVehicleEF	OBUS	1,226.51	1,422.10
tblVehicleEF	OBUS	69.78	20.28
tblVehicleEF	OBUS	0.42	0.52
tblVehicleEF	OBUS	1.44	1.85
tblVehicleEF	OBUS	2.11	0.61
tblVehicleEF	OBUS	1.4500e-004	2.0430e-003
tblVehicleEF	OBUS	7.3790e-003	0.04
tblVehicleEF	OBUS	8.3400e-004	1.9500e-004
tblVehicleEF	OBUS	1.3900e-004	1.9550e-003
tblVehicleEF	OBUS	7.0420e-003	0.03
tblVehicleEF	OBUS	7.6700e-004	1.7900e-004
tblVehicleEF	OBUS	1.4250e-003	1.8490e-003
tblVehicleEF	OBUS	0.02	0.02

tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	7.6500e-004	9.7800e-004
tblVehicleEF	OBUS	0.06	0.10
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.35	0.12
tblVehicleEF	OBUS	8.2000e-004	8.0300e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9600e-004	2.0100e-004
tblVehicleEF	OBUS	1.4250e-003	1.8490e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	7.6500e-004	9.7800e-004
tblVehicleEF	OBUS	0.07	0.12
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	OBUS	0.01	9.0790e-003
tblVehicleEF	OBUS	8.5800e-003	9.4940e-003
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.26	0.53
tblVehicleEF	OBUS	0.58	1.02
tblVehicleEF	OBUS	5.31	2.31
tblVehicleEF	OBUS	88.70	84.93
tblVehicleEF	OBUS	1,226.51	1,422.12
tblVehicleEF	OBUS	69.78	20.06
tblVehicleEF	OBUS	0.43	0.52
tblVehicleEF	OBUS	1.35	1.74
tblVehicleEF	OBUS	2.08	0.60
tblVehicleEF	OBUS	1.2200e-004	1.7270e-003
tblVehicleEF	OBUS	7.3790e-003	0.04

tblVehicleEF	OBUS	8.3400e-004	1.9500e-004
tblVehicleEF	OBUS	1.1700e-004	1.6520e-003
tblVehicleEF	OBUS	7.0420e-003	0.03
tblVehicleEF	OBUS	7.6700e-004	1.7900e-004
tblVehicleEF	OBUS	1.9610e-003	2.5310e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	1.0530e-003	1.3340e-003
tblVehicleEF	OBUS	0.06	0.10
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.34	0.11
tblVehicleEF	OBUS	8.5900e-004	8.0900e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9100e-004	1.9900e-004
tblVehicleEF	OBUS	1.9610e-003	2.5310e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	1.0530e-003	1.3340e-003
tblVehicleEF	OBUS	0.07	0.12
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.37	0.13
tblVehicleEF	OBUS	0.01	9.0540e-003
tblVehicleEF	OBUS	8.3930e-003	9.3190e-003
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.29	0.59
tblVehicleEF	OBUS	0.57	1.00
tblVehicleEF	OBUS	5.64	2.46
tblVehicleEF	OBUS	79.14	83.50
tblVehicleEF	OBUS	1,226.51	1,422.09

tblVehicleEF	OBUS	69.78	20.31
tblVehicleEF	OBUS	0.40	0.52
tblVehicleEF	OBUS	1.41	1.81
tblVehicleEF	OBUS	2.12	0.61
tblVehicleEF	OBUS	1.7600e-004	2.4810e-003
tblVehicleEF	OBUS	7.3790e-003	0.04
tblVehicleEF	OBUS	8.3400e-004	1.9500e-004
tblVehicleEF	OBUS	1.6900e-004	2.3730e-003
tblVehicleEF	OBUS	7.0420e-003	0.03
tblVehicleEF	OBUS	7.6700e-004	1.7900e-004
tblVehicleEF	OBUS	1.4580e-003	1.9070e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	7.6200e-004	9.8200e-004
tblVehicleEF	OBUS	0.06	0.10
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.36	0.12
tblVehicleEF	OBUS	7.6700e-004	7.9500e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9700e-004	2.0100e-004
tblVehicleEF	OBUS	1.4580e-003	1.9070e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	7.6200e-004	9.8200e-004
tblVehicleEF	OBUS	0.07	0.12
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	SBUS	0.87	0.07
tblVehicleEF	SBUS	0.02	0.01

tblVehicleEF	SBUS	0.09	7.1320e-003
tblVehicleEF	SBUS	8.16	2.80
tblVehicleEF	SBUS	1.19	1.03
tblVehicleEF	SBUS	9.61	1.02
tblVehicleEF	SBUS	1,131.05	356.18
tblVehicleEF	SBUS	1,090.69	1,128.82
tblVehicleEF	SBUS	54.18	5.79
tblVehicleEF	SBUS	9.79	3.82
tblVehicleEF	SBUS	4.65	6.33
tblVehicleEF	SBUS	12.50	0.55
tblVehicleEF	SBUS	0.01	6.3360e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.04
tblVehicleEF	SBUS	9.3500e-004	6.5000e-005
tblVehicleEF	SBUS	0.01	6.0620e-003
tblVehicleEF	SBUS	2.6810e-003	2.6580e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	8.6000e-004	6.0000e-005
tblVehicleEF	SBUS	3.6480e-003	1.1350e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	0.98	0.34
tblVehicleEF	SBUS	1.9360e-003	5.7500e-004
tblVehicleEF	SBUS	0.13	0.14
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.51	0.04
tblVehicleEF	SBUS	0.01	3.4000e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.0800e-004	5.7000e-005
tblVehicleEF	SBUS	3.6480e-003	1.1350e-003

tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	1.42	0.48
tblVehicleEF	SBUS	1.9360e-003	5.7500e-004
tblVehicleEF	SBUS	0.16	0.17
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.56	0.05
tblVehicleEF	SBUS	0.87	0.07
tblVehicleEF	SBUS	0.02	0.01
tblVehicleEF	SBUS	0.08	6.4080e-003
tblVehicleEF	SBUS	8.04	2.75
tblVehicleEF	SBUS	1.21	1.05
tblVehicleEF	SBUS	7.94	0.84
tblVehicleEF	SBUS	1,182.37	367.48
tblVehicleEF	SBUS	1,090.69	1,128.85
tblVehicleEF	SBUS	54.18	5.50
tblVehicleEF	SBUS	10.10	3.93
tblVehicleEF	SBUS	4.39	5.98
tblVehicleEF	SBUS	12.46	0.55
tblVehicleEF	SBUS	8.9100e-003	5.3460e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.04
tblVehicleEF	SBUS	9.3500e-004	6.5000e-005
tblVehicleEF	SBUS	8.5240e-003	5.1150e-003
tblVehicleEF	SBUS	2.6810e-003	2.6580e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	8.6000e-004	6.0000e-005
tblVehicleEF	SBUS	4.9860e-003	1.5480e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	0.98	0.34

tblVehicleEF	SBUS	2.6570e-003	7.8500e-004
tblVehicleEF	SBUS	0.13	0.14
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.46	0.04
tblVehicleEF	SBUS	0.01	3.5060e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	6.8100e-004	5.4000e-005
tblVehicleEF	SBUS	4.9860e-003	1.5480e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	1.42	0.48
tblVehicleEF	SBUS	2.6570e-003	7.8500e-004
tblVehicleEF	SBUS	0.16	0.17
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.50	0.04
tblVehicleEF	SBUS	0.87	0.07
tblVehicleEF	SBUS	0.02	0.01
tblVehicleEF	SBUS	0.09	7.2360e-003
tblVehicleEF	SBUS	8.33	2.86
tblVehicleEF	SBUS	1.18	1.03
tblVehicleEF	SBUS	9.77	1.03
tblVehicleEF	SBUS	1,060.18	340.58
tblVehicleEF	SBUS	1,090.69	1,128.81
tblVehicleEF	SBUS	54.18	5.82
tblVehicleEF	SBUS	9.36	3.67
tblVehicleEF	SBUS	4.57	6.22
tblVehicleEF	SBUS	12.51	0.55
tblVehicleEF	SBUS	0.01	7.7020e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.04

tblVehicleEF	SBUS	9.3500e-004	6.5000e-005
tblVehicleEF	SBUS	0.01	7.3690e-003
tblVehicleEF	SBUS	2.6810e-003	2.6580e-003
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	8.6000e-004	6.0000e-005
tblVehicleEF	SBUS	3.6990e-003	1.1730e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	0.99	0.34
tblVehicleEF	SBUS	1.8970e-003	5.6800e-004
tblVehicleEF	SBUS	0.13	0.14
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.51	0.04
tblVehicleEF	SBUS	0.01	3.2520e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.1100e-004	5.8000e-005
tblVehicleEF	SBUS	3.6990e-003	1.1730e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	1.42	0.48
tblVehicleEF	SBUS	1.8970e-003	5.6800e-004
tblVehicleEF	SBUS	0.16	0.17
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.56	0.05
tblVehicleEF	UBUS	1.93	1.2640e-003
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	8.96	0.09
tblVehicleEF	UBUS	13.19	1.81
tblVehicleEF	UBUS	1,828.32	438.73
tblVehicleEF	UBUS	133.38	22.76
tblVehicleEF	UBUS	4.82	0.08

tblVehicleEF	UBUS	13.49	0.24
tblVehicleEF	UBUS	0.53	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.04	9.0000e-005
tblVehicleEF	UBUS	1.1810e-003	4.0000e-005
tblVehicleEF	UBUS	0.23	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.04	8.2000e-005
tblVehicleEF	UBUS	1.0860e-003	3.6000e-005
tblVehicleEF	UBUS	6.1570e-003	2.6630e-003
tblVehicleEF	UBUS	0.10	0.03
tblVehicleEF	UBUS	3.6270e-003	1.8540e-003
tblVehicleEF	UBUS	0.53	4.2690e-003
tblVehicleEF	UBUS	0.03	7.5400e-003
tblVehicleEF	UBUS	0.96	0.15
tblVehicleEF	UBUS	8.6430e-003	4.3420e-003
tblVehicleEF	UBUS	1.5700e-003	2.2500e-004
tblVehicleEF	UBUS	6.1570e-003	2.6630e-003
tblVehicleEF	UBUS	0.10	0.03
tblVehicleEF	UBUS	3.6270e-003	1.8540e-003
tblVehicleEF	UBUS	2.52	6.2290e-003
tblVehicleEF	UBUS	0.03	7.5400e-003
tblVehicleEF	UBUS	1.05	0.16
tblVehicleEF	UBUS	1.94	1.2930e-003
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	9.02	0.09
tblVehicleEF	UBUS	11.63	1.61
tblVehicleEF	UBUS	1,828.32	438.73
tblVehicleEF	UBUS	133.38	22.40

tblVehicleEF	UBUS	4.53	0.07
tblVehicleEF	UBUS	13.42	0.23
tblVehicleEF	UBUS	0.53	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.04	9.0000e-005
tblVehicleEF	UBUS	1.1810e-003	4.0000e-005
tblVehicleEF	UBUS	0.23	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.04	8.2000e-005
tblVehicleEF	UBUS	1.0860e-003	3.6000e-005
tblVehicleEF	UBUS	8.2530e-003	3.6380e-003
tblVehicleEF	UBUS	0.10	0.03
tblVehicleEF	UBUS	4.8310e-003	2.4730e-003
tblVehicleEF	UBUS	0.53	4.3510e-003
tblVehicleEF	UBUS	0.03	6.8080e-003
tblVehicleEF	UBUS	0.89	0.14
tblVehicleEF	UBUS	8.6450e-003	4.3420e-003
tblVehicleEF	UBUS	1.5430e-003	2.2200e-004
tblVehicleEF	UBUS	8.2530e-003	3.6380e-003
tblVehicleEF	UBUS	0.10	0.03
tblVehicleEF	UBUS	4.8310e-003	2.4730e-003
tblVehicleEF	UBUS	2.53	6.3490e-003
tblVehicleEF	UBUS	0.03	6.8080e-003
tblVehicleEF	UBUS	0.98	0.15
tblVehicleEF	UBUS	1.93	1.2580e-003
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	8.95	0.09
tblVehicleEF	UBUS	13.46	1.85
tblVehicleEF	UBUS	1,828.32	438.73

tblVehicleEF	UBUS	133.38	22.82
tblVehicleEF	UBUS	4.73	0.08
tblVehicleEF	UBUS	13.51	0.24
tblVehicleEF	UBUS	0.53	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.04	9.0000e-005
tblVehicleEF	UBUS	1.1810e-003	4.0000e-005
tblVehicleEF	UBUS	0.23	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.04	8.2000e-005
tblVehicleEF	UBUS	1.0860e-003	3.6000e-005
tblVehicleEF	UBUS	6.9610e-003	2.5390e-003
tblVehicleEF	UBUS	0.12	0.03
tblVehicleEF	UBUS	3.8300e-003	1.7550e-003
tblVehicleEF	UBUS	0.52	4.2500e-003
tblVehicleEF	UBUS	0.04	9.2000e-003
tblVehicleEF	UBUS	0.98	0.15
tblVehicleEF	UBUS	8.6430e-003	4.3420e-003
tblVehicleEF	UBUS	1.5750e-003	2.2600e-004
tblVehicleEF	UBUS	6.9610e-003	2.5390e-003
tblVehicleEF	UBUS	0.12	0.03
tblVehicleEF	UBUS	3.8300e-003	1.7550e-003
tblVehicleEF	UBUS	2.52	6.2010e-003
tblVehicleEF	UBUS	0.04	9.2000e-003
tblVehicleEF	UBUS	1.07	0.16
tblVehicleTrips	DV_TP	17.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	17.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00

tblVehicleTrips	PR_TP	66.00	100.00
tblVehicleTrips	PR_TP	54.00	100.00
tblVehicleTrips	ST_TR	158.37	0.00
tblVehicleTrips	ST_TR	8.96	0.00
tblVehicleTrips	ST_TR	49.97	148.80
tblVehicleTrips	ST_TR	177.59	0.00
tblVehicleTrips	SU_TR	131.84	0.00
tblVehicleTrips	SU_TR	1.55	0.00
tblVehicleTrips	SU_TR	25.24	68.45
tblVehicleTrips	SU_TR	166.44	0.00
tblVehicleTrips	WD_TR	127.15	0.00
tblVehicleTrips	WD_TR	36.13	0.00
tblVehicleTrips	WD_TR	42.70	102.71
tblVehicleTrips	WD_TR	102.24	0.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	12,945,712.84	0.00
tblWater	IndoorWaterUseRate	200,768.86	0.00
tblWater	IndoorWaterUseRate	9,939,636.18	0.00
tblWater	IndoorWaterUseRate	5,068,041.92	30,597,544.00
tblWater	IndoorWaterUseRate	4,218,238.31	0.00
tblWater	OutdoorWaterUseRate	826,322.10	0.00
tblWater	OutdoorWaterUseRate	38,241.69	0.00
tblWater	OutdoorWaterUseRate	634,444.86	0.00
tblWater	OutdoorWaterUseRate	3,106,219.24	853,528.00
tblWater	OutdoorWaterUseRate	130,460.98	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.7170	2.1000e-004	0.0228	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0441	0.0441	1.2000e-004	0.0000	0.0471
Energy	0.0679	0.6175	0.5187	3.7100e-003		0.0469	0.0469		0.0469	0.0469	0.0000	1,802.7264	1,802.7264	0.0746	0.0251	1,812.0668
Mobile	3.0749	8.2554	38.8043	0.1202	11.6037	0.1448	11.7485	3.1032	0.1364	3.2396	0.0000	11,167.9500	11,167.9500	0.4290	0.0000	11,178.6759
Waste						0.0000	0.0000		0.0000	0.0000	160.2938	0.0000	160.2938	9.4731	0.0000	397.1212
Water						0.0000	0.0000		0.0000	0.0000	10.8255	98.3256	109.1511	0.0426	0.0247	117.5630
Total	**3.8599**	**8.8732**	**39.3458**	**0.1239**	**11.6037**	**0.1918**	**11.7955**	**3.1032**	**0.1834**	**3.2866**	**171.1193**	**13,069.0461**	**13,240.1654**	**10.0195**	**0.0497**	**13,505.4740**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.7170	2.1000e-004	0.0228	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0441	0.0441	1.2000e-004	0.0000	0.0471
Energy	0.0679	0.6175	0.5187	3.7100e-003		0.0469	0.0469		0.0469	0.0469	0.0000	1,802.7264	1,802.7264	0.0746	0.0251	1,812.0668
Mobile	3.0749	8.2554	38.8043	0.1202	11.6037	0.1448	11.7485	3.1032	0.1364	3.2396	0.0000	11,167.9500	11,167.9500	0.4290	0.0000	11,178.6759
Waste						0.0000	0.0000		0.0000	0.0000	160.2938	0.0000	160.2938	9.4731	0.0000	397.1212
Water						0.0000	0.0000		0.0000	0.0000	10.8255	98.3256	109.1511	0.0426	0.0247	117.5630
Total	**3.8599**	**8.8732**	**39.3458**	**0.1239**	**11.6037**	**0.1918**	**11.7955**	**3.1032**	**0.1834**	**3.2866**	**171.1193**	**13,069.0461**	**13,240.1654**	**10.0195**	**0.0497**	**13,505.4740**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.0749	8.2554	38.8043	0.1202	11.6037	0.1448	11.7485	3.1032	0.1364	3.2396	0.0000	11,167.9500	11,167.9500	0.4290	0.0000	11,178.6759
Unmitigated	3.0749	8.2554	38.8043	0.1202	11.6037	0.1448	11.7485	3.1032	0.1364	3.2396	0.0000	11,167.9500	11,167.9500	0.4290	0.0000	11,178.6759

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Movie Theater (No Matinee)	1,936.00	2,464.00	2035.00	6,092,081	6,092,081
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Medical Office Building	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	7,027.42	10,180.90	4683.35	24,574,817	24,574,817
Supermarket	0.00	0.00	0.00		
Total	8,963.42	12,644.90	6,718.35	30,666,898	30,666,898

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Movie Theater (No Matinee)	16.60	8.40	6.90	1.80	79.20	19.00	100	0	0
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Medical Office Building	16.60	8.40	6.90	29.60	51.40	19.00	60	30	10
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	100	0	0
Supermarket	16.60	8.40	6.90	6.50	74.50	19.00	34	30	36

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High Turnover (Sit Down Restaurant)	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Medical Office Building	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Movie Theater (No Matinee)	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Other Non-Asphalt Surfaces	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Parking Lot	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Regional Shopping Center	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Supermarket	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,130.4997	1,130.4997	0.0617	0.0128	1,135.8455
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,130.4997	1,130.4997	0.0617	0.0128	1,135.8455
NaturalGas Mitigated	0.0679	0.6175	0.5187	3.7100e-003		0.0469	0.0469		0.0469	0.0469	0.0000	672.2267	672.2267	0.0129	0.0123	676.2214
NaturalGas Unmitigated	0.0679	0.6175	0.5187	3.7100e-003		0.0469	0.0469		0.0469	0.0469	0.0000	672.2267	672.2267	0.0129	0.0123	676.2214

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High Turnover (Sit Down Restaurant)	1.1279e+007	0.0608	0.5529	0.4644	3.3200e-003		0.0420	0.0420		0.0420	0.0420	0.0000	601.8880	601.8880	0.0115	0.0110	605.4647
Medical Office Building	17284.7	9.0000e-005	8.5000e-004	7.1000e-004	1.0000e-005		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.9224	0.9224	2.0000e-005	2.0000e-005	0.9279
Movie Theater (No Matinee)	407745	2.2000e-003	0.0200	0.0168	1.2000e-004		1.5200e-003	1.5200e-003		1.5200e-003	1.5200e-003	0.0000	21.7588	21.7588	4.2000e-004	4.0000e-004	21.8881
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	144356	7.8000e-004	7.0800e-003	5.9400e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.7034	7.7034	1.5000e-004	1.4000e-004	7.7491
Supermarket	748712	4.0400e-003	0.0367	0.0308	2.2000e-004		2.7900e-003	2.7900e-003		2.7900e-003	2.7900e-003	0.0000	39.9541	39.9541	7.7000e-004	7.3000e-004	40.1915
Total		**0.0679**	**0.6175**	**0.5187**	**3.7100e-003**		**0.0469**	**0.0469**		**0.0469**	**0.0469**	**0.0000**	**672.2267**	**672.2267**	**0.0129**	**0.0123**	**676.2214**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High Turnover (Sit Down Restaurant)	1.1279e+007	0.0608	0.5529	0.4644	3.3200e-003		0.0420	0.0420		0.0420	0.0420	0.0000	601.8880	601.8880	0.0115	0.0110	605.4647
Medical Office Building	17284.7	9.0000e-005	8.5000e-004	7.1000e-004	1.0000e-005		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.9224	0.9224	2.0000e-005	2.0000e-005	0.9279

Movie Theater (No Matinee)	407745	2.2000e-003	0.0200	0.0168	1.2000e-004		1.5200e-003	1.5200e-003		1.5200e-003	1.5200e-003	0.0000	21.7588	21.7588	4.2000e-004	4.0000e-004	21.8881
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	144356	7.8000e-004	7.0800e-003	5.9400e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.7034	7.7034	1.5000e-004	1.4000e-004	7.7491
Supermarket	748712	4.0400e-003	0.0367	0.0308	2.2000e-004		2.7900e-003	2.7900e-003		2.7900e-003	2.7900e-003	0.0000	39.9541	39.9541	7.7000e-004	7.3000e-004	40.1915
Total		**0.0679**	**0.6175**	**0.5187**	**3.7100e-003**		**0.0469**	**0.0469**		**0.0469**	**0.0469**	**0.0000**	**672.2267**	**672.2267**	**0.0129**	**0.0123**	**676.2214**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High Turnover (Sit Down Restaurant)	1.7307e+006	417.1967	0.0228	4.7100e-003	419.1695
Medical Office Building	26142.5	6.3018	3.4000e-004	7.0000e-005	6.3316
Movie Theater (No Matinee)	178043	42.9184	2.3400e-003	4.8000e-004	43.1214
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	409816	98.7891	5.3900e-003	1.1200e-003	99.2562
Regional Shopping Center	919498	221.6515	0.0121	2.5000e-003	222.6996
Supermarket	1.42556e+006	343.6423	0.0188	3.8800e-003	345.2672
Total		**1,130.4997**	**0.0617**	**0.0128**	**1,135.8455**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High Turnover (Sit Down Restaurant)	1.7307e+006	417.1967	0.0228	4.7100e-003	419.1695
Medical Office Building	26142.5	6.3018	3.4000e-004	7.0000e-005	6.3316
Movie Theater (No Matinee)	178043	42.9184	2.3400e-003	4.8000e-004	43.1214
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	409816	98.7891	5.3900e-003	1.1200e-003	99.2562
Regional Shopping Center	919498	221.6515	0.0121	2.5000e-003	222.6996
Supermarket	1.42556e+006	343.6423	0.0188	3.8800e-003	345.2672
Total		**1,130.4997**	**0.0617**	**0.0128**	**1,135.8455**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.7170	2.1000e-004	0.0228	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0441	0.0441	1.2000e-004	0.0000	0.0471
Unmitigated	0.7170	2.1000e-004	0.0228	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0441	0.0441	1.2000e-004	0.0000	0.0471

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0831					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6318					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.1300e-003	2.1000e-004	0.0228	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0441	0.0441	1.2000e-004	0.0000	0.0471
Total	**0.7170**	**2.1000e-004**	**0.0228**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**0.0441**	**0.0441**	**1.2000e-004**	**0.0000**	**0.0471**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0831					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6318					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.1300e-003	2.1000e-004	0.0228	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0441	0.0441	1.2000e-004	0.0000	0.0471
Total	**0.7170**	**2.1000e-004**	**0.0228**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**0.0441**	**0.0441**	**1.2000e-004**	**0.0000**	**0.0471**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	109.1511	0.0426	0.0247	117.5630
Unmitigated	109.1511	0.0426	0.0247	117.5630

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High Turnover (Sit Down Restaurant)	0 / 0	0.0000	0.0000	0.0000	0.0000
Medical Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
Movie Theater (No Matinee)	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	30.5975 / 0.853528	109.1511	0.0426	0.0247	117.5630
Supermarket	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**109.1511**	**0.0426**	**0.0247**	**117.5630**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High Turnover (Sit Down Restaurant)	0 / 0	0.0000	0.0000	0.0000	0.0000
Medical Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
Movie Theater (No Matinee)	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	30.5975 / 0.853528	109.1511	0.0426	0.0247	117.5630
Supermarket	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**109.1511**	**0.0426**	**0.0247**	**117.5630**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	160.2938	9.4731	0.0000	397.1212
Unmitigated	160.2938	9.4731	0.0000	397.1212

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High Turnover (Sit Down Restaurant)	507.54	103.0260	6.0887	0.0000	255.2426
Medical Office Building	17.28	3.5077	0.2073	0.0000	8.6901
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	71.84	14.5829	0.8618	0.0000	36.1285
Supermarket	193	39.1773	2.3153	0.0000	97.0600
Total		**160.2938**	**9.4731**	**0.0000**	**397.1212**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High Turnover (Sit Down Restaurant)	507.54	103.0260	6.0887	0.0000	255.2426
Medical Office Building	17.28	3.5077	0.2073	0.0000	8.6901
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	71.84	14.5829	0.8618	0.0000	36.1285
Supermarket	193	39.1773	2.3153	0.0000	97.0600
Total		**160.2938**	**9.4731**	**0.0000**	**397.1212**

CalEEMod Operations Model

Brea Plaza Expansion Project Operations

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	21.36	1000sqft	0.49	21,355.00	0
Medical Office Building	1.60	1000sqft	0.04	1,596.00	0
Enclosed Parking with Elevator	182.11	1000sqft	1.39	182,108.00	0
Other Asphalt Surfaces	13.77	1000sqft	0.32	13,774.00	0
Other Non-Asphalt Surfaces	65.93	1000sqft	1.51	65,931.00	0
Parking Lot	388.32	1000sqft	8.91	388,318.00	0
High Turnover (Sit Down Restaurant)	42.65	1000sqft	0.98	42,649.00	0
Apartments Mid Rise	229.00	Dwelling Unit	0.00	241,718.00	655
Regional Shopping Center	68.42	1000sqft	1.57	68,415.00	0
Supermarket	34.22	1000sqft	0.79	34,219.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	531.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustainability Report

Land Use - based on info from applicant

Construction Phase -

Vehicle Trips - based on info from LLG, see assumptions file for calculations

Vehicle Emission Factors - EMFAC2017 adjustment

Woodstoves - assumes 6 grills and 3 fire pits to be used on weekends

Area Coating - based on info from applicant: residential accounts for 60% ext coating, nonres accounts for coating of parking structure, parking assumes parking area only

Energy Use - assumes existing uses use historical data, new uses adjusted based on NORESCO study. See assumptions file for calculations

Water And Wastewater - assigned all water use to regional shopping center, based on info from sewer study. Assumes 100% aerobic treatment

Solid Waste -

Fleet Mix - see fleet mix adjustment in assumptions file

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	84117	167163
tblAreaCoating	Area_Nonresidential_Interior	252351	320642
tblAreaCoating	Area_Parking	39008	34226
tblAreaCoating	Area_Residential_Exterior	163160	97896
tblEnergyUse	LightingElect	2.63	1.75
tblEnergyUse	LightingElect	5.27	4.34
tblEnergyUse	NT24E	2,555.58	3,054.10
tblEnergyUse	NT24NG	1,662.00	5,516.00
tblEnergyUse	T24E	226.43	176.17
tblEnergyUse	T24E	3.92	3.50
tblEnergyUse	T24E	6.17	4.21
tblEnergyUse	T24NG	7,475.05	5,615.89
tblEnergyUse	T24NG	10.28	8.50
tblFireplaces	FireplaceDayYear	25.00	104.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00

tblFireplaces	NumberGas	194.65	9.00
tblFireplaces	NumberNoFireplace	22.90	220.00
tblFireplaces	NumberWood	11.45	0.00
tblFleetMix	HHD	0.02	2.7060e-003
tblFleetMix	LDA	0.57	0.67
tblFleetMix	LDT1	0.04	0.05
tblFleetMix	LDT2	0.21	0.25
tblFleetMix	LHD1	0.01	2.2070e-003
tblFleetMix	LHD2	5.7730e-003	8.7600e-004
tblFleetMix	MCY	4.9530e-003	6.1330e-003
tblFleetMix	MDV	0.11	0.02
tblFleetMix	MH	8.7700e-004	1.3300e-004
tblFleetMix	MHD	0.03	3.9870e-003
tblFleetMix	OBUS	1.7920e-003	0.00
tblFleetMix	SBUS	6.0200e-004	9.1000e-005
tblFleetMix	UBUS	1.5090e-003	0.00
tblLandUse	LandUseSquareFeet	21,360.00	21,355.00
tblLandUse	LandUseSquareFeet	1,600.00	1,596.00
tblLandUse	LandUseSquareFeet	182,110.00	182,108.00
tblLandUse	LandUseSquareFeet	13,770.00	13,774.00
tblLandUse	LandUseSquareFeet	65,930.00	65,931.00
tblLandUse	LandUseSquareFeet	388,320.00	388,318.00
tblLandUse	LandUseSquareFeet	42,650.00	42,649.00
tblLandUse	LandUseSquareFeet	229,000.00	241,718.00
tblLandUse	LandUseSquareFeet	68,420.00	68,415.00
tblLandUse	LandUseSquareFeet	34,220.00	34,219.00
tblLandUse	LotAcreage	4.18	1.39
tblLandUse	LotAcreage	6.03	0.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	531.44

tblVehicleEF	HHD	0.44	0.03
tblVehicleEF	HHD	0.16	0.15
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.47	6.07
tblVehicleEF	HHD	1.26	0.64
tblVehicleEF	HHD	4.25	0.01
tblVehicleEF	HHD	3,818.18	1,012.56
tblVehicleEF	HHD	1,584.91	1,373.65
tblVehicleEF	HHD	13.84	0.08
tblVehicleEF	HHD	12.98	5.26
tblVehicleEF	HHD	1.77	2.42
tblVehicleEF	HHD	19.03	2.48
tblVehicleEF	HHD	0.01	2.9540e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	6.0110e-003	0.02
tblVehicleEF	HHD	1.3200e-004	1.0000e-006
tblVehicleEF	HHD	0.01	2.8260e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6690e-003	8.7620e-003
tblVehicleEF	HHD	5.7510e-003	0.02
tblVehicleEF	HHD	1.2100e-004	1.0000e-006
tblVehicleEF	HHD	1.1600e-004	4.0000e-006
tblVehicleEF	HHD	4.7330e-003	1.5600e-004
tblVehicleEF	HHD	0.35	0.40
tblVehicleEF	HHD	8.9000e-005	3.0000e-006
tblVehicleEF	HHD	0.08	0.03
tblVehicleEF	HHD	4.2800e-004	6.3000e-005
tblVehicleEF	HHD	0.09	4.0000e-006

tblVehicleEF	HHD	0.03	9.2460e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0800e-004	1.0000e-006
tblVehicleEF	HHD	1.1600e-004	4.0000e-006
tblVehicleEF	HHD	4.7330e-003	1.5600e-004
tblVehicleEF	HHD	0.43	0.47
tblVehicleEF	HHD	8.9000e-005	3.0000e-006
tblVehicleEF	HHD	0.25	0.17
tblVehicleEF	HHD	4.2800e-004	6.3000e-005
tblVehicleEF	HHD	0.09	4.0000e-006
tblVehicleEF	HHD	0.42	0.03
tblVehicleEF	HHD	0.16	0.15
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.07	5.98
tblVehicleEF	HHD	1.27	0.64
tblVehicleEF	HHD	4.05	9.6240e-003
tblVehicleEF	HHD	4,045.03	1,001.49
tblVehicleEF	HHD	1,584.91	1,373.65
tblVehicleEF	HHD	13.84	0.08
tblVehicleEF	HHD	13.40	5.04
tblVehicleEF	HHD	1.67	2.30
tblVehicleEF	HHD	19.02	2.48
tblVehicleEF	HHD	9.0000e-003	2.5700e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	6.0110e-003	0.02
tblVehicleEF	HHD	1.3200e-004	1.0000e-006
tblVehicleEF	HHD	8.6100e-003	2.4590e-003
tblVehicleEF	HHD	0.03	0.03

tblVehicleEF	HHD	8.6690e-003	8.7620e-003
tblVehicleEF	HHD	5.7510e-003	0.02
tblVehicleEF	HHD	1.2100e-004	1.0000e-006
tblVehicleEF	HHD	1.6500e-004	5.0000e-006
tblVehicleEF	HHD	4.8270e-003	1.5800e-004
tblVehicleEF	HHD	0.33	0.43
tblVehicleEF	HHD	1.2300e-004	4.0000e-006
tblVehicleEF	HHD	0.08	0.03
tblVehicleEF	HHD	4.1200e-004	6.1000e-005
tblVehicleEF	HHD	0.08	4.0000e-006
tblVehicleEF	HHD	0.04	9.1420e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0400e-004	1.0000e-006
tblVehicleEF	HHD	1.6500e-004	5.0000e-006
tblVehicleEF	HHD	4.8270e-003	1.5800e-004
tblVehicleEF	HHD	0.41	0.50
tblVehicleEF	HHD	1.2300e-004	4.0000e-006
tblVehicleEF	HHD	0.26	0.17
tblVehicleEF	HHD	4.1200e-004	6.1000e-005
tblVehicleEF	HHD	0.09	4.0000e-006
tblVehicleEF	HHD	0.48	0.02
tblVehicleEF	HHD	0.16	8.8800e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	2.03	6.01
tblVehicleEF	HHD	1.26	0.21
tblVehicleEF	HHD	4.29	0.01
tblVehicleEF	HHD	3,504.93	993.90
tblVehicleEF	HHD	1,584.91	1,270.38
tblVehicleEF	HHD	13.84	0.08

tblVehicleEF	HHD	12.41	5.37
tblVehicleEF	HHD	1.74	2.32
tblVehicleEF	HHD	19.03	2.48
tblVehicleEF	HHD	0.01	3.1440e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	6.0110e-003	0.02
tblVehicleEF	HHD	1.3200e-004	1.0000e-006
tblVehicleEF	HHD	0.01	3.0080e-003
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	8.6690e-003	8.4790e-003
tblVehicleEF	HHD	5.7510e-003	0.02
tblVehicleEF	HHD	1.2100e-004	1.0000e-006
tblVehicleEF	HHD	1.1300e-004	4.0000e-006
tblVehicleEF	HHD	5.0410e-003	1.7200e-004
tblVehicleEF	HHD	0.38	0.37
tblVehicleEF	HHD	8.9000e-005	3.0000e-006
tblVehicleEF	HHD	0.08	0.02
tblVehicleEF	HHD	4.6700e-004	6.7000e-005
tblVehicleEF	HHD	0.09	4.0000e-006
tblVehicleEF	HHD	0.03	9.3900e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0800e-004	1.0000e-006
tblVehicleEF	HHD	1.1300e-004	4.0000e-006
tblVehicleEF	HHD	5.0410e-003	1.7200e-004
tblVehicleEF	HHD	0.46	0.42
tblVehicleEF	HHD	8.9000e-005	3.0000e-006
tblVehicleEF	HHD	0.25	0.02
tblVehicleEF	HHD	4.6700e-004	6.7000e-005

tblVehicleEF	HHD	0.09	4.0000e-006
tblVehicleEF	LDA	3.2540e-003	1.8160e-003
tblVehicleEF	LDA	3.5200e-003	0.04
tblVehicleEF	LDA	0.48	0.55
tblVehicleEF	LDA	0.84	1.93
tblVehicleEF	LDA	231.86	246.35
tblVehicleEF	LDA	51.83	50.40
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.15
tblVehicleEF	LDA	1.8000e-003	1.4320e-003
tblVehicleEF	LDA	2.2330e-003	1.6850e-003
tblVehicleEF	LDA	1.6580e-003	1.3180e-003
tblVehicleEF	LDA	2.0530e-003	1.5490e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	8.1920e-003	6.5890e-003
tblVehicleEF	LDA	0.04	0.02
tblVehicleEF	LDA	0.05	0.17
tblVehicleEF	LDA	2.3210e-003	2.3880e-003
tblVehicleEF	LDA	5.3200e-004	4.8900e-004
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	9.5740e-003
tblVehicleEF	LDA	0.04	0.02
tblVehicleEF	LDA	0.05	0.19
tblVehicleEF	LDA	3.4390e-003	1.9350e-003
tblVehicleEF	LDA	3.1700e-003	0.04

tblVehicleEF	LDA	0.52	0.60
tblVehicleEF	LDA	0.73	1.66
tblVehicleEF	LDA	241.58	256.41
tblVehicleEF	LDA	51.83	49.92
tblVehicleEF	LDA	0.03	0.02
tblVehicleEF	LDA	0.04	0.14
tblVehicleEF	LDA	1.8000e-003	1.4320e-003
tblVehicleEF	LDA	2.2330e-003	1.6850e-003
tblVehicleEF	LDA	1.6580e-003	1.3180e-003
tblVehicleEF	LDA	2.0530e-003	1.5490e-003
tblVehicleEF	LDA	0.04	0.06
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	8.6510e-003	6.9570e-003
tblVehicleEF	LDA	0.03	0.02
tblVehicleEF	LDA	0.04	0.16
tblVehicleEF	LDA	2.4190e-003	2.4850e-003
tblVehicleEF	LDA	5.3000e-004	4.8400e-004
tblVehicleEF	LDA	0.04	0.06
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.03	0.02
tblVehicleEF	LDA	0.05	0.17
tblVehicleEF	LDA	3.1920e-003	1.7790e-003
tblVehicleEF	LDA	3.5920e-003	0.04
tblVehicleEF	LDA	0.47	0.53
tblVehicleEF	LDA	0.87	1.98
tblVehicleEF	LDA	228.27	242.64

tblVehicleEF	LDA	51.83	50.51
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.16
tblVehicleEF	LDA	1.8000e-003	1.4320e-003
tblVehicleEF	LDA	2.2330e-003	1.6850e-003
tblVehicleEF	LDA	1.6580e-003	1.3180e-003
tblVehicleEF	LDA	2.0530e-003	1.5490e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	8.0370e-003	6.4650e-003
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.18
tblVehicleEF	LDA	2.2850e-003	2.3520e-003
tblVehicleEF	LDA	5.3300e-004	4.9000e-004
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	9.3940e-003
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.19
tblVehicleEF	LDT1	7.2360e-003	4.1470e-003
tblVehicleEF	LDT1	9.9520e-003	0.06
tblVehicleEF	LDT1	0.92	0.93
tblVehicleEF	LDT1	2.03	2.10
tblVehicleEF	LDT1	292.62	293.91
tblVehicleEF	LDT1	65.95	61.09
tblVehicleEF	LDT1	0.08	0.07
tblVehicleEF	LDT1	0.12	0.21

tblVehicleEF	LDT1	2.2960e-003	1.8510e-003
tblVehicleEF	LDT1	2.9420e-003	2.1800e-003
tblVehicleEF	LDT1	2.1130e-003	1.7030e-003
tblVehicleEF	LDT1	2.7050e-003	2.0050e-003
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.21	0.16
tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.14	0.07
tblVehicleEF	LDT1	0.13	0.27
tblVehicleEF	LDT1	2.9360e-003	2.8490e-003
tblVehicleEF	LDT1	6.9500e-004	5.9200e-004
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.21	0.16
tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.14	0.07
tblVehicleEF	LDT1	0.15	0.29
tblVehicleEF	LDT1	7.6070e-003	4.3890e-003
tblVehicleEF	LDT1	8.9270e-003	0.05
tblVehicleEF	LDT1	0.99	1.01
tblVehicleEF	LDT1	1.75	1.81
tblVehicleEF	LDT1	304.46	304.24
tblVehicleEF	LDT1	65.95	60.53
tblVehicleEF	LDT1	0.07	0.06
tblVehicleEF	LDT1	0.11	0.20
tblVehicleEF	LDT1	2.2960e-003	1.8510e-003
tblVehicleEF	LDT1	2.9420e-003	2.1800e-003
tblVehicleEF	LDT1	2.1130e-003	1.7030e-003

tblVehicleEF	LDT1	2.7050e-003	2.0050e-003
tblVehicleEF	LDT1	0.14	0.14
tblVehicleEF	LDT1	0.22	0.16
tblVehicleEF	LDT1	0.12	0.12
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.13	0.06
tblVehicleEF	LDT1	0.12	0.24
tblVehicleEF	LDT1	3.0550e-003	2.9500e-003
tblVehicleEF	LDT1	6.9000e-004	5.8700e-004
tblVehicleEF	LDT1	0.14	0.14
tblVehicleEF	LDT1	0.22	0.16
tblVehicleEF	LDT1	0.12	0.12
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.13	0.06
tblVehicleEF	LDT1	0.13	0.26
tblVehicleEF	LDT1	7.1090e-003	4.0700e-003
tblVehicleEF	LDT1	0.01	0.06
tblVehicleEF	LDT1	0.89	0.90
tblVehicleEF	LDT1	2.09	2.16
tblVehicleEF	LDT1	288.25	290.09
tblVehicleEF	LDT1	65.95	61.21
tblVehicleEF	LDT1	0.08	0.07
tblVehicleEF	LDT1	0.12	0.21
tblVehicleEF	LDT1	2.2960e-003	1.8510e-003
tblVehicleEF	LDT1	2.9420e-003	2.1800e-003
tblVehicleEF	LDT1	2.1130e-003	1.7030e-003
tblVehicleEF	LDT1	2.7050e-003	2.0050e-003
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.24	0.17

tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.14	0.27
tblVehicleEF	LDT1	2.8920e-003	2.8120e-003
tblVehicleEF	LDT1	6.9600e-004	5.9300e-004
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.24	0.17
tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.15	0.30
tblVehicleEF	LDT2	4.5940e-003	2.9810e-003
tblVehicleEF	LDT2	4.8100e-003	0.06
tblVehicleEF	LDT2	0.64	0.74
tblVehicleEF	LDT2	1.11	2.45
tblVehicleEF	LDT2	329.48	312.71
tblVehicleEF	LDT2	73.66	65.44
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.08	0.22
tblVehicleEF	LDT2	1.8470e-003	1.4660e-003
tblVehicleEF	LDT2	2.3090e-003	1.6630e-003
tblVehicleEF	LDT2	1.6990e-003	1.3500e-003
tblVehicleEF	LDT2	2.1230e-003	1.5290e-003
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.05	0.05

tblVehicleEF	LDT2	0.06	0.25
tblVehicleEF	LDT2	3.2990e-003	3.0310e-003
tblVehicleEF	LDT2	7.5500e-004	6.3400e-004
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.07	0.27
tblVehicleEF	LDT2	4.8530e-003	3.1670e-003
tblVehicleEF	LDT2	4.3330e-003	0.05
tblVehicleEF	LDT2	0.69	0.80
tblVehicleEF	LDT2	0.96	2.11
tblVehicleEF	LDT2	342.98	322.65
tblVehicleEF	LDT2	73.66	64.81
tblVehicleEF	LDT2	0.05	0.04
tblVehicleEF	LDT2	0.07	0.21
tblVehicleEF	LDT2	1.8470e-003	1.4660e-003
tblVehicleEF	LDT2	2.3090e-003	1.6630e-003
tblVehicleEF	LDT2	1.6990e-003	1.3500e-003
tblVehicleEF	LDT2	2.1230e-003	1.5290e-003
tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.05	0.04
tblVehicleEF	LDT2	0.06	0.23
tblVehicleEF	LDT2	3.4350e-003	3.1280e-003
tblVehicleEF	LDT2	7.5200e-004	6.2800e-004

tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.05	0.04
tblVehicleEF	LDT2	0.06	0.25
tblVehicleEF	LDT2	4.5070e-003	2.9220e-003
tblVehicleEF	LDT2	4.9080e-003	0.06
tblVehicleEF	LDT2	0.62	0.72
tblVehicleEF	LDT2	1.14	2.52
tblVehicleEF	LDT2	324.49	309.04
tblVehicleEF	LDT2	73.66	65.58
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.08	0.23
tblVehicleEF	LDT2	1.8470e-003	1.4660e-003
tblVehicleEF	LDT2	2.3090e-003	1.6630e-003
tblVehicleEF	LDT2	1.6990e-003	1.3500e-003
tblVehicleEF	LDT2	2.1230e-003	1.5290e-003
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.09	0.12
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.07	0.26
tblVehicleEF	LDT2	3.2490e-003	2.9960e-003
tblVehicleEF	LDT2	7.5500e-004	6.3600e-004
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.09	0.12
tblVehicleEF	LDT2	0.04	0.07

tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.07	0.28
tblVehicleEF	LHD1	4.8760e-003	5.1790e-003
tblVehicleEF	LHD1	7.3850e-003	3.6570e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	0.58	0.42
tblVehicleEF	LHD1	2.05	0.96
tblVehicleEF	LHD1	9.05	8.87
tblVehicleEF	LHD1	582.71	633.58
tblVehicleEF	LHD1	30.08	11.39
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.97	0.58
tblVehicleEF	LHD1	0.88	0.30
tblVehicleEF	LHD1	8.7700e-004	8.3800e-004
tblVehicleEF	LHD1	0.01	9.8000e-003
tblVehicleEF	LHD1	9.4650e-003	6.3810e-003
tblVehicleEF	LHD1	7.7100e-004	2.2200e-004
tblVehicleEF	LHD1	8.3900e-004	8.0200e-004
tblVehicleEF	LHD1	2.5630e-003	2.4500e-003
tblVehicleEF	LHD1	9.0360e-003	6.0820e-003
tblVehicleEF	LHD1	7.0900e-004	2.0400e-004
tblVehicleEF	LHD1	2.4720e-003	1.8820e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.6210e-003	1.2380e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.26	0.15

tblVehicleEF	LHD1	0.21	0.06
tblVehicleEF	LHD1	9.0000e-005	8.6000e-005
tblVehicleEF	LHD1	5.7060e-003	6.1790e-003
tblVehicleEF	LHD1	3.3900e-004	1.1300e-004
tblVehicleEF	LHD1	2.4720e-003	1.8820e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.6210e-003	1.2380e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.26	0.15
tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD1	4.8760e-003	5.1900e-003
tblVehicleEF	LHD1	7.5120e-003	3.7120e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	0.59	0.42
tblVehicleEF	LHD1	1.97	0.92
tblVehicleEF	LHD1	9.05	8.87
tblVehicleEF	LHD1	582.71	633.59
tblVehicleEF	LHD1	30.08	11.32
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.92	0.55
tblVehicleEF	LHD1	0.84	0.28
tblVehicleEF	LHD1	8.7700e-004	8.3800e-004
tblVehicleEF	LHD1	0.01	9.8000e-003
tblVehicleEF	LHD1	9.4650e-003	6.3810e-003
tblVehicleEF	LHD1	7.7100e-004	2.2200e-004
tblVehicleEF	LHD1	8.3900e-004	8.0200e-004
tblVehicleEF	LHD1	2.5630e-003	2.4500e-003

tblVehicleEF	LHD1	9.0360e-003	6.0820e-003
tblVehicleEF	LHD1	7.0900e-004	2.0400e-004
tblVehicleEF	LHD1	3.4440e-003	2.6310e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.1800e-003	1.6730e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.25	0.14
tblVehicleEF	LHD1	0.20	0.06
tblVehicleEF	LHD1	9.0000e-005	8.6000e-005
tblVehicleEF	LHD1	5.7070e-003	6.1790e-003
tblVehicleEF	LHD1	3.3800e-004	1.1200e-004
tblVehicleEF	LHD1	3.4440e-003	2.6310e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	2.1800e-003	1.6730e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.25	0.14
tblVehicleEF	LHD1	0.22	0.07
tblVehicleEF	LHD1	4.8760e-003	5.1770e-003
tblVehicleEF	LHD1	7.3500e-003	3.6420e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	0.58	0.41
tblVehicleEF	LHD1	2.06	0.97
tblVehicleEF	LHD1	9.05	8.87
tblVehicleEF	LHD1	582.71	633.58
tblVehicleEF	LHD1	30.08	11.40
tblVehicleEF	LHD1	0.08	0.06

tblVehicleEF	LHD1	0.96	0.57
tblVehicleEF	LHD1	0.89	0.30
tblVehicleEF	LHD1	8.7700e-004	8.3800e-004
tblVehicleEF	LHD1	0.01	9.8000e-003
tblVehicleEF	LHD1	9.4650e-003	6.3810e-003
tblVehicleEF	LHD1	7.7100e-004	2.2200e-004
tblVehicleEF	LHD1	8.3900e-004	8.0200e-004
tblVehicleEF	LHD1	2.5630e-003	2.4500e-003
tblVehicleEF	LHD1	9.0360e-003	6.0820e-003
tblVehicleEF	LHD1	7.0900e-004	2.0400e-004
tblVehicleEF	LHD1	2.5350e-003	1.9320e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.6290e-003	1.2470e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.29	0.16
tblVehicleEF	LHD1	0.21	0.06
tblVehicleEF	LHD1	9.0000e-005	8.6000e-005
tblVehicleEF	LHD1	5.7060e-003	6.1790e-003
tblVehicleEF	LHD1	3.4000e-004	1.1300e-004
tblVehicleEF	LHD1	2.5350e-003	1.9320e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.6290e-003	1.2470e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.29	0.16
tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD2	3.5130e-003	3.7120e-003
tblVehicleEF	LHD2	3.0250e-003	2.8570e-003

tblVehicleEF	LHD2	6.4370e-003	9.0450e-003
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.27	0.31
tblVehicleEF	LHD2	1.11	0.65
tblVehicleEF	LHD2	13.66	13.46
tblVehicleEF	LHD2	600.10	642.40
tblVehicleEF	LHD2	25.96	8.94
tblVehicleEF	LHD2	0.09	0.08
tblVehicleEF	LHD2	0.55	0.66
tblVehicleEF	LHD2	0.47	0.21
tblVehicleEF	LHD2	1.1390e-003	1.2800e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.3740e-003	9.6040e-003
tblVehicleEF	LHD2	3.9500e-004	1.2800e-004
tblVehicleEF	LHD2	1.0900e-003	1.2250e-003
tblVehicleEF	LHD2	2.6730e-003	2.6460e-003
tblVehicleEF	LHD2	7.9990e-003	9.1750e-003
tblVehicleEF	LHD2	3.6300e-004	1.1800e-004
tblVehicleEF	LHD2	9.0300e-004	1.2060e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	6.4300e-004	8.2300e-004
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.06	0.09
tblVehicleEF	LHD2	0.09	0.04
tblVehicleEF	LHD2	1.3300e-004	1.2900e-004
tblVehicleEF	LHD2	5.8410e-003	6.2140e-003
tblVehicleEF	LHD2	2.7900e-004	8.9000e-005
tblVehicleEF	LHD2	9.0300e-004	1.2060e-003

tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	6.4300e-004	8.2300e-004
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.06	0.09
tblVehicleEF	LHD2	0.10	0.05
tblVehicleEF	LHD2	3.5130e-003	3.7190e-003
tblVehicleEF	LHD2	3.0530e-003	2.8800e-003
tblVehicleEF	LHD2	6.2440e-003	8.7610e-003
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.27	0.31
tblVehicleEF	LHD2	1.06	0.62
tblVehicleEF	LHD2	13.66	13.46
tblVehicleEF	LHD2	600.10	642.40
tblVehicleEF	LHD2	25.96	8.90
tblVehicleEF	LHD2	0.09	0.08
tblVehicleEF	LHD2	0.52	0.62
tblVehicleEF	LHD2	0.45	0.20
tblVehicleEF	LHD2	1.1390e-003	1.2800e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.3740e-003	9.6040e-003
tblVehicleEF	LHD2	3.9500e-004	1.2800e-004
tblVehicleEF	LHD2	1.0900e-003	1.2250e-003
tblVehicleEF	LHD2	2.6730e-003	2.6460e-003
tblVehicleEF	LHD2	7.9990e-003	9.1750e-003
tblVehicleEF	LHD2	3.6300e-004	1.1800e-004
tblVehicleEF	LHD2	1.2670e-003	1.6890e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.01	0.02

tblVehicleEF	LHD2	8.6800e-004	1.1130e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.08	0.04
tblVehicleEF	LHD2	1.3300e-004	1.2900e-004
tblVehicleEF	LHD2	5.8410e-003	6.2140e-003
tblVehicleEF	LHD2	2.7900e-004	8.8000e-005
tblVehicleEF	LHD2	1.2670e-003	1.6890e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	8.6800e-004	1.1130e-003
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.09	0.05
tblVehicleEF	LHD2	3.5130e-003	3.7100e-003
tblVehicleEF	LHD2	3.0170e-003	2.8500e-003
tblVehicleEF	LHD2	6.4770e-003	9.1040e-003
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.27	0.31
tblVehicleEF	LHD2	1.11	0.65
tblVehicleEF	LHD2	13.66	13.46
tblVehicleEF	LHD2	600.10	642.39
tblVehicleEF	LHD2	25.96	8.95
tblVehicleEF	LHD2	0.09	0.08
tblVehicleEF	LHD2	0.54	0.65
tblVehicleEF	LHD2	0.47	0.21
tblVehicleEF	LHD2	1.1390e-003	1.2800e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.3740e-003	9.6040e-003

tblVehicleEF	LHD2	3.9500e-004	1.2800e-004
tblVehicleEF	LHD2	1.0900e-003	1.2250e-003
tblVehicleEF	LHD2	2.6730e-003	2.6460e-003
tblVehicleEF	LHD2	7.9990e-003	9.1750e-003
tblVehicleEF	LHD2	3.6300e-004	1.1800e-004
tblVehicleEF	LHD2	8.9600e-004	1.2110e-003
tblVehicleEF	LHD2	0.03	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	6.3600e-004	8.1400e-004
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.09	0.04
tblVehicleEF	LHD2	1.3300e-004	1.2900e-004
tblVehicleEF	LHD2	5.8410e-003	6.2140e-003
tblVehicleEF	LHD2	2.8000e-004	8.9000e-005
tblVehicleEF	LHD2	8.9600e-004	1.2110e-003
tblVehicleEF	LHD2	0.03	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	6.3600e-004	8.1400e-004
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.10	0.05
tblVehicleEF	MCY	0.49	0.35
tblVehicleEF	MCY	0.15	0.23
tblVehicleEF	MCY	17.95	18.16
tblVehicleEF	MCY	9.61	8.50
tblVehicleEF	MCY	178.67	214.64
tblVehicleEF	MCY	44.17	59.14
tblVehicleEF	MCY	1.11	1.12

tblVehicleEF	MCY	0.31	0.26
tblVehicleEF	MCY	2.2470e-003	2.2320e-003
tblVehicleEF	MCY	3.4860e-003	2.9930e-003
tblVehicleEF	MCY	2.0980e-003	2.0840e-003
tblVehicleEF	MCY	3.2740e-003	2.8100e-003
tblVehicleEF	MCY	1.12	1.15
tblVehicleEF	MCY	0.65	0.68
tblVehicleEF	MCY	0.69	0.70
tblVehicleEF	MCY	2.34	2.35
tblVehicleEF	MCY	0.60	0.53
tblVehicleEF	MCY	2.02	1.79
tblVehicleEF	MCY	2.1510e-003	2.1240e-003
tblVehicleEF	MCY	6.5800e-004	5.8500e-004
tblVehicleEF	MCY	1.12	1.15
tblVehicleEF	MCY	0.65	0.68
tblVehicleEF	MCY	0.69	0.70
tblVehicleEF	MCY	2.92	2.93
tblVehicleEF	MCY	0.60	0.53
tblVehicleEF	MCY	2.20	1.95
tblVehicleEF	MCY	0.48	0.34
tblVehicleEF	MCY	0.13	0.21
tblVehicleEF	MCY	17.31	17.50
tblVehicleEF	MCY	8.84	7.78
tblVehicleEF	MCY	178.67	213.41
tblVehicleEF	MCY	44.17	57.38
tblVehicleEF	MCY	0.98	0.98
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	2.2470e-003	2.2320e-003
tblVehicleEF	MCY	3.4860e-003	2.9930e-003

tblVehicleEF	MCY	2.0980e-003	2.0840e-003
tblVehicleEF	MCY	3.2740e-003	2.8100e-003
tblVehicleEF	MCY	1.69	1.72
tblVehicleEF	MCY	0.70	0.72
tblVehicleEF	MCY	1.09	1.11
tblVehicleEF	MCY	2.29	2.30
tblVehicleEF	MCY	0.56	0.50
tblVehicleEF	MCY	1.82	1.60
tblVehicleEF	MCY	2.1390e-003	2.1120e-003
tblVehicleEF	MCY	6.3900e-004	5.6800e-004
tblVehicleEF	MCY	1.69	1.72
tblVehicleEF	MCY	0.70	0.72
tblVehicleEF	MCY	1.09	1.11
tblVehicleEF	MCY	2.85	2.86
tblVehicleEF	MCY	0.56	0.50
tblVehicleEF	MCY	1.98	1.74
tblVehicleEF	MCY	0.49	0.35
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	18.04	18.25
tblVehicleEF	MCY	9.73	8.62
tblVehicleEF	MCY	178.67	214.83
tblVehicleEF	MCY	44.17	59.46
tblVehicleEF	MCY	1.09	1.09
tblVehicleEF	MCY	0.31	0.27
tblVehicleEF	MCY	2.2470e-003	2.2320e-003
tblVehicleEF	MCY	3.4860e-003	2.9930e-003
tblVehicleEF	MCY	2.0980e-003	2.0840e-003
tblVehicleEF	MCY	3.2740e-003	2.8100e-003
tblVehicleEF	MCY	1.25	1.27

tblVehicleEF	MCY	0.84	0.87
tblVehicleEF	MCY	0.73	0.74
tblVehicleEF	MCY	2.35	2.36
tblVehicleEF	MCY	0.69	0.62
tblVehicleEF	MCY	2.06	1.83
tblVehicleEF	MCY	2.1520e-003	2.1260e-003
tblVehicleEF	MCY	6.6100e-004	5.8800e-004
tblVehicleEF	MCY	1.25	1.27
tblVehicleEF	MCY	0.84	0.87
tblVehicleEF	MCY	0.73	0.74
tblVehicleEF	MCY	2.93	2.94
tblVehicleEF	MCY	0.69	0.62
tblVehicleEF	MCY	2.24	1.99
tblVehicleEF	MDV	8.2720e-003	3.7210e-003
tblVehicleEF	MDV	0.01	0.07
tblVehicleEF	MDV	0.96	0.83
tblVehicleEF	MDV	1.95	2.70
tblVehicleEF	MDV	450.89	387.66
tblVehicleEF	MDV	98.57	79.61
tblVehicleEF	MDV	0.10	0.07
tblVehicleEF	MDV	0.17	0.27
tblVehicleEF	MDV	1.8710e-003	1.5460e-003
tblVehicleEF	MDV	2.2680e-003	1.7230e-003
tblVehicleEF	MDV	1.7240e-003	1.4260e-003
tblVehicleEF	MDV	2.0860e-003	1.5840e-003
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.02	0.02

tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.14	0.31
tblVehicleEF	MDV	4.5120e-003	3.7560e-003
tblVehicleEF	MDV	1.0190e-003	7.7200e-004
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.15	0.34
tblVehicleEF	MDV	8.7240e-003	3.9510e-003
tblVehicleEF	MDV	9.3780e-003	0.06
tblVehicleEF	MDV	1.04	0.90
tblVehicleEF	MDV	1.69	2.32
tblVehicleEF	MDV	468.83	397.99
tblVehicleEF	MDV	98.57	78.90
tblVehicleEF	MDV	0.09	0.06
tblVehicleEF	MDV	0.16	0.25
tblVehicleEF	MDV	1.8710e-003	1.5460e-003
tblVehicleEF	MDV	2.2680e-003	1.7230e-003
tblVehicleEF	MDV	1.7240e-003	1.4260e-003
tblVehicleEF	MDV	2.0860e-003	1.5840e-003
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.09	0.12
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.13	0.28
tblVehicleEF	MDV	4.6930e-003	3.8560e-003

tblVehicleEF	MDV	1.0150e-003	7.6500e-004
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.09	0.12
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.14	0.31
tblVehicleEF	MDV	8.1180e-003	3.6470e-003
tblVehicleEF	MDV	0.01	0.07
tblVehicleEF	MDV	0.93	0.80
tblVehicleEF	MDV	2.00	2.78
tblVehicleEF	MDV	444.26	383.84
tblVehicleEF	MDV	98.57	79.77
tblVehicleEF	MDV	0.09	0.06
tblVehicleEF	MDV	0.17	0.28
tblVehicleEF	MDV	1.8710e-003	1.5460e-003
tblVehicleEF	MDV	2.2680e-003	1.7230e-003
tblVehicleEF	MDV	1.7240e-003	1.4260e-003
tblVehicleEF	MDV	2.0860e-003	1.5840e-003
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.15	0.13
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.02	0.01
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.14	0.32
tblVehicleEF	MDV	4.4460e-003	3.7190e-003
tblVehicleEF	MDV	1.0200e-003	7.7300e-004
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.15	0.13

tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.16	0.35
tblVehicleEF	MH	0.02	6.9350e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.27	0.73
tblVehicleEF	MH	4.43	1.75
tblVehicleEF	MH	1,096.02	1,403.51
tblVehicleEF	MH	56.63	16.91
tblVehicleEF	MH	1.16	1.27
tblVehicleEF	MH	0.68	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.0200e-004	2.1600e-004
tblVehicleEF	MH	3.2400e-003	3.3090e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	8.2900e-004	1.9900e-004
tblVehicleEF	MH	0.74	0.62
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.33	0.28
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.26	0.08
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.4300e-004	1.6700e-004
tblVehicleEF	MH	0.74	0.62
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.33	0.28

tblVehicleEF	MH	0.08	0.06
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.29	0.09
tblVehicleEF	MH	0.02	7.0670e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.30	0.74
tblVehicleEF	MH	4.20	1.66
tblVehicleEF	MH	1,096.02	1,403.53
tblVehicleEF	MH	56.63	16.76
tblVehicleEF	MH	1.08	1.19
tblVehicleEF	MH	0.65	0.22
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.0200e-004	2.1600e-004
tblVehicleEF	MH	3.2400e-003	3.3090e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	8.2900e-004	1.9900e-004
tblVehicleEF	MH	0.99	0.83
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.45	0.38
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.02	9.8870e-003
tblVehicleEF	MH	0.25	0.08
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.3900e-004	1.6600e-004
tblVehicleEF	MH	0.99	0.83
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.45	0.38
tblVehicleEF	MH	0.08	0.06

tblVehicleEF	MH	0.02	9.8870e-003
tblVehicleEF	MH	0.27	0.08
tblVehicleEF	MH	0.02	6.8950e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.26	0.72
tblVehicleEF	MH	4.46	1.77
tblVehicleEF	MH	1,096.02	1,403.50
tblVehicleEF	MH	56.63	16.93
tblVehicleEF	MH	1.14	1.24
tblVehicleEF	MH	0.68	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.0200e-004	2.1600e-004
tblVehicleEF	MH	3.2400e-003	3.3090e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	8.2900e-004	1.9900e-004
tblVehicleEF	MH	0.80	0.66
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.34	0.29
tblVehicleEF	MH	0.06	0.04
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.26	0.08
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.4400e-004	1.6800e-004
tblVehicleEF	MH	0.80	0.66
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.34	0.29
tblVehicleEF	MH	0.08	0.06
tblVehicleEF	MH	0.02	0.01

tblVehicleEF	MH	0.29	0.09
tblVehicleEF	MHD	0.02	4.6040e-003
tblVehicleEF	MHD	2.6670e-003	1.2190e-003
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.32	0.38
tblVehicleEF	MHD	0.24	0.17
tblVehicleEF	MHD	4.63	1.13
tblVehicleEF	MHD	143.49	52.64
tblVehicleEF	MHD	1,123.36	993.27
tblVehicleEF	MHD	56.66	11.92
tblVehicleEF	MHD	0.37	0.25
tblVehicleEF	MHD	0.68	0.96
tblVehicleEF	MHD	11.00	1.55
tblVehicleEF	MHD	6.9000e-005	1.7500e-004
tblVehicleEF	MHD	2.8070e-003	6.0480e-003
tblVehicleEF	MHD	6.9200e-004	1.1100e-004
tblVehicleEF	MHD	6.6000e-005	1.6700e-004
tblVehicleEF	MHD	2.6820e-003	5.7810e-003
tblVehicleEF	MHD	6.3600e-004	1.0200e-004
tblVehicleEF	MHD	9.3500e-004	4.6900e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	6.5100e-004	3.4100e-004
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.29	0.05
tblVehicleEF	MHD	1.3800e-003	5.0100e-004
tblVehicleEF	MHD	0.01	9.5000e-003
tblVehicleEF	MHD	6.4800e-004	1.1800e-004

tblVehicleEF	MHD	9.3500e-004	4.6900e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	6.5100e-004	3.4100e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.31	0.06
tblVehicleEF	MHD	0.01	4.3670e-003
tblVehicleEF	MHD	2.6950e-003	1.2410e-003
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.24	0.31
tblVehicleEF	MHD	0.24	0.17
tblVehicleEF	MHD	4.41	1.08
tblVehicleEF	MHD	151.98	52.58
tblVehicleEF	MHD	1,123.36	993.27
tblVehicleEF	MHD	56.66	11.83
tblVehicleEF	MHD	0.38	0.24
tblVehicleEF	MHD	0.65	0.90
tblVehicleEF	MHD	10.97	1.55
tblVehicleEF	MHD	5.8000e-005	1.5000e-004
tblVehicleEF	MHD	2.8070e-003	6.0480e-003
tblVehicleEF	MHD	6.9200e-004	1.1100e-004
tblVehicleEF	MHD	5.5000e-005	1.4300e-004
tblVehicleEF	MHD	2.6820e-003	5.7810e-003
tblVehicleEF	MHD	6.3600e-004	1.0200e-004
tblVehicleEF	MHD	1.3170e-003	6.6100e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	8.8900e-004	4.6400e-004

tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.28	0.05
tblVehicleEF	MHD	1.4600e-003	5.0100e-004
tblVehicleEF	MHD	0.01	9.5000e-003
tblVehicleEF	MHD	6.4400e-004	1.1700e-004
tblVehicleEF	MHD	1.3170e-003	6.6100e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	8.8900e-004	4.6400e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.30	0.06
tblVehicleEF	MHD	0.02	4.9470e-003
tblVehicleEF	MHD	2.6590e-003	1.2110e-003
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.45	0.47
tblVehicleEF	MHD	0.24	0.17
tblVehicleEF	MHD	4.67	1.14
tblVehicleEF	MHD	131.74	52.73
tblVehicleEF	MHD	1,123.36	993.27
tblVehicleEF	MHD	56.66	11.94
tblVehicleEF	MHD	0.35	0.26
tblVehicleEF	MHD	0.67	0.94
tblVehicleEF	MHD	11.01	1.55
tblVehicleEF	MHD	8.4000e-005	2.1000e-004
tblVehicleEF	MHD	2.8070e-003	6.0480e-003
tblVehicleEF	MHD	6.9200e-004	1.1100e-004
tblVehicleEF	MHD	8.0000e-005	2.0100e-004

tblVehicleEF	MHD	2.6820e-003	5.7810e-003
tblVehicleEF	MHD	6.3600e-004	1.0200e-004
tblVehicleEF	MHD	9.4200e-004	4.6200e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	6.5200e-004	3.3800e-004
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.29	0.06
tblVehicleEF	MHD	1.2700e-003	5.0200e-004
tblVehicleEF	MHD	0.01	9.5000e-003
tblVehicleEF	MHD	6.4800e-004	1.1800e-004
tblVehicleEF	MHD	9.4200e-004	4.6200e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	6.5200e-004	3.3800e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.32	0.06
tblVehicleEF	OBUS	0.01	8.6550e-003
tblVehicleEF	OBUS	5.2770e-003	4.3820e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.25	0.56
tblVehicleEF	OBUS	0.39	0.54
tblVehicleEF	OBUS	4.82	2.26
tblVehicleEF	OBUS	76.59	78.18
tblVehicleEF	OBUS	1,203.91	1,334.33
tblVehicleEF	OBUS	69.07	19.41
tblVehicleEF	OBUS	0.15	0.30

tblVehicleEF	OBUS	0.55	0.98
tblVehicleEF	OBUS	1.95	0.75
tblVehicleEF	OBUS	1.4000e-005	9.9000e-005
tblVehicleEF	OBUS	2.4030e-003	6.5550e-003
tblVehicleEF	OBUS	8.9600e-004	2.0200e-004
tblVehicleEF	OBUS	1.3000e-005	9.5000e-005
tblVehicleEF	OBUS	2.2790e-003	6.2550e-003
tblVehicleEF	OBUS	8.2400e-004	1.8600e-004
tblVehicleEF	OBUS	1.3360e-003	1.7510e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	7.4000e-004	9.5000e-004
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.30	0.11
tblVehicleEF	OBUS	7.4300e-004	7.4500e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.7500e-004	1.9200e-004
tblVehicleEF	OBUS	1.3360e-003	1.7510e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	7.4000e-004	9.5000e-004
tblVehicleEF	OBUS	0.04	0.03
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.33	0.12
tblVehicleEF	OBUS	0.01	8.7320e-003
tblVehicleEF	OBUS	5.3660e-003	4.4740e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.24	0.55

tblVehicleEF	OBUS	0.39	0.55
tblVehicleEF	OBUS	4.58	2.14
tblVehicleEF	OBUS	80.14	77.32
tblVehicleEF	OBUS	1,203.91	1,334.35
tblVehicleEF	OBUS	69.07	19.21
tblVehicleEF	OBUS	0.16	0.28
tblVehicleEF	OBUS	0.52	0.92
tblVehicleEF	OBUS	1.92	0.74
tblVehicleEF	OBUS	1.2000e-005	8.8000e-005
tblVehicleEF	OBUS	2.4030e-003	6.5550e-003
tblVehicleEF	OBUS	8.9600e-004	2.0200e-004
tblVehicleEF	OBUS	1.1000e-005	8.4000e-005
tblVehicleEF	OBUS	2.2790e-003	6.2550e-003
tblVehicleEF	OBUS	8.2400e-004	1.8600e-004
tblVehicleEF	OBUS	1.8380e-003	2.3950e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	1.0100e-003	1.2840e-003
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.29	0.11
tblVehicleEF	OBUS	7.7700e-004	7.3700e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.7100e-004	1.9000e-004
tblVehicleEF	OBUS	1.8380e-003	2.3950e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	1.0100e-003	1.2840e-003
tblVehicleEF	OBUS	0.04	0.04

tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.32	0.12
tblVehicleEF	OBUS	0.01	8.5700e-003
tblVehicleEF	OBUS	5.2500e-003	4.3550e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.25	0.56
tblVehicleEF	OBUS	0.38	0.54
tblVehicleEF	OBUS	4.86	2.28
tblVehicleEF	OBUS	71.70	79.37
tblVehicleEF	OBUS	1,203.91	1,334.32
tblVehicleEF	OBUS	69.07	19.44
tblVehicleEF	OBUS	0.15	0.32
tblVehicleEF	OBUS	0.54	0.96
tblVehicleEF	OBUS	1.96	0.76
tblVehicleEF	OBUS	1.7000e-005	1.1500e-004
tblVehicleEF	OBUS	2.4030e-003	6.5550e-003
tblVehicleEF	OBUS	8.9600e-004	2.0200e-004
tblVehicleEF	OBUS	1.6000e-005	1.1000e-004
tblVehicleEF	OBUS	2.2790e-003	6.2550e-003
tblVehicleEF	OBUS	8.2400e-004	1.8600e-004
tblVehicleEF	OBUS	1.3380e-003	1.7730e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	7.3000e-004	9.4400e-004
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.31	0.11
tblVehicleEF	OBUS	6.9600e-004	7.5600e-004
tblVehicleEF	OBUS	0.01	0.01

tblVehicleEF	OBUS	7.7600e-004	1.9200e-004
tblVehicleEF	OBUS	1.3380e-003	1.7730e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	7.3000e-004	9.4400e-004
tblVehicleEF	OBUS	0.04	0.03
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.34	0.12
tblVehicleEF	SBUS	0.83	0.09
tblVehicleEF	SBUS	0.02	9.1570e-003
tblVehicleEF	SBUS	0.07	8.2300e-003
tblVehicleEF	SBUS	8.49	3.34
tblVehicleEF	SBUS	0.94	0.84
tblVehicleEF	SBUS	8.61	1.12
tblVehicleEF	SBUS	1,085.60	359.37
tblVehicleEF	SBUS	1,065.54	1,076.06
tblVehicleEF	SBUS	58.07	6.66
tblVehicleEF	SBUS	7.75	3.47
tblVehicleEF	SBUS	3.55	5.09
tblVehicleEF	SBUS	11.66	0.75
tblVehicleEF	SBUS	6.9310e-003	4.4780e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	1.0190e-003	7.7000e-005
tblVehicleEF	SBUS	6.6310e-003	4.2840e-003
tblVehicleEF	SBUS	2.6550e-003	2.6190e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	9.3700e-004	7.1000e-005
tblVehicleEF	SBUS	3.3910e-003	1.1510e-003

tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.01	0.40
tblVehicleEF	SBUS	1.9710e-003	6.6100e-004
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.45	0.05
tblVehicleEF	SBUS	0.01	3.4360e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.3000e-004	6.6000e-005
tblVehicleEF	SBUS	3.3910e-003	1.1510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.46	0.57
tblVehicleEF	SBUS	1.9710e-003	6.6100e-004
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.50	0.05
tblVehicleEF	SBUS	0.83	0.09
tblVehicleEF	SBUS	0.02	9.2670e-003
tblVehicleEF	SBUS	0.06	7.3960e-003
tblVehicleEF	SBUS	8.40	3.30
tblVehicleEF	SBUS	0.95	0.85
tblVehicleEF	SBUS	7.12	0.92
tblVehicleEF	SBUS	1,133.08	368.54
tblVehicleEF	SBUS	1,065.54	1,076.08
tblVehicleEF	SBUS	58.07	6.33
tblVehicleEF	SBUS	8.00	3.55
tblVehicleEF	SBUS	3.35	4.81
tblVehicleEF	SBUS	11.63	0.75
tblVehicleEF	SBUS	5.8420e-003	3.7810e-003

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	1.0190e-003	7.7000e-005
tblVehicleEF	SBUS	5.5900e-003	3.6170e-003
tblVehicleEF	SBUS	2.6550e-003	2.6190e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	9.3700e-004	7.1000e-005
tblVehicleEF	SBUS	4.6620e-003	1.5800e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.01	0.40
tblVehicleEF	SBUS	2.6790e-003	8.9500e-004
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.41	0.04
tblVehicleEF	SBUS	0.01	3.5220e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.0500e-004	6.3000e-005
tblVehicleEF	SBUS	4.6620e-003	1.5800e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.46	0.57
tblVehicleEF	SBUS	2.6790e-003	8.9500e-004
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.45	0.05
tblVehicleEF	SBUS	0.83	0.09
tblVehicleEF	SBUS	0.02	9.1270e-003
tblVehicleEF	SBUS	0.07	8.3500e-003
tblVehicleEF	SBUS	8.63	3.39
tblVehicleEF	SBUS	0.93	0.83

tblVehicleEF	SBUS	8.75	1.13
tblVehicleEF	SBUS	1,020.03	346.72
tblVehicleEF	SBUS	1,065.54	1,076.06
tblVehicleEF	SBUS	58.07	6.69
tblVehicleEF	SBUS	7.41	3.35
tblVehicleEF	SBUS	3.49	5.00
tblVehicleEF	SBUS	11.67	0.75
tblVehicleEF	SBUS	8.4330e-003	5.4400e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	1.0190e-003	7.7000e-005
tblVehicleEF	SBUS	8.0680e-003	5.2050e-003
tblVehicleEF	SBUS	2.6550e-003	2.6190e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	9.3700e-004	7.1000e-005
tblVehicleEF	SBUS	3.3080e-003	1.1240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.01	0.40
tblVehicleEF	SBUS	1.9200e-003	6.4200e-004
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.46	0.05
tblVehicleEF	SBUS	0.01	3.3160e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.3200e-004	6.6000e-005
tblVehicleEF	SBUS	3.3080e-003	1.1240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.47	0.57
tblVehicleEF	SBUS	1.9200e-003	6.4200e-004

tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.51	0.05
tblVehicleEF	UBUS	1.60	1.2910e-003
tblVehicleEF	UBUS	0.07	0.02
tblVehicleEF	UBUS	7.75	0.07
tblVehicleEF	UBUS	12.30	1.81
tblVehicleEF	UBUS	1,792.86	385.95
tblVehicleEF	UBUS	138.24	20.36
tblVehicleEF	UBUS	3.61	0.05
tblVehicleEF	UBUS	13.00	0.18
tblVehicleEF	UBUS	0.52	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.03	3.6000e-004
tblVehicleEF	UBUS	1.3330e-003	1.7000e-004
tblVehicleEF	UBUS	0.22	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.03	3.3100e-004
tblVehicleEF	UBUS	1.2250e-003	1.5700e-004
tblVehicleEF	UBUS	5.7880e-003	1.1460e-003
tblVehicleEF	UBUS	0.09	0.01
tblVehicleEF	UBUS	3.5780e-003	7.3800e-004
tblVehicleEF	UBUS	0.41	4.2710e-003
tblVehicleEF	UBUS	0.03	2.7280e-003
tblVehicleEF	UBUS	0.94	0.11
tblVehicleEF	UBUS	8.5520e-003	3.8190e-003
tblVehicleEF	UBUS	1.6040e-003	2.0100e-004
tblVehicleEF	UBUS	5.7880e-003	1.1460e-003
tblVehicleEF	UBUS	0.09	0.01

tblVehicleEF	UBUS	3.5780e-003	7.3800e-004
tblVehicleEF	UBUS	2.05	6.2320e-003
tblVehicleEF	UBUS	0.03	2.7280e-003
tblVehicleEF	UBUS	1.03	0.12
tblVehicleEF	UBUS	1.60	1.3190e-003
tblVehicleEF	UBUS	0.06	0.02
tblVehicleEF	UBUS	7.80	0.07
tblVehicleEF	UBUS	10.86	1.61
tblVehicleEF	UBUS	1,792.86	385.95
tblVehicleEF	UBUS	138.24	20.00
tblVehicleEF	UBUS	3.38	0.04
tblVehicleEF	UBUS	12.93	0.17
tblVehicleEF	UBUS	0.52	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.03	3.6000e-004
tblVehicleEF	UBUS	1.3330e-003	1.7000e-004
tblVehicleEF	UBUS	0.22	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.03	3.3100e-004
tblVehicleEF	UBUS	1.2250e-003	1.5700e-004
tblVehicleEF	UBUS	7.7730e-003	1.5810e-003
tblVehicleEF	UBUS	0.09	0.01
tblVehicleEF	UBUS	4.7590e-003	1.0200e-003
tblVehicleEF	UBUS	0.41	4.3520e-003
tblVehicleEF	UBUS	0.03	2.4620e-003
tblVehicleEF	UBUS	0.87	0.10
tblVehicleEF	UBUS	8.5530e-003	3.8190e-003
tblVehicleEF	UBUS	1.5790e-003	1.9800e-004
tblVehicleEF	UBUS	7.7730e-003	1.5810e-003

tblVehicleEF	UBUS	0.09	0.01
tblVehicleEF	UBUS	4.7590e-003	1.0200e-003
tblVehicleEF	UBUS	2.06	6.3510e-003
tblVehicleEF	UBUS	0.03	2.4620e-003
tblVehicleEF	UBUS	0.96	0.11
tblVehicleEF	UBUS	1.60	1.2850e-003
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	7.74	0.06
tblVehicleEF	UBUS	12.55	1.85
tblVehicleEF	UBUS	1,792.86	385.95
tblVehicleEF	UBUS	138.24	20.42
tblVehicleEF	UBUS	3.54	0.05
tblVehicleEF	UBUS	13.02	0.18
tblVehicleEF	UBUS	0.52	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.03	3.6000e-004
tblVehicleEF	UBUS	1.3330e-003	1.7000e-004
tblVehicleEF	UBUS	0.22	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.03	3.3100e-004
tblVehicleEF	UBUS	1.2250e-003	1.5700e-004
tblVehicleEF	UBUS	6.4170e-003	1.1580e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	3.7120e-003	7.1600e-004
tblVehicleEF	UBUS	0.40	4.2510e-003
tblVehicleEF	UBUS	0.04	3.3320e-003
tblVehicleEF	UBUS	0.96	0.11
tblVehicleEF	UBUS	8.5520e-003	3.8190e-003
tblVehicleEF	UBUS	1.6080e-003	2.0200e-004

tblVehicleEF	UBUS	6.4170e-003	1.1580e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	3.7120e-003	7.1600e-004
tblVehicleEF	UBUS	2.05	6.2030e-003
tblVehicleEF	UBUS	0.04	3.3320e-003
tblVehicleEF	UBUS	1.05	0.12
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	19.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	77.00	100.00
tblVehicleTrips	PR_TP	54.00	100.00
tblVehicleTrips	ST_TR	6.39	2.69
tblVehicleTrips	ST_TR	2.46	1.03
tblVehicleTrips	ST_TR	158.37	0.00
tblVehicleTrips	ST_TR	8.96	0.00
tblVehicleTrips	ST_TR	49.97	142.13
tblVehicleTrips	ST_TR	177.59	0.00
tblVehicleTrips	SU_TR	5.86	2.28
tblVehicleTrips	SU_TR	1.05	0.33
tblVehicleTrips	SU_TR	131.84	0.00
tblVehicleTrips	SU_TR	1.55	0.00
tblVehicleTrips	SU_TR	25.24	62.97
tblVehicleTrips	SU_TR	166.44	0.00
tblVehicleTrips	WD_TR	6.65	2.93
tblVehicleTrips	WD_TR	11.03	5.99

tblVehicleTrips	WD_TR	127.15	0.00
tblVehicleTrips	WD_TR	36.13	0.00
tblVehicleTrips	WD_TR	42.70	94.79
tblVehicleTrips	WD_TR	102.24	0.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	14,920,271.87	0.00
tblWater	IndoorWaterUseRate	3,796,392.86	0.00
tblWater	IndoorWaterUseRate	12,945,712.84	0.00
tblWater	IndoorWaterUseRate	200,768.86	0.00
tblWater	IndoorWaterUseRate	5,068,041.92	46,904,933.00
tblWater	IndoorWaterUseRate	4,218,238.31	0.00
tblWater	OutdoorWaterUseRate	9,406,258.35	0.00
tblWater	OutdoorWaterUseRate	2,326,821.43	0.00
tblWater	OutdoorWaterUseRate	826,322.10	0.00
tblWater	OutdoorWaterUseRate	38,241.69	0.00
tblWater	OutdoorWaterUseRate	3,106,219.24	1,000,352.00
tblWater	OutdoorWaterUseRate	130,460.98	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	NumberCatalytic	11.45	0.00
tblWoodstoves	NumberNoncatalytic	11.45	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	9.9762	0.3676	19.0318	1.9600e-003		0.1170	0.1170		0.1170	0.1170	0.0000	224.7858	224.7858	0.0368	3.4900e-003	226.7461
Energy	0.4412	3.9696	3.0677	0.0241		0.3048	0.3048		0.3048	0.3048		4,812.8194	4,812.8194	0.0923	0.0882	4,841.4196
Mobile	16.0774	33.1109	213.0059	0.7279	77.2864	0.4861	77.7725	20.6313	0.4526	21.0839		75,682.1881	75,682.1881	2.4618		75,743.7338
Total	**26.4948**	**37.4481**	**235.1054**	**0.7540**	**77.2864**	**0.9080**	**78.1944**	**20.6313**	**0.8744**	**21.5058**	**0.0000**	**80,719.7933**	**80,719.7933**	**2.5908**	**0.0917**	**80,811.8995**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	9.9762	0.3676	19.0318	1.9600e-003		0.1170	0.1170		0.1170	0.1170	0.0000	224.7858	224.7858	0.0368	3.4900e-003	226.7461
Energy	0.4412	3.9696	3.0677	0.0241		0.3048	0.3048		0.3048	0.3048		4,812.8194	4,812.8194	0.0923	0.0882	4,841.4196
Mobile	16.0774	33.1109	213.0059	0.7279	77.2864	0.4861	77.7725	20.6313	0.4526	21.0839		75,682.1881	75,682.1881	2.4618		75,743.7338
Total	**26.4948**	**37.4481**	**235.1054**	**0.7540**	**77.2864**	**0.9080**	**78.1944**	**20.6313**	**0.8744**	**21.5058**	**0.0000**	**80,719.7933**	**80,719.7933**	**2.5908**	**0.0917**	**80,811.8995**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	16.0774	33.1109	213.0059	0.7279	77.2864	0.4861	77.7725	20.6313	0.4526	21.0839		75,682.1881	75,682.1881	2.4618		75,743.7338
Unmitigated	16.0774	33.1109	213.0059	0.7279	77.2864	0.4861	77.7725	20.6313	0.4526	21.0839		75,682.1881	75,682.1881	2.4618		75,743.7338

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	670.97	616.01	522.12	2,470,550	2,470,550
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	127.95	22.00	7.05	376,318	376,318
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Medical Office Building	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	6,485.53	9,724.53	4308.41	22,834,605	22,834,605
Supermarket	0.00	0.00	0.00		
Total	7,284.45	10,362.55	4,837.58	25,681,472	25,681,472

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	100	0	0
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	100	0	0
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Medical Office Building	16.60	8.40	6.90	29.60	51.40	19.00	60	30	10
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	100	0	0
Supermarket	16.60	8.40	6.90	6.50	74.50	19.00	34	30	36

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.666486	0.050589	0.246793	0.020000	0.002207	0.000876	0.003987	0.002706	0.000000	0.000000	0.006133	0.000091	0.000133
Enclosed Parking with Elevator	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
General Office Building	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
High Turnover (Sit Down Restaurant)	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Medical Office Building	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Other Asphalt Surfaces	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Other Non-Asphalt Surfaces	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Parking Lot	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Regional Shopping Center	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Supermarket	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.4412	3.9696	3.0677	0.0241		0.3048	0.3048		0.3048	0.3048		4,812.8194	4,812.8194	0.0923	0.0882	4,841.4196
NaturalGas Unmitigated	0.4412	3.9696	3.0677	0.0241		0.3048	0.3048		0.3048	0.3048		4,812.8194	4,812.8194	0.0923	0.0882	4,841.4196

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	6984.12	0.0753	0.6436	0.2739	4.1100e-003		0.0520	0.0520		0.0520	0.0520		821.6609	821.6609	0.0158	0.0151	826.5436
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	529.487	5.7100e-003	0.0519	0.0436	3.1000e-004		3.9500e-003	3.9500e-003		3.9500e-003	3.9500e-003		62.2926	62.2926	1.1900e-003	1.1400e-003	62.6628
High Turnover (Sit Down Restaurant)	30901.2	0.3333	3.0295	2.5448	0.0182		0.2302	0.2302		0.2302	0.2302		3,635.4406	3,635.4406	0.0697	0.0667	3,657.0442
Medical Office Building	47.3553	5.1000e-004	4.6400e-003	3.9000e-003	3.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004		5.5712	5.5712	1.1000e-004	1.0000e-004	5.6043
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	395.495	4.2700e-003	0.0388	0.0326	2.3000e-004		2.9500e-003	2.9500e-003		2.9500e-003	2.9500e-003		46.5288	46.5288	8.9000e-004	8.5000e-004	46.8053
Supermarket	2051.26	0.0221	0.2011	0.1689	1.2100e-003		0.0153	0.0153		0.0153	0.0153		241.3253	241.3253	4.6300e-003	4.4200e-003	242.7594
Total		**0.4412**	**3.9696**	**3.0677**	**0.0241**		**0.3048**	**0.3048**		**0.3048**	**0.3048**		**4,812.8194**	**4,812.8194**	**0.0923**	**0.0882**	**4,841.4196**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	6.98412	0.0753	0.6436	0.2739	4.1100e-003		0.0520	0.0520		0.0520	0.0520		821.6609	821.6609	0.0158	0.0151	826.5436
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	0.529487	5.7100e-003	0.0519	0.0436	3.1000e-004		3.9500e-003	3.9500e-003		3.9500e-003	3.9500e-003		62.2926	62.2926	1.1900e-003	1.1400e-003	62.6628
High Turnover (Sit Down Restaurant)	30.9012	0.3333	3.0295	2.5448	0.0182		0.2302	0.2302		0.2302	0.2302		3,635.4406	3,635.4406	0.0697	0.0667	3,657.0442
Medical Office Building	0.0473553	5.1000e-004	4.6400e-003	3.9000e-003	3.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004		5.5712	5.5712	1.1000e-004	1.0000e-004	5.6043
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.395495	4.2700e-003	0.0388	0.0326	2.3000e-004		2.9500e-003	2.9500e-003		2.9500e-003	2.9500e-003		46.5288	46.5288	8.9000e-004	8.5000e-004	46.8053
Supermarket	2.05126	0.0221	0.2011	0.1689	1.2100e-003		0.0153	0.0153		0.0153	0.0153		241.3253	241.3253	4.6300e-003	4.4200e-003	242.7594
Total		**0.4412**	**3.9696**	**3.0677**	**0.0241**		**0.3048**	**0.3048**		**0.3048**	**0.3048**		**4,812.8194**	**4,812.8194**	**0.0923**	**0.0882**	**4,841.4196**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	9.9762	0.3676	19.0318	1.9600e-003		0.1170	0.1170		0.1170	0.1170	0.0000	224.7858	224.7858	0.0368	3.4900e-003	226.7461
Unmitigated	9.9762	0.3676	19.0318	1.9600e-003		0.1170	0.1170		0.1170	0.1170	0.0000	224.7858	224.7858	0.0368	3.4900e-003	226.7461

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.0359					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.3473					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0175	0.1493	0.0635	9.5000e-004		0.0121	0.0121		0.0121	0.0121	0.0000	190.5882	190.5882	3.6500e-003	3.4900e-003	191.7208
Landscaping	0.5755	0.2183	18.9683	1.0000e-003		0.1050	0.1050		0.1050	0.1050		34.1976	34.1976	0.0331		35.0253
Total	**9.9762**	**0.3676**	**19.0318**	**1.9500e-003**		**0.1170**	**0.1170**		**0.1170**	**0.1170**	**0.0000**	**224.7858**	**224.7858**	**0.0368**	**3.4900e-003**	**226.7461**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.0359					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.3473					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0175	0.1493	0.0635	9.5000e-004		0.0121	0.0121		0.0121	0.0121	0.0000	190.5882	190.5882	3.6500e-003	3.4900e-003	191.7208
Landscaping	0.5755	0.2183	18.9683	1.0000e-003		0.1050	0.1050		0.1050	0.1050		34.1976	34.1976	0.0331		35.0253
Total	**9.9762**	**0.3676**	**19.0318**	**1.9500e-003**		**0.1170**	**0.1170**		**0.1170**	**0.1170**	**0.0000**	**224.7858**	**224.7858**	**0.0368**	**3.4900e-003**	**226.7461**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

Brea Plaza Expansion Project Operations

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	21.36	1000sqft	0.49	21,355.00	0
Medical Office Building	1.60	1000sqft	0.04	1,596.00	0
Enclosed Parking with Elevator	182.11	1000sqft	1.39	182,108.00	0
Other Asphalt Surfaces	13.77	1000sqft	0.32	13,774.00	0
Other Non-Asphalt Surfaces	65.93	1000sqft	1.51	65,931.00	0
Parking Lot	388.32	1000sqft	8.91	388,318.00	0
High Turnover (Sit Down Restaurant)	42.65	1000sqft	0.98	42,649.00	0
Apartments Mid Rise	229.00	Dwelling Unit	0.00	241,718.00	655
Regional Shopping Center	68.42	1000sqft	1.57	68,415.00	0
Supermarket	34.22	1000sqft	0.79	34,219.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	531.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustainability Report

Land Use - based on info from applicant

Construction Phase -

Vehicle Trips - based on info from LLG, see assumptions file for calculations

Vehicle Emission Factors - EMFAC2017 adjustment

Woodstoves - assumes 6 grills and 3 fire pits to be used on weekends

Area Coating - based on info from applicant: residential accounts for 60% ext coating, nonres accounts for coating of parking structure, parking assumes parking area only

Energy Use - assumes existing uses use historical data, new uses adjusted based on NORESCO study. See assumptions file for calculations

Water And Wastewater - assigned all water use to regional shopping center, based on info from sewer study. Assumes 100% aerobic treatment

Solid Waste -

Fleet Mix - see fleet mix adjustment in assumptions file

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	84117	167163
tblAreaCoating	Area_Nonresidential_Interior	252351	320642
tblAreaCoating	Area_Parking	39008	34226
tblAreaCoating	Area_Residential_Exterior	163160	97896
tblEnergyUse	LightingElect	2.63	1.75
tblEnergyUse	LightingElect	5.27	4.34
tblEnergyUse	NT24E	2,555.58	3,054.10
tblEnergyUse	NT24NG	1,662.00	5,516.00
tblEnergyUse	T24E	226.43	176.17
tblEnergyUse	T24E	3.92	3.50
tblEnergyUse	T24E	6.17	4.21
tblEnergyUse	T24NG	7,475.05	5,615.89
tblEnergyUse	T24NG	10.28	8.50
tblFireplaces	FireplaceDayYear	25.00	104.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00

tblFireplaces	NumberGas	194.65	9.00
tblFireplaces	NumberNoFireplace	22.90	220.00
tblFireplaces	NumberWood	11.45	0.00
tblFleetMix	HHD	0.02	2.7060e-003
tblFleetMix	LDA	0.57	0.67
tblFleetMix	LDT1	0.04	0.05
tblFleetMix	LDT2	0.21	0.25
tblFleetMix	LHD1	0.01	2.2070e-003
tblFleetMix	LHD2	5.7730e-003	8.7600e-004
tblFleetMix	MCY	4.9530e-003	6.1330e-003
tblFleetMix	MDV	0.11	0.02
tblFleetMix	MH	8.7700e-004	1.3300e-004
tblFleetMix	MHD	0.03	3.9870e-003
tblFleetMix	OBUS	1.7920e-003	0.00
tblFleetMix	SBUS	6.0200e-004	9.1000e-005
tblFleetMix	UBUS	1.5090e-003	0.00
tblLandUse	LandUseSquareFeet	21,360.00	21,355.00
tblLandUse	LandUseSquareFeet	1,600.00	1,596.00
tblLandUse	LandUseSquareFeet	182,110.00	182,108.00
tblLandUse	LandUseSquareFeet	13,770.00	13,774.00
tblLandUse	LandUseSquareFeet	65,930.00	65,931.00
tblLandUse	LandUseSquareFeet	388,320.00	388,318.00
tblLandUse	LandUseSquareFeet	42,650.00	42,649.00
tblLandUse	LandUseSquareFeet	229,000.00	241,718.00
tblLandUse	LandUseSquareFeet	68,420.00	68,415.00
tblLandUse	LandUseSquareFeet	34,220.00	34,219.00
tblLandUse	LotAcreage	4.18	1.39
tblLandUse	LotAcreage	6.03	0.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	531.44

tblVehicleEF	HHD	0.44	0.03
tblVehicleEF	HHD	0.16	0.15
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.47	6.07
tblVehicleEF	HHD	1.26	0.64
tblVehicleEF	HHD	4.25	0.01
tblVehicleEF	HHD	3,818.18	1,012.56
tblVehicleEF	HHD	1,584.91	1,373.65
tblVehicleEF	HHD	13.84	0.08
tblVehicleEF	HHD	12.98	5.26
tblVehicleEF	HHD	1.77	2.42
tblVehicleEF	HHD	19.03	2.48
tblVehicleEF	HHD	0.01	2.9540e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	6.0110e-003	0.02
tblVehicleEF	HHD	1.3200e-004	1.0000e-006
tblVehicleEF	HHD	0.01	2.8260e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6690e-003	8.7620e-003
tblVehicleEF	HHD	5.7510e-003	0.02
tblVehicleEF	HHD	1.2100e-004	1.0000e-006
tblVehicleEF	HHD	1.1600e-004	4.0000e-006
tblVehicleEF	HHD	4.7330e-003	1.5600e-004
tblVehicleEF	HHD	0.35	0.40
tblVehicleEF	HHD	8.9000e-005	3.0000e-006
tblVehicleEF	HHD	0.08	0.03
tblVehicleEF	HHD	4.2800e-004	6.3000e-005
tblVehicleEF	HHD	0.09	4.0000e-006

tblVehicleEF	HHD	0.03	9.2460e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0800e-004	1.0000e-006
tblVehicleEF	HHD	1.1600e-004	4.0000e-006
tblVehicleEF	HHD	4.7330e-003	1.5600e-004
tblVehicleEF	HHD	0.43	0.47
tblVehicleEF	HHD	8.9000e-005	3.0000e-006
tblVehicleEF	HHD	0.25	0.17
tblVehicleEF	HHD	4.2800e-004	6.3000e-005
tblVehicleEF	HHD	0.09	4.0000e-006
tblVehicleEF	HHD	0.42	0.03
tblVehicleEF	HHD	0.16	0.15
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.07	5.98
tblVehicleEF	HHD	1.27	0.64
tblVehicleEF	HHD	4.05	9.6240e-003
tblVehicleEF	HHD	4,045.03	1,001.49
tblVehicleEF	HHD	1,584.91	1,373.65
tblVehicleEF	HHD	13.84	0.08
tblVehicleEF	HHD	13.40	5.04
tblVehicleEF	HHD	1.67	2.30
tblVehicleEF	HHD	19.02	2.48
tblVehicleEF	HHD	9.0000e-003	2.5700e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	6.0110e-003	0.02
tblVehicleEF	HHD	1.3200e-004	1.0000e-006
tblVehicleEF	HHD	8.6100e-003	2.4590e-003
tblVehicleEF	HHD	0.03	0.03

tblVehicleEF	HHD	8.6690e-003	8.7620e-003
tblVehicleEF	HHD	5.7510e-003	0.02
tblVehicleEF	HHD	1.2100e-004	1.0000e-006
tblVehicleEF	HHD	1.6500e-004	5.0000e-006
tblVehicleEF	HHD	4.8270e-003	1.5800e-004
tblVehicleEF	HHD	0.33	0.43
tblVehicleEF	HHD	1.2300e-004	4.0000e-006
tblVehicleEF	HHD	0.08	0.03
tblVehicleEF	HHD	4.1200e-004	6.1000e-005
tblVehicleEF	HHD	0.08	4.0000e-006
tblVehicleEF	HHD	0.04	9.1420e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0400e-004	1.0000e-006
tblVehicleEF	HHD	1.6500e-004	5.0000e-006
tblVehicleEF	HHD	4.8270e-003	1.5800e-004
tblVehicleEF	HHD	0.41	0.50
tblVehicleEF	HHD	1.2300e-004	4.0000e-006
tblVehicleEF	HHD	0.26	0.17
tblVehicleEF	HHD	4.1200e-004	6.1000e-005
tblVehicleEF	HHD	0.09	4.0000e-006
tblVehicleEF	HHD	0.48	0.02
tblVehicleEF	HHD	0.16	8.8800e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	2.03	6.01
tblVehicleEF	HHD	1.26	0.21
tblVehicleEF	HHD	4.29	0.01
tblVehicleEF	HHD	3,504.93	993.90
tblVehicleEF	HHD	1,584.91	1,270.38
tblVehicleEF	HHD	13.84	0.08

tblVehicleEF	HHD	12.41	5.37
tblVehicleEF	HHD	1.74	2.32
tblVehicleEF	HHD	19.03	2.48
tblVehicleEF	HHD	0.01	3.1440e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	6.0110e-003	0.02
tblVehicleEF	HHD	1.3200e-004	1.0000e-006
tblVehicleEF	HHD	0.01	3.0080e-003
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	8.6690e-003	8.4790e-003
tblVehicleEF	HHD	5.7510e-003	0.02
tblVehicleEF	HHD	1.2100e-004	1.0000e-006
tblVehicleEF	HHD	1.1300e-004	4.0000e-006
tblVehicleEF	HHD	5.0410e-003	1.7200e-004
tblVehicleEF	HHD	0.38	0.37
tblVehicleEF	HHD	8.9000e-005	3.0000e-006
tblVehicleEF	HHD	0.08	0.02
tblVehicleEF	HHD	4.6700e-004	6.7000e-005
tblVehicleEF	HHD	0.09	4.0000e-006
tblVehicleEF	HHD	0.03	9.3900e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0800e-004	1.0000e-006
tblVehicleEF	HHD	1.1300e-004	4.0000e-006
tblVehicleEF	HHD	5.0410e-003	1.7200e-004
tblVehicleEF	HHD	0.46	0.42
tblVehicleEF	HHD	8.9000e-005	3.0000e-006
tblVehicleEF	HHD	0.25	0.02
tblVehicleEF	HHD	4.6700e-004	6.7000e-005

tblVehicleEF	HHD	0.09	4.0000e-006
tblVehicleEF	LDA	3.2540e-003	1.8160e-003
tblVehicleEF	LDA	3.5200e-003	0.04
tblVehicleEF	LDA	0.48	0.55
tblVehicleEF	LDA	0.84	1.93
tblVehicleEF	LDA	231.86	246.35
tblVehicleEF	LDA	51.83	50.40
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.15
tblVehicleEF	LDA	1.8000e-003	1.4320e-003
tblVehicleEF	LDA	2.2330e-003	1.6850e-003
tblVehicleEF	LDA	1.6580e-003	1.3180e-003
tblVehicleEF	LDA	2.0530e-003	1.5490e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	8.1920e-003	6.5890e-003
tblVehicleEF	LDA	0.04	0.02
tblVehicleEF	LDA	0.05	0.17
tblVehicleEF	LDA	2.3210e-003	2.3880e-003
tblVehicleEF	LDA	5.3200e-004	4.8900e-004
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	9.5740e-003
tblVehicleEF	LDA	0.04	0.02
tblVehicleEF	LDA	0.05	0.19
tblVehicleEF	LDA	3.4390e-003	1.9350e-003
tblVehicleEF	LDA	3.1700e-003	0.04

tblVehicleEF	LDA	0.52	0.60
tblVehicleEF	LDA	0.73	1.66
tblVehicleEF	LDA	241.58	256.41
tblVehicleEF	LDA	51.83	49.92
tblVehicleEF	LDA	0.03	0.02
tblVehicleEF	LDA	0.04	0.14
tblVehicleEF	LDA	1.8000e-003	1.4320e-003
tblVehicleEF	LDA	2.2330e-003	1.6850e-003
tblVehicleEF	LDA	1.6580e-003	1.3180e-003
tblVehicleEF	LDA	2.0530e-003	1.5490e-003
tblVehicleEF	LDA	0.04	0.06
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	8.6510e-003	6.9570e-003
tblVehicleEF	LDA	0.03	0.02
tblVehicleEF	LDA	0.04	0.16
tblVehicleEF	LDA	2.4190e-003	2.4850e-003
tblVehicleEF	LDA	5.3000e-004	4.8400e-004
tblVehicleEF	LDA	0.04	0.06
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.03	0.02
tblVehicleEF	LDA	0.05	0.17
tblVehicleEF	LDA	3.1920e-003	1.7790e-003
tblVehicleEF	LDA	3.5920e-003	0.04
tblVehicleEF	LDA	0.47	0.53
tblVehicleEF	LDA	0.87	1.98
tblVehicleEF	LDA	228.27	242.64

tblVehicleEF	LDA	51.83	50.51
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.16
tblVehicleEF	LDA	1.8000e-003	1.4320e-003
tblVehicleEF	LDA	2.2330e-003	1.6850e-003
tblVehicleEF	LDA	1.6580e-003	1.3180e-003
tblVehicleEF	LDA	2.0530e-003	1.5490e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	8.0370e-003	6.4650e-003
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.18
tblVehicleEF	LDA	2.2850e-003	2.3520e-003
tblVehicleEF	LDA	5.3300e-004	4.9000e-004
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	9.3940e-003
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.19
tblVehicleEF	LDT1	7.2360e-003	4.1470e-003
tblVehicleEF	LDT1	9.9520e-003	0.06
tblVehicleEF	LDT1	0.92	0.93
tblVehicleEF	LDT1	2.03	2.10
tblVehicleEF	LDT1	292.62	293.91
tblVehicleEF	LDT1	65.95	61.09
tblVehicleEF	LDT1	0.08	0.07
tblVehicleEF	LDT1	0.12	0.21

tblVehicleEF	LDT1	2.2960e-003	1.8510e-003
tblVehicleEF	LDT1	2.9420e-003	2.1800e-003
tblVehicleEF	LDT1	2.1130e-003	1.7030e-003
tblVehicleEF	LDT1	2.7050e-003	2.0050e-003
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.21	0.16
tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.14	0.07
tblVehicleEF	LDT1	0.13	0.27
tblVehicleEF	LDT1	2.9360e-003	2.8490e-003
tblVehicleEF	LDT1	6.9500e-004	5.9200e-004
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.21	0.16
tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.14	0.07
tblVehicleEF	LDT1	0.15	0.29
tblVehicleEF	LDT1	7.6070e-003	4.3890e-003
tblVehicleEF	LDT1	8.9270e-003	0.05
tblVehicleEF	LDT1	0.99	1.01
tblVehicleEF	LDT1	1.75	1.81
tblVehicleEF	LDT1	304.46	304.24
tblVehicleEF	LDT1	65.95	60.53
tblVehicleEF	LDT1	0.07	0.06
tblVehicleEF	LDT1	0.11	0.20
tblVehicleEF	LDT1	2.2960e-003	1.8510e-003
tblVehicleEF	LDT1	2.9420e-003	2.1800e-003
tblVehicleEF	LDT1	2.1130e-003	1.7030e-003

tblVehicleEF	LDT1	2.7050e-003	2.0050e-003
tblVehicleEF	LDT1	0.14	0.14
tblVehicleEF	LDT1	0.22	0.16
tblVehicleEF	LDT1	0.12	0.12
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.13	0.06
tblVehicleEF	LDT1	0.12	0.24
tblVehicleEF	LDT1	3.0550e-003	2.9500e-003
tblVehicleEF	LDT1	6.9000e-004	5.8700e-004
tblVehicleEF	LDT1	0.14	0.14
tblVehicleEF	LDT1	0.22	0.16
tblVehicleEF	LDT1	0.12	0.12
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.13	0.06
tblVehicleEF	LDT1	0.13	0.26
tblVehicleEF	LDT1	7.1090e-003	4.0700e-003
tblVehicleEF	LDT1	0.01	0.06
tblVehicleEF	LDT1	0.89	0.90
tblVehicleEF	LDT1	2.09	2.16
tblVehicleEF	LDT1	288.25	290.09
tblVehicleEF	LDT1	65.95	61.21
tblVehicleEF	LDT1	0.08	0.07
tblVehicleEF	LDT1	0.12	0.21
tblVehicleEF	LDT1	2.2960e-003	1.8510e-003
tblVehicleEF	LDT1	2.9420e-003	2.1800e-003
tblVehicleEF	LDT1	2.1130e-003	1.7030e-003
tblVehicleEF	LDT1	2.7050e-003	2.0050e-003
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.24	0.17

tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.14	0.27
tblVehicleEF	LDT1	2.8920e-003	2.8120e-003
tblVehicleEF	LDT1	6.9600e-004	5.9300e-004
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.24	0.17
tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.15	0.30
tblVehicleEF	LDT2	4.5940e-003	2.9810e-003
tblVehicleEF	LDT2	4.8100e-003	0.06
tblVehicleEF	LDT2	0.64	0.74
tblVehicleEF	LDT2	1.11	2.45
tblVehicleEF	LDT2	329.48	312.71
tblVehicleEF	LDT2	73.66	65.44
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.08	0.22
tblVehicleEF	LDT2	1.8470e-003	1.4660e-003
tblVehicleEF	LDT2	2.3090e-003	1.6630e-003
tblVehicleEF	LDT2	1.6990e-003	1.3500e-003
tblVehicleEF	LDT2	2.1230e-003	1.5290e-003
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.05	0.05

tblVehicleEF	LDT2	0.06	0.25
tblVehicleEF	LDT2	3.2990e-003	3.0310e-003
tblVehicleEF	LDT2	7.5500e-004	6.3400e-004
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.07	0.27
tblVehicleEF	LDT2	4.8530e-003	3.1670e-003
tblVehicleEF	LDT2	4.3330e-003	0.05
tblVehicleEF	LDT2	0.69	0.80
tblVehicleEF	LDT2	0.96	2.11
tblVehicleEF	LDT2	342.98	322.65
tblVehicleEF	LDT2	73.66	64.81
tblVehicleEF	LDT2	0.05	0.04
tblVehicleEF	LDT2	0.07	0.21
tblVehicleEF	LDT2	1.8470e-003	1.4660e-003
tblVehicleEF	LDT2	2.3090e-003	1.6630e-003
tblVehicleEF	LDT2	1.6990e-003	1.3500e-003
tblVehicleEF	LDT2	2.1230e-003	1.5290e-003
tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.05	0.04
tblVehicleEF	LDT2	0.06	0.23
tblVehicleEF	LDT2	3.4350e-003	3.1280e-003
tblVehicleEF	LDT2	7.5200e-004	6.2800e-004

tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.05	0.04
tblVehicleEF	LDT2	0.06	0.25
tblVehicleEF	LDT2	4.5070e-003	2.9220e-003
tblVehicleEF	LDT2	4.9080e-003	0.06
tblVehicleEF	LDT2	0.62	0.72
tblVehicleEF	LDT2	1.14	2.52
tblVehicleEF	LDT2	324.49	309.04
tblVehicleEF	LDT2	73.66	65.58
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.08	0.23
tblVehicleEF	LDT2	1.8470e-003	1.4660e-003
tblVehicleEF	LDT2	2.3090e-003	1.6630e-003
tblVehicleEF	LDT2	1.6990e-003	1.3500e-003
tblVehicleEF	LDT2	2.1230e-003	1.5290e-003
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.09	0.12
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.07	0.26
tblVehicleEF	LDT2	3.2490e-003	2.9960e-003
tblVehicleEF	LDT2	7.5500e-004	6.3600e-004
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.09	0.12
tblVehicleEF	LDT2	0.04	0.07

tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.07	0.28
tblVehicleEF	LHD1	4.8760e-003	5.1790e-003
tblVehicleEF	LHD1	7.3850e-003	3.6570e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	0.58	0.42
tblVehicleEF	LHD1	2.05	0.96
tblVehicleEF	LHD1	9.05	8.87
tblVehicleEF	LHD1	582.71	633.58
tblVehicleEF	LHD1	30.08	11.39
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.97	0.58
tblVehicleEF	LHD1	0.88	0.30
tblVehicleEF	LHD1	8.7700e-004	8.3800e-004
tblVehicleEF	LHD1	0.01	9.8000e-003
tblVehicleEF	LHD1	9.4650e-003	6.3810e-003
tblVehicleEF	LHD1	7.7100e-004	2.2200e-004
tblVehicleEF	LHD1	8.3900e-004	8.0200e-004
tblVehicleEF	LHD1	2.5630e-003	2.4500e-003
tblVehicleEF	LHD1	9.0360e-003	6.0820e-003
tblVehicleEF	LHD1	7.0900e-004	2.0400e-004
tblVehicleEF	LHD1	2.4720e-003	1.8820e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.6210e-003	1.2380e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.26	0.15

tblVehicleEF	LHD1	0.21	0.06
tblVehicleEF	LHD1	9.0000e-005	8.6000e-005
tblVehicleEF	LHD1	5.7060e-003	6.1790e-003
tblVehicleEF	LHD1	3.3900e-004	1.1300e-004
tblVehicleEF	LHD1	2.4720e-003	1.8820e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.6210e-003	1.2380e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.26	0.15
tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD1	4.8760e-003	5.1900e-003
tblVehicleEF	LHD1	7.5120e-003	3.7120e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	0.59	0.42
tblVehicleEF	LHD1	1.97	0.92
tblVehicleEF	LHD1	9.05	8.87
tblVehicleEF	LHD1	582.71	633.59
tblVehicleEF	LHD1	30.08	11.32
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.92	0.55
tblVehicleEF	LHD1	0.84	0.28
tblVehicleEF	LHD1	8.7700e-004	8.3800e-004
tblVehicleEF	LHD1	0.01	9.8000e-003
tblVehicleEF	LHD1	9.4650e-003	6.3810e-003
tblVehicleEF	LHD1	7.7100e-004	2.2200e-004
tblVehicleEF	LHD1	8.3900e-004	8.0200e-004
tblVehicleEF	LHD1	2.5630e-003	2.4500e-003

tblVehicleEF	LHD1	9.0360e-003	6.0820e-003
tblVehicleEF	LHD1	7.0900e-004	2.0400e-004
tblVehicleEF	LHD1	3.4440e-003	2.6310e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.1800e-003	1.6730e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.25	0.14
tblVehicleEF	LHD1	0.20	0.06
tblVehicleEF	LHD1	9.0000e-005	8.6000e-005
tblVehicleEF	LHD1	5.7070e-003	6.1790e-003
tblVehicleEF	LHD1	3.3800e-004	1.1200e-004
tblVehicleEF	LHD1	3.4440e-003	2.6310e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	2.1800e-003	1.6730e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.25	0.14
tblVehicleEF	LHD1	0.22	0.07
tblVehicleEF	LHD1	4.8760e-003	5.1770e-003
tblVehicleEF	LHD1	7.3500e-003	3.6420e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	0.58	0.41
tblVehicleEF	LHD1	2.06	0.97
tblVehicleEF	LHD1	9.05	8.87
tblVehicleEF	LHD1	582.71	633.58
tblVehicleEF	LHD1	30.08	11.40
tblVehicleEF	LHD1	0.08	0.06

tblVehicleEF	LHD1	0.96	0.57
tblVehicleEF	LHD1	0.89	0.30
tblVehicleEF	LHD1	8.7700e-004	8.3800e-004
tblVehicleEF	LHD1	0.01	9.8000e-003
tblVehicleEF	LHD1	9.4650e-003	6.3810e-003
tblVehicleEF	LHD1	7.7100e-004	2.2200e-004
tblVehicleEF	LHD1	8.3900e-004	8.0200e-004
tblVehicleEF	LHD1	2.5630e-003	2.4500e-003
tblVehicleEF	LHD1	9.0360e-003	6.0820e-003
tblVehicleEF	LHD1	7.0900e-004	2.0400e-004
tblVehicleEF	LHD1	2.5350e-003	1.9320e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.6290e-003	1.2470e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.29	0.16
tblVehicleEF	LHD1	0.21	0.06
tblVehicleEF	LHD1	9.0000e-005	8.6000e-005
tblVehicleEF	LHD1	5.7060e-003	6.1790e-003
tblVehicleEF	LHD1	3.4000e-004	1.1300e-004
tblVehicleEF	LHD1	2.5350e-003	1.9320e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.6290e-003	1.2470e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.29	0.16
tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD2	3.5130e-003	3.7120e-003
tblVehicleEF	LHD2	3.0250e-003	2.8570e-003

tblVehicleEF	LHD2	6.4370e-003	9.0450e-003
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.27	0.31
tblVehicleEF	LHD2	1.11	0.65
tblVehicleEF	LHD2	13.66	13.46
tblVehicleEF	LHD2	600.10	642.40
tblVehicleEF	LHD2	25.96	8.94
tblVehicleEF	LHD2	0.09	0.08
tblVehicleEF	LHD2	0.55	0.66
tblVehicleEF	LHD2	0.47	0.21
tblVehicleEF	LHD2	1.1390e-003	1.2800e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.3740e-003	9.6040e-003
tblVehicleEF	LHD2	3.9500e-004	1.2800e-004
tblVehicleEF	LHD2	1.0900e-003	1.2250e-003
tblVehicleEF	LHD2	2.6730e-003	2.6460e-003
tblVehicleEF	LHD2	7.9990e-003	9.1750e-003
tblVehicleEF	LHD2	3.6300e-004	1.1800e-004
tblVehicleEF	LHD2	9.0300e-004	1.2060e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	6.4300e-004	8.2300e-004
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.06	0.09
tblVehicleEF	LHD2	0.09	0.04
tblVehicleEF	LHD2	1.3300e-004	1.2900e-004
tblVehicleEF	LHD2	5.8410e-003	6.2140e-003
tblVehicleEF	LHD2	2.7900e-004	8.9000e-005
tblVehicleEF	LHD2	9.0300e-004	1.2060e-003

tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	6.4300e-004	8.2300e-004
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.06	0.09
tblVehicleEF	LHD2	0.10	0.05
tblVehicleEF	LHD2	3.5130e-003	3.7190e-003
tblVehicleEF	LHD2	3.0530e-003	2.8800e-003
tblVehicleEF	LHD2	6.2440e-003	8.7610e-003
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.27	0.31
tblVehicleEF	LHD2	1.06	0.62
tblVehicleEF	LHD2	13.66	13.46
tblVehicleEF	LHD2	600.10	642.40
tblVehicleEF	LHD2	25.96	8.90
tblVehicleEF	LHD2	0.09	0.08
tblVehicleEF	LHD2	0.52	0.62
tblVehicleEF	LHD2	0.45	0.20
tblVehicleEF	LHD2	1.1390e-003	1.2800e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.3740e-003	9.6040e-003
tblVehicleEF	LHD2	3.9500e-004	1.2800e-004
tblVehicleEF	LHD2	1.0900e-003	1.2250e-003
tblVehicleEF	LHD2	2.6730e-003	2.6460e-003
tblVehicleEF	LHD2	7.9990e-003	9.1750e-003
tblVehicleEF	LHD2	3.6300e-004	1.1800e-004
tblVehicleEF	LHD2	1.2670e-003	1.6890e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.01	0.02

tblVehicleEF	LHD2	8.6800e-004	1.1130e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.08	0.04
tblVehicleEF	LHD2	1.3300e-004	1.2900e-004
tblVehicleEF	LHD2	5.8410e-003	6.2140e-003
tblVehicleEF	LHD2	2.7900e-004	8.8000e-005
tblVehicleEF	LHD2	1.2670e-003	1.6890e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	8.6800e-004	1.1130e-003
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.09	0.05
tblVehicleEF	LHD2	3.5130e-003	3.7100e-003
tblVehicleEF	LHD2	3.0170e-003	2.8500e-003
tblVehicleEF	LHD2	6.4770e-003	9.1040e-003
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.27	0.31
tblVehicleEF	LHD2	1.11	0.65
tblVehicleEF	LHD2	13.66	13.46
tblVehicleEF	LHD2	600.10	642.39
tblVehicleEF	LHD2	25.96	8.95
tblVehicleEF	LHD2	0.09	0.08
tblVehicleEF	LHD2	0.54	0.65
tblVehicleEF	LHD2	0.47	0.21
tblVehicleEF	LHD2	1.1390e-003	1.2800e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.3740e-003	9.6040e-003

tblVehicleEF	LHD2	3.9500e-004	1.2800e-004
tblVehicleEF	LHD2	1.0900e-003	1.2250e-003
tblVehicleEF	LHD2	2.6730e-003	2.6460e-003
tblVehicleEF	LHD2	7.9990e-003	9.1750e-003
tblVehicleEF	LHD2	3.6300e-004	1.1800e-004
tblVehicleEF	LHD2	8.9600e-004	1.2110e-003
tblVehicleEF	LHD2	0.03	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	6.3600e-004	8.1400e-004
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.09	0.04
tblVehicleEF	LHD2	1.3300e-004	1.2900e-004
tblVehicleEF	LHD2	5.8410e-003	6.2140e-003
tblVehicleEF	LHD2	2.8000e-004	8.9000e-005
tblVehicleEF	LHD2	8.9600e-004	1.2110e-003
tblVehicleEF	LHD2	0.03	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	6.3600e-004	8.1400e-004
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.10	0.05
tblVehicleEF	MCY	0.49	0.35
tblVehicleEF	MCY	0.15	0.23
tblVehicleEF	MCY	17.95	18.16
tblVehicleEF	MCY	9.61	8.50
tblVehicleEF	MCY	178.67	214.64
tblVehicleEF	MCY	44.17	59.14
tblVehicleEF	MCY	1.11	1.12

tblVehicleEF	MCY	0.31	0.26
tblVehicleEF	MCY	2.2470e-003	2.2320e-003
tblVehicleEF	MCY	3.4860e-003	2.9930e-003
tblVehicleEF	MCY	2.0980e-003	2.0840e-003
tblVehicleEF	MCY	3.2740e-003	2.8100e-003
tblVehicleEF	MCY	1.12	1.15
tblVehicleEF	MCY	0.65	0.68
tblVehicleEF	MCY	0.69	0.70
tblVehicleEF	MCY	2.34	2.35
tblVehicleEF	MCY	0.60	0.53
tblVehicleEF	MCY	2.02	1.79
tblVehicleEF	MCY	2.1510e-003	2.1240e-003
tblVehicleEF	MCY	6.5800e-004	5.8500e-004
tblVehicleEF	MCY	1.12	1.15
tblVehicleEF	MCY	0.65	0.68
tblVehicleEF	MCY	0.69	0.70
tblVehicleEF	MCY	2.92	2.93
tblVehicleEF	MCY	0.60	0.53
tblVehicleEF	MCY	2.20	1.95
tblVehicleEF	MCY	0.48	0.34
tblVehicleEF	MCY	0.13	0.21
tblVehicleEF	MCY	17.31	17.50
tblVehicleEF	MCY	8.84	7.78
tblVehicleEF	MCY	178.67	213.41
tblVehicleEF	MCY	44.17	57.38
tblVehicleEF	MCY	0.98	0.98
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	2.2470e-003	2.2320e-003
tblVehicleEF	MCY	3.4860e-003	2.9930e-003

tblVehicleEF	MCY	2.0980e-003	2.0840e-003
tblVehicleEF	MCY	3.2740e-003	2.8100e-003
tblVehicleEF	MCY	1.69	1.72
tblVehicleEF	MCY	0.70	0.72
tblVehicleEF	MCY	1.09	1.11
tblVehicleEF	MCY	2.29	2.30
tblVehicleEF	MCY	0.56	0.50
tblVehicleEF	MCY	1.82	1.60
tblVehicleEF	MCY	2.1390e-003	2.1120e-003
tblVehicleEF	MCY	6.3900e-004	5.6800e-004
tblVehicleEF	MCY	1.69	1.72
tblVehicleEF	MCY	0.70	0.72
tblVehicleEF	MCY	1.09	1.11
tblVehicleEF	MCY	2.85	2.86
tblVehicleEF	MCY	0.56	0.50
tblVehicleEF	MCY	1.98	1.74
tblVehicleEF	MCY	0.49	0.35
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	18.04	18.25
tblVehicleEF	MCY	9.73	8.62
tblVehicleEF	MCY	178.67	214.83
tblVehicleEF	MCY	44.17	59.46
tblVehicleEF	MCY	1.09	1.09
tblVehicleEF	MCY	0.31	0.27
tblVehicleEF	MCY	2.2470e-003	2.2320e-003
tblVehicleEF	MCY	3.4860e-003	2.9930e-003
tblVehicleEF	MCY	2.0980e-003	2.0840e-003
tblVehicleEF	MCY	3.2740e-003	2.8100e-003
tblVehicleEF	MCY	1.25	1.27

tblVehicleEF	MCY	0.84	0.87
tblVehicleEF	MCY	0.73	0.74
tblVehicleEF	MCY	2.35	2.36
tblVehicleEF	MCY	0.69	0.62
tblVehicleEF	MCY	2.06	1.83
tblVehicleEF	MCY	2.1520e-003	2.1260e-003
tblVehicleEF	MCY	6.6100e-004	5.8800e-004
tblVehicleEF	MCY	1.25	1.27
tblVehicleEF	MCY	0.84	0.87
tblVehicleEF	MCY	0.73	0.74
tblVehicleEF	MCY	2.93	2.94
tblVehicleEF	MCY	0.69	0.62
tblVehicleEF	MCY	2.24	1.99
tblVehicleEF	MDV	8.2720e-003	3.7210e-003
tblVehicleEF	MDV	0.01	0.07
tblVehicleEF	MDV	0.96	0.83
tblVehicleEF	MDV	1.95	2.70
tblVehicleEF	MDV	450.89	387.66
tblVehicleEF	MDV	98.57	79.61
tblVehicleEF	MDV	0.10	0.07
tblVehicleEF	MDV	0.17	0.27
tblVehicleEF	MDV	1.8710e-003	1.5460e-003
tblVehicleEF	MDV	2.2680e-003	1.7230e-003
tblVehicleEF	MDV	1.7240e-003	1.4260e-003
tblVehicleEF	MDV	2.0860e-003	1.5840e-003
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.02	0.02

tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.14	0.31
tblVehicleEF	MDV	4.5120e-003	3.7560e-003
tblVehicleEF	MDV	1.0190e-003	7.7200e-004
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.15	0.34
tblVehicleEF	MDV	8.7240e-003	3.9510e-003
tblVehicleEF	MDV	9.3780e-003	0.06
tblVehicleEF	MDV	1.04	0.90
tblVehicleEF	MDV	1.69	2.32
tblVehicleEF	MDV	468.83	397.99
tblVehicleEF	MDV	98.57	78.90
tblVehicleEF	MDV	0.09	0.06
tblVehicleEF	MDV	0.16	0.25
tblVehicleEF	MDV	1.8710e-003	1.5460e-003
tblVehicleEF	MDV	2.2680e-003	1.7230e-003
tblVehicleEF	MDV	1.7240e-003	1.4260e-003
tblVehicleEF	MDV	2.0860e-003	1.5840e-003
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.09	0.12
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.13	0.28
tblVehicleEF	MDV	4.6930e-003	3.8560e-003

tblVehicleEF	MDV	1.0150e-003	7.6500e-004
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.09	0.12
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.14	0.31
tblVehicleEF	MDV	8.1180e-003	3.6470e-003
tblVehicleEF	MDV	0.01	0.07
tblVehicleEF	MDV	0.93	0.80
tblVehicleEF	MDV	2.00	2.78
tblVehicleEF	MDV	444.26	383.84
tblVehicleEF	MDV	98.57	79.77
tblVehicleEF	MDV	0.09	0.06
tblVehicleEF	MDV	0.17	0.28
tblVehicleEF	MDV	1.8710e-003	1.5460e-003
tblVehicleEF	MDV	2.2680e-003	1.7230e-003
tblVehicleEF	MDV	1.7240e-003	1.4260e-003
tblVehicleEF	MDV	2.0860e-003	1.5840e-003
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.15	0.13
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.02	0.01
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.14	0.32
tblVehicleEF	MDV	4.4460e-003	3.7190e-003
tblVehicleEF	MDV	1.0200e-003	7.7300e-004
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.15	0.13

tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.16	0.35
tblVehicleEF	MH	0.02	6.9350e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.27	0.73
tblVehicleEF	MH	4.43	1.75
tblVehicleEF	MH	1,096.02	1,403.51
tblVehicleEF	MH	56.63	16.91
tblVehicleEF	MH	1.16	1.27
tblVehicleEF	MH	0.68	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.0200e-004	2.1600e-004
tblVehicleEF	MH	3.2400e-003	3.3090e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	8.2900e-004	1.9900e-004
tblVehicleEF	MH	0.74	0.62
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.33	0.28
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.26	0.08
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.4300e-004	1.6700e-004
tblVehicleEF	MH	0.74	0.62
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.33	0.28

tblVehicleEF	MH	0.08	0.06
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.29	0.09
tblVehicleEF	MH	0.02	7.0670e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.30	0.74
tblVehicleEF	MH	4.20	1.66
tblVehicleEF	MH	1,096.02	1,403.53
tblVehicleEF	MH	56.63	16.76
tblVehicleEF	MH	1.08	1.19
tblVehicleEF	MH	0.65	0.22
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.0200e-004	2.1600e-004
tblVehicleEF	MH	3.2400e-003	3.3090e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	8.2900e-004	1.9900e-004
tblVehicleEF	MH	0.99	0.83
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.45	0.38
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.02	9.8870e-003
tblVehicleEF	MH	0.25	0.08
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.3900e-004	1.6600e-004
tblVehicleEF	MH	0.99	0.83
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.45	0.38
tblVehicleEF	MH	0.08	0.06

tblVehicleEF	MH	0.02	9.8870e-003
tblVehicleEF	MH	0.27	0.08
tblVehicleEF	MH	0.02	6.8950e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.26	0.72
tblVehicleEF	MH	4.46	1.77
tblVehicleEF	MH	1,096.02	1,403.50
tblVehicleEF	MH	56.63	16.93
tblVehicleEF	MH	1.14	1.24
tblVehicleEF	MH	0.68	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.0200e-004	2.1600e-004
tblVehicleEF	MH	3.2400e-003	3.3090e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	8.2900e-004	1.9900e-004
tblVehicleEF	MH	0.80	0.66
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.34	0.29
tblVehicleEF	MH	0.06	0.04
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.26	0.08
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.4400e-004	1.6800e-004
tblVehicleEF	MH	0.80	0.66
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.34	0.29
tblVehicleEF	MH	0.08	0.06
tblVehicleEF	MH	0.02	0.01

tblVehicleEF	MH	0.29	0.09
tblVehicleEF	MHD	0.02	4.6040e-003
tblVehicleEF	MHD	2.6670e-003	1.2190e-003
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.32	0.38
tblVehicleEF	MHD	0.24	0.17
tblVehicleEF	MHD	4.63	1.13
tblVehicleEF	MHD	143.49	52.64
tblVehicleEF	MHD	1,123.36	993.27
tblVehicleEF	MHD	56.66	11.92
tblVehicleEF	MHD	0.37	0.25
tblVehicleEF	MHD	0.68	0.96
tblVehicleEF	MHD	11.00	1.55
tblVehicleEF	MHD	6.9000e-005	1.7500e-004
tblVehicleEF	MHD	2.8070e-003	6.0480e-003
tblVehicleEF	MHD	6.9200e-004	1.1100e-004
tblVehicleEF	MHD	6.6000e-005	1.6700e-004
tblVehicleEF	MHD	2.6820e-003	5.7810e-003
tblVehicleEF	MHD	6.3600e-004	1.0200e-004
tblVehicleEF	MHD	9.3500e-004	4.6900e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	6.5100e-004	3.4100e-004
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.29	0.05
tblVehicleEF	MHD	1.3800e-003	5.0100e-004
tblVehicleEF	MHD	0.01	9.5000e-003
tblVehicleEF	MHD	6.4800e-004	1.1800e-004

tblVehicleEF	MHD	9.3500e-004	4.6900e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	6.5100e-004	3.4100e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.31	0.06
tblVehicleEF	MHD	0.01	4.3670e-003
tblVehicleEF	MHD	2.6950e-003	1.2410e-003
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.24	0.31
tblVehicleEF	MHD	0.24	0.17
tblVehicleEF	MHD	4.41	1.08
tblVehicleEF	MHD	151.98	52.58
tblVehicleEF	MHD	1,123.36	993.27
tblVehicleEF	MHD	56.66	11.83
tblVehicleEF	MHD	0.38	0.24
tblVehicleEF	MHD	0.65	0.90
tblVehicleEF	MHD	10.97	1.55
tblVehicleEF	MHD	5.8000e-005	1.5000e-004
tblVehicleEF	MHD	2.8070e-003	6.0480e-003
tblVehicleEF	MHD	6.9200e-004	1.1100e-004
tblVehicleEF	MHD	5.5000e-005	1.4300e-004
tblVehicleEF	MHD	2.6820e-003	5.7810e-003
tblVehicleEF	MHD	6.3600e-004	1.0200e-004
tblVehicleEF	MHD	1.3170e-003	6.6100e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	8.8900e-004	4.6400e-004

tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.28	0.05
tblVehicleEF	MHD	1.4600e-003	5.0100e-004
tblVehicleEF	MHD	0.01	9.5000e-003
tblVehicleEF	MHD	6.4400e-004	1.1700e-004
tblVehicleEF	MHD	1.3170e-003	6.6100e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	8.8900e-004	4.6400e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.30	0.06
tblVehicleEF	MHD	0.02	4.9470e-003
tblVehicleEF	MHD	2.6590e-003	1.2110e-003
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.45	0.47
tblVehicleEF	MHD	0.24	0.17
tblVehicleEF	MHD	4.67	1.14
tblVehicleEF	MHD	131.74	52.73
tblVehicleEF	MHD	1,123.36	993.27
tblVehicleEF	MHD	56.66	11.94
tblVehicleEF	MHD	0.35	0.26
tblVehicleEF	MHD	0.67	0.94
tblVehicleEF	MHD	11.01	1.55
tblVehicleEF	MHD	8.4000e-005	2.1000e-004
tblVehicleEF	MHD	2.8070e-003	6.0480e-003
tblVehicleEF	MHD	6.9200e-004	1.1100e-004
tblVehicleEF	MHD	8.0000e-005	2.0100e-004

tblVehicleEF	MHD	2.6820e-003	5.7810e-003
tblVehicleEF	MHD	6.3600e-004	1.0200e-004
tblVehicleEF	MHD	9.4200e-004	4.6200e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	6.5200e-004	3.3800e-004
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.29	0.06
tblVehicleEF	MHD	1.2700e-003	5.0200e-004
tblVehicleEF	MHD	0.01	9.5000e-003
tblVehicleEF	MHD	6.4800e-004	1.1800e-004
tblVehicleEF	MHD	9.4200e-004	4.6200e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	6.5200e-004	3.3800e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.32	0.06
tblVehicleEF	OBUS	0.01	8.6550e-003
tblVehicleEF	OBUS	5.2770e-003	4.3820e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.25	0.56
tblVehicleEF	OBUS	0.39	0.54
tblVehicleEF	OBUS	4.82	2.26
tblVehicleEF	OBUS	76.59	78.18
tblVehicleEF	OBUS	1,203.91	1,334.33
tblVehicleEF	OBUS	69.07	19.41
tblVehicleEF	OBUS	0.15	0.30

tblVehicleEF	OBUS	0.55	0.98
tblVehicleEF	OBUS	1.95	0.75
tblVehicleEF	OBUS	1.4000e-005	9.9000e-005
tblVehicleEF	OBUS	2.4030e-003	6.5550e-003
tblVehicleEF	OBUS	8.9600e-004	2.0200e-004
tblVehicleEF	OBUS	1.3000e-005	9.5000e-005
tblVehicleEF	OBUS	2.2790e-003	6.2550e-003
tblVehicleEF	OBUS	8.2400e-004	1.8600e-004
tblVehicleEF	OBUS	1.3360e-003	1.7510e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	7.4000e-004	9.5000e-004
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.30	0.11
tblVehicleEF	OBUS	7.4300e-004	7.4500e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.7500e-004	1.9200e-004
tblVehicleEF	OBUS	1.3360e-003	1.7510e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	7.4000e-004	9.5000e-004
tblVehicleEF	OBUS	0.04	0.03
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.33	0.12
tblVehicleEF	OBUS	0.01	8.7320e-003
tblVehicleEF	OBUS	5.3660e-003	4.4740e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.24	0.55

tblVehicleEF	OBUS	0.39	0.55
tblVehicleEF	OBUS	4.58	2.14
tblVehicleEF	OBUS	80.14	77.32
tblVehicleEF	OBUS	1,203.91	1,334.35
tblVehicleEF	OBUS	69.07	19.21
tblVehicleEF	OBUS	0.16	0.28
tblVehicleEF	OBUS	0.52	0.92
tblVehicleEF	OBUS	1.92	0.74
tblVehicleEF	OBUS	1.2000e-005	8.8000e-005
tblVehicleEF	OBUS	2.4030e-003	6.5550e-003
tblVehicleEF	OBUS	8.9600e-004	2.0200e-004
tblVehicleEF	OBUS	1.1000e-005	8.4000e-005
tblVehicleEF	OBUS	2.2790e-003	6.2550e-003
tblVehicleEF	OBUS	8.2400e-004	1.8600e-004
tblVehicleEF	OBUS	1.8380e-003	2.3950e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	1.0100e-003	1.2840e-003
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.29	0.11
tblVehicleEF	OBUS	7.7700e-004	7.3700e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.7100e-004	1.9000e-004
tblVehicleEF	OBUS	1.8380e-003	2.3950e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	1.0100e-003	1.2840e-003
tblVehicleEF	OBUS	0.04	0.04

tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.32	0.12
tblVehicleEF	OBUS	0.01	8.5700e-003
tblVehicleEF	OBUS	5.2500e-003	4.3550e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.25	0.56
tblVehicleEF	OBUS	0.38	0.54
tblVehicleEF	OBUS	4.86	2.28
tblVehicleEF	OBUS	71.70	79.37
tblVehicleEF	OBUS	1,203.91	1,334.32
tblVehicleEF	OBUS	69.07	19.44
tblVehicleEF	OBUS	0.15	0.32
tblVehicleEF	OBUS	0.54	0.96
tblVehicleEF	OBUS	1.96	0.76
tblVehicleEF	OBUS	1.7000e-005	1.1500e-004
tblVehicleEF	OBUS	2.4030e-003	6.5550e-003
tblVehicleEF	OBUS	8.9600e-004	2.0200e-004
tblVehicleEF	OBUS	1.6000e-005	1.1000e-004
tblVehicleEF	OBUS	2.2790e-003	6.2550e-003
tblVehicleEF	OBUS	8.2400e-004	1.8600e-004
tblVehicleEF	OBUS	1.3380e-003	1.7730e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	7.3000e-004	9.4400e-004
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.31	0.11
tblVehicleEF	OBUS	6.9600e-004	7.5600e-004
tblVehicleEF	OBUS	0.01	0.01

tblVehicleEF	OBUS	7.7600e-004	1.9200e-004
tblVehicleEF	OBUS	1.3380e-003	1.7730e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	7.3000e-004	9.4400e-004
tblVehicleEF	OBUS	0.04	0.03
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.34	0.12
tblVehicleEF	SBUS	0.83	0.09
tblVehicleEF	SBUS	0.02	9.1570e-003
tblVehicleEF	SBUS	0.07	8.2300e-003
tblVehicleEF	SBUS	8.49	3.34
tblVehicleEF	SBUS	0.94	0.84
tblVehicleEF	SBUS	8.61	1.12
tblVehicleEF	SBUS	1,085.60	359.37
tblVehicleEF	SBUS	1,065.54	1,076.06
tblVehicleEF	SBUS	58.07	6.66
tblVehicleEF	SBUS	7.75	3.47
tblVehicleEF	SBUS	3.55	5.09
tblVehicleEF	SBUS	11.66	0.75
tblVehicleEF	SBUS	6.9310e-003	4.4780e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	1.0190e-003	7.7000e-005
tblVehicleEF	SBUS	6.6310e-003	4.2840e-003
tblVehicleEF	SBUS	2.6550e-003	2.6190e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	9.3700e-004	7.1000e-005
tblVehicleEF	SBUS	3.3910e-003	1.1510e-003

tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.01	0.40
tblVehicleEF	SBUS	1.9710e-003	6.6100e-004
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.45	0.05
tblVehicleEF	SBUS	0.01	3.4360e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.3000e-004	6.6000e-005
tblVehicleEF	SBUS	3.3910e-003	1.1510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.46	0.57
tblVehicleEF	SBUS	1.9710e-003	6.6100e-004
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.50	0.05
tblVehicleEF	SBUS	0.83	0.09
tblVehicleEF	SBUS	0.02	9.2670e-003
tblVehicleEF	SBUS	0.06	7.3960e-003
tblVehicleEF	SBUS	8.40	3.30
tblVehicleEF	SBUS	0.95	0.85
tblVehicleEF	SBUS	7.12	0.92
tblVehicleEF	SBUS	1,133.08	368.54
tblVehicleEF	SBUS	1,065.54	1,076.08
tblVehicleEF	SBUS	58.07	6.33
tblVehicleEF	SBUS	8.00	3.55
tblVehicleEF	SBUS	3.35	4.81
tblVehicleEF	SBUS	11.63	0.75
tblVehicleEF	SBUS	5.8420e-003	3.7810e-003

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	1.0190e-003	7.7000e-005
tblVehicleEF	SBUS	5.5900e-003	3.6170e-003
tblVehicleEF	SBUS	2.6550e-003	2.6190e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	9.3700e-004	7.1000e-005
tblVehicleEF	SBUS	4.6620e-003	1.5800e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.01	0.40
tblVehicleEF	SBUS	2.6790e-003	8.9500e-004
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.41	0.04
tblVehicleEF	SBUS	0.01	3.5220e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.0500e-004	6.3000e-005
tblVehicleEF	SBUS	4.6620e-003	1.5800e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.46	0.57
tblVehicleEF	SBUS	2.6790e-003	8.9500e-004
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.45	0.05
tblVehicleEF	SBUS	0.83	0.09
tblVehicleEF	SBUS	0.02	9.1270e-003
tblVehicleEF	SBUS	0.07	8.3500e-003
tblVehicleEF	SBUS	8.63	3.39
tblVehicleEF	SBUS	0.93	0.83

tblVehicleEF	SBUS	8.75	1.13
tblVehicleEF	SBUS	1,020.03	346.72
tblVehicleEF	SBUS	1,065.54	1,076.06
tblVehicleEF	SBUS	58.07	6.69
tblVehicleEF	SBUS	7.41	3.35
tblVehicleEF	SBUS	3.49	5.00
tblVehicleEF	SBUS	11.67	0.75
tblVehicleEF	SBUS	8.4330e-003	5.4400e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	1.0190e-003	7.7000e-005
tblVehicleEF	SBUS	8.0680e-003	5.2050e-003
tblVehicleEF	SBUS	2.6550e-003	2.6190e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	9.3700e-004	7.1000e-005
tblVehicleEF	SBUS	3.3080e-003	1.1240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.01	0.40
tblVehicleEF	SBUS	1.9200e-003	6.4200e-004
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.46	0.05
tblVehicleEF	SBUS	0.01	3.3160e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.3200e-004	6.6000e-005
tblVehicleEF	SBUS	3.3080e-003	1.1240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.47	0.57
tblVehicleEF	SBUS	1.9200e-003	6.4200e-004

tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.51	0.05
tblVehicleEF	UBUS	1.60	1.2910e-003
tblVehicleEF	UBUS	0.07	0.02
tblVehicleEF	UBUS	7.75	0.07
tblVehicleEF	UBUS	12.30	1.81
tblVehicleEF	UBUS	1,792.86	385.95
tblVehicleEF	UBUS	138.24	20.36
tblVehicleEF	UBUS	3.61	0.05
tblVehicleEF	UBUS	13.00	0.18
tblVehicleEF	UBUS	0.52	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.03	3.6000e-004
tblVehicleEF	UBUS	1.3330e-003	1.7000e-004
tblVehicleEF	UBUS	0.22	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.03	3.3100e-004
tblVehicleEF	UBUS	1.2250e-003	1.5700e-004
tblVehicleEF	UBUS	5.7880e-003	1.1460e-003
tblVehicleEF	UBUS	0.09	0.01
tblVehicleEF	UBUS	3.5780e-003	7.3800e-004
tblVehicleEF	UBUS	0.41	4.2710e-003
tblVehicleEF	UBUS	0.03	2.7280e-003
tblVehicleEF	UBUS	0.94	0.11
tblVehicleEF	UBUS	8.5520e-003	3.8190e-003
tblVehicleEF	UBUS	1.6040e-003	2.0100e-004
tblVehicleEF	UBUS	5.7880e-003	1.1460e-003
tblVehicleEF	UBUS	0.09	0.01

tblVehicleEF	UBUS	3.5780e-003	7.3800e-004
tblVehicleEF	UBUS	2.05	6.2320e-003
tblVehicleEF	UBUS	0.03	2.7280e-003
tblVehicleEF	UBUS	1.03	0.12
tblVehicleEF	UBUS	1.60	1.3190e-003
tblVehicleEF	UBUS	0.06	0.02
tblVehicleEF	UBUS	7.80	0.07
tblVehicleEF	UBUS	10.86	1.61
tblVehicleEF	UBUS	1,792.86	385.95
tblVehicleEF	UBUS	138.24	20.00
tblVehicleEF	UBUS	3.38	0.04
tblVehicleEF	UBUS	12.93	0.17
tblVehicleEF	UBUS	0.52	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.03	3.6000e-004
tblVehicleEF	UBUS	1.3330e-003	1.7000e-004
tblVehicleEF	UBUS	0.22	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.03	3.3100e-004
tblVehicleEF	UBUS	1.2250e-003	1.5700e-004
tblVehicleEF	UBUS	7.7730e-003	1.5810e-003
tblVehicleEF	UBUS	0.09	0.01
tblVehicleEF	UBUS	4.7590e-003	1.0200e-003
tblVehicleEF	UBUS	0.41	4.3520e-003
tblVehicleEF	UBUS	0.03	2.4620e-003
tblVehicleEF	UBUS	0.87	0.10
tblVehicleEF	UBUS	8.5530e-003	3.8190e-003
tblVehicleEF	UBUS	1.5790e-003	1.9800e-004
tblVehicleEF	UBUS	7.7730e-003	1.5810e-003

tblVehicleEF	UBUS	0.09	0.01
tblVehicleEF	UBUS	4.7590e-003	1.0200e-003
tblVehicleEF	UBUS	2.06	6.3510e-003
tblVehicleEF	UBUS	0.03	2.4620e-003
tblVehicleEF	UBUS	0.96	0.11
tblVehicleEF	UBUS	1.60	1.2850e-003
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	7.74	0.06
tblVehicleEF	UBUS	12.55	1.85
tblVehicleEF	UBUS	1,792.86	385.95
tblVehicleEF	UBUS	138.24	20.42
tblVehicleEF	UBUS	3.54	0.05
tblVehicleEF	UBUS	13.02	0.18
tblVehicleEF	UBUS	0.52	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.03	3.6000e-004
tblVehicleEF	UBUS	1.3330e-003	1.7000e-004
tblVehicleEF	UBUS	0.22	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.03	3.3100e-004
tblVehicleEF	UBUS	1.2250e-003	1.5700e-004
tblVehicleEF	UBUS	6.4170e-003	1.1580e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	3.7120e-003	7.1600e-004
tblVehicleEF	UBUS	0.40	4.2510e-003
tblVehicleEF	UBUS	0.04	3.3320e-003
tblVehicleEF	UBUS	0.96	0.11
tblVehicleEF	UBUS	8.5520e-003	3.8190e-003
tblVehicleEF	UBUS	1.6080e-003	2.0200e-004

tblVehicleEF	UBUS	6.4170e-003	1.1580e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	3.7120e-003	7.1600e-004
tblVehicleEF	UBUS	2.05	6.2030e-003
tblVehicleEF	UBUS	0.04	3.3320e-003
tblVehicleEF	UBUS	1.05	0.12
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	19.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	77.00	100.00
tblVehicleTrips	PR_TP	54.00	100.00
tblVehicleTrips	ST_TR	6.39	2.69
tblVehicleTrips	ST_TR	2.46	1.03
tblVehicleTrips	ST_TR	158.37	0.00
tblVehicleTrips	ST_TR	8.96	0.00
tblVehicleTrips	ST_TR	49.97	142.13
tblVehicleTrips	ST_TR	177.59	0.00
tblVehicleTrips	SU_TR	5.86	2.28
tblVehicleTrips	SU_TR	1.05	0.33
tblVehicleTrips	SU_TR	131.84	0.00
tblVehicleTrips	SU_TR	1.55	0.00
tblVehicleTrips	SU_TR	25.24	62.97
tblVehicleTrips	SU_TR	166.44	0.00
tblVehicleTrips	WD_TR	6.65	2.93
tblVehicleTrips	WD_TR	11.03	5.99

tblVehicleTrips	WD_TR	127.15	0.00
tblVehicleTrips	WD_TR	36.13	0.00
tblVehicleTrips	WD_TR	42.70	94.79
tblVehicleTrips	WD_TR	102.24	0.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	14,920,271.87	0.00
tblWater	IndoorWaterUseRate	3,796,392.86	0.00
tblWater	IndoorWaterUseRate	12,945,712.84	0.00
tblWater	IndoorWaterUseRate	200,768.86	0.00
tblWater	IndoorWaterUseRate	5,068,041.92	46,904,933.00
tblWater	IndoorWaterUseRate	4,218,238.31	0.00
tblWater	OutdoorWaterUseRate	9,406,258.35	0.00
tblWater	OutdoorWaterUseRate	2,326,821.43	0.00
tblWater	OutdoorWaterUseRate	826,322.10	0.00
tblWater	OutdoorWaterUseRate	38,241.69	0.00
tblWater	OutdoorWaterUseRate	3,106,219.24	1,000,352.00
tblWater	OutdoorWaterUseRate	130,460.98	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	NumberCatalytic	11.45	0.00
tblWoodstoves	NumberNoncatalytic	11.45	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	9.9762	0.3676	19.0318	1.9600e-003		0.1170	0.1170		0.1170	0.1170	0.0000	224.7858	224.7858	0.0368	3.4900e-003	226.7461
Energy	0.4412	3.9696	3.0677	0.0241		0.3048	0.3048		0.3048	0.3048		4,812.8194	4,812.8194	0.0923	0.0882	4,841.4196
Mobile	15.7606	34.8440	204.1351	0.7007	77.2750	0.4859	77.7609	20.6272	0.4524	21.0796		72,472.6544	72,472.6544	2.0035		72,522.7408
Total	**26.1779**	**39.1813**	**226.2346**	**0.7268**	**77.2750**	**0.9077**	**78.1827**	**20.6272**	**0.8742**	**21.5014**	**0.0000**	**77,510.2596**	**77,510.2596**	**2.1325**	**0.0917**	**77,590.9064**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	9.9762	0.3676	19.0318	1.9600e-003		0.1170	0.1170		0.1170	0.1170	0.0000	224.7858	224.7858	0.0368	3.4900e-003	226.7461
Energy	0.4412	3.9696	3.0677	0.0241		0.3048	0.3048		0.3048	0.3048		4,812.8194	4,812.8194	0.0923	0.0882	4,841.4196
Mobile	15.7606	34.8440	204.1351	0.7007	77.2750	0.4859	77.7609	20.6272	0.4524	21.0796		72,472.6544	72,472.6544	2.0035		72,522.7408
Total	**26.1779**	**39.1813**	**226.2346**	**0.7268**	**77.2750**	**0.9077**	**78.1827**	**20.6272**	**0.8742**	**21.5014**	**0.0000**	**77,510.2596**	**77,510.2596**	**2.1325**	**0.0917**	**77,590.9064**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	15.7606	34.8440	204.1351	0.7007	77.2750	0.4859	77.7609	20.6272	0.4524	21.0796		72,472.6544	72,472.6544	2.0035		72,522.7408
Unmitigated	15.7606	34.8440	204.1351	0.7007	77.2750	0.4859	77.7609	20.6272	0.4524	21.0796		72,472.6544	72,472.6544	2.0035		72,522.7408

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	670.97	616.01	522.12	2,470,550	2,470,550
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	127.95	22.00	7.05	376,318	376,318
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Medical Office Building	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	6,485.53	9,724.53	4308.41	22,834,605	22,834,605
Supermarket	0.00	0.00	0.00		
Total	7,284.45	10,362.55	4,837.58	25,681,472	25,681,472

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	100	0	0
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	100	0	0
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Medical Office Building	16.60	8.40	6.90	29.60	51.40	19.00	60	30	10
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	100	0	0
Supermarket	16.60	8.40	6.90	6.50	74.50	19.00	34	30	36

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.666486	0.050589	0.246793	0.020000	0.002207	0.000876	0.003987	0.002706	0.000000	0.000000	0.006133	0.000091	0.000133
Enclosed Parking with Elevator	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
General Office Building	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
High Turnover (Sit Down Restaurant)	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Medical Office Building	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Other Asphalt Surfaces	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Other Non-Asphalt Surfaces	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Parking Lot	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Regional Shopping Center	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Supermarket	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.4412	3.9696	3.0677	0.0241		0.3048	0.3048		0.3048	0.3048		4,812.8194	4,812.8194	0.0923	0.0882	4,841.4196
NaturalGas Unmitigated	0.4412	3.9696	3.0677	0.0241		0.3048	0.3048		0.3048	0.3048		4,812.8194	4,812.8194	0.0923	0.0882	4,841.4196

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	6984.12	0.0753	0.6436	0.2739	4.1100e-003		0.0520	0.0520		0.0520	0.0520		821.6609	821.6609	0.0158	0.0151	826.5436
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	529.487	5.7100e-003	0.0519	0.0436	3.1000e-004		3.9500e-003	3.9500e-003		3.9500e-003	3.9500e-003		62.2926	62.2926	1.1900e-003	1.1400e-003	62.6628
High Turnover (Sit Down Restaurant)	30901.2	0.3333	3.0295	2.5448	0.0182		0.2302	0.2302		0.2302	0.2302		3,635.4406	3,635.4406	0.0697	0.0667	3,657.0442
Medical Office Building	47.3553	5.1000e-004	4.6400e-003	3.9000e-003	3.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004		5.5712	5.5712	1.1000e-004	1.0000e-004	5.6043
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	395.495	4.2700e-003	0.0388	0.0326	2.3000e-004		2.9500e-003	2.9500e-003		2.9500e-003	2.9500e-003		46.5288	46.5288	8.9000e-004	8.5000e-004	46.8053
Supermarket	2051.26	0.0221	0.2011	0.1689	1.2100e-003		0.0153	0.0153		0.0153	0.0153		241.3253	241.3253	4.6300e-003	4.4200e-003	242.7594
Total		**0.4412**	**3.9696**	**3.0677**	**0.0241**		**0.3048**	**0.3048**		**0.3048**	**0.3048**		**4,812.8194**	**4,812.8194**	**0.0923**	**0.0882**	**4,841.4196**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	6.98412	0.0753	0.6436	0.2739	4.1100e-003		0.0520	0.0520		0.0520	0.0520		821.6609	821.6609	0.0158	0.0151	826.5436
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	0.529487	5.7100e-003	0.0519	0.0436	3.1000e-004		3.9500e-003	3.9500e-003		3.9500e-003	3.9500e-003		62.2926	62.2926	1.1900e-003	1.1400e-003	62.6628
High Turnover (Sit Down Restaurant)	30.9012	0.3333	3.0295	2.5448	0.0182		0.2302	0.2302		0.2302	0.2302		3,635.4406	3,635.4406	0.0697	0.0667	3,657.0442
Medical Office Building	0.0473553	5.1000e-004	4.6400e-003	3.9000e-003	3.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004		5.5712	5.5712	1.1000e-004	1.0000e-004	5.6043
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.395495	4.2700e-003	0.0388	0.0326	2.3000e-004		2.9500e-003	2.9500e-003		2.9500e-003	2.9500e-003		46.5288	46.5288	8.9000e-004	8.5000e-004	46.8053
Supermarket	2.05126	0.0221	0.2011	0.1689	1.2100e-003		0.0153	0.0153		0.0153	0.0153		241.3253	241.3253	4.6300e-003	4.4200e-003	242.7594
Total		**0.4412**	**3.9696**	**3.0677**	**0.0241**		**0.3048**	**0.3048**		**0.3048**	**0.3048**		**4,812.8194**	**4,812.8194**	**0.0923**	**0.0882**	**4,841.4196**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	9.9762	0.3676	19.0318	1.9600e-003		0.1170	0.1170		0.1170	0.1170	0.0000	224.7858	224.7858	0.0368	3.4900e-003	226.7461
Unmitigated	9.9762	0.3676	19.0318	1.9600e-003		0.1170	0.1170		0.1170	0.1170	0.0000	224.7858	224.7858	0.0368	3.4900e-003	226.7461

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.0359					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.3473					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0175	0.1493	0.0635	9.5000e-004		0.0121	0.0121		0.0121	0.0121	0.0000	190.5882	190.5882	3.6500e-003	3.4900e-003	191.7208
Landscaping	0.5755	0.2183	18.9683	1.0000e-003		0.1050	0.1050		0.1050	0.1050		34.1976	34.1976	0.0331		35.0253
Total	**9.9762**	**0.3676**	**19.0318**	**1.9500e-003**		**0.1170**	**0.1170**		**0.1170**	**0.1170**	**0.0000**	**224.7858**	**224.7858**	**0.0368**	**3.4900e-003**	**226.7461**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.0359					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.3473					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0175	0.1493	0.0635	9.5000e-004		0.0121	0.0121		0.0121	0.0121	0.0000	190.5882	190.5882	3.6500e-003	3.4900e-003	191.7208
Landscaping	0.5755	0.2183	18.9683	1.0000e-003		0.1050	0.1050		0.1050	0.1050		34.1976	34.1976	0.0331		35.0253
Total	**9.9762**	**0.3676**	**19.0318**	**1.9500e-003**		**0.1170**	**0.1170**		**0.1170**	**0.1170**	**0.0000**	**224.7858**	**224.7858**	**0.0368**	**3.4900e-003**	**226.7461**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

Brea Plaza Expansion Project Operations

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	21.36	1000sqft	0.49	21,355.00	0
Medical Office Building	1.60	1000sqft	0.04	1,596.00	0
Enclosed Parking with Elevator	182.11	1000sqft	1.39	182,108.00	0
Other Asphalt Surfaces	13.77	1000sqft	0.32	13,774.00	0
Other Non-Asphalt Surfaces	65.93	1000sqft	1.51	65,931.00	0
Parking Lot	388.32	1000sqft	8.91	388,318.00	0
High Turnover (Sit Down Restaurant)	42.65	1000sqft	0.98	42,649.00	0
Apartments Mid Rise	229.00	Dwelling Unit	0.00	241,718.00	655
Regional Shopping Center	68.42	1000sqft	1.57	68,415.00	0
Supermarket	34.22	1000sqft	0.79	34,219.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	531.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustainability Report

Land Use - based on info from applicant

Construction Phase -

Vehicle Trips - based on info from LLG, see assumptions file for calculations

Vehicle Emission Factors - EMFAC2017 adjustment

Woodstoves - assumes 6 grills and 3 fire pits to be used on weekends

Area Coating - based on info from applicant: residential accounts for 60% ext coating, nonres accounts for coating of parking structure, parking assumes parking area only

Energy Use - assumes existing uses use historical data, new uses adjusted based on NORESCO study. See assumptions file for calculations

Water And Wastewater - assigned all water use to regional shopping center, based on info from sewer study. Assumes 100% aerobic treatment

Solid Waste -

Fleet Mix - see fleet mix adjustment in assumptions file

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	84117	167163
tblAreaCoating	Area_Nonresidential_Interior	252351	320642
tblAreaCoating	Area_Parking	39008	34226
tblAreaCoating	Area_Residential_Exterior	163160	97896
tblEnergyUse	LightingElect	2.63	1.75
tblEnergyUse	LightingElect	5.27	4.34
tblEnergyUse	NT24E	2,555.58	3,054.10
tblEnergyUse	NT24NG	1,662.00	5,516.00
tblEnergyUse	T24E	226.43	176.17
tblEnergyUse	T24E	3.92	3.50
tblEnergyUse	T24E	6.17	4.21
tblEnergyUse	T24NG	7,475.05	5,615.89
tblEnergyUse	T24NG	10.28	8.50
tblFireplaces	FireplaceDayYear	25.00	104.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00

tblFireplaces	NumberGas	194.65	9.00
tblFireplaces	NumberNoFireplace	22.90	220.00
tblFireplaces	NumberWood	11.45	0.00
tblFleetMix	HHD	0.02	2.7060e-003
tblFleetMix	LDA	0.57	0.67
tblFleetMix	LDT1	0.04	0.05
tblFleetMix	LDT2	0.21	0.25
tblFleetMix	LHD1	0.01	2.2070e-003
tblFleetMix	LHD2	5.7730e-003	8.7600e-004
tblFleetMix	MCY	4.9530e-003	6.1330e-003
tblFleetMix	MDV	0.11	0.02
tblFleetMix	MH	8.7700e-004	1.3300e-004
tblFleetMix	MHD	0.03	3.9870e-003
tblFleetMix	OBUS	1.7920e-003	0.00
tblFleetMix	SBUS	6.0200e-004	9.1000e-005
tblFleetMix	UBUS	1.5090e-003	0.00
tblLandUse	LandUseSquareFeet	21,360.00	21,355.00
tblLandUse	LandUseSquareFeet	1,600.00	1,596.00
tblLandUse	LandUseSquareFeet	182,110.00	182,108.00
tblLandUse	LandUseSquareFeet	13,770.00	13,774.00
tblLandUse	LandUseSquareFeet	65,930.00	65,931.00
tblLandUse	LandUseSquareFeet	388,320.00	388,318.00
tblLandUse	LandUseSquareFeet	42,650.00	42,649.00
tblLandUse	LandUseSquareFeet	229,000.00	241,718.00
tblLandUse	LandUseSquareFeet	68,420.00	68,415.00
tblLandUse	LandUseSquareFeet	34,220.00	34,219.00
tblLandUse	LotAcreage	4.18	1.39
tblLandUse	LotAcreage	6.03	0.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	531.44

tblVehicleEF	HHD	0.44	0.03
tblVehicleEF	HHD	0.16	0.15
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.47	6.07
tblVehicleEF	HHD	1.26	0.64
tblVehicleEF	HHD	4.25	0.01
tblVehicleEF	HHD	3,818.18	1,012.56
tblVehicleEF	HHD	1,584.91	1,373.65
tblVehicleEF	HHD	13.84	0.08
tblVehicleEF	HHD	12.98	5.26
tblVehicleEF	HHD	1.77	2.42
tblVehicleEF	HHD	19.03	2.48
tblVehicleEF	HHD	0.01	2.9540e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	6.0110e-003	0.02
tblVehicleEF	HHD	1.3200e-004	1.0000e-006
tblVehicleEF	HHD	0.01	2.8260e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6690e-003	8.7620e-003
tblVehicleEF	HHD	5.7510e-003	0.02
tblVehicleEF	HHD	1.2100e-004	1.0000e-006
tblVehicleEF	HHD	1.1600e-004	4.0000e-006
tblVehicleEF	HHD	4.7330e-003	1.5600e-004
tblVehicleEF	HHD	0.35	0.40
tblVehicleEF	HHD	8.9000e-005	3.0000e-006
tblVehicleEF	HHD	0.08	0.03
tblVehicleEF	HHD	4.2800e-004	6.3000e-005
tblVehicleEF	HHD	0.09	4.0000e-006

tblVehicleEF	HHD	0.03	9.2460e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0800e-004	1.0000e-006
tblVehicleEF	HHD	1.1600e-004	4.0000e-006
tblVehicleEF	HHD	4.7330e-003	1.5600e-004
tblVehicleEF	HHD	0.43	0.47
tblVehicleEF	HHD	8.9000e-005	3.0000e-006
tblVehicleEF	HHD	0.25	0.17
tblVehicleEF	HHD	4.2800e-004	6.3000e-005
tblVehicleEF	HHD	0.09	4.0000e-006
tblVehicleEF	HHD	0.42	0.03
tblVehicleEF	HHD	0.16	0.15
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.07	5.98
tblVehicleEF	HHD	1.27	0.64
tblVehicleEF	HHD	4.05	9.6240e-003
tblVehicleEF	HHD	4,045.03	1,001.49
tblVehicleEF	HHD	1,584.91	1,373.65
tblVehicleEF	HHD	13.84	0.08
tblVehicleEF	HHD	13.40	5.04
tblVehicleEF	HHD	1.67	2.30
tblVehicleEF	HHD	19.02	2.48
tblVehicleEF	HHD	9.0000e-003	2.5700e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	6.0110e-003	0.02
tblVehicleEF	HHD	1.3200e-004	1.0000e-006
tblVehicleEF	HHD	8.6100e-003	2.4590e-003
tblVehicleEF	HHD	0.03	0.03

tblVehicleEF	HHD	8.6690e-003	8.7620e-003
tblVehicleEF	HHD	5.7510e-003	0.02
tblVehicleEF	HHD	1.2100e-004	1.0000e-006
tblVehicleEF	HHD	1.6500e-004	5.0000e-006
tblVehicleEF	HHD	4.8270e-003	1.5800e-004
tblVehicleEF	HHD	0.33	0.43
tblVehicleEF	HHD	1.2300e-004	4.0000e-006
tblVehicleEF	HHD	0.08	0.03
tblVehicleEF	HHD	4.1200e-004	6.1000e-005
tblVehicleEF	HHD	0.08	4.0000e-006
tblVehicleEF	HHD	0.04	9.1420e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0400e-004	1.0000e-006
tblVehicleEF	HHD	1.6500e-004	5.0000e-006
tblVehicleEF	HHD	4.8270e-003	1.5800e-004
tblVehicleEF	HHD	0.41	0.50
tblVehicleEF	HHD	1.2300e-004	4.0000e-006
tblVehicleEF	HHD	0.26	0.17
tblVehicleEF	HHD	4.1200e-004	6.1000e-005
tblVehicleEF	HHD	0.09	4.0000e-006
tblVehicleEF	HHD	0.48	0.02
tblVehicleEF	HHD	0.16	8.8800e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	2.03	6.01
tblVehicleEF	HHD	1.26	0.21
tblVehicleEF	HHD	4.29	0.01
tblVehicleEF	HHD	3,504.93	993.90
tblVehicleEF	HHD	1,584.91	1,270.38
tblVehicleEF	HHD	13.84	0.08

tblVehicleEF	HHD	12.41	5.37
tblVehicleEF	HHD	1.74	2.32
tblVehicleEF	HHD	19.03	2.48
tblVehicleEF	HHD	0.01	3.1440e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	6.0110e-003	0.02
tblVehicleEF	HHD	1.3200e-004	1.0000e-006
tblVehicleEF	HHD	0.01	3.0080e-003
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	8.6690e-003	8.4790e-003
tblVehicleEF	HHD	5.7510e-003	0.02
tblVehicleEF	HHD	1.2100e-004	1.0000e-006
tblVehicleEF	HHD	1.1300e-004	4.0000e-006
tblVehicleEF	HHD	5.0410e-003	1.7200e-004
tblVehicleEF	HHD	0.38	0.37
tblVehicleEF	HHD	8.9000e-005	3.0000e-006
tblVehicleEF	HHD	0.08	0.02
tblVehicleEF	HHD	4.6700e-004	6.7000e-005
tblVehicleEF	HHD	0.09	4.0000e-006
tblVehicleEF	HHD	0.03	9.3900e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0800e-004	1.0000e-006
tblVehicleEF	HHD	1.1300e-004	4.0000e-006
tblVehicleEF	HHD	5.0410e-003	1.7200e-004
tblVehicleEF	HHD	0.46	0.42
tblVehicleEF	HHD	8.9000e-005	3.0000e-006
tblVehicleEF	HHD	0.25	0.02
tblVehicleEF	HHD	4.6700e-004	6.7000e-005

tblVehicleEF	HHD	0.09	4.0000e-006
tblVehicleEF	LDA	3.2540e-003	1.8160e-003
tblVehicleEF	LDA	3.5200e-003	0.04
tblVehicleEF	LDA	0.48	0.55
tblVehicleEF	LDA	0.84	1.93
tblVehicleEF	LDA	231.86	246.35
tblVehicleEF	LDA	51.83	50.40
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.15
tblVehicleEF	LDA	1.8000e-003	1.4320e-003
tblVehicleEF	LDA	2.2330e-003	1.6850e-003
tblVehicleEF	LDA	1.6580e-003	1.3180e-003
tblVehicleEF	LDA	2.0530e-003	1.5490e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	8.1920e-003	6.5890e-003
tblVehicleEF	LDA	0.04	0.02
tblVehicleEF	LDA	0.05	0.17
tblVehicleEF	LDA	2.3210e-003	2.3880e-003
tblVehicleEF	LDA	5.3200e-004	4.8900e-004
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	9.5740e-003
tblVehicleEF	LDA	0.04	0.02
tblVehicleEF	LDA	0.05	0.19
tblVehicleEF	LDA	3.4390e-003	1.9350e-003
tblVehicleEF	LDA	3.1700e-003	0.04

tblVehicleEF	LDA	0.52	0.60
tblVehicleEF	LDA	0.73	1.66
tblVehicleEF	LDA	241.58	256.41
tblVehicleEF	LDA	51.83	49.92
tblVehicleEF	LDA	0.03	0.02
tblVehicleEF	LDA	0.04	0.14
tblVehicleEF	LDA	1.8000e-003	1.4320e-003
tblVehicleEF	LDA	2.2330e-003	1.6850e-003
tblVehicleEF	LDA	1.6580e-003	1.3180e-003
tblVehicleEF	LDA	2.0530e-003	1.5490e-003
tblVehicleEF	LDA	0.04	0.06
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	8.6510e-003	6.9570e-003
tblVehicleEF	LDA	0.03	0.02
tblVehicleEF	LDA	0.04	0.16
tblVehicleEF	LDA	2.4190e-003	2.4850e-003
tblVehicleEF	LDA	5.3000e-004	4.8400e-004
tblVehicleEF	LDA	0.04	0.06
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.03	0.02
tblVehicleEF	LDA	0.05	0.17
tblVehicleEF	LDA	3.1920e-003	1.7790e-003
tblVehicleEF	LDA	3.5920e-003	0.04
tblVehicleEF	LDA	0.47	0.53
tblVehicleEF	LDA	0.87	1.98
tblVehicleEF	LDA	228.27	242.64

tblVehicleEF	LDA	51.83	50.51
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.16
tblVehicleEF	LDA	1.8000e-003	1.4320e-003
tblVehicleEF	LDA	2.2330e-003	1.6850e-003
tblVehicleEF	LDA	1.6580e-003	1.3180e-003
tblVehicleEF	LDA	2.0530e-003	1.5490e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	8.0370e-003	6.4650e-003
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.18
tblVehicleEF	LDA	2.2850e-003	2.3520e-003
tblVehicleEF	LDA	5.3300e-004	4.9000e-004
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.08	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	9.3940e-003
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.19
tblVehicleEF	LDT1	7.2360e-003	4.1470e-003
tblVehicleEF	LDT1	9.9520e-003	0.06
tblVehicleEF	LDT1	0.92	0.93
tblVehicleEF	LDT1	2.03	2.10
tblVehicleEF	LDT1	292.62	293.91
tblVehicleEF	LDT1	65.95	61.09
tblVehicleEF	LDT1	0.08	0.07
tblVehicleEF	LDT1	0.12	0.21

tblVehicleEF	LDT1	2.2960e-003	1.8510e-003
tblVehicleEF	LDT1	2.9420e-003	2.1800e-003
tblVehicleEF	LDT1	2.1130e-003	1.7030e-003
tblVehicleEF	LDT1	2.7050e-003	2.0050e-003
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.21	0.16
tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.14	0.07
tblVehicleEF	LDT1	0.13	0.27
tblVehicleEF	LDT1	2.9360e-003	2.8490e-003
tblVehicleEF	LDT1	6.9500e-004	5.9200e-004
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.21	0.16
tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.14	0.07
tblVehicleEF	LDT1	0.15	0.29
tblVehicleEF	LDT1	7.6070e-003	4.3890e-003
tblVehicleEF	LDT1	8.9270e-003	0.05
tblVehicleEF	LDT1	0.99	1.01
tblVehicleEF	LDT1	1.75	1.81
tblVehicleEF	LDT1	304.46	304.24
tblVehicleEF	LDT1	65.95	60.53
tblVehicleEF	LDT1	0.07	0.06
tblVehicleEF	LDT1	0.11	0.20
tblVehicleEF	LDT1	2.2960e-003	1.8510e-003
tblVehicleEF	LDT1	2.9420e-003	2.1800e-003
tblVehicleEF	LDT1	2.1130e-003	1.7030e-003

tblVehicleEF	LDT1	2.7050e-003	2.0050e-003
tblVehicleEF	LDT1	0.14	0.14
tblVehicleEF	LDT1	0.22	0.16
tblVehicleEF	LDT1	0.12	0.12
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.13	0.06
tblVehicleEF	LDT1	0.12	0.24
tblVehicleEF	LDT1	3.0550e-003	2.9500e-003
tblVehicleEF	LDT1	6.9000e-004	5.8700e-004
tblVehicleEF	LDT1	0.14	0.14
tblVehicleEF	LDT1	0.22	0.16
tblVehicleEF	LDT1	0.12	0.12
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.13	0.06
tblVehicleEF	LDT1	0.13	0.26
tblVehicleEF	LDT1	7.1090e-003	4.0700e-003
tblVehicleEF	LDT1	0.01	0.06
tblVehicleEF	LDT1	0.89	0.90
tblVehicleEF	LDT1	2.09	2.16
tblVehicleEF	LDT1	288.25	290.09
tblVehicleEF	LDT1	65.95	61.21
tblVehicleEF	LDT1	0.08	0.07
tblVehicleEF	LDT1	0.12	0.21
tblVehicleEF	LDT1	2.2960e-003	1.8510e-003
tblVehicleEF	LDT1	2.9420e-003	2.1800e-003
tblVehicleEF	LDT1	2.1130e-003	1.7030e-003
tblVehicleEF	LDT1	2.7050e-003	2.0050e-003
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.24	0.17

tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.14	0.27
tblVehicleEF	LDT1	2.8920e-003	2.8120e-003
tblVehicleEF	LDT1	6.9600e-004	5.9300e-004
tblVehicleEF	LDT1	0.10	0.10
tblVehicleEF	LDT1	0.24	0.17
tblVehicleEF	LDT1	0.09	0.09
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.15	0.30
tblVehicleEF	LDT2	4.5940e-003	2.9810e-003
tblVehicleEF	LDT2	4.8100e-003	0.06
tblVehicleEF	LDT2	0.64	0.74
tblVehicleEF	LDT2	1.11	2.45
tblVehicleEF	LDT2	329.48	312.71
tblVehicleEF	LDT2	73.66	65.44
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.08	0.22
tblVehicleEF	LDT2	1.8470e-003	1.4660e-003
tblVehicleEF	LDT2	2.3090e-003	1.6630e-003
tblVehicleEF	LDT2	1.6990e-003	1.3500e-003
tblVehicleEF	LDT2	2.1230e-003	1.5290e-003
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.05	0.05

tblVehicleEF	LDT2	0.06	0.25
tblVehicleEF	LDT2	3.2990e-003	3.0310e-003
tblVehicleEF	LDT2	7.5500e-004	6.3400e-004
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.07	0.27
tblVehicleEF	LDT2	4.8530e-003	3.1670e-003
tblVehicleEF	LDT2	4.3330e-003	0.05
tblVehicleEF	LDT2	0.69	0.80
tblVehicleEF	LDT2	0.96	2.11
tblVehicleEF	LDT2	342.98	322.65
tblVehicleEF	LDT2	73.66	64.81
tblVehicleEF	LDT2	0.05	0.04
tblVehicleEF	LDT2	0.07	0.21
tblVehicleEF	LDT2	1.8470e-003	1.4660e-003
tblVehicleEF	LDT2	2.3090e-003	1.6630e-003
tblVehicleEF	LDT2	1.6990e-003	1.3500e-003
tblVehicleEF	LDT2	2.1230e-003	1.5290e-003
tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.05	0.04
tblVehicleEF	LDT2	0.06	0.23
tblVehicleEF	LDT2	3.4350e-003	3.1280e-003
tblVehicleEF	LDT2	7.5200e-004	6.2800e-004

tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.06	0.10
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.05	0.04
tblVehicleEF	LDT2	0.06	0.25
tblVehicleEF	LDT2	4.5070e-003	2.9220e-003
tblVehicleEF	LDT2	4.9080e-003	0.06
tblVehicleEF	LDT2	0.62	0.72
tblVehicleEF	LDT2	1.14	2.52
tblVehicleEF	LDT2	324.49	309.04
tblVehicleEF	LDT2	73.66	65.58
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.08	0.23
tblVehicleEF	LDT2	1.8470e-003	1.4660e-003
tblVehicleEF	LDT2	2.3090e-003	1.6630e-003
tblVehicleEF	LDT2	1.6990e-003	1.3500e-003
tblVehicleEF	LDT2	2.1230e-003	1.5290e-003
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.09	0.12
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.07	0.26
tblVehicleEF	LDT2	3.2490e-003	2.9960e-003
tblVehicleEF	LDT2	7.5500e-004	6.3600e-004
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.09	0.12
tblVehicleEF	LDT2	0.04	0.07

tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.07	0.28
tblVehicleEF	LHD1	4.8760e-003	5.1790e-003
tblVehicleEF	LHD1	7.3850e-003	3.6570e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	0.58	0.42
tblVehicleEF	LHD1	2.05	0.96
tblVehicleEF	LHD1	9.05	8.87
tblVehicleEF	LHD1	582.71	633.58
tblVehicleEF	LHD1	30.08	11.39
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.97	0.58
tblVehicleEF	LHD1	0.88	0.30
tblVehicleEF	LHD1	8.7700e-004	8.3800e-004
tblVehicleEF	LHD1	0.01	9.8000e-003
tblVehicleEF	LHD1	9.4650e-003	6.3810e-003
tblVehicleEF	LHD1	7.7100e-004	2.2200e-004
tblVehicleEF	LHD1	8.3900e-004	8.0200e-004
tblVehicleEF	LHD1	2.5630e-003	2.4500e-003
tblVehicleEF	LHD1	9.0360e-003	6.0820e-003
tblVehicleEF	LHD1	7.0900e-004	2.0400e-004
tblVehicleEF	LHD1	2.4720e-003	1.8820e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.6210e-003	1.2380e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.26	0.15

tblVehicleEF	LHD1	0.21	0.06
tblVehicleEF	LHD1	9.0000e-005	8.6000e-005
tblVehicleEF	LHD1	5.7060e-003	6.1790e-003
tblVehicleEF	LHD1	3.3900e-004	1.1300e-004
tblVehicleEF	LHD1	2.4720e-003	1.8820e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.6210e-003	1.2380e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.26	0.15
tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD1	4.8760e-003	5.1900e-003
tblVehicleEF	LHD1	7.5120e-003	3.7120e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	0.59	0.42
tblVehicleEF	LHD1	1.97	0.92
tblVehicleEF	LHD1	9.05	8.87
tblVehicleEF	LHD1	582.71	633.59
tblVehicleEF	LHD1	30.08	11.32
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.92	0.55
tblVehicleEF	LHD1	0.84	0.28
tblVehicleEF	LHD1	8.7700e-004	8.3800e-004
tblVehicleEF	LHD1	0.01	9.8000e-003
tblVehicleEF	LHD1	9.4650e-003	6.3810e-003
tblVehicleEF	LHD1	7.7100e-004	2.2200e-004
tblVehicleEF	LHD1	8.3900e-004	8.0200e-004
tblVehicleEF	LHD1	2.5630e-003	2.4500e-003

tblVehicleEF	LHD1	9.0360e-003	6.0820e-003
tblVehicleEF	LHD1	7.0900e-004	2.0400e-004
tblVehicleEF	LHD1	3.4440e-003	2.6310e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.1800e-003	1.6730e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.25	0.14
tblVehicleEF	LHD1	0.20	0.06
tblVehicleEF	LHD1	9.0000e-005	8.6000e-005
tblVehicleEF	LHD1	5.7070e-003	6.1790e-003
tblVehicleEF	LHD1	3.3800e-004	1.1200e-004
tblVehicleEF	LHD1	3.4440e-003	2.6310e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	2.1800e-003	1.6730e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.25	0.14
tblVehicleEF	LHD1	0.22	0.07
tblVehicleEF	LHD1	4.8760e-003	5.1770e-003
tblVehicleEF	LHD1	7.3500e-003	3.6420e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	0.58	0.41
tblVehicleEF	LHD1	2.06	0.97
tblVehicleEF	LHD1	9.05	8.87
tblVehicleEF	LHD1	582.71	633.58
tblVehicleEF	LHD1	30.08	11.40
tblVehicleEF	LHD1	0.08	0.06

tblVehicleEF	LHD1	0.96	0.57
tblVehicleEF	LHD1	0.89	0.30
tblVehicleEF	LHD1	8.7700e-004	8.3800e-004
tblVehicleEF	LHD1	0.01	9.8000e-003
tblVehicleEF	LHD1	9.4650e-003	6.3810e-003
tblVehicleEF	LHD1	7.7100e-004	2.2200e-004
tblVehicleEF	LHD1	8.3900e-004	8.0200e-004
tblVehicleEF	LHD1	2.5630e-003	2.4500e-003
tblVehicleEF	LHD1	9.0360e-003	6.0820e-003
tblVehicleEF	LHD1	7.0900e-004	2.0400e-004
tblVehicleEF	LHD1	2.5350e-003	1.9320e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.6290e-003	1.2470e-003
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.29	0.16
tblVehicleEF	LHD1	0.21	0.06
tblVehicleEF	LHD1	9.0000e-005	8.6000e-005
tblVehicleEF	LHD1	5.7060e-003	6.1790e-003
tblVehicleEF	LHD1	3.4000e-004	1.1300e-004
tblVehicleEF	LHD1	2.5350e-003	1.9320e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.6290e-003	1.2470e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.29	0.16
tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD2	3.5130e-003	3.7120e-003
tblVehicleEF	LHD2	3.0250e-003	2.8570e-003

tblVehicleEF	LHD2	6.4370e-003	9.0450e-003
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.27	0.31
tblVehicleEF	LHD2	1.11	0.65
tblVehicleEF	LHD2	13.66	13.46
tblVehicleEF	LHD2	600.10	642.40
tblVehicleEF	LHD2	25.96	8.94
tblVehicleEF	LHD2	0.09	0.08
tblVehicleEF	LHD2	0.55	0.66
tblVehicleEF	LHD2	0.47	0.21
tblVehicleEF	LHD2	1.1390e-003	1.2800e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.3740e-003	9.6040e-003
tblVehicleEF	LHD2	3.9500e-004	1.2800e-004
tblVehicleEF	LHD2	1.0900e-003	1.2250e-003
tblVehicleEF	LHD2	2.6730e-003	2.6460e-003
tblVehicleEF	LHD2	7.9990e-003	9.1750e-003
tblVehicleEF	LHD2	3.6300e-004	1.1800e-004
tblVehicleEF	LHD2	9.0300e-004	1.2060e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	6.4300e-004	8.2300e-004
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.06	0.09
tblVehicleEF	LHD2	0.09	0.04
tblVehicleEF	LHD2	1.3300e-004	1.2900e-004
tblVehicleEF	LHD2	5.8410e-003	6.2140e-003
tblVehicleEF	LHD2	2.7900e-004	8.9000e-005
tblVehicleEF	LHD2	9.0300e-004	1.2060e-003

tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	6.4300e-004	8.2300e-004
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.06	0.09
tblVehicleEF	LHD2	0.10	0.05
tblVehicleEF	LHD2	3.5130e-003	3.7190e-003
tblVehicleEF	LHD2	3.0530e-003	2.8800e-003
tblVehicleEF	LHD2	6.2440e-003	8.7610e-003
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.27	0.31
tblVehicleEF	LHD2	1.06	0.62
tblVehicleEF	LHD2	13.66	13.46
tblVehicleEF	LHD2	600.10	642.40
tblVehicleEF	LHD2	25.96	8.90
tblVehicleEF	LHD2	0.09	0.08
tblVehicleEF	LHD2	0.52	0.62
tblVehicleEF	LHD2	0.45	0.20
tblVehicleEF	LHD2	1.1390e-003	1.2800e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.3740e-003	9.6040e-003
tblVehicleEF	LHD2	3.9500e-004	1.2800e-004
tblVehicleEF	LHD2	1.0900e-003	1.2250e-003
tblVehicleEF	LHD2	2.6730e-003	2.6460e-003
tblVehicleEF	LHD2	7.9990e-003	9.1750e-003
tblVehicleEF	LHD2	3.6300e-004	1.1800e-004
tblVehicleEF	LHD2	1.2670e-003	1.6890e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.01	0.02

tblVehicleEF	LHD2	8.6800e-004	1.1130e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.08	0.04
tblVehicleEF	LHD2	1.3300e-004	1.2900e-004
tblVehicleEF	LHD2	5.8410e-003	6.2140e-003
tblVehicleEF	LHD2	2.7900e-004	8.8000e-005
tblVehicleEF	LHD2	1.2670e-003	1.6890e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	8.6800e-004	1.1130e-003
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.09	0.05
tblVehicleEF	LHD2	3.5130e-003	3.7100e-003
tblVehicleEF	LHD2	3.0170e-003	2.8500e-003
tblVehicleEF	LHD2	6.4770e-003	9.1040e-003
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.27	0.31
tblVehicleEF	LHD2	1.11	0.65
tblVehicleEF	LHD2	13.66	13.46
tblVehicleEF	LHD2	600.10	642.39
tblVehicleEF	LHD2	25.96	8.95
tblVehicleEF	LHD2	0.09	0.08
tblVehicleEF	LHD2	0.54	0.65
tblVehicleEF	LHD2	0.47	0.21
tblVehicleEF	LHD2	1.1390e-003	1.2800e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.3740e-003	9.6040e-003

tblVehicleEF	LHD2	3.9500e-004	1.2800e-004
tblVehicleEF	LHD2	1.0900e-003	1.2250e-003
tblVehicleEF	LHD2	2.6730e-003	2.6460e-003
tblVehicleEF	LHD2	7.9990e-003	9.1750e-003
tblVehicleEF	LHD2	3.6300e-004	1.1800e-004
tblVehicleEF	LHD2	8.9600e-004	1.2110e-003
tblVehicleEF	LHD2	0.03	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	6.3600e-004	8.1400e-004
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.09	0.04
tblVehicleEF	LHD2	1.3300e-004	1.2900e-004
tblVehicleEF	LHD2	5.8410e-003	6.2140e-003
tblVehicleEF	LHD2	2.8000e-004	8.9000e-005
tblVehicleEF	LHD2	8.9600e-004	1.2110e-003
tblVehicleEF	LHD2	0.03	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	6.3600e-004	8.1400e-004
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.10	0.05
tblVehicleEF	MCY	0.49	0.35
tblVehicleEF	MCY	0.15	0.23
tblVehicleEF	MCY	17.95	18.16
tblVehicleEF	MCY	9.61	8.50
tblVehicleEF	MCY	178.67	214.64
tblVehicleEF	MCY	44.17	59.14
tblVehicleEF	MCY	1.11	1.12

tblVehicleEF	MCY	0.31	0.26
tblVehicleEF	MCY	2.2470e-003	2.2320e-003
tblVehicleEF	MCY	3.4860e-003	2.9930e-003
tblVehicleEF	MCY	2.0980e-003	2.0840e-003
tblVehicleEF	MCY	3.2740e-003	2.8100e-003
tblVehicleEF	MCY	1.12	1.15
tblVehicleEF	MCY	0.65	0.68
tblVehicleEF	MCY	0.69	0.70
tblVehicleEF	MCY	2.34	2.35
tblVehicleEF	MCY	0.60	0.53
tblVehicleEF	MCY	2.02	1.79
tblVehicleEF	MCY	2.1510e-003	2.1240e-003
tblVehicleEF	MCY	6.5800e-004	5.8500e-004
tblVehicleEF	MCY	1.12	1.15
tblVehicleEF	MCY	0.65	0.68
tblVehicleEF	MCY	0.69	0.70
tblVehicleEF	MCY	2.92	2.93
tblVehicleEF	MCY	0.60	0.53
tblVehicleEF	MCY	2.20	1.95
tblVehicleEF	MCY	0.48	0.34
tblVehicleEF	MCY	0.13	0.21
tblVehicleEF	MCY	17.31	17.50
tblVehicleEF	MCY	8.84	7.78
tblVehicleEF	MCY	178.67	213.41
tblVehicleEF	MCY	44.17	57.38
tblVehicleEF	MCY	0.98	0.98
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	2.2470e-003	2.2320e-003
tblVehicleEF	MCY	3.4860e-003	2.9930e-003

tblVehicleEF	MCY	2.0980e-003	2.0840e-003
tblVehicleEF	MCY	3.2740e-003	2.8100e-003
tblVehicleEF	MCY	1.69	1.72
tblVehicleEF	MCY	0.70	0.72
tblVehicleEF	MCY	1.09	1.11
tblVehicleEF	MCY	2.29	2.30
tblVehicleEF	MCY	0.56	0.50
tblVehicleEF	MCY	1.82	1.60
tblVehicleEF	MCY	2.1390e-003	2.1120e-003
tblVehicleEF	MCY	6.3900e-004	5.6800e-004
tblVehicleEF	MCY	1.69	1.72
tblVehicleEF	MCY	0.70	0.72
tblVehicleEF	MCY	1.09	1.11
tblVehicleEF	MCY	2.85	2.86
tblVehicleEF	MCY	0.56	0.50
tblVehicleEF	MCY	1.98	1.74
tblVehicleEF	MCY	0.49	0.35
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	18.04	18.25
tblVehicleEF	MCY	9.73	8.62
tblVehicleEF	MCY	178.67	214.83
tblVehicleEF	MCY	44.17	59.46
tblVehicleEF	MCY	1.09	1.09
tblVehicleEF	MCY	0.31	0.27
tblVehicleEF	MCY	2.2470e-003	2.2320e-003
tblVehicleEF	MCY	3.4860e-003	2.9930e-003
tblVehicleEF	MCY	2.0980e-003	2.0840e-003
tblVehicleEF	MCY	3.2740e-003	2.8100e-003
tblVehicleEF	MCY	1.25	1.27

tblVehicleEF	MCY	0.84	0.87
tblVehicleEF	MCY	0.73	0.74
tblVehicleEF	MCY	2.35	2.36
tblVehicleEF	MCY	0.69	0.62
tblVehicleEF	MCY	2.06	1.83
tblVehicleEF	MCY	2.1520e-003	2.1260e-003
tblVehicleEF	MCY	6.6100e-004	5.8800e-004
tblVehicleEF	MCY	1.25	1.27
tblVehicleEF	MCY	0.84	0.87
tblVehicleEF	MCY	0.73	0.74
tblVehicleEF	MCY	2.93	2.94
tblVehicleEF	MCY	0.69	0.62
tblVehicleEF	MCY	2.24	1.99
tblVehicleEF	MDV	8.2720e-003	3.7210e-003
tblVehicleEF	MDV	0.01	0.07
tblVehicleEF	MDV	0.96	0.83
tblVehicleEF	MDV	1.95	2.70
tblVehicleEF	MDV	450.89	387.66
tblVehicleEF	MDV	98.57	79.61
tblVehicleEF	MDV	0.10	0.07
tblVehicleEF	MDV	0.17	0.27
tblVehicleEF	MDV	1.8710e-003	1.5460e-003
tblVehicleEF	MDV	2.2680e-003	1.7230e-003
tblVehicleEF	MDV	1.7240e-003	1.4260e-003
tblVehicleEF	MDV	2.0860e-003	1.5840e-003
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.02	0.02

tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.14	0.31
tblVehicleEF	MDV	4.5120e-003	3.7560e-003
tblVehicleEF	MDV	1.0190e-003	7.7200e-004
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.15	0.34
tblVehicleEF	MDV	8.7240e-003	3.9510e-003
tblVehicleEF	MDV	9.3780e-003	0.06
tblVehicleEF	MDV	1.04	0.90
tblVehicleEF	MDV	1.69	2.32
tblVehicleEF	MDV	468.83	397.99
tblVehicleEF	MDV	98.57	78.90
tblVehicleEF	MDV	0.09	0.06
tblVehicleEF	MDV	0.16	0.25
tblVehicleEF	MDV	1.8710e-003	1.5460e-003
tblVehicleEF	MDV	2.2680e-003	1.7230e-003
tblVehicleEF	MDV	1.7240e-003	1.4260e-003
tblVehicleEF	MDV	2.0860e-003	1.5840e-003
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.09	0.12
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.13	0.28
tblVehicleEF	MDV	4.6930e-003	3.8560e-003

tblVehicleEF	MDV	1.0150e-003	7.6500e-004
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.14	0.13
tblVehicleEF	MDV	0.09	0.12
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.09	0.05
tblVehicleEF	MDV	0.14	0.31
tblVehicleEF	MDV	8.1180e-003	3.6470e-003
tblVehicleEF	MDV	0.01	0.07
tblVehicleEF	MDV	0.93	0.80
tblVehicleEF	MDV	2.00	2.78
tblVehicleEF	MDV	444.26	383.84
tblVehicleEF	MDV	98.57	79.77
tblVehicleEF	MDV	0.09	0.06
tblVehicleEF	MDV	0.17	0.28
tblVehicleEF	MDV	1.8710e-003	1.5460e-003
tblVehicleEF	MDV	2.2680e-003	1.7230e-003
tblVehicleEF	MDV	1.7240e-003	1.4260e-003
tblVehicleEF	MDV	2.0860e-003	1.5840e-003
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.15	0.13
tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.02	0.01
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.14	0.32
tblVehicleEF	MDV	4.4460e-003	3.7190e-003
tblVehicleEF	MDV	1.0200e-003	7.7300e-004
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.15	0.13

tblVehicleEF	MDV	0.07	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.16	0.35
tblVehicleEF	MH	0.02	6.9350e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.27	0.73
tblVehicleEF	MH	4.43	1.75
tblVehicleEF	MH	1,096.02	1,403.51
tblVehicleEF	MH	56.63	16.91
tblVehicleEF	MH	1.16	1.27
tblVehicleEF	MH	0.68	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.0200e-004	2.1600e-004
tblVehicleEF	MH	3.2400e-003	3.3090e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	8.2900e-004	1.9900e-004
tblVehicleEF	MH	0.74	0.62
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.33	0.28
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.26	0.08
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.4300e-004	1.6700e-004
tblVehicleEF	MH	0.74	0.62
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.33	0.28

tblVehicleEF	MH	0.08	0.06
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.29	0.09
tblVehicleEF	MH	0.02	7.0670e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.30	0.74
tblVehicleEF	MH	4.20	1.66
tblVehicleEF	MH	1,096.02	1,403.53
tblVehicleEF	MH	56.63	16.76
tblVehicleEF	MH	1.08	1.19
tblVehicleEF	MH	0.65	0.22
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.0200e-004	2.1600e-004
tblVehicleEF	MH	3.2400e-003	3.3090e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	8.2900e-004	1.9900e-004
tblVehicleEF	MH	0.99	0.83
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.45	0.38
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.02	9.8870e-003
tblVehicleEF	MH	0.25	0.08
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.3900e-004	1.6600e-004
tblVehicleEF	MH	0.99	0.83
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.45	0.38
tblVehicleEF	MH	0.08	0.06

tblVehicleEF	MH	0.02	9.8870e-003
tblVehicleEF	MH	0.27	0.08
tblVehicleEF	MH	0.02	6.8950e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.26	0.72
tblVehicleEF	MH	4.46	1.77
tblVehicleEF	MH	1,096.02	1,403.50
tblVehicleEF	MH	56.63	16.93
tblVehicleEF	MH	1.14	1.24
tblVehicleEF	MH	0.68	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.0200e-004	2.1600e-004
tblVehicleEF	MH	3.2400e-003	3.3090e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	8.2900e-004	1.9900e-004
tblVehicleEF	MH	0.80	0.66
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.34	0.29
tblVehicleEF	MH	0.06	0.04
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.26	0.08
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.4400e-004	1.6800e-004
tblVehicleEF	MH	0.80	0.66
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.34	0.29
tblVehicleEF	MH	0.08	0.06
tblVehicleEF	MH	0.02	0.01

tblVehicleEF	MH	0.29	0.09
tblVehicleEF	MHD	0.02	4.6040e-003
tblVehicleEF	MHD	2.6670e-003	1.2190e-003
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.32	0.38
tblVehicleEF	MHD	0.24	0.17
tblVehicleEF	MHD	4.63	1.13
tblVehicleEF	MHD	143.49	52.64
tblVehicleEF	MHD	1,123.36	993.27
tblVehicleEF	MHD	56.66	11.92
tblVehicleEF	MHD	0.37	0.25
tblVehicleEF	MHD	0.68	0.96
tblVehicleEF	MHD	11.00	1.55
tblVehicleEF	MHD	6.9000e-005	1.7500e-004
tblVehicleEF	MHD	2.8070e-003	6.0480e-003
tblVehicleEF	MHD	6.9200e-004	1.1100e-004
tblVehicleEF	MHD	6.6000e-005	1.6700e-004
tblVehicleEF	MHD	2.6820e-003	5.7810e-003
tblVehicleEF	MHD	6.3600e-004	1.0200e-004
tblVehicleEF	MHD	9.3500e-004	4.6900e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	6.5100e-004	3.4100e-004
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.29	0.05
tblVehicleEF	MHD	1.3800e-003	5.0100e-004
tblVehicleEF	MHD	0.01	9.5000e-003
tblVehicleEF	MHD	6.4800e-004	1.1800e-004

tblVehicleEF	MHD	9.3500e-004	4.6900e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	6.5100e-004	3.4100e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.31	0.06
tblVehicleEF	MHD	0.01	4.3670e-003
tblVehicleEF	MHD	2.6950e-003	1.2410e-003
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.24	0.31
tblVehicleEF	MHD	0.24	0.17
tblVehicleEF	MHD	4.41	1.08
tblVehicleEF	MHD	151.98	52.58
tblVehicleEF	MHD	1,123.36	993.27
tblVehicleEF	MHD	56.66	11.83
tblVehicleEF	MHD	0.38	0.24
tblVehicleEF	MHD	0.65	0.90
tblVehicleEF	MHD	10.97	1.55
tblVehicleEF	MHD	5.8000e-005	1.5000e-004
tblVehicleEF	MHD	2.8070e-003	6.0480e-003
tblVehicleEF	MHD	6.9200e-004	1.1100e-004
tblVehicleEF	MHD	5.5000e-005	1.4300e-004
tblVehicleEF	MHD	2.6820e-003	5.7810e-003
tblVehicleEF	MHD	6.3600e-004	1.0200e-004
tblVehicleEF	MHD	1.3170e-003	6.6100e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	8.8900e-004	4.6400e-004

tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.28	0.05
tblVehicleEF	MHD	1.4600e-003	5.0100e-004
tblVehicleEF	MHD	0.01	9.5000e-003
tblVehicleEF	MHD	6.4400e-004	1.1700e-004
tblVehicleEF	MHD	1.3170e-003	6.6100e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	8.8900e-004	4.6400e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.30	0.06
tblVehicleEF	MHD	0.02	4.9470e-003
tblVehicleEF	MHD	2.6590e-003	1.2110e-003
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.45	0.47
tblVehicleEF	MHD	0.24	0.17
tblVehicleEF	MHD	4.67	1.14
tblVehicleEF	MHD	131.74	52.73
tblVehicleEF	MHD	1,123.36	993.27
tblVehicleEF	MHD	56.66	11.94
tblVehicleEF	MHD	0.35	0.26
tblVehicleEF	MHD	0.67	0.94
tblVehicleEF	MHD	11.01	1.55
tblVehicleEF	MHD	8.4000e-005	2.1000e-004
tblVehicleEF	MHD	2.8070e-003	6.0480e-003
tblVehicleEF	MHD	6.9200e-004	1.1100e-004
tblVehicleEF	MHD	8.0000e-005	2.0100e-004

tblVehicleEF	MHD	2.6820e-003	5.7810e-003
tblVehicleEF	MHD	6.3600e-004	1.0200e-004
tblVehicleEF	MHD	9.4200e-004	4.6200e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	6.5200e-004	3.3800e-004
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.29	0.06
tblVehicleEF	MHD	1.2700e-003	5.0200e-004
tblVehicleEF	MHD	0.01	9.5000e-003
tblVehicleEF	MHD	6.4800e-004	1.1800e-004
tblVehicleEF	MHD	9.4200e-004	4.6200e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	6.5200e-004	3.3800e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.32	0.06
tblVehicleEF	OBUS	0.01	8.6550e-003
tblVehicleEF	OBUS	5.2770e-003	4.3820e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.25	0.56
tblVehicleEF	OBUS	0.39	0.54
tblVehicleEF	OBUS	4.82	2.26
tblVehicleEF	OBUS	76.59	78.18
tblVehicleEF	OBUS	1,203.91	1,334.33
tblVehicleEF	OBUS	69.07	19.41
tblVehicleEF	OBUS	0.15	0.30

tblVehicleEF	OBUS	0.55	0.98
tblVehicleEF	OBUS	1.95	0.75
tblVehicleEF	OBUS	1.4000e-005	9.9000e-005
tblVehicleEF	OBUS	2.4030e-003	6.5550e-003
tblVehicleEF	OBUS	8.9600e-004	2.0200e-004
tblVehicleEF	OBUS	1.3000e-005	9.5000e-005
tblVehicleEF	OBUS	2.2790e-003	6.2550e-003
tblVehicleEF	OBUS	8.2400e-004	1.8600e-004
tblVehicleEF	OBUS	1.3360e-003	1.7510e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	7.4000e-004	9.5000e-004
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.30	0.11
tblVehicleEF	OBUS	7.4300e-004	7.4500e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.7500e-004	1.9200e-004
tblVehicleEF	OBUS	1.3360e-003	1.7510e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	7.4000e-004	9.5000e-004
tblVehicleEF	OBUS	0.04	0.03
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.33	0.12
tblVehicleEF	OBUS	0.01	8.7320e-003
tblVehicleEF	OBUS	5.3660e-003	4.4740e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.24	0.55

tblVehicleEF	OBUS	0.39	0.55
tblVehicleEF	OBUS	4.58	2.14
tblVehicleEF	OBUS	80.14	77.32
tblVehicleEF	OBUS	1,203.91	1,334.35
tblVehicleEF	OBUS	69.07	19.21
tblVehicleEF	OBUS	0.16	0.28
tblVehicleEF	OBUS	0.52	0.92
tblVehicleEF	OBUS	1.92	0.74
tblVehicleEF	OBUS	1.2000e-005	8.8000e-005
tblVehicleEF	OBUS	2.4030e-003	6.5550e-003
tblVehicleEF	OBUS	8.9600e-004	2.0200e-004
tblVehicleEF	OBUS	1.1000e-005	8.4000e-005
tblVehicleEF	OBUS	2.2790e-003	6.2550e-003
tblVehicleEF	OBUS	8.2400e-004	1.8600e-004
tblVehicleEF	OBUS	1.8380e-003	2.3950e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	1.0100e-003	1.2840e-003
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.29	0.11
tblVehicleEF	OBUS	7.7700e-004	7.3700e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.7100e-004	1.9000e-004
tblVehicleEF	OBUS	1.8380e-003	2.3950e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	1.0100e-003	1.2840e-003
tblVehicleEF	OBUS	0.04	0.04

tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	0.32	0.12
tblVehicleEF	OBUS	0.01	8.5700e-003
tblVehicleEF	OBUS	5.2500e-003	4.3550e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.25	0.56
tblVehicleEF	OBUS	0.38	0.54
tblVehicleEF	OBUS	4.86	2.28
tblVehicleEF	OBUS	71.70	79.37
tblVehicleEF	OBUS	1,203.91	1,334.32
tblVehicleEF	OBUS	69.07	19.44
tblVehicleEF	OBUS	0.15	0.32
tblVehicleEF	OBUS	0.54	0.96
tblVehicleEF	OBUS	1.96	0.76
tblVehicleEF	OBUS	1.7000e-005	1.1500e-004
tblVehicleEF	OBUS	2.4030e-003	6.5550e-003
tblVehicleEF	OBUS	8.9600e-004	2.0200e-004
tblVehicleEF	OBUS	1.6000e-005	1.1000e-004
tblVehicleEF	OBUS	2.2790e-003	6.2550e-003
tblVehicleEF	OBUS	8.2400e-004	1.8600e-004
tblVehicleEF	OBUS	1.3380e-003	1.7730e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	7.3000e-004	9.4400e-004
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.31	0.11
tblVehicleEF	OBUS	6.9600e-004	7.5600e-004
tblVehicleEF	OBUS	0.01	0.01

tblVehicleEF	OBUS	7.7600e-004	1.9200e-004
tblVehicleEF	OBUS	1.3380e-003	1.7730e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	7.3000e-004	9.4400e-004
tblVehicleEF	OBUS	0.04	0.03
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.34	0.12
tblVehicleEF	SBUS	0.83	0.09
tblVehicleEF	SBUS	0.02	9.1570e-003
tblVehicleEF	SBUS	0.07	8.2300e-003
tblVehicleEF	SBUS	8.49	3.34
tblVehicleEF	SBUS	0.94	0.84
tblVehicleEF	SBUS	8.61	1.12
tblVehicleEF	SBUS	1,085.60	359.37
tblVehicleEF	SBUS	1,065.54	1,076.06
tblVehicleEF	SBUS	58.07	6.66
tblVehicleEF	SBUS	7.75	3.47
tblVehicleEF	SBUS	3.55	5.09
tblVehicleEF	SBUS	11.66	0.75
tblVehicleEF	SBUS	6.9310e-003	4.4780e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	1.0190e-003	7.7000e-005
tblVehicleEF	SBUS	6.6310e-003	4.2840e-003
tblVehicleEF	SBUS	2.6550e-003	2.6190e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	9.3700e-004	7.1000e-005
tblVehicleEF	SBUS	3.3910e-003	1.1510e-003

tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.01	0.40
tblVehicleEF	SBUS	1.9710e-003	6.6100e-004
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.45	0.05
tblVehicleEF	SBUS	0.01	3.4360e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.3000e-004	6.6000e-005
tblVehicleEF	SBUS	3.3910e-003	1.1510e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.46	0.57
tblVehicleEF	SBUS	1.9710e-003	6.6100e-004
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.50	0.05
tblVehicleEF	SBUS	0.83	0.09
tblVehicleEF	SBUS	0.02	9.2670e-003
tblVehicleEF	SBUS	0.06	7.3960e-003
tblVehicleEF	SBUS	8.40	3.30
tblVehicleEF	SBUS	0.95	0.85
tblVehicleEF	SBUS	7.12	0.92
tblVehicleEF	SBUS	1,133.08	368.54
tblVehicleEF	SBUS	1,065.54	1,076.08
tblVehicleEF	SBUS	58.07	6.33
tblVehicleEF	SBUS	8.00	3.55
tblVehicleEF	SBUS	3.35	4.81
tblVehicleEF	SBUS	11.63	0.75
tblVehicleEF	SBUS	5.8420e-003	3.7810e-003

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	1.0190e-003	7.7000e-005
tblVehicleEF	SBUS	5.5900e-003	3.6170e-003
tblVehicleEF	SBUS	2.6550e-003	2.6190e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	9.3700e-004	7.1000e-005
tblVehicleEF	SBUS	4.6620e-003	1.5800e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.01	0.40
tblVehicleEF	SBUS	2.6790e-003	8.9500e-004
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.41	0.04
tblVehicleEF	SBUS	0.01	3.5220e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.0500e-004	6.3000e-005
tblVehicleEF	SBUS	4.6620e-003	1.5800e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.46	0.57
tblVehicleEF	SBUS	2.6790e-003	8.9500e-004
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.45	0.05
tblVehicleEF	SBUS	0.83	0.09
tblVehicleEF	SBUS	0.02	9.1270e-003
tblVehicleEF	SBUS	0.07	8.3500e-003
tblVehicleEF	SBUS	8.63	3.39
tblVehicleEF	SBUS	0.93	0.83

tblVehicleEF	SBUS	8.75	1.13
tblVehicleEF	SBUS	1,020.03	346.72
tblVehicleEF	SBUS	1,065.54	1,076.06
tblVehicleEF	SBUS	58.07	6.69
tblVehicleEF	SBUS	7.41	3.35
tblVehicleEF	SBUS	3.49	5.00
tblVehicleEF	SBUS	11.67	0.75
tblVehicleEF	SBUS	8.4330e-003	5.4400e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	1.0190e-003	7.7000e-005
tblVehicleEF	SBUS	8.0680e-003	5.2050e-003
tblVehicleEF	SBUS	2.6550e-003	2.6190e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	9.3700e-004	7.1000e-005
tblVehicleEF	SBUS	3.3080e-003	1.1240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.01	0.40
tblVehicleEF	SBUS	1.9200e-003	6.4200e-004
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.46	0.05
tblVehicleEF	SBUS	0.01	3.3160e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.3200e-004	6.6000e-005
tblVehicleEF	SBUS	3.3080e-003	1.1240e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.47	0.57
tblVehicleEF	SBUS	1.9200e-003	6.4200e-004

tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.51	0.05
tblVehicleEF	UBUS	1.60	1.2910e-003
tblVehicleEF	UBUS	0.07	0.02
tblVehicleEF	UBUS	7.75	0.07
tblVehicleEF	UBUS	12.30	1.81
tblVehicleEF	UBUS	1,792.86	385.95
tblVehicleEF	UBUS	138.24	20.36
tblVehicleEF	UBUS	3.61	0.05
tblVehicleEF	UBUS	13.00	0.18
tblVehicleEF	UBUS	0.52	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.03	3.6000e-004
tblVehicleEF	UBUS	1.3330e-003	1.7000e-004
tblVehicleEF	UBUS	0.22	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.03	3.3100e-004
tblVehicleEF	UBUS	1.2250e-003	1.5700e-004
tblVehicleEF	UBUS	5.7880e-003	1.1460e-003
tblVehicleEF	UBUS	0.09	0.01
tblVehicleEF	UBUS	3.5780e-003	7.3800e-004
tblVehicleEF	UBUS	0.41	4.2710e-003
tblVehicleEF	UBUS	0.03	2.7280e-003
tblVehicleEF	UBUS	0.94	0.11
tblVehicleEF	UBUS	8.5520e-003	3.8190e-003
tblVehicleEF	UBUS	1.6040e-003	2.0100e-004
tblVehicleEF	UBUS	5.7880e-003	1.1460e-003
tblVehicleEF	UBUS	0.09	0.01

tblVehicleEF	UBUS	3.5780e-003	7.3800e-004
tblVehicleEF	UBUS	2.05	6.2320e-003
tblVehicleEF	UBUS	0.03	2.7280e-003
tblVehicleEF	UBUS	1.03	0.12
tblVehicleEF	UBUS	1.60	1.3190e-003
tblVehicleEF	UBUS	0.06	0.02
tblVehicleEF	UBUS	7.80	0.07
tblVehicleEF	UBUS	10.86	1.61
tblVehicleEF	UBUS	1,792.86	385.95
tblVehicleEF	UBUS	138.24	20.00
tblVehicleEF	UBUS	3.38	0.04
tblVehicleEF	UBUS	12.93	0.17
tblVehicleEF	UBUS	0.52	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.03	3.6000e-004
tblVehicleEF	UBUS	1.3330e-003	1.7000e-004
tblVehicleEF	UBUS	0.22	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.03	3.3100e-004
tblVehicleEF	UBUS	1.2250e-003	1.5700e-004
tblVehicleEF	UBUS	7.7730e-003	1.5810e-003
tblVehicleEF	UBUS	0.09	0.01
tblVehicleEF	UBUS	4.7590e-003	1.0200e-003
tblVehicleEF	UBUS	0.41	4.3520e-003
tblVehicleEF	UBUS	0.03	2.4620e-003
tblVehicleEF	UBUS	0.87	0.10
tblVehicleEF	UBUS	8.5530e-003	3.8190e-003
tblVehicleEF	UBUS	1.5790e-003	1.9800e-004
tblVehicleEF	UBUS	7.7730e-003	1.5810e-003

tblVehicleEF	UBUS	0.09	0.01
tblVehicleEF	UBUS	4.7590e-003	1.0200e-003
tblVehicleEF	UBUS	2.06	6.3510e-003
tblVehicleEF	UBUS	0.03	2.4620e-003
tblVehicleEF	UBUS	0.96	0.11
tblVehicleEF	UBUS	1.60	1.2850e-003
tblVehicleEF	UBUS	0.07	0.03
tblVehicleEF	UBUS	7.74	0.06
tblVehicleEF	UBUS	12.55	1.85
tblVehicleEF	UBUS	1,792.86	385.95
tblVehicleEF	UBUS	138.24	20.42
tblVehicleEF	UBUS	3.54	0.05
tblVehicleEF	UBUS	13.02	0.18
tblVehicleEF	UBUS	0.52	0.02
tblVehicleEF	UBUS	0.01	2.2580e-003
tblVehicleEF	UBUS	0.03	3.6000e-004
tblVehicleEF	UBUS	1.3330e-003	1.7000e-004
tblVehicleEF	UBUS	0.22	0.01
tblVehicleEF	UBUS	3.0000e-003	5.6500e-004
tblVehicleEF	UBUS	0.03	3.3100e-004
tblVehicleEF	UBUS	1.2250e-003	1.5700e-004
tblVehicleEF	UBUS	6.4170e-003	1.1580e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	3.7120e-003	7.1600e-004
tblVehicleEF	UBUS	0.40	4.2510e-003
tblVehicleEF	UBUS	0.04	3.3320e-003
tblVehicleEF	UBUS	0.96	0.11
tblVehicleEF	UBUS	8.5520e-003	3.8190e-003
tblVehicleEF	UBUS	1.6080e-003	2.0200e-004

tblVehicleEF	UBUS	6.4170e-003	1.1580e-003
tblVehicleEF	UBUS	0.11	0.01
tblVehicleEF	UBUS	3.7120e-003	7.1600e-004
tblVehicleEF	UBUS	2.05	6.2030e-003
tblVehicleEF	UBUS	0.04	3.3320e-003
tblVehicleEF	UBUS	1.05	0.12
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	19.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	77.00	100.00
tblVehicleTrips	PR_TP	54.00	100.00
tblVehicleTrips	ST_TR	6.39	2.69
tblVehicleTrips	ST_TR	2.46	1.03
tblVehicleTrips	ST_TR	158.37	0.00
tblVehicleTrips	ST_TR	8.96	0.00
tblVehicleTrips	ST_TR	49.97	142.13
tblVehicleTrips	ST_TR	177.59	0.00
tblVehicleTrips	SU_TR	5.86	2.28
tblVehicleTrips	SU_TR	1.05	0.33
tblVehicleTrips	SU_TR	131.84	0.00
tblVehicleTrips	SU_TR	1.55	0.00
tblVehicleTrips	SU_TR	25.24	62.97
tblVehicleTrips	SU_TR	166.44	0.00
tblVehicleTrips	WD_TR	6.65	2.93
tblVehicleTrips	WD_TR	11.03	5.99

tblVehicleTrips	WD_TR	127.15	0.00
tblVehicleTrips	WD_TR	36.13	0.00
tblVehicleTrips	WD_TR	42.70	94.79
tblVehicleTrips	WD_TR	102.24	0.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	14,920,271.87	0.00
tblWater	IndoorWaterUseRate	3,796,392.86	0.00
tblWater	IndoorWaterUseRate	12,945,712.84	0.00
tblWater	IndoorWaterUseRate	200,768.86	0.00
tblWater	IndoorWaterUseRate	5,068,041.92	46,904,933.00
tblWater	IndoorWaterUseRate	4,218,238.31	0.00
tblWater	OutdoorWaterUseRate	9,406,258.35	0.00
tblWater	OutdoorWaterUseRate	2,326,821.43	0.00
tblWater	OutdoorWaterUseRate	826,322.10	0.00
tblWater	OutdoorWaterUseRate	38,241.69	0.00
tblWater	OutdoorWaterUseRate	3,106,219.24	1,000,352.00
tblWater	OutdoorWaterUseRate	130,460.98	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	NumberCatalytic	11.45	0.00
tblWoodstoves	NumberNoncatalytic	11.45	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.7853	0.0351	2.3743	1.8000e-004		0.0138	0.0138		0.0138	0.0138	0.0000	12.8687	12.8687	3.9300e-003	1.6000e-004	13.0160
Energy	0.0805	0.7245	0.5599	4.3900e-003		0.0556	0.0556		0.0556	0.0556	0.0000	2,395.4801	2,395.4801	0.1025	0.0327	2,407.7747
Mobile	1.9726	4.4747	26.6352	0.0901	9.7078	0.0618	9.7696	2.5948	0.0575	2.6523	0.0000	8,496.2975	8,496.2975	0.2921	0.0000	8,503.5987
Waste						0.0000	0.0000		0.0000	0.0000	185.7083	0.0000	185.7083	10.9751	0.0000	460.0845
Water						0.0000	0.0000		0.0000	0.0000	16.5950	149.9045	166.4996	0.0653	0.0378	179.3908
Total	**3.8384**	**5.2342**	**29.5694**	**0.0947**	**9.7078**	**0.1311**	**9.8390**	**2.5948**	**0.1269**	**2.7217**	**202.3034**	**11,054.5508**	**11,256.8541**	**11.4388**	**0.0706**	**11,563.8647**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.7853	0.0351	2.3743	1.8000e-004		0.0138	0.0138		0.0138	0.0138	0.0000	12.8687	12.8687	3.9300e-003	1.6000e-004	13.0160
Energy	0.0805	0.7245	0.5599	4.3900e-003		0.0556	0.0556		0.0556	0.0556	0.0000	2,395.4801	2,395.4801	0.1025	0.0327	2,407.7747
Mobile	1.9726	4.4747	26.6352	0.0901	9.7078	0.0618	9.7696	2.5948	0.0575	2.6523	0.0000	8,496.2975	8,496.2975	0.2921	0.0000	8,503.5987
Waste						0.0000	0.0000		0.0000	0.0000	185.7083	0.0000	185.7083	10.9751	0.0000	460.0845
Water						0.0000	0.0000		0.0000	0.0000	16.5950	149.9045	166.4996	0.0653	0.0378	179.3908
Total	**3.8384**	**5.2342**	**29.5694**	**0.0947**	**9.7078**	**0.1311**	**9.8390**	**2.5948**	**0.1269**	**2.7217**	**202.3034**	**11,054.5508**	**11,256.8541**	**11.4388**	**0.0706**	**11,563.8647**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.9726	4.4747	26.6352	0.0901	9.7078	0.0618	9.7696	2.5948	0.0575	2.6523	0.0000	8,496.2975	8,496.2975	0.2921	0.0000	8,503.5987
Unmitigated	1.9726	4.4747	26.6352	0.0901	9.7078	0.0618	9.7696	2.5948	0.0575	2.6523	0.0000	8,496.2975	8,496.2975	0.2921	0.0000	8,503.5987

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	670.97	616.01	522.12	2,470,550	2,470,550
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	127.95	22.00	7.05	376,318	376,318
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Medical Office Building	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	6,485.53	9,724.53	4308.41	22,834,605	22,834,605
Supermarket	0.00	0.00	0.00		
Total	7,284.45	10,362.55	4,837.58	25,681,472	25,681,472

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	100	0	0
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	100	0	0
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Medical Office Building	16.60	8.40	6.90	29.60	51.40	19.00	60	30	10
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	100	0	0
Supermarket	16.60	8.40	6.90	6.50	74.50	19.00	34	30	36

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.666486	0.050589	0.246793	0.020000	0.002207	0.000876	0.003987	0.002706	0.000000	0.000000	0.006133	0.000091	0.000133
Enclosed Parking with Elevator	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
General Office Building	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
High Turnover (Sit Down Restaurant)	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Medical Office Building	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Other Asphalt Surfaces	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Other Non-Asphalt Surfaces	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Parking Lot	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Regional Shopping Center	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877
Supermarket	0.565244	0.042904	0.209304	0.108392	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000877

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,598.6639	1,598.6639	0.0872	0.0181	1,606.2234
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,598.6639	1,598.6639	0.0872	0.0181	1,606.2234
NaturalGas Mitigated	0.0805	0.7245	0.5599	4.3900e-003		0.0556	0.0556		0.0556	0.0556	0.0000	796.8162	796.8162	0.0153	0.0146	801.5513
NaturalGas Unmitigated	0.0805	0.7245	0.5599	4.3900e-003		0.0556	0.0556		0.0556	0.0556	0.0000	796.8162	796.8162	0.0153	0.0146	801.5513

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.5492e+006	0.0138	0.1175	0.0500	7.5000e-004		9.5000e-003	9.5000e-003		9.5000e-003	9.5000e-003	0.0000	136.0352	136.0352	2.6100e-003	2.4900e-003	136.8436
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	193263	1.0400e-003	9.4700e-003	7.9600e-003	6.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004	0.0000	10.3132	10.3132	2.0000e-004	1.9000e-004	10.3745
High Turnover (Sit Down Restaurant)	1.1279e+007	0.0608	0.5529	0.4644	3.3200e-003		0.0420	0.0420		0.0420	0.0420	0.0000	601.8880	601.8880	0.0115	0.0110	605.4647
Medical Office Building	17284.7	9.0000e-005	8.5000e-004	7.1000e-004	1.0000e-005		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.9224	0.9224	2.0000e-005	2.0000e-005	0.9279
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	144356	7.8000e-004	7.0800e-003	5.9400e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.7034	7.7034	1.5000e-004	1.4000e-004	7.7491
Supermarket	748712	4.0400e-003	0.0367	0.0308	2.2000e-004		2.7900e-003	2.7900e-003		2.7900e-003	2.7900e-003	0.0000	39.9541	39.9541	7.7000e-004	7.3000e-004	40.1915
Total		**0.0805**	**0.7245**	**0.5599**	**4.4000e-003**		**0.0556**	**0.0556**		**0.0556**	**0.0556**	**0.0000**	**796.8162**	**796.8162**	**0.0153**	**0.0146**	**801.5513**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.5492e+006	0.0138	0.1175	0.0500	7.5000e-004		9.5000e-003	9.5000e-003		9.5000e-003	9.5000e-003	0.0000	136.0352	136.0352	2.6100e-003	2.4900e-003	136.8436
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	193263	1.0400e-003	9.4700e-003	7.9600e-003	6.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004	0.0000	10.3132	10.3132	2.0000e-004	1.9000e-004	10.3745
High Turnover (Sit Down Restaurant)	1.1279e+007	0.0608	0.5529	0.4644	3.3200e-003		0.0420	0.0420		0.0420	0.0420	0.0000	601.8880	601.8880	0.0115	0.0110	605.4647
Medical Office Building	17284.7	9.0000e-005	8.5000e-004	7.1000e-004	1.0000e-005		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.9224	0.9224	2.0000e-005	2.0000e-005	0.9279
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	144356	7.8000e-004	7.0800e-003	5.9400e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.7034	7.7034	1.5000e-004	1.4000e-004	7.7491
Supermarket	748712	4.0400e-003	0.0367	0.0308	2.2000e-004		2.7900e-003	2.7900e-003		2.7900e-003	2.7900e-003	0.0000	39.9541	39.9541	7.7000e-004	7.3000e-004	40.1915
Total		**0.0805**	**0.7245**	**0.5599**	**4.4000e-003**		**0.0556**	**0.0556**		**0.0556**	**0.0556**	**0.0000**	**796.8162**	**796.8162**	**0.0153**	**0.0146**	**801.5513**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	909522	219.2467	0.0120	2.4800e-003	220.2834
Enclosed Parking with Elevator	990668	238.8075	0.0130	2.7000e-003	239.9367
General Office Building	288079	69.4435	3.7900e-003	7.8000e-004	69.7719
High Turnover (Sit Down Restaurant)	1.7307e+006	417.1967	0.0228	4.7100e-003	419.1695

Medical Office Building	26142.5	6.3018	3.4000e-004	7.0000e-005	6.3316
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	341720	82.3740	4.5000e-003	9.3000e-004	82.7635
Regional Shopping Center	919498	221.6515	0.0121	2.5000e-003	222.6996
Supermarket	1.42556e+006	343.6423	0.0188	3.8800e-003	345.2672
Total		**1,598.6639**	**0.0872**	**0.0181**	**1,606.2234**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	909522	219.2467	0.0120	2.4800e-003	220.2834
Enclosed Parking with Elevator	990668	238.8075	0.0130	2.7000e-003	239.9367
General Office Building	288079	69.4435	3.7900e-003	7.8000e-004	69.7719
High Turnover (Sit Down Restaurant)	1.7307e+006	417.1967	0.0228	4.7100e-003	419.1695
Medical Office Building	26142.5	6.3018	3.4000e-004	7.0000e-005	6.3316
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	341720	82.3740	4.5000e-003	9.3000e-004	82.7635
Regional Shopping Center	919498	221.6515	0.0121	2.5000e-003	222.6996
Supermarket	1.42556e+006	343.6423	0.0188	3.8800e-003	345.2672
Total		**1,598.6639**	**0.0872**	**0.0181**	**1,606.2234**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.7853	0.0351	2.3743	1.8000e-004		0.0138	0.0138		0.0138	0.0138	0.0000	12.8687	12.8687	3.9300e-003	1.6000e-004	13.0160
Unmitigated	1.7853	0.0351	2.3743	1.8000e-004		0.0138	0.0138		0.0138	0.0138	0.0000	12.8687	12.8687	3.9300e-003	1.6000e-004	13.0160

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1890					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.5234					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	9.1000e-004	7.7600e-003	3.3000e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	8.9907	8.9907	1.7000e-004	1.6000e-004	9.0442
Landscaping	0.0719	0.0273	2.3710	1.3000e-004		0.0131	0.0131		0.0131	0.0131	0.0000	3.8779	3.8779	3.7500e-003	0.0000	3.9718
Total	**1.7853**	**0.0351**	**2.3743**	**1.8000e-004**		**0.0138**	**0.0138**		**0.0138**	**0.0138**	**0.0000**	**12.8687**	**12.8687**	**3.9200e-003**	**1.6000e-004**	**13.0160**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1890					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.5234					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	9.1000e-004	7.7600e-003	3.3000e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	8.9907	8.9907	1.7000e-004	1.6000e-004	9.0442
Landscaping	0.0719	0.0273	2.3710	1.3000e-004		0.0131	0.0131		0.0131	0.0131	0.0000	3.8779	3.8779	3.7500e-003	0.0000	3.9718
Total	**1.7853**	**0.0351**	**2.3743**	**1.8000e-004**		**0.0138**	**0.0138**		**0.0138**	**0.0138**	**0.0000**	**12.8687**	**12.8687**	**3.9200e-003**	**1.6000e-004**	**13.0160**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	166.4996	0.0653	0.0378	179.3908
Unmitigated	166.4996	0.0653	0.0378	179.3908

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	0 / 0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0 / 0	0.0000	0.0000	0.0000	0.0000
Medical Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	46.9049 / 1.00035	166.4996	0.0653	0.0378	179.3908
Supermarket	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**166.4996**	**0.0653**	**0.0378**	**179.3908**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	0 / 0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0 / 0	0.0000	0.0000	0.0000	0.0000
Medical Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	46.9049 / 1.00035	166.4996	0.0653	0.0378	179.3908
Supermarket	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**166.4996**	**0.0653**	**0.0378**	**179.3908**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	185.7083	10.9751	0.0000	460.0845
Unmitigated	185.7083	10.9751	0.0000	460.0845

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	105.34	21.3831	1.2637	0.0000	52.9757
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	19.86	4.0314	0.2383	0.0000	9.9876
High Turnover (Sit Down Restaurant)	507.54	103.0260	6.0887	0.0000	255.2426
Medical Office Building	17.28	3.5077	0.2073	0.0000	8.6901
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	71.84	14.5829	0.8618	0.0000	36.1285
Supermarket	193	39.1773	2.3153	0.0000	97.0600
Total		**185.7083**	**10.9750**	**0.0000**	**460.0845**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	105.34	21.3831	1.2637	0.0000	52.9757
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	19.86	4.0314	0.2383	0.0000	9.9876
High Turnover (Sit Down Restaurant)	507.54	103.0260	6.0887	0.0000	255.2426
Medical Office Building	17.28	3.5077	0.2073	0.0000	8.6901
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	71.84	14.5829	0.8618	0.0000	36.1285
Supermarket	193	39.1773	2.3153	0.0000	97.0600
Total		**185.7083**	**10.9750**	**0.0000**	**460.0845**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

LST Worksheets

Construction Localized Significance Thresholds: Building Demolition

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.50	25	82	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	1	0.5
NOx	**103**	Graders	0.5	0.0625			0
CO	**522**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building Demolition Haul

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.00	25	82	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625			0
NOx	**103**	Graders	0.5	0.0625			0
CO	**522**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building Demolition Haul and Asphalt Demolition

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.50	25	82	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	1	0.5
NOx	**103**	Graders	0.5	0.0625			0
CO	**522**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Asphalt Demolition

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.50	25	82	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	1	0.5
NOx	**103**	Graders	0.5	0.0625			0
CO	**522**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Asphalt Demolition and Debris Haul

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.50	25	82	2.2

Source Receptor	**North Orange County**		**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25		Tractors	0.5	0.0625	8	1	0.5
NOx	**103**		Graders	0.5	0.0625			0
CO	**522**		Dozers	0.5	0.0625			0
PM10	**4.00**		Scrapers	1	0.125			0
PM2.5	**3.00**						**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Asphalt Demolition Debris Haul

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.00	25	82	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625			0
NOx	**103**	Graders	0.5	0.0625			0
CO	**522**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Site Preparation

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	1.00	25	82	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	2	1
NOx	**103**	Graders	0.5	0.0625			0
CO	**522**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	1.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

1.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Site Preparation and Rough Grading

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	2.00	25	82	2.2

Source Receptor	North Orange County	Equipment	Acres/8-hr Day		Daily hours	Equipment Used	Acres
Distance (meters)	25	Tractors	0.5	0.0625	8	4	2
NOx	**147**	Graders	0.5	0.0625			0
CO	**762**	Dozers	0.5	0.0625			0
PM10	**6.00**	Scrapers	1	0.125			0
PM2.5	**4.00**					**Acres**	2.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	2	147	143	156	186	269
	2	147	143	156	186	269
		147	143	156	186	269
CO	2	762	1010	1395	2444	7121
	2	762	1010	1395	2444	7121
		762	1010	1395	2444	7121
PM10	2	6	17	31	60	145
	2	6	17	31	60	145
		6	17	31	60	145
PM2.5	2	4	6	11	24	79
	2	4	6	11	24	79
		4	6	11	24	79

North Orange County

2.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	147	143	156	186	269
CO	762	1010	1395	2444	7121
PM10	6	17	31	60	145
PM2.5	4	6	11	24	79

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	2	16	2
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Rough Grading

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	1.00	25	82	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	2	1
NOx	**103**	Graders	0.5	0.0625			0
CO	**522**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	1.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

1.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Rough Grading and Soil Haul

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	1.00	25	82	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	2	1
NOx	**103**	Graders	0.5	0.0625			0
CO	**522**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	1.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

1.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Rough Grading and Soil Haul and Utilities Trenching

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	2.00	25	82	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	4	2
NOx	**147**	Graders	0.5	0.0625			0
CO	**762**	Dozers	0.5	0.0625			0
PM10	**6.00**	Scrapers	1	0.125			0
PM2.5	**4.00**					**Acres**	2.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	2	147	143	156	186	269
	2	147	143	156	186	269
		147	143	156	186	269
CO	2	762	1010	1395	2444	7121
	2	762	1010	1395	2444	7121
		762	1010	1395	2444	7121
PM10	2	6	17	31	60	145
	2	6	17	31	60	145
		6	17	31	60	145
PM2.5	2	4	6	11	24	79
	2	4	6	11	24	79
		4	6	11	24	79

North Orange County

2.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	147	143	156	186	269
CO	762	1010	1395	2444	7121
PM10	6	17	31	60	145
PM2.5	4	6	11	24	79

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	2	16	2
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Utilities Trenching

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	1.00	25	82	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	2	1
NOx	**103**	Graders	0.5	0.0625			0
CO	**522**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	1.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

1.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Fine Grading

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	1.00	25	82	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	2	1
NOx	**103**	Graders	0.5	0.0625			0
CO	**522**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	1.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

1.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Parking Structure Construction

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.50	25	82	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	1	0.5
NOx	**103**	Graders	0.5	0.0625			0
CO	**522**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Residential Construction

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.00	25	82	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625			0
NOx	**103**	Graders	0.5	0.0625			0
CO	**522**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Residential Construction and Paving

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.50	25	82	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	1	0.5
NOx	**103**	Graders	0.5	0.0625			0
CO	**522**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Residential Construction, Architectural Coating, and

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.50	25	82	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	1	0.5
NOx	**103**	Graders	0.5	0.0625			0
CO	**522**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Architectural Coating and Paving

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.50	25	82	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	1	0.5
NOx	**103**	Graders	0.5	0.0625			0
CO	**522**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building Demolition

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.50	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	149	Tractors	0.5	0.0625	8	1	0.5
NOx	**140**	Graders	0.5	0.0625			0
CO	**1,488**	Dozers	0.5	0.0625			0
PM10	**38.31**	Scrapers	1	0.125			0
PM2.5	**14.43**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building Demolition Haul

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.00	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	149	Tractors	0.5	0.0625			0
NOx	**140**	Graders	0.5	0.0625			0
CO	**1,488**	Dozers	0.5	0.0625			0
PM10	**38.31**	Scrapers	1	0.125			0
PM2.5	**14.43**					**Acres**	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building Demolition Haul and Asphalt Demolition

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.50	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	149	Tractors	0.5	0.0625	8	1	0.5
NOx	**140**	Graders	0.5	0.0625			0
CO	**1,488**	Dozers	0.5	0.0625			0
PM10	**38.31**	Scrapers	1	0.125			0
PM2.5	**14.43**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Asphalt Demolition

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.50	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	149	Tractors	0.5	0.0625	8	1	0.5
NOx	**140**	Graders	0.5	0.0625			0
CO	**1,488**	Dozers	0.5	0.0625			0
PM10	**38.31**	Scrapers	1	0.125			0
PM2.5	**14.43**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Asphalt Demolition and Debris Haul

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.50	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**	
Distance (meters)	149	Tractors	0.5	0.0625	8	1	0.5	
NOx	**140**	Graders	0.5	0.0625			0	
CO	**1,488**	Dozers	0.5	0.0625			0	
PM10	**38.31**	Scrapers	1	0.125			0	
PM2.5	**14.43**					**Acres**	0.50	

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Asphalt Demolition Debris Haul

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.00	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	149	Tractors	0.5	0.0625			0
NOx	**140**	Graders	0.5	0.0625			0
CO	**1,488**	Dozers	0.5	0.0625			0
PM10	**38.31**	Scrapers	1	0.125			0
PM2.5	**14.43**					**Acres**	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Site Preparation

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	1.00	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	149	Tractors	0.5	0.0625	8	2	1
NOx	**140**	Graders	0.5	0.0625			0
CO	**1,488**	Dozers	0.5	0.0625			0
PM10	**38.31**	Scrapers	1	0.125			0
PM2.5	**14.43**					**Acres**	1.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

1.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Site Preparation and Rough Grading

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	2.00	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	149	Tractors	0.5	0.0625	8	4	2
NOx	**171**	Graders	0.5	0.0625			0
CO	**1,913**	Dozers	0.5	0.0625			0
PM10	**45.31**	Scrapers	1	0.125			0
PM2.5	**17.42**					**Acres**	2.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	2	147	143	156	186	269
	2	147	143	156	186	269
		147	143	156	186	269
CO	2	762	1010	1395	2444	7121
	2	762	1010	1395	2444	7121
		762	1010	1395	2444	7121
PM10	2	6	17	31	60	145
	2	6	17	31	60	145
		6	17	31	60	145
PM2.5	2	4	6	11	24	79
	2	4	6	11	24	79
		4	6	11	24	79

North Orange County

2.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	147	143	156	186	269
CO	762	1010	1395	2444	7121
PM10	6	17	31	60	145
PM2.5	4	6	11	24	79

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	2	16	2
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Rough Grading

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	1.00	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	149	Tractors	0.5	0.0625	8	2	1
NOx	**140**	Graders	0.5	0.0625			0
CO	**1,488**	Dozers	0.5	0.0625			0
PM10	**38.31**	Scrapers	1	0.125			0
PM2.5	**14.43**					**Acres**	1.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

1.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Rough Grading and Soil Haul

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	1.00	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	149	Tractors	0.5	0.0625	8	2	1
NOx	**140**	Graders	0.5	0.0625			0
CO	**1,488**	Dozers	0.5	0.0625			0
PM10	**38.31**	Scrapers	1	0.125			0
PM2.5	**14.43**					**Acres**	1.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

1.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Rough Grading and Soil Haul and Utilities Trenching

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	2.00	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	149	Tractors	0.5	0.0625	8	4	2
NOx	**171**	Graders	0.5	0.0625			0
CO	**1,913**	Dozers	0.5	0.0625			0
PM10	**45.31**	Scrapers	1	0.125			0
PM2.5	**17.42**					**Acres**	2.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	2	147	143	156	186	269
	2	147	143	156	186	269
		147	143	156	186	269
CO	2	762	1010	1395	2444	7121
	2	762	1010	1395	2444	7121
		762	1010	1395	2444	7121
PM10	2	6	17	31	60	145
	2	6	17	31	60	145
		6	17	31	60	145
PM2.5	2	4	6	11	24	79
	2	4	6	11	24	79
		4	6	11	24	79

North Orange County

2.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	147	143	156	186	269
CO	762	1010	1395	2444	7121
PM10	6	17	31	60	145
PM2.5	4	6	11	24	79

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	2	16	2
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Utilities Trenching

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	1.00	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	149	Tractors	0.5	0.0625	8	2	1
NOx	**140**	Graders	0.5	0.0625			0
CO	**1,488**	Dozers	0.5	0.0625			0
PM10	**38.31**	Scrapers	1	0.125			0
PM2.5	**14.43**					**Acres**	1.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

1.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Fine Grading and Soil Haul

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	1.00	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	149	Tractors	0.5	0.0625	8	2	1
NOx	**140**	Graders	0.5	0.0625			0
CO	**1,488**	Dozers	0.5	0.0625			0
PM10	**38.31**	Scrapers	1	0.125			0
PM2.5	**14.43**					**Acres**	1.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

1.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Parking Structure Construction

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.50	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**	
Distance (meters)	149	Tractors	0.5	0.0625	8	1	0.5	
NOx	**140**	Graders	0.5	0.0625			0	
CO	**1,488**	Dozers	0.5	0.0625			0	
PM10	**38.31**	Scrapers	1	0.125			0	
PM2.5	**14.43**					**Acres**	0.50	

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Residential Construction

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.00	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	149	Tractors	0.5	0.0625			0
NOx	**140**	Graders	0.5	0.0625			0
CO	**1,488**	Dozers	0.5	0.0625			0
PM10	**38.31**	Scrapers	1	0.125			0
PM2.5	**14.43**					**Acres**	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Residential Construction and Paving

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.50	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**	
Distance (meters)	149	Tractors	0.5	0.0625	8	1	0.5	
NOx	**140**	Graders	0.5	0.0625			0	
CO	**1,488**	Dozers	0.5	0.0625			0	
PM10	**38.31**	Scrapers	1	0.125			0	
PM2.5	**14.43**					**Acres**	0.50	

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Residential Construction, Architectural Coating, and

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.50	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	149	Tractors	0.5	0.0625	8	1	0.5
NOx	**140**	Graders	0.5	0.0625			0
CO	**1,488**	Dozers	0.5	0.0625			0
PM10	**38.31**	Scrapers	1	0.125			0
PM2.5	**14.43**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Architectural Coating and Paving

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
16	0.50	149	490	2.2

Source Receptor	**North Orange County**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	149	Tractors	0.5	0.0625	8	1	0.5
NOx	**140**	Graders	0.5	0.0625			0
CO	**1,488**	Dozers	0.5	0.0625			0
PM10	**38.31**	Scrapers	1	0.125			0
PM2.5	**14.43**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	159	252
	1	103	104	121	159	252
		103	104	121	159	252
CO	1	522	685	1014	1975	6531
	1	522	685	1014	1975	6531
		522	685	1014	1975	6531
PM10	1	4	10	24	53	137
	1	4	10	24	53	137
		4	10	24	53	137
PM2.5	1	3	4	9	20	74
	1	3	4	9	20	74
		3	4	9	20	74

North Orange County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	159	252
CO	522	685	1014	1975	6531
PM10	4	10	24	53	137
PM2.5	3	4	9	20	74

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
16	1	16	1
Distance Increment Below			
100			
Distance Increment Above			
200			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Appendix C2 Construction Health Risk Assessment

Appendices

This page intentionally left blank.

1. Construction Health Risk Assessment

1.1 INTRODUCTION

BOSC Realty Advisors/Sevenco, the project applicant, is proposing the redevelopment of the Brea Plaza Shopping Center (proposed project or project). The 16-acre project site is bounded by Mercury Insurance office development to the north, South Associated Road to the east, Imperial Highway/State Route 90 to the south, and State Route 57 to the west, in the City of Brea, Orange County, California. The project is a mixed-use project that would result in demolition of the existing theater and 139 surface parking spaces in addition to the subsequent development of a new five-story residential building, co-working office space, and parking garage on 2.2 acres of the existing Brea Plaza Shopping Center. The proposed project would involve demolition, site preparation, grading, trenching, building construction, architectural coating, paving, and finishing and landscaping. The following provides the background methodology used for the construction health risk assessment for the proposed project.

Project construction is anticipated to take place starting at the beginning of June 2022 and be completed by June of 2024 (approximately 543 workdays). The nearest sensitive receptors to the project site include the single-family houses to the north along Greenbriar Lane and east of the site along Associated Road. Guidance from the California Environmental Protection Agency (Cal/EPA), Office of Environmental Health Hazard Assessment (OEHHA), California Air Pollution Control Officers Association (CAPCOA), and the South Coast Air Quality Management District (South Coast AQMD) recommend the completion of health risk assessments (HRA) to determine the impacts of hazardous air emissions upon sensitive receptors in the vicinity of the project. As a result, a site-specific construction health risk assessment (HRA) has been prepared for the proposed project. This HRA considers the health impact to sensitive receptors (adults and children in the nearby residences) of construction emissions at the project site from diesel equipment exhaust (diesel particulate matter or DPM).

It should be noted that these health impacts are based on conservative (i.e., health protective) assumptions. The United States Environmental Protection Agency (USEPA, 2005) and the Office of Environmental Health Hazard Assessment (OEHHA, 2015) note that conservative assumptions used in a risk assessment are intended to ensure that the estimated risks do not underestimate the actual risks. Therefore, the estimated risks may not necessarily represent actual risks experienced by populations at or near a site. The use of conservative assumptions tends to produce upper-bound estimates of exposure and thus risk.

For residential-based receptors, the following conservative assumptions were used:

- It was assumed that maximum-exposed off-site residential receptors (both children and adults) stood outdoors and are subject to DPM at their residence for 8 hours per day, and approximately 260 construction days per year. In reality, California residents typically will spend on average 2 hours per day

outdoors at their residences (USEPA, 2011). This would result in lower exposures to construction related DPM emissions and lower estimated risk values.

- The calculated risk for infants from third trimester to age 2 is multiplied by a factor of 10 to account for early life exposure and uncertainty in child versus adult exposure impacts (OEHHA, 2015).

1.2 METHODOLOGY AND SIGNIFICANCE THRESHOLDS

For this HRA, the South Coast AQMD significance thresholds were deemed to be appropriate and the thresholds that were used for this project are shown below:

- Excess cancer risk of more than 10 in a million
- Non-cancer hazard index (chronic or acute) greater than 1.0

The methodology used in this HRA is consistent with the following South Coast AQMD and the OEHHA guidance documents:

- OEHHA. 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments.* February, 2015.

Potential exposures to DPM from proposed project construction were evaluated for off-site sensitive receptors in close proximity to the site. Pollutant concentrations were estimated using an air dispersion model, and excess lifetime cancer risks and chronic non-cancer hazard indexes were calculated. These risks were then compared to the significance thresholds adopted for this HRA.

1.3 CONSTRUCTION EMISSIONS

Construction emissions were calculated as average daily emissions in pounds per day, using the proposed construction schedule and the latest version of California Emissions Estimation Model, known as CalEEMod Version 2016.3.2.25 (CAPCOA, 2017). DPM emissions were based on the CalEEMod construction runs, using annual exhaust PM_{10} construction emissions presented in pounds (lbs) per day.

The project was assumed to take place over approximately 24 months (543 workdays or 2.08 years) from the beginning of June 2022 through June 2024. The average daily emission rates from construction equipment used during the proposed project were determined by dividing the annual average emissions for each construction year by the number of construction days per year for each calendar year of construction (i.e., 2022, 2023, and 2024). The off-site hauling emission rates were adjusted to evaluate localized emissions from the 0.79-mile haul route within 1,000 feet of the project site. The CalEEMod construction emissions output and emission rate calculations are provided in Appendix A of the HRA.

1.4 DISPERSION MODELING

Air quality modeling was performed using the AERMOD atmospheric dispersion model to assess the impact of emitted compounds on sensitive receptors near the project. The model is a steady state Gaussian plume model and is an approved model by South Coast AQMD for estimating ground level impacts from point and fugitive sources in simple and complex terrain. The on-site construction emissions for the project were modeled as poly-area sources. The off-site mobile sources were modeled as adjacent line volume sources. The model requires additional input parameters, including chemical emission data and local meteorology. Inputs for the construction emission rates are those described in Section 1.3. Meteorological data obtained from the South Coast AQMD for the nearest representative meteorological station (Fullerton Airport) with the five latest available years (2012 to 2016) of record were used to represent local weather conditions and prevailing winds. The prevailing wind direction at the Fullerton Airport meteorological station is to the northeast, and the wind rose is provided in Appendix A.

The modeling analysis also considered the spatial distribution and elevation of each emitting source in relation to the sensitive receptors. To accommodate the model's Cartesian grid format, direction-dependent calculations were obtained by identifying the Universal Transverse Mercator (UTM) coordinates for each source location. In addition, digital elevation model (DEM) data for the area were obtained and included in the model runs to account for complex terrain. An emission release height of 4.15 meters was used as representative of the stack exhaust height for off-road construction equipment and diesel truck traffic, and an initial vertical dispersion parameter of 1.93 m was used, per California Air Resources Board (CARB) guidance (2000).

To determine contaminant impacts during construction hours, the model's Hour-By-Day-of-Week (HRDOW) scalar option was invoked to predict flagpole-level concentrations (0 m for ground-floor receptors and 6.1 m for 2nd-floor) for construction emissions generated between the hours of 7:00 AM and 4:00 PM with a 1-hour lunch break.

A unit emission rate of 1 gram per second was used for all modeling runs. The unit emission rates were proportioned over the poly-area sources for on-site construction emissions and divided between the volume sources for off-site hauling emissions. The maximum modeled concentrations from the output files were then multiplied by the emission rates calculated in Appendix A to obtain the maximum flagpole-level concentrations at the off-site maximum exposed receptor (MER). As shown in Figure 1, the MER is a single-family residence north of the site along Greenbriar Lane. The MER location is the receptor location associated with the maximum AERMOD predicted DPM concentrations from the on-site emission source because the calculated on-site emission rates are approximately 3 orders of magnitude higher than the calculated off-site emission rates (see Appendix A). Therefore, the maximum concentrations associated with the on-site emission sources produce the highest overall ground-level MER concentrations and, consequently, highest calculated health risks.

The air dispersion model output for the emission sources is presented in Appendix B. The model output DPM concentrations from the construction emission sources are provided in Appendix C.

1.5 RISK CHARACTERIZATION

1.5.1 Carcinogenic Chemical Risk

Carcinogenic compounds are not considered to have threshold levels (i.e., dose levels below which there are no risks). Therefore, any exposure will have some associated risk. The South Coast AQMD has established a maximum incremental cancer risk of 10 in a million (1×10^{-5} or 10×10^{-6}) for CEQA projects and the OEHHA also sets a typical risk management level as 10 in a million (OEHHA, 2015).

Health risks associated with exposure to carcinogenic compounds can be defined in terms of the probability of developing cancer as a result of exposure to a chemical at a given concentration. The cancer risk probability is determined by multiplying the chemical's annual concentration by its cancer potency factor (CPF), a measure of the carcinogenic potential of a chemical when a dose is received through the inhalation pathway. It is an upper-limit estimate of the probability of contracting cancer as a result of continuous exposure to an ambient concentration of one microgram per cubic meter ($\mu g/m^3$), averaged over a lifetime of 70 years.

Recent guidance from OEHHA recommends a refinement to the standard point estimate approach with the use of age-specific breathing rates and age sensitivity factors (ASFs) to assess risk for susceptible subpopulations such as children. For the inhalation pathway, the procedure requires the incorporation of several discrete variates to effectively quantify dose for each age group. Once determined, contaminant dose is multiplied by the cancer potency factor in units of inverse dose expressed in milligrams per kilogram per day $(mg/kg/day)^{-1}$ to derive the cancer risk estimate. Therefore, the following dose algorithm was used to accommodate the unique exposures associated with each receptor type.

$$\text{Dose}_{\text{AIR,per age group}} = \left(C_{\text{air}} \times \text{EF} \times \left[\frac{\text{BR}}{\text{BW}}\right] \times \text{A} \times \text{CF}\right)$$

Where:

Dose_{AIR}	=	dose by inhalation (mg/kg-day), per age group
C_{air}	=	concentration of contaminant in air ($\mu g/m^3$)
EF	=	exposure frequency (number of days/365 days)
BR/BW	=	daily breathing rate normalized to body weight (L/kg-day)
A	=	inhalation absorption factor (default = 1)
CF	=	conversion factor ($1x10^{-6}$, µg to mg, L to m^3)

The inhalation absorption factor (A) is a unitless factor that is only used if the cancer potency factor included a correction for absorption across the lung. The default value of 1 was used for this assessment. For residential receptors, the exposure frequency (EF) of 0.96 is used to represent 350 days per year to allow for a two-week period away from home each year (OEHHA, 2015). The 95th percentile daily breathing rates (BR/BW), exposure duration (ED), age sensitivity factors (ASFs), and fraction of time at home (FAH) for the various age groups are provided herein:

Age Groups	BR/BW (L/kg-day)	ED	ASF	FAH
Third trimester	361	0.25	10	0.85
0-2 age group	1,090	2	10	0.85
2-9 age group	861	7	3	0.72
2-16 age group	745	14	3	0.72
16-30 age group	335	14	1	0.73
16-70 age group	290	54	1	0.73

For construction analysis, the exposure duration spans the length of construction (e.g., 543 workdays, approximately 2.08 years). In addition, the construction duration each year was considered in the risk calculations to account for the number of days residents are exposed to construction emissions in 2022, 2023 and 2024. As the length of construction is less than 2.25 years, the third trimester and 0-2 age bins apply to the construction analysis for the off-site residential receptors.

To calculate the overall cancer risk, the risk for each appropriate age group is calculated per the following equation:

$$\text{Cancer Risk}_{\text{AIR}} = \text{Dose}_{\text{AIR}} \times \text{CPF} \times \text{ASF} \times \text{FAH} \times \frac{\text{ED}}{AT}$$

Where:

Dose_{AIR}	=	dose by inhalation (mg/kg-day), per age group
CPF	=	cancer potency factor, chemical-specific $(\text{mg/kg-day})^{-1}$
ASF	=	age sensitivity factor, per age group
FAH	=	fraction of time at home, per age group (for residential receptors only)
ED	=	exposure duration (years)
AT	=	averaging time period over which exposure duration is averaged (70 years)

The CPFs used in the assessment were obtained from OEHHA guidance. The excess lifetime cancer risks during the construction period to the maximally exposed resident were calculated based on the factors provided above. The cancer risks for each age group are summed to estimate the total cancer risk for each toxic chemical species. The final step converts the cancer risk in scientific notation to a whole number that expresses the cancer risk in "chances per million" by multiplying the cancer risk by a factor of $1x10^6$ (i.e., 1 million).

The calculated results are provided in Appendix C.

1.5.2 Non-Carcinogenic Hazards

An evaluation was also conducted of the potential non-cancer effects of chronic chemical exposures. Adverse health effects are evaluated by comparing the annual receptor level (flagpole) concentration of each chemical compound with the appropriate reference exposure limit (REL). Available RELs promulgated by OEHHA were considered in the assessment.

The hazard index approach was used to quantify non-carcinogenic impacts. The hazard index assumes that chronic sub-threshold exposures adversely affect a specific organ or organ system (toxicological endpoint). Target organs presented in regulatory guidance were used for each discrete chemical exposure. To calculate the hazard index, each chemical concentration or dose is divided by the appropriate toxicity value. This ratio is summed for compounds affecting the same toxicological endpoint. A health hazard is presumed to exist where the total equals or exceeds one.

The chronic hazard analysis for DPM is provided in Appendix C. The calculations contain the relevant exposure concentrations and corresponding reference dose values used in the evaluation of non-carcinogenic exposures.

1.6 CONSTRUCTION HRA RESULTS

The calculated results are provided in Appendix C and the results are summarized in Table 1.

TABLE 1. CONSTRUCTION RISK SUMMARY - UNMITIGATED

Receptor	Cancer Risk (per million)	Chronic Hazards
Maximum Exposed Receptor - Resident	3.1	0.007
South Coast AQMD Threshold	10	1.0
Exceeds Threshold?	No	No

Note: Cancer risk calculated using 2015 OEHHA HRA guidance.

Cancer risk for the maximum exposed receptor from project-related construction emissions was calculated to be 3.1 in a million, which would not exceed the 10 in a million significance threshold. In accordance with the latest 2015 OEHHA guidance, the calculated total cancer risk conservatively assumes that the risk for the MER consists of a pregnant woman in the third trimester that subsequently gives birth to an infant during the approximately 24-month construction period; therefore, all calculated risk values were multiplied by a factor of 10. In addition, it was conservatively assumed that the residents were outdoors 8 hours a day and exposed to all of the daily construction emissions. For non-carcinogenic effects, the chronic hazard index identified for each toxicological endpoint totaled less than one for all the off-site sensitive receptors. Therefore, chronic non-carcinogenic hazards are less than significant.

Therefore, the project would not expose off-site sensitive receptors to substantial concentrations of air pollutant emissions during construction and impacts would be less than significant.

Figure 1 - Project Site and Off-Site Receptor Locations

City Boundary

Construction Area

Construction Truck Route

Maximum Exposed Receptor - Residence

Receptors - Residential

0 800
Scale (Feet)

Base Map Source: Nearmap, 2021

2. References

California Air Pollution Control Officers Association (CAPCOA). 2017. California Emissions Estimator Model (CalEEMod). Version 2016.3.2.25. Prepared by: BREEZE Software, A Division of Trinity Consultants in collaboration with South Coast Air Quality Management District and the California Air Districts.

California Air Resources Board (CARB). 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.*

Office of Environmental Health Hazard Assessment (OEHHA). 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments.* Dated February 2015.

South Coast Air Quality Management District (South Coast AQMD). 2021, May 20 (accessed). 2012-2016. Meteorological Data Set for Fullerton Airport Meteorological Station. http://www.aqmd.gov/home/air-quality/meteorological-data/data-for-aermod.

United States Environmental Protection Agency (USEPA). 2011. *Exposure Factors Handbook 2011 Edition (Final).* EPA/600/R-09/052F, 2011.

_____. 2005. *Guideline on Air Quality Models* (Revised). EPA-450/2-78-027R.

Appendix A. Emission Rate Calculations

Construction Emissions - DPM
Input to Risk Tables

Onsite Construction PM10 Exhaust Emissions - Unmitigated Scenario [1]

Year	Annual PM10 Exhaust Emissions (Tons/Year)	Annual PM10 Exhaust Emissions (lbs/Year)	# of Construction Days/Year	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/hr)	Emission Rate (g/s)	# of Workdays/ Year	Construction Duration[2]
2022	0.0143	28.68	153	0.19	2.34E-02	2.95E-03	260	0.59
2023	0.0352	70.40	260	0.27	3.38E-02	4.26E-03	260	1.00
2024	0.0138	27.58	130	0.21	2.65E-02	3.34E-03	262	0.50

Offsite Construction PM10 Exhaust Emissions - Unmitigated Scenario [1]

Year	Annual PM10 Exhaust Emissions (Tons/Year)	Annual PM10 Exhaust Emissions (lbs/Year)	# of Construction Days/Year	Average Daily Emissions (lbs/day)	Hauling Emissions w/in 1,000 ft (lbs/day) [3]	Emission Rate (lbs/hr)	Emission Rate (g/s)
2022	0.0013	2.58	153	0.02	3.44E-04	4.29E-05	5.41E-06
2023	0.0008	1.68	260	0.01	1.32E-04	1.65E-05	2.07E-06
2024	0.0004	0.72	130	0.01	1.13E-04	1.41E-05	1.78E-06

Note: Emissions evenly distributed over 55 modeled volume sources.

Hauling Length (miles) [3]	39.0	miles
Haul Length within 1,000 ft of Site (mile) [4]	0.79	miles
Hours per work day (7:00 AM to 4:00 PM, 1-hour of breaks) [5]	8	hours

[1] DPM emissions taken as PM_{10} exhaust emissions from CalEEMod average daily emissions.

[2] Construction durations determined for each year to adjust receptor exposures to the exposure durations for each construction year (see App C - Risk Calculations).

[3] Based on distance between the project site and the Prima Deshecha Landfill.

[4] Emissions from CalEEMod offsite average daily emissions, which is based on proportioned haul truck trip distances , are adjusted to evaluate emissions from the 0.79-mile route within 1,000 of the project site.

[5] Work hours applied in By Hour/Day (HRDOW) variable emissions module in air dispersion model (see App C - Air Dispersion Model Output Files).

3.3 Building Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category tons/yr										
Off-Road	0.01	0.06	0.06	0.00		0.00	0.00		0.00	0.00
Total	0.01	0.06	0.06	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category tons/yr										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.3 Building Demolition Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category tons/yr										
Fugitive Dust					0.01	0.00	0.01	0.00	0.00	0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category tons/yr										
Hauling	0.00	0.07	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Vendor	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.07	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00

3.4 Asphalt Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category tons/yr										
Off-Road	0.00	0.03	0.03	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.03	0.03	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category tons/yr										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.5 Asphalt Demolition Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category tons/yr										
Fugitive Dust					0.01	0.00	0.01	0.00	0.00	0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category tons/yr										
Hauling	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.6 Site Preparation - 2022

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust						0.00	0.00	0.00	0.00	0.00	0.00
Off-Road		0.00	0.04	0.04	0.00		0.00	0.00		0.00	0.00
Total		0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.8 Rough Grading - 2022

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust						0.00	0.00	0.00	0.00	0.00	0.00
Off-Road		0.00	0.02	0.03	0.00		0.00	0.00		0.00	0.00
Total		0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.9 Rough Grading Soil Haul - 2022

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust						0.00	0.00	0.00	0.00	0.00	0.00
Off-Road		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.01	0.22	0.07	0.00	0.02	0.00	0.02	0.00	0.00	0.01
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.01	0.23	0.07	0.00	0.02	0.00	0.02	0.01	0.00	0.01

3.10 Utility Trenching - 2022

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.00	0.03	0.04	0.00		0.00	0.00		0.00	0.00
Total		0.00	0.03	0.04	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.11 Fine Grading - 2022

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust						0.00	0.00	0.00	0.00	0.00	0.00
Off-Road		0.00	0.01	0.02	0.00		0.00	0.00		0.00	0.00
Total		0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.13 Parking Structure Construction - 2022

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.01	0.15	0.14	0.00		0.01	0.01		0.01	0.01
Total		0.01	0.15	0.14	0.00		0.01	0.01		0.01	0.01

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.01	0.00	0.04	0.00	0.02	0.00	0.02	0.00	0.00	0.00
Total		0.01	0.02	0.05	0.00	0.02	0.00	0.02	0.00	0.00	0.00

3.13 Parking Structure Construction - 2023

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.04	0.41	0.41	0.00		0.02	0.02		0.02	0.02
Total		0.04	0.41	0.41	0.00		0.02	0.02		0.02	0.02

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.02	0.01	0.12	0.00	0.05	0.00	0.05	0.01	0.00	0.01
Total		0.02	0.04	0.13	0.00	0.05	0.00	0.05	0.01	0.00	0.01

3.14 Residential Construction - 2023

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.04	0.41	0.41	0.00		0.02	0.02		0.02	0.02
Total		0.04	0.41	0.41	0.00		0.02	0.02		0.02	0.02

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.02	0.01	0.16	0.00	0.07	0.00	0.07	0.02	0.00	0.02
Total		0.02	0.03	0.17	0.00	0.07	0.00	0.07	0.02	0.00	0.02

3.14 Residential Construction - 2024

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.02	0.19	0.21	0.00		0.01	0.01		0.01	0.01
Total		0.02	0.19	0.21	0.00		0.01	0.01		0.01	0.01

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.01	0.01	0.08	0.00	0.03	0.00	0.03	0.01	0.00	0.01
Total		0.01	0.01	0.08	0.00	0.03	0.00	0.03	0.01	0.00	0.01

3.15 Paving - 2024

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.00	0.04	0.06	0.00		0.00	0.00		0.00	0.00
Paving		0.00					0.00	0.00		0.00	0.00
Total		0.00	0.04	0.06	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.16 Finishing/Landscaping - 2024

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.01	0.08	0.16	0.00		0.00	0.00		0.00	0.00
Total		0.01	0.08	0.16	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Total		0.00	0.01	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00

3.17 Architectural Coating - 2024

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Architectural Coating		1.16					0.00	0.00		0.00	0.00
Off Road		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Total		1.16	0.00	0.00	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase Name	Start Date	End Date	CalEEMod Days	Total Days
Building Demolition	6/1/2022	7/1/2022	23	**30**
Building Demolition Haul	7/15/2022	8/1/2022	12	**17**
Asphalt Demolition	8/1/2022	8/15/2022	11	**14**
Asphalt Demolition Debris Haul	8/15/2022	8/25/2022	9	**10**
Site Preparation	9/1/2022	9/15/2022	11	**14**
Site Preparation Soil Haul	9/5/2022	9/15/2022	9	**10**
Rough Grading	9/15/2022	9/25/2022	7	**10**
Rough Grading Soil Haul	9/26/2022	10/7/2022	10	**11**
Fine Grading	10/17/2022	10/21/2022	5	**4**
Fine Grading Soil Haul	10/17/2022	10/21/2022	5	**4**
Utility Trenching	10/1/2022	10/16/2022	10	**15**
Parking Structure Construction 2022	11/1/2022	12/31/2022	44	**60**
Parking Structure Construction 2023	1/1/2023	7/1/2023	130	**181**
Residential Construction 2023	7/2/2023	12/31/2023	130	**182**
Residential Construction 2024	1/1/2024	4/1/2024	66	**91**
Paving	3/1/2024	3/15/2024	11	**14**
Architectural Coating	4/1/2024	6/30/2024	65	**90**
Finishing/Landscaping	4/1/2024	6/30/2024	65	**90**

Number of Construction Days Per Year			
2022	6/1/2022	12/31/2022	153
2023	1/1/2023	12/31/2023	260
2024	1/1/2024	6/30/2024	130
		CONSTRUCTION DAYS	543

Total Construction Days Per Year		
1/1/2022	12/31/2022	260
1/1/2023	12/31/2023	260
1/1/2024	12/31/2024	262
	TOTAL DAYS	782

Appendix B. Air Dispersion Model Output

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

                                        ***   MODEL SETUP OPTIONS SUMMARY   ***
- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses URBAN Dispersion Algorithm for the SBL for   56 Source(s),
  for Total of   1 Urban Area(s):
  Urban Population =   3176000.0 ; Urban Roughness Length = 1.000 m

**Model Uses Regulatory DEFAULT Options:
       1. Stack-tip Downwash.
       2. Model Accounts for ELEVated Terrain Effects.
       3. Use Calms Processing Routine.
       4. Use Missing Data Processing Routine.
       5. No Exponential Decay.
       6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
       ADJ_U*   - Use ADJ_U* option for SBL in AERMET
       CCVR_Sub - Meteorological data includes CCVR substitutions
       TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: OTHER

**Model Calculates PERIOD Averages Only

**This Run Includes: 56 Source(s);   2 Source Group(s); and   432 Receptor(s)

               with: 0 POINT(s), including
                          0 POINTCAP(s) and   0 POINTHOR(s)
                and: 55 VOLUME source(s)
                and: 1 AREA type source(s)
                and: 0 LINE source(s)
                and: 0 RLINE/RLINEXT source(s)
                and: 0 OPENPIT source(s)
                and: 0 BUOYANT LINE source(s) with   0 line(s)

```
**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  16216

**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    29.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                 ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.6 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   BREA-03.err
**File for Summary of Results:   BREA-03.sum
```

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000001	0	0.18182E-01	418539.2	3752862.1	101.1	4.15	10.73	3.26	YES	HRDOW
L0000002	0	0.18182E-01	418562.2	3752862.6	100.9	4.15	10.73	3.26	YES	HRDOW
L0000003	0	0.18182E-01	418585.3	3752863.1	100.7	4.15	10.73	3.26	YES	HRDOW
L0000004	0	0.18182E-01	418608.4	3752863.6	100.3	4.15	10.73	3.26	YES	HRDOW
L0000005	0	0.18182E-01	418631.4	3752864.1	100.0	4.15	10.73	3.26	YES	HRDOW
L0000006	0	0.18182E-01	418654.5	3752864.5	99.2	4.15	10.73	3.26	YES	HRDOW
L0000007	0	0.18182E-01	418677.0	3752868.5	97.7	4.15	10.73	3.26	YES	HRDOW
L0000008	0	0.18182E-01	418696.7	3752864.3	96.5	4.15	10.73	3.26	YES	HRDOW
L0000009	0	0.18182E-01	418697.4	3752846.7	97.2	4.15	10.73	3.26	YES	HRDOW
L0000010	0	0.18182E-01	418685.0	3752827.2	97.1	4.15	10.73	3.26	YES	HRDOW
L0000011	0	0.18182E-01	418672.7	3752807.8	97.3	4.15	10.73	3.26	YES	HRDOW
L0000012	0	0.18182E-01	418660.3	3752788.3	97.1	4.15	10.73	3.26	YES	HRDOW
L0000013	0	0.18182E-01	418651.1	3752767.5	97.1	4.15	10.73	3.26	YES	HRDOW
L0000014	0	0.18182E-01	418646.1	3752745.0	96.9	4.15	10.73	3.26	YES	HRDOW
L0000015	0	0.18182E-01	418641.0	3752722.5	96.8	4.15	10.73	3.26	YES	HRDOW
L0000016	0	0.18182E-01	418637.5	3752699.7	96.8	4.15	10.73	3.26	YES	HRDOW
L0000017	0	0.18182E-01	418635.7	3752676.7	96.8	4.15	10.73	3.26	YES	HRDOW
L0000018	0	0.18182E-01	418633.8	3752653.7	96.9	4.15	10.73	3.26	YES	HRDOW
L0000019	0	0.18182E-01	418632.0	3752630.7	96.9	4.15	10.73	3.26	YES	HRDOW
L0000020	0	0.18182E-01	418619.3	3752619.6	97.0	4.15	10.73	3.26	YES	HRDOW
L0000021	0	0.18182E-01	418596.2	3752619.6	97.2	4.15	10.73	3.26	YES	HRDOW
L0000022	0	0.18182E-01	418573.1	3752619.6	97.3	4.15	10.73	3.26	YES	HRDOW
L0000023	0	0.18182E-01	418550.1	3752619.6	97.6	4.15	10.73	3.26	YES	HRDOW
L0000024	0	0.18182E-01	418527.0	3752619.6	98.2	4.15	10.73	3.26	YES	HRDOW
L0000025	0	0.18182E-01	418503.9	3752619.6	98.6	4.15	10.73	3.26	YES	HRDOW
L0000026	0	0.18182E-01	418480.9	3752619.6	99.1	4.15	10.73	3.26	YES	HRDOW
L0000027	0	0.18182E-01	418457.8	3752619.6	100.0	4.15	10.73	3.26	YES	HRDOW
L0000028	0	0.18182E-01	418434.7	3752619.6	100.6	4.15	10.73	3.26	YES	HRDOW
L0000029	0	0.18182E-01	418411.7	3752619.8	101.3	4.15	10.73	3.26	YES	HRDOW
L0000030	0	0.18182E-01	418391.8	3752631.6	101.6	4.15	10.73	3.26	YES	HRDOW
L0000031	0	0.18182E-01	418378.3	3752649.0	101.4	4.15	10.73	3.26	YES	HRDOW
L0000032	0	0.18182E-01	418368.5	3752669.9	99.8	4.15	10.73	3.26	YES	HRDOW
L0000033	0	0.18182E-01	418364.2	3752692.3	99.4	4.15	10.73	3.26	YES	HRDOW
L0000034	0	0.18182E-01	418362.6	3752715.3	99.3	4.15	10.73	3.26	YES	HRDOW
L0000035	0	0.18182E-01	418362.2	3752738.2	99.3	4.15	10.73	3.26	YES	HRDOW
L0000036	0	0.18182E-01	418366.9	3752760.8	99.7	4.15	10.73	3.26	YES	HRDOW
L0000037	0	0.18182E-01	418371.7	3752783.3	100.0	4.15	10.73	3.26	YES	HRDOW
L0000038	0	0.18182E-01	418376.5	3752805.9	100.3	4.15	10.73	3.26	YES	HRDOW
L0000039	0	0.18182E-01	418381.2	3752828.5	100.8	4.15	10.73	3.26	YES	HRDOW
L0000040	0	0.18182E-01	418386.0	3752851.0	101.6	4.15	10.73	3.26	YES	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000041	0	0.18182E-01	418390.7	3752873.6	102.5	4.15	10.73	3.26	YES	HRDOW
L0000042	0	0.18182E-01	418396.1	3752896.0	103.3	4.15	10.73	3.26	YES	HRDOW
L0000043	0	0.18182E-01	418404.2	3752917.6	104.0	4.15	10.73	3.26	YES	HRDOW
L0000044	0	0.18182E-01	418412.3	3752939.2	104.6	4.15	10.73	3.26	YES	HRDOW
L0000045	0	0.18182E-01	418420.4	3752960.8	105.1	4.15	10.73	3.26	YES	HRDOW
L0000046	0	0.18182E-01	418428.5	3752982.4	105.6	4.15	10.73	3.26	YES	HRDOW
L0000047	0	0.18182E-01	418436.6	3753004.0	106.1	4.15	10.73	3.26	YES	HRDOW
L0000048	0	0.18182E-01	418444.7	3753025.6	106.7	4.15	10.73	3.26	YES	HRDOW
L0000049	0	0.18182E-01	418452.6	3753047.3	107.4	4.15	10.73	3.26	YES	HRDOW
L0000050	0	0.18182E-01	418460.4	3753069.0	107.9	4.15	10.73	3.26	YES	HRDOW
L0000051	0	0.18182E-01	418468.2	3753090.7	108.4	4.15	10.73	3.26	YES	HRDOW
L0000052	0	0.18182E-01	418476.0	3753112.4	108.9	4.15	10.73	3.26	YES	HRDOW
L0000053	0	0.18182E-01	418483.9	3753134.1	109.5	4.15	10.73	3.26	YES	HRDOW
L0000054	0	0.18182E-01	418491.7	3753155.8	110.0	4.15	10.73	3.26	YES	HRDOW
L0000055	0	0.18182E-01	418499.5	3753177.5	110.5	4.15	10.73	3.26	YES	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
1	0	0.85669E-04	418378.5	3752771.4	100.1	4.15	8	1.93	YES	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ONSITE	1 ,
OFFSITE	L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 , L0000008 ,
	L0000009 , L0000010 , L0000011 , L0000012 , L0000013 , L0000014 , L0000015 , L0000016 ,
	L0000017 , L0000018 , L0000019 , L0000020 , L0000021 , L0000022 , L0000023 , L0000024 ,
	L0000025 , L0000026 , L0000027 , L0000028 , L0000029 , L0000030 , L0000031 , L0000032 ,
	L0000033 , L0000034 , L0000035 , L0000036 , L0000037 , L0000038 , L0000039 , L0000040 ,
	L0000041 , L0000042 , L0000043 , L0000044 , L0000045 , L0000046 , L0000047 , L0000048 ,
	L0000049 , L0000050 , L0000051 , L0000052 , L0000053 , L0000054 , L0000055 ,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	3176000.	1 , L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 ,
		L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 , L0000014 , L0000015 ,
		L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 , L0000022 , L0000023 ,
		L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , L0000029 , L0000030 , L0000031 ,
		L0000032 , L0000033 , L0000034 , L0000035 , L0000036 , L0000037 , L0000038 , L0000039 ,
		L0000040 , L0000041 , L0000042 , L0000043 , L0000044 , L0000045 , L0000046 , L0000047 ,
		L0000048 , L0000049 , L0000050 , L0000051 , L0000052 , L0000053 , L0000054 , L0000055 ,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = 1   ; SOURCE TYPE = AREAPOLY :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
						DAY OF WEEK = WEEKDAY									
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.1000E+01
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.0000E+00	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
						DAY OF WEEK = SATURDAY									
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
						DAY OF WEEK = SUNDAY									
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = L0000001 TO L0000055   ; SOURCE TYPE = VOLUME   :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
							DAY OF WEEK = WEEKDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.1000E+01
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.0000E+00	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
							DAY OF WEEK = SATURDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
							DAY OF WEEK = SUNDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(418735.9,	3752648.4,	99.7,	99.7,	0.0);	(418755.9,	3752648.4,	100.4,	100.4,	0.0);
(418775.9,	3752648.4,	101.2,	101.2,	0.0);	(418795.9,	3752648.4,	102.0,	102.0,	0.0);
(418815.9,	3752648.4,	102.7,	102.7,	0.0);	(418835.9,	3752648.4,	103.4,	103.4,	0.0);
(418855.9,	3752648.4,	104.2,	104.2,	0.0);	(418875.9,	3752648.4,	105.0,	105.0,	0.0);
(418895.9,	3752648.4,	105.7,	105.7,	0.0);	(418735.9,	3752688.4,	99.6,	99.6,	0.0);
(418755.9,	3752688.4,	100.4,	100.4,	0.0);	(418775.9,	3752688.4,	101.2,	101.2,	0.0);
(418795.9,	3752688.4,	102.0,	102.0,	0.0);	(418815.9,	3752688.4,	102.8,	102.8,	0.0);
(418835.9,	3752688.4,	103.7,	103.7,	0.0);	(418855.9,	3752688.4,	104.6,	104.6,	0.0);
(418875.9,	3752688.4,	105.4,	105.4,	0.0);	(418895.9,	3752688.4,	106.2,	106.2,	0.0);
(418735.9,	3752708.4,	99.0,	99.0,	0.0);	(418755.9,	3752708.4,	99.7,	99.7,	0.0);
(418775.9,	3752708.4,	100.5,	100.5,	0.0);	(418795.9,	3752708.4,	101.5,	101.5,	0.0);
(418815.9,	3752708.4,	102.5,	102.5,	0.0);	(418835.9,	3752708.4,	103.7,	103.7,	0.0);
(418855.9,	3752708.4,	104.8,	104.8,	0.0);	(418875.9,	3752708.4,	105.8,	105.8,	0.0);
(418895.9,	3752708.4,	106.7,	106.7,	0.0);	(418735.9,	3752728.4,	98.1,	98.1,	0.0);
(418755.9,	3752728.4,	98.8,	98.8,	0.0);	(418775.9,	3752728.4,	99.7,	99.7,	0.0);
(418795.9,	3752728.4,	100.8,	100.8,	0.0);	(418815.9,	3752728.4,	102.1,	102.1,	0.0);
(418835.9,	3752728.4,	103.6,	103.6,	0.0);	(418855.9,	3752728.4,	104.9,	104.9,	0.0);
(418875.9,	3752728.4,	106.0,	106.0,	0.0);	(418895.9,	3752728.4,	107.1,	107.1,	0.0);
(418735.9,	3752748.4,	97.6,	97.6,	0.0);	(418755.9,	3752748.4,	98.4,	98.4,	0.0);
(418775.9,	3752748.4,	99.4,	99.4,	0.0);	(418795.9,	3752748.4,	100.6,	100.6,	0.0);
(418815.9,	3752748.4,	102.0,	102.0,	0.0);	(418835.9,	3752748.4,	103.3,	103.3,	0.0);
(418855.9,	3752748.4,	104.5,	104.5,	0.0);	(418875.9,	3752748.4,	105.6,	105.6,	0.0);
(418895.9,	3752748.4,	106.7,	106.7,	0.0);	(418755.9,	3752768.4,	98.1,	98.1,	0.0);
(418775.9,	3752768.4,	99.1,	99.1,	0.0);	(418795.9,	3752768.4,	100.4,	100.4,	0.0);
(418815.9,	3752768.4,	102.0,	102.0,	0.0);	(418835.9,	3752768.4,	103.4,	103.4,	0.0);
(418855.9,	3752768.4,	104.4,	104.4,	0.0);	(418755.9,	3752788.4,	98.0,	98.0,	0.0);
(418775.9,	3752788.4,	98.9,	98.9,	0.0);	(418795.9,	3752788.4,	100.1,	100.1,	0.0);
(418815.9,	3752788.4,	102.0,	102.0,	0.0);	(418835.9,	3752788.4,	103.6,	103.6,	0.0);
(418855.9,	3752788.4,	104.3,	104.3,	0.0);	(418735.9,	3752808.4,	97.6,	97.6,	0.0);
(418775.9,	3752808.4,	98.1,	98.1,	0.0);	(418795.9,	3752808.4,	99.1,	99.1,	0.0);
(418815.9,	3752808.4,	101.3,	101.3,	0.0);	(418835.9,	3752808.4,	103.0,	103.0,	0.0);
(418855.9,	3752808.4,	103.6,	103.6,	0.0);	(418735.9,	3752828.4,	97.5,	97.5,	0.0);
(418795.9,	3752828.4,	98.7,	98.7,	0.0);	(418815.9,	3752828.4,	100.6,	100.6,	0.0);
(418835.9,	3752828.4,	102.0,	103.3,	0.0);	(418855.9,	3752828.4,	102.5,	109.0,	0.0);
(418735.9,	3752848.4,	97.3,	97.3,	0.0);	(418755.9,	3752848.4,	97.7,	97.7,	0.0);
(418775.9,	3752848.4,	98.1,	98.1,	0.0);	(418795.9,	3752848.4,	98.7,	98.7,	0.0);
(418815.9,	3752848.4,	100.0,	100.0,	0.0);	(418835.9,	3752848.4,	100.6,	100.6,	0.0);
(418755.9,	3752868.4,	97.3,	97.3,	0.0);	(418775.9,	3752868.4,	97.7,	97.7,	0.0);
(418795.9,	3752868.4,	98.2,	98.2,	0.0);	(418815.9,	3752868.4,	98.8,	98.8,	0.0);
(418835.9,	3752868.4,	99.5,	108.7,	0.0);	(418795.9,	3752888.4,	97.7,	97.7,	0.0);
(418815.9,	3752888.4,	98.0,	98.0,	0.0);	(418716.8,	3752801.4,	97.4,	97.4,	0.0);

```
( 418703.5, 3752783.4,      97.3,      97.3,      0.0);        ( 418696.4, 3752764.9,      97.2,      97.2,      0.0);
( 418691.1, 3752748.8,      97.3,      97.3,      0.0);        ( 418683.6, 3752728.8,      97.2,      97.2,      0.0);
( 418678.3, 3752710.8,      97.3,      97.3,      0.0);        ( 418682.6, 3752685.6,      97.7,      97.7,      0.0);
( 418674.5, 3752665.2,      98.0,      98.0,      0.0);        ( 418687.8, 3752651.5,      98.4,      98.4,      0.0);
```

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(418712.5, 3752646.3,	98.8,	98.8,	0.0);	(418590.3, 3753003.1,	104.1,	104.1,	0.0);
(418610.3, 3753003.1,	103.3,	103.3,	0.0);	(418630.3, 3753003.1,	102.5,	102.5,	0.0);
(418492.0, 3753051.2,	107.2,	107.2,	0.0);	(418530.3, 3753023.1,	106.0,	106.0,	0.0);
(418550.3, 3753023.1,	105.7,	105.7,	0.0);	(418570.3, 3753023.1,	105.2,	105.2,	0.0);
(418590.3, 3753023.1,	104.6,	104.6,	0.0);	(418610.3, 3753023.1,	103.7,	103.7,	0.0);
(418630.3, 3753023.1,	103.0,	103.0,	0.0);	(418650.3, 3753023.1,	102.7,	102.7,	0.0);
(418670.3, 3753023.1,	102.6,	102.6,	0.0);	(418510.3, 3753043.1,	106.9,	106.9,	0.0);
(418530.3, 3753043.1,	106.6,	106.6,	0.0);	(418550.3, 3753043.1,	106.2,	106.2,	0.0);
(418570.3, 3753043.1,	105.6,	105.6,	0.0);	(418590.3, 3753043.1,	104.9,	104.9,	0.0);
(418610.3, 3753043.1,	104.0,	104.0,	0.0);	(418630.3, 3753043.1,	103.4,	103.4,	0.0);
(418650.3, 3753043.1,	103.3,	103.3,	0.0);	(418670.3, 3753043.1,	103.2,	103.2,	0.0);
(418690.3, 3753043.1,	102.6,	102.6,	0.0);	(418710.3, 3753043.1,	101.8,	101.8,	0.0);
(418510.3, 3753063.1,	107.4,	107.4,	0.0);	(418530.3, 3753063.1,	107.0,	107.0,	0.0);
(418550.3, 3753063.1,	106.4,	106.4,	0.0);	(418570.3, 3753063.1,	105.7,	105.7,	0.0);
(418590.3, 3753063.1,	105.0,	105.0,	0.0);	(418610.3, 3753063.1,	104.4,	104.4,	0.0);
(418650.3, 3753063.1,	103.8,	103.8,	0.0);	(418670.3, 3753063.1,	103.6,	103.6,	0.0);
(418690.3, 3753063.1,	103.2,	103.2,	0.0);	(418710.3, 3753063.1,	102.5,	102.5,	0.0);
(418730.3, 3753063.1,	101.8,	101.8,	0.0);	(418790.3, 3753063.1,	102.7,	102.7,	0.0);
(418810.3, 3753063.1,	103.0,	103.0,	0.0);	(418510.3, 3753083.1,	107.5,	107.5,	0.0);
(418530.3, 3753083.1,	107.1,	107.1,	0.0);	(418550.3, 3753083.1,	106.7,	106.7,	0.0);
(418610.3, 3753083.1,	105.0,	105.0,	0.0);	(418630.3, 3753083.1,	104.6,	104.6,	0.0);
(418650.3, 3753083.1,	104.3,	104.3,	0.0);	(418670.3, 3753083.1,	104.1,	104.1,	0.0);
(418690.3, 3753083.1,	103.7,	103.7,	0.0);	(418710.3, 3753083.1,	103.0,	103.0,	0.0);
(418730.3, 3753083.1,	102.5,	102.5,	0.0);	(418750.3, 3753083.1,	102.2,	102.2,	0.0);
(418790.3, 3753083.1,	102.8,	102.8,	0.0);	(418810.3, 3753083.1,	102.9,	102.9,	0.0);
(418830.3, 3753083.1,	102.7,	102.7,	0.0);	(418850.3, 3753083.1,	102.2,	102.2,	0.0);
(418550.3, 3753103.1,	107.0,	107.0,	0.0);	(418570.3, 3753103.1,	106.6,	106.6,	0.0);
(418590.3, 3753103.1,	106.0,	106.0,	0.0);	(418610.3, 3753103.1,	105.5,	105.5,	0.0);
(418630.3, 3753103.1,	105.1,	105.1,	0.0);	(418650.3, 3753103.1,	104.7,	104.7,	0.0);
(418670.3, 3753103.1,	104.3,	104.3,	0.0);	(418690.3, 3753103.1,	103.9,	103.9,	0.0);
(418710.3, 3753103.1,	103.4,	103.4,	0.0);	(418730.3, 3753103.1,	103.2,	103.2,	0.0);
(418750.3, 3753103.1,	103.2,	103.2,	0.0);	(418770.3, 3753103.1,	103.2,	103.2,	0.0);
(418830.3, 3753103.1,	102.8,	102.8,	0.0);	(418850.3, 3753103.1,	102.6,	102.6,	0.0);
(418530.3, 3753123.1,	107.8,	107.8,	0.0);	(418550.3, 3753123.1,	107.5,	107.5,	0.0);
(418570.3, 3753123.1,	107.0,	107.0,	0.0);	(418590.3, 3753123.1,	106.3,	106.3,	0.0);
(418610.3, 3753123.1,	105.8,	105.8,	0.0);	(418630.3, 3753123.1,	105.2,	105.2,	0.0);
(418650.3, 3753123.1,	104.6,	104.6,	0.0);	(418670.3, 3753123.1,	104.1,	104.1,	0.0);
(418690.3, 3753123.1,	103.7,	103.7,	0.0);	(418710.3, 3753123.1,	103.7,	103.7,	0.0);
(418730.3, 3753123.1,	104.0,	104.0,	0.0);	(418750.3, 3753123.1,	104.1,	104.1,	0.0);
(418770.3, 3753123.1,	104.0,	104.0,	0.0);	(418790.3, 3753123.1,	103.5,	103.5,	0.0);
(418530.3, 3753143.1,	108.0,	108.0,	0.0);	(418550.3, 3753143.1,	107.6,	107.6,	0.0);
(418570.3, 3753143.1,	107.1,	107.1,	0.0);	(418590.3, 3753143.1,	106.6,	106.6,	0.0);

```
( 418610.3, 3753143.1,     106.1,     106.1,       0.0);        ( 418710.3, 3753143.1,     104.4,     104.4,       0.0);
( 418730.3, 3753143.1,     104.6,     104.6,       0.0);        ( 418750.3, 3753143.1,     104.6,     104.6,       0.0);
( 418770.3, 3753143.1,     104.3,     104.3,       0.0);        ( 418530.3, 3753163.1,     108.2,     108.2,       0.0);
```

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(	418550.3,	3753163.1,	107.6,	107.6,	0.0);	(418590.3,	3753163.1,	106.9,	106.9,	0.0);
(	418610.3,	3753163.1,	106.6,	106.6,	0.0);	(418630.3,	3753163.1,	106.3,	106.3,	0.0);
(	418650.3,	3753163.1,	106.0,	106.0,	0.0);	(418670.3,	3753163.1,	105.5,	105.5,	0.0);
(	418690.3,	3753163.1,	105.2,	105.2,	0.0);	(418710.3,	3753163.1,	105.2,	105.2,	0.0);
(	418730.3,	3753163.1,	105.2,	105.2,	0.0);	(418750.3,	3753163.1,	105.0,	105.0,	0.0);
(	418770.3,	3753163.1,	104.6,	104.6,	0.0);	(418550.3,	3753183.1,	108.0,	108.0,	0.0);
(	418570.3,	3753183.1,	107.8,	107.8,	0.0);	(418590.3,	3753183.1,	107.6,	107.6,	0.0);
(	418610.3,	3753183.1,	107.4,	107.4,	0.0);	(418630.3,	3753183.1,	107.2,	107.2,	0.0);
(	418650.3,	3753183.1,	106.9,	106.9,	0.0);	(418670.3,	3753183.1,	106.7,	106.7,	0.0);
(	418690.3,	3753183.1,	106.4,	106.4,	0.0);	(418710.3,	3753183.1,	106.0,	106.0,	0.0);
(	418730.3,	3753183.1,	105.6,	105.6,	0.0);	(418750.3,	3753183.1,	105.2,	105.2,	0.0);
(	418550.3,	3753203.1,	108.5,	108.5,	0.0);	(418570.3,	3753203.1,	108.0,	108.0,	0.0);
(	418590.3,	3753203.1,	107.8,	107.8,	0.0);	(418610.3,	3753203.1,	107.6,	107.6,	0.0);
(	418630.3,	3753203.1,	107.4,	107.4,	0.0);	(418650.3,	3753203.1,	107.2,	107.2,	0.0);
(	418670.3,	3753203.1,	107.0,	107.0,	0.0);	(418690.3,	3753203.1,	106.7,	106.7,	0.0);
(	418710.3,	3753203.1,	106.3,	106.3,	0.0);	(418730.3,	3753203.1,	105.9,	105.9,	0.0);
(	418550.3,	3753223.1,	109.1,	112.1,	0.0);	(418570.3,	3753223.1,	108.1,	108.1,	0.0);
(	418590.3,	3753223.1,	107.8,	107.8,	0.0);	(418610.3,	3753223.1,	107.6,	107.6,	0.0);
(	418735.9,	3752648.4,	99.7,	99.7,	6.1);	(418755.9,	3752648.4,	100.4,	100.4,	6.1);
(	418775.9,	3752648.4,	101.2,	101.2,	6.1);	(418795.9,	3752648.4,	102.0,	102.0,	6.1);
(	418815.9,	3752648.4,	102.7,	102.7,	6.1);	(418835.9,	3752648.4,	103.4,	103.4,	6.1);
(	418855.9,	3752648.4,	104.2,	104.2,	6.1);	(418875.9,	3752648.4,	105.0,	105.0,	6.1);
(	418895.9,	3752648.4,	105.7,	105.7,	6.1);	(418735.9,	3752688.4,	99.6,	99.6,	6.1);
(	418755.9,	3752688.4,	100.4,	100.4,	6.1);	(418775.9,	3752688.4,	101.2,	101.2,	6.1);
(	418795.9,	3752688.4,	102.0,	102.0,	6.1);	(418815.9,	3752688.4,	102.8,	102.8,	6.1);
(	418835.9,	3752688.4,	103.7,	103.7,	6.1);	(418855.9,	3752688.4,	104.6,	104.6,	6.1);
(	418875.9,	3752688.4,	105.4,	105.4,	6.1);	(418895.9,	3752688.4,	106.2,	106.2,	6.1);
(	418735.9,	3752708.4,	99.0,	99.0,	6.1);	(418755.9,	3752708.4,	99.7,	99.7,	6.1);
(	418775.9,	3752708.4,	100.5,	100.5,	6.1);	(418795.9,	3752708.4,	101.5,	101.5,	6.1);
(	418815.9,	3752708.4,	102.5,	102.5,	6.1);	(418835.9,	3752708.4,	103.7,	103.7,	6.1);
(	418855.9,	3752708.4,	104.8,	104.8,	6.1);	(418875.9,	3752708.4,	105.8,	105.8,	6.1);
(	418895.9,	3752708.4,	106.7,	106.7,	6.1);	(418735.9,	3752728.4,	98.1,	98.1,	6.1);
(	418755.9,	3752728.4,	98.8,	98.8,	6.1);	(418775.9,	3752728.4,	99.7,	99.7,	6.1);
(	418795.9,	3752728.4,	100.8,	100.8,	6.1);	(418815.9,	3752728.4,	102.1,	102.1,	6.1);
(	418835.9,	3752728.4,	103.6,	103.6,	6.1);	(418855.9,	3752728.4,	104.9,	104.9,	6.1);
(	418875.9,	3752728.4,	106.0,	106.0,	6.1);	(418895.9,	3752728.4,	107.1,	107.1,	6.1);
(	418735.9,	3752748.4,	97.6,	97.6,	6.1);	(418755.9,	3752748.4,	98.4,	98.4,	6.1);
(	418775.9,	3752748.4,	99.4,	99.4,	6.1);	(418795.9,	3752748.4,	100.6,	100.6,	6.1);
(	418815.9,	3752748.4,	102.0,	102.0,	6.1);	(418835.9,	3752748.4,	103.3,	103.3,	6.1);
(	418855.9,	3752748.4,	104.5,	104.5,	6.1);	(418875.9,	3752748.4,	105.6,	105.6,	6.1);
(	418895.9,	3752748.4,	106.7,	106.7,	6.1);	(418755.9,	3752768.4,	98.1,	98.1,	6.1);
(	418775.9,	3752768.4,	99.1,	99.1,	6.1);	(418795.9,	3752768.4,	100.4,	100.4,	6.1);

```
( 418815.9, 3752768.4,     102.0,     102.0,       6.1);        ( 418835.9, 3752768.4,     103.4,     103.4,       6.1);
( 418855.9, 3752768.4,     104.4,     104.4,       6.1);        ( 418755.9, 3752788.4,      98.0,      98.0,       6.1);
( 418775.9, 3752788.4,      98.9,      98.9,       6.1);        ( 418795.9, 3752788.4,     100.1,     100.1,       6.1);
```

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(418815.9,	3752788.4,	102.0,	102.0,	6.1);	(418835.9,	3752788.4,	103.6,	103.6,	6.1);
(418855.9,	3752788.4,	104.3,	104.3,	6.1);	(418735.9,	3752808.4,	97.6,	97.6,	6.1);
(418775.9,	3752808.4,	98.1,	98.1,	6.1);	(418795.9,	3752808.4,	99.1,	99.1,	6.1);
(418815.9,	3752808.4,	101.3,	101.3,	6.1);	(418835.9,	3752808.4,	103.0,	103.0,	6.1);
(418855.9,	3752808.4,	103.6,	103.6,	6.1);	(418735.9,	3752828.4,	97.5,	97.5,	6.1);
(418795.9,	3752828.4,	98.7,	98.7,	6.1);	(418815.9,	3752828.4,	100.6,	100.6,	6.1);
(418835.9,	3752828.4,	102.0,	103.3,	6.1);	(418855.9,	3752828.4,	102.5,	109.0,	6.1);
(418735.9,	3752848.4,	97.3,	97.3,	6.1);	(418755.9,	3752848.4,	97.7,	97.7,	6.1);
(418775.9,	3752848.4,	98.1,	98.1,	6.1);	(418795.9,	3752848.4,	98.7,	98.7,	6.1);
(418815.9,	3752848.4,	100.0,	100.0,	6.1);	(418835.9,	3752848.4,	100.6,	100.6,	6.1);
(418755.9,	3752868.4,	97.3,	97.3,	6.1);	(418775.9,	3752868.4,	97.7,	97.7,	6.1);
(418795.9,	3752868.4,	98.2,	98.2,	6.1);	(418815.9,	3752868.4,	98.8,	98.8,	6.1);
(418835.9,	3752868.4,	99.5,	108.7,	6.1);	(418795.9,	3752888.4,	97.7,	97.7,	6.1);
(418815.9,	3752888.4,	98.0,	98.0,	6.1);	(418716.8,	3752801.4,	97.4,	97.4,	6.1);
(418703.5,	3752783.4,	97.3,	97.3,	6.1);	(418696.4,	3752764.9,	97.2,	97.2,	6.1);
(418691.1,	3752748.8,	97.3,	97.3,	6.1);	(418683.6,	3752728.8,	97.2,	97.2,	6.1);
(418678.3,	3752710.8,	97.3,	97.3,	6.1);	(418682.6,	3752685.6,	97.7,	97.7,	6.1);
(418674.5,	3752665.2,	98.0,	98.0,	6.1);	(418687.8,	3752651.5,	98.4,	98.4,	6.1);
(418712.5,	3752646.3,	98.8,	98.8,	6.1);	(418590.3,	3753003.1,	104.1,	104.1,	6.1);
(418610.3,	3753003.1,	103.3,	103.3,	6.1);	(418630.3,	3753003.1,	102.5,	102.5,	6.1);
(418492.0,	3753051.2,	107.2,	107.2,	6.1);	(418530.3,	3753023.1,	106.0,	106.0,	6.1);
(418550.3,	3753023.1,	105.7,	105.7,	6.1);	(418570.3,	3753023.1,	105.2,	105.2,	6.1);
(418590.3,	3753023.1,	104.6,	104.6,	6.1);	(418610.3,	3753023.1,	103.7,	103.7,	6.1);
(418630.3,	3753023.1,	103.0,	103.0,	6.1);	(418650.3,	3753023.1,	102.7,	102.7,	6.1);
(418670.3,	3753023.1,	102.6,	102.6,	6.1);	(418510.3,	3753043.1,	106.9,	106.9,	6.1);
(418530.3,	3753043.1,	106.6,	106.6,	6.1);	(418550.3,	3753043.1,	106.2,	106.2,	6.1);
(418570.3,	3753043.1,	105.6,	105.6,	6.1);	(418590.3,	3753043.1,	104.9,	104.9,	6.1);
(418610.3,	3753043.1,	104.0,	104.0,	6.1);	(418630.3,	3753043.1,	103.4,	103.4,	6.1);
(418650.3,	3753043.1,	103.3,	103.3,	6.1);	(418670.3,	3753043.1,	103.2,	103.2,	6.1);
(418690.3,	3753043.1,	102.6,	102.6,	6.1);	(418710.3,	3753043.1,	101.8,	101.8,	6.1);
(418510.3,	3753063.1,	107.4,	107.4,	6.1);	(418530.3,	3753063.1,	107.0,	107.0,	6.1);
(418550.3,	3753063.1,	106.4,	106.4,	6.1);	(418570.3,	3753063.1,	105.7,	105.7,	6.1);
(418590.3,	3753063.1,	105.0,	105.0,	6.1);	(418610.3,	3753063.1,	104.4,	104.4,	6.1);
(418650.3,	3753063.1,	103.8,	103.8,	6.1);	(418670.3,	3753063.1,	103.6,	103.6,	6.1);
(418690.3,	3753063.1,	103.2,	103.2,	6.1);	(418710.3,	3753063.1,	102.5,	102.5,	6.1);
(418730.3,	3753063.1,	101.8,	101.8,	6.1);	(418790.3,	3753063.1,	102.7,	102.7,	6.1);
(418810.3,	3753063.1,	103.0,	103.0,	6.1);	(418510.3,	3753083.1,	107.5,	107.5,	6.1);
(418530.3,	3753083.1,	107.1,	107.1,	6.1);	(418550.3,	3753083.1,	106.7,	106.7,	6.1);
(418610.3,	3753083.1,	105.0,	105.0,	6.1);	(418630.3,	3753083.1,	104.6,	104.6,	6.1);
(418650.3,	3753083.1,	104.3,	104.3,	6.1);	(418670.3,	3753083.1,	104.1,	104.1,	6.1);
(418690.3,	3753083.1,	103.7,	103.7,	6.1);	(418710.3,	3753083.1,	103.0,	103.0,	6.1);
(418730.3,	3753083.1,	102.5,	102.5,	6.1);	(418750.3,	3753083.1,	102.2,	102.2,	6.1);

```
( 418790.3, 3753083.1,     102.8,     102.8,       6.1);        ( 418810.3, 3753083.1,     102.9,     102.9,       6.1);
( 418830.3, 3753083.1,     102.7,     102.7,       6.1);        ( 418850.3, 3753083.1,     102.2,     102.2,       6.1);
( 418550.3, 3753103.1,     107.0,     107.0,       6.1);        ( 418570.3, 3753103.1,     106.6,     106.6,       6.1);
```

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(418590.3,	3753103.1,	106.0,	106.0,	6.1);	(418610.3,	3753103.1,	105.5,	105.5,	6.1);
(418630.3,	3753103.1,	105.1,	105.1,	6.1);	(418650.3,	3753103.1,	104.7,	104.7,	6.1);
(418670.3,	3753103.1,	104.3,	104.3,	6.1);	(418690.3,	3753103.1,	103.9,	103.9,	6.1);
(418710.3,	3753103.1,	103.4,	103.4,	6.1);	(418730.3,	3753103.1,	103.2,	103.2,	6.1);
(418750.3,	3753103.1,	103.2,	103.2,	6.1);	(418770.3,	3753103.1,	103.2,	103.2,	6.1);
(418830.3,	3753103.1,	102.8,	102.8,	6.1);	(418850.3,	3753103.1,	102.6,	102.6,	6.1);
(418530.3,	3753123.1,	107.8,	107.8,	6.1);	(418550.3,	3753123.1,	107.5,	107.5,	6.1);
(418570.3,	3753123.1,	107.0,	107.0,	6.1);	(418590.3,	3753123.1,	106.3,	106.3,	6.1);
(418610.3,	3753123.1,	105.8,	105.8,	6.1);	(418630.3,	3753123.1,	105.2,	105.2,	6.1);
(418650.3,	3753123.1,	104.6,	104.6,	6.1);	(418670.3,	3753123.1,	104.1,	104.1,	6.1);
(418690.3,	3753123.1,	103.7,	103.7,	6.1);	(418710.3,	3753123.1,	103.7,	103.7,	6.1);
(418730.3,	3753123.1,	104.0,	104.0,	6.1);	(418750.3,	3753123.1,	104.1,	104.1,	6.1);
(418770.3,	3753123.1,	104.0,	104.0,	6.1);	(418790.3,	3753123.1,	103.5,	103.5,	6.1);
(418530.3,	3753143.1,	108.0,	108.0,	6.1);	(418550.3,	3753143.1,	107.6,	107.6,	6.1);
(418570.3,	3753143.1,	107.1,	107.1,	6.1);	(418590.3,	3753143.1,	106.6,	106.6,	6.1);
(418610.3,	3753143.1,	106.1,	106.1,	6.1);	(418710.3,	3753143.1,	104.4,	104.4,	6.1);
(418730.3,	3753143.1,	104.6,	104.6,	6.1);	(418750.3,	3753143.1,	104.6,	104.6,	6.1);
(418770.3,	3753143.1,	104.3,	104.3,	6.1);	(418530.3,	3753163.1,	108.2,	108.2,	6.1);
(418550.3,	3753163.1,	107.6,	107.6,	6.1);	(418590.3,	3753163.1,	106.9,	106.9,	6.1);
(418610.3,	3753163.1,	106.6,	106.6,	6.1);	(418630.3,	3753163.1,	106.3,	106.3,	6.1);
(418650.3,	3753163.1,	106.0,	106.0,	6.1);	(418670.3,	3753163.1,	105.5,	105.5,	6.1);
(418690.3,	3753163.1,	105.2,	105.2,	6.1);	(418710.3,	3753163.1,	105.2,	105.2,	6.1);
(418730.3,	3753163.1,	105.2,	105.2,	6.1);	(418750.3,	3753163.1,	105.0,	105.0,	6.1);
(418770.3,	3753163.1,	104.6,	104.6,	6.1);	(418550.3,	3753183.1,	108.0,	108.0,	6.1);
(418570.3,	3753183.1,	107.8,	107.8,	6.1);	(418590.3,	3753183.1,	107.6,	107.6,	6.1);
(418610.3,	3753183.1,	107.4,	107.4,	6.1);	(418630.3,	3753183.1,	107.2,	107.2,	6.1);
(418650.3,	3753183.1,	106.9,	106.9,	6.1);	(418670.3,	3753183.1,	106.7,	106.7,	6.1);
(418690.3,	3753183.1,	106.4,	106.4,	6.1);	(418710.3,	3753183.1,	106.0,	106.0,	6.1);
(418730.3,	3753183.1,	105.6,	105.6,	6.1);	(418750.3,	3753183.1,	105.2,	105.2,	6.1);
(418550.3,	3753203.1,	108.5,	108.5,	6.1);	(418570.3,	3753203.1,	108.0,	108.0,	6.1);
(418590.3,	3753203.1,	107.8,	107.8,	6.1);	(418610.3,	3753203.1,	107.6,	107.6,	6.1);
(418630.3,	3753203.1,	107.4,	107.4,	6.1);	(418650.3,	3753203.1,	107.2,	107.2,	6.1);
(418670.3,	3753203.1,	107.0,	107.0,	6.1);	(418690.3,	3753203.1,	106.7,	106.7,	6.1);
(418710.3,	3753203.1,	106.3,	106.3,	6.1);	(418730.3,	3753203.1,	105.9,	105.9,	6.1);
(418550.3,	3753223.1,	109.1,	112.1,	6.1);	(418570.3,	3753223.1,	108.1,	108.1,	6.1);
(418590.3,	3753223.1,	107.8,	107.8,	6.1);	(418610.3,	3753223.1,	107.6,	107.6,	6.1);

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54,   3.09,   5.14,   8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file: ..\metdata-29m\KFUL_v9.SFC   Met Version: 16216
  Profile file: ..\metdata-29m\KFUL_v9.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:   3166   Upper air station no.:   3190
                Name: UNKNOWN   Name: UNKNOWN
                Year: 2012   Year: 2012

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
12	01	01	1	01	-4.8	0.098	-9.000	-9.000	-999.	74.	18.0	0.26	2.61	1.00	0.96	322.	10.1	283.8	2.0
12	01	01	1	02	-1.9	0.072	-9.000	-9.000	-999.	47.	18.0	0.26	2.61	1.00	0.52	13.	10.1	283.1	2.0
12	01	01	1	03	-3.1	0.083	-9.000	-9.000	-999.	57.	16.3	0.26	2.61	1.00	0.75	73.	10.1	282.0	2.0
12	01	01	1	04	-4.3	0.094	-9.000	-9.000	-999.	69.	17.3	0.26	2.61	1.00	0.91	98.	10.1	281.4	2.0
12	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.26	2.61	1.00	0.00	0.	10.1	280.9	2.0
12	01	01	1	06	-2.1	0.074	-9.000	-9.000	-999.	48.	17.6	0.26	2.61	1.00	0.55	80.	10.1	280.4	2.0
12	01	01	1	07	-2.8	0.080	-9.000	-9.000	-999.	54.	16.3	0.26	2.61	1.00	0.69	201.	10.1	280.4	2.0
12	01	01	1	08	-1.5	0.066	-9.000	-9.000	-999.	41.	17.0	0.26	2.61	0.54	0.52	72.	10.1	280.9	2.0
12	01	01	1	09	37.4	-9.000	-9.000	-9.000	38.	-999.	-99999.0	0.26	2.61	0.31	0.00	0.	10.1	285.9	2.0
12	01	01	1	10	109.1	0.151	0.713	0.008	121.	141.	-2.9	0.26	2.61	0.24	0.79	268.	10.1	289.9	2.0
12	01	01	1	11	160.5	0.148	1.143	0.005	338.	136.	-1.8	0.26	2.61	0.21	0.70	273.	10.1	294.2	2.0
12	01	01	1	12	186.9	0.156	1.483	0.005	634.	148.	-1.8	0.26	2.61	0.20	0.74	230.	10.1	297.5	2.0
12	01	01	1	13	187.4	0.210	1.777	0.005	1088.	231.	-4.5	0.26	2.61	0.20	1.20	227.	10.1	300.4	2.0
12	01	01	1	14	160.3	0.235	1.833	0.005	1395.	274.	-7.4	0.26	2.61	0.21	1.47	233.	10.1	300.9	2.0
12	01	01	1	15	109.1	0.197	1.662	0.005	1527.	210.	-6.3	0.26	2.61	0.25	1.20	233.	10.1	302.0	2.0
12	01	01	1	16	33.3	0.243	1.125	0.005	1548.	288.	-39.2	0.26	2.61	0.33	1.91	229.	10.1	298.1	2.0
12	01	01	1	17	-9.1	0.141	-9.000	-9.000	-999.	132.	28.3	0.26	2.61	0.60	1.37	212.	10.1	294.2	2.0
12	01	01	1	18	-4.3	0.094	-9.000	-9.000	-999.	69.	17.5	0.26	2.61	1.00	0.91	190.	10.1	292.0	2.0
12	01	01	1	19	-2.8	0.079	-9.000	-9.000	-999.	54.	16.3	0.26	2.61	1.00	0.70	302.	10.1	289.2	2.0
12	01	01	1	20	-4.0	0.091	-9.000	-9.000	-999.	65.	17.0	0.26	2.61	1.00	0.87	338.	10.1	288.1	2.0
12	01	01	1	21	-6.3	0.113	-9.000	-9.000	-999.	91.	20.5	0.26	2.61	1.00	1.11	304.	10.1	287.0	2.0
12	01	01	1	22	-3.1	0.082	-9.000	-9.000	-999.	57.	16.3	0.26	2.61	1.00	0.75	76.	10.1	285.4	2.0
12	01	01	1	23	-2.4	0.076	-9.000	-9.000	-999.	50.	16.7	0.26	2.61	1.00	0.62	306.	10.1	284.9	2.0
12	01	01	1	24	-3.6	0.087	-9.000	-9.000	-999.	62.	16.6	0.26	2.61	1.00	0.82	318.	10.1	283.8	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
12	01	01	01	10.1	1	322.	0.96	283.8	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ONSITE ***
INCLUDING SOURCE(S): 1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
418735.92	3752648.42	0.46485	418755.92	3752648.42	0.42541
418775.92	3752648.42	0.38798	418795.92	3752648.42	0.35400
418815.92	3752648.42	0.32379	418835.92	3752648.42	0.29687
418855.92	3752648.42	0.27278	418875.92	3752648.42	0.25123
418895.92	3752648.42	0.23281	418735.92	3752688.42	0.56105
418755.92	3752688.42	0.50384	418775.92	3752688.42	0.45185
418795.92	3752688.42	0.40608	418815.92	3752688.42	0.36645
418835.92	3752688.42	0.33175	418855.92	3752688.42	0.30152
418875.92	3752688.42	0.27549	418895.92	3752688.42	0.25220
418735.92	3752708.42	0.61272	418755.92	3752708.42	0.54489
418775.92	3752708.42	0.48684	418795.92	3752708.42	0.43394
418815.92	3752708.42	0.38834	418835.92	3752708.42	0.34877
418855.92	3752708.42	0.31496	418875.92	3752708.42	0.28583
418895.92	3752708.42	0.26045	418735.92	3752728.42	0.66503
418755.92	3752728.42	0.58604	418775.92	3752728.42	0.51917
418795.92	3752728.42	0.46195	418815.92	3752728.42	0.40978
418835.92	3752728.42	0.36523	418855.92	3752728.42	0.32785
418875.92	3752728.42	0.29549	418895.92	3752728.42	0.26801
418735.92	3752748.42	0.71595	418755.92	3752748.42	0.62536
418775.92	3752748.42	0.54982	418795.92	3752748.42	0.48664
418815.92	3752748.42	0.42903	418835.92	3752748.42	0.38095
418855.92	3752748.42	0.34063	418875.92	3752748.42	0.30525
418895.92	3752748.42	0.27576	418755.92	3752768.42	0.66173
418775.92	3752768.42	0.57789	418795.92	3752768.42	0.50839
418815.92	3752768.42	0.44569	418835.92	3752768.42	0.39383
418855.92	3752768.42	0.35145	418755.92	3752788.42	0.69401
418775.92	3752788.42	0.60263	418795.92	3752788.42	0.52733
418815.92	3752788.42	0.46004	418835.92	3752788.42	0.40441
418855.92	3752788.42	0.36055	418735.92	3752808.42	0.84328
418775.92	3752808.42	0.62396	418795.92	3752808.42	0.54404
418815.92	3752808.42	0.47512	418835.92	3752808.42	0.41540
418855.92	3752808.42	0.36945	418735.92	3752828.42	0.87401
418795.92	3752828.42	0.55714	418815.92	3752828.42	0.48795
418835.92	3752828.42	0.42617	418855.92	3752828.42	0.37819
418735.92	3752848.42	0.89950	418755.92	3752848.42	0.76243
418775.92	3752848.42	0.65419	418795.92	3752848.42	0.56708
418815.92	3752848.42	0.49547	418835.92	3752848.42	0.43738

418755.92	3752868.42	0.77797	418775.92	3752868.42	0.66536
418795.92	3752868.42	0.57533	418815.92	3752868.42	0.50220
418835.92	3752868.42	0.44206	418795.92	3752888.42	0.58232

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ONSITE ***
INCLUDING SOURCE(S): 1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC	
418815.92	3752888.42	0.50742	418716.77	3752801.42	0.97366	
418703.49	3752783.39	1.03597	418696.37	3752764.88	1.02722	
418691.15	3752748.75	0.99754	418683.56	3752728.82	0.95337	
418678.34	3752710.80	0.88999	418682.61	3752685.65	0.74301	
418674.55	3752665.25	0.68014	418687.83	3752651.49	0.58600	
418712.50	3752646.27	0.50994	418590.27	3753003.11	3.23067	
418610.27	3753003.11	2.82553	418630.27	3753003.11	2.42457	
418492.01	3753051.24	2.20446	418530.27	3753023.11	3.24735	MER LOCATION
418550.27	3753023.11	3.19880	418570.27	3753023.11	3.03841	
418590.27	3753023.11	2.79795	418610.27	3753023.11	2.51293	
418630.27	3753023.11	2.20823	418650.27	3753023.11	1.90745	
418670.27	3753023.11	1.63152	418510.27	3753043.11	2.55710	
418530.27	3753043.11	2.65458	418550.27	3753043.11	2.65990	
418570.27	3753043.11	2.57822	418590.27	3753043.11	2.42678	
418610.27	3753043.11	2.22793	418630.27	3753043.11	1.99952	
418650.27	3753043.11	1.76147	418670.27	3753043.11	1.53306	
418690.27	3753043.11	1.32983	418710.27	3753043.11	1.15230	
418510.27	3753063.11	2.09669	418530.27	3753063.11	2.19962	
418550.27	3753063.11	2.23521	418570.27	3753063.11	2.20280	
418590.27	3753063.11	2.11049	418610.27	3753063.11	1.97211	
418650.27	3753063.11	1.61819	418670.27	3753063.11	1.43335	
418690.27	3753063.11	1.26031	418710.27	3753063.11	1.10475	
418730.27	3753063.11	0.96605	418790.27	3753063.11	0.62647	
418810.27	3753063.11	0.54464	418510.27	3753083.11	1.74646	
418530.27	3753083.11	1.84357	418550.27	3753083.11	1.89132	
418610.27	3753083.11	1.74202	418630.27	3753083.11	1.61956	
418650.27	3753083.11	1.47933	418670.27	3753083.11	1.33254	
418690.27	3753083.11	1.18880	418710.27	3753083.11	1.05465	
418730.27	3753083.11	0.93044	418750.27	3753083.11	0.81717	
418790.27	3753083.11	0.62243	418810.27	3753083.11	0.54549	
418830.27	3753083.11	0.48039	418850.27	3753083.11	0.42592	
418550.27	3753103.11	1.61113	418570.27	3753103.11	1.62483	
418590.27	3753103.11	1.60019	418610.27	3753103.11	1.54054	
418630.27	3753103.11	1.45442	418650.27	3753103.11	1.34965	
418670.27	3753103.11	1.23474	418690.27	3753103.11	1.11704	
418710.27	3753103.11	1.00210	418730.27	3753103.11	0.89193	
418750.27	3753103.11	0.78952	418770.27	3753103.11	0.69679	

418830.27	3753103.11	0.48010	418850.27	3753103.11	0.42600
418530.27	3753123.11	1.32635	418550.27	3753123.11	1.38075
418570.27	3753123.11	1.40598	418590.27	3753123.11	1.40094

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ONSITE ***
INCLUDING SOURCE(S): 1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
418610.27	3753123.11	1.36637	418630.27	3753123.11	1.30738
418650.27	3753123.11	1.23074	418670.27	3753123.11	1.14188
418690.27	3753123.11	1.04678	418710.27	3753123.11	0.94820
418730.27	3753123.11	0.85105	418750.27	3753123.11	0.75971
418770.27	3753123.11	0.67692	418790.27	3753123.11	0.60360
418530.27	3753143.11	1.13976	418550.27	3753143.11	1.19414
418570.27	3753143.11	1.22467	418590.27	3753143.11	1.23092
418610.27	3753143.11	1.21274	418710.27	3753143.11	0.89106
418730.27	3753143.11	0.80867	418750.27	3753143.11	0.72987
418770.27	3753143.11	0.65697	418530.27	3753163.11	0.98626
418550.27	3753163.11	1.03886	418590.27	3753163.11	1.08449
418610.27	3753163.11	1.07762	418630.27	3753163.11	1.05239
418650.27	3753163.11	1.01220	418670.27	3753163.11	0.96034
418690.27	3753163.11	0.89999	418710.27	3753163.11	0.83314
418730.27	3753163.11	0.76451	418750.27	3753163.11	0.69865
418770.27	3753163.11	0.63473	418550.27	3753183.11	0.90717
418570.27	3753183.11	0.93985	418590.27	3753183.11	0.95698
418610.27	3753183.11	0.95814	418630.27	3753183.11	0.94387
418650.27	3753183.11	0.91613	418670.27	3753183.11	0.87736
418690.27	3753183.11	0.83036	418710.27	3753183.11	0.77770
418730.27	3753183.11	0.72216	418750.27	3753183.11	0.66547
418550.27	3753203.11	0.79619	418570.27	3753203.11	0.83003
418590.27	3753203.11	0.84982	418610.27	3753203.11	0.85667
418630.27	3753203.11	0.85041	418650.27	3753203.11	0.83238
418670.27	3753203.11	0.80425	418690.27	3753203.11	0.76812
418710.27	3753203.11	0.72619	418730.27	3753203.11	0.68032
418550.27	3753223.11	0.70184	418570.27	3753223.11	0.73660
418590.27	3753223.11	0.75788	418610.27	3753223.11	0.76839
418735.92	3752648.42	0.44565	418755.92	3752648.42	0.40637
418775.92	3752648.42	0.37106	418795.92	3752648.42	0.33946
418815.92	3752648.42	0.31125	418835.92	3752648.42	0.28603
418855.92	3752648.42	0.26338	418875.92	3752648.42	0.24304
418895.92	3752648.42	0.22476	418735.92	3752688.42	0.53600
418755.92	3752688.42	0.47959	418775.92	3752688.42	0.43076
418795.92	3752688.42	0.38829	418815.92	3752688.42	0.35127
418835.92	3752688.42	0.31868	418855.92	3752688.42	0.29012
418875.92	3752688.42	0.26499	418895.92	3752688.42	0.24280

418735.92	3752708.42	0.58700	418755.92	3752708.42	0.52007
418775.92	3752708.42	0.46300	418795.92	3752708.42	0.41381
418815.92	3752708.42	0.37132	418835.92	3752708.42	0.33414

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ONSITE ***
INCLUDING SOURCE(S): 1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
418855.92	3752708.42	0.30212	418875.92	3752708.42	0.27438
418895.92	3752708.42	0.25021	418735.92	3752728.42	0.64020
418755.92	3752728.42	0.56253	418775.92	3752728.42	0.49541
418795.92	3752728.42	0.43893	418815.92	3752728.42	0.39055
418835.92	3752728.42	0.34875	418855.92	3752728.42	0.31333
418875.92	3752728.42	0.28306	418895.92	3752728.42	0.25695
418735.92	3752748.42	0.69103	418755.92	3752748.42	0.60127
418775.92	3752748.42	0.52426	418795.92	3752748.42	0.46098
418815.92	3752748.42	0.40743	418835.92	3752748.42	0.36240
418855.92	3752748.42	0.32430	418875.92	3752748.42	0.29185
418895.92	3752748.42	0.26394	418755.92	3752768.42	0.63634
418775.92	3752768.42	0.55015	418795.92	3752768.42	0.48054
418815.92	3752768.42	0.42166	418835.92	3752768.42	0.37314
418855.92	3752768.42	0.33325	418755.92	3752788.42	0.66677
418775.92	3752788.42	0.57663	418795.92	3752788.42	0.49760
418815.92	3752788.42	0.43353	418835.92	3752788.42	0.38162
418855.92	3752788.42	0.34056	418735.92	3752808.42	0.80919
418775.92	3752808.42	0.59888	418795.92	3752808.42	0.51521
418815.92	3752808.42	0.44590	418835.92	3752808.42	0.39065
418855.92	3752808.42	0.34790	418735.92	3752828.42	0.83629
418795.92	3752828.42	0.53249	418815.92	3752828.42	0.45580
418835.92	3752828.42	0.39951	418855.92	3752828.42	0.35519
418735.92	3752848.42	0.85901	418755.92	3752848.42	0.72773
418775.92	3752848.42	0.62428	418795.92	3752848.42	0.54035
418815.92	3752848.42	0.46358	418835.92	3752848.42	0.40818
418755.92	3752868.42	0.74283	418775.92	3752868.42	0.63474
418795.92	3752868.42	0.54839	418815.92	3752868.42	0.47801
418835.92	3752868.42	0.41518	418795.92	3752888.42	0.55564
418815.92	3752888.42	0.48438	418716.77	3752801.42	0.93423
418703.49	3752783.39	0.99597	418696.37	3752764.88	0.98929
418691.15	3752748.75	0.96092	418683.56	3752728.82	0.91956
418678.34	3752710.80	0.85856	418682.61	3752685.65	0.71548
418674.55	3752665.25	0.65374	418687.83	3752651.49	0.56276
418712.50	3752646.27	0.48976	418590.27	3753003.11	3.04832
418610.27	3753003.11	2.66869	418630.27	3753003.11	2.28634
418492.01	3753051.24	2.05134	418530.27	3753023.11	3.03852
418550.27	3753023.11	3.01107	418570.27	3753023.11	2.87396

418590.27	3753023.11	2.65411	418610.27	3753023.11	2.38763
418630.27	3753023.11	2.09656	418650.27	3753023.11	1.80585
418670.27	3753023.11	1.53903	418510.27	3753043.11	2.38845

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ONSITE ***
INCLUDING SOURCE(S): 1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
418530.27	3753043.11	2.49486	418550.27	3753043.11	2.51379
418570.27	3753043.11	2.44800	418590.27	3753043.11	2.31156
418610.27	3753043.11	2.12606	418630.27	3753043.11	1.90774
418650.27	3753043.11	1.67721	418670.27	3753043.11	1.45560
418690.27	3753043.11	1.25852	418710.27	3753043.11	1.08595
418510.27	3753063.11	1.96656	418530.27	3753063.11	2.07489
418550.27	3753063.11	2.11959	418570.27	3753063.11	2.09828
418590.27	3753063.11	2.01708	418610.27	3753063.11	1.88805
418650.27	3753063.11	1.54743	418670.27	3753063.11	1.36777
418690.27	3753063.11	1.19959	418710.27	3753063.11	1.04819
418730.27	3753063.11	0.91301	418790.27	3753063.11	0.58892
418810.27	3753063.11	0.51183	418510.27	3753083.11	1.64382
418530.27	3753083.11	1.74425	418550.27	3753083.11	1.79797
418610.27	3753083.11	1.67135	418630.27	3753083.11	1.55466
418650.27	3753083.11	1.41919	418670.27	3753083.11	1.27652
418690.27	3753083.11	1.13658	418710.27	3753083.11	1.00583
418730.27	3753083.11	0.88471	418750.27	3753083.11	0.77462
418790.27	3753083.11	0.58791	418810.27	3753083.11	0.51453
418830.27	3753083.11	0.45250	418850.27	3753083.11	0.40047
418550.27	3753103.11	1.53460	418570.27	3753103.11	1.55355
418590.27	3753103.11	1.53476	418610.27	3753103.11	1.48077
418630.27	3753103.11	1.39913	418650.27	3753103.11	1.29821
418670.27	3753103.11	1.18661	418690.27	3753103.11	1.07184
418710.27	3753103.11	0.95960	418730.27	3753103.11	0.85205
418750.27	3753103.11	0.75238	418770.27	3753103.11	0.66252
418830.27	3753103.11	0.45398	418850.27	3753103.11	0.40224
418530.27	3753123.11	1.26025	418550.27	3753123.11	1.31724
418570.27	3753123.11	1.34615	418590.27	3753123.11	1.34545
418610.27	3753123.11	1.31528	418630.27	3753123.11	1.26034
418650.27	3753123.11	1.18661	418670.27	3753123.11	1.10038
418690.27	3753123.11	1.00756	418710.27	3753123.11	0.91098
418730.27	3753123.11	0.81593	418750.27	3753123.11	0.72687
418770.27	3753123.11	0.64637	418790.27	3753123.11	0.57511
418530.27	3753143.11	1.08481	418550.27	3753143.11	1.14089
418570.27	3753143.11	1.17405	418590.27	3753143.11	1.18348
418610.27	3753143.11	1.16863	418710.27	3753143.11	0.85823
418730.27	3753143.11	0.77753	418750.27	3753143.11	0.70051

418770.27	3753143.11	0.62939	418530.27	3753163.11	0.94010
418550.27	3753163.11	0.99377	418590.27	3753163.11	1.04361
418610.27	3753163.11	1.03927	418630.27	3753163.11	1.01651

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ONSITE ***
INCLUDING SOURCE(S): 1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
418650.27	3753163.11	0.97863	418670.27	3753163.11	0.92884
418690.27	3753163.11	0.87030	418710.27	3753163.11	0.80507
418730.27	3753163.11	0.73799	418750.27	3753163.11	0.67230
418770.27	3753163.11	0.60980	418550.27	3753183.11	0.86871
418570.27	3753183.11	0.90271	418590.27	3753183.11	0.92154
418610.27	3753183.11	0.92461	418630.27	3753183.11	0.91227
418650.27	3753183.11	0.88639	418670.27	3753183.11	0.84934
418690.27	3753183.11	0.80391	418710.27	3753183.11	0.75267
418730.27	3753183.11	0.69843	418750.27	3753183.11	0.64294
418550.27	3753203.11	0.76318	418570.27	3753203.11	0.79789
418590.27	3753203.11	0.81896	418610.27	3753203.11	0.82728
418630.27	3753203.11	0.82255	418650.27	3753203.11	0.80603
418670.27	3753203.11	0.77932	418690.27	3753203.11	0.74450
418710.27	3753203.11	0.70378	418730.27	3753203.11	0.65899
418550.27	3753223.11	0.67337	418570.27	3753223.11	0.70861
418590.27	3753223.11	0.73084	418610.27	3753223.11	0.74250

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: OFFSITE ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
418735.92	3752648.42	1.25489	418755.92	3752648.42	0.99208
418775.92	3752648.42	0.81157	418795.92	3752648.42	0.67646
418815.92	3752648.42	0.57395	418835.92	3752648.42	0.49656
418855.92	3752648.42	0.43436	418875.92	3752648.42	0.38337
418895.92	3752648.42	0.34096	418735.92	3752688.42	1.58296
418755.92	3752688.42	1.22281	418775.92	3752688.42	0.97912
418795.92	3752688.42	0.79967	418815.92	3752688.42	0.66781
418835.92	3752688.42	0.56849	418855.92	3752688.42	0.49052
418875.92	3752688.42	0.42779	418895.92	3752688.42	0.37671
418735.92	3752708.42	1.77078	418755.92	3752708.42	1.36167
418775.92	3752708.42	1.08096	418795.92	3752708.42	0.87981
418815.92	3752708.42	0.72287	418835.92	3752708.42	0.60788
418855.92	3752708.42	0.51958	418875.92	3752708.42	0.44943
418895.92	3752708.42	0.39315	418735.92	3752728.42	1.97964
418755.92	3752728.42	1.51571	418775.92	3752728.42	1.19392
418795.92	3752728.42	0.96188	418815.92	3752728.42	0.78515
418835.92	3752728.42	0.65025	418855.92	3752728.42	0.55042
418875.92	3752728.42	0.47236	418895.92	3752728.42	0.41049
418735.92	3752748.42	2.21001	418755.92	3752748.42	1.67790
418775.92	3752748.42	1.30874	418795.92	3752748.42	1.04452
418815.92	3752748.42	0.84560	418835.92	3752748.42	0.69583
418855.92	3752748.42	0.58508	418875.92	3752748.42	0.49908
418895.92	3752748.42	0.43055	418755.92	3752768.42	1.85992
418775.92	3752768.42	1.43197	418795.92	3752768.42	1.13045
418815.92	3752768.42	0.90514	418835.92	3752768.42	0.73803
418855.92	3752768.42	0.61783	418755.92	3752788.42	2.06994
418775.92	3752788.42	1.56433	418795.92	3752788.42	1.21836
418815.92	3752788.42	0.96324	418835.92	3752788.42	0.77740
418855.92	3752788.42	0.64872	418735.92	3752808.42	3.31990
418775.92	3752808.42	1.70811	418795.92	3752808.42	1.31038
418815.92	3752808.42	1.02868	418835.92	3752808.42	0.82023
418855.92	3752808.42	0.68095	418735.92	3752828.42	3.91578
418795.92	3752828.42	1.38339	418815.92	3752828.42	1.07873
418835.92	3752828.42	0.86529	418855.92	3752828.42	0.71223

418735.92	3752848.42	4.42960	418755.92	3752848.42	2.73320
418775.92	3752848.42	1.91048	418795.92	3752848.42	1.43048
418815.92	3752848.42	1.11448	418835.92	3752848.42	0.90011
418755.92	3752868.42	2.76860	418775.92	3752868.42	1.94043
418795.92	3752868.42	1.45535	418815.92	3752868.42	1.13921
418835.92	3752868.42	0.91957	418795.92	3752888.42	1.44730

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: OFFSITE ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
418815.92	3752888.42	1.14390	418716.77	3752801.42	4.64871
418703.49	3752783.39	5.05159	418696.37	3752764.88	4.87352
418691.15	3752748.75	4.78969	418683.56	3752728.82	4.99877
418678.34	3752710.80	5.14351	418682.61	3752685.65	4.10610
418674.55	3752665.25	4.51255	418687.83	3752651.49	2.91076
418712.50	3752646.27	1.73731	418590.27	3753003.11	1.63560
418610.27	3753003.11	1.58963	418630.27	3753003.11	1.56588
418492.01	3753051.24	5.03763	418530.27	3753023.11	2.26121
418550.27	3753023.11	1.88262	418570.27	3753023.11	1.65857
418590.27	3753023.11	1.52616	418610.27	3753023.11	1.44917
418630.27	3753023.11	1.40037	418650.27	3753023.11	1.36608
418670.27	3753023.11	1.34006	418510.27	3753043.11	3.23323
418530.27	3753043.11	2.39063	418550.27	3753043.11	1.91678
418570.27	3753043.11	1.63505	418590.27	3753043.11	1.46200
418610.27	3753043.11	1.35455	418630.27	3753043.11	1.28334
418650.27	3753043.11	1.23336	418670.27	3753043.11	1.19590
418690.27	3753043.11	1.16524	418710.27	3753043.11	1.13306
418510.27	3753063.11	3.63871	418530.27	3753063.11	2.56959
418550.27	3753063.11	1.98619	418570.27	3753063.11	1.64089
418590.27	3753063.11	1.42652	418610.27	3753063.11	1.28916
418650.27	3753063.11	1.13446	418670.27	3753063.11	1.08764
418690.27	3753063.11	1.05059	418710.27	3753063.11	1.01608
418730.27	3753063.11	0.97903	418790.27	3753063.11	0.81187
418810.27	3753063.11	0.74738	418510.27	3753083.11	4.15285
418530.27	3753083.11	2.79421	418550.27	3753083.11	2.07940
418610.27	3753083.11	1.24260	418630.27	3753083.11	1.13332
418650.27	3753083.11	1.05744	418670.27	3753083.11	1.00341
418690.27	3753083.11	0.96105	418710.27	3753083.11	0.92466
418730.27	3753083.11	0.88792	418750.27	3753083.11	0.84736
418790.27	3753083.11	0.75009	418810.27	3753083.11	0.69720
418830.27	3753083.11	0.64326	418850.27	3753083.11	0.59089
418550.27	3753103.11	2.19166	418570.27	3753103.11	1.69756
418590.27	3753103.11	1.39892	418610.27	3753103.11	1.20903
418630.27	3753103.11	1.08324	418650.27	3753103.11	0.99740

418670.27	3753103.11	0.93597	418690.27	3753103.11	0.88961
418710.27	3753103.11	0.85068	418730.27	3753103.11	0.81404
418750.27	3753103.11	0.77671	418770.27	3753103.11	0.73726
418830.27	3753103.11	0.60535	418850.27	3753103.11	0.55990
418530.27	3753123.11	3.39107	418550.27	3753123.11	2.31170
418570.27	3753123.11	1.73222	418590.27	3753123.11	1.39279

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: OFFSITE ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
418610.27	3753123.11	1.18133	418630.27	3753123.11	1.04297
418650.27	3753123.11	0.94878	418670.27	3753123.11	0.88199
418690.27	3753123.11	0.83126	418710.27	3753123.11	0.78938
418730.27	3753123.11	0.75206	418750.27	3753123.11	0.71675
418770.27	3753123.11	0.68190	418790.27	3753123.11	0.64645
418530.27	3753143.11	3.72501	418550.27	3753143.11	2.40702
418570.27	3753143.11	1.75018	418590.27	3753143.11	1.37907
418610.27	3753143.11	1.15168	418710.27	3753143.11	0.73557
418730.27	3753143.11	0.69859	418750.27	3753143.11	0.66541
418770.27	3753143.11	0.63423	418530.27	3753163.11	3.95920
418550.27	3753163.11	2.42940	418590.27	3753163.11	1.34986
418610.27	3753163.11	1.11646	418630.27	3753163.11	0.96435
418650.27	3753163.11	0.86035	418670.27	3753163.11	0.78694
418690.27	3753163.11	0.73231	418710.27	3753163.11	0.68857
418730.27	3753163.11	0.65239	418750.27	3753163.11	0.62099
418770.27	3753163.11	0.59263	418550.27	3753183.11	2.32124
418570.27	3753183.11	1.66586	418590.27	3753183.11	1.29978
418610.27	3753183.11	1.07307	418630.27	3753183.11	0.92287
418650.27	3753183.11	0.81883	418670.27	3753183.11	0.74416
418690.27	3753183.11	0.68909	418710.27	3753183.11	0.64654
418730.27	3753183.11	0.61249	418750.27	3753183.11	0.58285
418550.27	3753203.11	2.04771	418570.27	3753203.11	1.53973
418590.27	3753203.11	1.22599	418610.27	3753203.11	1.02055
418630.27	3753203.11	0.88002	418650.27	3753203.11	0.78026
418670.27	3753203.11	0.70744	418690.27	3753203.11	0.65282
418710.27	3753203.11	0.61084	418730.27	3753203.11	0.57693
418550.27	3753223.11	1.69005	418570.27	3753223.11	1.36634
418590.27	3753223.11	1.12910	418610.27	3753223.11	0.95759
418735.92	3752648.42	1.10155	418755.92	3752648.42	0.88314
418775.92	3752648.42	0.72937	418795.92	3752648.42	0.61572
418815.92	3752648.42	0.52856	418835.92	3752648.42	0.45967
418855.92	3752648.42	0.40380	418875.92	3752648.42	0.35785
418895.92	3752648.42	0.31950	418735.92	3752688.42	1.38396
418755.92	3752688.42	1.08189	418775.92	3752688.42	0.87444

418795.92	3752688.42	0.72441	418815.92	3752688.42	0.61173
418835.92	3752688.42	0.52371	418855.92	3752688.42	0.45408
418875.92	3752688.42	0.39788	418895.92	3752688.42	0.35172
418735.92	3752708.42	1.55567	418755.92	3752708.42	1.20857
418775.92	3752708.42	0.96654	418795.92	3752708.42	0.79152
418815.92	3752708.42	0.66056	418835.92	3752708.42	0.55881

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: OFFSITE ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
418855.92	3752708.42	0.47991	418875.92	3752708.42	0.41727
418895.92	3752708.42	0.36664	418735.92	3752728.42	1.74997
418755.92	3752728.42	1.35306	418775.92	3752728.42	1.07189
418795.92	3752728.42	0.86684	418815.92	3752728.42	0.71420
418835.92	3752728.42	0.59688	418855.92	3752728.42	0.50755
418875.92	3752728.42	0.43781	418895.92	3752728.42	0.38206
418735.92	3752748.42	1.95519	418755.92	3752748.42	1.49980
418775.92	3752748.42	1.17703	418795.92	3752748.42	0.94197
418815.92	3752748.42	0.76825	418835.92	3752748.42	0.63817
418855.92	3752748.42	0.53888	418875.92	3752748.42	0.46167
418895.92	3752748.42	0.40027	418755.92	3752768.42	1.66035
418775.92	3752768.42	1.28877	418795.92	3752768.42	1.02041
418815.92	3752768.42	0.82170	418835.92	3752768.42	0.67622
418855.92	3752768.42	0.56856	418755.92	3752788.42	1.83863
418775.92	3752788.42	1.40767	418795.92	3752788.42	1.10110
418815.92	3752788.42	0.87422	418835.92	3752788.42	0.71176
418855.92	3752788.42	0.59663	418735.92	3752808.42	2.80770
418775.92	3752808.42	1.54160	418795.92	3752808.42	1.19213
418815.92	3752808.42	0.93224	418835.92	3752808.42	0.75156
418855.92	3752808.42	0.62655	418735.92	3752828.42	3.23406
418795.92	3752828.42	1.26304	418815.92	3752828.42	0.98115
418835.92	3752828.42	0.79051	418855.92	3752828.42	0.65642
418735.92	3752848.42	3.64761	418755.92	3752848.42	2.39394
418775.92	3752848.42	1.72372	418795.92	3752848.42	1.30713
418815.92	3752848.42	1.01836	418835.92	3752848.42	0.82520
418755.92	3752868.42	2.47659	418775.92	3752868.42	1.76931
418795.92	3752868.42	1.33860	418815.92	3752868.42	1.05317
418835.92	3752868.42	0.85101	418795.92	3752888.42	1.35027
418815.92	3752888.42	1.06940	418716.77	3752801.42	3.73941
418703.49	3752783.39	4.05113	418696.37	3752764.88	3.96921
418691.15	3752748.75	3.91381	418683.56	3752728.82	4.05733
418678.34	3752710.80	4.13144	418682.61	3752685.65	3.33098
418674.55	3752665.25	3.49695	418687.83	3752651.49	2.33935
418712.50	3752646.27	1.48396	418590.27	3753003.11	1.51121

418610.27	3753003.11	1.47991	418630.27	3753003.11	1.46554
418492.01	3753051.24	4.02122	418530.27	3753023.11	2.03570
418550.27	3753023.11	1.71907	418570.27	3753023.11	1.52932
418590.27	3753023.11	1.41752	418610.27	3753023.11	1.35648
418630.27	3753023.11	1.31735	418650.27	3753023.11	1.28814
418670.27	3753023.11	1.26552	418510.27	3753043.11	2.77166

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: OFFSITE ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
418530.27	3753043.11	2.13547	418550.27	3753043.11	1.75099
418570.27	3753043.11	1.51123	418590.27	3753043.11	1.36457
418610.27	3753043.11	1.27312	418630.27	3753043.11	1.21152
418650.27	3753043.11	1.16564	418670.27	3753043.11	1.13165
418690.27	3753043.11	1.10780	418710.27	3753043.11	1.08227
418510.27	3753063.11	3.06280	418530.27	3753063.11	2.28328
418550.27	3753063.11	1.81712	418570.27	3753063.11	1.52575
418590.27	3753063.11	1.33925	418610.27	3753063.11	1.21730
418650.27	3753063.11	1.07409	418670.27	3753063.11	1.03111
418690.27	3753063.11	0.99957	418710.27	3753063.11	0.97190
418730.27	3753063.11	0.93967	418790.27	3753063.11	0.78033
418810.27	3753063.11	0.71720	418510.27	3753083.11	3.48197
418530.27	3753083.11	2.48294	418550.27	3753083.11	1.90493
418610.27	3753083.11	1.17344	418630.27	3753083.11	1.07259
418650.27	3753083.11	1.00262	418670.27	3753083.11	0.95223
418690.27	3753083.11	0.91507	418710.27	3753083.11	0.88459
418730.27	3753083.11	0.85265	418750.27	3753083.11	0.81558
418790.27	3753083.11	0.72182	418810.27	3753083.11	0.67084
418830.27	3753083.11	0.61899	418850.27	3753083.11	0.56820
418550.27	3753103.11	2.00416	418570.27	3753103.11	1.58111
418590.27	3753103.11	1.31638	418610.27	3753103.11	1.14321
418630.27	3753103.11	1.02684	418650.27	3753103.11	0.94729
418670.27	3753103.11	0.89079	418690.27	3753103.11	0.84857
418710.27	3753103.11	0.81409	418730.27	3753103.11	0.78061
418750.27	3753103.11	0.74588	418770.27	3753103.11	0.70875
418830.27	3753103.11	0.58326	418850.27	3753103.11	0.53910
418530.27	3753123.11	2.96652	418550.27	3753123.11	2.10430
418570.27	3753123.11	1.61279	418590.27	3753123.11	1.31343
418610.27	3753123.11	1.12056	418630.27	3753123.11	0.99240
418650.27	3753123.11	0.90457	418670.27	3753123.11	0.84216
418690.27	3753123.11	0.79564	418710.27	3753123.11	0.75587
418730.27	3753123.11	0.71997	418750.27	3753123.11	0.68621
418770.27	3753123.11	0.65389	418790.27	3753123.11	0.62171
418530.27	3753143.11	3.25870	418550.27	3753143.11	2.20800

418570.27	3753143.11	1.63942	418590.27	3753143.11	1.30569
418610.27	3753143.11	1.09527	418710.27	3753143.11	0.70375
418730.27	3753143.11	0.66800	418750.27	3753143.11	0.63690
418770.27	3753143.11	0.60846	418530.27	3753163.11	3.48563
418550.27	3753163.11	2.25354	418590.27	3753163.11	1.28048
418610.27	3753163.11	1.06218	418630.27	3753163.11	0.91770

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: OFFSITE ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
418650.27	3753163.11	0.81978	418670.27	3753163.11	0.75069
418690.27	3753163.11	0.69931	418710.27	3753163.11	0.65764
418730.27	3753163.11	0.62350	418750.27	3753163.11	0.59450
418770.27	3753163.11	0.56842	418550.27	3753183.11	2.17325
418570.27	3753183.11	1.57307	418590.27	3753183.11	1.23186
418610.27	3753183.11	1.01763	418630.27	3753183.11	0.87602
418650.27	3753183.11	0.77761	418670.27	3753183.11	0.70787
418690.27	3753183.11	0.65623	418710.27	3753183.11	0.61694
418730.27	3753183.11	0.58553	418750.27	3753183.11	0.55814
418550.27	3753203.11	1.95644	418570.27	3753203.11	1.47621
418590.27	3753203.11	1.17097	418610.27	3753203.11	0.97336
418630.27	3753203.11	0.83766	418650.27	3753203.11	0.74271
418670.27	3753203.11	0.67348	418690.27	3753203.11	0.62247
418710.27	3753203.11	0.58316	418730.27	3753203.11	0.55188
418550.27	3753223.11	1.64298	418570.27	3753223.11	1.33255
418590.27	3753223.11	1.09155	418610.27	3753223.11	0.92080

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE SUMMARY OF MAXIMUM PERIOD (43848 HRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
ONSITE	1ST HIGHEST VALUE IS	3.24735 AT (418530.27, 3753023.11, 105.98, 105.98, 0.00)	DC	
	2ND HIGHEST VALUE IS	3.23067 AT (418590.27, 3753003.11, 104.11, 104.11, 0.00)	DC	
	3RD HIGHEST VALUE IS	3.19880 AT (418550.27, 3753023.11, 105.66, 105.66, 0.00)	DC	
	4TH HIGHEST VALUE IS	3.04832 AT (418590.27, 3753003.11, 104.11, 104.11, 6.10)	DC	
	5TH HIGHEST VALUE IS	3.03852 AT (418530.27, 3753023.11, 105.98, 105.98, 6.10)	DC	
	6TH HIGHEST VALUE IS	3.03841 AT (418570.27, 3753023.11, 105.22, 105.22, 0.00)	DC	
	7TH HIGHEST VALUE IS	3.01107 AT (418550.27, 3753023.11, 105.66, 105.66, 6.10)	DC	
	8TH HIGHEST VALUE IS	2.87396 AT (418570.27, 3753023.11, 105.22, 105.22, 6.10)	DC	
	9TH HIGHEST VALUE IS	2.82553 AT (418610.27, 3753003.11, 103.29, 103.29, 0.00)	DC	
	10TH HIGHEST VALUE IS	2.79795 AT (418590.27, 3753023.11, 104.60, 104.60, 0.00)	DC	
OFFSITE	1ST HIGHEST VALUE IS	5.14351 AT (418678.34, 3752710.80, 97.27, 97.27, 0.00)	DC	
	2ND HIGHEST VALUE IS	5.05159 AT (418703.49, 3752783.39, 97.31, 97.31, 0.00)	DC	
	3RD HIGHEST VALUE IS	5.03763 AT (418492.01, 3753051.24, 107.19, 107.19, 0.00)	DC	
	4TH HIGHEST VALUE IS	4.99877 AT (418683.56, 3752728.82, 97.23, 97.23, 0.00)	DC	
	5TH HIGHEST VALUE IS	4.87352 AT (418696.37, 3752764.88, 97.25, 97.25, 0.00)	DC	
	6TH HIGHEST VALUE IS	4.78969 AT (418691.15, 3752748.75, 97.31, 97.31, 0.00)	DC	
	7TH HIGHEST VALUE IS	4.64871 AT (418716.77, 3752801.42, 97.43, 97.43, 0.00)	DC	
	8TH HIGHEST VALUE IS	4.51255 AT (418674.55, 3752665.25, 97.96, 97.96, 0.00)	DC	
	9TH HIGHEST VALUE IS	4.42960 AT (418735.92, 3752848.42, 97.30, 97.30, 0.00)	DC	
	10TH HIGHEST VALUE IS	4.15285 AT (418510.27, 3753083.11, 107.45, 107.45, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of   0 Fatal Error Message(s)
A Total of   2 Warning Message(s)
A Total of   2285 Informational Message(s)

A Total of   43848 Hours Were Processed

A Total of   1588 Calm Hours Identified

A Total of   697 Missing Hours Identified (1.59 Percent)

   ******** FATAL ERROR MESSAGES ********
              *** NONE ***

   ********   WARNING MESSAGES   ********
ME W186   900   MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used   0.50
ME W187   900   MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

   ****
   *** AERMOD Finishes Successfully ***
   ****

Results Summary

BREA-03.5 (Brea Plaza) Construction HRA
Brea

Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		5.14351	ug/m^3	418678.34	3752710.80	97.27	0.00	97.27	

Concentration - Source Group: ONSITE

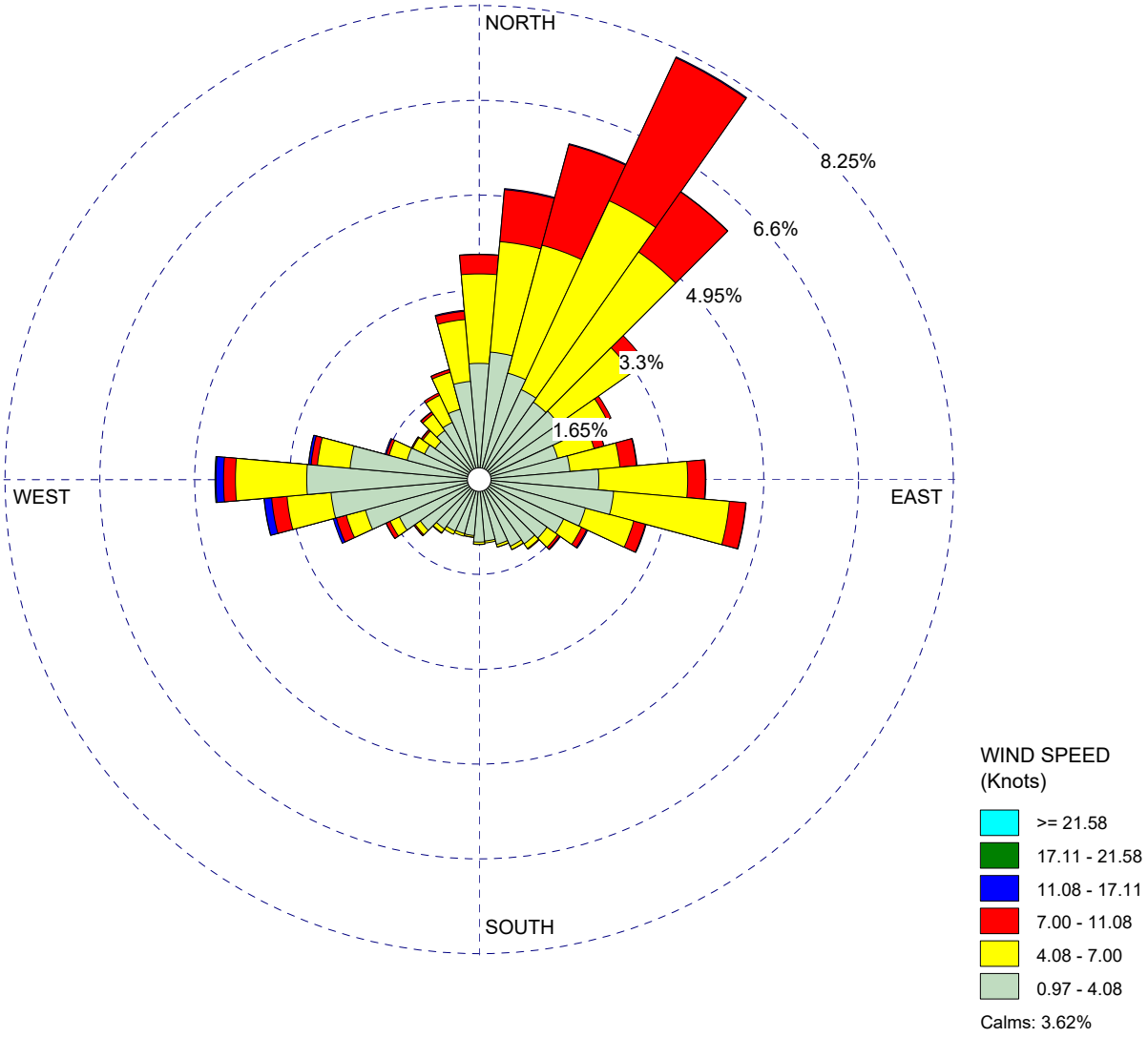
Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		3.24735	ug/m^3	418530.27	3753023.11	105.98	0.00	105.98	

WIND ROSE PLOT:

Station #3166

DISPLAY:

Wind Speed
Flow Vector (blowing to)



COMMENTS:	DATA PERIOD: **Start Date: 1/1/2012 - 00:00** **End Date: 12/31/2016 - 23:59**	COMPANY NAME:	
		MODELER:	
	CALM WINDS: **3.62%**	TOTAL COUNT: **43471 hrs.**	
	AVG. WIND SPEED: **3.93 Knots**	DATE: **5/14/2021**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

Appendix C. Construction Risk Calculations

Table C1
Residential MER Concentrations for Risk Calculations

Contaminant	Source		Model Output [1] ($\mu g/m^3$)	Emission Rates [2] (g/s)	MEIR Conc. ($\mu g/m^3$)	Total MEIR Conc. Annual Average ($\mu g/m^3$)
(a)	(b)		(c)	(d)	(e)	(f)
Residential Receptors - Unmitigated						
DPM	2022	On-Site Emissions	3.25	2.95E-03	9.59E-03	9.60E-03
		Truck Route	2.26	5.41E-06	1.22E-05	
	2023	On-Site Emissions	3.25	4.26E-03	1.38E-02	1.39E-02
		Truck Route	2.26	2.07E-06	4.69E-06	
	2024	On-Site Emissions	3.25	3.34E-03	1.09E-02	1.09E-02
		Truck Route	2.26	1.78E-06	4.02E-06	

Maximum Exposed Individual Resident (MEIR) UTM coordinates: 418530.27 E, 3753023.11 N

[1] Model Output at the MEIR based on unit emission rates for sources (1 g/s).

[2] Emission Rates from Emission Rate Calculations (Appendix A - Construction Emissions).

Table C2
Residential MER Health Risk Calculations

Source		MEIR	Weight	Contaminant			Dose (by age bin)		Carcinogenic Risks (by age bin)		**Total Cancer Risk**	**Chronic Hazards [3]**	
		Conc. ($\mu g/m^3$)	Fraction		URF $(\mu g/m^3)^{-1}$	CPF $(mg/kg/day)^{-1}$	3rd Trimester (mg/kg-day)	0 < 2 years (mg/kg-day)	3rd Trimester per million	0 < 2 years per million	per million	REL ($\mu g/m^3$)	RESP
(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(j)	(k)	(m)	(n)	(o)
Residential Receptors - Unmitigated													
2022	On & Off-	9.60E-03	1.0E+00	DPM	3.0E-04	1.1E+00	3.32E-06	1.00E-05	1.06E-01	4.33E-01	0.5	5.0E+00	1.92E-03
2023	Site	1.39E-02						1.45E-05		1.85E+00	1.8		2.77E-03
2024	Emissions	1.09E-02						1.13E-05		7.18E-01	0.7		2.17E-03
										Total	**3.1**		**0.007**

Maximum Exposed Individual Resident (MEIR) UTM coordinates: 418530.27 E, 3753023.11 N

		3rd Trimester	0 < 2 years
	OEHHA age bin		
	exposure year(s)	2022	2022-2024
Dose Exposure Factors:	exposure frequency (days/year)	350	350
	inhalation rate (L/kg-day) [1]	361	1090
	inhalation absorption factor	1	1
	conversion factor (mg/µg; m^3/L)	1.0E-06	1.0E-06
Risk Calculation Factors:	age sensitivity factor	10	10
	averaging time (years)	70	70
	per million	1.0E+06	1.0E+06
	fraction of time at home	0.85	0.85

exposure durations per age bin		exposure durations (year)	
Construction Year	Const Duration [2]	3rd Trimester	0 < 2 years
2022	0.59	0.25	0.34
2023	1.00		1.00
2024	0.50		0.50
Total	2.08	0.25	1.83

[1] Inhalation rate taken as the 95th percentile breathing rates (OEHHA, 2015)

[2] Construction durations determined for each year to adjust receptor exposures to the exposure durations for each construction year (see App A - Construction Emissions

[3] Chronic Hazards for DPM using the chronic reference exposure level (REL) for the Respiratory Toxicological Endpoint

Appendix C3 Energy Worksheets

Appendices

This page intentionally left blank.

Energy Appendix

Construction-Related Fuel/Energy Usage

CONSTRUCTION WORKER COMMUTE

Year	Gas		Diesel		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	kWh
2022	86,387	2,916	687	15	1,443	475
2023	325,909	11,044	2,340	51	5,311	1,732
2024	198,475	6,332	1,692	34	4,692	1,518
Total	**610,771**	**20,292**	**4,719**	**100**	**11,446**	**3,725**

CONSTRUCTION VENDOR TRIPS

Year	Gas		Diesel	
	VMT	Gallons	VMT	Gallons
2022	517	102	5,244	636
2023	747	145	7,952	911
2024	431	83	4,823	544
Total	**1,695**	**330**	**18,018**	**2,091**

CONSTRUCTION TRUCK HAUL TRIPS

Year	Gas		Diesel	
	VMT	Gallons	VMT	Gallons
2022	56	13	63,158	9,282
Total	**56**	**13**	**63,158**	**9,282**

CONSTRUCTION OFF-ROAD EQUIPMENT

Year	Gasoline gallons	Diesel gallons
2022	0	8,634
2023	0	16,386
2024	0	7,178
Total	**0**	**32,198**

CONSTRUCTION TOTAL

Year	Gas		Diesel		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	kWh
2022	86,960	3,030	69,090	18,567	1,443	475
2023	326,656	11,189	10,291	17,348	5,311	1,732
2024	198,906	6,415	6,515	7,756	4,692	1,518
Total	**612,522**	**20,635**	**85,896**	**43,671**	**11,446**	**3,725**

Operation-Related Vehicle Fuel/Energy Usage

EXISTING CONDITIONS COMMUTE

Vehicle Type	Gas		Diesel		CNG		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	Gallons	VMT	kWh
Passenger Vehicles	28,442,115	1,100,651	1,780,236	164,082	53,308	16,329	391,194	129,672

PROPOSED PROJECT COMMUTE

Vehicle Type	Gas		Diesel		CNG		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	Gallons	VMT	kWh
Passenger Vehicles	23,598,107	826,580	1,473,487	122,528	42,028	13,206	567,853	183,749
Net Change	**-4,844,008**	**-274,070**	**-306,749**	**-41,554**	**-11,281**	**-3,123**	**176,660**	**54,077**

Construction Worker Trips Fuel Usage Worksheet

Note: Per CalEEMod methodology, worker vehicles are "LD_Mix", which is 50% LDA, 25% LDT1, and 25% LDT2

Activity[1]	Daily trips[1,2]	Trip miles[2]	Trip days[1]	Annual VMT
2022				
Building Demolition	15	14.7	23	5,072
Building Demolition Haul	5	14.7	12	882
Asphalt Demolition	5	14.7	11	809
Asphalt Demolition Debris Haul	5	14.7	9	662
Site Preparation	5	14.7	11	809
Rough Grading	5	14.7	7	515
Rough Grading Soil Haul	5	14.7	10	735
Utility Trenching	5	14.7	10	735
Fine Grading	5	14.7	5	368
Parking Structure Construction 2022	75	14.7	44	48,510
2023				
Parking Structure Construction 2023	75	14.7	130	143,325
Residential Construction 2023	100	14.7	130	191,100
2024				
Residential Construction 2024	100	14.7	66	97,020
Paving	10	14.7	11	1,617
Finishing/Landscaping	30	14.7	65	28,665
Architectural Coating	10	14.7	65	9,555

[1] *Based on information provided.*

[2] *Based on CalEEMod defaults.*

Year	LDA VMT	LDT1 VMT	LDT2 VMT	Gasoline[1]						Diesel[1]						Electricity[1]			
				LDA mpg	LDA gallons	LDT1 mpg	LDT1 gallons	LDT2 mpg	LDT2 gallons	LDA mpg	LDA gallons	LDT1 mpg	LDT1 gallons	LDT2 mpg	LDT2 gallons	LDA m/kWh	LDA kWh	LDT1 m/kWh	LDT1 kWh
2022	59,094	14,774	14,774	31.75	1,802	27.27	537	25.19	577	49.81	12	25.09	0	36.22	3	3.04	435	3.04	40
2023	167,213	83,606	83,606	32.64	4,936	27.97	2,956	26.05	3,151	51.12	33	25.61	1	37.23	17	3.07	1,435	3.07	298
2024	136,857	34,214	34,214	33.55	3,911	28.67	1,177	26.93	1,244	52.50	27	26.18	0	38.29	7	3.09	1,364	3.09	154
	29547																		

Gasoline		Diesel		Electricity	
VMT	Gallons	VMT	Gallons	VMT	kWh
86,387	2,916	687	15	1,443	475
325,909	11,044	2,340	51	5,311	1,732
198,475	6,332	1,692	34	4,692	1,518
610,771	**20,292**	**4,719**	**100**	**11,446**	**3,725**

[1] *EMFAC2017 v1.0.3.*

Year	VMT from gasoline			VMT from diesel			VMT from electricity	
	LDA	LDT1	LDT2	LDA	LDT1	LDT2	LDA	LDT1
2022	96.79%	99.16%	98.44%	0.98%	0.02%	0.73%	2.24%	0.82%
2023	96.36%	98.89%	98.20%	1.01%	0.02%	0.77%	2.63%	1.09%
2024	95.89%	98.59%	97.95%	1.03%	0.02%	0.80%	3.08%	1.39%

Appendix C: Evidence Used to Define the Average Number of KWH Required to Displace a Gallong of Gasoline

Table A 3: Evidence from U.S. Department of Energy and U.S. Environmental Protection Agency's fuel economy website[32]

Vehicle	Model year	Electric consumption	Gasoline fuel economy	Number of kWh that are equivalent to 1 gallon
Ford Fusion Energi & Ford C-Max Energi	2013	0.34 kWh per mile	43 mpg	14.6
Chevrolet Volt	2013	0.35 kWh per mile	37 mpg	12.9
Chevrolet Volt	2012	0.36 kWh per mile	37 mpg	13.3
Fisker Karma	2012	0.62 kWh per mile	20 mpg	12.4
Toyota Prius	2013	0.29 kWh per mile & 0.2 gal	50 mpg	13.1
Average for five models	-	-	-	13.3 +/- 0.8

Table A 5: Average power consumption per mile traveled over time for different PEV categories

Year range	2012- 2020	2020-2030	2030-2040	2040-2050	2050
Efficiency improvement per year	0.3%	0.8%	0.9%	0.9%	
Year	2012	2020	2030	2040	2050
Relative energy efficiency	1.000	0.976	0.901	0.823	0.752

https://www.fhwa.dot.gov/environment/climate_change/mitigation/publications_and_tools/ev_deployment/page08.cfm

0.34	14.6
0.35	12.9
0.36	13.3
0.34	13.3

Year	Estimated Electric Consumption
2013	0.34
2014	0.34
2015	0.34
2016	0.34
2017	0.34
2018	0.34
2019	0.34
2020	0.33
2021	0.33
2022	0.33
2023	0.33
2024	0.32
2025	0.32
2026	0.32
2027	0.32
2028	0.31
2029	0.31
2030	0.31
2031	0.31
2032	0.30
2033	0.30
2034	0.30
2035	0.29

Vendor Trips Fuel Usage Worksheet

Note: Based on CalEEMod methodology, vendor vehicles HHDT (T7).

Activity[1]	Daily trips[1,2]	Trip miles[2]	Trip days[1]	Annual VMT
2022				
Building Demolition	4	6.9	23	635
Building Demolition Haul	10	6.9	12	828
Asphalt Demolition	4	6.9	11	304
Asphalt Demolition Debris Haul	12	6.9	9	745
Site Preparation	4	6.9	11	304
Rough Grading	4	6.9	7	193
Rough Grading Soil Haul	10	6.9	10	690
Utility Trenching	4	6.9	10	276
Fine Grading	4	6.9	5	138
Parking Structure Construction 2022	6	6.9	44	1,822
2023				
Parking Structure Construction 2023	6	6.9	130	5,382
Residential Construction 2023	4	6.9	130	3,588
2024				
Residential Construction 2024	4	6.9	66	1,822
Paving	12	6.9	11	911
Finishing/Landscaping	4	6.9	65	1,794
Architectural Coating	2	6.9	65	897

[1] *Based on information provided.*

[2] *Based on CalEEMod defaults.*

Year	HHDT (T7) VMT	MHDT (T6) VMT	Gasoline[1]				Diesel[1]			
			HHDT (T7) mpg	HHDT (T7) gallons	MHDT (T6) mpg	MHDT (T6) gallons	HHDT (T7) mpg	HHDT (T7) gallons	MHDT (T6) mpg	MHDT (T6) gallons
2022	2,967	2,967	4.40	1	5.10	101	6.80	410	10.88	225
2023	4,485	4,485	4.50	1	5.14	145	7.23	582	11.36	329
2024	2,712	2,712	4.59	1	5.17	83	7.34	346	11.53	198

[1] *EMFAC2017 v1.0.3.*

Year	VMT from gasoline		VMT from diesel	
	HHDT (T7)	MHDT (T6)	HHDT (T7)	MHDT (T6)
2022	0.08%	17.35%	94.09%	82.65%
2023	0.09%	16.56%	93.86%	83.44%
2024	0.09%	15.79%	93.64%	84.21%

VENDOR

Gasoline		Diesel	
VMT	Gallons	VMT	Gallons
517.25	101.54	5,244	636
746.84	145.46	7,952	911
430.85	83.36	4,823	544
1,694.94	**330.37**	**18,018**	**2,091**

Truck Haul Trips Fuel Usage Worksheet

Note: Hauling vehicles are HHDT (T7)

Activity	Total Trips[1]	Mi/Trip[1]	Annual VMT
2022			
Building Demolition Haul	346	39	13,494
Asphalt Demolition Debris Haul	186	39	7,254
Rough Grading Soil Haul	1,139	39	44,421

[1] *Based on information provided by the District.*

Year	VMT	Gasoline[1]		Diesel[1]	
		HHDT (T7) mpg	HHDT (T7) gallons	HHDT (T7) mpg	HHDT (T7) gallons
2022	65,169	4.40	13	6.80	9,282

[1] *EMFAC2017 v1.0.3.*

Gasoline		Diesel	
VMT	Gallons	VMT	Gallons
56	13	63,158	9,282
56	**13**	**63,158**	**9,282**

Year	VMT from gasoline	VMT from diesel
2022	0.09%	96.91%
2023	0.09%	96.79%
2024	0.10%	96.67%

Off-Road Construction Equipment Fuel Usage Worksheet

Year	Total Gasoline	Total Diesel Gallons	Total Natural Gas
2022	0	8,634	0
2023	0	16,386	0
2024	0	7,178	0
Total	**0**	**32,198**	**0**

Equipment Type[1]	Number of Equipment[1]	Horsepower	OFFROAD2017 Horsepower Category	Fuel Type	Working days[1]	Hours Per Day	Total Hours of Operation	Gasoline Gal/Hr[2]	Total Gasoline gallons	Diesel Gal/Hr[2]	Total Diesel gallons	Natural Gas Gal/Hr[2]	Total Natural Gas gallons
2022													
Building Demolition													
Excavators	1	424	*600*	*Diesel*	23	8	184	0.00	0	6.68	1,229	0.00	0
Tractors/Loaders/Backhoes	1	268	*300*	*Diesel*	23	8	184	0.00	0	3.98	731	0.00	0
Asphalt Demolition													
Excavators	1	424	*600*	*Diesel*	11	8	88	0.00	0	6.68	588	0.00	0
Tractors/Loaders/Backhoes	1	268	*300*	*Diesel*	11	8	88	0.00	0	3.98	350	0.00	0
Site Preparation													
Excavators	1	424	*600*	*Diesel*	11	8	88	0.00	0	6.68	588	0.00	0
Tractors/Loaders/Backhoes	1	268	*300*	*Diesel*	11	8	88	0.00	0	3.98	350	0.00	0
Tractors/Loaders/Backhoes	1	93	*100*	*Diesel*	11	8	88	0.00	0	1.59	140	0.00	0
Rough Grading													
Tractors/Loaders/Backhoes	1	268	*300*	*Diesel*	7	8	56	0.00	0	3.98	223	0.00	0
Tractors/Loaders/Backhoes	1	93	*100*	*Diesel*	7	8	56	0.00	0	1.59	89	0.00	0
Rollers	1	142	*175*	*Diesel*	7	8	56	0.00	0	2.79	156	0.00	0
Utility Trenching													
Tractors/Loaders/Backhoes	1	131	*175*	*Diesel*	10	8	80	0.00	0	2.72	218	0.00	0
Tractors/Loaders/Backhoes	1	268	*300*	*Diesel*	10	8	80	0.00	0	3.98	318	0.00	0
Excavators	1	424	*600*	*Diesel*	10	8	80	0.00	0	6.68	534	0.00	0
Fine Grading													
Rollers	1	142	*175*	*Diesel*	5	8	40	0.00	0	2.79	112	0.00	0
Tractors/Loaders/Backhoes	1	268	*300*	*Diesel*	5	8	40	0.00	0	3.98	159	0.00	0
Tractors/Loaders/Backhoes	1	93	*100*	*Diesel*	5	8	40	0.00	0	1.59	64	0.00	0
Parking Structure Construction 2022													
Aerial Lifts	1	63	*75*	*Diesel*	44	8	352	0.00	0	1.15	406	0.00	0
Cranes	1	231	*300*	*Diesel*	44	8	352	0.00	0	3.28	1,156	0.00	0
Forklifts	1	55	*75*	*Diesel*	44	8	352	0.00	0	0.76	268	0.00	0
Tractors/Loaders/Backhoes	1	131	*175*	*Diesel*	44	8	352	0.00	0	2.72	957	0.00	0
							TOTAL		**0**		**8,634**		**0**
2023													
Parking Structure Construction 2023													
Aerial Lifts	1	63	*75*	*Diesel*	130	8	1,040	0.00	0	1.11	1,159	0.00	0
Cranes	1	231	*300*	*Diesel*	130	8	1,040	0.00	0	3.28	3,409	0.00	0
Forklifts	1	55	*75*	*Diesel*	130	8	1,040	0.00	0	0.76	792	0.00	0
Tractors/Loaders/Backhoes	1	131	*175*	*Diesel*	130	8	1,040	0.00	0	2.72	2,834	0.00	0
Residential Construction 2023													
Aerial Lifts	1	63	*75*	*Diesel*	130	8	1,040	0.00	0	1.11	1,159	0.00	0
Cranes	1	231	*300*	*Diesel*	130	8	1,040	0.00	0	3.28	3,409	0.00	0
Forklifts	1	55	*75*	*Diesel*	130	8	1,040	0.00	0	0.76	792	0.00	0
Tractors/Loaders/Backhoes	1	131	*175*	*Diesel*	130	8	1,040	0.00	0	2.72	2,834	0.00	0
							TOTAL		**0**		**16,386**		**0**
2024													
Residential Construction 2024													
Aerial Lifts	1	63	*75*	*Diesel*	66	8	528	0.00	0	1.11	588	0.00	0
Cranes	1	231	*300*	*Diesel*	66	8	528	0.00	0	3.27	1,727	0.00	0
Forklifts	1	55	*75*	*Diesel*	66	8	528	0.00	0	0.77	406	0.00	0
Tractors/Loaders/Backhoes	1	131	*175*	*Diesel*	66	8	528	0.00	0	2.73	1,441	0.00	0
Paving													
Paving Equipment	1	173	*175*	*Diesel*	11	8	88	0.00	0	2.67	235	0.00	0
Rollers	1	142	*175*	*Diesel*	11	8	88	0.00	0	2.79	245	0.00	0
Rollers	1	100	*100*	*Diesel*	11	8	88	0.00	0	1.69	149	0.00	0
Tractors/Loaders/Backhoes	1	93	*100*	*Diesel*	11	8	88	0.00	0	1.59	140	0.00	0
Finishing/Landscaping													
Tractors/Loaders/Backhoes	1	93	*100*	*Diesel*	65	8	520	0.00	0	1.59	829	0.00	0
Tractors/Loaders/Backhoes	1	131	*175*	*Diesel*	65	8	520	0.00	0	2.73	1,419	0.00	0
							TOTAL		**0**		**7,178**		**0**

[1] Based on information provided.
[2] OFFROAD2017 v.1.0.1

OFFROAD 2021

	Equipment Type	Horsepower HP	Gas				Diesel				Natural Gas			
			Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Cal/Yr)	Population	Hrs/Yr	Gal/Hr
Air Compressors25	Air Compressors	25	1668159.0	1142.08	53208.05	0.302161222	8035.4	17.99	1463.5	0.547630932	0	0	0	0
Air Compressors50	Air Compressors	50	507368.65	47.3	22885.5	2.217065391	90315.6	108.57	88370.35	1.022014787	0	0	0	0
Air Compressors75	Air Compressors	75	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors100	Air Compressors	100	278402	153.49	74171.65	1.753752279	0	0	0	0	0	0	0	0
Air Compressors175	Air Compressors	175	34145.75	10.31	5000.5	1.828407153	0	0	0	0	0	0	0	0
Air Compressors300	Air Compressors	300	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors600	Air Compressors	600	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors750	Air Compressors	750	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors9999	Air Compressors	9999	0	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts25	Aerial Lifts	25	34072.75	105.01	8942.0	0.864535152	28838.69	157.26	62783.65	0.459333376	52289.9	117.89	64248.95	1.181720696
Aerial Lifts50	Aerial Lifts	50	71769.95	125.4	45307.45	1.584065093	111219.6324	454.81111884	136033.4388	0.817590392	0	0	0	0
Aerial Lifts75	Aerial Lifts	75	0	0	0	0	13154.9319	382.48087588	114038.4456	1.153847812	0	0	0	0
Aerial Lifts100	Aerial Lifts	100	1290469.6	125.4	45307.45	2.848304197	62710.36950	168.4890503	50390.16826	1.244492166	0	0	0	0
Aerial Lifts175	Aerial Lifts	175	0	0	0	0	11860.47882	19.10258027	5704.72109	2.079063749	0	0	0	0
Aerial Lifts300	Aerial Lifts	300	0	0	0	0	7087.553009	0.64930723	193.1723617	3.665242855	0	0	0	0
Aerial Lifts600	Aerial Lifts	600	0	0	0	0	503.3193431	0.216635733	64.45738722	7.808560865	0	0	0	0
Bore/Drill rigs25	Bore/Drill rigs	25	4325.29	26.67	3303.25	1.309392285	3474.9	6.46	5234.1	0.663877266	0	0	0	0
Bore/Drill rigs50	Bore/Drill rigs	50	686.2	2.5	255.5	2.685714288	3198.162911	7.867257141	2767.454479	1.155633432	0	0	0	0
Bore/Drill rigs75	Bore/Drill rigs	75	0	0	0	0	3634.182752	4.803107518	1935.441725	1.877703378	0	0	0	0
Bore/Drill rigs100	Bore/Drill rigs	100	7887.65	11.49	1226.4	6.431547619	16311.79765	19.21267003	7550.28897	2.160420311	0	0	0	0
Bore/Drill rigs175	Bore/Drill rigs	175	2744.8	2.85	313.9	8.764186047	29086.05994	18.96429037	5933.198805	3.890097725	0	0	0	0
Bore/Drill rigs300	Bore/Drill rigs	300	0	0	0	0	3285.19072	19.12985849	6140.289615	5.355643946	0	0	0	0
Bore/Drill rigs600	Bore/Drill rigs	600	0	0	0	0	59989.45652	16.23118368	5609.985501	10.69333354	0	0	0	0
Bore/Drill rigs750	Bore/Drill rigs	750	0	0	0	0	26167.73019	3.146903858	1553.046834	16.84928595	0	0	0	0
Bore/Drill rigs9999	Bore/Drill rigs	9999	0	0	0	0	17287.7856	0.496879398	358.1796652	48.30568137	0	0	0	0
Cement and Mortar Mixers25	Cement and Mortar Mixers	25	1428812.0	4021.39	370341.0	0.385817136	899.53	89.77	26955.25	0.330570278	0	0	0	0
Cement and Mortar Mixers50	Cement and Mortar Mixers	50	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers75	Cement and Mortar Mixers	75	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers100	Cement and Mortar Mixers	100	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers175	Cement and Mortar Mixers	175	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers300	Cement and Mortar Mixers	300	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers600	Cement and Mortar Mixers	600	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers750	Cement and Mortar Mixers	750	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers9999	Cement and Mortar Mixers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws25	Concrete/Industrial Saws	25	127737.15	566.09	160870.1	0.79391479	288.35	0.64	379.6	0.759615385	0	0	0	0
Concrete/Industrial Saws50	Concrete/Industrial Saws	50	15777.65	9.36	5701.3	2.766352296	4533.9	5.62	5230.4	1.386160714	0	0	0	0
Concrete/Industrial Saws75	Concrete/Industrial Saws	75	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws100	Concrete/Industrial Saws	100	15388.4	5.35	3266.75	4.710614525	0	0	0	0	0	0	0	0
Concrete/Industrial Saws175	Concrete/Industrial Saws	175	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws300	Concrete/Industrial Saws	300	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws600	Concrete/Industrial Saws	600	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws750	Concrete/Industrial Saws	750	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws9999	Concrete/Industrial Saws	9999	0	0	0	0	0	0	0	0	0	0	0	0
Cranes25	Cranes	25	0	0	0	0	61.15327	0.31201974	147.7170041	0.413975854	0	0	0	0
Cranes50	Cranes	50	2288.55	2.85	1193.55	1.917431193	990.8013965	3.328210559	1436.779838	0.689603404	0	0	0	0
Cranes75	Cranes	75	0	0	0	0	402.4038927	1.0400658	185.7316046	1.043222432	0	0	0	0
Cranes100	Cranes	100	7825.2	5.66	2354.25	3.324031008	22613.43311	39.52250378	17291.22645	1.307748162	0	0	0	0
Cranes175	Cranes	175	514.65	0.25	98.55	5.222222222	68318.50009	69.16437568	31276.32008	2.184491942	0	0	0	0
Cranes300	Cranes	300	0	0	0	0	119139.1189	77.58890868	36224.13131	3.288943435	0	0	0	0
Cranes600	Cranes	600	0	0	0	0	208189.7326	76.86086249	37791.27885	5.483042806	0	0	0	0
Cranes750	Cranes	750	0	0	0	0	32231.40728	0.83205264	336.7665883	9.571636256	0	0	0	0
Cranes9999	Cranes	9999	0	0	0	0	11386.32314	1.664105218	814.4396988	13.98056017	0	0	0	0
Crawler Tractors25	Crawler Tractors	25	0	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors50	Crawler Tractors	50	0	0	0	0	3208.577911	9.230805932	3113.432694	1.030559644	0	0	0	0
Crawler Tractors75	Crawler Tractors	75	0	0	0	0	394.1025593	1.384629888	252.722099	1.55943054	0	0	0	0
Crawler Tractors100	Crawler Tractors	100	0	0	0	0	141404.0237	157.109338	72728.29332	1.944280387	0	0	0	0
Crawler Tractors175	Crawler Tractors	175	0	0	0	0	154615.8986	104.3087845	46715.13287	3.309769438	0	0	0	0
Crawler Tractors300	Crawler Tractors	300	0	0	0	0	162852.4289	81.13931144	35682.17188	4.563971877	0	0	0	0
Crawler Tractors600	Crawler Tractors	600	0	0	0	0	562500.1687	140.3091617	65947.982	8.529454004	0	0	0	0
Crawler Tractors750	Crawler Tractors	750	0	0	0	0	10301.08431	1.661555884	743.2635099	13.8592628	0	0	0	0
Crawler Tractors9999	Crawler Tractors	9999	0	0	0	0	32762.28802	2.769259779	1515.186226	21.62307674	0	0	0	0
Crushing/Proc. Equipment25	Crushing/Proc. Equipment	25	1898	0.7	1930.85	0.982986767	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment50	Crushing/Proc. Equipment	50	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment75	Crushing/Proc. Equipment	75	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment100	Crushing/Proc. Equipment	100	6069.95	3.31	784.75	7.734883721	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment175	Crushing/Proc. Equipment	175	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment300	Crushing/Proc. Equipment	300	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment600	Crushing/Proc. Equipment	600	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment750	Crushing/Proc. Equipment	750	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment9999	Crushing/Proc. Equipment	9999	0	0	0	0	0	0	0	0	0	0	0	0
Dumpers/Tenders25	Dumpers/Tenders	25	13661.65	268.09	39982.1	0.341701663	875.65	3.86	2565.35	0.342810277	0	0	0	0
Dumpers/Tenders100	Dumpers/Tenders	100	646.05	2.03	255.5	2.528571429	0	0	0	0	0	0	0	0
Excavators25	Excavators	25	0	0	0	0	6269.366898	6.247479726	8403.644838	0.746020394	0	0	0	0
Excavators50	Excavators	50	0	0	0	0	128388.2896	225.6835108	163210.579	0.786529283	0	0	0	0
Excavators75	Excavators	75	0	0	0	0	9303.913411	8.339405302	6187.473761	1.467934198	0	0	0	0
Excavators100	Excavators	100	0	0	0	0	157313.6425	154.5562075	97779.73298	1.608857355	0	0	0	0
Excavators175	Excavators	175	0	0	0	0	351600.77	208.3872744	123824.2275	2.886131744	0	0	0	0
Excavators300	Excavators	300	0	0	0	0	1240175.582	180.8242862	104123.1586	4.325501807	0	0	0	0
Excavators600	Excavators	600	0	0	0	0	791473.4011	186.9288422	118795.9404	6.662461881	0	0	0	0
Excavators750	Excavators	750	0	0	0	0	11146.05444	1.572855115	881.2315222	12.64827607	0	0	0	0
Excavators9999	Excavators	9999	0	0	0	0	22157.01158	1.387398833	930.7283514	23.80609933	0	0	0	0
Forklifts25	Forklifts	25	1485.55	2.4	2268.1	0.685185185	19.51845778	0.107146668	33.7498551	0.578278827	1383.35	1.16	1432.55	0.979328165
Forklifts50	Forklifts	50	11978878.9	419.37	753922.1	1.588862961	78703.41278	223.5689703	156153.0512	0.504014582	1842260.85	765.98	1379978.1	1.335000555
Forklifts75	Forklifts	75	0	0	0	0	6616.509782	17.24749132	8632.638643	0.766452766	0	0	0	0
Forklifts100	Forklifts	100	5573516.4	1483.81	2650754.1	2.10262275	1180098.766	1900.116834	1186668.618	0.993290455	1152915.2	2688.4	484327.2	2.380446809
Forklifts175	Forklifts	175	390623	54.21	96852.75	4.033163748	350073.8727	355.3951129	219240.464	1.596573758	865309.15	98.38	177236.7	4.882223312
Forklifts300	Forklifts	300	0	0	0	0	66761.48042	42.62082744	29477.65878	2.264813245	0	0	0	0
Forklifts600	Forklifts	600	0	0	0	0	17350.53944	6.781663695	4446.477496	3.902086497	0	0	0	0
Forklifts750	Forklifts	750	0	0	0	0	296.8405468	0.107146668	22.86289705	12.98535974	0	0	0	0
Forklifts9999	Forklifts	9999	0	0	0	0	1241.278457	0.174248912	135.7401112	9.144522179	0	0	0	0
Generator Sets25	Generator Sets	25	2423154.7	29997.89	5446640.25	0.703048338	209666.95	1021.33	344789.95	0.608100526	0	0	0	0
Generator Sets50	Generator Sets	50	39993.45	1557.66	29857.3	2.219154412	248747.5	526.93	177871.8	1.398403474	0	0	0	0
Generator Sets75	Generator Sets	75	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets100	Generator Sets	100	1795413.7	300.74	34538.3	5.196889489	0	0	0	0	16089.2	22.39	2569.4	6.261363636
Generator Sets175	Generator Sets	175	293227.75	28.46	3259.45	8.997760358	0	0	0	0	23254.15	18.97	2127.35	10.92795883
Generator Sets300	Generator Sets	300	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets600	Generator Sets	600	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets750	Generator Sets	750	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets9999	Generator Sets	9999	0	0	0	0	0	0	0	0	0	0	0	0
Graders25	Graders	25	0	0	0	0	24.66716434	0.185893444	41.97426529	0.587673523	0	0	0	0
Graders50	Graders	50	0	0	0	0	823.8776008	2.695459898	938.9643145	0.877432281	0	0	0	0
Graders75	Graders	75	0	0	0	0	1231.990954	2.044827882	801.078915	1.540410232	0	0	0	0
Graders100	Graders	100	0	0	0	0	17535.53949	25.74624197	9146.137979	1.875031693	0	0	0	0
Graders175	Graders	175	0	0	0	0	215092.781	146.391087	68322.14122	3.14821487	0	0	0	0
Graders300	Graders	300	0	0	0	0	452925.5142	131.7986517	98906.58469	4.579366636	0	0	0	0
Graders600	Graders	600	0	0	0	0	19492.53666	3.459028713	2608.805528	7.471824436	0	0	0	0
Graders750	Graders	750	0	0	0	0	0	0	0	0	0	0	0	0
Graders9999	Graders	9999	0	0	0	0	15366.26171	0.557680312	401.6937188	38.25367684	0	0	0	0
Pavers25	Pavers	25	11659.8	26.12	10355.05	1.125132182	1682.65	2.38	1992.9	0.844322344	0	0	0	0
Pavers50	Pavers	50	7386.5	8.07	3171.85	2.313019455	3516.994602	10.83150945	3798.621195	0.925839959	0	0	0	0
Pavers75	Pavers	75	0	0	0	0	6196.810124	11.55361008	3976.446705	1.558181033	0	0	0	0
Pavers100	Pavers	100	66320.85	4.44	1737.4	3.817726891	27660.29374	40.70842302	15949.76801	1.734219444	0	0	0	0
Pavers175	Pavers	175	0	0	0	0	4051.136002	15.57450535	13691.88794	1.59588368	0	0	0	0
Pavers300	Pavers	300	0	0	0	0	36371.51921	17.24015254	7656.858515	4.750188232	0	0	0	0
Pavers600	Pavers	600	0	0	0	0	6508.834155	1.899114154	824.0562546	7.900224202	0	0	0	0
Pavers750	Pavers	750	0	0	0	0	1361.200241	0.180525158	84.47949357	16.11278884	0	0	0	0
Pavers9999	Pavers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment25	Paving Equipment	25	247152.45	2859.47	540930	0.456902834	2080.2	4.2	3478.45	0.575026193	0	0	0	0
Paving Equipment50	Paving Equipment	50	8623.1	22.07	3669	2.228301887	4379.6841	13.33737853	6210.601516	0.705194833	0	0	0	0
Paving Equipment75	Paving Equipment	75	0	0	0	0	709.0958657	1.641878759	573.4145648	1.221389865	0	0	0	0
Paving Equipment100	Paving Equipment	100	3562.4	5.69	996.45	3.575091575	18470.32643	24.78229118	11234.89807	1.644013707	0	0	0	0
Paving Equipment175	Paving Equipment	175	0	0	0	0	19482.52527	15.86066833	7277.462048	2.674554114	0	0	0	0
Paving Equipment300	Paving Equipment	300	0	0	0	0	14059.77665	7.029158952	3269.562281	4.302021503	0	0	0	0
Paving Equipment600	Paving Equipment	600	0	0	0	0	13388.80145	3.965166589	1804.384008	7.420152617	0	0	0	0
Paving Equipment750	Paving Equipment	750	0	0	0	0	2832.149267	0.450587112	240.8219413	11.76034502	0	0	0	0
Paving Equipment9999	Paving Equipment	9999	0	0	0	0	1285.966963	0.180234845	83.02095891	15.4886559	0	0	0	0
Rollers25	Rollers	25	57570.1	309.39	77035.9	0.747370416	36788.78018	138.3528461	90202.14448	0.382413516	0	0	0	0
Rollers50	Rollers	50	9541.1	5.66	3540.5	2.694845361	72214.55327	273.8035374	93692.39837	0.770762138	0	0	0	0
Rollers75	Rollers	75	0	0	0	0	603.0407982	1.949770867	441.8172418	1.358753283	0	0	0	0
Rollers100	Rollers	100	30068.7	10.71	6646.65	4.523887974	112273.3393	202.311939	66297.84725	1.693468852	0	0	0	0
Rollers175	Rollers	175	0	0	0	0	116720.3147	118.1004928	41867.66822	2.787838911	0	0	0	0
Rollers300	Rollers	300	0	0	0	0	19328.12583	15.13395573	4605.783118	4.196490602	0	0	0	0
Rollers600	Rollers	600	0	0	0	0	11337.80252	5.477927673	1682.58508	6.819435942	0	0	0	0
Rollers750	Rollers	750	0	0	0	0	0	0	0	0	0	0	0	0
Rollers9999	Rollers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts25	Rough Terrain Forklifts	25	0	0	0	0	19.51845787	0.107146668	33.7498551	0.578327161	0	0	0	0
Rough Terrain Forklifts50	Rough Terrain Forklifts	50	1543.95	1.35	470.85	3.279069767	3659.139383	12.32186698	3326.598621	1.099964198	0	0	0	0
Rough Terrain Forklifts75	Rough Terrain Forklifts	75	0	0	0	0	100.2985703	0.321440208	72.70130078	1.379598059	0	0	0	0
Rough Terrain Forklifts100	Rough Terrain Forklifts	100	34058.15	16.14	6679.5	5.098907104	285577.5087	510.1252923	142628.9441	2.002248923	0	0	0	0
Rough Terrain Forklifts175	Rough Terrain Forklifts	175	1919.9	0.57	222.65	8.622958083	65102.77673	93.32474891	25112.45253	2.592452834	0	0	0	0
Rough Terrain Forklifts300	Rough Terrain Forklifts	300	0	0	0	0	4640.398013	4.29566577	1060.761775	4.374116351	0	0	0	0
Rough Terrain Forklifts600	Rough Terrain Forklifts	600	0	0	0	0	1721.78998	0.857173354	216.8942301	7.938381054	0	0	0	0
Rough Terrain Forklifts750	Rough Terrain Forklifts	750	0	0	0	0	296.8405468	0.107146668	22.86289705	12.98535974	0	0	0	0
Rough Terrain Forklifts9999	Rough Terrain Forklifts	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers25	Rubber Tired Dozers	25	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers50	Rubber Tired Dozers	50	0	0	0	0	3104.352339	3.445042258	3309.787124	0.937931119	0	0	0	0
Rubber Tired Dozers75	Rubber Tired Dozers	75	0	0	0	0	2506.913196	2.758366923	1763.497822	1.421557266	0	0	0	0
Rubber Tired Dozers100	Rubber Tired Dozers	100	0	0	0	0	13079.88188	7.857763102	6977.105088	1.731361474	0	0	0	0
Rubber Tired Dozers175	Rubber Tired Dozers	175	0	0	0	0	133673.7308	51.91405931	44521.67452	3.002144395	0	0	0	0
Rubber Tired Dozers300	Rubber Tired Dozers	300	0	0	0	0	146804.4345	41.85839298	32872.47694	4.465466916	0	0	0	0
Rubber Tired Dozers600	Rubber Tired Dozers	600	0	0	0	0	162775.2685	29.76886849	21455.77982	7.585484492	0	0	0	0
Rubber Tired Dozers750	Rubber Tired Dozers	750	0	0	0	0	4631.219126	0.353137668	348.2510754	13.23852472	0	0	0	0
Rubber Tired Dozers9999	Rubber Tired Dozers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Scrapers25	Scrapers	25	0	0	0	0	0	0	0	0	0	0	0	0
Scrapers50	Scrapers	50	0	0	0	0	154.3861311	0.546208906	175.8516995	0.877923886	0	0	0	0
Scrapers75	Scrapers	75	0	0	0	0	1851.634991	2.640009715	1110.609859	1.667223821	0	0	0	0
Scrapers100	Scrapers	100	0	0	0	0	8155.906748	5.937283154	3601.414038	2.264640129	0	0	0	0
Scrapers175	Scrapers	175	0	0	0	0	109425.316	59.08159672	26124.40912	4.188623547	0	0	0	0
Scrapers300	Scrapers	300	0	0	0	0	129283.8862	58.08021372	23271.62401	5.555430342	0	0	0	0
Scrapers600	Scrapers	600	0	0	0	0	159858.975	319.6232451	151586.2208	10.54527889	0	0	0	0
Scrapers750	Scrapers	750	0	0	0	0	25516.30935	4.278636434	1635.389976	15.60259392	0	0	0	0
Scrapers9999	Scrapers	9999	0	0	0	0	36985.55288	2.369595263	939.2831396	39.36763058	0	0	0	0
Skid Steer Loaders25	Skid Steer Loaders	25	1885511.7	540.27	172491.7	1.093105929	162133	309.4	258288.6	0.62772031	0	0	0	0
Skid Steer Loaders50	Skid Steer Loaders	50	45975.4	77.61	24093.65	1.908395728	54839.65214	189.5788193	58998.33908	0.929263172	0	0	0	0
Skid Steer Loaders75	Skid Steer Loaders	75	0	0	0	0	2851337217	601.163177	212230.0392	1.343512552	0	0	0	0
Skid Steer Loaders100	Skid Steer Loaders	100	614845.2	46.44	14413.85	4.26563687	4835.756944	10.62009545	3403.396394	1.420749559	0	0	0	0
Skid Steer Loaders175	Skid Steer Loaders	175	0	0	0	0	1059.880989	2.537743243	877.2199602	2.894009478	0	0	0	0
Skid Steer Loaders300	Skid Steer Loaders	300	0	0	0	0	1820.834199	1.597838338	465.5468576	3.907815171	0	0	0	0
Skid Steer Loaders600	Skid Steer Loaders	600	0	0	0	0	526.587197	0.187980781	56.30275516	9.022663356	0	0	0	0
Skid Steer Loaders750	Skid Steer Loaders	750	0	0	0	0	1721.78998	0.857173354	216.8942301	7.938381054	0	0	0	0
Skid Steer Loaders9999	Skid Steer Loaders	9999	0	0	0	0	712.8083881	0.187980781	37.35215074	19.08346307	0	0	0	0
Surfacing Equipment25	Surfacing Equipment	25	120661.7	771.71	33017.5	0.36544733	0	0	0	0	0	0	0	0
Surfacing Equipment50	Surfacing Equipment	50	0	0	0	0	506.2094977	0.325483363	801.7148411	0.631408367	0	0	0	0
Surfacing Equipment75	Surfacing Equipment	75	0	0	0	0	339.7228323	1.279032063	321.8218917	1.055623751	0	0	0	0
Surfacing Equipment100	Surfacing Equipment	100	0	0	0	0	2947.14744	7.929998778	2118.652785	1.391047882	0	0	0	0
Surfacing Equipment175	Surfacing Equipment	175	0	0	0	0	2725.388356	5.030859447	1291.041995	2.110599152	0	0	0	0
Surfacing Equipment300	Surfacing Equipment	300	0	0	0	0	5374.063931	6.224622708	1510.146579	3.558636694	0	0	0	0
Surfacing Equipment600	Surfacing Equipment	600	0	0	0	0	17003.68743	9.550106088	2685.006099	6.332485114	0	0	0	0
Surfacing Equipment750	Surfacing Equipment	750	0	0	0	0	8464.74312	2.899139342	853.8937678	9.913133539	0	0

Orange (SC)	2021 Agricultural - Combine Harvesters	Aggregate	300 Diesel	0.000106244	0.000128555	0.000152992	0.000455125	0.001405949	0.026858413	5.183376-05	4.76876-05	2.467981-07	2.20685E-07	6222.792908	1145.870217	3.03560225E 265318.9
Orange (SC)	2021 Agricultural - Combine Harvesters	Aggregate	600 Diesel	1.83124E-05	2.21689E-05	2.63829E-05	0.000127773	0.000243166	0.008116828	1.008E-05	9.27383E-06	7.469785-08	6.6692E-08	1885.577912	235.4024772	0.52303288 L 77735.43
Orange (SC)	2021 Agricultural - Construction Equipment	Aggregate	50 Diesel	0.000169007	0.000204498	0.000243317	0.000587887	0.000548939	0.007964625	4.74847E-05	4.36868-05	6.906060-08	6.54422-08	1845.314253	1784.692706	4.958388099 79111.94
Orange (SC)	2021 Agricultural - Construction Equipment	Aggregate	175 Diesel	0.000118839	0.000143795	0.000171128	0.000607906	0.000979932	0.01293388	7.09515E-05	6.52754E-05	1.168137-07	1.08273E-07	2996.634841	2027.804496	5.528174202 127775
Orange (SC)	2021 Agricultural - Construction Equipment	Aggregate	100 Diesel	0.000238996	0.000289185	0.000344154	0.001435632	0.001951341	0.031559382	0.000151884	0.00014614	2.847087-07	2.57668E-07	7265.616889	3691.751767	7.630283838 311128
Orange (SC)	2021 Agricultural - Construction Equipment	Aggregate	175 Diesel	0.000445739	0.000539344	0.000641884	0.002856326	0.004139894	0.067801814	0.000244181	0.000224647	6.176946-07	5.57101E-07	15708.91952	11.04187279	0.949189449 749944.6
Orange (SC)	2021 Agricultural - Construction Equipment	Aggregate	300 Diesel	0.000243008	0.00029411	0.000350015	0.00093823	0.002712428	0.045659993	0.000314683	0.000302508	4.120768-07	3.70210E-07	10439.2009	2521.404129	4.530535976 495863.8
Orange (SC)	2021 Agricultural - Construction Equipment	Aggregate	600 Diesel	2.740122-05	3.31554E-05	3.94579E-05	0.000127668	0.00027381	0.00435532	1.177915-05	1.08368E-05	3.971518-08	3.57186E-08	1009.078755	137.5018987	0.155666991 48534.07
Orange (SC)	2021 Agricultural - Cotton Pickers	Aggregate	100 Diesel	2.887606-05	3.49405E-05	4.15821E-05	3.41635E-05	3.16647E-05	0.000840758	2.36087E-06	2.172E-06	7.738745-09	6.9081E-09	194.7942741	83.6859447	0.184519386 7531.735
Orange (SC)	2021 Agricultural - Cotton Pickers	Aggregate	175 Diesel	8.080555-06	9.77746E-06	1.1636E-05	0.000103165	9.43201E-05	0.002623152	5.27666E-06	4.85452E-06	2.417266-08	2.15534E-08	607.7549363	210.8963594	0.460417805 25821.67
Orange (SC)	2021 Agricultural - Cotton Pickers	Aggregate	300 Diesel	8.69555-06	1.05216E-05	1.2521E-05	0.00045946	0.000118313	0.003361847	1.45208E-06	1.33609E-06	2.76226-08	2.77E-08	1778.902198	135.5329678	0.398161816 3480
Orange (SC)	2021 Agricultural - Cotton Pickers	Aggregate	600 Diesel	1.47048E-05	1.77928E-05	2.11749E-05	7.88008E-05	0.000194823	0.005580157	7.65244E-06	7.04024E-06	5.428858-08	4.83155E-08	1362.366627	180.4096534	0.391435551 58446.36
Orange (SC)	2021 Agricultural - Forage & Silage Harvesters	Aggregate	100 Diesel	5.96749E-05	9.15418E-05	1.08942E-05	4.50614E-06	6.44053E-06	0.000101756	5.16272E-07	4.74876-07	9.243958-10	8.3608E-10	23.57564116	11.39442379	0.031115459 911.5539
Orange (SC)	2021 Agricultural - Forage & Silage Harvesters	Aggregate	175 Diesel	0.000146796	0.00022517	0.00026797	2.61035E-05	8.75123E-05	0.001405758	4.67534E-06	4.30244E-06	2.287028-09	2.06675E-09	57.98255903	28.04179273	0.077000412 2243.58
Orange (SC)	2021 Agricultural - Forage & Silage Harvesters	Aggregate	600 Diesel	5.84485E-06	7.07227E-06	8.41659E-06	3.23764E-05	7.69207E-05	0.001869953	2.98314E-06	2.74449E-06	1.722938-08	1.53647E-08	432.3472274	44.09175409	0.108547038 8189.03
Orange (SC)	2021 Agricultural - Forage & Silage Harvesters	Aggregate	750 Diesel	0.000160529	0.00019388	0.00023065	0.000890688	0.002116498	0.051296941	8.20512E-05	7.54888E-05	4.735128-07	4.26116E-07	1190.962131	900.9662131	0.140022464 98546.25
Orange (SC)	2021 Agricultural - Harvesters	Aggregate	9999 Diesel	5.82111E-06	7.04353E-06	8.38238E-06	3.86555E-05	0.000128929	0.002408616	3.17526E-06	2.92124E-06	2.224368-08	1.97907E-08	558.0493411	27.89247578	0.060950174 23987.53
Orange (SC)	2021 Agricultural - Forklifts	Aggregate	50 Diesel	1.45182E-05	1.75179E-05	2.06216E-05	5.65616E-05	1.35245E-05	0.000815572	4.14821E-06	3.81826E-06	1.702478-07	1.50296E-07	4324.2116	2644.710414	4.405919178 3106.328
Orange (SC)	2021 Agricultural - Forklifts	Aggregate	75 Diesel	1.15769E-06	1.40081E-06	1.66708E-06	6.35048E-06	9.43766E-06	0.00013156	6.81808E-07	6.27263E-07	1.389778-09	1.08098E-09	30.48160598	20.11382594	0.023906824 1307.399
Orange (SC)	2021 Agricultural - Hay Squeeze/Stack reinforcer	Aggregate	100 Diesel	4.54488E-07	5.4998E-07	6.54462E-07	2.52391E-06	3.51074E-06	5.22388E-05	2.48854E-07	2.28997E-07	4.730258-10	4.12E-10	12.14263994	8.679408761	0.007968842 519.6072
Orange (SC)	2021 Agricultural - Hay Squeeze/Stack reinforcer	Aggregate	75 Diesel	7.11566E-07	8.60995E-07	1.0244E-06	3.95104E-06	5.11925E-06	5.85350E-05	4.30717E-07	3.96364E-07	1.20977E-08	1.04883E-08	315.5460225	83.95134762	0.069154457 553.2365
Orange (SC)	2021 Agricultural - Hay Squeeze/Stack reinforcer	Aggregate	100 Diesel	1.54429E-06	1.86859E-06	2.22377E-06	6.62815E-06	1.09996E-05	0.000127382	9.70423E-07	8.92789E-07	1.119238-09	1.04655E-09	29.51302219	15.55609456	0.026271152 1205.597
Orange (SC)	2021 Agricultural - Hay Squeeze/Stack reinforcer	Aggregate	175 Diesel	1.99617E-05	2.41561E-05	2.87439E-05	0.000602931	0.000502188	0.010010083	1.99308E-06	9.24614E-06	1.937758-08	1.73354E-08	488.8183998	169.3175269	0.28652657E 75884.25
Orange (SC)	2021 Agricultural - Hay Squeeze/Stack reinforcer	Aggregate	300 Diesel	4.34361E-05	5.25577E-05	6.2548E-05	0.000149788	0.000457428	0.005545251	1.98423E-05	1.82540E-05	5.020948-08	4.55632E-08	1284.772327	245.6056601	0.413098281 58248.58
Orange (SC)	2021 Agricultural - Hay Squeeze/Stack reinforcer	Aggregate	600 Diesel	1.01936E-05	1.23398E-05	1.46856E-05	5.44870E-05	0.000107272	0.002410868	4.57447E-06	4.20842E-06	1.166E-08	1.02E-08	328.9285199	46.27552445	0.078383724 5458.58
Orange (SC)	2021 Agricultural - Nut Harvester	Aggregate	50 Diesel	3.28944E-05	3.98022E-05	4.73679E-05	0.000329883	0.000420388	0.007894567	1.58492E-05	1.45813E-05	7.249158-08	6.48666E-08	1829.082649	1769.175681	4.563616188 70957.66
Orange (SC)	2021 Agricultural - Nut Harvester	Aggregate	75 Diesel	1.91003E-05	2.31113E-05	2.75044E-05	0.000290168	0.000290989	0.007596439	1.29557E-05	1.19108E-05	7.023098-08	6.2417E-08	1760.009709	1049.678611	2.668781189 68604.74
Orange (SC)	2021 Agricultural - Nut Harvester	Aggregate	100 Diesel	4.22071E-05	5.10790E-05	6.07783E-05	0.000641868	0.000628085	0.016611686	1.41182E-05	1.29818E-05	2.978128-07	2.11057E-07	5951.302227	2814.034868	4.997391497 231468.7
Orange (SC)	2021 Agricultural - Nut Harvester	Aggregate	175 Diesel	5.39729E-05	6.53072E-05	7.7721E-05	0.00093069	0.000679364	0.024134773	3.78792E-05	3.48489E-05	2.230158-07	1.98306E-07	5591.756169	1897.421892	3.856988733 234597.4
Orange (SC)	2021 Agricultural - Nut Harvester	Aggregate	300 Diesel	2.70464E-05	3.27163E-05	3.89468E-05	0.000479355	0.000364547	0.013010312	1.48660E-05	1.36775E-05	1.52998-08	1.42385E-08	4013.450854	1.013777793	130114.74
Orange (SC)	2021 Agricultural - Nut Harvester	Aggregate	600 Diesel	2.108E-05	2.5514E-05	3.0363E-05	0.000157721	0.000302303	0.012325169	1.25661E-05	1.15688E-05	1.140848-07	1.01272E-07	2855.603301	377.6829984	0.88201943 122747
Orange (SC)	2021 Agricultural - Other Harvesters	Aggregate	50 Diesel	1.49125E-05	1.80450E-05	2.14885E-05	8.77733E-05	0.000344851	0.003446615	4.97536E-06	4.57739E-06	1.20977E-08	1.10488E-08	311.5486225	83.34578363	0.349028163 2245.74
Orange (SC)	2021 Agricultural - Other Harvesters	Aggregate	75 Diesel	2.39917E-05	2.9018E-05	3.4548E-05	0.000212312	0.000220946	0.004718947	1.41934E-05	1.30579E-05	4.320198-08	3.87738E-08	1091.327153	634.7140483	0.452603356 42643.2
Orange (SC)	2021 Agricultural - Other Harvesters	Aggregate	100 Diesel	7.31222E-05	8.8719E-05	0.000105584	0.000602931	0.000588222	0.012332225	5.11518E-05	4.70588E-05	1.209698-07	1.08732E-07	3065.190721	1385.029058	1.155106107 118807.2
Orange (SC)	2021 Agricultural - Other Harvesters	Aggregate	175 Diesel	5.26829E-05	6.39199E-05	7.6098E-05	0.000434115	0.000404943	0.008966985	2.92073E-05	2.68729E-05	7.745748-08	2.0142965E	5681.25868	3991.664668	885.653
Orange (SC)	2021 Agricultural - Other Harvesters	Aggregate	300 Diesel	4.47567E-05	5.41558E-05	6.4449E-05	0.000174628	0.00055321	0.009526931	2.05183E-05	1.88709E-05	8.732918-08	7.82791E-08	2207.283026	440.3639587	0.646334855 94179.52
Orange (SC)	2021 Agricultural - Other Harvesters	Aggregate	600 Diesel	2.31015E-05	2.7953E-05	3.3265E-05	8.3265E-05	0.000183851	0.004733457	7.53145E-06	6.92859E-06	5.148944E-08	2.82312E-08	796.0767927	85.29242625	0.140375622 94519.87
Orange (SC)	2021 Agricultural - Others	Aggregate	50 Diesel	1.23507E-05	1.49443E-05	1.779E-05	5.00203E-05	4.89582E-05	0.000755921	3.67745E-06	3.38325E-06	6.66518-09	6.2111E-09	175.1403541	166.3566151	0.313053468 7512.148
Orange (SC)	2021 Agricultural - Others	Aggregate	75 Diesel	2.29627E-06	2.77498E-06	3.3057E-06	1.41186E-05	2.60872E-05	0.000361188	1.41182E-06	1.29818E-06	2.882148-09	2.65009E-09	72.12423315	67.45283816	0.085017707 2007.424
Orange (SC)	2021 Agricultural - Others	Aggregate	100 Diesel	9.38185E-06	1.1352E-05	1.35299E-05	5.8157E-05	7.79989E-05	0.001819015	6.23123E-06	5.73365E-06	1.164988-08	1.05329E-08	297.0020275	146.3103535	0.293537567 12739.06
Orange (SC)	2021 Agricultural - Others	Aggregate	175 Diesel	2.62188E-05	3.17248E-05	3.77516E-05	0.000190138	0.000204317	0.004024171	1.48088E-05	1.36238E-05	4.018959E-08	3.61734E-08	1020.4001	381.4776969	0.772448114 66837.77
Orange (SC)	2021 Agricultural - Others	Aggregate	300 Diesel	2.93983E-05	3.55671E-05	4.2307E-05	0.000110861	0.000193345	0.003766038	1.41936E-05	1.30566E-05	4.737718-08	4.26511E-08	1203.926405	292.6260805	0.587975127 63702.21
Orange (SC)	2021 Agricultural - Others	Aggregate	600 Diesel	0.000135485	0.000163937	0.000195099	0.000817873	0.001585605	0.029171395	6.603099E-05	6.07484E-05	2.674676-07	2.39706E-07	6759.148321	862.6507073	1.747248228 3223.82
Orange (SC)	2021 Agricultural - Sprayers/Spray rigs	Aggregate	50 Diesel	2.95302E-05	3.57316E-05	4.25233E-05	0.000178373	0.000364	0.00511878	0.000137849	0.000126849	1.567795E-08	1.52989E-08	1.422885E-08	402.8367768	0.781105	16379.71
Orange (SC)	2021 Agricultural - Sprayers/Spray rigs	Aggregate	75 Diesel	8.3151E-06	1.00614E-05	1.19739E-05	4.8914E-05	7.17467E-05	0.001067491	5.06145E-06	4.65656E-06	9.686238-09	8.77116E-09	247.3257871	167.3439606	0.300536032 10100.11
Orange (SC)	2021 Agricultural - Sprayers/Spray rigs	Aggregate	100 Diesel	1.88996E-05	2.28769E-05	2.72145E-05	0.000112183	0.000155049	0.002445364	1.23572E-06	1.13687E-06	2.219338-08	2.0038E-08	566.543651	264.0953387	0.494470404 16711.9
Orange (SC)	2021 Agricultural - Sprayers/Spray rigs	Aggregate	175 Diesel	3.1117E-05	3.76515E-05	4.4805E-05	0.000219618	0.000314404	0.005026936	1.74627E-05	1.60657E-05	4.585478-08	4.13040E-08	1164.684549	432.6878584	0.773566492 51909.58
Orange (SC)	2021 Agricultural - Sprayers/Spray rigs	Aggregate	300 Diesel	1.36177E-05	1.6477E-05	1.96095E-05	5.58373E-05	0.000156419	0.002567149	6.71195E-06	6.17486E-06	2.348528-08	2.10833E-08	594.7795282	123.1784966	0.222630891 35865.27
Orange (SC)	2021 Agricultural - Sprayers/Spray rigs	Aggregate	600 Diesel	4.11344E-07	5.0014E-07	5.9521E-07	2.64535E-06	4.82401E-06	7.18295E-05	2.80295E-07	2.57876E-07	7.093768-10	6.0369E-10	17.98465697	11.52121887	0.011271 2149.73
Orange (SC)	2021 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	50 Diesel	4.77051E-06	5.77212E-06	6.8695E-06	3.29151E-05	3.80101E-05	0.000663988	1.87486E-06	1.72487E-06	6.036988-09	5.45573E-09	153.8385686	126.242001	0.288548859 5602.256
Orange (SC)	2021 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	100 Diesel	3.31668E-05	4.01298E-05	4.77501E-05	0.000228766	0.000264	0.004619139	1.30397E-06	1.19976E-06	4.178528-08	3.31994E-08	936.141816	519.6218445	1.010884605 33500.3
Orange (SC)	2021 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	100 Diesel	3.04714E-05	3.68704E-05	4.3879E-05	0.000166873	0.000238138	0.003900933	2.43217E-05	2.2376E-05	8.293858-08	7.40240E-08	2087.315896	885.6635077	1.911958172 75943.68
Orange (SC)	2021 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	175 Diesel	1.45152E-05	1.75645E-05	2.0903E-05	0.000198823	0.000180282	0.003955544	9.47677E-06	8.71826E-06	4.660192-08	4.15394E-08	1171.27755	381.9878864	0.748169499 29735.35
Orange (SC)	2021 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	300 Diesel	5.44875E-06	6.59299E-06	7.8462E-06	3.04485E-05	7.05852E-05	0.002173901	2.80391E-06	2.57959E-06	2.007018-08	1.78621E-08	503.6685087	96.95007919	0.201712646 19945.53
Orange (SC)	2021 Agricultural - Tug/Air Narrow Body	Aggregate	25 Diesel													
Orange (SC)	2021 Agricultural - Tug/Air Narrow Body	Aggregate	50 Diesel	2.60395E-05	3.15078E-05	3.74969E-05	0.000109863	9.44357E-05	0.009399127	1.0017E-05	9.21564E-06	8.611848-08	7.67144E-08	304.9443083	229.576981	0.728630122 9903.748
Orange (SC)	2021 Agricultural - Tug/Air Narrow Body	Aggregate	75 Diesel	3.91723E-07	4.73984E-07	5.6408E-07	9.88214E-06	8.51503E-06	0.001572716	5.79529E-07	5.33167E-07	1.452888-08	1.28363E-08	51.02504763	32.04390044	0.009715083 1842.524
Orange (SC)	2021 Agricultural - Tug/Air Narrow Body	Aggregate	100 Diesel	1.77662E-05	2.15015E-05	2.55903E-05	0.000103343	0.000159515	0.018447221	5.43655E-06	5.00184E-06	7.788348-07	6.89451E-07	2740.607837	1126.806193	3.448849242 98966.68
Orange (SC)	2021 Agricultural - Tug/Air Narrow Body	Aggregate	175 Diesel	0.000143388	0.000162609	0.000193518	0.001682807	0.001778885	0.280347664	0.000108261	9.96004E-05	2.587928-06	2.28816E-06	9095.571225	2509.963159	7.674903947 328434.2
Orange (SC)	2021 Agricultural - Tug/Air Narrow Body	Aggregate	300 Diesel	4.42941E-05	5.0418E-05	6.6663E-05	0.000289387	0.000387078	0.018240653	2.50176E-05	2.30158E-05	1.329268-06	1.17468E-06	4669.647402	753.0106602	2.383045647 168515
Orange (SC)	2021 Agricultural - Tug/Air Narrow Body	Aggregate	750 Diesel	1.14803E-05	1.3891E-05	1.65316E-05	5.71146E-05	0.000557053	0.009573056	7.17966E-06	6.60528E-06	8.81632E-08	7.8134E-08	310.5872464	16.02195022	0.048575341 11215.37
Orange (SC)	2021 Agricultural - Tug/Air Wide Body	Aggregate	25 Diesel													
Orange (SC)	2021 Agricultural - Tug/Air Wide Body	Aggregate	50 Diesel	5.60728E-07	6.7847BE-07	8.0744E-07	1.24339E-05	1.01745E-05	0.002041614	4.06484E-06	3.73965E-08	1.885898-08	1.66634E-08	66.23790987	44.2844004	0.013071696 2147.793
Orange (SC)	2021 Agricultural - Tug/Air Wide Body	Aggregate	75 Diesel	4.93931E-06	5.97957E-06	7.1126E-06	3.02772E-05	5.17282E-05	0.003597173	3.64212E-06	3.35075E-06	3.310958-08	2.93596E-08	116.7063234	66.42660061	0.168079544 4207.018
Orange (SC)	2021 Agricultural - Tug/Air Wide Body	Aggregate	100 Diesel	1.57202E-05	1.90243E-05	2.26316E-05	9.66014E-05	0.000150199	0.009769165	4.57438E-06	4.20824E-06	9.009368-08	7.97544E-08	316.9486046	112.8520012	0.331159897 11425.38
Orange (SC)	2021 Agricultural - Tug/Air Wide Body	Aggregate	175 Diesel	2.29128E-05	2.5304E-05	3.0114E-05	0.000218315	0.000260551	0.036823693	1.51571E-05	1.41285E-05	3.398268-07	3.00555E-07	1194.704205	287.8486026	0.719678023 43066.58
Orange (SC)	2021 Agricultural - Tug/Air Wide Body	Aggregate	300 Diesel	6.86139E-05	8.3167E-05	9.8955E-05	0.000619883	0.000818822	0.031027913	3.98984E-05	3.70429E-05	1.027E-06	9.07E-07	1077.8359	1606.171127	2.461288871 148539.9
Orange (SC)	2021 Agricultural - Tug/Air Wide Body	Aggregate	600 Diesel	6.22394E-05	7.5309E-05	8.9624BE-05	0.000426959	0.001137747	0.15613571	3.65863E-05	3.36594E-05	1.441688-06	1.27436E-06	5065.651163	489.2516291	1.272376502 182610.1
Orange (SC)	2021 Agricultural - Tug/Air Wide Body	Aggregate	750 Diesel	1.34688E-06	8.8824E-06	1.0570E-05	2.64664E-05	0.000166864	0.013066844	4.26413E-06	3.923E-06	1.205868-07	1.06647E-07	423.9265515	24.26542488	0.110719696 15287.22
Orange (SC)	2021 Agricultural - Baggage Tug	Aggregate	25 Diesel													
Orange (SC)	2021 Agricultural - Baggage Tug	Aggregate	50 Diesel	7.42712E-05	8.98682E-05	0.000106951	0.000296714	0.000321798	0.020626555	2.83144E-05	2.60493E-05	1.884758-07	1.68351E-07	669.2058648	702.3759996	0.975636912 31706.18
Orange (SC)	2021 Agricultural - Baggage Tug	Aggregate	75 Diesel	6.16822E-05	7.4819E-05	8.8821E-05	0.000301184	0.000815096	0.147565507	4.17699E-05	3.84156E-05	1.565128-06	1.40572E-06	4779.97418	3777.895793	5.153364201 25110
Orange (SC)	2021 Agricultural - Baggage Tug	Aggregate	100 Diesel	5.1445E-05	6.2268E-05	7.4080E-05	0.000300454	0.000768012	0.148407855	2.58844E-05	2.38076E-05	1.370588-06	1.23128E-06	4814.929518	2822.360698	3.902547948 252462.4
Orange (SC)	2021 Agricultural - Baggage Tug	Aggregate	175 Diesel	1.94477E-05	2.3313E-05	2.7659E-05	0.000648	0.001446	0.311466501	6.01940E-05	5.53638E-05	1.192358-06	1.07128E-06	4173.760761	1838.399997	2.972504163 2292.412
Orange (SC)	2021 Agricultural - Baggage Tug	Aggregate	300 Diesel	5.26847E-06	6.37485E-06	7.586E-06	1.78169E-05	0.000111385	0.007764701	2.88834E-06	2.65727E-06	7.163058-08	6.33744E-08	251.9171586	73.35719887	0.100065324 13204.3
Orange (SC)	2021 Agricultural - Belt Loader	Aggregate	25 Diesel													
Orange (SC)	2021 Agricultural - Belt Loader	Aggregate	50 Diesel	2.59935E-05	3.14521E-05	3.7436E-05	0.000131284	0.000314937	0.012798456	9.44298E-06	8.68754E-06	1.175488-07	1.04459E-07	415.2318232	479.4662673	0.934891192 21583.13
Orange (SC)	2021 Agricultural - Belt Loader	Aggregate	75 Diesel	5.98502E-06	7.2418BE-06	8.6184E-06	0.000543893	0.000692836	0.077562755	4.90214E-05	4.50997E-05	7.153118-07	6.33057E-07	2516.438166	2307.335161	4.499163863 144972.6
Orange (SC)	2021 Agricultural - Belt Loader	Aggregate	100 Diesel	5.51886E-05	6.6778E-05	7.9471E-05	0.000496843	0.000575281	0.069797162	5.22288E-05	4.80454E-05	5.696778-07	5.03977E-07	2264.498552	1526.258004	3.009181025 130534.6
Orange (SC)	2021 Agricultural - Belt Loader	Aggregate	175 Diesel	8.56728E-06	1.0366E-05	1.2316E-05	4.9958E-05	8.74455E-05	0.006397469	5.02331E-06	4.62144E-06	5.889088-08	5.22153E-08	207.5588484	96.2990366	0.204507448 11985.03
Orange (SC)	2021 Agricultural - Belt Loader	Aggregate	300 Diesel	9.50826E-07	1.1503E-06	1.3669E-06	7.955E-06	1.16249E-05	0.004221991	5.22126E-07	4.80454E-07	1.140458-07	1.01E-07	396.9078925	190.8809308	0.458491781 4744.881
Orange (SC)	2021 Agricultural - Belt Loader	Aggregate	600 Diesel	2.75766E-07	3.3367BE-07	3.9710Z0E-07	6.43002E-06	1.7785E-06	0.003654173	5.98505E-08	5.50624E-08	3.369128-08	2.97514E-08	118.2636177	14.98269585	0.029215365 6817.127
Orange (SC)	2021 Agricultural - Belt Loader	Aggregate	750 Diesel	3.72191E-06	4.5035E-06	5.3595E-06	5.74261E-05	4.96862E-05	0.002137783	2.52791E-06	2.32586E-06	1.965328-08	1.73448E-08	69.35795977	6.402864749	0.029215365 4001.788
Orange (SC)	2021 Agricultural - Bobtail	Aggregate	25 Diesel	1.49376-07	1.8078E-07	2.1517E-07	1.59097E-06	3.82418E-06	0.000453121	1.38599E-07	2.75111E-07	4.308558-09	3.80135E-09	14.73450259	27.74887172	0.006014925 693.7218
Orange (SC)	2021 Agricultural - Bobtail	Aggregate	50 Diesel	2.0868E-06	2.5250E-06	3.0049E-06	1.9044E-05	1.62928E-05	0.00286146	6.14345E-07	5.65188E-07	2.63938-08	2.33549E-08	92.83691871	96.42897702	0.240596998 4377.467
Orange (SC)	2021 Agricultural - Bobtail	Aggregate	75 Diesel	1.16344E-07	7.4249E-07	8.8363E-07	1.59503E-06	1.07502E-05	0.000710201	5.06132E-07	4.71996E-07	1.114578-08	9.85995E-09	39.17575318	27.74887172	0.006014925 2053.417
Orange (SC)	2021 Agricultural - Bobtail	Aggregate	100 Diesel	1.5209E-06	1.8391E-06	2.1889E-06	3.5795E-06	2.7843E-05	0.001564396	1.27391E-06	1.172E-06	5.14E-08	4.5415E-08	180.530714	110.9554869	0.240596998 9462.365
Orange (SC)	2021 Agricultural - Bobtail	Aggregate	175 Diesel	4.90967E-06	5.9399E-06	7.0691E-06	1.2078E-05	5.46875E-05	0.008852526	3.51545E-06	3.23421E-06	8.30018E-08	7.33628E-08	288.2723083	124.1778487	0.346999161 13649.58
Orange (SC)	2021 Agricultural - Bobtail	Aggregate	300 Diesel	2.09214E-05	2.5314BE-05	3.0126BE-05	0.000132543	0.000298007	0.048587103	1.17801E-05	1.08377E-05	4.485464E-07	3.96561E-07	1576.355054	401.6665059	0.902238743 82625.4
Orange (SC)	2021 Agricultural - Cargo Loader	Aggregate	25 Diesel	3.85157E-06	4.6604E-06	5.5462E-06	1.9384E-05	1.68025E-05	0.001898546	1.06879E-06	1.55185E-06	1.794375E-08	1.58957E-08	61.59828939	127.9585152	0.267807373 6398.763
Orange (SC)	2021 Agricultural - Cargo Loader	Aggregate	50 Diesel	2.69362E-06	3.2597E-06	3.8794E-06	1.2547E-05	3.19639E-05	0.004129795	1.62386E-06	1.47484E-06	1.254918E-07	1.11172E-07	429.1889	190.8929008	0.458491795 7137.995
Orange (SC)	2021 Agricultural - Cargo Loader	Aggregate	100 Diesel	5.59526E-05	7.9802E-05	9.4971BE-05	0.001277437	0.001028732	0.197146966	4.49211E-05	4.13276E-05	1.820748-06	1.60909E-06	6396.216116	4288.572888	9.266135099 369134.5
Orange (SC)	2021 Agricultural - Cargo Loader	Aggregate	175 Diesel	4.83592E-05	5.8514E-05	6.9637E-05	0.000385112	0.000352112	0.062208863	1.77588E-05	1.63387E-05	2.589998E-06	2.28768E-06	9093.658893	3952.614448	8.302285577 525092.4
Orange (SC)	2021 Agricultural - Cargo Loader	Aggregate	300 Diesel	4.76574E-06	5.7423E-06	6.8318E-06	5.2219E-05	5.25574E-05	0.027571841	1.93562E-06	1.78077E-06	2.547738-07	2.25038E-07	894.5382409	242.0495067	0.535614746 51642.71
Orange (SC)	2021 Agricultural - Cargo Loader	Aggregate	600 Diesel	2.31662E-06	2.7918E-06	3.3204E-06	4.6321E-05	2.7788E-05	0.029303138	4.38849E-07	4.03741E-07	2.30424E-07	2.03E-07	840.9352792	153.5406188	0.321088844 33184.84
Orange (SC)	2021 Agricultural - Cargo Loader	Aggregate	750 Diesel	2.86204E-06	3.4630TE-06	4.1213E-06	5.1597E-05	1.41904E-05	0.028471813	4.94338E-07	4.54791E-07	2.631SE-07	2.32183E-07	923.7366043	76.77030909	0.160684424 53329.77
Orange (SC)	2021 Agricultural - Cargo Tractor	Aggregate	25 Diesel	6.07901E-07	7.3556E-07	8.7537E-07	1.2325E-05	9.54811E-06	0.001879585	4.6677E-08	3.74228E-08	1.775959E-08	1.5349E-08	60.88116029	117.3011228	0.169931779 2932.528
Orange (SC)	2021 Agricultural - Cargo Tractor	Aggregate	50 Diesel	2.49027E-05	3.0312E-05	3.5859E-05	0.000215025	8.74178E-05	0.009717552	2.91207E-05	2.70859E-05	8.369068E-08	7.93117E-08	315.2765694	467.7921821	1.506172007 15180.24
Orange (SC)	2021 Agricultural - Cargo Tractor	Aggregate	75 Diesel	2.00016746E	0.000

Orange (SC)	2021 ConstMin - Rollers	Aggregate	100 Diesel	0.001863189	0.002254458	0.002682992	0.022803659	0.0230279	3.460537845	0.001402744	0.001290524	3.193855	2.824446	15.12273.3393	662397.84725	202.311939	5782316				
Orange (SC)	2021 ConstMin - Rollers	Aggregate	175 Diesel	0.001086383	0.001314524	0.001564992	0.013936303	0.014425503	3.597904462	0.000862974	0.000609936	3.12239	2.936312	15.16710.3147	41867.66827	118.1004068	6021392				
Orange (SC)	2021 ConstMin - Rollers	Aggregate	300 Diesel	0.000214785	0.00025989	0.00030929	0.001743727	0.003208752	0.595739921	0.000111769	0.000104668	5.501476	4.862356	09.1938.12563	4605.783133	15.11393577	995515.9				
Orange (SC)	2021 ConstMin - Rollers	Aggregate	600 Diesel	8.40538E-05	0.000101705	0.000121038	0.000913995	0.0012591	0.34966147	4.03773E-05	3.71472E-05	3.128424	2.852268	05.1137.85252	1662.58509	5.477927673	548261.3				
Orange (SC)	2021 ConstMin - Rough Terrain Forklifts	Aggregate	25 Diesel	1.75466E-07	2.12208E-07	2.52642E-07	3.76183E-06	4.99815E-06	0.000601606	1.65068E-07	1.51862E-07	5.556896	4.91023E	09.19.51845787	33.74985511	0.107146669	843.7464				
Orange (SC)	2021 ConstMin - Rough Terrain Forklifts	Aggregate	50 Diesel	0.000154247	0.000186639	0.000222116	0.000894672	0.00084614	0.11278359	5.84449E-05	5.37691E-05	1.038116	9.20525E	07.3659.139383	3326.598221	12.32186696	158277.8				
Orange (SC)	2021 ConstMin - Rough Terrain Forklifts	Aggregate	75 Diesel	8.49533E-06	1.02793E-05	1.22318E-05	3.45257E-05	8.49411E-05	0.019091446	5.76538E-06	5.30454E-06	2.831771	2.52328	08.1005.29857294	72.70130078	0.321440008	4823.024				
Orange (SC)	2021 ConstMin - Rough Terrain Forklifts	Aggregate	100 Diesel	0.001936195	0.002342796	0.00278812	0.053629634	0.034789377	8.802194563	0.001056491	0.000971972	8.112265	7.184235	03.285577.5087	142628.9441	510.1252923	137237.00				
Orange (SC)	2021 ConstMin - Rough Terrain Forklifts	Aggregate	175 Diesel	0.000886503	0.001072507	0.00127585	0.011508338	0.00971005	2.009626187	0.000865373	0.000602943	1.852565	1.637788	05.1102.77673	25112.43251	93.12474891	3130094				
Orange (SC)	2021 ConstMin - Rough Terrain Forklifts	Aggregate	300 Diesel	2.53056E-05	3.06198E-05	3.64401E-05	0.000265952	0.000423914	0.143019452	9.69875E-06	8.92285E-06	1.321538	1.167316	06.4640.108611	1060.761575	4.28586677	23309				
Orange (SC)	2021 ConstMin - Rough Terrain Forklifts	Aggregate	600 Diesel	7.94889E-06	9.61816E-06	1.14479E-05	0.000147556	0.000240996	0.045644273	3.06782E-06	2.82319E-06	4.904187	4.331486	17.2.99988	216.8942021	0.857173304	83386.94				
Orange (SC)	2021 ConstMin - Rough Terrain Forklifts	Aggregate	750 Diesel	1.51382E-06	1.83172E-06	2.17996E-06	1.68263E-05	2.31465E-05	0.009149333	1.63162E-07	1.50109E-07	8.454478	7.467568	09.2.84004668	22.86280507	0.107146669	14289.25				
Orange (SC)	2021 ConstMin - Rubber Tired Dozers	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Orange (SC)	2021 ConstMin - Rubber Tired Dozers	Aggregate	50 Diesel	0.000155598	0.000188647	0.000224505	0.000971838	0.000723033	0.095683702	5.70601E-05	5.24953E-05	8.799667	7.80958	07.3104.35239	1309.78714	3.445042258	136514.4				
Orange (SC)	2021 ConstMin - Rubber Tired Dozers	Aggregate	75 Diesel	0.000173642	0.000210107	0.000250045	0.000791773	0.001522237	0.077269172	0.000122574	0.000112768	7.018183	6.30661	07.2506.91196	1763.497822	7.278369923	121430.8				
Orange (SC)	2021 ConstMin - Rubber Tired Dozers	Aggregate	100 Diesel	0.000404224	0.000458418	0.000545439	0.001704529	0.003713313	0.169400606	0.000268802	0.000247313	3.427927	3.108916	02.1078.88168	6977.100669	7.861763102	585473				
Orange (SC)	2021 ConstMin - Rubber Tired Dozers	Aggregate	175 Diesel	0.000441786	0.000534561	0.000636172	0.002013433	0.005220577	0.412021169	0.000259876	0.000247782	3.796098	3.362808	03.1367.57098	4452.674928	5.918405931	653917.4				
Orange (SC)	2021 ConstMin - Rubber Tired Dozers	Aggregate	300 Diesel	0.000404746	0.000482553	0.000573674	0.001820578	0.004999872	0.559999227	0.000352705	0.000336107	5.202606	4.612496	04.1.49449	6.693192E+08	4.693192E+08	77466.3				
Orange (SC)	2021 ConstMin - Rubber Tired Dozers	Aggregate	600 Diesel	0.003788267	0.004558303	0.005455105	0.003606342	0.0483561	5.01713034	0.002159981	0.001987183	4.627226	4.094915	162775.2685	21455.77382	29.76868949	7913621				
Orange (SC)	2021 ConstMin - Rubber Tired Dozers	Aggregate	750 Diesel	5.44183E-05	6.63301E-05	7.89383E-05	0.000291863	0.00097731	0.14274673	2.73795E-05	2.51891E-05	1.318116	1.165076	46.611.2935225	348.2516764	0.353337668	2265212				
Orange (SC)	2021 ConstMin - Rubber Tired Loaders	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Orange (SC)	2021 ConstMin - Rubber Tired Loaders	Aggregate	50 Diesel	0.000577584	0.000698877	0.000831722	0.00340311	0.00262273	0.309370526	0.000211752	0.000194942	2.842968	2.525404	06.10037.18601	11573.48576	13.62654158	4806832				
Orange (SC)	2021 ConstMin - Rubber Tired Loaders	Aggregate	100 Diesel	0.005937001	0.007184497	0.008550148	0.026203448	0.038175547	7.533614121	0.002177848	0.002004715	6.945567	6.147238	05.24455.8408	153371.1389	169.3189862	13198006				
Orange (SC)	2021 ConstMin - Rubber Tired Loaders	Aggregate	175 Diesel	0.009702623	0.011740174	0.013971778	0.113733251	0.105788434	17.86808783	0.001785855	0.005322986	0.000164908	0.000145837	579710.4314	206908.8533	222.0757992	21036096				
Orange (SC)	2021 ConstMin - Rubber Tired Loaders	Aggregate	300 Diesel	0.010637138	0.012878936	0.015317478	0.061746021	0.114229119	29.25353158	0.004832178	0.004407729	0.000231564	0.000204255	811925.2792	210700.9525	201.3597732	24516804				
Orange (SC)	2021 ConstMin - Rubber Tired Loaders	Aggregate	600 Diesel	0.0144311	0.017461631	0.020780784	0.096182908	0.17238285	34.41749086	0.00649403	0.005974507	0.000317774	0.000289511	1116637.587	182026.2536	186.9045906	59998140				
Orange (SC)	2021 ConstMin - Rubber Tired Loaders	Aggregate	750 Diesel	0.001123032	0.001358869	0.001617166	0.0094972	0.012899118	3.010853914	0.000470551	0.000432889	2.780401E-05	2.457561E-05	97687.08176	8075.661114	8.5626241	5239881				
Orange (SC)	2021 ConstMin - Rubber Tired Loaders	Aggregate	900 Diesel	0.000994655	0.001203578	0.001432358	0.005125252	0.009773872	2.319029795	0.000954614	0.000872893	2.453E-05	2.165E-05	7.4967.88179	4185.123797	1.590779848	407026				
Orange (SC)	2021 ConstMin - Scrapers	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Orange (SC)	2021 ConstMin - Scrapers	Aggregate	50 Diesel	2.04314E-05	2.472E-05	2.94212E-05	7.25035E-05	5.18656E-05	0.00475855	6.68705E-06	6.15208E-06	4.338238	3.883807	154.1861111	175.8516999	0.546208056	5688.818				
Orange (SC)	2021 ConstMin - Scrapers	Aggregate	75 Diesel	0.000108573	0.000131373	0.000156345	0.000506486	0.000939151	0.057071901	8.33169E-05	7.66534E-05	5.244016	4.65813	07.1851.634991	1110.608859	2.640009715	73765.97				
Orange (SC)	2021 ConstMin - Scrapers	Aggregate	100 Diesel	0.000215508	0.000260762	0.000310329	0.001680285	0.002735886	0.251384916	0.000203408	0.000187134	2.317716	2.053778	08.3155.906746	3601.414636	5.238455144	146289.9				
Orange (SC)	2021 ConstMin - Scrapers	Aggregate	175 Diesel	0.002261477	0.002736387	0.003256527	0.021828773	0.027363227	3.372754829	0.001465389	0.001348158	3.111496	2.75288	05.109425.316	26124.40932	59.08159672	4365154				
Orange (SC)	2021 ConstMin - Scrapers	Aggregate	300 Diesel	0.002463364	0.002980973	0.003547244	0.014459849	0.033325529	3.984843344	0.001403459	0.001334896	3.67088	3.252384	05.123283.8862	29273.62402	58.08021072	5199688				
Orange (SC)	2021 ConstMin - Scrapers	Aggregate	600 Diesel	0.021383564	0.025879122	0.030792932	0.186245177	0.295799184	49.2760492	0.011271828	0.010423107	0.000945886	0.000842137	1598518.975	151586.2209	319.6232451	63984419				
Orange (SC)	2021 ConstMin - Scrapers	Aggregate	750 Diesel	0.000846486	0.001024248	0.001218939	0.009639924	0.014037445	0.786474819	0.000572233	0.000526454	7.245998E-06	6.41910E-06	25516.30935	1635.389976	4.278636434	1017600				
Orange (SC)	2021 ConstMin - Scrapers	Aggregate	9999 Diesel	0.001009447	0.001243038	0.001517659	0.011782468	0.012729748	1.911194419	0.000680813	0.000626107	1.52681E-05	9.30510E-06	36989.93288	524.2831699	2.360605241	148254				
Orange (SC)	2021 ConstMin - Skid Steer Loaders	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Orange (SC)	2021 ConstMin - Skid Steer Loaders	Aggregate	50 Diesel	0.000966421	0.00116695	0.001388767	0.010651869	0.010199313	1.684127202	0.000836047	0.000331166	1.554178	1.374565	05.54639.65234	589883.31988	189.5788333	2569821				
Orange (SC)	2021 ConstMin - Skid Steer Loaders	Aggregate	75 Diesel	0.002441953	0.002954763	0.003516412	0.054507831	0.0391696	8.788515965	0.001572111	0.001466342	8.118036	7.173075	285133.7217	212230.0392	601.163177	14960233				
Orange (SC)	2021 ConstMin - Skid Steer Loaders	Aggregate	100 Diesel	0.484427E-05	5.85946E-05	6.97324E-05	0.000707944	0.000801638	0.149666508	5.76882E-05	5.38029E-05	1.382298	1.221568	48575.76503	3403.196394	10.62092542	2583039.8				
Orange (SC)	2021 ConstMin - Skid Steer Loaders	Aggregate	175 Diesel	1.48442E-05	1.79597E-05	2.13772E-05	0.000327764	0.000155264	0.029003837	8.01216E-06	7.37995E-06	5.580508	4.931044	197.1.95938084	577.2159602	2.537741243	103105.9				
Orange (SC)	2021 ConstMin - Skid Steer Loaders	Aggregate	300 Diesel	8.79877E-06	1.06465E-05	1.26702E-05	0.000103661	0.000113128	0.056122546	3.73803E-06	3.43699E-06	5.180176	4.580855	07.1820.834199	465.9468576	1.597838338	99530.99				
Orange (SC)	2021 ConstMin - Skid Steer Loaders	Aggregate	600 Diesel	1.97933E-05	2.39477E-05	2.85013E-05	0.000233178	0.000254766	0.126232307	8.40962E-06	7.7325E-06	2.745E-06	2.428E-06	1.524E+06	1047.187537	3.594E+09	224000				
Orange (SC)	2021 ConstMin - Skid Steer Loaders	Aggregate	9999 Diesel	1.0414E-05	1.26009E-05	1.49961E-05	7.07692E-05	0.000188432	0.021970491	6.22923E-06	5.73088E-06	2.028168E-07	1.7932E-07	712.8083891	37.35215074	0.187980981	37352.15				
Orange (SC)	2021 ConstMin - Surfacing Equipment	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Orange (SC)	2021 ConstMin - Surfacing Equipment	Aggregate	50 Diesel	1.09044E-05	1.31944E-05	1.57024E-05	0.000102375	0.000019051	0.015602609	5.31E-06	4.885E-06	1.439276	1.273468	07.506.2094585	801.7148411	3.325483363	28799.52				
Orange (SC)	2021 ConstMin - Surfacing Equipment	Aggregate	75 Diesel	8.65652E-06	1.04744E-05	1.24634E-05	7.4117E-05	0.000124037	0.010471081	7.58461E-06	6.97785E-06	9.655078	8.546368	08.339.7218323	321.8218917	1.279032863	21692.51				
Orange (SC)	2021 ConstMin - Surfacing Equipment	Aggregate	100 Diesel	3.48262E-05	4.21377E-05	5.01498E-05	0.000543188	0.000504264	0.295308264	2.95208E-05	2.71538E-05	8.38262E-07	7.41432E-07	2947.44744	2118.652765	7.929998579	188466.3				
Orange (SC)	2021 ConstMin - Surfacing Equipment	Aggregate	175 Diesel	3.55409E-05	4.30044E-05	5.11788E-05	0.000482296	0.000409788	0.084003115	2.43195E-05	2.23735E-05	7.755846E-07	6.85622E-07	2725.388556	1291.041985	5.030859447	174734.2				
Orange (SC)	2021 ConstMin - Surfacing Equipment	Aggregate	300 Diesel	5.79279E-05	7.0093E-05	8.34162E-05	0.000437561	0.000665703	0.164501751	3.73758E-05	3.43845E-05	9.742E-07	8.9E-07	3540.06093	1510.145579	6.224622706	194620				
Orange (SC)	2021 ConstMin - Surfacing Equipment	Aggregate	600 Diesel	0.000100215	0.000121715	0.000144851	0.001063172	0.001485081	0.524076578	5.35962E-05	4.93085E-05	4.842331E-06	4.27744E-06	17003.08741	2685.090099	9.550106099	1090558				
Orange (SC)	2021 ConstMin - Surfacing Equipment	Aggregate	750 Diesel	5.53802E-05	6.6658E-05	7.97263E-05	0.000505052	0.001423035	0.501880264	0.000185119	0.000170303	1.299222E-05	1.1294E-05	8462.74122	853.8917674	2.899139764	184964.1				
Orange (SC)	2021 ConstMin - Surfacing Equipment	Aggregate	9999 Diesel	2.38258E-05	2.88292E-05	3.43091E-05	0.000184776	0.000610944	0.085928361	1.32858E-05	1.22229E-05	7.937366E-07	7.0133E-07	2787.851026	204.1831886	0.767419238	178810.4				
Orange (SC)	2021 ConstMin - Sweepers/Scrubbers	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Orange (SC)	2021 ConstMin - Sweepers/Scrubbers	Aggregate	50 Diesel	0.001760226	0.002129873	0.002534725	0.010307658	0.00847235	0.026602962	0.000719259	0.000661718	9.438658E-06	8.379E-06	33307.00025	35680.59331	51.06702519	1272099				
Orange (SC)	2021 ConstMin - Sweepers/Scrubbers	Aggregate	75 Diesel	0.000229578	0.000277789	0.000330592	0.002002377	0.00244788	0.275088035	0.000173586	0.000159699	2.536448E-06	2.24523E-06	8924.928326	5204.984051	9.038411539	378377.3				
Orange (SC)	2021 ConstMin - Sweepers/Scrubbers	Aggregate	100 Diesel	0.000858859	0.001038922	0.001236757	0.007490529	0.011560888	0.000602668	0.000668241	0.000614761	1.210038E-05	1.07048E-05	42552.14859	22842.01248	32.53828154	1809163				
Orange (SC)	2021 ConstMin - Sweepers/Scrubbers	Aggregate	175 Diesel	0.000237838	0.000287784	0.000342488	0.002428456	0.002772441	0.39577382	0.000140007	0.000128806	3.651998E-06	3.23025E-06	12840.43923	3408.219939	4.790358115	544743.8				
Orange (SC)	2021 ConstMin - Sweepers/Scrubbers	Aggregate	300 Diesel	6.90658E-05	8.3569E-05	9.94549E-05	0.000501283	0.000805279	0.078800364	2.81988E-05	2.59439E-05	2.135464E-06	1.8899E-06	7511.268097	1560.025941	1.380328719	157343.4				
Orange (SC)	2021 ConstMin - Sweepers/Scrubbers	Aggregate	600 Diesel	2.60137E-05	3.14766E-05	3.74598E-05	0.000425713	0.000853885	0.031208417	1.81161E-05	1.66668E-05	2.959858E-07	2.61938E-07	1041.397798	133.8797772	0.180768231	44180.33				
Orange (SC)	2021 ConstMin - Sweepers/Scrubbers	Aggregate	9999 Diesel	1.6691E-05	2.01962E-05	2.40351E-05	8.30476E-05	0.000332393	0.041410683	9.60327E-06	8.835E-06	1.807398E-07	3.3660E-07	1318.018383	66.93988862	0.290384115	56765.03				
Orange (SC)	2021 ConstMin - Tractors/Loaders/Backhoes	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Orange (SC)	2021 ConstMin - Tractors/Loaders/Backhoes	Aggregate	50 Diesel	0.000360847	0.004307915	0.005198179	0.028321427	0.024419711	3.329180866	0.001470274	0.001352652	3.067168E-05	2.717235E-05	10801.1.5808	193563.1835	265.3213993	5140733				
Orange (SC)	2021 ConstMin - Tractors/Loaders/Backhoes	Aggregate	75 Diesel	0.001955142	0.002358242	0.002847152	0.015477252	0.0048126	0.011352	0.647177186	0.595433	0.000609019	0.000539619	2148346.195	1126.72071	50.013549	8044272.6				
Orange (SC)	2021 ConstMin - Tractors/Loaders/Backhoes	Aggregate	100 Diesel	0.023420883	0.028319269	0.03373607	0.354679773	0.29017618	51.06081688	0.011591178	0.010886571	0.000488971	0.000413075	1721469.768	108346.9	1.751.491021	90070517				
Orange (SC)	2021 ConstMin - Tractors/Loaders/Backhoes	Aggregate	175 Diesel	0.001324385	0.001593606	0.001907515	0.012438235	0.018517792	3.258425268	0.001481944	0.001408943	8.552E-05	7.558E-05	300467.513	11058.8188	2.983.978.1	1586203				
Orange (SC)	2021 ConstMin - Tractors/Loaders/Backhoes	Aggregate	300 Diesel	0.001919597	0.002322713	0.00276422	0.013156985	0.026505837	5.180813732	0.000909348	0.0008366	5.153986E-05	4.554995E-05	18160.3554	46160.74291	83.94140438	9509306				
Orange (SC)	2021 ConstMin - Tractors/Loaders/Backhoes	Aggregate	600 Diesel	0.002252843	0.00272594	0.003244094	0.019699431	0.027172737	7.884649635	0.000983887	0.000905176	7.284E-05	6.436381E-05	25566.6887	40083.95616	73.77229151	13540368				
Orange (SC)	2021 ConstMin - Tractors/Loaders/Backhoes	Aggregate	750 Diesel	1.52506E-05	4.2618E-05	5.07408E-05	0.000306482	0.000553202	0.149037283	8.48495E-05	7.7911E-06	1.378787E-06	1.21642E-06	4835.544883	397.5487472	0.785735845	254861.3				
Orange (SC)	2021 ConstMin - Tractors/Loaders/Backhoes	Aggregate	9999 Diesel	0.000728665	0.000881684	0.001049277	0.005145926	0.016676561	7.603879417	0.000338019	0.000310977	2.405523E-05	2.125250E-05	84480.00004	2394.894406	3.882752185	4432335				
Orange (SC)	2021 ConstMin - Trenchers	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Orange (SC)	2021 ConstMin - Trenchers	Aggregate	50 Diesel	0.00113709	0.001617879	0.001925409	0.009310307	0.00891667	1.177850961	0.000626481	0.000576361	1.085888E-05	9.62162E-06	38246.52116	33128.09555	87.00139402	1321469				
Orange (SC)	2021 ConstMin - Trenchers	Aggregate	75 Diesel	0.002837E-05	0.000338915	0.000403961	0.005651035	0.000959162	0.067978311	0.000175187	0.000161055	2.792E-06	2.473E-06	9824.49844	1197.298464	4.448934017	345117.4				
Orange (SC)	2021 ConstMin - Trenchers	Aggregate	100 Diesel	0.000648723	0.000784955	0.000934162	0.005530315	0.007292579	0.786676899	0.000534245	0.000491505	7.25376E-06	6.42075E-06	25522.86563	11710.24601	35.88807504	980149.7				
Orange (SC)	2021 ConstMin - Trenchers	Aggregate	175 Diesel	0.000112038	0.000135601	0.000161334	0.001101585	0.001424608	0.174456172	7.2963E-05	6.7107E-06	1.669957E-06	1.42388E-06	5660.018599	1527.263266	5.338721906	218204.4				
Orange (SC)	2021 ConstMin - Trenchers	Aggregate	300 Diesel	0.000020882	0.000025274	0.000029549	0.000211976	0.000303395	0.041424966	0.000012075	0.000011109	5.38477E-06	1.38411E-06	1945.209451	2264.832165	2.316026316	316969.5
Orange (SC)	2021 ConstMin - Trenchers	Aggregate	600 Diesel	0.000189704	0.000229542	0.000273174	0.002015065	0.002562534	0.576182423	0.000101213	9.31162E-05	7.402538E-06	1.89692E-06	1855.642144	5.146991405	715976.6					
Orange (SC)	2021 ConstMin - Trenchers	Aggregate	750 Diesel	1.19764E-05	2.34454E-05	2.79024E-05	0.000177677	0.000311018	0.077477077	1.11746E-05	1.02841E-05	1.527176E-06	6.7057E-07	2.58393E+03	361.6460923	0.799021764	233733				
Orange (SC)	2021 ConstMin - Trenchers	Aggregate	9999 Diesel	2.80172E-05	3.39009E-05	4.03448E-05	0.000404767	0.000388275	0.051383722	1.79850E-05	1.65462E-05	1.41398E-07	1.2556E-07	499.1079247	22.32351452	0.09886522	19188.22				
Orange (SC)	2021 Industrial - Aerial Lifts	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Orange (SC)	2021 Industrial - Aerial Lifts	Aggregate	50 Diesel	0.000795146	0.000962126	0.00114501	0.018173642	0.017057062	3.428060332	0.000154802	0.000142417	3.167038E-05	2.797945E-05	111219.6324	136033.4886	454.8131189	6275048				
Orange (SC)	2021 Industrial - Aerial Lifts	Aggregate	75 Diesel	0.000673842	0.000815348	0.000970932	0.024393997	0.012520628	4.048679081	0.000284929	0.000262134	3.741188E-05	3.30448E-05	131354.9339	114038.4456	382.4808768	8239897				
Orange (SC)	2021 Industrial - Aerial Lifts	Aggregate	100 Diesel	0.001944855	0.002354725	0.002804592	0.011687	0.007229643	1.931882085	0.000136005	0.000125104	1.490116E-05	1.32E-05	52595.16826	50390.16826	168.4809707	3933081				
Orange (SC)	2021 Industrial - Aerial Lifts	Aggregate	175 Diesel	5.49483E-05	6.64874E-05	7.91255E-05	0.000372369	0.000614905	0.365568853	2.09419E-05	1.92665E-05	3.378232E-06	2.98372E-06	11860.47882	5704.721099	19.10258027	744257				
Orange (SC)	2021 Industrial - Aerial Lifts	Aggregate	300 Diesel	2.43162E-05	2.9427E-05	3.50154E-05	0.000164771	0.000448	0.161945581	9.27406E-06	8.5281E-06	2.716067E-06	2.42613E-06	10797.2.5	2525.1.5	8.643972	444576.6
Orange (SC)	2021 Industrial - Aerial Lifts	Aggregate	600 Diesel	1.38668E-06	1.67788E-06	1.99681E-06	2.77407E-05	7.65904E-06	0.015513531	2.62798E-07	2.41775E-07	1.431889E-07	1.2661 9E-07	503.3194313	64.45738722	0.224635733	31584.12				
Orange (SC)	2021 Industrial - Forklifts	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Orange (SC)	2021 Industrial - Forklifts	Aggregate	50 Diesel	0.000325714	0.000933364	0.004681028	0.02172548	0.017742996	3.307222103	0.001247458	0.001147661	2.121398E-05	1.8831E-05	74855.28017	152581.7212	210.6413838	6468591				
Orange (SC)	2021 Industrial - Forklifts	Aggregate	75 Diesel	0.000253572	0.000633522	0.000758944	0.002956712	0.004977413	0.919960604	0.000359393	0.000330474	6.716798E-06	5.82546E-06	23159.76376	1.8232E-06	1.631616E-06	6485.730142	35.89.3219516	1618644
Orange (SC)	2021 Industrial - Forklifts	Aggregate	100 Diesel	0.001708654	0.002052129	0.002507579	0.019688884	0.011641713	2.573849451	0.001364713	0.001255746	0.000054556	0.000021581	85109.1.428	1046832.969	1988.985378	8227614				
Orange (SC)	2021 Industrial - Forklifts	Aggregate	175 Diesel	0.00425545	0.005149094	0.006127848	0.053784427	0.048737241	8.783503465	0.002635619	0.002424769	8.108025E-05	7.168385E-05	284971.096	194128.0315	262.070364	27427934				
Orange (SC)	2021 Industrial - Forklifts	Aggregate	300 Diesel	0.000767093	0.000921151	0.00110456	0.009569583	0.021732024	3.975855974	0.000412485	0.000379548	1.724746E-05	1.52678E-05	60607.1161	23071.87543	28.04505063	3425596				
Orange (SC)	2021 Industrial - Forklifts	Aggregate	600 Diesel	0.000316775	0.000202978	0.000243156	0.001116653	0.001829783	0.481716136	6.76532E-05	6.22415E-05	4.448676E-06	3.9317E-06	15628.74946	4229.583174	5.924463015	1495193				
Orange (SC)	2021 Industrial - Forklifts	Aggregate	750 Diesel	5.13407E-06	6.21223E-06	7.39107E-06	7.21114E-05	0.000170634	0.018329224	1.49601E-06	1.37681E-06	1.124127E-06	1.0E-06	3972.788477	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06
Orange (SC)	2021 Industrial - Other General Industrial Equipment	Aggregate	25 Diesel	3.01175E-06	3.64422E-06	4.33692E-06	1.001E-05	6.89546E-06	0.000526923	9.47990E-07	8.72151E-07	4.781310E-09	4.30008E-09	17.09544207	34.79396083	0.154093685	869.8494				
Orange (SC)	2021 Industrial - Other General Industrial Equipment	Aggregate	50 Diesel	0.000578064	0.000700163	0.000833717	0.004976761	0.017300761	4.961382278	0.000245006	0.000240205	0.001240205	0.000965	4.049384E-05	160965.1565	292630.1945	281.066881	81703202
Orange (SC)	2021 Industrial - Other General Industrial Equipment	Aggregate	75 Diesel	0.001506004	0.001824155	0.002168705	0.012513137	0.031889182	9.269461897	0.001006606	0.001030886	0.018268E-05	2.60864E-05	10927.4841	83827.69882	1.08.0E+04	1995390
Orange (SC)	2021 Industrial - Other General Industrial Equipment	Aggregate	100 Diesel	0.000985067	0.001191931	0.001418497	0.005820077	0.008955311	0.725379497	0.000817446	0.000752052	6.676948E-06	5.92045E-06	23514.13698	16895.94738	22.49767798	1329260
Orange (SC)	2021 Industrial - Other General Industrial Equipment	Aggregate	175 Diesel	0.000979449	0.001185268	0.001410962	0.010155321	0.016875782	3.868585974	0.000842361	0.000775001	1.724746E-05	1.52468E-05	60607.1161	23071.87543	28.04505063	3425596
Orange (SC)	2021 Industrial - Other General Industrial Equipment	Aggregate	300 Diesel

| | | |

OFFROAD 2022

	Equipment Type	Horsepower HP	Gas				Diesel				Natural Gas			
			Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr
Air Compressors25	Air Compressors	25	167633.95	1147.69	554795.33	0.302153306	8048.25	18.04	14694.8	0.547690855	0	0	0	0
Air Compressors50	Air Compressors	50	51107.3	47.54	22980.4	2.223951715	90706.15	109.07	88797.2	1.021497865	0	0	0	0
Air Compressors75	Air Compressors	75	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors100	Air Compressors	100	279732.35	154.21	74529.35	3.753317988	0	0	0	0	0	0	0	0
Air Compressors175	Air Compressors	175	34113.65	10.36	5018.75	3.837097009	0	0	0	0	0	0	0	0
Air Compressors300	Air Compressors	300	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors600	Air Compressors	600	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors750	Air Compressors	750	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors9999	Air Compressors	9999	0	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts25	Aerial Lifts	25	34253.49	105.53	39606.15	0.864805087	28984.69	158.03	63093.9	0.459383301	52782.65	119.01	44605.05	1.181743891
Aerial Lifts50	Aerial Lifts	50	72138.6	136	45526.45	1.584542612	114923.2766	464.4663277	140563.3895	0.817593392	0	0	0	0
Aerial Lifts75	Aerial Lifts	75	0	0	0	0	141712.9508	407.257405	122300.3001	1.152785412	0	0	0	0
Aerial Lifts100	Aerial Lifts	100	129688.15	126	45526.45	2.848633047	58814.57377	155.4066193	46972.23181	1.252087024	0	0	0	0
Aerial Lifts175	Aerial Lifts	175	0	0	0	0	12255.43601	19.50802415	5894.689864	2.079053749	0	0	0	0
Aerial Lifts300	Aerial Lifts	300	0	0	0	0	71357.75806	109.8115076	33152.43815	2.152294052	0	0	0	0
Aerial Lifts600	Aerial Lifts	600	0	0	0	0	520.0810161	0.219191283	66.60383586	7.808560865	0	0	0	0
Bore/Drill rigs25	Bore/Drill rigs	25	4347.13	26.83	3321.5	1.308791289	3522.25	6.55	5299.8	0.664606951	0	0	0	0
Bore/Drill rigs50	Bore/Drill rigs	50	689.85	2.51	262.8	2.623	3116.601853	7.655787819	2725.003055	1.143705746	0	0	0	0
Bore/Drill rigs75	Bore/Drill rigs	75	0	0	0	0	4858.33933	5.382368535	2664.521077	1.823152666	0	0	0	0
Bore/Drill rigs100	Bore/Drill rigs	100	7873.05	11.48	1237.35	6.362831858	14868.48469	17.48743112	6675.571651	2.137038007	0	0	0	0
Bore/Drill rigs175	Bore/Drill rigs	175	2741.15	2.86	321.2	8.534090909	22746.54998	18.45447801	5841.804123	3.893754431	0	0	0	0
Bore/Drill rigs300	Bore/Drill rigs	300	0	0	0	0	32641.78975	18.77582997	6074.98594	5.373139432	0	0	0	0
Bore/Drill rigs600	Bore/Drill rigs	600	0	0	0	0	54977.42408	15.55333736	5251.989773	10.46752291	0	0	0	0
Bore/Drill rigs750	Bore/Drill rigs	750	0	0	0	0	29757.38077	3.342602368	1772.941246	16.78413245	0	0	0	0
Bore/Drill rigs9999	Bore/Drill rigs	9999	0	0	0	0	17031.11048	0.483529443	352.6734469	48.29164532	0	0	0	0
Cement and Mortar Mixers25	Cement and Mortar Mixers	25	143284.6	4041.67	372175.9	0.384891075	9102.6	91.01	27720.25	0.330268521	0	0	0	0
Cement and Mortar Mixers50	Cement and Mortar Mixers	50	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers75	Cement and Mortar Mixers	75	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers100	Cement and Mortar Mixers	100	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers175	Cement and Mortar Mixers	175	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers300	Cement and Mortar Mixers	300	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers600	Cement and Mortar Mixers	600	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers750	Cement and Mortar Mixers	750	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers9999	Cement and Mortar Mixers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws25	Concrete/Industrial Saws	25	128948.6	568.88	161662.15	0.793931049	298.35	0.65	183.25	0.752380952	0	0	0	0
Concrete/Industrial Saws50	Concrete/Industrial Saws	50	15771.65	9.36	2357.9	3.311885445	2264.75294	4581.7	5.69	1121.5	1.382417582	0	0	0
Concrete/Industrial Saws75	Concrete/Industrial Saws	75	0	0	0	0	54977.42408	15.55333736	5251.989773	10.46752291	0	0	0	0
Concrete/Industrial Saws100	Concrete/Industrial Saws	100	15388.4	5.35	3266.75	4.710614525	0	0	0	0	0	0	0	0
Concrete/Industrial Saws175	Concrete/Industrial Saws	175	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws300	Concrete/Industrial Saws	300	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws600	Concrete/Industrial Saws	600	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws750	Concrete/Industrial Saws	750	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws9999	Concrete/Industrial Saws	9999	0	0	0	0	0	0	0	0	0	0	0	0
Cranes25	Cranes	25	0	0	0	0	60.21120479	0.30363275	145.4461827	0.413975834	0	0	0	0
Cranes50	Cranes	50	2282.2	2.86	1175.3	1.950310559	975.520139	3.238749338	1414.930814	0.689452302	0	0	0	0
Cranes75	Cranes	75	0	0	0	0	391.501185	1.012109168	377.3738794	1.042719463	0	0	0	0
Cranes100	Cranes	100	7825.2	5.69	2357.9	3.318885449	22064.75294	38.05109473	16880.90906	1.307202749	0	0	0	0
Cranes175	Cranes	175	500.05	0.25	102.2	4.892857143	67503.49957	67.71010335	30931.47777	2.182356112	0	0	0	0
Cranes300	Cranes	300	0	0	0	0	116397.0646	75.19971119	35448.51824	3.283552327	0	0	0	0
Cranes600	Cranes	600	0	0	0	0	202644.6743	74.89607844	37132.59542	5.465405898	0	0	0	0
Cranes750	Cranes	750	0	0	0	0	4072.624148	1.012109168	432.2919531	9.421003835	0	0	0	0
Cranes9999	Cranes	9999	0	0	0	0	11211.28373	1.010376669	802.7268126	13.96644487	0	0	0	0
Crawler Tractors25	Crawler Tractors	25	0	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors50	Crawler Tractors	50	0	0	0	0	3159.496078	8.982743298	3065.467515	1.030673786	0	0	0	0
Crawler Tractors75	Crawler Tractors	75	0	0	0	0	340.0479247	1.077925186	218.7713833	1.554352854	0	0	0	0
Crawler Tractors100	Crawler Tractors	100	0	0	0	0	139197.2644	153.2455996	71654.70847	1.942611552	0	0	0	0
Crawler Tractors175	Crawler Tractors	175	0	0	0	0	152245.4399	101.4153711	45985.57316	3.311081734	0	0	0	0
Crawler Tractors300	Crawler Tractors	300	0	0	0	0	159713.5451	78.59900332	35075.45587	4.553427494	0	0	0	0
Crawler Tractors600	Crawler Tractors	600	0	0	0	0	558489.9751	137.5257989	65310.13834	8.551325705	0	0	0	0
Crawler Tractors750	Crawler Tractors	750	0	0	0	0	5791.925828	0.988101756	417.4305764	13.74102893	0	0	0	0
Crawler Tractors9999	Crawler Tractors	9999	0	0	0	0	32209.27762	2.694829717	1491.99521	21.58804254	0	0	0	0
Crushing/Proc. Equipment25	Crushing/Proc. Equipment	25	1908.95	6.72	1841.8	0.983082707	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment50	Crushing/Proc. Equipment	50	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment75	Crushing/Proc. Equipment	75	0	0	0	0	32209.27762	2.694829717	1491.99521	21.58804254	0	0	0	0
Crushing/Proc. Equipment100	Crushing/Proc. Equipment	100	6077.25	3.3	795.7	7.637614679	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment175	Crushing/Proc. Equipment	175	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment300	Crushing/Proc. Equipment	300	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment600	Crushing/Proc. Equipment	600	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment750	Crushing/Proc. Equipment	750	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment9999	Crushing/Proc. Equipment	9999	0	0	0	0	0	0	0	0	0	0	0	0
Dumpers/Tenders25	Dumpers/Tenders	25	13713.65	269.38	4015.55	0.341328249	908.85	3.9	2598.9	0.349715301	0	0	0	0
Dumpers/Tenders100	Dumpers/Tenders	100	642.4	2.02	259.15	2.478872239	0	0	0	0	0	0	0	0
Excavators25	Excavators	25	0	0	0	0	6351.182284	6.310021161	8516.633428	0.745973434	0	0	0	0
Excavators50	Excavators	50	0	0	0	0	126332.2651	219.617213	160707.6388	0.786100562	0	0	0	0
Excavators75	Excavators	75	0	0	0	0	29.77117849	0.090030704	28.48009888	1.045110672	0	0	0	0
Excavators100	Excavators	100	0	0	0	0	163965.5381	158.2324004	102484.2477	1.599099649	0	0	0	0
Excavators175	Excavators	175	0	0	0	0	346075.5468	202.785892	119950.2162	2.885159842	0	0	0	0
Excavators300	Excavators	300	0	0	0	0	441834.6369	175.4237477	102228.4355	4.322026536	0	0	0	0
Excavators600	Excavators	600	0	0	0	0	785787.1276	182.9843602	117646.5698	6.679218349	0	0	0	0
Excavators750	Excavators	750	0	0	0	0	6257.766072	0.990077953	485.8169755	12.88078924	0	0	0	0
Excavators9999	Excavators	9999	0	0	0	0	21816.62454	1.350105806	916.4204661	23.80634861	0	0	0	0
Forklifts25	Forklifts	25	1488.2	2.41	2175.4	0.684563758	37.19250402	0.238513205	64.31811466	0.578259404	1397.36	1.34	1427.15	0.979539642
Forklifts50	Forklifts	50	1204875.05	421.44	757608.6	1.590367308	81119.34249	227.6085075	161153.3883	0.503167278	1859700.55	773.21	1193018.85	1.335014653
Forklifts75	Forklifts	75	0	0	0	0	7154.515821	19.73295894	9401.761375	0.760814267	0	0	0	0
Forklifts100	Forklifts	100	5602664.15	1491.01	2663700.65	2.103330995	1207823.409	1917.420587	1221654.281	0.988504871	1163844.8	2713.81	488900.88	2.380498819
Forklifts175	Forklifts	175	3925582.2	54.49	97330.9	4.033150829	356709.6555	354.7995713	224476.4844	1.589073801	873503.4	99.31	178912.05	4.882306139
Forklifts300	Forklifts	300	0	0	0	0	68758.75154	43.31908327	30408.11878	2.261139715	0	0	0	0
Forklifts600	Forklifts	600	0	0	0	0	17847.77166	6.884339954	4583.870898	3.893602398	0	0	0	0
Forklifts750	Forklifts	750	0	0	0	0	292.2767691	0.104266602	22.51139421	12.98535479	0	0	0	0
Forklifts9999	Forklifts	9999	0	0	0	0	1282.61337	0.177947269	140.260294	9.144522179	0	0	0	0
Generator Sets25	Generator Sets	25	2432221.3	30144.48	3467543.4	0.702234971	210652.45	1026.37	3466723	0.607791656	0	0	0	0
Generator Sets50	Generator Sets	50	3088758.05	1564.81	179728.65	2.218224865	240966.15	529.5	178733.2	1.3978306	0	0	0	0
Generator Sets75	Generator Sets	75	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets100	Generator Sets	100	1802777.07	302.21	34771.5	5.193585699	0	0	0	0	16169.3	22.47	2587.85	6.248236951
Generator Sets175	Generator Sets	175	39466.45	28.97	3274.05	0	0	0	0	0	23378.25	18.83	2146.2	10.89385719
Generator Sets300	Generator Sets	300	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets600	Generator Sets	600	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets750	Generator Sets	750	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets9999	Generator Sets	9999	0	0	0	0	0	0	0	0	0	0	0	0
Graders25	Graders	25	0	0	0	0	24.28796138	0.180896688	41.32900401	0.587673523	0	0	0	0
Graders50	Graders	50	0	0	0	0	811.3642839	2.623001981	924.4264972	0.877694751	0	0	0	0
Graders75	Graders	75	0	0	0	0	349.9958398	0.723587533	230.3058749	1.519699966	0	0	0	0
Graders100	Graders	100	0	0	0	0	18589.10759	26.59118318	9953.479581	1.867609512	0	0	0	0
Graders175	Graders	175	0	0	0	0	211371.1849	142.184799	67082.75915	3.150901756	0	0	0	0
Graders300	Graders	300	0	0	0	0	445778.266	128.255752	97387.56179	4.577363434	0	0	0	0
Graders600	Graders	600	0	0	0	0	19150.51529	3.945387734	2564.671346	7.47055381	0	0	0	0
Graders750	Graders	750	0	0	0	0	0	0	0	0	0	0	0	0
Graders9999	Graders	9999	0	0	0	0	15130.0397	0.542690665	395.5185684	38.25367684	0	0	0	0
Pavers25	Pavers	25	11709.2	26.36	10398.85	1.126009138	1708.2	2.46	2011.15	0.849364791	0	0	0	0
Pavers50	Pavers	50	7851.1	8.04	3168.2	2.320276498	3465.346153	10.54036198	3740.025888	0.926554729	0	0	0	0
Pavers75	Pavers	75	0	0	0	0	5291.464722	10.18901699	3444.926678	1.536599872	0	0	0	0
Pavers100	Pavers	100	6624.75	4.42	1752	3.78125	28136.76446	40.75606636	16202.19671	1.73672527	0	0	0	0
Pavers175	Pavers	175	0	0	0	0	45750.47014	34.87100391	13453.83888	3.399534858	0	0	0	0
Pavers300	Pavers	300	0	0	0	0	35727.38521	16.77674283	7547.479404	4.733763859	0	0	0	0
Pavers600	Pavers	600	0	0	0	0	6497.624543	1.844563348	802.7098542	8.094611857	0	0	0	0
Pavers750	Pavers	750	0	0	0	0	1340.274805	0.1756727	83.18080864	16.11278884	0	0	0	0
Pavers9999	Pavers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment25	Paving Equipment	25	2492835.05	2873.46	543579.9	0.456575047	2031.05	4.26	3518.6	0.57780083	0	0	0	0
Paving Equipment50	Paving Equipment	50	86717.65	22.09	3869	2.227358491	4334.534682	12.97887413	6114.926931	0.709574301	0	0	0	0
Paving Equipment75	Paving Equipment	75	0	0	0	0	6673.903597	1.315456943	527.2331512	1.267238472	0	0	0	0
Paving Equipment100	Paving Equipment	100	3566.05	5.7	1000.1	3.565893431	17939.87675	21.76537084	10955.80515	1.63687917	0	0	0	0
Paving Equipment175	Paving Equipment	175	0	0	0	0	19447.16872	15.87281228	7305.635168	2.663948054	0	0	0	0
Paving Equipment300	Paving Equipment	300	0	0	0	0	13051.84187	6.577132152	3078.049915	4.240295716	0	0	0	0
Paving Equipment600	Paving Equipment	600	0	0	0	0	13978.52	4.121669482	1917.795709	7.288844119	0	0	0	0
Paving Equipment750	Paving Equipment	750	0	0	0	0	2790.148525	0.438475473	237.2200156	11.76173319	0	0	0	0
Paving Equipment9999	Paving Equipment	9999	0	0	0	0	1266.198072	0.175390191	81.74473551	15.4896559	0	0	0	0
Rollers25	Rollers	25	57863.45	310.9	77431.3	0.747289526	37281.3	140.21	97520.7	0.382289855	0	0	0	0
Rollers50	Rollers	50	9537.45	5.49	3540.5	2.693814433	71057.52888	266.3534365	92234.33319	0.770402153	0	0	0	0
Rollers75	Rollers	75	0	0	0	0	788.384339	2.529835544	582.1589232	1.354375722	0	0	0	0
Rollers100	Rollers	100	30057.75	10.71	6650.3	4.519758507	110403.8019	196.4221069	65178.34989	1.693873452	0	0	0	0
Rollers175	Rollers	175	0	0	0	0	114918.1064	114.9259853	41221.15578	2.787863899	0	0	0	0
Rollers300	Rollers	300	0	0	0	0	19032.65139	14.72714049	4534.876213	4.19659354	0	0	0	0
Rollers600	Rollers	600	0	0	0	0	11155.26713	5.330682753	1637.129741	6.813917582	0	0	0	0
Rollers750	Rollers	750	0	0	0	0	0	0	0	0	0	0	0	0
Rollers9999	Rollers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts25	Rough Terrain Forklifts	25	0	0	0	0	37.19250402	0.208533203	64.31811466	0.578259404	0	0	0	0
Rough Terrain Forklifts50	Rough Terrain Forklifts	50	1551.25	1.16	470.85	3.294573643	3581.367762	11.88639257	3245.920852	1.103552232	0	0	0	0
Rough Terrain Forklifts75	Rough Terrain Forklifts	75	0	0	0	0	98.75678509	0.312799805	71.58307945	1.379598059	0	0	0	0
Rough Terrain Forklifts100	Rough Terrain Forklifts	100	34028.95	16.17	6675.85	5.09732094	280018.3693	500.0626208	141279.2646	2.003574763	0	0	0	0
Rough Terrain Forklifts175	Rough Terrain Forklifts	175	1919.9	0.59	226.3	8.483870968	62268.944	87.16687886	23883.93633	2.606310079	0	0	0	0
Rough Terrain Forklifts300	Rough Terrain Forklifts	300	0	0	0	0	4568.721067	4.170864586	1044.931148	4.372269815	0	0	0	0
Rough Terrain Forklifts600	Rough Terrain Forklifts	600	0	0	0	0	1698.57999	0.834132812	213.4408545	7.958082784	0	0	0	0
Rough Terrain Forklifts750	Rough Terrain Forklifts	750	0	0	0	0	292.2767691	0.104266602	22.51139421	12.98535479	0	0	0	0
Rough Terrain Forklifts9999	Rough Terrain Forklifts	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers25	Rubber Tired Dozers	25	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers50	Rubber Tired Dozers	50	0	0	0	0	3156.550183	3.524360672	3348.166016	0.942769907	0	0	0	0
Rubber Tired Dozers75	Rubber Tired Dozers	75	0	0	0	0	9173.365989	3.008600574	2254.761076	1.407406762	0	0	0	0
Rubber Tired Dozers100	Rubber Tired Dozers	100	0	0	0	0	19368.02955	6.704861278	5785.079445	1.746164215	0	0	0	0
Rubber Tired Dozers175	Rubber Tired Dozers	175	0	0	0	0	14177.14488	6.18912118	4863.614505	2.914940088	0	0	0	0
Rubber Tired Dozers300	Rubber Tired Dozers	300	0	0	0	0	15328.6817	4.813760918	3377.722826	4.538146694	0	0	0	0
Rubber Tired Dozers600	Rubber Tired Dozers	600	0	0	0	0	159494.3314	28.88256552	20986.30511	7.599924362	0	0	0	0
Rubber Tired Dozers750	Rubber Tired Dozers	750	0	0	0	0	4580.088719	0.943840884	342.8980788	13.28852472	0	0	0	0
Rubber Tired Dozers9999	Rubber Tired Dozers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Scrapers25	Scrapers	25	0	0	0	0	25.26813835	0.088587831	36.43098372	0.693581941	0	0	0	0
Scrapers50	Scrapers	50	0	0	0	0	201.1150016	0.53152898	190.3518896	1.056543216	0	0	0	0
Scrapers75	Scrapers	75	0	0	0	0	1774.784555	2.391871449	1048.200359	1.693173008	0	0	0	0
Scrapers100	Scrapers	100	0	0	0	0	7998.845544	5.846796869	3536.132956	2.262031333	0	0	0	0
Scrapers175	Scrapers	175	0	0	0	0	107911.2977	57.67067821	25758.22945	4.189302092	0	0	0	0
Scrapers300	Scrapers	300	0	0	0	0	127186.3558	56.34180274	22881.69366	5.558432178	0	0	0	0
Scrapers600	Scrapers	600	0	0	0	0	1576095.151	310.9432881	149323.7209	10.55488801	0	0	0	0
Scrapers750	Scrapers	750	0	0	0	0	24216.2523	4.252215805	1552.769484	15.59552369	0	0	0	0
Scrapers9999	Scrapers	9999	0	0	0	0	36421.28466	2.301268151	914.215297	39.83893498	0	0	0	0
Skid Steer Loaders25	Skid Steer Loaders	25	1884861	542.92	173345.8	1.093110419	16456115	313.68	261847.3	0.62770599	0	0	0	0
Skid Steer Loaders50	Skid Steer Loaders	50	45988.1	77.62	24088.35	1.90847098	53781.57867	184.4830021	58385.85221	0.925858059	0	0	0	0
Skid Steer Loaders75	Skid Steer Loaders	75	0	0	0	0	28170.2383	586.4575308	209449.5565	0.134492974	0	0	0	0
Skid Steer Loaders100	Skid Steer Loaders	100	81495.2	46.41	14408.55	4.268583689	4104.330828	8.872031485	2874.844134	1.427656976	0	0	0	0
Skid Steer Loaders175	Skid Steer Loaders	175	0	0	0	0	1929.883059	2.469529523	666.8092047	2.894205791	0	0	0	0
Skid Steer Loaders300	Skid Steer Loaders	300	0	0	0	0	1793.450365	1.554888953	458.8884494	3.908249166	0	0	0	0
Skid Steer Loaders600	Skid Steer Loaders	600	0	0	0	0	518.4920865	0.182938115	57.46553786	9.022631316	0	0	0	0
Skid Steer Loaders750	Skid Steer Loaders	750	0	0	0	0	31353.5	46.03	43945.09	0.721668807	0	0	0	0
Skid Steer Loaders9999	Skid Steer Loaders	9999	0	0	0	0	701.8505483	0.182938115	36.88242702	19.02940227	0	0	0	0
Surfacing Equipment25	Surfacing Equipment	25	121242.05	775.51	331792.3	0.365415502	0	0	0	0	0	0	0	0
Surfacing Equipment50	Surfacing Equipment	50	0	0	0	0	498.4763	0.236095449	283.2006773	0.631823813	0	0	0	0
Surfacing Equipment75	Surfacing Equipment	75	0	0	0	0	300.5714477	1.161675289	288.9122873	1.040353379	0	0	0	0
Surfacing Equipment100	Surfacing Equipment	100	0	0	0	0	3083.865457	7.965773412	2211.10788	1.394724154	0	0	0	0
Surfacing Equipment175	Surfacing Equipment	175	0	0	0	0	2531.466019	4.729677963	1175.276142	2.153963955	0	0	0	0
Surfacing Equipment300	Surfacing Equipment	300	0	0	0	0	5133.168998	5.891353253	1450.050088	3.539971674	0	0	0	0
Surfacing Equipment600	Surfacing Equipment	600	0	0	0	0	18000.6493	9.791283153	2801.738757	6.424834497	0	0	0	0
Surfacing Equipment750	Surfacing Equipment	750	0	0	0	0

Orange (SC)	2022 Agricultural - Combine Harvesters	Aggregate	300 Diesel	0.000100351	0.000121425	0.000144505	0.000440086	0.001305416	0.026761796	4.830650-05	4.444190-05	2.460756-07	2.198910-07	6200.407915	1141.761521	3.030036909	2643167.8
Orange (SC)	2022 Agricultural - Combine Harvesters	Aggregate	600 Diesel	1.77626-05	2.150832-05	2.560128-05	0.000126335	0.000214812	0.008084752	8.993916-06	8.273836-06	7.47285-08	6.642938-08	1873.146358	234.4779471	0.515278481	77430.09
Orange (SC)	2022 Agricultural - Construction Equipment	Aggregate	50 Diesel	0.000161656	0.000195604	0.000232785	0.00057834	0.000537475	0.007956603	5.440020-05	4.176820-05	6.920658-08	6.537636-08	1843.455569	1782.992172	4.596367142	790351.1
Orange (SC)	2022 Agricultural - Construction Equipment	Aggregate	75 Diesel	0.00011151	0.000137447	0.000163493	0.00060274	0.000942799	0.012924983	8.756535-05	6.216616-05	1.168946-07	1.061958-07	2994.561557	2026.396304	1.525806136	1278686.8
Orange (SC)	2022 Agricultural - Construction Equipment	Aggregate	100 Diesel	0.000225684	0.000278077	0.000329984	0.001425147	0.00182476	0.031106033	0.000149864	0.000137691	2.846116-07	2.57228-07	7253.256609	3685.367834	7.623954916	3106605.5
Orange (SC)	2022 Agricultural - Construction Equipment	Aggregate	175 Diesel	0.000425485	0.000524755	0.000621577	0.003057257	0.003867608	0.06763504	0.000329394	0.000211778	6.167526-07	5.557318-07	15670.27985	6110.447118	9.982879436	7481029.9
Orange (SC)	2022 Agricultural - Construction Equipment	Aggregate	300 Diesel	0.000329257	0.000281358	0.000334839	0.000918853	0.000541565	0.004503223	0.000307731	9.91126E-05	1.420786-07	1.699384-07	10431.37591	2519.559453	4.529387959	4954666.8
Orange (SC)	2022 Agricultural - Construction Equipment	Aggregate	600 Diesel	2.63266E-05	3.18552E-05	3.79103E-05	0.000118802	0.000257307	0.004352844	1.10895-05	1.020195-05	3.972431-08	3.57656E-08	1008.505131	137.4173688	0.155617988	68505.53
Orange (SC)	2022 Agricultural - Cotton Pickers	Aggregate	100 Diesel	2.62431E-05	3.17541E-05	3.779E-05	3.3909E-05	2.82884E-05	0.000836993	2.114916-06	1.945726-06	7.711065-09	6.876775-09	191.9085474	33.30542515	0.184098105	7497.488
Orange (SC)	2022 Agricultural - Cotton Pickers	Aggregate	175 Diesel	7.50943E-06	9.08641E-06	1.08136E-05	0.000102843	8.45691E-05	0.002615104	4.783826-06	4.401116-06	2.411486-08	2.148736-08	6205.8901449	210.2594503	0.455974338	25744.21
Orange (SC)	2022 Agricultural - Cotton Pickers	Aggregate	300 Diesel	8.25968E-06	9.99422E-06	1.18937E-05	4.56357E-05	0.000100266	0.003655924	0.000109262	3.744816-06	3.088575-08	2.757436-08	777.5298403	135.3197654	2.93364683	33420
Orange (SC)	2022 Agricultural - Cotton Pickers	Aggregate	600 Diesel	1.40284E-05	1.69744E-05	2.0201E-05	7.88892E-05	0.000175711	0.005867927	7.007166-06	6.446596-06	5.414946-08	4.821455-08	1359.512872	180.0590954	6.391002369	58324.96
Orange (SC)	2022 Agricultural - Forage & Silage Harvesters	Aggregate	100 Diesel	7.05096E-07	8.5316TE-07	1.01549E-06	4.44836E-06	6.05924E-06	0.000101753	4.873889E-07	4.483868-07	9.259151-10	8.360855-10	23.57504356	11.39413408	0.031142002	911.5308
Orange (SC)	2022 Agricultural - Forage & Silage Harvesters	Aggregate	175 Diesel	2.24563E-07	7.55732E-07	8.9937E-07	2.52406E-06	8.19118E-06	0.000146027	2.969116-07	2.732496-07	1.948795-09	1.707225-09	34.04144362	6.651172424	0.018372004	1483.258
Orange (SC)	2022 Agricultural - Forage & Silage Harvesters	Aggregate	600 Diesel	5.54006E-06	6.70347E-06	7.97769E-06	3.11994E-05	7.03979E-05	0.001863205	2.748795-06	2.528886-06	1.716726-08	1.530186-08	431.4753614	43.92498771	0.108336135	18735.74
Orange (SC)	2022 Agricultural - Forage & Silage Harvesters	Aggregate	750 Diesel	6.57652E-06	7.95732E-06	9.47013E-06	3.70413E-05	8.35810E-05	0.002210666	3.263814-06	3.003116-06	2.036587-08	1.816226-08	512.2844955	61.58552423	0.128633121	22241.83
Orange (SC)	2022 Agricultural - Forage & Silage Harvesters	Aggregate	9999 Diesel	5.47717E-06	6.62738E-06	7.8871E-06	3.8152E-05	0.000121839	0.002405124	2.870198-06	2.640586-06	2.122148-08	1.97626E-08	557.3402711	87.85203676	0.060950501	23952.75
Orange (SC)	2022 Agricultural - Forklifts	Aggregate	50 Diesel	1.36715E-05	1.65429E-05	1.96869E-05	5.57721E-05	5.21432E-05	0.000815372	1.927388-06	1.813198-06	1.738218-09	1.592464-09	188.9932335	81.65641	0.040938004	16086.28
Orange (SC)	2022 Agricultural - Forklifts	Aggregate	75 Diesel	1.11721E-06	1.35182E-06	1.60878E-06	6.31099E-06	9.17256E-06	0.00013156	6.467688-07	5.950268-07	1.190988-09	1.08098E-09	30.48016959	20.11382597	0.023906824	1307.399
Orange (SC)	2022 Agricultural - Forklifts	Aggregate	100 Diesel	4.35497E-06	5.26842E-06	6.26988E-06	2.50822E-06	3.29915E-06	5.22868E-05	2.731966-07	2.513467-07	4.735988-10	4.2962E-10	12.14226997	8.704608717	0.027968842	519.6072
Orange (SC)	2022 Agricultural - Hay Squeeze/Stack retriever	Aggregate	75 Diesel	6.77968E-07	8.19254E-07	9.7486E-07	1.00237E-06	4.91028E-06	5.82705E-05	4.093407-07	3.766087-07	5.220425-10	4.79788-10	13.50063138	3.898379976	0.015009875	551.4864
Orange (SC)	2022 Agricultural - Hay Squeeze/Stack retriever	Aggregate	100 Diesel	1.46667E-06	1.77467E-06	2.11201E-06	5.53619E-06	1.04158E-05	0.000126856	9.25687E-07	8.516326-07	1.136718-09	1.04232E-09	29.39104851	15.49180305	0.026216863	1200.615
Orange (SC)	2022 Agricultural - Hay Squeeze/Stack retriever	Aggregate	175 Diesel	1.90946E-06	2.31049E-06	2.74961E-06	1.00001E-05	2.00557E-05	0.002103576	1.804969-06	2.421E-06	1.917475-09	1.758785-09	49.61210919	169.249416	0.285996419	20785.21
Orange (SC)	2022 Agricultural - Hay Squeeze/Stack retriever	Aggregate	300 Diesel	4.14634E-06	5.01707E-06	5.97072E-06	2.00142893	0.000433858	0.005525901	1.868576-05	1.719086-05	5.018858-08	4.540426-08	1280.290341	244.7662497	0.412369539	58045.84
Orange (SC)	2022 Agricultural - Hay Squeeze/Stack retriever	Aggregate	600 Diesel	9.76193E-06	1.18119E-05	1.40596E-05	5.05116E-05	0.000943488	0.011001685	3.942486-05	3.625196-05	1.181198-07	1.068737-07	3015.487157	466.0029121	0.978207582	137486.31
Orange (SC)	2022 Agricultural - Nut Harvester	Aggregate	50 Diesel	3.08256E-05	3.7299E-05	4.43888E-05	0.000327444	0.000401669	0.007892691	1.395446-05	1.283886-05	7.253656-08	6.485126-08	1828.647938	1768.760761	4.56307203	78940.9
Orange (SC)	2022 Agricultural - Nut Harvester	Aggregate	75 Diesel	1.82868E-05	2.21272E-05	2.63332E-05	0.00029559	0.000290522	0.007593883	1.134698-05	1.043916-05	7.031464-08	6.239598-08	1759.414585	1049.308319	2.666814025	685805
Orange (SC)	2022 Agricultural - Nut Harvester	Aggregate	100 Diesel	3.84682E-05	4.65611E-05	5.54039E-05	0.000515858	0.000317192	0.005650758	1.024727268	3.481311E-06	2.377786-07	2.109398-07	5947.976392	3812.482886	4.995964873	2131821.1
Orange (SC)	2022 Agricultural - Nut Harvester	Aggregate	175 Diesel	5.04155E-05	6.10027E-05	7.25983E-05	0.000930184	0.000590019	0.02412612	3.311376-05	3.046466-05	2.230426-07	1.982358-07	5589.751184	1896.734794	3.856284562	2345117
Orange (SC)	2022 Agricultural - Nut Harvester	Aggregate	300 Diesel	2.55122E-05	3.08698E-05	3.67376E-05	1.75928E-05	0.000102911	0.000300012	1.305161-06	1.200886-06	1.134726-08	1.008178-08	284.2844955	61.58552423	0.133715865	13035.83
Orange (SC)	2022 Agricultural - Nut Harvester	Aggregate	600 Diesel	1.38306E-05	2.3995E-05	2.85561E-05	0.000157643	0.000255302	0.021322771	1.08526-05	9.983826-06	1.140998-07	1.012516-07	285.047802	377.6095239	0.381933646	122723.1
Orange (SC)	2022 Agricultural - Nut Harvester	Aggregate	750 Diesel	1.40202E-05	1.69723E-05	2.01925E-05	8.67495E-05	0.000178604	0.003344931	2.542023E-06	2.185286-06	1.309278-08	1.1605E-08	311.65451	319.4168719	0.349088304	112648.25
Orange (SC)	2022 Agricultural - Other Harvesters	Aggregate	75 Diesel	2.29448E-05	2.77632E-05	3.30405E-05	0.000211447	0.000214183	0.004713138	1.278388-05	1.176116-05	4.317926-08	3.872E-08	1091.981128	633.9314566	0.452313074	425389.68
Orange (SC)	2022 Agricultural - Other Harvesters	Aggregate	100 Diesel	1.87968E-05	8.32441E-05	9.90674E-05	0.000600382	0.000533155	0.01123393	4.681575-05	4.307016-05	1.211112-07	1.08738E-07	3066.148458	1385.092466	1.155922459	1086213.9
Orange (SC)	2022 Agricultural - Other Harvesters	Aggregate	175 Diesel	4.26268E-05	5.29275E-05	7.11186E-05	0.000613001	0.000462098	0.010892977	2.746116-05	2.526E-05	7.742436-08	2.011957E-08	5675.171885	0.998951396	0.882294	829.77
Orange (SC)	2022 Agricultural - Other Harvesters	Aggregate	300 Diesel	4.27391E-05	5.17143E-05	8.15443E-05	0.000169737	0.000466081	0.009503561	1.910745-05	1.757886-05	8.717238-08	7.808731E-08	2201.869338	439.2955976	0.645530156	93949.65
Orange (SC)	2022 Agricultural - Other Harvesters	Aggregate	600 Diesel	1.56679E-05	1.89535E-05	2.25616E-05	7.88719E-05	0.000168231	0.004422986	7.747414-06	6.988E-06	1.138676-08	1.81228E-08	7511.001744	38.94415459	0.146099214	34385.31
Orange (SC)	2022 Agricultural - Others	Aggregate	50 Diesel	1.17357E-05	1.42002E-05	1.68994E-05	4.92706E-05	4.77036E-05	0.000755921	1.437258-06	1.194776-06	6.683758-09	6.21118E-09	175.1403565	166.3966178	0.318053469	7512.148
Orange (SC)	2022 Agricultural - Others	Aggregate	75 Diesel	2.15905E-06	2.61053E-06	3.15436E-06	1.40556E-05	1.94249E-05	0.000301686	1.339556-06	1.233557-06	2.885381-09	2.56103E-09	72.21423328	47.652861	0.080157702	3027.424
Orange (SC)	2022 Agricultural - Others	Aggregate	100 Diesel	8.89074E-06	1.07578E-05	1.28227E-05	5.78147E-05	7.29968E-05	0.001281901	5.881635-06	5.41116-06	1.166468-08	1.05329E-08	297.0020886	146.3103343	0.293575566	12739.06
Orange (SC)	2022 Agricultural - Others	Aggregate	175 Diesel	2.50126E-05	3.02652E-05	3.60318E-05	0.000189548	0.000247801	0.004404275	1.939468-05	1.287516-05	4.022578-08	1.63794E-08	1020.020451	381.4776917	0.772468141	68187.77
Orange (SC)	2022 Agricultural - Others	Aggregate	300 Diesel	2.85134E-05	3.4504E-05	4.10705E-05	0.000158658	0.000317192	0.005760038	1.348516-05	1.223E-05	4.797738-08	1.93526E-08	1206.492884	492.6206884	0.987975126	83972.21
Orange (SC)	2022 Agricultural - Others	Aggregate	600 Diesel	0.00013005	0.00015736	0.000187271	0.000793567	0.001486773	0.029173195	6.222127E-05	5.724393E-05	2.67638-07	2.39706E-07	6759.148349	862.6507093	1.747248232	323382.7
Orange (SC)	2022 Agricultural - Sprayers/Spray rigs	Aggregate	50 Diesel	2.82122E-06	3.4145E-06	4.05402E-06	1.67376E-05	1.75928E-05	0.000309912	1.031732E-06	1.305101E-06	1.424747-08	4.02152E-09	401.512441	416.2736679	0.780728625	16364.37
Orange (SC)	2022 Agricultural - Sprayers/Spray rigs	Aggregate	75 Diesel	7.94667E-06	9.61547E-06	1.14432E-05	4.85274E-05	6.93698E-05	0.001065761	4.781644E-06	4.398393E-06	9.681244-09	8.75699E-09	246.9262369	167.2823024	0.302979706	10083.83
Orange (SC)	2022 Agricultural - Sprayers/Spray rigs	Aggregate	100 Diesel	1.79541E-05	2.17264E-05	2.58538E-05	0.000111329	0.000145258	0.002442001	1.168815E-06	1.075E-06	2.219038-08	7.56E-09	565.7842368	263.7631261	0.468362664	23178.11
Orange (SC)	2022 Agricultural - Sprayers/Spray rigs	Aggregate	175 Diesel	2.97052E-05	3.59433E-05	4.27755E-05	0.000218366	0.000204778	0.005022685	1.650945-05	1.518876-05	4.585756-08	4.12694E-08	1163.699737	432.3116241	0.773221198	51863.87
Orange (SC)	2022 Agricultural - Sprayers/Spray rigs	Aggregate	300 Diesel	1.29963E-05	1.57255E-05	1.87147E-05	5.42403E-05	0.000146429	0.002542	6.300899E-06	5.796086-06	2.345598-08	2.10514E-08	593.5865716	122.9508791	0.224423392	26810.09
Orange (SC)	2022 Agricultural - Sprayers/Spray rigs	Aggregate	600 Diesel	3.94783E-05	4.7760E-05	5.68615E-05	2.51275E-05	0.000137509	4.51103E-05	8.471286-06	7.796576-06	6.960526-10	6.40626E-10	0.627011331	0.270895942	0.000482519	891.1265
Orange (SC)	2022 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	50 Diesel	4.39352E-06	5.31615E-06	6.32666E-06	3.23649E-05	3.64428E-05	0.000661246	1.687266-06	1.552286-06	6.022746-09	5.43322E-09	153.2031634	125.7205363	0.287952503	5579.103
Orange (SC)	2022 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	75 Diesel	1.31438E-05	1.59067E-05	1.89357E-05	0.000134658	0.000151578	0.002722506	7.019404E-06	6.45826E-06	1.226-07	1.07932E-07	426.9896354	517.8796344	0.895170397	15466.18
Orange (SC)	2022 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	100 Diesel	2.80114E-05	3.38938E-05	4.03165E-05	0.000286489	0.000290145	0.00897	2.172E-05	1.998E-05	8.273558-08	7.37802E-08	2080.426284	882.7237833	1.903762628	75691.31
Orange (SC)	2022 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	175 Diesel	4.27411E-05	5.17229E-05	6.15153E-05	0.000437203	0.000198218	0.000430707	0.000027454	8.466666-07	1.410332-07	1.16574E-07	3284.440	880.640359	1.880243159	74099.5
Orange (SC)	2022 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	300 Diesel	5.15224E-06	6.23421E-06	7.41923E-06	3.01785E-05	6.25478E-05	0.002167142	2.515599E-06	2.314346-06	2.001618-08	1.78066E-08	502.1024286	96.64603617	0.201389176	19883.14
Orange (SC)	2022 AirGrSprp - A/C Tug Narrow Body	Aggregate	50 Diesel	7.5149E-08	9.09308E-08	1.08215E-05	2.69842E-05	0.000169841	0.011344766	4.380656-06	4.03026E-06	1.22229E-07	1.08102E-07	428.711928	24.59657805	0.111695478	15495.84
Orange (SC)	2022 AirGrSprp - Baggage Tug	Aggregate	25 Diesel														
Orange (SC)	2022 AirGrSprp - Baggage Tug	Aggregate	50 Diesel	4.18878E-05	5.06842E-05	6.03184E-05	0.000224392	0.000176942	0.002908048	1.688166-05	1.551265-05	1.932498-07	1.706493E-07	678.3385976	711.9614092	0.984235286	31982.49
Orange (SC)	2022 AirGrSprp - Baggage Tug	Aggregate	75 Diesel	5.74144E-05	6.94715E-05	8.26758E-05	0.000307511	0.000242514	0.003989117	2.314564E-05	2.126452E-05	1.223117-06	4856.357522	3629.453181	5.198781256	2545471
Orange (SC)	2022 AirGrSprp - Baggage Tug	Aggregate	100 Diesel	5.33467E-05	6.45495E-05	7.68192E-05	0.000327041	0.000767212	0.015043198	2.421855-05	2.225994-05	1.389238-06	1.22782E-06	4880.639349	3860.877703	13.93694145	256114.1
Orange (SC)	2022 AirGrSprp - Baggage Tug	Aggregate	175 Diesel	1.22316E-07	1.48046E-07	1.76155E-07	7.23455E-06	3.74969E-07	0.000136643	2.352446-08	2.164258-08	1.362978-08	1.1252E-08	44.33248304	18.58957868	0.035239004	2328.602
Orange (SC)	2022 AirGrSprp - Baggage Tug	Aggregate	300 Diesel	5.34037E-06	6.46185E-06	7.69013E-06	1.809E-05	0.000112905	0.007870666	2.927766-06	2.693546-06	7.2608E-08	6.42393E-08	255.3551023	74.35831438	0.100947209	13384.5
Orange (SC)	2022 AirGrSprp - Belt Loader	Aggregate	25 Diesel	7.0927E-06	8.58221E-06	1.02135E-05	2.24073E-06	2.14479E-06	0.000451396	7.104076-09	6.535756-09	4.171256-09	3.68623E-09	14.64594321	30.37433301	0.053849456	7593.853
Orange (SC)	2022 AirGrSprp - Belt Loader	Aggregate	50 Diesel	2.28378E-05	2.76318E-05	3.28893E-05	7.21614E-06	9.80169E-05	0.012973114	7.622976-05	7.013136-06	1.339138-07	1.15832E-07	420.8985417	870.8021616	0.913657644	21829.96
Orange (SC)	2022 AirGrSprp - Belt Loader	Aggregate	75 Diesel	6.16323E-05	7.45752E-05	8.87505E-05	0.000553677	0.000703315	0.078169867	5.030285-05	4.627862-05	7.2087E-07	6.38012E-07	2536.135256	2323.636475	4.509342565	146191.7
Orange (SC)	2022 AirGrSprp - Belt Loader	Aggregate	100 Diesel	5.29666E-05	6.4088E-05	7.62712E-05	0.000575261	0.000575261	0.012732506	4.43950E-05	4.052146-05	6.825454E-07	6.02705E-07	2346.059875	1577.226869	3.109464658	135353.5
Orange (SC)	2022 AirGrSprp - Belt Loader	Aggregate	175 Diesel	2.05923E-06	2.49166E-06	2.96529E-06	2.29816E-06	2.14466E-05	0.004806583	1.44663E-06	1.33209E-06	4.487728-08	1.96710E-08	157.6979891	67.23890811	0.147364136	9090.882
Orange (SC)	2022 AirGrSprp - Belt Loader	Aggregate	300 Diesel	1.01514E-05	1.22849E-05	1.46175E-05	6.14452E-05	1.18507E-05	0.004279509	5.389795E-06	5.048E-07	2.149826-07	1.84672E-08	1.84672E-08	30.37433301	0.053849456	3318.637
Orange (SC)	2022 AirGrSprp - Belt Loader	Aggregate	600 Diesel	2.79529E-07	3.382E-07	4.02522E-07	6.49749E-06	1.80277E-06	0.001864919	6.066738-08	5.581398-08	3.41538-08	3.01574E-08	119.8775755	15.1871665	0.029472827	6910.161
Orange (SC)	2022 AirGrSprp - Belt Loader	Aggregate	750 Diesel	1.7727E-06	4.56497E-06	5.41269E-06	5.82089E-05	5.03634E-05	0.002166956	7.562401E-06	2.357424E-06	1.992414E-08	1.76864E-08	70.30446618	45.96402092	0.029472827	4056.401
Orange (SC)	2022 AirGrSprp - Bobtail	Aggregate	50 Diesel	1.68961E-07	1.94205E-07	2.31726E-07	1.13183E-06	1.90765E-06	0.000459711	1.438464E-07	1.2731E-07	2.424538-07	2.15427E-07	84.83483404	28.12756309	0.050079705	7011.895
Orange (SC)	2022 AirGrSprp - Bobtail	Aggregate	75 Diesel	2.20794E-06	2.67168E-06	3.17943E-06	1.99339E-05	1.66464E-05	0.002090511	6.361916E-07	5.852952E-07	2.675045E-08	2.367360E-08	94.10387528	97.74695485	0.242717401	4437.207
Orange (SC)	2022 AirGrSprp - Bobtail	Aggregate	100 Diesel	4.61064E-07	5.57888E-07	6.63913E-07	3.22813E-06	2.24073E-06	0.000122402	8.768317E-08	8.142436-08	1.29E-08	1.12978E-08	45.99901197	18.12756309	0.030675535	2081.44
Orange (SC)	2022 AirGrSprp - Bobtail	Aggregate	175 Diesel	1.61052E-06	1.94872E-06	2.31914E-06	1.66499E-05	2.83795E-05	0.005040338	1.316176-06	1.210886-06	5.209946-08	4.60357E-08	182.9944383	112.5102556	0.242717401	9591.499
Orange (SC)	2022 AirGrSprp - Bobtail	Aggregate	300 Diesel	5.10508E-06	6.17714E-06	7.35101E-06	5.82171E-05	1.03158E-05	0.009005313	3.630795E-06	3.341386-06	8.311658-08	7.34033E-08	291.2003951	1.38E+03	0.399539196	1317.1
Orange (SC)	2022 AirGrSprp - Bobtail	Aggregate	600 Diesel	1.3507E-05	1.63435E-05	1.94501E-05	0.000116337	0.000160356	0.049250177	6.755925E-06	6.215456-06	4.549376-07	4.01973E-07	1597.86776	407.1481578	0.910190252	83753
Orange (SC)	2022 AirGrSprp - Cargo Loader	Aggregate	25 Diesel	1.10068E-06	1.33183E-06	1.58499E-06	1.13677E-05	1.26993E-05	0.001924451	6.600094E-07	6.072904E-07	1.775958-08	1.57072E-08	62.43690135	139.0966712	0.270167583	3242.417
Orange (SC)	2022 AirGrSprp - Cargo Loader	Aggregate	50 Diesel	3.08256E-06	3.7299E-06	4.43888E-06	4.49145E-06	2.97807E-05	0.002949615	1.182016-06	1.088156-06	3.505278-08	3.13E-08	1244.0962	1844.0962	3.511633949	42048.13
Orange (SC)	2022 AirGrSprp - Cargo Loader	Aggregate	75 Diesel	5.96937E-06	7.22282E-06	8.59755E-06	1.00126711	0.000965017	0.195516706	3.750118-05	3.450122-05	1.805868-06	1.59578E-06	6343.324184	4243.341916	9.131664301	366051
Orange (SC)	2022 AirGrSprp - Cargo Loader	Aggregate	100 Diesel	4.87443E-06	5.89857E-06	7.02174E-06	7.01776E-06	1.03014E-05	0.000622674	2.248415E-06	2.069E-06	2.665268-06	2.35416E-06	9357.040983	6110.313587	8.591129154	548258
Orange (SC)	2022 AirGrSprp - Cargo Loader	Aggregate	300 Diesel	5.04972E-06	6.11016E-06	7.2716E-06	5.34718E-05	5.361E-05	0.027948124	1.994E-06	1.834486-06	2.582438-07	2.28108E-07	906.7461117	345.3527853	0.540335166	52347.48
Orange (SC)	2022 AirGrSprp - Cargo Loader	Aggregate	600 Diesel	2.53877E-06	3.07128E-06	3.65511E-06	4.73486E-05	1.13183E-05	0.026258844	4.517615E-07	4.156E-07	2.426832-07	2.14035E-07	851.8749	155.6360054	0.324020384	31488.98
Orange (SC)	2022 AirGrSprp - Cargo Loader	Aggregate	750 Diesel	3.03434E-06	3.67155E-06	4.36945E-06	5.25894E-05	1.44403E-05	0.028860371	5.061376-07	4.656466-07	2.667376-07	2.35554E-07	936.3429487	77.81800272	0.16210055	54057.57
Orange (SC)	2022 AirGrSprp - Cargo Tractor	Aggregate	25 Diesel	6.7504E-07	8.16804E-07	9.72064E-07	1.30579E-05	9.79464E-06	0.001905024	4.331212E-08	3.985556E-08	1.759468-08	1.55203E-08	61.81339778	118.9019405	0.137411244	2972.549
Orange (SC)	2022 AirGrSprp - Cargo Tractor	Aggregate	50 Diesel	1.31788E-05	1.5948E-05	1.89775E-05	8.8945E-05	7.15985E-05	0.009850208	4.948E-06	4.552E-06	9.087478-08	8.03966E-08	319.5793866	853.8043585	0.771756	53787.13
Orange (SC)	2022 AirGrSprp - Cargo Tractor	Aggregate	75 Diesel	2.00015887E	2.00019224E	2.00022878E	2.00013184E	2.00015351E	2.00014271E	2.00014274E	2.00014174E	1.670826-07	1.47926E-07	589.2890329	5158.551468	7.670653191	314856
Orange (SC)	2022 AirGrSprp - Cargo Tractor	Aggregate	100 Diesel	1.77727E-05	2.16568E-05	2.58068E-05	5.41351E-05	0.000420899	0.005818979	2.910E-06	2.619386-05	6.073959-07	5.37204E-07	2135.418162	1267.343752	1.885528699	114181.4
Orange (SC)	2022 AirGrSprp - Cargo Tractor	Aggregate	175 Diesel	2.01609E-05	2.45943E-05	2.90312E-05	0.000131268	0.000215508	0.025249481	1.237945-05	1.138915-05	4.852416-07	4.28902E-07	1704.910025	633.6718761	1.427361752	90145.89
Orange (SC)	2022 AirGrSprp - Cargo Tractor	Aggregate	300 Diesel	4.05162E-05	4.9824E-05	5.83433E-05	0.000231805	0.000358605	0.076576475	2.729504E-05	2.509E-05	1.088116-06	1.00127E-06	4025.542042	613.183052	2.869174845	212452.7
Orange (SC)	2022 AirGrSprp - Cargo Tractor	Aggregate	600 Diesel	2.74831E-05	3.32546E-05	3.95757E-05	0.000162541	0.000232342	0.079605156	1.074395-05	9.884E-06	7.351656-07	6.49272E-07	2582.701627	356.7053684	0.514233733	138074.9
Orange (SC)	2022 AirGrSprp - Forklift	Aggregate	25 Diesel	4.17635E-06	5.05339E-06	6.01359E-06	9.49575E-06	7.87962E-06	0.000158851	3.096852E-06	2.848E-06	1.46674E-09	1.29652E-09	0.153745921	17.83477545	0.045321157	645.3894
Orange (SC)	2022 AirGrSprp - Forklift	Aggregate	50 Diesel	1.42788E-05	1.72778E-05	2.05479E-05	7.2016E-05	6.36741E-05	0.007122258	5.943076-06	5.463E-06	5.813098-08	5.13E-08	2.5977E-07	2997.800724	5.573151772	173803.9
Orange (SC)	2022 AirGrSprp - Forklift	Aggregate	75 Diesel	5.51126E-06	6.69283E-06	7.96502E-06	3.52902E-05	5.98956E-05	0.004026368	4.439476-06	4.084326-06	3.872318-08	3.43310E-08	136.4677976	190.2737781	0.543855445	13128.34
Orange (SC)	2022 AirGrSprp - Forklift	Aggregate	100 Diesel	1.92456E-05	2.33637E-05	2.78137E-05	0.000763444	0.000834259	0.060444009	4.618383E-06	4.248E-06	7.752757-07	6.87591E-07	2726.744786	2964.438516	7.840597079	261627.4
Orange (SC)	2022 AirGrSprp - Forklift	Aggregate	175 Diesel	1.39373E-05	4.10642E-05	8.88697E-05	0.000286482	0.000408682	0.045272162	2.477616E-05	2.279392E-05	4.174567-07	3.69505E-07	1468.805446	1075.332799	2.851246335	142025.4
Orange (SC)	2022 AirGrSprp - Forklift	Aggregate	300 Diesel	9.28042E-06	1.12238E-05	1.35458E-05	8.32585E-05	0.000117835	0.019978879	4.164576-06	3.831446-06	3.510356-07	3.22138E-07	1291.863571	500.9594649	1.319183511	63441.3
Orange (SC)	2022 AirGrSprp - Forklift	Aggregate	600 Diesel	3.64364E-06	4.40888E-06	5.24684E-06	1.29949E-05	8.16225E-05	0.006298505	2.138446-06	1.967366-06	5.812358-08	5.14075E-08	204.3480668	53.44632635

Orange (SC)	2022 ConstMin - Rollers	Aggregate	100 Diesel	0.001590116	0.00192404	0.002289767	0.022158063	0.020053156	3.402914128	0.001153384	0.001060837	3.141396 05	2.77741E-05	110403.8013	651.78.34933	196.4221069	5689582
Orange (SC)	2022 ConstMin - Rollers	Aggregate	175 Diesel	0.000911149	0.001102491	0.001312055	0.019547346	0.011550888	1.954205012	0.000527994	0.000485755	1.272207E-05	2.89098E-05	114918.1064	412.21.15578	114.9259051	5929001
Orange (SC)	2022 ConstMin - Rollers	Aggregate	300 Diesel	0.000202858	0.000245458	0.000292116	0.003716781	0.002862153	0.586032678	0.000107608	9.89993E-05	5.417626E-06	4.78802E-06	19032.65119	4534.87627	14.72714049	980709.1
Orange (SC)	2022 ConstMin - Rough Terrain Forklifts	Aggregate	25 Diesel	0.138986 05	9.88607E-05	0.000117057	0.000693227	0.00011265	0.34833251	3.80225E-05	3.49807E-05	3.174646E-06	2.80631E-06	11155.36713	1637.12.9743	5.330682753	571787.6
Orange (SC)	2022 ConstMin - Rough Terrain Forklifts	Aggregate	25 Diesel	6.277416-07	7.59567E-07	0.039476-07	7.8052E-06	9.734151E-06	0.001146365	5.446788-07	5.01104E-07	1.057996 08	9.3564B-09	37.19256045	64.31811464	0.208533203	1607.953
Orange (SC)	2022 ConstMin - Rough Terrain Forklifts	Aggregate	50 Diesel	0.000123221	0.000148097	0.000177438	0.003809798	0.000758203	0.119417302	4.457778-05	4.10115E-05	1.017178 06	9.01213E-07	3583.367762	3245.928052	11.88639257	155068.9
Orange (SC)	2022 ConstMin - Rough Terrain Forklifts	Aggregate	75 Diesel	8.419326-06	1.01845E-05	1.21204E-05	3.41332E-05	8.394E-05	0.003043922	5.725404E-06	5.26704E-06	2.780014E-08	2.48441E-08	98.7563052	81.57857965	0.317799805	4748.88
Orange (SC)	2022 ConstMin - Rough Terrain Forklifts	Aggregate	100 Diesel	0.00177125	0.002143212	0.0025506	0.053080656	0.031843557	8.723115375	0.000805345	0.000786918	8.059825 05	7.11985E-05	283018.3603	141279.2649	500.0636208	13603564
Orange (SC)	2022 ConstMin - Rollers	Aggregate	25 Diesel	1.449306E-05	0.000175722	0.001869645	0.01091604	0.008129548	1.918864109	0.000543883	0.000499268	1.771618 05	1.56598E-05	62248.944	23883.93633	87.16687886	299476
Orange (SC)	2022 ConstMin - Rough Terrain Forklifts	Aggregate	300 Diesel	2.567964E-05	3.10721E-05	3.69784E-05	0.000263304	0.000417711	0.140819113	9.622706E-06	8.85284E-06	1.301178 06	1.14935E-06	4568.721042	1044.931148	4.17066406	2197074
Orange (SC)	2022 ConstMin - Rough Terrain Forklifts	Aggregate	500 Diesel	5.670464E-06	6.86124E-06	8.16564E-06	9.38666E-05	0.000887235	0.025435473	8.912416E-07	1.19942E-07	4.838728-07	4.27309E-07	1698.57999	213.4408454	0.841126154	82218.2
Orange (SC)	2022 ConstMin - Rough Terrain Forklifts	Aggregate	750 Diesel	1.539756-06	1.8631E-06	2.21724E-06	1.6635E-05	2.285266-05	0.009008683	1.618476-07	1.488996-07	8.324358-08	7.35277E-08	292.2767891	22.51134013	0.104266602	14069.59
Orange (SC)	2022 ConstMin - Tubber Tired Dozers	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)	2022 ConstMin - Tubber Tired Dozers	Aggregate	50 Diesel	0.000173033	0.00020937	0.000249168	0.00103847	0.000756241	0.097929567	6.15563E-05	5.66318E-05	8.943276-07	7.94089E-07	3156.550183	1348.166036	3.524360672	138877.7
Orange (SC)	2022 ConstMin - Tubber Tired Dozers	Aggregate	75 Diesel	0.000135764	0.000164274	0.0001955	0.000830449	0.001325981	0.097810871	9.967956-05	9.17051E-05	9.002375-07	7.98319E-07	3173.165989	2254.761079	3.008605764	154301.8
Orange (SC)	2022 ConstMin - Tubber Tired Dozers	Aggregate	100 Diesel	0.000333772	0.000403864	0.000480611	0.002041586	0.001863305	0.513321199	0.00025369	0.000233718	2.859606E-06	2.53280-06	10068.02955	5795.079445	6.704881178	488974.1
Orange (SC)	2022 ConstMin - Tubber Tired Dozers	Aggregate	175 Diesel	0.000440202	0.000532645	0.000633893	0.003149069	0.004845571	0.436974145	0.000309442	0.000284686	4.026846-06	3.56652E-06	14177.14489	4863.614505	6.18912118	693176.8
Orange (SC)	2022 ConstMin - Tubber Tired Dozers	Aggregate	300 Diesel	0.000193786	0.000234541	0.000279052	0.001439777	0.002526289	0.247464845	0.000240859	0.000221639	4.356366-06	3.85636E-06	15328.60717	3177.728287	8.417609354	392852.7
Orange (SC)	2022 ConstMin - Tubber Tired Dozers	Aggregate	600 Diesel	0.00359677	0.004352092	0.005179349	0.034556963	0.044975483	9.416003867	0.002017633	0.001856222	4.53410-05	4.01238E-05	159494.3314	20986.30511	28.88255651	7745866
Orange (SC)	2022 ConstMin - Tubber Tired Dozers	Aggregate	750 Diesel	5.509777-05	6.66682E-05	7.93407E-05	0.0002898	0.00096276	0.140551499	2.700126-05	2.48411E-05	1.297826 06	1.14716E-06	4560.038576	342.8980789	0.341840066	223038.9
Orange (SC)	2022 ConstMin - Tubber Tired Dozers	Aggregate	900 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)	2022 ConstMin - Tubber Tired Loaders	Aggregate	50 Diesel	0.000505694	0.000611889	0.000728199	0.003212112	0.002465069	0.30475452	0.000183953	0.000169237	2.802446-06	2.48737-06	9887.424786	11395.36437	13.26026456	473678
Orange (SC)	2022 ConstMin - Tubber Tired Loaders	Aggregate	100 Diesel	0.001672358	0.002024053	0.002408623	0.010627115	0.054313222	0.953537497	7.417E-05	0.000178643	9.26E-06	8.18102E-06	32513.57317	8413.08.7256	164.7577468	12980424
Orange (SC)	2022 ConstMin - Tubber Tired Loaders	Aggregate	175 Diesel	0.001410116	0.00985063	0.011723063	0.110257858	0.084102286	17.58769001	0.00453858	0.004173653	0.000162363	0.000143548	570613.233	203729.7259	216.1064737	30567701
Orange (SC)	2022 ConstMin - Tubber Tired Loaders	Aggregate	250 Diesel	0.000600698	0.001092735	0.001299753	0.059798311	0.112267128	25.49953299	0.001785828	0.000230552	0.000238595	827188.116	121431.0995	39.26293144	5.452215905	966285.8
Orange (SC)	2022 ConstMin - Tubber Tired Loaders	Aggregate	600 Diesel	0.012639289	0.01529354	0.018200577	0.087492092	0.142456507	32.85498478	0.005348473	0.004920595	0.000303381	0.000268518	1065943.798	173576.0922	178.2968005	57246877
Orange (SC)	2022 ConstMin - Tubber Tired Loaders	Aggregate	750 Diesel	0.000888813	0.001074693	0.001278973	0.008925799	0.007856839	3.195623813	0.000227466	0.000201589	0.000025189	2.95185E-05	2.60823E-05	10367.6.4888	8643.709922	8.601252586	5585294
Orange (SC)	2022 ConstMin - Tubber Tired Loaders	Aggregate	900 Diesel	0.000272632	0.000329847	0.000392453	0.002744897	0.002407983	0.616276886	0.228609767	0.000341716	2.564E-05	1.86147E-05	73994.72244	4120.27505	1.494258004	54047.21
Orange (SC)	2022 ConstMin - Scrapers	Aggregate	25 Diesel	1.448766-07	1.7538-07	2.08622E-07	4.08173E-06	3.745E-06	0.000778826	1.305595-08	1.20114E-08	7.196381-09	6.35667E-09	25.26813835	36.43089372	0.088587831	910.7746
Orange (SC)	2022 ConstMin - Scrapers	Aggregate	50 Diesel	2.39808E-05	3.00679E-05	3.57425E-05	0.000191113	7.21208E-05	0.015981884	1.204979E-06	1.02441E-06	5.549477-08	5.05942E-08	201.1150018	190.3518892	0.531528869	7372.316
Orange (SC)	2022 ConstMin - Scrapers	Aggregate	75 Diesel	8.677876-05	0.000105002	0.000124961	0.000454092	0.000800331	0.054703184	6.96923E-05	6.41169E-05	5.031556-07	4.46488-07	1774.784555	1048.200359	2.391871447	71070.32
Orange (SC)	2022 ConstMin - Scrapers	Aggregate	100 Diesel	0.000211282	0.000255652	0.000304246	0.001854415	0.002667874	0.249434845	0.000191838	0.000174889	2.27308E-06	2.01210E-06	7998.845444	3536.112956	9.646776369	318899.4
Orange (SC)	2022 ConstMin - Scrapers	Aggregate	175 Diesel	0.002050679	0.002481321	0.002952979	0.021140689	0.024155388	3.326080906	0.001299778	0.001195796	3.068998E-05	2.71473E-05	10791.2977	25758.22345	57.67067821	4299559
Orange (SC)	2022 ConstMin - Scrapers	Aggregate	300 Diesel	0.002082026	0.002520751	0.002999502	0.021113343	0.027061075	3.920193347	0.001179845	0.001085457	3.631858-05	3.19961E-05	12786.3558	22881.65369	56.34189074	5110606
Orange (SC)	2022 ConstMin - Scrapers	Aggregate	500 Diesel	0.001857169	0.002247345	0.002674323	0.018653112	0.024654599	4.857909736	0.001075549	0.000989178	0.000048581	0.000039649	15760.9.151	14933.7.283	50.31432881	4307229
Orange (SC)	2022 ConstMin - Scrapers	Aggregate	750 Diesel	0.000801204	0.000969457	0.001153734	0.008996853	0.01331081	0.746403893	0.00053896	0.000459843	6.876848-06	6.09205E-06	24216.2523	1552.769484	4.252215905	966285.8
Orange (SC)	2022 ConstMin - Scrapers	Aggregate	900 Diesel	0.000879447	0.001064131	0.001266404	0.010854186	0.014599068	2.532333034	0.000594153	0.000508453	7.61E-06	6.49E-06	26421.29466	914.2152977	2.352283615	1460154
Orange (SC)	2022 ConstMin - Skid Steer Loaders	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)	2022 ConstMin - Skid Steer Loaders	Aggregate	50 Diesel	0.000847716	0.001022716	0.001212071	0.010275588	0.009647666	1.657679317	0.000289647	0.000266303	1.530806-05	1.35298E-05	53781.57982	58085.85231	184.4830021	2531060
Orange (SC)	2022 ConstMin - Skid Steer Loaders	Aggregate	75 Diesel	0.002218381	0.002684241	0.003194468	0.053692058	0.035735045	6.682752369	0.001300573	0.001202047	8.020998-05	7.08675E-05	281702.3383	209449.5565	586.4675306	14779100
Orange (SC)	2022 ConstMin - Skid Steer Loaders	Aggregate	100 Diesel	4.26287E-05	5.15807E-05	6.13853E-05	0.00082551	0.00073952	0.128504586	4.965531E-06	4.58822E-06	1.168312E-06	1.03251E-06	4104.30192	2874.644134	8.872031485	217146.7
Orange (SC)	2022 ConstMin - Skid Steer Loaders	Aggregate	175 Diesel	0.000410006	0.000496009	0.000590178	0.007939228	0.007111777	1.235667197	0.000248169	0.000229447	1.456662-05	1.34615E-05	53528.83054	40194.30192	85.49519E+07	1015111
Orange (SC)	2022 ConstMin - Skid Steer Loaders	Aggregate	300 Diesel	8.977796-06	1.08631E-05	1.29285-05	0.000102781	0.00013002	0.02527851	3.726846-06	3.42869E-06	5.538088-07	4.51178E-07	179.4503965	458.8884404	1.554889901	94115.7
Orange (SC)	2022 ConstMin - Skid Steer Loaders	Aggregate	600 Diesel	1.931856-05	2.33698E-05	5.74823E-05	0.000443113	0.000606E-05	0.122826 05	0.001698184	1.53072E-06	2.544116-06	1.50305E-06	597.5.15.8	1.47634E-07	0.000153889	7372.316
Orange (SC)	2022 ConstMin - Skid Steer Loaders	Aggregate	9999 Diesel	1.073326-05	1.29872E-05	1.54559E-05	7.16547E-05	0.000191302	0.021632744	6.37188E-06	5.86167E-06	1.996838-07	1.76564E-07	701.8505403	36.88242702	0.182928113	36882.43
Orange (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	50 Diesel	9.063866-06	1.09673E-05	1.3052E-05	9.67029E-05	0.000100265	0.015364256	3.958888E-06	3.64217E-06	1.41778E-07	1.25403E-07	498.4763786	789.2006777	3.236095449	28551.09
Orange (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	75 Diesel	8.189E-06	9.90869E-06	1.17922E-05	6.64914E-05	0.000114828	0.020926344	7.04867E-06	6.48478E-06	8.540788-07	7.56143E-08	300.5714473	388.3122827	1.161675389	19188.19
Orange (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	100 Diesel	2.185464E-05	3.7607E-05	4.4941E-05	0.000255432	0.000445667	0.095052185	2.104866E-05	1.93644E-05	8.778877E-07	7.75828E-07	3081.863457	2211.107588	7.965779442	197084.5
Orange (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	175 Diesel	1.955636E-05	4.78631E-05	5.69611E-05	0.000460396	0.000469698	0.07802595	2.698215E-05	2.48236E-05	7.20202E-07	6.36837E-07	2533.466019	1175.270142	4.729677963	162238.9
Orange (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	250 Diesel	5.151126-05	6.23288E-05	7.41765E-05	0.000599718	0.000727118	0.151625767	3.974488-05	3.65672E-05	1.461125E-06	1.29134E-06	5113.168898	1450.059888	5.891353153	328800.6
Orange (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	600 Diesel	9.800826-05	0.00011859	0.000141132	0.001116397	0.001315891	0.554823862	4.947238-05	4.55145E-05	5.126988-06	4.52384E-06	18000.64917	2801.728757	9.791263152	1154541
Orange (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	750 Diesel	4.319368-05	5.2268E-05	6.22419E-05	0.000415027	0.000613485	0.124833526	2.467346-05	1.98495E-05	1.364E-06	1.20603E-06	4773.4.9.05	699.6264956	2.837164485	153197.7
Orange (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	9999 Diesel	2.080176-05	2.51701E-05	2.99545E-05	0.000193498	0.000570716	0.091679037	1.108888-05	1.02017E-05	8.465941-07	7.48272E-07	2974.425374	220.5704993	0.829768864	190702.2
Orange (SC)	2022 ConstMin - Sweepers/Scrubbers	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)	2022 ConstMin - Sweepers/Scrubbers	Aggregate	50 Diesel	0.00144328	0.001734269	0.002063923	0.009377204	0.007724611	0.010821217	0.000575506	0.000529445	9.302558-06	8.25019E-06	32794.98117	35132.08329	49.69436011	1252028
Orange (SC)	2022 ConstMin - Sweepers/Scrubbers	Aggregate	75 Diesel	0.000238776	0.000288919	0.000343837	0.002169053	0.002464247	0.299674469	0.000180931	0.000166457	2.763488-06	2.44959E-06	9722.608103	5652.256102	9.499089824	413360.3
Orange (SC)	2022 ConstMin - Sweepers/Scrubbers	Aggregate	100 Diesel	0.000667919	0.000808181	0.000961803	0.005746194	0.006892744	1.252383144	0.000502009	0.000462481	1.165332-05	1.03035E-05	40963.1.287	21963.58849	30.96020612	1737725
Orange (SC)	2022 ConstMin - Sweepers/Scrubbers	Aggregate	175 Diesel	0.000195565	0.000236634	0.000281614	0.003372347	0.002210838	0.389869479	0.000106486	9.79672E-05	3.597018-06	3.18059E-06	12641.04694	3355.826113	4.661598442	536369.5
Orange (SC)	2022 ConstMin - Sweepers/Scrubbers	Aggregate	250 Diesel	6.443026-05	7.79638E-05	9.2734E-05	0.000491134	0.000728357	0.128242604	2.798E-05	2.57441E-05	2.161786-06	1.79638E-06	7117.744615	1516.044	3.110918077	342134.3
Orange (SC)	2022 ConstMin - Sweepers/Scrubbers	Aggregate	600 Diesel	2.578936-05	3.1205E-05	3.71365E-05	0.000419547	0.000353368	0.031604975	1.784422-05	1.64167E-05	2.91438-07	2.57956E-07	1025.388616	131.8216725	0.175090239	43501.15
Orange (SC)	2022 ConstMin - Sweepers/Scrubbers	Aggregate	9999 Diesel	3.191576-06	3.86422E-06	4.59875E-06	7.16708E-05	0.000173493	0.040607805	1.353446-06	1.24517E-06	3.753426-07	3.31434E-07	1317.46601	85.91083623	0.08795462	5892.39
Orange (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	50 Diesel	0.000234355	0.000911569	0.004657471	0.027077188	0.022928391	3.27380121	0.001233876	0.001119582	3.017098-05	2.67203E-05	10621.4.748	13340.2554	258.1896461	5053439
Orange (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	75 Diesel	0.001201189	0.001453413	0.001729582	0.004966355	0.01145156	0.482123564	0.000923604	0.000849202	4.421318-06	3.93494E-06	1564.140437	821141.2	4.921805978	19188.19
Orange (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	100 Diesel	0.020116514	0.024340982	0.02896779	0.345626355	0.251017343	52.28889249	0.011390095	0.012134888	0.000482815	0.000426759	169690.643	106412.649	1703.152049	8669847
Orange (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	175 Diesel	0.002881889	0.003488117	0.004151478	0.053692058	0.035902004	7.482666377	0.001654734	0.001463355	8.420659-05	7.44481E-05	29044.06378	10883.54444	30.11617727	1561394
Orange (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	300 Diesel	0.00172529	0.002087601	0.002484419	0.013465514	0.021858722	4.751649349	0.000768891	0.00070738	5.312516-05	4.69442E-05	18660.5.288	46939.59273	83.30439452	9807641
Orange (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	600 Diesel	0.001937511	0.002344387	0.002790814	0.017494161	0.021267439	7.507922255	0.000781206	0.000718709	6.935636-05	6.12787E-05	24358.2691	37986.68446	70.08004679	12877599
Orange (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	750 Diesel	5.592226-05	6.7665E-05	8.05279E-05	0.000671384	0.000611287	0.142486026	2.331516-05	2.14496E-05	1.31198E-06	1.15969E-06	4609.824605	384.2416667	0.893533942	249964.3
Orange (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	9999 Diesel	0.000656805	0.000794734	0.000945799	0.004948503	0.015427894	2.563805942	0.000292505	0.000269104	2.36848-05	2.09254E-05	8317.98027	3358.181177	3.778385065	4364410
Orange (SC)	2022 ConstMin - Trenchers	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)	2022 ConstMin - Trenchers	Aggregate	50 Diesel	0.00117543	0.00142227	0.001692619	0.008896583	0.008405127	1.160749181	0.000542256	0.000498876	1.069648-05	9.47388E-06	3769..23885	32631.08786	84.66282476	1300170
Orange (SC)	2022 ConstMin - Trenchers	Aggregate	75 Diesel	0.469777-05	0.00018484	0.000219383	0.000975584	0.000959954	0.069296188	6.56052E-05	6.03858E-05	6.378398-07	5.65388E-07	224.8.23586	124.8544447	0.371425	86392.47
Orange (SC)	2022 ConstMin - Trenchers	Aggregate	100 Diesel	0.000596541	0.000721814	0.000859019	0.005363621	0.006803468	0.76519316	0.000483538	0.000446511	7.05669E-06	6.2454E-06	24825.84936	11399.00431	34.53858419	954005.4
Orange (SC)	2022 ConstMin - Trenchers	Aggregate	175 Diesel	0.000108257	0.000130749	0.000155602	0.001123915	0.001963147	0.178078872	6.95479E-05	6.39841E-05	1.057018-06	9.45992E-07	3760.237997	1590.277997	5.387634303	223614.3
Orange (SC)	2022 ConstMin - Trenchers	Aggregate	250 Diesel	0.000192281	0.000232266	0.000276881	0.001717889	0.001178222	0.268565801	0.000111388	0.000102494	1.58E-06	1.39E-06	5525.1.5.7	2136.049403	5.565368	0.00
Orange (SC)	2022 ConstMin - Trenchers	Aggregate	600 Diesel	0.000179894	0.000217672	0.000259048	0.002025566	0.00223154	0.586077671	9.281538-05	8.539015-05	5.413188-06	4.78349E-06	19014.64458	1914.707415	5.195218792	727956.6
Orange (SC)	2022 ConstMin - Trenchers	Aggregate	750 Diesel	1.530946-05	1.85244E-05	2.20452E-05	0.000153911	0.000177575	0.018326074	1.315166-06	1.88102E-06	1.74016-06	1.53656E-06	6107.910234	362.8854129	0.769662043	234873.2
Orange (SC)	2022 ConstMin - Trenchers	Aggregate	9999 Diesel	2.770036-05	3.3517E-05	3.98884E-05	0.000402516	0.000833394	0.051347232	1.780515-05	1.63807E-05	1.392138-07	1.23636E-07	491.4352468	21.98833997	0.096207755	18903.09
Orange (SC)	2022 Industrial - Aerial Lifts	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)	2022 Industrial - Aerial Lifts	Aggregate	50 Diesel	0.000806923	0.000976377	0.001161969	0.018770499	0.017530851	3.54221537	0.000146389	0.000134677	3.272538-05	2.89111E-05	114923.2766	140563.3893	464.4663277	6484035
Orange (SC)	2022 Industrial - Aerial Lifts	Aggregate	75 Diesel	0.000729043	0.000882142	0.001049822	0.026339449	0.013699569	4.367938396	0.000249201	0.000229265	4.036198-05	3.56505E-05	14172.95928	122930.9002	407.257409	6889369
Orange (SC)	2022 Industrial - Aerial Lifts	Aggregate	100 Diesel	0.000282877	0.000342371	0.000407664	0.012203179	0.008375766	1.812804852	0.000104314	9.47959E-05	1.609218-05	1.42066E-05	5648.147977	46973.23161	155.4066191	1608943
Orange (SC)	2022 Industrial - Aerial Lifts	Aggregate	175 Diesel	5.406316-05	6.54163E-05	7.78509E-05	0.002040116	0.000513936	0.377742395	1.942E-05	1.78728E-05	3.490798-06	3.08308E-06	12255.43601	5894.689864	19.50802415	769040.9
Orange (SC)	2022 Industrial - Aerial Lifts	Aggregate	300 Diesel	2.629476-05	3.1816E-05	3.78644E-05	0.000992178	0.000249756	0.183680647	9.447E-06	8.69238E-06	1.562E-06	1.38048E-06	5487.2.7.7	2869..5.7	9.487355	374.5.7
Orange (SC)	2022 Industrial - Aerial Lifts	Aggregate	600 Diesel	1.500846-06	1.81602E-06	2.16121E-06	2.88114E-05	7.9427BE-06	0.016003016	2.74128E-07	2.52198E-07	1.481626-07	1.30836E-07	520.0801061	66.60383586	0.219191283	32635.88
Orange (SC)	2022 Industrial - Aerial Lifts	Aggregate	750 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)	2022 Industrial - Forklifts	Aggregate	50 Diesel	0.002880285	0.003485144	0.00414761	0.021513681	0.017489984	2.38405323	0.001094154	0.001006521	2.195536-05	1.94583E-05	77347.98149	157662.7343	215.3161954	6684689
Orange (SC)	2022 Industrial - Forklifts	Aggregate	75 Diesel	0.000543998	0.000658226	0.000783443	0.002191027	0.005159156	0.216536186	0.000407462	0.000374083	1.985668-06	1.76734E-06	7025.27805	9312.068187	19.39625231	682194.9
Orange (SC)	2022 Industrial - Forklifts	Aggregate	100 Diesel	0.001573797	0.001902867	0.002263403	0.011995329	0.017953227	3.717623994	0.001490736	0.001369058	1.00232E-05	8.90215E-06	35396.39493	25491.91	1447.349997	8806863
Orange (SC)	2022 Industrial - Forklifts	Aggregate	175 Diesel	0.003388213	0.004704738	0.005599027	0.054995044	0.042788697	8.075996514	0.002288299	0.002105235	8.379545-05	7.40771E-05	294460.7115	200592.5481	267.6339924	28342062
Orange (SC)	2022 Industrial - Forklifts	Aggregate	250 Diesel	0.000911208	0.001265599	0.001506131	0.014491311	0.008603933	1.494991124	0.000423703	0.000389552	1.131546-06	1.00415E-06	3994..5.5	1827.007	2.485541229	0.00
Orange (SC)	2022 Industrial - Forklifts	Aggregate	600 Diesel	0.000180347	0.000221822	0.000259699	0.001164976	0.001089943	0.497757413	0.000149511	0.000137695	4.59666-06	4.08263E-06	16349.1911	4370.424952	6.050207142	1543921
Orange (SC)	2022 Industrial - Forklifts	Aggregate	9999 Diesel	5.738906E-06	6.94539E-06	7.5457E-06	0.000077782	0.000033288	0.007777783	0.000013283	1.58728E-06	1.47379E-06	1.30821E-06	5238.6.7.7	1.48.26024	0.004177264	1492.1
Orange (SC)	2022 Industrial - Other General Industrial Equipment	Aggregate	25 Diesel	3.11204E-06	3.7655E-06	4.48134E-06	1.03475E-05	7.12508E-06	0.00054447	9.795585-07	9.01193E-07	4.940536-09	4.44388E-09	17.66472497	35.95260926	0.157364256	898.8152
Orange (SC)	2022 Industrial - Other General Industrial Equipment	Aggregate	50 Diesel	0.000549599	0.000661003	0.000771499	0.044917221	0.036553267	5.121652202	0.002009814	0.001904229	4.734E-05	4.18422E-05	166125.3403	240376.7883	287.0324022	8444487
Orange (SC)	2022 Industrial - Other General Industrial Equipment	Aggregate	75 Diesel	0.001280609	0.001545143	0.001805393	0.104728293	0.016437899	3.400129644	0.000843162	0.000792709	1.34528E-05	1.18958E-05	47284.22966	103.1387527	0.324944	2000.1
Orange (SC)	2022 Industrial - Other General Industrial Equipment	Aggregate	100 Diesel	0.000864615	0.001046185	0.001245045	0.00572468	0.008250785	0.721740804	0.000071803	0.000065859	6.640916-06	5.80075E-06	23416.08553	16596.44348	21.87363153	1318225
Orange (SC)	2022 Industrial - Other General Industrial Equipment	Aggregate	175 Diesel	0.000951208	0.001150716	0.001371016	0.016931842	0.012496194	1.919036849	0.000640365	0.000587439	1.78227E-05	1.57548E-05	62625.34966	23840.1752	28.64029452	3539669
Orange (SC)	2022 Industrial - Other General Industrial Equipment	Aggregate	300 Diesel	0.000662353	0.000801447	0.000953788	0.004817212	0.008619474	0.947850402	0.000278836	0.000256529	1.79886-05	1.58983E-05	63195.8613	16614.06026	20.61471748	3567907
Orange (SC)	2022 Industrial - Other General Industrial Equipment	Aggregate	600 Diesel	0.001310098	0.001827218	0.002174541	0.012757857	0.011303703	0.124970384	0.000462129	0.000425158	3.55E-05	3.13E-05	124503.1.28	19871.7.925	29

| | | |

OFFROAD 2022

	Equipment Type	Horsepower HP	Gas				Diesel				Natural Gas			
			Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Cal/Yr)	Population	Hrs/Yr	Gal/Hr
Air Compressors25	Air Compressors	25	1686472.5	1153.23	557479.3	0.30215931	8077.45	18.18	14764.25	0.547055175	0	0	0	0
Air Compressors50	Air Compressors	50	51490.55	47.8	23093.55	2.229650703	91104	109.62	89235.2	1.020842406	0	0	0	0
Air Compressors75	Air Compressors	75	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors100	Air Compressors	100	281093.8	154.96	74905.3	5.752655687	0	0	0	0	0	0	0	0
Air Compressors175	Air Compressors	175	34488.85	10.41	5044.3	1.837324775	0	0	0	0	0	0	0	0
Air Compressors300	Air Compressors	300	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors600	Air Compressors	600	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors750	Air Compressors	750	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors9999	Air Compressors	9999	0	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts25	Aerial Lifts	25	34419.5	106.05	39798.6	0.864820249	25917	158.73	63411.45	0.459333448	53282.1	120.15	49088.45	1.181797251
Aerial Lifts50	Aerial Lifts	50	72518.2	126.84	45749.1	1.585128451	118626.9268	473.977273 12	145093.3401	0.817590392	0	0	0	0
Aerial Lifts75	Aerial Lifts	75	0	0	0	0	89153.05167	262.823618	80016.54915	1.114182739	0	0	0	0
Aerial Lifts100	Aerial Lifts	100	130337.85	126.84	45749.1	2.848970789	117836.8899	311.3621075	95363.1081	1.235655405	0	0	0	0
Aerial Lifts175	Aerial Lifts	175	0	0	0	0	12650.3932	19.90749107	6084.658838	2.079063769	0	0	0	0
Aerial Lifts300	Aerial Lifts	300	0	0	0	0	753.9594672	0.671039225	205.2508516	3.665243855	0	0	0	0
Aerial Lifts600	Aerial Lifts	600	0	0	0	0	536.840781	0.223679675	68.7502845	7.808500865	0	0	0	0
Bore/Drill rigs25	Bore/Drill rigs	25	4305.4	26.93	3347.05	1.30425299	3573.191	6.64	5372.8	0.665081522	0	0	0	0
Bore/Drill rigs50	Bore/Drill rigs	50	689.85	2.49	266.45	2.589041098	3070.230791	7.426357912	2674.137144	1.14811643	0	0	0	0
Bore/Drill rigs75	Bore/Drill rigs	75	0	0	0	0	4507.624122	5.081192258	2463.313428	1.829910819	0	0	0	0
Bore/Drill rigs100	Bore/Drill rigs	100	7880.35	11.5	1233.7	6.387573984	14606.3589	17.58874242	6701.014631	2.179722239	0	0	0	0
Bore/Drill rigs175	Bore/Drill rigs	175	2748.45	2.85	306.6	8.964285714	22425.0372	17.90143118	5732.345598	3.912017657	0	0	0	0
Bore/Drill rigs300	Bore/Drill rigs	300	0	0	0	0	32705.95988	18.4483655	6040.623278	5.414980392	0	0	0	0
Bore/Drill rigs600	Bore/Drill rigs	600	0	0	0	0	51873.93158	14.77454364	4991.933432	10.39155115	0	0	0	0
Bore/Drill rigs750	Bore/Drill rigs	750	0	0	0	0	30619.62977	3.126887542	1820.906288	16.81559807	0	0	0	0
Bore/Drill rigs9999	Bore/Drill rigs	9999	0	0	0	0	16703.67538	0.469033133	346.0433594	48.27064231	0	0	0	0
Cement and Mortar Mixers25	Cement and Mortar Mixers	25	143744.2	4061.27	373957.2	0.3843874	919.56	92.28	27092.55	0.330413616	0	0	0	0
Cement and Mortar Mixers50	Cement and Mortar Mixers	50	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers75	Cement and Mortar Mixers	75	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers100	Cement and Mortar Mixers	100	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers175	Cement and Mortar Mixers	175	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers300	Cement and Mortar Mixers	300	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers600	Cement and Mortar Mixers	600	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers750	Cement and Mortar Mixers	750	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers9999	Cement and Mortar Mixers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws25	Concrete/Industrial Saws	25	128969.1	571.83	162454.2	0.793879753	392	0.66	990.55	0.747663551	0	0	0	0
Concrete/Industrial Saws50	Concrete/Industrial Saws	50	15771.65	9.38	5701.3	2.766352524	4698.1	5.78	3368.95	1.38033486	0	0	0	0
Concrete/Industrial Saws75	Concrete/Industrial Saws	75	0	0	0	0	51873.93158	14.77454364	4991.933432	10.39155115	0	0	0	0
Concrete/Industrial Saws100	Concrete/Industrial Saws	100	15388.4	5.35	3266.75	4.710614525	0	0	0	0	0	0	0	0
Concrete/Industrial Saws175	Concrete/Industrial Saws	175	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws300	Concrete/Industrial Saws	300	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws600	Concrete/Industrial Saws	600	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws750	Concrete/Industrial Saws	750	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws9999	Concrete/Industrial Saws	9999	0	0	0	0	0	0	0	0	0	0	0	0
Cranes25	Cranes	25	0	0	0	0	59.07929684	0.294533434	142.7119459	0.413975854	0	0	0	0
Cranes50	Cranes	50	2282.2	2.85	1185.25	1.932307692	957.1833664	9.141689966	1388.208152	0.689508449	0	0	0	0
Cranes75	Cranes	75	0	0	0	0	366.6490116	0.981778134	164.3805895	1.008225445	0	0	0	0
Cranes100	Cranes	100	7821.95	5.67	2361.55	3.312210201	21613.02182	38.81867928	16530.69514	1.307484943	0	0	0	0
Cranes175	Cranes	175	496.4	0.22	102.2	4.857142857	66266.15439	65.77913306	30397.53108	2.179984758	0	0	0	0
Cranes300	Cranes	300	0	0	0	0	113655.0304	72.74975823	34674.692	3.277751892	0	0	0	0
Cranes600	Cranes	600	0	0	0	0	20322.42888	12.94611389	6597.23275	3.471002495	0	0	0	0
Cranes750	Cranes	750	0	0	0	0	3472.105572	0.883600303	365.7419027	9.493485833	0	0	0	0
Cranes9999	Cranes	9999	0	0	0	0	11000.5233	1.578364983	787.5249034	13.96847677	0	0	0	0
Crawler Tractors25	Crawler Tractors	25	0	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors50	Crawler Tractors	50	0	0	0	0	3100.168617	8.713549131	3007.940409	1.030631382	0	0	0	0
Crawler Tractors75	Crawler Tractors	75	0	0	0	0	479.794341	1.481302975	309.1004869	1.55222772	0	0	0	0
Crawler Tractors100	Crawler Tractors	100	0	0	0	0	136473.0827	148.217433	70213.43416	1.943689043	0	0	0	0
Crawler Tractors175	Crawler Tractors	175	0	0	0	0	149451.1389	98.37594961	45115.38078	3.312642455	0	0	0	0
Crawler Tractors300	Crawler Tractors	300	0	0	0	0	156487.2998	76.1564	34402.8842	4.548668804	0	0	0	0
Crawler Tractors600	Crawler Tractors	600	0	0	0	0	548151.8293	133.4955387	64095.15752	8.552158677	0	0	0	0
Crawler Tractors750	Crawler Tractors	750	0	0	0	0	5598.31971	0.958349038	407.0662119	13.74793473	0	0	0	0
Crawler Tractors9999	Crawler Tractors	9999	0	0	0	0	31733.58142	2.814066073	1464.048916	21.67523936	0	0	0	0
Crushing/Proc. Equipment25	Crushing/Proc. Equipment	25	1923.55	6.75	1956.4	0.983208955	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment50	Crushing/Proc. Equipment	50	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment75	Crushing/Proc. Equipment	75	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment100	Crushing/Proc. Equipment	100	6077.25	3.29	799.35	7.602739726	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment175	Crushing/Proc. Equipment	175	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment300	Crushing/Proc. Equipment	300	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment600	Crushing/Proc. Equipment	600	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment750	Crushing/Proc. Equipment	750	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment9999	Crushing/Proc. Equipment	9999	0	0	0	0	0	0	0	0	0	0	0	0
Dumpers/Tenders25	Dumpers/Tenders	25	13740.9	270.66	40372.65	0.340475545	912.5	3.97	2638.95	0.345781466	0	0	0	0
Dumpers/Tenders100	Dumpers/Tenders	100	646.05	2.04	259.15	2.492957746	0	0	0	0	0	0	0	0
Excavators25	Excavators	25	0	0	0	0	6447.844897	6.391929129	8633.015442	0.746882449	0	0	0	0
Excavators50	Excavators	50	0	0	0	0	123952.8534	213.0356884	157678.835	0.786108379	0	0	0	0
Excavators75	Excavators	75	0	0	0	0	1615.310551	1.746194151	1137.887878	1.419516172	0	0	0	0
Excavators100	Excavators	100	0	0	0	0	159133.4489	151.8315814	99448.01081	1.600167252	0	0	0	0
Excavators175	Excavators	175	0	0	0	0	339633.1043	196.7887711	117693.7638	2.885735779	0	0	0	0
Excavators300	Excavators	300	0	0	0	0	432365.9408	169.2935226	100579.9578	4.320205307	0	0	0	0
Excavators600	Excavators	600	0	0	0	0	770641.8679	178.1118034	115489.5159	6.672829869	0	0	0	0
Excavators750	Excavators	750	0	0	0	0	8030.126429	1.222135905	644.4567562	12.44478801	0	0	0	0
Excavators9999	Excavators	9999	0	0	0	0	21406.7394	1.309645613	899.0918369	23.80923942	0	0	0	0
Forklifts25	Forklifts	25	1500.15	2.43	2190	0.685	36.49337502	0.202183848	63.10901025	0.578259494	1412.55	1.35	1441.75	0.979746835
Forklifts50	Forklifts	50	12117703.8	423.46	761276.85	1.591761	835453.26062	231.6613361	166170.8106	0.502755329	1877315.45	780.59	140621.14	1.335014443
Forklifts75	Forklifts	75	0	0	0	0	7024.916935	20.30235417	9230.406282	0.761062489	0	0	0	0
Forklifts100	Forklifts	100	5631550.8	1498.17	267630.7	2.103987626	1216666.862	1933.602459	1254788.31	0.969167451	1174868.05	2739.46	493537.05	2.380505137
Forklifts175	Forklifts	175	3944462.8	54.76	97809.05	4.032988767	363851.9804	355.3414056	229968.9044	1.582179044	881785.25	100.25	18061295	4.882181759
Forklifts300	Forklifts	300	0	0	0	0	70888.02943	43.99572007	31136.18128	2.259398868	0	0	0	0
Forklifts600	Forklifts	600	0	0	0	0	18391.92441	6.983232962	4720.937855	3.895820062	0	0	0	0
Forklifts750	Forklifts	750	0	0	0	0	286.7822898	0.101141972	22.08819203	12.98353574	0	0	0	0
Forklifts9999	Forklifts	9999	0	0	0	0	1323.948282	0.181591105	144.7804768	9.144522179	0	0	0	0
Generator Sets25	Generator Sets	25	24417733.35	30290.77	3480362.8	7.017585987	2116585.4	1031.34	348147.95	6.080032876	0	0	0	0
Generator Sets50	Generator Sets	50	4069692.6	1572.89	217061	2.217542443	250955.9	532.05	179616.3	1.397175371	0	0	0	0
Generator Sets75	Generator Sets	75	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets100	Generator Sets	100	1810125.4	303.7	34888.45	5.191867539	0	0	0	0	16235.5	22.81	2587.85	6.273624829
Generator Sets175	Generator Sets	175	295597.85	28.75	3292.3	8.990022173	0	0	0	0	23480.45	18.79	2157.35	10.88496078
Generator Sets300	Generator Sets	300	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets600	Generator Sets	600	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets750	Generator Sets	750	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets9999	Generator Sets	9999	0	0	0	0	0	0	0	0	0	0	0	0
Graders25	Graders	25	0	0	0	0	23.81371	0.175475447	40.35200177	0.587673523	0	0	0	0
Graders50	Graders	50	0	0	0	0	797.7667138	2.544395436	907.2510002	0.879323045	0	0	0	0
Graders75	Graders	75	0	0	0	0	296.4408116	0.52642664	193.027814	1.53574144	0	0	0	0
Graders100	Graders	100	0	0	0	0	19106.33323	26.49680754	10200.76976	1.881851417	0	0	0	0
Graders175	Graders	175	0	0	0	0	208417.6545	137.397359	65421.62746	3.135342698	0	0	0	0
Graders300	Graders	300	0	0	0	0	428112.289	122.8328823	94153.87841	4.546942157	0	0	0	0
Graders600	Graders	600	0	0	0	0	27657.72989	4.825577539	3927.001662	7.042853976	0	0	0	0
Graders750	Graders	750	0	0	0	0	0	0	0	0	0	0	0	0
Graders9999	Graders	9999	0	0	0	0	14845.61051	0.52642664	388.2859915	38.23370316	0	0	0	0
Pavers25	Pavers	25	11760.2	26.97	10449.95	1.125392944	1713.75	2.48	2044	0.848214286	0	0	0	0
Pavers50	Pavers	50	7387.6	8.06	3182.8	2.321100917	3395.963945	10.22496898	3668.421936	0.926566502	0	0	0	0
Pavers75	Pavers	75	0	0	0	0	4457.771193	8.435201538	2919.706396	1.526787489	0	0	0	0
Pavers100	Pavers	100	6624.75	4.46	1741.05	3.805931447	28138.85495	40.98315081	16358.36984	1.73237694	0	0	0	0
Pavers175	Pavers	175	0	0	0	0	44886.38725	33.82002151	13297.30014	3.398604315	0	0	0	0
Pavers300	Pavers	300	0	0	0	0	34838.47391	16.18877059	7364.146162	4.730822255	0	0	0	0
Pavers600	Pavers	600	0	0	0	0	6608.160109	1.878489224	829.3619513	7.967784318	0	0	0	0
Pavers750	Pavers	750	0	0	0	0	1315.679034	0.170408113	81.61709698	16.11278884	0	0	0	0
Pavers9999	Pavers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment25	Paving Equipment	25	249565.1	2887.4	546215.2	0.456898859	2058.6	4.31	1577	0.575510204	0	0	0	0
Paving Equipment50	Paving Equipment	50	86310.35	22.09	3861.7	2.229678639	4237.119948	12.58992108	5999.874378	0.706201444	0	0	0	0
Paving Equipment75	Paving Equipment	75	0	0	0	0	727.4936868	1.351072546	562.3305466	1.293172365	0	0	0	0
Paving Equipment100	Paving Equipment	100	3562.4	5.69	1007.4	3.536231884	17617.28773	23.05316631	10750.23363	1.638781847	0	0	0	0
Paving Equipment175	Paving Equipment	175	0	0	0	0	18993.96818	15.31286518	7124.261059	2.666096598	0	0	0	0
Paving Equipment300	Paving Equipment	300	0	0	0	0	12805.83123	6.188027575	3020.185782	4.24008063	0	0	0	0
Paving Equipment600	Paving Equipment	600	0	0	0	0	13816.07729	3.998159614	1891.474156	7.304390764	0	0	0	0
Paving Equipment750	Paving Equipment	750	0	0	0	0	2616.302631	0.425335172	223.3242888	11.71526235	0	0	0	0
Paving Equipment9999	Paving Equipment	9999	0	0	0	0	1242.394866	0.170134069	80.20801921	15.486659	0	0	0	0
Rollers25	Rollers	25	581468.85	312.41	77792.45	0.747384226	37805.6679	142.1976429	98865.99411	0.382403495	0	0	0	0
Rollers50	Rollers	50	9581.25	5.67	3533.2	2.711776886	69777.12182	258.4589559	90516.12071	0.770880604	0	0	0	0
Rollers75	Rollers	75	0	0	0	0	729.9040188	2.278715788	530.657668	1.375478699	0	0	0	0
Rollers100	Rollers	100	30061.4	10.69	6643	4.525274725	108329.9767	190.5356998	63950.32468	1.693977098	0	0	0	0
Rollers175	Rollers	175	0	0	0	0	112754.8218	111.4817873	40445.93715	2.787793054	0	0	0	0
Rollers300	Rollers	300	0	0	0	0	19064.30199	14.46308095	4520.61592	4.217139127	0	0	0	0
Rollers600	Rollers	600	0	0	0	0	10540.2851	4.995646147	1535.160218	6.805905598	0	0	0	0
Rollers750	Rollers	750	0	0	0	0	0	0	0	0	0	0	0	0
Rollers9999	Rollers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts25	Rough Terrain Forklifts	25	0	0	0	0	36.49337502	0.202183848	63.10901025	0.578259494	0	0	0	0
Rough Terrain Forklifts50	Rough Terrain Forklifts	50	1554.9	1.14	470.85	3.302325581	3511.584564	11.53017923	3182.329819	1.104091898	0	0	0	0
Rough Terrain Forklifts75	Rough Terrain Forklifts	75	0	0	0	0	96.90018444	0.303425789	70.21798026	1.379598059	0	0	0	0
Rough Terrain Forklifts100	Rough Terrain Forklifts	100	34021.65	16.19	6694.1	5.082331997	278910.7979	487.4029203	139113.7412	2.004911902	0	0	0	0
Rough Terrain Forklifts175	Rough Terrain Forklifts	175	1912.6	0.59	229.95	8.317460317	59001.65337	82.22383239	22911.83971	2.634441011	0	0	0	0
Rough Terrain Forklifts300	Rough Terrain Forklifts	300	0	0	0	0	4485.056248	4.045078704	1014.703188	4.763863278	0	0	0	0
Rough Terrain Forklifts600	Rough Terrain Forklifts	600	0	0	0	0	1666.62567	0.809135383	209.6621258	7.949102224	0	0	0	0
Rough Terrain Forklifts750	Rough Terrain Forklifts	750	0	0	0	0	286.7822898	0.101141923	22.08819203	12.98353574	0	0	0	0
Rough Terrain Forklifts9999	Rough Terrain Forklifts	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers25	Rubber Tired Dozers	25	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers50	Rubber Tired Dozers	50	0	0	0	0	3078.683033	3.418742052	3284.645906	0.937295259	0	0	0	0
Rubber Tired Dozers75	Rubber Tired Dozers	75	0	0	0	0	3307.833223	3.085208242	2324.52457	1.423008501	0	0	0	0
Rubber Tired Dozers100	Rubber Tired Dozers	100	0	0	0	0	9982.282579	6.337180395	5563.693578	1.794261651	0	0	0	0
Rubber Tired Dozers175	Rubber Tired Dozers	175	0	0	0	0	13439.18951	5.836876675	4640.377697	2.896141803	0	0	0	0
Rubber Tired Dozers300	Rubber Tired Dozers	300	0	0	0	0	15133.94742	4.752885292	3385.427332	4.470321154	0	0	0	0
Rubber Tired Dozers600	Rubber Tired Dozers	600	0	0	0	0	155624.8497	28.01700804	20564.90295	7.567497465	0	0	0	0
Rubber Tired Dozers750	Rubber Tired Dozers	750	0	0	0	0	5771.279758	0.416919752	423.8371678	13.61352419	0	0	0	0
Rubber Tired Dozers9999	Rubber Tired Dozers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Scrapers25	Scrapers	25	0	0	0	0	24.79312367	0.089193017	35.74611916	0.693581941	0	0	0	0
Scrapers50	Scrapers	50	0	0	0	0	197.3342492	0.5155981	186.7734726	1.056543216	0	0	0	0
Scrapers75	Scrapers	75	0	0	0	0	1712.519571	2.234258413	1015.586963	1.686236268	0	0	0	0
Scrapers100	Scrapers	100	0	0	0	0	8259.68349	6.271130217	3630.713465	2.274647754	0	0	0	0
Scrapers175	Scrapers	175	0	0	0	0	103941.4416	54.39559955	24772.00958	4.195914248	0	0	0	0
Scrapers300	Scrapers	300	0	0	0	0	126408.5661	55.68454948	22831.35715	5.543055924	0	0	0	0
Scrapers600	Scrapers	600	0	0	0	0	1546334.297	301.6248885	146508.7461	10.5545528	0	0	0	0
Scrapers750	Scrapers	750	0	0	0	0	23789.01645	4.1247848	1525.366341	15.59560861	0	0	0	0
Scrapers9999	Scrapers	9999	0	0	0	0	35736.61225	2.224258416	896.6318246	39.85593872	0	0	0	0
Skid Steer Loaders25	Skid Steer Loaders	25	1904405.9	545.55	174185.3	1.093122689	1666042.5	317.97	2654207	0.627697852	0	0	0	0
Skid Steer Loaders50	Skid Steer Loaders	50	45988.1	77.65	24093	1.908381838	52785.69455	178.9543853	56998.31025	0.926220687	0	0	0	0
Skid Steer Loaders75	Skid Steer Loaders	75	0	0	0	0	280467.3992	577.2321417	208257.9819	1.346730568	0	0	0	0
Skid Steer Loaders100	Skid Steer Loaders	100	614872.6	46.46	14413.85	4.265880909	99.28855964	0.2861691	83.51177	1.614162799	0	0	0	0
Skid Steer Loaders175	Skid Steer Loaders	175	0	0	0	0	1896.151115	2.39552226	654.5814416	2.896738272	0	0	0	0
Skid Steer Loaders300	Skid Steer Loaders	300	0	0	0	0	1760.394526	1.508291793	450.3643342	3.908823126	0	0	0	0
Skid Steer Loaders600	Skid Steer Loaders	600	0	0	0	0	508.7449752	0.177496093	56.38525536	9.022661376	0	0	0	0
Skid Steer Loaders750	Skid Steer Loaders	750	0	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders9999	Skid Steer Loaders	9999	0	0	0	0	688.654881	0.177446093	36.0855573	19.08346307	0	0	0	0
Surfacing Equipment25	Surfacing Equipment	25	121840.65	779.36	333405.6	0.365442722	0	0	0	0	0	0	0	0
Surfacing Equipment50	Surfacing Equipment	50	0	0	0	0	489.19059	0.139115698	774.271521	0.631807487	0	0	0	0
Surfacing Equipment75	Surfacing Equipment	75	0	0	0	0	310.9079498	1.207352159	297.8038912	1.044009916	0	0	0	0
Surfacing Equipment100	Surfacing Equipment	100	0	0	0	0	2960.157472	7.485583374	2118.20227	1.397485742	0	0	0	0
Surfacing Equipment175	Surfacing Equipment	175	0	0	0	0	2544.101986	4.748104485	1189.448487	2.138893947	0	0	0	0
Surfacing Equipment300	Surfacing Equipment	300	0	0	0	0	4943.212707	5.634102066	1398.897051	3.533650102	0	0	0	0
Surfacing Equipment600	Surfacing Equipment	600	0	0	0	0	17417.29383	9.578327113	2734.085274	6.370428104	0	0	0	0
Surfacing Equipment750	Surfacing Equipment	750	0	0	0	0	7452.013543	2.414704334	743.8586939	10.01804733

Orange (SC)	2023 Agricultural - Combine Harvesters	Aggregate	300 Diesel	9.48702E-05	0.000114793	0.000136613	0.000426792	0.001209259	0.02666562	4.494765E-05	4.13518E-05	2.453446-07	2.19102E-07	6178.124819	1137.67157	3.02448403	2634.20				
Orange (SC)	2023 Agricultural - Combine Harvesters	Aggregate	600 Diesel	1.64708E-05	1.99295E-05	2.37177E-05	0.000124864	0.000185918	0.008052814	8.02111E-06	7.37942E-06	7.44575E-08	6.61668E-08	1865.746544	233.5567755	0.518256269	77126.05				
Orange (SC)	2023 Agricultural - Construction Equipment	Aggregate	50 Diesel	0.000154507	0.000186953	0.00022249	0.000569064	0.000526251	0.007948626	4.33517E-05	3.98835E-05	6.934676-08	6.53108E-08	1184.607339	1781.301449	4.594359348	78958.7				
Orange (SC)	2023 Agricultural - Construction Equipment	Aggregate	175 Diesel	0.000208405	0.00021117	0.000156104	0.000597842	0.000910146	0.012816037	6.42445E-05	5.91048E-05	1.160646-07	1.06126E-07	2992.508914	2024.994271	5.523561187	127599				
Orange (SC)	2023 Agricultural - Construction Equipment	Aggregate	100 Diesel	0.000213051	0.000257791	0.00030679	0.001414377	0.00170419	0.031252941	0.000140832	0.000129566	2.844966-07	2.56793E-07	7240.955795	3670.014621	7.617716304	310075.7				
Orange (SC)	2023 Agricultural - Construction Equipment	Aggregate	175 Diesel	0.000405879	0.000491114	0.000584468	0.000391928	0.003609397	0.057469111	0.000201676	0.000193979	6.157938-07	5.54367E-07	15631.83582	6096.094442	0.967687792	746270.6				
Orange (SC)	2023 Agricultural - Construction Equipment	Aggregate	300 Diesel	0.000222469	0.000269216	0.00032089	0.000885719	0.00237944	0.044899393	0.000301112	9.30234E-05	4.120666-07	3.69662E-07	10423.58386	2517.704535	4.528242356	495130.9				
Orange (SC)	2023 Agricultural - Construction Equipment	Aggregate	600 Diesel	2.52829E-05	3.05924E-05	3.64074E-05	0.000110966	0.000241498	0.004550379	1.04243E-05	9.59031E-06	3.972376-08	3.57454E-08	1007.933983	137.3332021	0.15556909	48477.12				
Orange (SC)	2023 Agricultural - Cotton Pickers	Aggregate	100 Diesel	2.18815E-05	2.88966E-06	3.43894E-06	0.000106351	2.50466E-05	0.000833132	1.88772E-06	1.73670E-06	7.682744-09	6.94552E-09	193.0274128	82.92887966	0.183677793	7463.419				
Orange (SC)	2023 Agricultural - Cotton Pickers	Aggregate	175 Diesel	6.98879E-06	8.45644E-06	1.00639E-05	0.000102528	7.567E-05	0.002607094	4.32366E-06	3.97776E-06	2.405598-08	2.14215E-08	604.0343495	209.6256255	0.459012572	25667.12				
Orange (SC)	2023 Agricultural - Cotton Pickers	Aggregate	300 Diesel	7.857E-06	1.50709E-06	1.11442E-05	4.53461E-05	0.541926E-05	0.000350033	3.71522E-06	3.41781E-06	3.09448E-08	2.7526E-08	776.1165572	119.0726725	0.233880139					
Orange (SC)	2023 Agricultural - Cotton Pickers	Aggregate	600 Diesel	1.33979E-05	1.62115E-05	1.9293E-05	7.75706E-05	0.000158236	0.009585783	6.40562E-06	5.89317E-06	5.410881E-08	4.81147E-08	1356.719273	179.6716169	0.390606639	58204.41				
Orange (SC)	2023 Agricultural - Forage & Silage Harvesters	Aggregate	100 Diesel	6.56088E-07	7.93879E-08	9.44782E-07	4.43767E-06	5.67868E-06	0.000101753	4.58387E-07	4.21698E-07	9.27368E-10	8.36051E-10	23.57463526	11.39939764	0.03111385	911.535				
Orange (SC)	2023 Agricultural - Forage & Silage Harvesters	Aggregate	175 Diesel	3.89502E-07	7.11782E-07	4.99459E-07	2.43803E-06	7.64132E-06	0.000146428	2.78142E-07	2.55911E-07	1.34388-09	1.20192E-09	33.89146906	6.623850184	0.018686709	1049.417				
Orange (SC)	2023 Agricultural - Forage & Silage Harvesters	Aggregate	600 Diesel	5.25638E-06	6.36022E-06	7.56919E-06	3.01641E-05	6.43797E-05	0.003854693	2.53076E-06	2.32833E-06	5.581488-08	5.12939E-08	429.7116484	43.75901869	0.108125736	18663.65				
Orange (SC)	2023 Agricultural - Forage & Silage Harvesters	Aggregate	750 Diesel	8.14725E-06	9.85417E-06	1.17282E-05	4.67413E-05	9.46713E-05	0.005658019	3.92452E-06	3.60987E-06	3.542868-08	3.25733E-08	665.8911599	67.81454666	0.167550934	28941.81				
Orange (SC)	2023 Agricultural - Forklifts	Aggregate	9999 Diesel	5.16554E-06	6.2503E-06	7.43837E-06	3.76759E-05	0.000115603	0.002401645	2.50974E-06	2.30891E-06	2.219848-08	1.97334E-08	556.4342249	27.81174904	0.060869012	23918.1				
Orange (SC)	2023 Agricultural - Forklifts	Aggregate	50 Diesel	1.30546E-05	1.57968E-05	1.8798E-05	5.50231E-05	0.000188944	0.003681572	1.73161E-06	1.61488E-06	7.306888-09	6.79264E-09	188.9372364	244.7164102	0.495091252	8106.328				
Orange (SC)	2023 Agricultural - Forklifts	Aggregate	75 Diesel	1.07882E-06	1.30537E-06	1.5534E-06	6.2731E-06	9.92044E-06	0.00013156	6.13504E-07	5.64424E-07	1.19214E-09	1.08098E-09	30.48160592	20.11382601	0.023906824	1307.399				
Orange (SC)	2023 Agricultural - Forklifts	Aggregate	100 Diesel	4.17098E-07	5.04688E-07	6.00821E-07	2.49316E-06	2.49316E-06	3.10107E-06	5.22388E-05	2.59098E-07	2.383624E-07	4.74147E-10	4.29628E-10	12.14436997	6.7046087	0.007969842	519.6072			
Orange (SC)	2023 Agricultural - Hay Squeeze/Stack retriever	Aggregate	75 Diesel	6.44778E-07	7.78972E-07	2.96122E-06	2.96122E-06	4.69388E-06	5.80116E-05	3.47598E-07	3.20345211	4.15242E-08	3.82810E-08	10.44097603	8.858897029	0.029507574	549.0595				
Orange (SC)	2023 Agricultural - Hay Squeeze/Stack retriever	Aggregate	100 Diesel	1.39108E-06	1.68312E-06	2.00316E-06	6.44866E-06	9.84398E-06	0.000126331	8.81249E-07	8.10749E-07	1.1341E-09	1.03802E-09	29.26957491	15.42775309	0.026162687	1195.653				
Orange (SC)	2023 Agricultural - Hay Squeeze/Stack retriever	Aggregate	175 Diesel	1.82448E-05	2.20811E-05	2.62736E-05	9.98868E-05	0.000160369	0.000393387	3.67739E-05	3.38509E-05	2.85240E-08	2.60452E-08	1.164.5	168.3890571	0.285407276	20702.52				
Orange (SC)	2023 Agricultural - Hay Squeeze/Stack retriever	Aggregate	300 Diesel	1.95714E-05	4.78814E-05	5.69828E-05	0.000196428	0.000408926	0.005506645	1.75723E-05	1.61665E-05	5.00968-08	4.5240E-08	1275.827875	243.8905827	0.411644377	57843.99				
Orange (SC)	2023 Agricultural - Hay Squeeze/Stack retriever	Aggregate	600 Diesel	9.34268E-05	0.000114206	1.34532E-05	4.65359E-05	0.000116	0.001275854	0.000167816	0.000154378	1.38126E-07	1.24813E-07	347.0291	864.8886183	2.969739	83186.84				
Orange (SC)	2023 Agricultural - Nut Harvester	Aggregate	50 Diesel	2.90896E-06	3.51984E-05	4.1889E-05	0.000325371	0.000384597	0.007890819	1.22844E-05	1.13016E-05	7.25712E-08	6.48358E-08	1828.214154	1768.346752	4.562585939	70924.17				
Orange (SC)	2023 Agricultural - Nut Harvester	Aggregate	75 Diesel	1.76291E-05	2.13312E-05	2.5383E-05	0.000295101	0.000285918	0.007591306	9.94617E-06	9.15048E-06	7.01273E-08	6.23748E-08	1754.820666	1048.939163	2.667845987	68556.33				
Orange (SC)	2023 Agricultural - Nut Harvester	Aggregate	100 Diesel	2.40021E-05	4.34045E-05	5.14678E-05	0.000391374	0.000611886	0.009577897	2.88979E-05	2.65857E-05	1.25098E-07	1.15048E-07	3019.931376	1429.933703	4.994547793	211194.1				
Orange (SC)	2023 Agricultural - Nut Harvester	Aggregate	175 Diesel	4.726E-05	5.71918E-05	6.80631E-05	0.000929867	0.000512976	0.024117499	2.89053E-05	2.65929E-05	2.230568-07	1.98164E-07	5587.75384	1896.050396	3.855583719	234426.3				
Orange (SC)	2023 Agricultural - Nut Harvester	Aggregate	300 Diesel	2.40104E-05	2.91658E-05	3.46737E-05	0.000479366	0.000258942	0.012161868	1.46911E-05	1.35139E-05	1.142748-07	1.05131E-07	2842.908	1067.388	3.008.9697795	107355.4	65.3011481	0.137254691	12993.96	
Orange (SC)	2023 Agricultural - Nut Harvester	Aggregate	600 Diesel	1.86767E-05	2.25988E-05	2.68945E-05	0.000157566	0.000221962	0.012320374	9.34312E-06	8.59567E-06	1.141128-07	1.05123E-07	2854.692512	377.5360788	0.881847879	122699.2				
Orange (SC)	2023 Agricultural - Other Harvesters	Aggregate	50 Diesel	1.32209E-05	1.60026E-05	1.9035E-05	8.58408E-05	7.81527E-05	0.003452121	4.53422E-06	4.17329E-06	1.21237E-08	1.1053E-08	311.670217	313.4880298	0.731.4980298	10725.95				
Orange (SC)	2023 Agricultural - Other Harvesters	Aggregate	75 Diesel	2.20307E-06	2.66572E-05	3.17242E-05	0.000210864	0.000208446	0.004707355	1.14877E-05	1.05687E-05	4.31528E-08	3.96513E-08	1090.641377	633.1159365	0.452026445	42536.41				
Orange (SC)	2023 Agricultural - Other Harvesters	Aggregate	100 Diesel	6.45499E-05	7.81054E-05	9.29519E-05	0.000598942	0.000479515	0.013246829	4.27429E-05	3.93235E-05	1.21245E-07	1.08744E-07	3066.314968	1585.165782	1.15078486	118529.8				
Orange (SC)	2023 Agricultural - Other Harvesters	Aggregate	175 Diesel	4.70882E-05	5.69758E-05	6.78071E-05	0.000377764	0.000429359	0.009683883	2.97695E-05	2.73945E-05	2.579505E-08	2.31272E-08	7.1.193168	2011.073312	1.664.8863844	0.998739	88186.84			
Orange (SC)	2023 Agricultural - Other Harvesters	Aggregate	300 Diesel	4.08111E-05	4.94057E-05	5.87968E-05	0.000165353	0.000431069	0.009480337	1.77745E-05	1.63521E-05	8.701348-08	7.78962E-08	2196.487595	438.2335656	0.664727855	93721.15				
Orange (SC)	2023 Agricultural - Other Harvesters	Aggregate	600 Diesel	2.56169E-05	3.10061E-05	3.69107E-05	7.49E-05	0.000156195	0.003460472	5.97977E-06	5.50413E-06	4.54538E-08	4.06772E-08	1147.1.9165166	1.9165166	0.139823386	84251.32				
Orange (SC)	2023 Agricultural - Others	Aggregate	50 Diesel	1.11511E-05	1.34928E-05	1.6057E-05	4.85593E-05	4.65501E-05	0.000755923	3.27584E-06	3.01378E-06	6.70128E-09	6.21118E-09	175.140557	166.3966179	0.318053469	7512.148				
Orange (SC)	2023 Agricultural - Others	Aggregate	75 Diesel	2.09152E-06	2.53096E-06	3.01179E-06	1.95457E-05	1.88052E-05	0.000311686	1.25698E-06	1.15604E-06	2.838828E-09	2.56103E-09	72.12413285	67.45268079	0.120857177	2724.427				
Orange (SC)	2023 Agricultural - Others	Aggregate	100 Diesel	8.4252E-06	1.01945E-05	1.21123E-05	5.74972E-05	6.82594E-05	0.001281901	5.5445E-06	5.10094E-06	1.167858-08	1.05329E-08	297.0020278	146.310354	0.293577566	12739.06				
Orange (SC)	2023 Agricultural - Others	Aggregate	175 Diesel	1.38842E-05	2.8875E-06	3.43654E-05	0.000318874	0.000232173	0.004402475	1.32122E-05	1.21551E-05	4.026618-08	3.63734E-08	1020.203451	881.4776917	2.772446143	68637.27				
Orange (SC)	2023 Agricultural - Others	Aggregate	300 Diesel	2.68632E-05	3.2504E-05	3.8683E-05	0.000617205	0.000297286	0.005766038	1.26815E-05	1.16725E-05	7.797738-08	7.04519E-08	1964.959123	1684.9179	5.987575124	63702.21				
Orange (SC)	2023 Agricultural - Others	Aggregate	600 Diesel	0.000124888	0.000151115	0.00017983	0.000752202	0.001393408	0.029737336	5.859575E-05	5.39088E-05	2.677858-07	2.39706E-07	6759.148387	852.0507125	1.747248234	323302.7				
Orange (SC)	2023 Agricultural - Sprayers/Spray rigs	Aggregate	50 Diesel	2.68315E-06	3.24616E-06	3.86371E-06	1.74616E-05	2.71618E-05	0.000350024	1.64472E-06	1.05151E-06	1.534498-08	1.38611E-08	402.3370704	65.86141099	0.178035439	16349.1				
Orange (SC)	2023 Agricultural - Sprayers/Spray rigs	Aggregate	75 Diesel	7.59909E-06	9.1948E-06	1.09427E-05	4.816E-05	6.71244E-05	0.001064094	4.51369E-06	4.15241E-06	9.67567E-09	8.74287E-09	246.5281992	166.8215914	0.302008221	10087.62				
Orange (SC)	2023 Agricultural - Sprayers/Spray rigs	Aggregate	100 Diesel	1.70541E-05	2.06355E-05	2.45579E-05	0.000108053	0.000160483	0.002438653	1.10488E-05	1.01648E-05	2.218628-08	2.00455E-08	565.6083454	283.4282966	0.573057374	23145.25				
Orange (SC)	2023 Agricultural - Sprayers/Spray rigs	Aggregate	175 Diesel	2.83615E-05	3.43175E-05	4.08406E-05	0.000217585	0.000276588	0.005018454	1.55979E-05	1.43501E-05	4.123478-08	3.72548E-08	1162.719428	431.9373384	0.772878273	51818.36				
Orange (SC)	2023 Agricultural - Sprayers/Spray rigs	Aggregate	300 Diesel	3.24758E-05	1.501E-06	1.78644E-05	5.26787E-05	0.000137397	0.002556871	5.9698E-06	5.44538E-06	2.34259E-08	2.10888E-08	592.3983958	122.7243002	0.221216305	26765.11				
Orange (SC)	2023 Agricultural - Sprayers/Spray rigs	Aggregate	600 Diesel	4.56172E-07	4.56172E-07	5.41139E-07	2.23599E-06	4.2169E-06	4.41467E-05	1.77954E-07	1.63718E-07	7.78932E-10	6.93178E-10	19.54583166	2.688924648	0.006924406	887.4427				
Orange (SC)	2023 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	50 Diesel	4.05904E-06	4.91144E-06	5.84502E-06	3.18666E-05	3.50091E-05	0.000585514	1.51597E-06	1.38498E-06	6.607368-09	5.41076E-09	152.5704189	125.2012517	0.287357657	5556.048				
Orange (SC)	2023 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	75 Diesel	1.24472E-05	1.50546E-05	1.79612E-05	9.22117E-05	0.000118021	0.001404053	5.79195E-06	5.29166E-06	1.389678-08	1.20755E-08	339.8544.9	316.1423869	0.651.1423869	14078.5				
Orange (SC)	2023 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	100 Diesel	2.57972E-05	3.12146E-05	3.714E-05	0.000362633	0.000256198	0.008949793	1.15457E-05	1.05490E-05	2.966178-08	2.91292E-07	1157.907345	273.9586568	0.675991663	41739.93				
Orange (SC)	2023 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	175 Diesel	1.26233E-05	1.52746E-05	1.81778E-05	0.000197221	0.000133118	0.004509163	5.75584E-06	5.25761E-06	6.439174E-08	5.88276E-08	1.1.1244.5	1.1.1244.5	0.278.2889491	0.98815E-08	1.1.1244.5	0.278.2889491	0.98815E-08	1.1.1244.5
Orange (SC)	2023 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	300 Diesel	4.87655E-06	5.90063E-06	7.0224E-06	2.9937E-05	5.54227E-05	0.00216041	2.2548E-06	2.07442E-06	1.996178-08	1.77512E-08	500.5427651	96.34424438	0.201066377	19821				
Orange (SC)	2023 AirGrSpp - A/C Tug Narrow Body	Aggregate	25 Diesel	2.7627E-06	3.3429BE-05	3.97842E-05	0.00011631	9.7838E-05	0.009655669	1.05481E-05	9.70423E-06	8.844268-08	7.88083E-08	313.2675315	235.8431103	0.741433708	10174.06				
Orange (SC)	2023 AirGrSpp - A/C Tug Narrow Body	Aggregate	50 Diesel	1.59842E-06	1.93409E-06	2.30173E-06	1.53289E-05	2.02741E-05	0.002241996	1.54599E-06	1.42231E-06	2.067998-08	1.82984E-08	72.73712924	43.85489786	0.148238742	2625.552				
Orange (SC)	2023 AirGrSpp - A/C Tug Narrow Body	Aggregate	100 Diesel	4.49576E-06	5.43987E-06	6.47388E-06	3.36703E-05	4.74965E-05	0.009095364	3.03755E-06	2.79435E-06	5.814538-08	5.14235E-08	170.4.2	170.4.2	0.348.2	6150.8				
Orange (SC)	2023 AirGrSpp - A/C Tug Narrow Body	Aggregate	175 Diesel	9.97808E-06	0.000120735	0.000143684	0.000167481	0.00014741	0.283197422	7.51386E-05	6.93115E-05	2.615318-08	2.31142E-08	9188.030464	2523.570494	7.661481646	331770.9				
Orange (SC)	2023 AirGrSpp - A/C Tug Narrow Body	Aggregate	300 Diesel	3.82074E-05	4.6475E-05	5.5018E-05	0.000182324	0.000653946	0.007185251	1.88041E-05	1.73078E-05	9.83215E-08	8.68926E-08	2.1.2.1	2.1.2.1	0.993.2.1	0.993.2.1	0.993.2.1	0.993.2.1	0.993.2.1	0.993.2.1
Orange (SC)	2023 AirGrSpp - A/C Tug Narrow Body	Aggregate	750 Diesel	1.19847E-05	1.45015E-05	1.7259E-05	5.92726E-05	0.000162756	0.009834345	7.53847E-06	6.95353E-06	9.056398-08	8.02666E-08	319.0644893	16.45925718	0.049428914	11521.48				
Orange (SC)	2023 AirGrSpp - A/C Tug Wide Body	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Orange (SC)	2023 AirGrSpp - A/C Tug Wide Body	Aggregate	50 Diesel	6.51174E-07	7.87921E-07	9.37691E-07	1.34934E-05	1.06006E-05	0.002097334	4.44255E-06	4.08715E-08	1.937148-08	1.71182E-08	68.04582329	45.49310947	0.112665227	2206.416				
Orange (SC)	2023 AirGrSpp - A/C Tug Wide Body	Aggregate	75 Diesel	1.39159E-06	1.68842E-06	2.00936E-06	1.6713E-05	1.74858E-05	0.002470053	1.15378E-06	1.06148E-06	2.27950-08	2.01602E-08	80.13815893	45.49310947	0.112665227	2888.812				
Orange (SC)	2023 AirGrSpp - A/C Tug Wide Body	Aggregate	100 Diesel	6.58404E-06	7.98855E-06	9.5051E-06	9.22117E-05	0.000148087	0.031400525	7.23696E-06	6.65716E-06	1.236378-07	1.09973E-07	434.7652874	167.1972439	0.456661109	15672.38				
Orange (SC)	2023 AirGrSpp - A/C Tug Wide Body	Aggregate	175 Diesel	9.9529E-06	1.2043E-05	1.43122E-05	0.000202748	0.000127603	0.035689353	5.94341E-06	5.46793E-06	3.296678-07	2.92192E-07	1157.907345	273.9586568	0.675991663	41739.93				
Orange (SC)	2023 AirGrSpp - A/C Tug Wide Body	Aggregate	300 Diesel	6.1173E-05	7.4041E-05	8.8041E-05	0.000637304	0.000373497	0.04111889	2.29832E-05	2.11445E-05	1.352188-06	1.20403E-06	4.4.4.4	4.4.4.4	0.4.4.4	0.4.4.4	0.4.4.4	0.4.4.4	0.4.4.4	0.4.4.4
Orange (SC)	2023 AirGrSpp - A/C Tug Wide Body	Aggregate	600 Diesel	5.55B5E-05	6.7257BE-05	8.00423E-05	0.000435409	0.000304259	0.160319519	3.13028E-05	2.87986E-05	1.480578-06	1.30851E-06	520.1.390226	502.6053806	1.295605887	187503.3				
Orange (SC)	2023 AirGrSpp - A/C Tug Wide Body	Aggregate	750 Diesel	7.69905E-06	9.3060SE-06	1.10758E-05	2.7526E-05	0.000173043	0.019423088	4.49874E-06	4.13884E-06	1.238728-07	1.09557E-07	435.4973046	24.92773122	0.112665237	15704.47				
Orange (SC)	2023 AirGrSpp - Baggage Tug	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Orange (SC)	2023 AirGrSpp - Baggage Tug	Aggregate	50 Diesel	1.94111E-05	2.34874E-05	2.795E-05	0.000176186	0.000146717	0.021189541	8.75161E-06	8.05332E-06	1.450748-06	1.28356E-06	4921.745527	721.5668189	0.991789304	32413.09				
Orange (SC)	2023 AirGrSpp - Baggage Tug	Aggregate	75 Diesel	6.02242E-05	7.2629E-05	8.64464E-05	0.000455777	0.000387922	0.151700348	3.80515E-05	3.50135E-05	4.480748-06	3.96255E-06	1.1.1.1	1.1.1.1	0.1.1.1	0.1.1.1	0.1.1.1	0.1.1.1	0.1.1.1	0.1.1.1
Orange (SC)	2023 AirGrSpp - Baggage Tug	Aggregate	100 Diesel	5.72472E-05	6.9269E-05	8.24359E-05	0.000565361	0.000783857	0.152458538	2.51527E-05	2.31405E-05	1.407848-06	1.24435E-06	4946.349361	3899.394888	1.971123738	259962.3				
Orange (SC)	2023 AirGrSpp - Baggage Tug	Aggregate	175 Diesel	1.38789E-05	1.67992E-05	1.99874E-05	7.47131E-05	0.000250497	0.001384832	2.49481E-06	2.29522E-06	1.180108-06	1.04299E-06	4.1.1.1	4.1.1.1	0.1.1.1	0.1.1.1	0.1.1.1	0.1.1.1	0.1.1.1	0.1.1.1
Orange (SC)	2023 AirGrSpp - Baggage Tug	Aggregate	300 Diesel	5.41227E-06	6.54885E-06	7.7936E-06	1.83032E-05	0.000114425	0.007976632	2.96718E-06	2.72988E-06	7.358568-08	6.50140E-08	258.793046	75.35942899	0.101823866	13564.7				
Orange (SC)	2023 AirGrSpp - Belt Loader	Aggregate	25 Diesel	8.23862E-08	9.96994E-08	1.18651E-07	2.37166E-06	2.19448E-06	0.000457473	7.57239E-07	6.96712E-09	4.270988-09	3.73383E-09	14.84221504	10.78327493	0.025457452	769.5619				
Orange (SC)	2023 AirGrSpp - Belt Loader	Aggregate	50 Diesel	1.71835E-05	2.0794E-05	2.47475E-05	5.50181E-05	0.000188889	0.934015E-05	0.001147781	6.17526E-06	1.285638-07	1.12555E-07	4.1.1.1	4.1.1.1	0.1.1.1	0.1.1.1	0.1.1.1	0.1.1.1	0.1.1.1	0.1.1.1
Orange (SC)	2023 AirGrSpp - Belt Loader	Aggregate	75 Diesel	5.79082E-05	7.0069E-05	8.33878E-05	0.000556931	0.000624443	0.080193442	4.46109E-05	4.10421E-05	7.386918-07	6.54528E-07	2601.787912	2385.703759	4.607952499	149976.1				
Orange (SC)	2023 AirGrSpp - Belt Loader	Aggregate	100 Diesel	7.62207E-05	4.3827E-05	5.21579E-05	0.000731	0.000604588	0.027377291	5.92915E-05	5.45708E-05	1.483458-06	1.32755E-06	5.1.1.1	5.1.1.1	0.1.1.1	0.1.1.1	0.1.1.1	0.1.1.1	0.1.1.1	0.1.1.1
Orange (SC)	2023 AirGrSpp - Belt Loader	Aggregate	175 Diesel	1.15115E-05	1.3492BE-05	1.60578E-05	0.000165	0.000138606	0.217996E-05	0.004016027	1.48194E-06	1.363188E-06	4.547598-08	4.0200E-08	159.8211377	68.14617132	0.148643829	9213.276			
Orange (SC)	2023 AirGrSpp - Belt Loader	Aggregate	300 Diesel	1.08076E-06	1.3079E-06	1.5492BE-06	8.34419E-06	1.20783E-05	0.004372227	5.55888E-07	5.11417E-07	4.486748-08	3.96255E-08	140.7.56071	140.7.56071	0.303.1.1913	0.303.1.1913	0.303.1.1913	0.303.1.1913	0.303.1.1913	0.303.1.1913
Orange (SC)	2023 AirGrSpp - Belt Loader	Aggregate	600 Diesel	3.11278E-07	3.7664BE-07	4.482E-07	6.64543E-06	1.83885E-06	0.003744665	6.25455E-08	5.75418E-08	3.461198-08	3.05635E-08	121.4915333	15.39165715	0.029728726	7003.195				
Orange (SC)	2023 AirGrSpp - Belt Loader	Aggregate	750 Diesel	3.82354E-06	4.6264BE-06	5.5053BE-06	5.89935E-05	5.10423E-05	0.00219613	2.59669E-06	2.38916E-06	2.208198-08	1.90245E-08	75.21502259	6.577622715	0.029728726	4111.014				
Orange (SC)	2023 AirGrSpp - Bobtail	Aggregate	25 Diesel	1.72708E-07	2.0898E-07	2.48699E-07	1.28635E-06	3.99196E-06	0.00046593	1.49219E-07	1.37282E-07	6.06128E-09	5.57826E-09	19.68.2	19.68.2	0.19.68.2	0.19.68.2	0.19.68.2	0.19.68.2	0.19.68.2	0.19.68.2
Orange (SC)	2023 AirGrSpp - Bobtail	Aggregate	50 Diesel	2.33157E-06	2.82122E-06	3.3574E-06	2.08202E-05	1.70034E-05	0.002039561	6.58398E-07	6.05726E-07	2.710788-08	2.39923E-08	95.37083186	99.06093268	0.244824801	4496.947				
Orange (SC)	2023 AirGrSpp - Bobtail	Aggregate	75 Diesel	3.18243E-07	1.1197E-06	1.32227E-06	2.25217E-05	3.81908E-05	0.005004301	1.77422E-06	1.63236E-06	3.329428-08	2.94162E-08	116.9019956	85.53878827	0.183618601	6128.845				
Orange (SC)	2023 AirGrSpp - Bobtail	Aggregate	100 Diesel	7.02375E-07	8.4987E-07	1.0114E-06	9.34135E-06	1.33473E-05	0.001341061	7.43759E-07	6.84238E-07	1.237778-08	1.13945E-08	43.58924636	43.58924636	0.083.58924636	0.083.58924636	0.083.58924636	0.083.58924636	0.083.58924636	0.083.58924636
Orange (SC)	2023 AirGrSpp - Bobtail	Aggregate	175 Diesel	5.67753E-06	6.8685BE-06	8.17649E-06	7.24213E-05	4.2239E-05	0.011193863	3.79322E-06	3.48939E-06	1.028198-07	9.69018E-08	361.4045414	156.0744449	0.367237208	13964.47				
Orange (SC)	2023 AirGrSpp - Bobtail	Aggregate	300 Diesel	1.39966E-05	1.6935BE-05	2.01551E-05	0.000118S7	0.000162714	0.049913251	6.875E-06	6.32528E-06	1.971138-08	1.08112E-08	9.55118E-09	37.96650798	78.80569035	0.165027992	1971.642			
Orange (SC)	2023 AirGrSpp - Cargo Loader	Aggregate	25 Diesel	2.68619E-06	3.2502BE-06	3.86811E-06	6.62111E-06	5.27763E-06	0.00117021	2.14253E-06	1.97110E-06	1.08112E-08	9.55118E-09	37.96650798	78.80569035	0.165027992	1971.642				
Orange (SC)	2023 AirGrSpp - Cargo Loader	Aggregate	50 Diesel	1.41958E-05	4.1456BE-06

| | | |

| | | |

OFFROAD 2024

	Equipment Type	Horsepower HP	Gas				Diesel				Natural Gas			
			Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr
Air Compressors25	Air Compressors	25	169276.05	1158.91	560242.15	0.302148009	8135.85	18.24	1480.03	0.549204824	0	0	0	0
Air Compressors50	Air Compressors	50	51892.05	48.03	23210.35	2.235728888	91498.2	110.17	89662.25	1.020476287	0	0	0	0
Air Compressors75	Air Compressors	75	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors100	Air Compressors	100	282542.85	155.71	75266.65	5.753891664	0	0	0	0	0	0	0	0
Air Compressors175	Air Compressors	175	34660.4	10.48	5058.9	5.851370851	0	0	0	0	0	0	0	0
Air Compressors300	Air Compressors	300	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors600	Air Compressors	600	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors750	Air Compressors	750	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors9999	Air Compressors	9999	0	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts25	Aerial Lifts	25	34583.75	106.57	39993.05	0.864749399	29265.7	159.55	6373.85	0.459259894	53782.75	121.29	45519.15	1.181541176
Aerial Lifts50	Aerial Lifts	50	72901.45	127.24	45979.05	1.585536239	122330.565	483.3519432	149623.2898	0.817590392	0	0	0	0
Aerial Lifts75	Aerial Lifts	75	0	0	0	0	93636.84122	273.0402403	84674.46351	1.113717692	0	0	0	0
Aerial Lifts100	Aerial Lifts	100	110994.85	127.24	45979.05	2.849011689	119815.5255	312.5022002	96780.70997	1.238010477	0	0	0	0
Aerial Lifts175	Aerial Lifts	175	0	0	0	0	13045.35039	20.30123782	6274.527412	2.079063769	0	0	0	0
Aerial Lifts300	Aerial Lifts	300	0	0	0	0	77956112.38	23.04113871	212.6803994	3.605242855	0	0	0	0
Aerial Lifts600	Aerial Lifts	600	0	0	0	0	553.6014559	0.228103796	70.89673314	7.808560865	0	0	0	0
Bore/Drill rigs25	Bore/Drill rigs	25	4394.67	27.07	3350.7	1.311546641	3617.15	6.72	5453.1	0.663318644	0	0	0	0
Bore/Drill rigs50	Bore/Drill rigs	50	689.85	2.5	266.45	2.589041098	2989.470365	7.179406083	2614.484433	1.14342634	0	0	0	0
Bore/Drill rigs75	Bore/Drill rigs	75	0	0	0	0	3676.284448	6.005152868	1982.58594	1.854287679	0	0	0	0
Bore/Drill rigs100	Bore/Drill rigs	100	7876.7	11.48	1224.4	6.422010048	15009.15616	17.91072886	6976.491392	2.151390339	0	0	0	0
Bore/Drill rigs175	Bore/Drill rigs	175	2748.45	2.85	306.6	8.964285714	21890.54793	17.30014773	5603.021692	3.906918289	0	0	0	0
Bore/Drill rigs300	Bore/Drill rigs	300	0	0	0	0	31884.22913	17.83515611	5885.415681	5.419196446	0	0	0	0
Bore/Drill rigs600	Bore/Drill rigs	600	0	0	0	0	4911.31810	14.13208408	4775.354758	10.28863478	0	0	0	0
Bore/Drill rigs750	Bore/Drill rigs	750	0	0	0	0	31793.34044	3.174053218	1902.84805	16.70860712	0	0	0	0
Bore/Drill rigs9999	Bore/Drill rigs	9999	0	0	0	0	16328.66618	0.453436174	338.2859846	48.26825186	0	0	0	0
Cement and Mortar Mixers25	Cement and Mortar Mixers	25	144324.85	4081.35	375087.65	0.384838617	927.45	93.49	2807.25	0.330386169	0	0	0	0
Cement and Mortar Mixers50	Cement and Mortar Mixers	50	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers75	Cement and Mortar Mixers	75	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers100	Cement and Mortar Mixers	100	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers175	Cement and Mortar Mixers	175	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers300	Cement and Mortar Mixers	300	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers600	Cement and Mortar Mixers	600	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers750	Cement and Mortar Mixers	750	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers9999	Cement and Mortar Mixers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws25	Concrete/Industrial Saws	25	129598.9	574.48	163253.55	0.793838174	102.95	0.67	397.85	0.76140789	0	0	0	0
Concrete/Industrial Saws50	Concrete/Industrial Saws	50	15771.65	9.4	5701.3	2.766325278	4703.2	5.88	3420.05	1.374599787	0	0	0	0
Concrete/Industrial Saws75	Concrete/Industrial Saws	75	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws100	Concrete/Industrial Saws	100	15388.4	5.35	3266.75	4.710614525	0	0	0	0	0	0	0	0
Concrete/Industrial Saws175	Concrete/Industrial Saws	175	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws300	Concrete/Industrial Saws	300	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws600	Concrete/Industrial Saws	600	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws750	Concrete/Industrial Saws	750	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws9999	Concrete/Industrial Saws	9999	0	0	0	0	0	0	0	0	0	0	0	0
Cranes25	Cranes	25	0	0	0	0	57.75554616	0.284739189	139.5142938	0.413975854	0	0	0	0
Cranes50	Cranes	50	2295.87	2.85	1193.55	1.923547401	935.7444373	3.037218017	1357.103608	0.689508449	0	0	0	0
Cranes75	Cranes	75	0	0	0	0	359.0845153	0.949310363	356.8835561	1.006172796	0	0	0	0
Cranes100	Cranes	100	7825.6	5.7	2361.55	3.313175796	22527.27172	37.39574684	17096.48703	1.317509492	0	0	0	0
Cranes175	Cranes	175	503.7	0.21	91.25	5.52	63388.87899	61.76840404	28778.0947	2.202678101	0	0	0	0
Cranes300	Cranes	300	0	0	0	0	110052.0183	69.76110133	33651.22474	3.270371856	0	0	0	0
Cranes600	Cranes	600	0	0	0	0	19723.5823	71.08988421	36026.07298	5.460753471	0	0	0	0
Cranes750	Cranes	750	0	0	0	0	3385.94245	0.854215667	356.5488513	9.496413491	0	0	0	0
Cranes9999	Cranes	9999	0	0	0	0	10746.58719	1.518609699	769.657551	13.96281682	0	0	0	0
Crawler Tractors25	Crawler Tractors	25	0	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors50	Crawler Tractors	50	0	0	0	0	3026.636067	8.423781643	2940.641909	1.029249404	0	0	0	0
Crawler Tractors75	Crawler Tractors	75	0	0	0	0	742.9366151	2.10594791	470.2300999	1.579740707	0	0	0	0
Crawler Tractors100	Crawler Tractors	100	0	0	0	0	133164.6775	142.6147925	68473.56924	1.944751515	0	0	0	0
Crawler Tractors175	Crawler Tractors	175	0	0	0	0	14610.387	95.10460752	44105.19931	1.312903718	0	0	0	0
Crawler Tractors300	Crawler Tractors	300	0	0	0	0	152211.9696	72.80579769	33499.95088	4.543647548	0	0	0	0
Crawler Tractors600	Crawler Tractors	600	0	0	0	0	536307.4457	129.8106292	62804.00455	8.539163883	0	0	0	0
Crawler Tractors750	Crawler Tractors	750	0	0	0	0	5907.37696	0.926617308	385.8186755	13.75543018	0	0	0	0
Crawler Tractors9999	Crawler Tractors	9999	0	0	0	0	31064.46512	2.527137493	1431.246944	21.70560868	0	0	0	0
Crushing/Proc. Equipment25	Crushing/Proc. Equipment	25	1930.85	6.82	1971	0.979629631	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment50	Crushing/Proc. Equipment	50	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment75	Crushing/Proc. Equipment	75	0	0	0	0	31064.46512	2.527137493	1431.246944	21.70560868	0	0	0	0
Crushing/Proc. Equipment100	Crushing/Proc. Equipment	100	6066.1	3.31	799.35	7.589041096	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment175	Crushing/Proc. Equipment	175	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment300	Crushing/Proc. Equipment	300	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment600	Crushing/Proc. Equipment	600	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment750	Crushing/Proc. Equipment	750	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment9999	Crushing/Proc. Equipment	9999	0	0	0	0	0	0	0	0	0	0	0	0
Dumpers/Tenders25	Dumpers/Tenders	25	13808.9	27.9	4055.8	0.340352772	927.1	4.03	2668.15	0.347489	0	0	0	0
Dumpers/Tenders100	Dumpers/Tenders	100	649.7	2.06	266.45	2.438356164	0	0	0	0	0	0	0	0
Excavators25	Excavators	25	0	0	0	0	6512.836317	6.388812722	8718.162898	0.747042283	0	0	0	0
Excavators50	Excavators	50	0	0	0	0	121316.7654	206.0359287	15417.51118	0.786873882	0	0	0	0
Excavators75	Excavators	75	0	0	0	0	2276.082317	2.701003546	1577.709077	1.442653602	0	0	0	0
Excavators100	Excavators	100	0	0	0	0	154945.2507	145.7887851	96755.81201	1.601405088	0	0	0	0
Excavators175	Excavators	175	0	0	0	0	332131.2985	190.1675389	115057.7624	2.886648337	0	0	0	0
Excavators300	Excavators	300	0	0	0	0	423171.8462	163.8327465	97985.45601	4.321326816	0	0	0	0
Excavators600	Excavators	600	0	0	0	0	751269.2175	171.8513506	112714.727	6.665226784	0	0	0	0
Excavators750	Excavators	750	0	0	0	0	9386.701883	1.392503779	769.867166	12.19282574	0	0	0	0
Excavators9999	Excavators	9999	0	0	0	0	20937.35561	1.266095412	879.143725	23.80424861	0	0	0	0
Forklifts25	Forklifts	25	1500.15	2.44	2197.3	0.682726251	35.67569602	0.195570715	61.69495945	0.578259404	1427.15	1.16	1452.9	0.982412109
Forklifts50	Forklifts	50	12187.05	4.25	765040	1.592996183	85861.34972	235.0371532	171054.9583	0.501659527	1895134.75	787.97	1419561.65	1.335014605
Forklifts75	Forklifts	75	0	0	0	0	5630.076285	16.82993197	7330.210702	0.768064727	0	0	0	0
Forklifts100	Forklifts	100	56608986.15	1505.45	268787.2	2.10458959	1260370.85	1053.474132	128954.178	9.773958776	11860168	2765.34	4982217.15	2.380499211
Forklifts175	Forklifts	175	3966422.85	55.03	98298.15	4.032861758	370543.4955	354.9777478	235221.288	1.575297385	8901147.4	101.2	182318.45	4.882109183
Forklifts300	Forklifts	300	0	0	0	0	72794.08012	44.74913093	32288.33238	2.254853051	0	0	0	0
Forklifts600	Forklifts	600	0	0	0	0	18737.77902	6.980666219	4831.49439	3.878257431	0	0	0	0
Forklifts750	Forklifts	750	0	0	0	0	280.3504549	0.097778608	21.50122581	12.98535474	0	0	0	0
Forklifts9999	Forklifts	9999	0	0	0	0	1985.283195	0.185182764	149.3000598	9.144522179	0	0	0	0
Generator Sets25	Generator Sets	25	2452080.95	10440.29	1497532.2	0.701088885	2127.07	1036.41	349885.35	0.607934571	0	0	0	0
Generator Sets50	Generator Sets	50	4023934.25	1580.67	184495.25	2.217004017	2527.03	534.72	180496.15	1.399719841	0	0	0	0
Generator Sets75	Generator Sets	75	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets100	Generator Sets	100	1817992.7	305.17	85040	5.188333333	0	0	0	0	16341.05	22.67	2602.45	6.279102389
Generator Sets175	Generator Sets	175	29751.15	28.83	3306.9	8.996688742	0	0	0	0	23597.25	18.84	2164.45	10.90219222
Generator Sets300	Generator Sets	300	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets600	Generator Sets	600	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets750	Generator Sets	750	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets9999	Generator Sets	9999	0	0	0	0	0	0	0	0	0	0	0	0
Graders25	Graders	25	0	0	0	0	23.2973992	0.169640384	39.64343858	0.587673523	0	0	0	0
Graders50	Graders	50	0	0	0	0	779.5159047	2.459785568	886.823721	0.87905164	0	0	0	0
Graders75	Graders	75	0	0	0	0	289.7986691	0.508921152	188.7027678	1.53574144	0	0	0	0
Graders100	Graders	100	0	0	0	0	19585.38512	25.95497873	10318.98868	1.898049373	0	0	0	0
Graders175	Graders	175	0	0	0	0	201021.2911	132.4891396	63607.69898	3.160329593	0	0	0	0
Graders300	Graders	300	0	0	0	0	414874.7519	118.3241678	91500.72326	4.534119454	0	0	0	0
Graders600	Graders	600	0	0	0	0	30334.29251	5.089211517	4381.293728	6.923592534	0	0	0	0
Graders750	Graders	750	0	0	0	0	0	0	0	0	0	0	0	0
Graders9999	Graders	9999	0	0	0	0	14512.97479	0.508921152	379.4868158	38.24366818	0	0	0	0
Pavers25	Pavers	25	11822.35	26.55	10508.35	1.125043418	1755.65	2.52	2076.85	0.845342707	0	0	0	0
Pavers50	Pavers	50	7894.9	8.07	3168.2	2.234301382	3321.764757	9.884487498	3587.011138	0.926010019	0	0	0	0
Pavers75	Pavers	75	0	0	0	0	3848.827632	7.083882709	2524.545923	1.524562134	0	0	0	0
Pavers100	Pavers	100	6628.4	4.43	1748.35	3.791231733	28181.32962	40.60876947	16302.06117	1.72869947	0	0	0	0
Pavers175	Pavers	175	0	0	0	0	49816.71688	32.7855502	12931.31946	3.8952978	0	0	0	0
Pavers300	Pavers	300	0	0	0	0	34276.52815	15.73280927	7231.673935	4.739777838	0	0	0	0
Pavers600	Pavers	600	0	0	0	0	6308.542219	1.739785312	778.0567775	8.108074377	0	0	0	0
Pavers750	Pavers	750	0	0	0	0	1285.612926	0.164741458	79.78835568	16.11278884	0	0	0	0
Pavers9999	Pavers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment25	Paving Equipment	25	250765.05	2901.04	548919.85	0.456835276	2084.15	4.36	1624.45	0.575025176	0	0	0	0
Paving Equipment50	Paving Equipment	50	8621.3	22.1	3854.4	2.236742424	4141.75443	12.17172631	5865.246882	0.706048342	0	0	0	0
Paving Equipment75	Paving Equipment	75	0	0	0	0	509.9895272	1.153135698	419.2565321	1.216994338	0	0	0	0
Paving Equipment100	Paving Equipment	100	3589.7	5.71	992.8	3.595588235	17443.08642	22.45104612	10665.22105	1.635511007	0	0	0	0
Paving Equipment175	Paving Equipment	175	0	0	0	0	18538.88983	14.80288759	6940.609527	2.672075181	0	0	0	0
Paving Equipment300	Paving Equipment	300	0	0	0	0	12577.45206	6.167886913	2962.988478	4.244853512	0	0	0	0
Paving Equipment600	Paving Equipment	600	0	0	0	0	13942.01072	1.947416868	1885.80025	7.39347119	0	0	0	0
Paving Equipment750	Paving Equipment	750	0	0	0	0	2054.608945	0.328953053	170.851006	12.03743495	0	0	0	0
Paving Equipment9999	Paving Equipment	9999	0	0	0	0	1214.557347	0.164476528	78.41085128	15.4886559	0	0	0	0
Rollers25	Rollers	25	58425.55	313.99	78186.65	0.747257386	38317.42288	144.0947285	100197.7008	0.382413185	0	0	0	0
Rollers50	Rollers	50	9638.7	5.7	3544.15	2.716786818	68225.98301	249.8643106	88485.9069	0.771037845	0	0	0	0
Rollers75	Rollers	75	0	0	0	0	713.5495628	2.202946568	518.7675682	1.375478694	0	0	0	0
Rollers100	Rollers	100	30090.6	10.69	6657.6	4.519736842	105918.6611	184.1997295	62519.11598	1.694180428	0	0	0	0
Rollers175	Rollers	175	0	0	0	0	110246.3414	107.7746383	39538.10791	2.788150537	0	0	0	0
Rollers300	Rollers	300	0	0	0	0	18634.36509	13.98020049	4419.424474	4.216480717	0	0	0	0
Rollers600	Rollers	600	0	0	0	0	10297.45347	4.829529807	1501.059899	6.860121625	0	0	0	0
Rollers750	Rollers	750	0	0	0	0	0	0	0	0	0	0	0	0
Rollers9999	Rollers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts25	Rough Terrain Forklifts	25	0	0	0	0	35.67569607	0.195557215	61.69495947	0.578259494	0	0	0	0
Rough Terrain Forklifts50	Rough Terrain Forklifts	50	1554.9	1.35	470.85	1.30232581	3288.97235	10.56008962	2985.464788	1.101661745	0	0	0	0
Rough Terrain Forklifts75	Rough Terrain Forklifts	75	0	0	0	0	1124.852013	0.880007489	195.5958713	1.234255475	0	0	0	0
Rough Terrain Forklifts100	Rough Terrain Forklifts	100	34028.95	16.18	6690.45	5.086197491	274051.4748	474.2262489	136696.4914	2.004817533	0	0	0	0
Rough Terrain Forklifts175	Rough Terrain Forklifts	175	1916.25	0.6	237.25	8.076923077	57103.55302	76.46287115	21699.71674	2.633159449	0	0	0	0
Rough Terrain Forklifts300	Rough Terrain Forklifts	300	0	0	0	0	4524.116149	6.009529512	1027.563825	4.402778571	0	0	0	0
Rough Terrain Forklifts600	Rough Terrain Forklifts	600	0	0	0	0	1490.300898	0.684560253	179.3723822	8.308417831	0	0	0	0
Rough Terrain Forklifts750	Rough Terrain Forklifts	750	0	0	0	0	280.3504549	0.097778608	21.50122581	12.98535474	0	0	0	0
Rough Terrain Forklifts9999	Rough Terrain Forklifts	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers25	Rubber Tired Dozers	25	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers50	Rubber Tired Dozers	50	0	0	0	0	2911.391032	3.143834872	3127.125266	0.931043397	0	0	0	0
Rubber Tired Dozers75	Rubber Tired Dozers	75	0	0	0	0	3867.001854	3.385668334	2629.422558	1.470653809	0	0	0	0
Rubber Tired Dozers100	Rubber Tired Dozers	100	0	0	0	0	8926.879498	5.884613991	5166.667454	1.727863534	0	0	0	0
Rubber Tired Dozers175	Rubber Tired Dozers	175	0	0	0	0	13591.36841	5.804002841	4666.104173	2.91278718	0	0	0	0
Rubber Tired Dozers300	Rubber Tired Dozers	300	0	0	0	0	15941.64519	4.917280184	3442.757699	4.630437165	0	0	0	0
Rubber Tired Dozers600	Rubber Tired Dozers	600	0	0	0	0	150506.4864	26.60167989	19841.51562	7.585432954	0	0	0	0
Rubber Tired Dozers750	Rubber Tired Dozers	750	0	0	0	0	5641.896549	0.403055753	414.4382861	13.61352619	0	0	0	0
Rubber Tired Dozers9999	Rubber Tired Dozers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Scrapers25	Scrapers	25	0	0	0	0	24.23760856	0.08307545	34.94517954	0.693581941	0	0	0	0
Scrapers50	Scrapers	50	0	0	0	0	192.9127119	0.498452696	182.5885631	1.056543216	0	0	0	0
Scrapers75	Scrapers	75	0	0	0	0	1698.572637	2.159981698	964.6810952	1.665392475	0	0	0	0
Scrapers100	Scrapers	100	0	0	0	0	8135.456018	6.064507828	3577.609828	2.273952225	0	0	0	0
Scrapers175	Scrapers	175	0	0	0	0	100422.2124	51.83908057	23940.06887	4.194737823	0	0	0	0
Scrapers300	Scrapers	300	0	0	0	0	124741.0231	54.58570943	22570.80026	5.526854692	0	0	0	0
Scrapers600	Scrapers	600	0	0	0	0	1514105.369	291.8440545	143421.3264	10.55704616	0	0	0	0
Scrapers750	Scrapers	750	0	0	0	0	20234.23118	3.738395233	1298.572399	15.56093453	0	0	0	0
Scrapers9999	Scrapers	9999	0	0	0	0	34935.88584	2.159981698	876.9298846	39.83893498	0	0	0	0
Skid Steer Loaders25	Skid Steer Loaders	25	191340.3	548.25	175043.05	1.093104239	168849	322.25	269005	0.627679783	0	0	0	0
Skid Steer Loaders50	Skid Steer Loaders	50	45975.4	77.64	24090	1.908644648	51639.79918	179.0053935	55712.5646	0.926859824	0	0	0	0
Skid Steer Loaders75	Skid Steer Loaders	75	0	0	0	0	273141.2748	554.7783838	202792.1156	1.346902833	0	0	0	0
Skid Steer Loaders100	Skid Steer Loaders	100	61487.9	46.44	14413.85	4.265880099	1249.784615	3.516860765	864.2105212	1.446110177	0	0	0	0
Skid Steer Loaders175	Skid Steer Loaders	175	0	0	0	0	1853.749365	2.315862943	639.8144476	2.897323892	0	0	0	0
Skid Steer Loaders300	Skid Steer Loaders	300	0	0	0	0	1721.867521	1.458135923	439.8724326	3.914015505	0	0	0	0
Skid Steer Loaders600	Skid Steer Loaders	600	0	0	0	0	497.3458659	0.171545403	55.12185472	9.022663316	0	0	0	0
Skid Steer Loaders750	Skid Steer Loaders	750	0	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders9999	Skid Steer Loaders	9999	0	0	0	0	673.2262119	0.171545403	35.27798958	19.08346307	0	0	0	0
Surfacing Equipment25	Surfacing Equipment	25	122431.95	783.1	335051.75	0.365412059	0	0	0	0	0	0	0	0
Surfacing Equipment50	Surfacing Equipment	50	0	0	0	0	478.3195652	3.034729268	757.0185136	0.631850477	0	0	0	0
Surfacing Equipment75	Surfacing Equipment	75	0	0	0	0	228.8573445	0.933762855	227.8497138	1.004221557	0	0	0	0
Surfacing Equipment100	Surfacing Equipment	100	0	0	0	0	3019.205749	7.547916138	2158.025021	1.399059375	0	0	0	0
Surfacing Equipment175	Surfacing Equipment	175	0	0	0	0	2644.273899	4.513187134	1138.430278	2.347059865	0	0	0	0
Surfacing Equipment300	Surfacing Equipment	300	0	0	0	0	4833.820158	5.446949965	1367.916578	3.533709757	0	0	0	0
Surfacing Equipment600	Surfacing Equipment	600	0	0	0	0	17032.69487	9.337628511	2673.279044	6.371463169	0	0	0	0
Surfacing Equipment750	Surfacing Equipment	750	0	0	0	0	7289.459999	2.256593557	727.2824666

Orange (SC)	2024 Agricultural - Combine Harvesters	Aggregate	300 Diesel	8.97788E-05	0.000108632	0.000129282	0.000415102	0.001117686	0.026569877	4.17595E-05	3.84182E-05	2.44606E-07	2.18314E-07	6155.942245	1133.600095	3.0189436	262478				
Orange (SC)	2024 Agricultural - Combine Harvesters	Aggregate	600 Diesel	1.56447E-05	1.89302E-05	2.25284E-05	0.000123349	0.00018803	0.008021051	7.15335E-06	6.58109E-06	7.41868E-08	6.59055E-08	1856.378381	232.6398537	0.517236248	76821.32				
Orange (SC)	2024 Agricultural - Construction Equipment	Aggregate	50 Diesel	0.000147568	0.000178557	0.000212497	0.000560067	0.000515281	0.007940694	4.13425E-05	3.80351E-05	6.94811E-08	6.52456E-08	1836.769643	177.626812	4.592357485	78882.74				
Orange (SC)	2024 Agricultural - Construction Equipment	Aggregate	100 Diesel	0.000103524	0.000125265	0.000149075	0.000393206	0.000878969	0.012807175	6.09955E-05	5.61158E-05	1.17028E-07	1.06053E-07	2996.447589	202.159441	5.521262361	127511.6				
Orange (SC)	2024 Agricultural - Construction Equipment	Aggregate	100 Diesel	0.000201083	0.00024331	0.000289559	0.001404281	0.00158957	0.031200107	0.000132317	0.000121732	2.84636E-07	2.56359E-07	7228.714656	3672.692214	7.61149247	309553.3				
Orange (SC)	2024 Agricultural - Construction Equipment	Aggregate	175 Diesel	0.000387257	0.000468582	0.000557651	0.000302056	0.003367436	0.067304008	0.00028338	0.000260746	6.14615E-07	5.53013E-07	15593.58297	6881.813308	10.02796264	744447.3				
Orange (SC)	2024 Agricultural - Construction Equipment	Aggregate	300 Diesel	0.000212944	0.000257663	0.00030664	0.000862708	0.002225713	0.044956112	9.41869E-05	8.73194E-05	4.12045E-07	3.69387E-07	10415.8266	2515.866872	4.527099384	494766.8				
Orange (SC)	2024 Agricultural - Construction Equipment	Aggregate	600 Diesel	2.42711E-05	2.93681E-05	3.49504E-05	0.000103941	0.000226372	0.004347924	9.78521E-06	9.0024E-06	3.97402E-08	3.57252E-08	1007.365304	137.2493971	0.155532097	48448.83				
Orange (SC)	2024 Agricultural - Cotton Pickers	Aggregate	100 Diesel	2.17716E-06	2.63437E-06	3.13512E-06	3.14451E-05	2.21631E-05	0.000829349	1.67883E-06	1.54422E-06	7.65388E-09	6.88144E-09	192.1508751	82.53307769	0.183258825	7429.528				
Orange (SC)	2024 Agricultural - Cotton Pickers	Aggregate	175 Diesel	6.51563E-06	7.88392E-06	9.38251E-06	0.000102214	6.79986E-05	0.002599122	3.8956E-06	3.58396E-06	2.39959E-08	2.1356E-08	602.1875133	208.5948761	0.453312503	25990.41				
Orange (SC)	2024 Agricultural - Cotton Pickers	Aggregate	300 Diesel	7.48436E-06	9.05631E-06	1.07775E-05	4.51165E-05	9.55316E-05	0.003648394	3.38532E-06	3.11468E-06	3.08016E-08	2.74775E-08	774.8122961	134.838241	0.582080559	33391.17				
Orange (SC)	2024 Agricultural - Cotton Pickers	Aggregate	600 Diesel	1.28088E-05	1.54986E-05	1.84446E-05	7.736951E-05	0.000142299	0.005843726	5.84529E-06	5.37767E-06	5.40063E-08	4.80156E-08	1351.925621	179.305859	0.980194353	58084.71				
Orange (SC)	2024 Agricultural - Forage & Silage Harvesters	Aggregate	100 Diesel	6.0963E-07	7.37652E-07	8.7787E-07	4.42369E-06	5.30216E-06	0.00010175	4.29445E-07	3.95058E-07	9.38756E-10	8.37481E-10	23.57441583	11.39381511	0.031111196	911.5065				
Orange (SC)	2024 Agricultural - Forage & Silage Harvesters	Aggregate	175 Diesel	3.57677E-07	6.79732E-07	8.08949E-07	2.34053E-06	7.10566E-06	0.000145835	2.60009E-07	2.39208E-07	1.38777E-09	1.19662E-09	33.74196218	15.59206275	0.018644505	1453.385				
Orange (SC)	2024 Agricultural - Forage & Silage Harvesters	Aggregate	300 Diesel	4.99265E-06	6.04111E-06	7.18942E-06	2.92553E-05	5.88360E-05	0.001847118	2.32928E-06	2.14201E-06	1.70423E-08	1.51772E-08	427.9566168	43.59384084	0.107915838	18591.9				
Orange (SC)	2024 Agricultural - Forage & Silage Harvesters	Aggregate	750 Diesel	1.75260E-05	2.12009E-05	2.52337E-05	0.000102705	8.41726E-05	0.003880708	1.63756E-05	1.50635E-05	1.37973E-07	1.22893E-07	895.9419905	153.4370556	0.378722216	88310.05				
Orange (SC)	2024 Agricultural - Forklifts	Aggregate	9999 Diesel	4.88363E-06	5.90919E-06	7.03242E-06	3.72177E-05	0.000110132	0.002398179	2.35406E-06	2.16574E-06	2.21746E-08	1.97040E-08	555.6312298	77.77161372	0.060816407	23883.59				
Orange (SC)	2024 Agricultural - Forklifts	Aggregate	25 Diesel	1.24697E-05	1.50884E-05	1.79569E-05	5.43125E-05	4.9612E-05	0.000857572	3.54162E-06	3.25818E-06	5.92404E-08	5.26482E-08	1483.990644	244.713389	0.495091624	8106.327				
Orange (SC)	2024 Agricultural - Forklifts	Aggregate	75 Diesel	1.04236E-06	1.26126E-06	1.501E-06	6.23675E-06	8.68031E-06	0.00013156	5.81956E-07	5.354E-07	1.39323E-09	1.08098E-09	30.48106581	20.11382571	0.023908823	1307.399				
Orange (SC)	2024 Agricultural - Forklifts	Aggregate	100 Diesel	3.99534E-06	4.83436E-06	5.75128E-06	2.47853E-05	2.91547E-06	5.22888E-05	2.45703E-07	2.26047E-07	4.74674E-10	4.2962E-10	12.11427024	8.704605868	0.007968944	519.6072				
Orange (SC)	2024 Agricultural - Hay Squeeze/Stack retriever	Aggregate	50 Diesel	6.11768E-07	7.40239E-07	8.80923E-07	2.92202E-06	4.48826E-06	5.77546E-05	3.67068E-07	3.37682E-07	5.33219E-10	4.74565E-10	13.98160685	8.810975589	0.010023954	546.6343				
Orange (SC)	2024 Agricultural - Hay Squeeze/Stack retriever	Aggregate	100 Diesel	1.3176BE-06	1.59439E-06	1.89746E-06	6.36491E-06	9.28587E-06	0.000125809	8.37269E-07	7.70287E-07	1.13144E-09	1.03373E-09	29.14860293	15.36401197	0.026108622	1190.711				
Orange (SC)	2024 Agricultural - Hay Squeeze/Stack retriever	Aggregate	175 Diesel	1.74427E-05	2.11086E-05	2.50948E-05	8.97842E-05	0.000134103	0.002085229	9.18669E-06	8.12566E-06	1.49733E-08	1.36815E-08	385.8054268	167.3914979	0.284496317	20622.17				
Orange (SC)	2024 Agricultural - Hay Squeeze/Stack retriever	Aggregate	300 Diesel	3.77594E-05	4.56880E-05	5.43735E-05	0.000103392	0.000385681	0.005487468	1.65029E-05	1.51828E-05	4.99419E-08	4.50864E-08	1271.384849	243.0386472	0.410920794	57643.01				
Orange (SC)	2024 Agricultural - Hay Squeeze/Stack retriever	Aggregate	600 Diesel	8.94028E-05	1.08179E-04	1.28747E-04	0.000288315	1.82282E-03	0.000311681	1.75126E-04	1.61129E-04	2.84105E-07	2.51329E-07	6775.842108	1.721423278	0.073498455	3452.7				
Orange (SC)	2024 Agricultural - Nut Harvester	Aggregate	50 Diesel	2.76382E-06	3.34422E-06	3.9796E-06	0.000323612	0.000369564	0.00788895	1.08179E-05	9.95245E-06	7.25973E-08	6.48204E-08	1827.781265	1767.93354	4.56198557	70907.48				
Orange (SC)	2024 Agricultural - Nut Harvester	Aggregate	75 Diesel	1.71607E-05	2.06919E-05	2.46251E-05	0.000294687	0.000282133	0.007588752	8.7313E-05	8.0328E-05	7.01194E-08	6.23538E-08	1758.228573	1048.571336	2.663789422	68532.24				
Orange (SC)	2024 Agricultural - Nut Harvester	Aggregate	100 Diesel	1.35333E-05	4.09E-05	4.84287E-05	0.000231611	0.000233161	0.012564373	2.36388E-05	2.17426E-05	2.84109E-07	2.52613E-07	7241.368821	3803.397669	4.991191253	231067.5				
Orange (SC)	2024 Agricultural - Nut Harvester	Aggregate	175 Diesel	0.000119989	0.000145187	0.000172785	0.000723146	0.001305311	0.029173195	5.51477E-05	5.07359E-05	2.69732E-07	2.39706E-07	6759.148307	852.0507103	1.747248237	323302.7				
Orange (SC)	2024 Agricultural - Sprayers/Spray rigs	Aggregate	50 Diesel	2.55564E-05	3.09332E-05	3.68013E-05	0.000154044	0.000178225	0.003929833	7.45772E-06	6.86139E-06	2.22867E-07	1.98102E-07	5.542822407	4.01.7642516	0.017191408	12984.12				
Orange (SC)	2024 Agricultural - Sprayers/Spray rigs	Aggregate	75 Diesel	7.27132E-06	8.79822E-06	1.04707E-05	4.78109E-05	6.50041E-05	0.001062339	4.25724E-06	3.91666E-06	9.66957E-09	8.72881E-09	246.1115444	166.5018237	0.299822947	10051.46				
Orange (SC)	2024 Agricultural - Sprayers/Spray rigs	Aggregate	100 Diesel	1.61979E-05	1.95996E-05	2.33247E-05	0.000109778	0.000127477	0.002724153	1.04534E-05	9.61.8E-06	2.15.E-08	1.94.E-08	564.2166266	267.0849454	0.668143154	22409.53				
Orange (SC)	2024 Agricultural - Sprayers/Spray rigs	Aggregate	175 Diesel	2.70834E-05	3.27711E-05	3.90002E-05	0.000216069	0.000259419	0.005014242	1.47272E-05	1.35499E-05	4.58576E-08	4.12001E-08	1161.74366	431.5648093	0.772535366	51779.07				
Orange (SC)	2024 Agricultural - Sprayers/Spray rigs	Aggregate	300 Diesel	1.18449E-05	1.43324E-05	1.70567E-05	5.12392E-05	0.000128896	0.002551784	5.5379E-06	5.09487E-06	2.33952E-08	2.09866E-08	591.2150346	122.4886442	0.221009332	26715.32				
Orange (SC)	2024 Agricultural - Sprayers/Spray rigs	Aggregate	600 Diesel	3.60456E-07	4.36149E-07	5.19048E-07	2.27563E-06	3.94061E-06	0.000112648	6.46703E-07	5.94.E-07	1.77.E-09	1.59.E-09	10.46511022	2.678709382	0.011962201	893.7497				
Orange (SC)	2024 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	50 Diesel	3.76401E-06	4.55445E-06	5.42017E-06	3.14164E-05	3.38994E-05	0.000555795	1.36016E-06	1.25129E-06	5.99093E-09	5.38841E-09	151.940313	124.6841303	0.280764052	5533.089				
Orange (SC)	2024 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	75 Diesel	1.88324E-05	2.27907E-05	2.71262E-05	0.000161431	0.000169611	0.004178497	6.72432E-05	6.01576564	4.70983E-08	3.28634E-08	926.6954725	614.4140025	1.104349881	53183.21				
Orange (SC)	2024 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	100 Diesel	2.38116E-05	2.88112E-05	3.42488E-05	0.000160994	0.000225933	0.008020313	1.72350E-05	1.58582E-05	8.23116E-08	7.32947E-08	2066.736446	876.8823617	1.902391194	75189.83				
Orange (SC)	2024 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	175 Diesel	1.18056E-05	1.42866E-05	1.69856E-05	0.000199434	0.000117248	0.005007177	6.72411E-06	6.18438E-06	4.41997E-08	3.93.E-08	1158.855707	377.9417884	0.699.7.E-09	49.7.E-09				
Orange (SC)	2024 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	300 Diesel	4.62185E-06	5.59244E-06	6.6554E-06	2.97211E-05	4.91254E-05	0.002153706	2.01984E-06	1.85825E-06	1.99078E-08	1.76962E-08	498.9859495	96.04170869	0.200744248	19759.13				
Orange (SC)	2024 AirGroup - Ag/C Tug Narrow Body	Aggregate	25 Diesel	9.52145E-06	1.13113E-05	2.8083E-05	0.000176269	0.013601407	4.6184E-06	4.24892E-06	1.25516E-07	1.1101.E-07	441.2826811	25.25888448	0.113629201	1593.1					
Orange (SC)	2024 AirGroup - Baggage Tug	Aggregate	25 Diesel	2.033E-05	2.4603E-05	2.927966E-05	0.000184415	0.000150064	0.021471034	9.00603E-06	8.28555E-06	1.979E-07	1.75244E-07	696.6040632	731.1322385	1.001274814	32843.68				
Orange (SC)	2024 AirGroup - Baggage Tug	Aggregate	75 Diesel	5.56472E-05	6.7331E-05	8.01367E-05	0.000504774	0.000357565	0.153715239	1.21904E-05	1.12166E-05	5.41145E-05	4.98721E-05	1.58678E-05	3932.567986	5.288784618	261401.2				
Orange (SC)	2024 AirGroup - Baggage Tug	Aggregate	100 Diesel	6.12322E-05	7.40901E-05	8.81744E-05	0.000386094	0.000800264	0.154483876	2.60820E-05	2.39966E-05	1.42644E-06	1.26088E-06	501.0592852	2937.911884	4.005099258	263010.4				
Orange (SC)	2024 AirGroup - Baggage Tug	Aggregate	175 Diesel	1.55622E-07	1.88302E-07	2.24067E-07	7.68341E-06	1.99E-06	0.000403228	2.56737E-07	2.36198E-07	1.39E-08	1.14.E-08	45.2426135	19.09013985	0.002.E-06	2386.267				
Orange (SC)	2024 AirGroup - Baggage Tug	Aggregate	300 Diesel	5.48417E-06	6.63585E-06	7.897E-06	1.85463E-05	0.000015945	0.003882598	3.00659E-06	2.76607E-06	7.45631E-08	6.59691E-08	262.2309897	76.36053442	0.102698853	13744.9				
Orange (SC)	2024 AirGroup - Belt Loader	Aggregate	25 Diesel	9.41444E-06	1.13915E-05	1.3556BE-05	2.50526E-05	2.24463E-06	0.000465551	8.05177E-06	7.40762E-06	4.28293E-09	3.78344E-09	15.03818688	31.1922156	0.059966148	779.8054				
Orange (SC)	2024 AirGroup - Belt Loader	Aggregate	50 Diesel	1.56598E-05	1.89483E-05	2.25501E-05	0.000416504	9.19891E-05	0.011322443	1.58368E-05	1.45679E-05	7.12707E-07	6.29.E-07	486.643134	783.8618007	1.442020157	10158.3				
Orange (SC)	2024 AirGroup - Belt Loader	Aggregate	75 Diesel	5.85216E-05	7.08111E-05	8.42711E-05	0.000564823	0.000623985	0.080834467	4.47343E-05	4.11556E-05	7.4559E-07	6.59752E-07	2622.552802	2401.800602	4.617394425	151173.1				
Orange (SC)	2024 AirGroup - Belt Loader	Aggregate	100 Diesel	1.37409E-05	4.0385E-05	4.80615E-05	0.000406684	0.073760597	0.008141195	1.05945571	2.86009E-05	6.82.E-05	6.03.E-05	2391.194885	1604.133002	3.082.E-06	137952.2				
Orange (SC)	2024 AirGroup - Belt Loader	Aggregate	175 Diesel	2.21959E-05	2.68618E-06	3.1987BE-06	3.10774E-05	2.21563E-05	0.000491517	1.51766E-06	1.39625E-06	4.60825E-08	4.07401E-08	161.9442862	69.04943454	0.149915371	9335.67				
Orange (SC)	2024 AirGroup - Belt Loader	Aggregate	300 Diesel	1.14736E-06	1.38896E-06	1.6538E-06	8.52701E-06	1.23077E-05	0.000494845	5.73055E-07	5.27216E-07	2.38.E-08	2.11.E-08	642.5853024	111.3122156	0.259098374	13219.49				
Orange (SC)	2024 AirGroup - Belt Loader	Aggregate	600 Diesel	3.4377E-07	4.1596ZE-07	4.9502BE-07	6.79498E-06	1.87525E-06	0.000394411	6.44510E-08	5.92957E-08	3.50709E-08	3.02.E-08	123.1054911	15.5961078	0.029983074	7096.229				
Orange (SC)	2024 AirGroup - Belt Loader	Aggregate	750 Diesel	3.87429E-06	4.68789E-06	5.57898E-06	5.97772E-05	5.17284E-05	0.002225301	2.61141E-06	2.42086E-06	2.04578E-08	1.81626E-08	72.19758899	6.605003384	0.009983074	4165.627				
Orange (SC)	2024 AirGroup - Bobtail	Aggregate	25 Diesel	1.84476E-07	2.2358E-07	2.6605E-07	4.48318E-06	4.07711E-06	0.000472081	1.54666E-07	1.42212E-07	1.46.E-08	1.29.E-08	47.26.E-08	28.88494827	0..E-06	1722.1237				
Orange (SC)	2024 AirGroup - Bobtail	Aggregate	50 Diesel	2.45769E-06	2.97381E-06	3.53908E-06	2.17331E-05	1.73641E-05	0.002078612	6.80968E-07	6.26491E-07	2.74605E-08	2.43112E-08	96.63778844	100.3769105	0.240919434	4556.686				
Orange (SC)	2024 AirGroup - Bobtail	Aggregate	75 Diesel	9.50201E-07	1.14951E-06	1.3681E-06	2.29831E-05	1.87024E-05	0.003651349	2.93446E-06	2.69.E-06	1.37359E-08	1.21.E-08	48.44742.E-08	15.18189576	0.210.E-06	1.E-06				
Orange (SC)	2024 AirGroup - Bobtail	Aggregate	100 Diesel	7.328EC-07	8.867EC-07	1.0553E-06	9.55466E-06	1.36012E-05	0.001358876	7.68905E-07	7.07393E-07	1.25415E-08	1.10912E-08	44.68724621	28.88494827	0.061728859	2310.796				
Orange (SC)	2024 AirGroup - Bobtail	Aggregate	175 Diesel	5.90581E-06	7.1462BE-06	8.5035E-06	7.41023E-05	6.34725E-05	0.011287344	3.91424E-06	3.60.E-06	1.41E-07	1.21.E-07	366.265418	158.1468073	0.310707615	11.E-06				
Orange (SC)	2024 AirGroup - Bobtail	Aggregate	300 Diesel	9.89133E-06	1.19718E-05	1.42465E-05	0.000104259	0.000104606	0.025576325	3.75833E-06	3.45767E-06	4.67306E-07	4.12797E-07	1640.893174	418.1113415	0.925947879	86008.19				
Orange (SC)	2024 AirGroup - Cargo Loader	Aggregate	25 Diesel	1.46522E-06	1.77292E-06	2.10992E-06	3.21391E-05	2.89955E-05	0.005233181	3.56579E-06	3.28053E-07	4.83394E-08	4.27125E-08	169.7847957	293.0157633	0.604658863	8117.11				
Orange (SC)	2024 AirGroup - Cargo Loader	Aggregate	50 Diesel	2.40745E-06	2.91301E-06	3.46672E-06	1.2826E-05	1.16569E-05	0.001153351	9.20356E-07	8.46727E-07	1.05911E-08	9.74149E-09	37.4139116	38.85969944	0.109937939	1942.848				
Orange (SC)	2024 AirGroup - Cargo Loader	Aggregate	100 Diesel	1.39616E-05	6.52938E-05	7.77309E-05	0.001122885	0.000814115	0.119045571	2.86009E-05	2.63205E-05	1.03.E-05	9.54488E-06	3.679.15682	4144.499022	8.308.E-06	444.499022				
Orange (SC)	2024 AirGroup - Cargo Loader	Aggregate	175 Diesel	5.58769E-06	6.7611E-05	8.04627E-05	0.001780486	0.000660763	0.306525921	2.22747E-05	2.04927E-05	2.83231E-06	2.50182E-06	994.8595799	443409.9418	9.179817881	574144.5				
Orange (SC)	2024 AirGroup - Cargo Loader	Aggregate	300 Diesel	5.67353E-06	6.86.E-06	8.16.E-06	5.60881E-05	5.56769E-05	0.028700877	2.13102E-06	1.96.E-06	2.82.E-07	2.59.E-07	1025.4.E-06	251.8599427	2.54.E-06	33.E-06				
Orange (SC)	2024 AirGroup - Cargo Loader	Aggregate	600 Diesel	2.973BE-06	3.5983E-06	4.2822E-06	4.94435E-05	1.35499E-05	0.026963856	4.78144E-07	4.39892E-07	2.49205E-07	2.20075E-07	874.8126145	159.826778	0.329813816	50505.26				
Orange (SC)	2024 AirGroup - Cargo Loader	Aggregate	750 Diesel	5.52811E-06	4.26901E-06	5.08047E-06	5.48857E-05	1.50038E-05	0.029657487	5.35394E-07	4.92563E-07	2.73907E-07	2.41897E-07	961.5556374	79.93188986	0.364908008	55513.47				
Orange (SC)	2024 AirGroup - Cargo Tractor	Aggregate	25 Diesel	2.14686E-07	9.8524E-07	1.1722E-06	4.1958E-06	1.0297E-05	0.001955541	4.87784E-08	4.48.E-08	1.96.E-08	1.59.E-08	6.47732E-08	122.1035905	1.864E-08	1.E-06				
Orange (SC)	2024 AirGroup - Cargo Tractor	Aggregate	50 Diesel	1.4095BE-06	1.7055BE-06	2.0397BE-06	9.57315E-06	7.47057E-06	0.010115442	5.19098E-06	4.77576E-06	9.30994E-08	8.25609E-08	328.184421	466.1256113	0.784704572	15780.32				
Orange (SC)	2024 AirGroup - Cargo Tractor	Aggregate	75 Diesel	1.00019E-05	1.20914E-05	1.4458BE-05	0.000172222	0.001137604	0.001137604	0.001427077	0.001312E-05	1.59.E-07	1.46.E-07	5.52.E-06	8654.410783	0.887962155	284055.6				
Orange (SC)	2024 AirGroup - Cargo Tractor	Aggregate	100 Diesel	1.94209E-05	2.34993E-05	2.79661E-05	0.000565376	0.000228874	0.090276552	8.32261E-06	7.65.E-06	8.34096E-07	7.36825E-07	292.8231315	1942.513073	2.833655399	156583.3				
Orange (SC)	2024 AirGroup - Cargo Tractor	Aggregate	175 Diesel	2.17716E-05	2.634E-05	3.1350BE-05	0.000328835	0.000222465	0.010364468	1.29548E-05	1.19446E-05	4.98275E-07	4.40451E-07	175.8177411	650.7346112	0.441.E-06	9423.149				
Orange (SC)	2024 AirGroup - Cargo Tractor	Aggregate	300 Diesel	2.25257E-05	2.7256E-05	3.243E-05	0.000169774	0.000257702	0.077831595	8.6133E-06	7.92423E-06	7.28161E-07	6.43413E-07	255.6044288	629.8994748	0.959083366	136730.3				
Orange (SC)	2024 AirGroup - Cargo Tractor	Aggregate	600 Diesel	3.05025E-05	3.6911E-05	4.3921BE-05	0.000167894	0.000335323	0.081748866	1.1362E-05	1.04531E-05	7.54892E-07	6.67223E-07	265.245433	366.3307715	0.521363381	141702.8				
Orange (SC)	2024 AirGroup - Forklift	Aggregate	25 Diesel	4.86068E-06	5.8821E-06	7.0296E-06	1.02996E-05	8.29679E-07	0.000163128	3.38296E-06	3.11232E-06	1.50674E-09	1.33143E-09	5.29251963	0.197090507	0.080.E-07	1.E-06				
Orange (SC)	2024 AirGroup - Forklift	Aggregate	50 Diesel	1.42516E-05	1.72444E-05	2.0523E-05	7.41379E-05	6.3728E-05	0.007314037	5.77084E-06	5.30917E-06	6.71944E-08	5.96962E-08	237.2958901	532.7431587	1.383179836	20506.87				
Orange (SC)	2024 AirGroup - Forklift	Aggregate	75 Diesel	4.50986E-06	5.4593E-06	6.4930BE-06	2.93126E-05	4.8624E-05	0.005615419	3.64466E-06	3.35304E-06	1.73.E-08	1.54.E-08	61.48829.E-08	158.8092648	0..E-06	10959.21				
Orange (SC)	2024 AirGroup - Forklift	Aggregate	100 Diesel	5.12097E-05	6.1963E-05	7.3741BE-05	0.000573723	0.000578725	0.084488133	4.03525E-05	3.71243E-05	7.7959BE-07	6.89581E-07	2741.124591	3007.672323	7.384125087	262950.6				
Orange (SC)	2024 AirGroup - Forklift	Aggregate	175 Diesel	2.87225E-05	3.4754E-05	4.1345E-05	0.000312258	0.000348272	0.049114827	2.05163E-05	1.88745E-05	4.55239E-07	4.02699E-07	1591.476468	1177.456672	2.702.E-06	137673.6				
Orange (SC)	2024 AirGroup - Forklift	Aggregate	300 Diesel	9.42801E-06	1.14079E-05	1.3576BE-05	8.6364BE-05	0.000105999	0.039021553	3.96449E-06	3.64733E-06	3.60491E-07	3.19387E-07	1266.011309	514.4468889	1.337073842	121630.6				
Orange (SC)	2024 AirGroup - Forklift	Aggregate	600 Diesel	3.81235E-06	4.6129BE-06	5.4897BE-06	1.35041E-05	8.46835E-06	0.005468103	2.25177E-06	2.07162E-06	5.96864E-08	5.29108E-08	209.8504792	54.88340929	0.133017886	20160.51				
Orange (SC)	2024 AirGroup - Lift	Aggregate	25 Diesel	1.36438E-07	4.0706E-07	4.8443E-07	1.70511E-06	8.2841BE-06	0.000137009	2.31446E-07	2.12923E-07	1.14.E-08	9.97.E-09	3.844.E-07	33.22466838	0..E-06	1.E-06				
Orange (SC)	2024 AirGroup - Lift	Aggregate	50 Diesel	6.35039E-06	7.6839BE-06	9.1445E-06	8.90823E-05	8.51255E-05	0.014086392	2.32739E-06	2.14119E-06	1.30045E-07	1.14971E-07	457.0174902	510.2086123	1.231556293	23892.75				
Orange (SC)	2024 AirGroup - Lift	Aggregate	75 Diesel	1.43576E-05	4.1578E-05	4.9435E-05	7.84461E-05	0.000178826	0.027885629	8.01275E-06	7.37245E-06	1.12.E-06	9.97.E-07	3.95.E-06	2243.411129	0.738196027	22765.14				
Orange (SC)	2024 AirGroup - Lift	Aggregate	100 Diesel	2.02795E-05	2.4518ZE-05	9.9202E-05	0.000577219	0.000132947	0.09211791	1.16273E-05	1.06.E-05	8.51067E-07	7.51854E-07	2988.664144	2008.342607	4.774438416	172246.4				
Orange (SC)	2024 AirGroup - Lift	Aggregate	175 Diesel	4.60943E-06	5.5712BE-06	6.7435E-06	0.000112178	4.4853BE-05	0.039561778	3.71.E-06	3.41.E-06	1.48720E-07	1.31.E-07	524.2786183	1.E-06	1.E-06	3.E-06				
Orange (SC)	2024 AirGroup - Lift	Aggregate	300 Diesel	7.63961E-06	9.2439ZE-06	1.1001E-05	0.000123172	7.1194E-05	0.043615756	3.26263E-06	3.0012E-06	4.0302E-07	3.55986E-07	1415.065156	364.6554461	0.888720531	81557.98				
Orange (SC)	2024 AirGroup - Other GSE	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Orange (SC)	2024 AirGroup - Other GSE	Aggregate	50 Diesel	0.000144176	0.000178617	0.000212565	0.001179203	0.002115785	0.18211642	5.78665E-05	5.23367E-05	1.67933E-06	1.48641E-06	5908.566883	8916.867423	18.56236598	3061101				
Orange (SC)	2024 AirGroup - Other GSE	Aggregate	75 Diesel	3.61278E-05	4.3714E-05	5.2024E-05	0.000560466	0.000480199	0.083348266	2.56922E-05	2.36368E-05	7.69512E-07	6.80277E-07	2704.142713	2427.392389	5.156212771	159877.1				
Orange (SC)	2024 AirGroup - Other GSE	Aggregate	100 Diesel	1.18226E-05	3.8505BE-05	4.5824BE-05	0.000740829	0.000473691	0.111669822	1.85776E-05	1.70945E-05	2.51.E-06	2.22.E-06	8.83.E-06	3524.576737	7.38.E-06	218241.4				
Orange (SC)	2024 AirGroup - Other GSE	Aggregate	175 Diesel	8.34176E-06	0.000100935	0.000120121	0.00207147	0.000928085	0.356652889	3.65554E-05	3.36311E-05	3.23493E-06	2.91095E-06	11571.2102	4333.957928	8.971810222

Orange (SC)	2024 ConstMin - Rollers	Aggregate	100 Diesel	0.001327837	0.001606682	0.001913085	0.021133272	0.016995906	3.264671183	0.000888021	0.000816979	3.014376	2.664585	105918.6611	625119.1508	184.1997326	5495607
Orange (SC)	2024 ConstMin - Rollers	Aggregate	175 Diesel	0.000751921	0.000909824	0.001082756	0.011875258	0.008523077	1.399806831	0.000389421	0.000358267	3.139428	2.773455	110246.3414	395381.1078	107.7746305	5585184
Orange (SC)	2024 ConstMin - Rollers	Aggregate	300 Diesel	0.000192743	0.000233219	0.00027755	0.00165547	0.002563225	0.574356529	9.84709E-05	9.05932E-05	5.304416	4.687826	186434.36504	44143.424474	13.98030049	959800.2
Orange (SC)	2024 ConstMin - Rollers	Aggregate	600 Diesel	6.99426E-05	8.46309E-05	0.000100718	0.000847802	0.000865606	0.317392603	2.94404E-05	2.70795E-05	7.932392	6.590526	102974.4547	1501.059899	4.829528807	527963.2
Orange (SC)	2024 ConstMin - Rough Terrain Forklifts	Aggregate	25 Diesel	6.29813E-07	7.62076E-07	9.06931E-07	7.6936E-06	9.40368E-06	0.001099612	5.34048E-07	4.91317E-07	1.014766	0.874884	09.35.67569607	61.69495947	0.195557215	1542.374
Orange (SC)	2024 ConstMin - Rough Terrain Forklifts	Aggregate	50 Diesel	7.12745E-05	8.62421E-05	0.000102635	0.000656195	0.000811509	0.101174341	2.42917E-05	2.23483E-05	9.351168	8.27402E-07	3288.97235	2985.464789	10.56008962	142263.1
Orange (SC)	2024 ConstMin - Rough Terrain Forklifts	Aggregate	175 Diesel	2.20907E-05	2.67298E-05	3.18169E-05	8.31122E-05	0.000125932	0.007441001	1.09214E-05	1.00477E-05	6.813318	6.07232E-08	241.4513366	195.9589715	0.880007469	10901.78
Orange (SC)	2024 ConstMin - Rough Terrain Forklifts	Aggregate	100 Diesel	0.001651113	0.001997846	0.002377602	0.015151484	0.020867856	8.446834117	0.000689276	0.000634134	7.804668	0.694270	274051.4748	136686.4934	474.2262469	13166614
Orange (SC)	2024 ConstMin - Rubber Tired Dozers	Aggregate	25 Diesel	0.00055141	0.000667206	0.00079403	0.008839507	0.00558262	1.760070824	0.000371371	0.000341477	1.625828	0.145605	57105.15302	21699.71874	76.46287115	2749356
Orange (SC)	2024 ConstMin - Rubber Tired Dozers	Aggregate	300 Diesel	2.48739E-05	3.00976E-05	3.58184E-05	0.000261199	0.000360009	0.1394449	8.73099E-06	8.01251E-06	1.286496	1.13813E-06	4524.136194	1027.565825	4.008922912	2174722
Orange (SC)	2024 ConstMin - Rubber Tired Dozers	Aggregate	600 Diesel	5.13496E-06	6.18900E-06	7.36496E-06	8.29208E-05	5.67832E-05	0.040594688	7.91863E-07	7.28514E-07	4.24538E-07	3.74911E-07	1491.360668	179.3728122	0.684492023	71724.96
Orange (SC)	2024 ConstMin - Rough Terrain Forklifts	Aggregate	750 Diesel	1.56746E-06	1.89663E-06	2.25714E-06	1.60819E-05	2.20846E-05	0.008641272	1.57441E-07	1.44846E-07	7.984588	7.05289E-08	280.356549	21.59323581	0.097778808	13495.77
Orange (SC)	2024 ConstMin - Rubber Tired Dozers	Aggregate	50 Diesel	5.63039E-05	6.81278E-05	8.10777E-05	0.000744957	0.000547477	0.089816303	1.76855E-05	1.59763E-05	8.287076	7.33069E-07	2911.993032	3127.125266	9.143834872	1281904
Orange (SC)	2024 ConstMin - Rubber Tired Dozers	Aggregate	75 Diesel	0.000119486	0.000168778	0.00020086	0.000983905	0.001298668	0.119390418	9.38976E-05	8.63858E-05	1.097796	9.72816E-07	3867.001854	2629.432558	1.385668324	188806.1
Orange (SC)	2024 ConstMin - Rubber Tired Dozers	Aggregate	100 Diesel	0.000272334	0.000319512	0.000374571	0.002746972	0.002754821	0.275434174	0.000203411	0.000187137	2.535716	2.24572E-06	892.8379498	1166.067454	3.884613991	433318.6
Orange (SC)	2024 ConstMin - Rubber Tired Dozers	Aggregate	175 Diesel	0.00038376	0.000464535	0.000552615	0.002985335	0.004097883	0.418519088	0.00026418	0.000243046	3.86168	3.41916E-06	1359.38841	4666.104173	15.80400241	664541.1
Orange (SC)	2024 ConstMin - Rubber Tired Dozers	Aggregate	300 Diesel	0.000404048	0.000488423	0.000581034	0.003139722	0.005367707	0.601603447	0.000219165	0.000201647	4.530776	4.01042E-06	1594.646433	3442.757609	11.63728016	979402.8
Orange (SC)	2024 ConstMin - Rubber Tired Dozers	Aggregate	600 Diesel	0.002943753	0.003561941	0.004239005	0.02835066	0.0349553	4.638976587	0.001556076	0.001431359	4.280138	3.78627E-05	15050.46864	15841.51562	26.60167969	7301411
Orange (SC)	2024 ConstMin - Rubber Tired Dozers	Aggregate	750 Diesel	6.14585E-05	7.43976E-05	8.85393E-05	0.000358872	0.000944958	0.173899159	2.675E-05	2.46164E-05	1.605946	1.41934E-06	564.1966549	414.4382882	0.402055753	2759481
Orange (SC)	2024 ConstMin - Rubber Tired Dozers	Aggregate	25 Diesel														
Orange (SC)	2024 ConstMin - Rubber Tired Loaders	Aggregate	50 Diesel	0.000415167	0.000502353	0.000597841	0.002981445	0.002224766	0.292012638	0.000142529	0.000131127	2.687356	2.38337E-06	947.0284564	10931.20396	12.43514401	453122
Orange (SC)	2024 ConstMin - Rubber Tired Loaders	Aggregate	75 Diesel	0.000150798	0.000183525	0.000218403	0.001088139	0.000812284	0.106572759	5.20196E-05	4.78812E-05	2.438045	2.16255E-06	859.2685169	3968.426216	4.527216946	164966.8
Orange (SC)	2024 ConstMin - Rubber Tired Loaders	Aggregate	100 Diesel	0.00437859	0.005298093	0.006305169	0.051860138	0.044584605	7.083201969	0.00293231	0.002697725	6.535645	5.7812E-05	229806.6871	144147.5946	152.8346416	12387599
Orange (SC)	2024 ConstMin - Rubber Tired Loaders	Aggregate	175 Diesel	0.000577786	0.000699121	0.000832147	0.004747012	0.003568212	0.660970122	0.000278312	0.000256198	0.000155782	0.000137698	54737.4356	25770.21469	28.66749419	1039832
Orange (SC)	2024 ConstMin - Rubber Tired Loaders	Aggregate	300 Diesel	0.007682946	0.009296364	0.011063442	0.056309934	0.085964496	25.38270073	0.002850561	0.002622516	0.000234445	0.00020717	823513.7312	209374.1122	391.316371	44107334
Orange (SC)	2024 ConstMin - Rubber Tired Loaders	Aggregate	600 Diesel	0.010601014	0.012827227	0.015265461	0.078616309	0.125030893	36.70717462	0.003974966	0.003565969	0.00028449	0.000251118	998207.0866	161354.3468	161.0012152	51534703
Orange (SC)	2024 ConstMin - Rubber Tired Loaders	Aggregate	750 Diesel	0.009601009	0.011617209	0.013826504	0.068532284	0.109132787	32.02723665	0.003470373	0.003112264	0.000248101	0.000219091	871135.4371	2.81812E-05	946.7064458	44932.8
Orange (SC)	2024 ConstMin - Rubber Tired Loaders	Aggregate	9999 Diesel	0.000728462	0.000881439	0.001048985	0.004831151	0.01544373	2.185979247	0.000320144	0.000295433	2.018866	1.78417E-05	70921.68924	3952.527945	3.276828489	3784820
Orange (SC)	2024 ConstMin - Scrapers	Aggregate	25 Diesel	1.84041E-07	2.22689E-07	2.65023E-07	4.34721E-06	2.68128E-06	0.000470582	1.41235E-08	1.29937E-08	6.901446	0.09	0.000470582	24.23760056	0.038207545	873.6295
Orange (SC)	2024 ConstMin - Scrapers	Aggregate	50 Diesel	2.90954E-05	3.52054E-05	4.18974E-05	9.90741E-05	0.954831E-05	0.00594604	9.77866E-06	8.99637E-06	5.410128	4.85308E-08	192.9127113	182.5885631	0.498452898	7071.642
Orange (SC)	2024 ConstMin - Scrapers	Aggregate	75 Diesel	5.80758E-05	7.02717E-05	8.36548E-05	0.000180016	0.000542282	0.049134481	4.60883E-05	4.24012E-05	4.560801	4.09416E-07	1606.573837	964.0810952	1.559961466	61887.52
Orange (SC)	2024 ConstMin - Scrapers	Aggregate	100 Diesel	0.000202291	0.000244772	0.000291298	0.001888936	0.002559043	0.250754603	0.000182574	0.000167969	2.312386	2.04663E-06	813.4569828	3577.609826	6.064507823	3245207
Orange (SC)	2024 ConstMin - Scrapers	Aggregate	175 Diesel	0.001507907	0.001825076	0.002171396	0.013405328	0.018992355	1.895260344	0.000886926	0.000817425	2.857256	2.52631E-05	100422.3124	23946.06887	51.83908057	1994875
Orange (SC)	2024 ConstMin - Scrapers	Aggregate	300 Diesel	0.001933026	0.002338961	0.002783557	0.012398525	0.023420361	3.844622284	0.001606222	0.001490424	3.544938	3.13509E-05	12474.10231	2257.800838	14.58057041	1004699
Orange (SC)	2024 ConstMin - Scrapers	Aggregate	600 Diesel	0.016664331	0.020163841	0.023996637	0.150939901	0.202188353	46.66842223	0.007811444	0.007185528	0.000430973	0.000380901	1514325.563	1434321.3264	291.8404545	80585810
Orange (SC)	2024 ConstMin - Scrapers	Aggregate	750 Diesel	0.000691188	0.000836337	0.000995311	0.005388274	0.011334064	1.666436103	0.000466403	0.000429107	5.745398	5.09018E-06	20134.21118	1299.572898	1.738395233	8080593
Orange (SC)	2024 ConstMin - Scrapers	Aggregate	9999 Diesel	0.000701104	0.000848336	0.00100959	0.004826199	0.012169104	1.076809109	0.000417738	0.000384159	9.93466	8.7887E-06	34935.88564	876.9298666	2.15996169	14006603
Orange (SC)	2024 ConstMin - Skid Steer Loaders	Aggregate	0 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)	2024 ConstMin - Skid Steer Loaders	Aggregate	50 Diesel	0.000778623	0.000942134	0.001121217	0.008896382	0.009019551	1.591664419	0.000229109	0.00021998	1.469246	1.29991E-05	516199.79918	55752.5646	173.0035391	2428344
Orange (SC)	2024 ConstMin - Skid Steer Loaders	Aggregate	75 Diesel	0.001873909	0.002266405	0.002697209	0.015690118	0.030577944	4.418879539	0.000439834	0.000408118	7.778056	6.87138E-05	2731451.749	302792.1556	554.7778338	14322926
Orange (SC)	2024 ConstMin - Skid Steer Loaders	Aggregate	100 Diesel	0.843026E-05	8.28604E-05	9.85397E-05	0.000578498	0.000750765	0.576791E-05	4.23483E-06	3.92612E-06	5.540918	4.74401E-07	1249.763864	864.2105232	1.516887065	69116.51
Orange (SC)	2024 ConstMin - Skid Steer Loaders	Aggregate	175 Diesel	1.17483E-05	1.42154E-05	1.69175E-05	0.000312536	0.000315001	0.057137075	5.71421E-06	5.25707E-06	5.279088	4.66345E-07	185.1749365	639.8144474	2.315862943	97543.39
Orange (SC)	2024 ConstMin - Skid Steer Loaders	Aggregate	300 Diesel	8.73415E-06	1.05683E-05	1.25772E-05	9.93961E-05	0.000118999	0.053085987	1.66060E-06	1.52705E-06	1.367816	4.33117E-07	172.1667521	49.87274326	0.038207545	873.6295
Orange (SC)	2024 ConstMin - Skid Steer Loaders	Aggregate	600 Diesel	3.97334E-06	4.80774E-06	5.72161E-06	2.89516E-05	6.04806E-05	0.015329411	2.64112E-06	2.42983E-06	1.416098	1.25117E-07	497.3458605	55.12185872	0.171545403	26061.61
Orange (SC)	2024 ConstMin - Sweepers/Scrubbers	Aggregate	9999 Diesel	1.38578E-06	1.88419E-06	2.24352E-06	1.77877E-05	8.98641E-05	0.020750472	3.04913E-06	2.70452E-06	1.111186	1.81777E-07	69.12852113	55.25778958	0.171545403	26061.61
Orange (SC)	2024 ConstMin - Surfacing Equipment	Aggregate	25 Diesel														
Orange (SC)	2024 ConstMin - Surfacing Equipment	Aggregate	50 Diesel	6.76062E-06	8.19124E-06	9.74826E-06	9.00410E-05	9.14868E-05	0.014749201	2.85367E-06	2.62538E-06	1.363108	1.20210E-07	478.3109643	757.0138356	3.034732066	21765.13
Orange (SC)	2024 ConstMin - Surfacing Equipment	Aggregate	75 Diesel	7.28753E-06	8.81791E-06	1.04944E-05	5.15417E-05	8.49074E-05	0.007053941	5.57128E-06	5.12558E-06	6.499868	5.75733E-08	228.8579465	227.8497138	0.933762851	14629.24
Orange (SC)	2024 ConstMin - Surfacing Equipment	Aggregate	100 Diesel	2.25843E-05	2.73272E-05	3.25214E-05	0.000574158	0.000838384	0.093059277	1.41387E-05	1.30076E-05	8.597028	7.59537E-07	3019.205749	2158.025921	7.547916382	192416.7
Orange (SC)	2024 ConstMin - Surfacing Equipment	Aggregate	175 Diesel	1.66941E-05	2.43998E-05	2.90344E-05	0.000444858	0.000748613	0.027133742	2.49244E-06	2.29284E-06	6.954432	6.14902E-07	2444.27099	1138.430274	4.513187174	156615.2
Orange (SC)	2024 ConstMin - Surfacing Equipment	Aggregate	300 Diesel	4.48788E-05	5.43023E-05	6.46243E-05	0.000371667	0.000713079	0.148990314	2.37345E-05	2.18357E-05	1.376146	1.21604E-06	4831.820158	1367.916578	5.446949965	3092352
Orange (SC)	2024 ConstMin - Surfacing Equipment	Aggregate	600 Diesel	9.64962E-05	0.000116705	0.000138943	0.000585043	0.001229153	0.324809154	4.59949E-05	4.23155E-05	1.284887	1.13548E-06	4510.684867	2673.127604	10.56007161	672573
Orange (SC)	2024 ConstMin - Surfacing Equipment	Aggregate	750 Diesel	3.19884E-05	3.87059E-05	4.60633E-05	0.000424367	0.000378411	0.224678914	1.38881E-05	1.27771E-05	1.087426	9.61280E-07	3821.144152	2076316.86	2.256593557	467928.3
Orange (SC)	2024 ConstMin - Surfacing Equipment	Aggregate	9999 Diesel	1.51256E-05	1.83020E-05	2.17809E-05	0.000017417	0.000432092	0.081492882	7.31503E-06	6.72983E-06	7.529816	6.65127E-07	2643.920228	192.7539478	0.703023138	1695273
Orange (SC)	2024 ConstMin - Sweepers/Scrubbers	Aggregate	25 Diesel														
Orange (SC)	2024 ConstMin - Sweepers/Scrubbers	Aggregate	50 Diesel	0.000107381	0.001231031	0.001465029	0.008255578	0.006730251	0.969595803	0.00019358	0.000362069	8.933876	7.91371E-06	3145746801	13699.25357	46.60221635	1200472
Orange (SC)	2024 ConstMin - Sweepers/Scrubbers	Aggregate	75 Diesel	0.000221807	0.000268169	0.000319402	0.001825763	0.001475524	0.214755126	0.000177136	0.000162973	1.357576	1.20433E-06	478726795	2641.488534	5.777147669	2045468.3
Orange (SC)	2024 ConstMin - Sweepers/Scrubbers	Aggregate	100 Diesel	0.000555551	0.000669797	0.000797114	0.00302473	0.006787624	1.350987243	0.000355482	0.000327044	1.247398	1.10260E-05	43831.20224	29646.06955	32.16783943	1859097
Orange (SC)	2024 ConstMin - Sweepers/Scrubbers	Aggregate	175 Diesel	0.0001154	0.000139034	0.000165373	0.000248917	0.001559189	0.277905851	7.57043E-05	6.96479E-05	3.451277	0.000305148	121274.4393	3218.961824	13.97185251	514494.2
Orange (SC)	2024 ConstMin - Sweepers/Scrubbers	Aggregate	300 Diesel	6.61157E-05	8E-05	9.52066E-05	0.000481445	0.000864945	0.224481758	2.72238E-05	2.50452E-05	2.073466	1.83219E-06	7283.06213	1473.378758	1.979593949	108977.2
Orange (SC)	2024 ConstMin - Sweepers/Scrubbers	Aggregate	600 Diesel	3.50645E-06	4.24028E-06	5.04619E-06	5.59265E-05	1.53028E-05	0.033015995	5.43685E-07	5.00318E-07	2.812816	2.48477E-07	983.5698839	126.4454667	0.384963179	41727
Orange (SC)	2024 ConstMin - Sweepers/Scrubbers	Aggregate	9999 Diesel	3.47996E-06	4.20944E-06	5.00842E-06	6.96281E-05	0.000167793	0.038514461	1.13948E-06	1.04864E-06	1.602128	1.17917E-07	1261.737247	63.32272337	0.082481564	53612.87
Orange (SC)	2024 ConstMin - Tractors/Loaders/Backhoes	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)	2024 ConstMin - Tractors/Loaders/Backhoes	Aggregate	50 Diesel	0.002658881	0.003217178	0.003828069	0.025151344	0.020565661	3.196561392	0.000905253	0.000832305	2.891916	2.56002E-05	101762.2788	128033.4021	242.1238709	4851419
Orange (SC)	2024 ConstMin - Tractors/Loaders/Backhoes	Aggregate	75 Diesel	0.000997455	0.001206921	0.001436335	0.004016635	0.009473184	0.191071723	0.000759199	0.000698463	3.585738	3.19187E-06	12687.89136	9333.394882	19.48220588	665288.8
Orange (SC)	2024 ConstMin - Tractors/Loaders/Backhoes	Aggregate	100 Diesel	0.016870761	0.020413621	0.024293859	0.131917904	0.131827958	0.008088697	50.314483	0.009225134	0.000464476	0.000410666	1631307.957	1024554.859	1597.5297	85314563
Orange (SC)	2024 ConstMin - Tractors/Loaders/Backhoes	Aggregate	175 Diesel	0.002432305	0.002943089	0.003502519	0.051664869	0.02302049	4.781449357	0.001145008	0.001053407	8.111598	7.1673E-05	284904.4533	104424.1088	183.9128394	14993253
Orange (SC)	2024 ConstMin - Tractors/Loaders/Backhoes	Aggregate	300 Diesel	0.00150117	0.001816415	0.002161684	0.012682336	0.01703807	5.442330221	0.000620583	0.000570936	5.02725	4.44198E-05	17670.4101	44715.48134	78.20518857	5209411
Orange (SC)	2024 ConstMin - Tractors/Loaders/Backhoes	Aggregate	600 Diesel	0.017170776	0.020210852	0.024055199	0.018208977	0.173344955	7.304729986	0.000617967	0.000568476	6.748376	5.96202E-05	236993.7803	36808.56886	65.75191274	4381487
Orange (SC)	2024 ConstMin - Tractors/Loaders/Backhoes	Aggregate	750 Diesel	4.96647E-05	6.00943E-05	7.15172E-05	0.000608549	0.000521889	0.117776972	2.16277E-05	1.98974E-05	1.087426	9.61280E-07	3821.144152	308.0474743	0.674909502	204249.7
Orange (SC)	2024 ConstMin - Tractors/Loaders/Backhoes	Aggregate	9999 Diesel	0.000365487	0.000793127	0.000943995	0.004823102	0.014632316	2.422923927	0.000372127	0.000342139	2.271616	2.00771E-05	797833.5611	2261.610923	1.543274887	4188018
Orange (SC)	2024 ConstMin - Trenchers	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange (SC)	2024 ConstMin - Trenchers	Aggregate	50 Diesel	0.000937505	0.001134381	0.001350508	0.007995349	0.007241541	1.113400225	0.000371707	0.000341151	1.026581	9.08744E-06	361213.0461	31288.07497	79.39467014	1247952
Orange (SC)	2024 ConstMin - Trenchers	Aggregate	75 Diesel	0.000153485	0.000185737	0.000221018	0.000969842	0.001619563	0.121481158	0.000121194	0.000111498	1.118558	9.91513E-07	3941.322383	2103.750745	6.947034215	151763.9
Orange (SC)	2024 ConstMin - Trenchers	Aggregate	100 Diesel	0.000466783	0.000564807	0.000672167	0.004752001	0.005354356	0.686301853	0.000161287	0.000148124	0.133126	1.6015E-06	22266.30129	10086.8502	29.863225	855003.1
Orange (SC)	2024 ConstMin - Trenchers	Aggregate	175 Diesel	9.46116E-05	0.000114482	0.000136243	0.000962574	0.001154888	0.167457993	5.87938E-05	5.40988E-05	0.543764	4.81731E-07	1914.486	5345.716074	1.442144905	2043102.1
Orange (SC)	2024 ConstMin - Trenchers	Aggregate	300 Diesel	0.000172754	0.000209032	0.000248766	0.001909871	0.002325118	0.373926313	9.78704E-05	9.00408E-05	3.451958	3.05194E-06	12131.62741	2065.483481	6.495928097	4653899.9
Orange (SC)	2024 ConstMin - Trenchers	Aggregate	600 Diesel	0.000155938	0.000188709	0.000224579	0.001770504	0.001177879	0.557709443	7.46577E-05	6.86851E-05	1.121268	9.95172E-07	3955.729446	1819.123904	4.871946073	6931123.2
Orange (SC)	2024 ConstMin - Trenchers	Aggregate	750 Diesel	1.67524E-05	2.02704E-05	2.41235E-05	0.000324963	8.96205E-05	0.181041516	3.08845E-06	2.84138E-06	1.673326	1.47764E-06	5873.692591	348.8329934	0.721769789	225799.2
Orange (SC)	2024 ConstMin - Trenchers	Aggregate	9999 Diesel	2.69006E-05	3.25538E-05	3.87441E-05	0.000520997	0.000180204	0.014529466	1.71810E-06	1.58050E-06	1.335187	1.18538E-07	471.392512	21.08389021	0.040122114	12742.15
Orange (SC)	2024 ConstMin - Aerial Lifts	Aggregate	25 Diesel														
Orange (SC)	2024 ConstMin - Aerial Lifts	Aggregate	50 Diesel	0.000804143	0.000108124	0.000121652	0.001983835	0.018541371	0.775052606	0.000319079	0.000312752	1.483531	3.07749E-05	122330.565	149623.2908	483.3519402	6902270
Orange (SC)	2024 ConstMin - Aerial Lifts	Aggregate	75 Diesel	0.000497186	0.000601595	0.000715948	0.017313186	0.008977543	2.886115572	0.000199604	0.000183636	2.666878	2.35561E-05	93636.84125	84074.46352	273.0402435	5874353
Orange (SC)	2024 ConstMin - Aerial Lifts	Aggregate	100 Diesel	0.000537307	0.000650141	0.000773721	0.022111133	0.010057421	3.693006399	0.000130423	0.000119989	3.412768	3.0141E-05	119815.5255	96780.70397	312.5022002	7514702
Orange (SC)	2024 ConstMin - Aerial Lifts	Aggregate	175 Diesel	5.49427E-05	6.57547E-05	7.82532E-05	0.001966488	0.000457737	0.402086481	1.34453E-05	1.23683E-05	1.175388	1.03841E-06	412653.1049	20.30127782	0.818608	9
Orange (SC)	2024 ConstMin - Aerial Lifts	Aggregate	300 Diesel	1.04779E-06	1.68778E-06	4.38877E-06	4.40663E-05	3.11606E-05	0.024027976	4.21205E-07	3.87588E-07	2.220598	1.96113E-07	779.5612338	212.6901994	0.684311387	48918.75
Orange (SC)	2024 ConstMin - Aerial Lifts	Aggregate	600 Diesel	1.74212E-06	2.10824E-06	2.52635E-06	3.08116E-05	8.51581E-05	0.070631464	2.97287E-07	2.73455E-07	1.579707	1.39269E-07	553.6014559	71.80673314	0.243102788	34784
Orange (SC)	2024 ConstMin - Forklifts	Aggregate	25 Diesel														
Orange (SC)	2024 ConstMin - Forklifts	Aggregate	50 Diesel	0.002470063	0.002988778	0.00355889	0.021569127	0.017440075	2.537775486	0.000876354	0.000805245	2.338881	2.07120E-05	82333.38414	167824.7605	224.0710441	7120152
Orange (SC)	2024 ConstMin - Forklifts	Aggregate	75 Diesel	0.000445048	0.000539617	0.000642189	0.001778277	0.002467851	0.165152161	0.000310882	0.000304411	1.513538	1.34795E-06	5358.179888	7114.501085	15.92571768	818779.7
Orange (SC)	2024 ConstMin - Forklifts	Aggregate	100 Diesel	0.013905598	0.016825774	0.020024061	0.208493812	0.158671905	30.4003773	0.009074339	0.008348392	0.000208649	0.000184124	986306.7613	1152810.98	1479.239916	95022806
Orange (SC)	2024 ConstMin - Forklifts	Aggregate	175 Diesel	0.000844966	0.001041757	0.001240762	0.054168848	0.014234949	9.646962652	0.001762877	0.001621107	8.521838	0.75851E-05	31439.9425	27135.71583	278.5148766	8017924
Orange (SC)	2024 ConstMin - Forklifts	Aggregate	300 Diesel	0.000629462	0.000761649	0.000906425	0.00481235	0.006293537	2.104459961	0.000237607	0.000218598	1.945958	1.71746E-05	68269.94393	31255.76856	40.74028301	6562284
Orange (SC)	2024 ConstMin - Forklifts	Aggregate	600 Diesel	0.000195213	0.000236123	0.000281133	0.001525398	0.001907193	0.653089303	7.2152E-05	6.6352E-05	4.909138	4.33418E-06	17247.47812	4652.122897	2.196219864	1248957
Orange (SC)	2024 ConstMin - Forklifts	Aggregate	9999 Diesel	7.03593E-06	8.51348E-06	1.01317E-05	8.23229E-05	0.000102327	0.042081354	1.77946E-06	1.63716E-06	3.888526	3.43462E-07	1365.283195	149.3006598	0.185187764	131384.6
Orange (SC)	2024 ConstMin - Other General Industrial Equipment	Aggregate	25 Diesel	3.31262E-06	4.00983E-06	4.77323E-06	1.40144E-05	7.56432E-06	0.020579561	1.04269E-06	9.59270E-07	5.258078	4.73032E-08	18.80329077	77.18396001	0.163762827	7924.577
Orange (SC)	2024 ConstMin - Other General Industrial Equipment	Aggregate	50 Diesel	0.004418629	0.005348851	0.006020035	0.018445494	0.035777944	5.456880044	0.001152563	0.001059984	0.000459958	0.000406504	161577.3079	288.7037859	2650778
Orange (SC)	2024 ConstMin - Other General Industrial Equipment	Aggregate	75 Diesel	0.000132801	0.001599224	0.00189821	0.023923467	0.015895344	3.490302744	0.000745816	0.000686151	3.2231E-05	2.84874E-05	113239.0286	89676.63636	103.8256321	6407635
Orange (SC)	2024 ConstMin - Other General Industrial Equipment	Aggregate	100 Diesel	0.000613369	0.000742177	0.000882252	0.005592269	0.007457451	0.963830261	0.000154259	0.000141929	8.336076e-06	7.37528E-06	29317.16018	21107.18401	26.96585151	1655261
Orange (SC)	2024 ConstMin - Other General Industrial Equipment	Aggregate	175 Diesel	0.000158101	0.000809413	0.000962078	0.012518889	0.006165272	2.054079598	0.000323246	0.000297186	1.897658	1.677E-05	66661.81678	25376.77473	29.80483446	3768249
Orange (SC)	2024 ConstMin - Other General Industrial Equipment	Aggregate	300 Diesel	0.000597843	0.000723119	0.000860893	0.004474427	0.006499207	2.008285738	0.000219004	0.000198374	1.854979	1.63972E-05	65156.63896	12745.18509	29.36164182	3748473
Orange (SC)	2024 ConstMin - Other General Industrial Equipment	Aggregate	600 Diesel	0.001569987	0.001899684	0.002260783	0.014154521	0.012131166	8.866720388	0.000424739	0.0003926	6.343918	5.6045E-05	222783.1807	32807.2597	37.50168732	12598084
Orange (SC)	2024 ConstMin - Other General Industrial Equipment	Aggregate	750 Diesel	0.000110917	0.000142682	0.000169803	0.001780156	0.000775178	0.754190357	3.52244E-05	3.24035E-05	7.339135	6.48208E-06	25766.64488	2236.876012	2.620205227	1457072
Orange (SC)	2024 ConstMin - Other Material Handling Equipment	Aggregate	25 Diesel	8.82916E-05	0.000106833	0.000127164	0.000211769	0.000311769	0.031911373	1.49586E-05	1.37617E-05	8.825

Orange (SC)	2024 OFF - ConstMin - Trenchers	Aggregate	25 Gasoline	0.02723527	0.0200011	0.025005856	0.935799862	0.016810507	1.5492177	0.011668397	0.008831234	4.11328E-05	4.12745E-05	117818.35	122275	281.5	1809944
Orange (SC)	2024 OFF - ConstMin - Trenchers	Aggregate	25 Diesel	0.003082474	0.000455175	0.000550762	0.020372217	0.00347441	0.459705446	0.000310947	0.000110471	6.09193E-06	3.94645E-06	15288.85	15590.65	25.85	157251.1
Orange (SC)	2024 OFF - ConstMin - Trenchers	Aggregate	50 Gasoline	0.002046743	0.001882594	0.002252315	0.146218641	0.002862265	0.976133633	6.72938E-05	5.08442E-05	1.186E-05	1.60898E-05	45927.95	20841.5	51.81	625245
Orange (SC)	2024 OFF - ConstMin - Trenchers	Aggregate	100 Gasoline	0.000730686	0.000672085	0.000804078	0.031154607	0.001892966	0.70467817	4.91319E-05	5.71218E-05	6.88817E-06	1.00274E-05	28623.3	6913.1	17.21	456264.6
Orange (SC)	2024 OFF - Industrial - Aerial Lifts	Aggregate	25 Gasoline	0.006729614	0.006188899	0.00740553	0.277507289	0.004741705	0.45008197	0.003395737	0.002565668	1.14297E-05	1.21155E-05	34583.75	39993.05	106.57	754349.2
Orange (SC)	2024 OFF - Industrial - Aerial Lifts	Aggregate	25 Diesel	0.000729979	0.000868736	0.00105117	0.004192207	0.000631707	0.879378824	0.000256668	0.000226133	1.1981E-05	7.36233E-06	29265.7	63718.05	159.55	1113845
Orange (SC)	2024 OFF - Industrial - Aerial Lifts	Aggregate	25 Net Gas	0	0	0.000513805	0.136754437	0.003763284	0.804996266	0	0	0	0	53782.75	4559.15	121.29	858644.3
Orange (SC)	2024 OFF - Industrial - Aerial Lifts	Aggregate	50 Gasoline	0.002077992	0.001911337	0.002286703	0.170389904	0.003103011	1.650961349	0.000113816	8.59941E-05	2.00727E-05	2.55391E-05	72901.45	45979.05	127.24	1517309
Orange (SC)	2024 OFF - Industrial - Aerial Lifts	Aggregate	100 Gasoline	0.001637941	0.001506578	0.001802454	0.099526713	0.004087092	3.314394602	0.000231081	0.000174594	3.3207E-05	4.58006E-05	130094.85	45979.05	127.24	3080596
Orange (SC)	2024 OFF - Industrial - Forklifts	Aggregate	25 Gasoline	0.00019863	0.0001827	0.000218581	0.012243489	0.000161348	0.019680636	9.89898E-06	7.47923E-06	4.98798E-07	5.25538E-07	1500.15	2197.3	2.44	50537.9
Orange (SC)	2024 OFF - Industrial - Forklifts	Aggregate	25 Net Gas	0	0	0.000147908	0.039394457	0.001085978	0.231946011	0	0	0	0	1427.35	1452.7	1.16	34412.1
Orange (SC)	2024 OFF - Industrial - Forklifts	Aggregate	50 Gasoline	0.052570284	0.048354147	0.057850391	6.1818856	0.121108209	22.24637666	0.001533945	0.001158754	0.000270475	0.000426397	1217150.9	764569.15	424.4	31347335
Orange (SC)	2024 OFF - Industrial - Forklifts	Aggregate	50 Net Gas	0	0	0.003345596	0.570793693	0.149285344	35.57588234	0	0	0	0	18951.54.75	14195561.85	787.97	5820228
Orange (SC)	2024 OFF - Industrial - Forklifts	Aggregate	100 Gasoline	0.111080706	0.102080054	0.122127496	10.51018022	0.547816363	119.7017005	0.009188833	0.006942674	0.001273292	0.001971225	562488.2	268309695.5	1489.31	1.88E+08
Orange (SC)	2024 OFF - Industrial - Forklifts	Aggregate	100 Net Gas	0	0	0.020379788	9.62230808	0.964908274	213.1763852	0	0	0	0	11880164	4982217.15	2765.52	3.49E+08
Orange (SC)	2024 OFF - Industrial - Forklifts	Aggregate	175 Gasoline	0.005792655	0.005328364	0.006374463	0.404623847	0.013923118	2.579559926	0.000700449	0.000529227	9.70606E-05	0.000138205	394506.6	98060.9	54.43	1416189
Orange (SC)	2024 OFF - Industrial - Forklifts	Aggregate	175 Net Gas	0	0	0.009934947	0.563723326	0.048014927	16.27101826	0	0	0	0	89014.7	18232.45	101.2	2661954
Orange (SC)	2024 OFF - Industrial - Other General Industrial Equipment	Aggregate	25 Gasoline	0.00556618	0.005114254	0.006118639	0.338450805	0.004453442	0.553609888	0.000275178	0.000207912	1.58268E-05	1.49422E-05	42819.9	19731.85	198.91	815315.1
Orange (SC)	2024 OFF - Industrial - Other General Industrial Equipment	Aggregate	25 Diesel	0.000899974	0.001071044	0.001295963	0.00509966	0.00838351	1.111246141	0.000316538	0.000291215	1.48568E-05	9.29979E-06	36967.2	70463.25	49.42	1269543
Orange (SC)	2024 OFF - Industrial - Other General Industrial Equipment	Aggregate	50 Gasoline	0.001622355	0.001550437	0.001796302	0.156261176	0.003605333	1.111514581	7.66368E-05	5.79068E-05	1.15154E-05	1.80729E-05	51589.1	29010.2	40.64	870308
Orange (SC)	2024 OFF - Industrial - Other General Industrial Equipment	Aggregate	100 Gasoline	0.000505022	0.000464452	0.000557746	0.03665218	0.002977964	0.953663883	6.63106E-05	5.01014E-05	9.18683E-06	1.19329E-05	38230.1	9533.8	13.37	753170.2
Orange (SC)	2024 OFF - Industrial - Other General Industrial Equipment	Aggregate	175 Gasoline	7.08542E-05	6.51717E-05	7.79707E-05	0.008634891	0.000600127	0.197156122	1.41346E-05	1.06795E-05	1.95854E-06	2.75812E-06	7873.05	919.8	1.3	160045.2
Orange (SC)	2024 OFF - Industrial - Other Material Handling Equipment	Aggregate	50 Gasoline	2.10183E-05	1.9337E-05	2.31264E-05	0.001737142	4.29124E-05	0.014085569	7.86406E-07	5.94242E-07	1.38707E-07	1.85408E-07	529.25	222.65	0.55	9128.65
Orange (SC)	2024 OFF - Industrial - Other Material Handling Equipment	Aggregate	100 Gasoline	0.000533045	0.000490294	0.000586583	0.038227486	0.002486334	0.657427196	4.58374E-05	3.46327E-05	6.35166E-06	9.32798E-06	26626.75	9829.45	25.4	530790.3
Orange (SC)	2024 OFF - Industrial - Sweepers/Scrubbers	Aggregate	25 Gasoline	0.004219598	0.003886271	0.004601457	0.272595992	0.003421058	0.456036071	0.000210375	0.000158802	1.18698E-05	1.18766E-05	31901.2	14795.75	139.89	649027
Orange (SC)	2024 OFF - Industrial - Sweepers/Scrubbers	Aggregate	25 Diesel	0.00017923	0.000213298	0.000258091	0.001100288	0.001693873	0.225936141	6.43578E-05	5.92092E-05	3.11229E-06	1.89154E-06	7519	10468.2	16.1	193661.7
Orange (SC)	2024 OFF - Industrial - Sweepers/Scrubbers	Aggregate	50 Gasoline	0.004530582	0.004167229	0.004985629	0.390984133	0.00979556	3.592753886	0.000247981	0.000187137	4.36813E-05	5.59947E-05	159837.15	61115.6	118.35	2199046
Orange (SC)	2024 OFF - Industrial - Sweepers/Scrubbers	Aggregate	100 Gasoline	0.002644281	0.002432209	0.002910922	0.167098997	0.016665727	5.763635834	0.000401786	0.000303572	5.56753E-05	7.99815E-05	228307.5	51007	98.83	3469836
Orange (SC)	2024 OFF - Industrial - Sweepers/Scrubbers	Aggregate	175 Gasoline	2.04721E-05	1.88302E-05	2.25282E-05	0.002225533	0.000197642	0.067085907	4.80934E-06	3.63373E-06	6.66428E-07	9.34716E-07	2668.15	295.65	0.58	41391
Orange (SC)	2024 OFF - Light Commercial - Air Compressors	Aggregate	25 Gasoline	0.048810859	0.044896408	0.05371941	1.122805473	0.028933743	2.507780945	0.001541025	0.001143107	9.77977E-05	6.94208E-05	252101.85	180496.15	534.72	5956373
Orange (SC)	2024 OFF - Light Commercial - Air Compressors	Aggregate	25 Diesel	0.000212414	0.00025279	0.000305876	0.00112297	0.001892494	0.244462421	7.83392E-05	7.20721E-05	3.24177E-06	2.04672E-06	8135.85	14840.9	18.24	296438.4
Orange (SC)	2024 OFF - Light Commercial - Air Compressors	Aggregate	50 Gasoline	0.002035307	0.002166411	0.002620817	0.181888181	0.003112143	1.270618083	7.43905E-05	5.60298E-05	9.18368E-05	1.81709E-05	51882.05	32210.35	48.03	812862.3
Orange (SC)	2024 OFF - Light Commercial - Air Compressors	Aggregate	50 Diesel	0.002326149	0.002768309	0.003349654	0.023188931	0.018497961	2.731268462	0.000641837	0.00059049	3.53343E-05	2.30181E-05	91498.2	89662.25	110.17	3317503
Orange (SC)	2024 OFF - Light Commercial - Air Compressors	Aggregate	100 Gasoline	0.007316	0.006729256	0.008050811	0.342298275	0.018180864	6.90145902	0.000463186	0.000363563	0.667775-05	9.88934E-05	282542.85	75266.65	155.71	5288666
Orange (SC)	2024 OFF - Light Commercial - Air Compressors	Aggregate	175 Gasoline	0.000698079	0.00064209	0.000768359	0.031237463	0.001512497	0.864936176	6.19655E-05	4.68184E-05	8.58653E-06	1.21424E-05	34660.4	5058.9	10.48	677862.6
Orange (SC)	2024 OFF - Light Commercial - Gas Compressors	Aggregate	50 Net Gas	0	0	0.000159982	0.028344376	0.005809517	1.9306733	0	0	0	0	102583.25	30003	3.53	960096
Orange (SC)	2024 OFF - Light Commercial - Gas Compressors	Aggregate	100 Net Gas	0	0	0.000372413	0.453272112	0.011618256	3.84949383	0	0	0	0	600326.45	6201.15	7.3	5457188
Orange (SC)	2024 OFF - Light Commercial - Gas Compressors	Aggregate	175 Net Gas	0	0	0.000243307	0.092121	0.009198586	2.8235883	0	0	0	0	154172.35	10001	1.18	1460146
Orange (SC)	2024 OFF - Light Commercial - Gas Compressors	Aggregate	300 Net Gas	0	0	0.000187192	0.106107098	0.008080004	2.9100713	0	0	0	0	1598729	8000.18	0.94	1688168
Orange (SC)	2024 OFF - Light Commercial - Gas Compressors	Aggregate	600 Net Gas	0	0	0.000263629	0.14943409	0.012536983	4.0884988	0	0	0	0	224872.85	7000.7	0.82	2366237
Orange (SC)	2024 OFF - Light Commercial - Generator Sets	Aggregate	25 Gasoline	0.353162019	0.324838426	0.38861326	19.26071786	0.251533089	33.08508501	0.023874869	0.018527679	0.000908268	0.000859022	2452086.95	349753.2	30440.29	37153361
Orange (SC)	2024 OFF - Light Commercial - Generator Sets	Aggregate	25 Diesel	0.005151012	0.00613033	0.007474758	0.032186633	0.049113193	6.626351552	0.00203192	0.001858995	8.91826E-05	5.35105E-05	217974	349885.35	1036.41	5001105
Orange (SC)	2024 OFF - Light Commercial - Generator Sets	Aggregate	50 Gasoline	0.011977748	0.011017133	0.013180782	0.791912358	0.024906499	9.342426759	0.000844059	0.000486622	0.000113587	0.000140968	402394.25	181496.25	1580.17	5807880
Orange (SC)	2024 OFF - Light Commercial - Generator Sets	Aggregate	50 Diesel	0.004353115	0.005185566	0.006268405	0.050215442	0.078419	10.57605469	0.003144102	0.002874497	9.77977E-05	6.94208E-05	252101.85	180496.15	534.72	5956373
Orange (SC)	2024 OFF - Light Commercial - Generator Sets	Aggregate	100 Gasoline	0.002570381	0.002364236	0.002838547	0.107364736	0.014981281	4.627399576	0.000322633	0.000243767	4.47070E-05	6.36885E-05	181799.2	35040	305.17	2008320
Orange (SC)	2024 OFF - Light Commercial - Generator Sets	Aggregate	100 Net Gas	0	0	0.004021E-05	0.089415452	0.009049918	3.000225514	0	0	0	0	163411.05	2602.45	22.67	2160014
Orange (SC)	2024 OFF - Light Commercial - Generator Sets	Aggregate	175 Gasoline	0.000258195	0.000237488	0.000284128	0.023859981	0.002606124	0.747985313	5.36226E-05	4.05148E-05	7.43045E-06	1.04225E-05	29751.15	3306.9	28.83	482807.4
Orange (SC)	2024 OFF - Light Commercial - Generator Sets	Aggregate	175 Net Gas	0	0	1.38531E-05	0.011788609	0.001301613	0.437514827	0	0	0	0	21597.25	2164.45	18.84	316207.3
Orange (SC)	2024 OFF - Light Commercial - Pressure Washers	Aggregate	25 Gasoline	0.037956851	0.034912715	0.041937629	0.140376279	0.019488621	2.786753299	0.003856072	0.002913476	8.34725E-05	6.82138E-05	19473.55	3651.24	317.73	2527975
Orange (SC)	2024 OFF - Light Commercial - Pressure Washers	Aggregate	25 Diesel	2.79556E-05	3.32695E-05	4.02561E-05	0.000204252	0.000275165	0.036095565	1.14774E-05	1.05592E-05	5.35333E-07	1.04851E-07	1211.8	4949.4	34.21	699048
Orange (SC)	2024 OFF - Light Commercial - Pressure Washers	Aggregate	50 Gasoline	0.000329793	0.00031157	0.000371957	0.074322349	0.000295536	0.094915555	6.51416E-05	4.93762E-05	1.15506E-06	1.41150E-06	4060.55	1620.6	14.12	46997.4
Orange (SC)	2024 OFF - Light Commercial - Pressure Washers	Aggregate	50 Diesel	1.46712E-05	1.746E-05	2.11265E-05	0.000206475	0.000219224	0.036150866	5.50852E-06	5.06057E-06	4.68916E-07	3.03933E-07	1208.15	1854.2	12.82	704559.6
Orange (SC)	2024 OFF - Light Commercial - Pumps	Aggregate	25 Gasoline	0.121004191	0.111289655	0.133577151	4.077828919	0.082156264	8.679808628	0.034782765	0.026511677	0.000219832	0.000183962	552089.3	155021.5	70244.14	8681853
Orange (SC)	2024 OFF - Light Commercial - Pumps	Aggregate	25 Diesel	0.002811563	0.003345992	0.00404869	0.017374328	0.025172664	3.282046116	0.001065508	0.000980267	4.69021E-05	2.74944E-05	109291.95	235001.6	583.88	2582652
Orange (SC)	2024 OFF - Light Commercial - Pumps	Aggregate	50 Gasoline	0.001851451	0.001702844	0.002037409	0.141067808	0.002864385	1.410464897	9.72355E-05	7.14468E-05	1.71488E-05	2.17286E-05	62034.45	27878.7	126.28	864239
Orange (SC)	2024 OFF - Light Commercial - Pumps	Aggregate	50 Diesel	0.003302048	0.003936543	0.004760964	0.039867722	0.028157424	4.42777927	0.000947	0.000870195	5.72192E-05	3.37945E-05	147671.7	94232.05	234.09	3486586
Orange (SC)	2024 OFF - Light Commercial - Pumps	Aggregate	100 Gasoline	0.002839172	0.00266022	0.003182659	0.142397192	0.007669274	5.302893102	0.00036973	0.000279352	5.12333E-05	7.33835E-05	209473.5	35339.3	160.05	3286555
Orange (SC)	2024 OFF - Light Commercial - Pumps	Aggregate	175 Gasoline	0.001045969	0.91824E-05	0.000115072	0.007879133	0.000381499	0.240743796	1.72588E-06	1.3045E-05	2.39154E-06	3.35782E-06	9584.9	1062.15	4.82	152949.6
Orange (SC)	2024 OFF - Light Commercial - Pumps	Aggregate	175 Diesel	0.011814986	0.108673419	0.13001573	4.903451139	0.084825069	0.024684946	0.060543911	0.045744288	0.000207243	0.000214982	611667.2	777256.1	3719.84	12132147
Orange (SC)	2024 OFF - Light Commercial - Welders	Aggregate	25 Diesel	0.002408797	0.002961875	0.003583868	0.014282744	0.022229943	2.883660868	0.000930804	0.000829239	3.97728E-05	2.41521E-05	96005.95	245436	382.13	3733640
Orange (SC)	2024 OFF - Light Commercial - Welders	Aggregate	50 Gasoline	0.004425105	0.004070212	0.004869558	0.298096014	0.006876585	2.830003266	0.000195099	0.000147408	3.44079E-05	4.39508E-05	125457.8	52136.6	250.93	2346147
Orange (SC)	2024 OFF - Light Commercial - Welders	Aggregate	50 Diesel	0.009831171	0.011699906	0.014156886	0.110402955	0.083225194	13.56167265	0.002384771	0.002017188	0.000162391	0.000105601	420398.15	353575.5	5507.57	16264473
Orange (SC)	2024 OFF - Light Commercial - Welders	Aggregate	100 Gasoline	0.001251821	0.001151252	0.001377641	0.112074892	0.002492587	0.892425195	0.000174553	0.000124934	4.1922E-05	6.18012E-05	176411.8	51195.1	256.12	3728557
Orange (SC)	2024 OFF - Light Commercial - Welders	Aggregate	175 Gasoline	0.000288485	0.000265348	0.00031746	0.018223899	0.001283336	0.553140473	3.96543E-05	2.99611E-05	5.49487E-06	7.72198E-06	22042.35	3668.25	17.65	479872.5
Orange (SC)	2024 OFF - Military - A/C unit	Aggregate	100 Diesel	4.18737E-05	5.22158E-05	6.31811E-05	0.000834492	0.000587187	0.14259957	2.55455E-05	2.35019E-05	1.07699E-06	1.19461E-06	4768.65	1372.4	4.55	138112.4
Orange (SC)	2024 OFF - Military - A/C unit	Aggregate	300 Diesel	2.28374E-05	2.7178E-05	3.28859E-05	0.000216699	0.000259169	0.112209778	7.46437E-06	6.86722E-06	1.38295E-06	1.02198E-06	4062.45	573.05	1.91	119194.4
Orange (SC)	2024 OFF - Military - A/C unit	Aggregate	600 Diesel	1.32678E-05	1.57898E-05	1.91057E-05	0.000125888	0.000149418	0.077889208	4.34760E-06	3.99979E-06	7.22302E-07	5.93988E-07	2419.95	229.3	0.75	71284.5
Orange (SC)	2024 OFF - Military - Aircraft Support	Aggregate	100 Diesel	8.03032E-06	9.5567 4E-06	1.15637E-05	0.000152732	0.000107469	0.02616505	4.67544E-06	4.30141E-06	3.06929E-07	2.19456E-07	872.35	368.65	1.25	25068.2
Orange (SC)	2024 OFF - Military - Aircraft Support	Aggregate	175 Diesel	1.79922E-05	2.14122E-05	2.59088E-05	0.000393752	0.000200788	0.078565229	8.48411E-06	7.88538E-06	8.65587E-07	6.42758E-07	2555	532.9	1.78	74086
Orange (SC)	2024 OFF - Military - Cart	Aggregate	25 Gasoline	0.000302098	0.000313605	0.000379664	0.019867223	0.002815424	0.422779727	0.000347	0.000280735	5.72192E-06	3.37945E-06	14767.1	9432.05	24.09	348538
Orange (SC)	2024 OFF - Military - Cart	Aggregate	25 Diesel	0.000202158	0.000243911	0.000295144	0.001236614	0.001966491	0.228157424	7.29701E-05	6.71218E-05	3.02452E-06	1.90977E-06	7589.68	13814.05	16.1	276945.2
Orange (SC)	2024 OFF - Military - Cart	Aggregate	50 Gasoline	0.000104958	0.000101572	0.000122903	0.007697313	0.000918499	0.247437796	1.72588E-06	1.3045E-05	2.39154E-06	3.35782E-06	9584.9	1062.15	4.82	152949.6
Orange (SC)	2024 OFF - Military - Cart	Aggregate	50 Diesel	0.000204956	0.000247178	0.000299144	0.001253127	0.001993116	0.231261183	7.39701E-05	6.80433E-05	3.06611E-06	1.93599E-06	7693.35	14000.65	16.32	280722.1
Orange (SC)	2024 OFF - Military - Cart	Aggregate	100 Gasoline	0.000202158	0.000243911	0.000295144	0.001236614	0.001966491	0.228157424	7.29701E-05	6.71218E-05	3.02452E-06	1.90977E-06	7589.68	13814.05	16.1	276945.2
Orange (SC)	2024 OFF - Military - Cart	Aggregate	100 Diesel	0.000404916	0.000488324	0.000591288	0.002509966	0.003937543	0.456911673	0.000146144	0.000134992	6.08555E-06	3.84126E-06	15192.96	27650.1	32.24	554553.2
Orange (SC)	2024 OFF - Military - Cart	Aggregate	175 Diesel	0.000707206	0.000852999	0.001032901	0.004383613	0.006877499	0.798191858	0.000255301	0.000235922	1.06293E-05	6.71148E-06	26543.9	48318.15	56.33	968989.2
Orange (SC)	2024 OFF - Military - Communications	Aggregate	25 Gasoline	0.000202158	0.000243911	0.000295144	0.001236614	0.001966491	0.228157424	7.29701E-05	6.71218E-05	3.02452E-06	1.90977E-06	7589.68	13814.05	16.1	276945.2
Orange (SC)	2024 OFF - Military - Communications	Aggregate	25 Diesel	0.000404916	0.000488324	0.000591288	0.002509966	0.003937543	0.456911673	0.000146144	0.000134992	6.08555E-06	3.84126E-06	15192.96	27650.1	32.24	554553.2
Orange (SC)	2024 OFF - Military - Communications	Aggregate	50 Gasoline	0.000404916	0.000488324	0.000591288	0.002509966	0.003937543	0.456911673	0.000146144	0.000134992	6.08555E-06	3.84126E-06	15192.96	27650.1	32.24	554553.2
Orange (SC)	2024 OFF - Military - Communications	Aggregate	50 Diesel	0.000404916	0.000488324	0.000591288	0.002509966	0.003937543	0.456911673	0.000146144	0.000134992	6.08555E-06	3.84126E-06	15192.96	27650.1	32.24	554553.2
Orange (SC)	2024 OFF - Military - Communications	Aggregate	100 Gasoline	0.000404916	0.000488324	0.000591288	0.002509966	0.003937543	0.456911673	0.000146144	0.000134992	6.08555E-06	3.84126E-06	15192.96	27650.1	32.24	554553.2
Orange (SC)	2024 OFF - Military - Communications	Aggregate	100 Diesel	0.000404916	0.000488324	0.000591288	0.002509966	0.003937543	0.456911673	0.000146144	0.000134992	6.08555E-06	3.84126E-06	15192.96	27650.1	32.24	554553.2
Orange (SC)	2024 OFF - Military - Compressor (Military)	Aggregate	25 Gasoline	0.000255153	0.000308408	0.000373937	0.00559177	0.003815444	1.029371868	0.000312945	0.000210846	1.22967E-05	9.11981E-06	36251.8	7221.35	24.03	1061832
Orange (SC)	2024 OFF - Military - Compressor (Military)	Aggregate	25 Diesel	8.14247E-05	9.69021E-05	0.000117252	0.000769056	0.000924044	0.418223388	2.66115E-05	2.44844E-05	4.93076E-06	3.63617E-06	14454	1908.95	6.34	425695.9
Orange (SC)	2024 OFF - Military - Compressor (Military)	Aggregate	50 Gasoline	5.00805E-05	5.95148E-05	7.20218E-05	0.00047795	0.000543831	0.277371521	1.63880E-05	1.50798E-05	2.72479E-06	2.01135E-06	8346.9	777.45	2.57	270512.6
Orange (SC)	2024 OFF - Military - Compressor (Military)	Aggregate	50 Diesel	2.66858E-06	3.17583E-06	3.84275E-06	2.52866E-05	2.92698E-05	0.014674719	8.76398E-07	8.06286E-07	1.47755E-07	1.21206E-07	481.8	0.07	0.07	0
Orange (SC)	2024 OFF - Military - Compressor (Military)	Aggregate	100 Diesel	2.68451E-05	3.19478E-05	3.86569E-05	0.000510578	0.000310266	0.08746878	1.56289E-05	1.41794E-05	1.02605E-06	7.29071E-07	2858.1	886.95	2.97	84260.25
Orange (SC)	2024 OFF - Military - Lift (Military)	Aggregate	25 Diesel	0.000134564	0.000160207	0.000193849	0.001278431	0.00129	0.363	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Orange (SC)	2024 OFF - Military - Light	Aggregate	50 Diesel	1.87641E-06	2.23309E-06	2.7020 4E-06	2.23189E-05	2.17523E-05	0.003435537	6.47858E-07	5.96029E-07	4.44129E-08	2.93832E-08	116.8	58.4	0.17	2920
Orange (SC)	2024 OFF - Military - Other tactical support equipment	Aggregate	25 Diesel	1.75283E-07	4.66618E-07	5.40407E-07	4.46377E-06	4.25048E-06	0.000687207	1.29572E-07	1.19206E-07	8.88258E-09	0	0	0	0	0
Orange (SC)	2024 OFF - Military - Other tactical support equipment	Aggregate	100 Diesel	5.33105E-06	6.34439E-06	7.67672E-06	0.000101394	7.13452E-05	0.017370876	3.10387E-06	2.85556E-06	2.03766E-07	1.45408E-07	576.7	211.7	0.7	16724.3
Orange (SC)	2024 OFF - Military - Other tactical support equipment	Aggregate	175 Diesel	7.60381E-06	9.05431E-06	1.09537E-05	0.000160153	8.49048E-05	0.032414069	3.58757E-06	3.39256E-06	2.90714E-07	2.07477E-07	1080.4	211.7	0.7	33116
Orange (SC)	2024 OFF - Military - Other tactical support equipment	Aggregate	300 Diesel	3.33982E-06	3.97466E-06	4.80934E-06	3.15466E-05	3.79018E-05	0.017974728	1.09161E-06	1.00429E-06	2.02247E-07	1.49671E-07	594.95	62.05	0.24	13526.9
Orange (SC)	2024 OFF - Military - Other tactical support equipment	Aggregate	600 Diesel	1.33793E-06	1.59225E-06	1.92668E-06	1.2787E-05	1.45228E-05	0.00744205	4.38413E-07	4.03164E-07	7.28372E-08	5.24391E-08	248.2	0	0.07	0
Orange (SC)	2024 OFF - Military - Other tactical support equipment	Aggregate	750 Diesel	1.56437E-06	1.86179E-06	2.25280E-06	1.48124E-05	1.71585E-05	0.008602585	5.13760E-07	4.72588E-07	8.64966E-08	6.23588E-08	288.35	0	0	0
Orange (SC)	2024 OFF - Military - Pressure Washers	Aggregate	175 Diesel	1.46508E-06	1.74357E-06	2.10971E-06	1.2062 7E-05	1.63499E-05	0.006266419	6.96849E-07	6.35581E-07	7.05088E-08	4.95842E-08	197.1	51.1	0.16	7767.2
Orange (SC)	2024 OFF - Military - Pump (Military)	Aggregate	50 Diesel	1.69778E-05	2.0205E-05	2.44468E-05	0.000210941	0.000198911	0.031804743	5.86182E-07	5.35287E-06	4.01648E-07	2.82612E-07	1043.9	777.45	2.57	30320.55
Orange (SC)	2024 OFF - Military - Pump (Military)	Aggregate	100 Diesel	1.89792E-05	2.25868E-05	2.73101E-05	0.000360974	0.000253998	0.061839669	1.10502E-05	1.01661E-05	7.25411E-07	5.17870E-07	2058.6	598.6	2	59860
Orange (SC)	2024 OFF - Military - Start Cart	Aggregate	25 Diesel	1.23184E-07	6.07332E-07	8.02165E-08	5.64446E-06	0.000144705	0.032127275	7.05027E-06	6.49265E-06	1.61202E-06	1.14960E-06	58.4	0	0	0
Orange (SC)	2024 OFF - Military - Start Cart	Aggregate	600 Diesel	7.01177E-07	8.34458E-07	1.00969E-06	6.70133E-06	7.61104E-06	0.003889023	2.29761E-07	2.1188E-07	3.81721E-08	3.03014E-08	120.45	0	0	0
Orange (SC)	2024 OFF - Military - Test Stand	Aggregate	100 Diesel	1.28846E-05	1.52188E-05	1.84387E-05	0.000243537	0.000171364	0.041721182	7.45517E-06	6.85876E-06	4.89411E-07	3.46173E-07	1376.05	434.35	1.46	39960.2
Orange (SC)	2024 OFF - Military - Test Stand	Aggregate	175 Diesel	9.12462E-07	1.08591E-06	1.31395E-06	1.99688E-05	1.01828E-05	0.003902877	4.30266E-07	3.93438E-07	3.12197E-08	2.47152E-08	124.1	0	0.07	0
Orange (SC)	2024 OFF - Military - Test Stand	Aggregate	300 Diesel	1.55935E-05	1.85575E-05	2.24546E-05	0.00014728	0.000170962	0.083923304	5.09671E-06	4.68897E-06	9.44281E-07	6.96933E-07	2770.35	412.45	1.37	81252.65

Existing Conditions

EXISTING CONDITIONS

Vehicle type	Fleet percent		VMT		
	Movie Theater (No Matinee)	Regional Shopping Center	Movie Theater (No Matinee)	Regional Shopping Center	Total
LDA	55.90%	55.90%	3,405,285	13,736,733	17,142,018
LDT1	4.35%	4.35%	265,209	1,069,840	1,335,049
LDT2	20.98%	20.98%	1,278,231	5,156,313	6,434,543
MDV	11.39%	11.39%	694,178	2,800,276	3,494,454
LHD1	1.61%	1.61%	98,148	395,925	494,073
LHD2	0.58%	0.58%	35,279	142,313	177,592
MHD	2.54%	2.54%	155,023	625,355	780,379
HHD	1.67%	1.67%	101,456	409,269	510,725
OBUS	0.17%	0.17%	10,436	42,097	52,532
UBUS	0.16%	0.16%	9,461	38,165	47,626
MCY	0.49%	0.49%	29,826	120,318	150,145
SBUS	0.06%	0.06%	3,594	14,499	18,093
MH	0.10%	0.10%	5,885	23,739	29,624
	100.00%	100.00%	6,092,006	24,574,817	30,666,823

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Fast Food Restaurant with Drive Thru	0.00	0.00	0.00		
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Medical Office Building	0.00	0.00	0.00		
Movie Theater (No Matinee)	1,935.96	2,464.00	2035.94	6,092,006	6,092,006
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	7,927.42	10,180.90	4683.35	24,574,817	24,574,817
Supermarket	0.00	0.00	0.00		
Total	9,863.38	12,644.89	6,718.36	30,666,823	30,666,823

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Fast Food Restaurant with Drive Thru	0.558976	0.043534	0.209621	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
High Turnover (Sit Down Restaurant)	0.558976	0.043534	0.209621	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Medical Office Building	0.558976	0.043534	0.209621	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Movie Theater (No Matinee)	0.558976	0.043534	0.209621	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Other Non-Asphalt Surfaces	0.558976	0.043534	0.209621	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Parking Lot	0.558976	0.043534	0.209621	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Regional Shopping Center	0.558976	0.043534	0.209621	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966
Supermarket	0.558976	0.043534	0.209621	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966

PROPOSED CONDITIONS

Vehicle type	Gas percent	Diesel percent	CNG percent	Electricity percent	
LDA	97.15%	0.94%	0.00%	1.91%	
LDT1	99.40%	0.02%	0.00%	0.58%	
LDT2	98.66%	0.68%	0.00%	0.65%	
MDV	97.27%	2.31%	0.00%	0.42%	
LHD1	58.84%	41.16%	0.00%	0.00%	
LHD2	38.80%	61.20%	0.00%	0.00%	
MHD	18.18%	81.82%	0.00%	0.00%	<< Equal to T6 (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
HHD	0.08%	97.05%	2.87%	0.00%	<< Equal to T7 (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
OBUS	48.87%	51.13%	0.00%	0.00%	<< Motor coach, all other buses, and OBUS (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
UBUS	18.82%	0.00%	81.18%	0.00%	
MCY	100.00%	0.00%	0.00%	0.00%	
SBUS	34.17%	65.83%	0.00%	0.00%	
MH	69.70%	30.30%	0.00%	0.00%	

PROPOSED CONDITIONS

Vehicle type	Gasoline			Diesel			CNG				Electricity		
	VMT	mpg	Gallons	VMT	mpg	Gallons	VMT	mpg	Gallons	VMT	m/kWh	kWh	
LDA	16,653,957	30.91	538,861	161,230	48.57	3,319	0	0.00	0	326,831	3.02	108,337	
LDT1	1,327,094	26.61	49,869	271	24.66	11	0	0.00	0	7,685	3.02	2,547	
LDT2	6,348,517	24.37	260,486	43,918	35.25	1,246	0	0.00	0	42,109	3.02	13,958	
MDV	3,399,015	19.76	172,011	80,869	26.73	3,025	0	0.00	0	14,569	3.02	4,829	
LHD1	290,715	10.56	27,528	203,358	21.31	9,544	0	0.00	0	0	3.02	0	
LHD2	68,902	9.18	7,508	108,689	19.22	5,654	0	0.00	0	0	3.02	0	
MHD	141,891	5.06	28,053	638,487	10.52	60,669	0	0.00	0	0	3.02	0	
HHD	416	4.27	98	495,664	6.60	75,070	14,645	2.22	6,584	0	3.02	0	
OBUS	25,671	5.07	5,064	26,861	8.75	3,068	0	0.00	0	0	3.02	0	
UBUS	8,962	3.68	2,436	0	0.00	0	38,663	3.97	9,745	0	3.02	0	
MCY	150,145	37.18	4,039	0	0.00	0	0	0.00	0	0	3.02	0	
SBUS	6,183	9.10	680	11,911	7.40	1,610	0	0.00	0	0	3.02	0	
MH	20,647	5.14	4,018	8,977	10.37	866	0	0.00	0	0	3.02	0	
	28,442,115		**1,100,651**	**1,780,236**		**164,082**	**53,308**		**16,329**	**391,194**		**129,672**	

PROPOSED PROJECT CONDITIONS

Vehicle type	Fleet percent			VMT			
	Apartments Mid Rise	General Office Building	Regional Shopping Center	Apartments Mid Rise	General Office Building	Regional Shopping Center	Total
LDA	66.65%	56.52%	56.52%	1,646,587	212,712	12,907,123	14,766,422
LDT1	5.06%	4.29%	4.29%	124,983	16,146	979,696	1,120,824
LDT2	24.68%	20.93%	20.93%	609,714	78,765	4,779,374	5,467,853
MDV	2.00%	10.84%	10.84%	49,411	40,790	2,475,088	2,565,289
LHD1	0.22%	1.45%	1.45%	5,453	5,474	332,152	343,079
LHD2	0.09%	0.58%	0.58%	2,164	2,172	131,824	136,161
MHD	0.40%	2.63%	2.63%	9,850	9,887	599,934	619,671
HHD	0.27%	1.78%	1.78%	6,685	6,710	407,164	420,559
OBUS	0.00%	0.18%	0.18%	0	674	40,920	41,594
UBUS	0.00%	0.15%	0.15%	0	568	34,457	35,025
MCY	0.61%	0.50%	0.50%	15,152	1,864	113,100	130,116
SBUS	0.01%	0.06%	0.06%	225	227	13,746	14,198
MH	0.01%	0.09%	0.09%	329	330	20,026	20,685
	100.00%	100.00%	100.00%	2,470,550	376,318	22,834,605	25,681,472

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	670.97	616.37	522.12	2,470,550	2,470,550
Enclosed Parking with Elevator	0.00	0.00	0.00		
Fast Food Restaurant with Drive Thru	0.00	0.00	0.00		
General Office Building	127.05	22.05	7.05	376,318	376,318
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Medical Office Building	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	6,485.53	5,724.53	4588.41	22,834,605	22,834,605
Supermarket	0.00	0.00	0.00		
Total	7,284.45	10,362.55	4,537.58	25,681,472	25,681,472

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.666486	0.050588	0.246793	0.020000	0.002207	0.000876	0.003987	0.002706	0.000000	0.000000	0.006133	0.000091	0.000133
Enclosed Parking with Elevator	0.565244	0.042904	0.209304	0.169382	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000887
Fast Food Restaurant with Drive Thru	0.565244	0.042904	0.209304	0.169382	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000887
General Office Building	0.565244	0.042904	0.209304	0.169382	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000887
High Turnover (Sit Down Restaurant)	0.565244	0.042904	0.209304	0.169382	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000887
Medical Office Building	0.565244	0.042904	0.209304	0.169382	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000887
Other Asphalt Surfaces	0.565244	0.042904	0.209304	0.169382	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000887
Other Non-Asphalt Surfaces	0.565244	0.042904	0.209304	0.169382	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000887
Parking Lot	0.565244	0.042904	0.209304	0.169382	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000887
Regional Shopping Center	0.565244	0.042904	0.209304	0.169382	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000887
Supermarket	0.565244	0.042904	0.209304	0.169382	0.014546	0.005773	0.026273	0.017831	0.001792	0.001509	0.004953	0.000602	0.000887

PROPOSED CONDITIONS

Vehicle type	Gas percent	Diesel percent	CNG percent	Electricity percent	
LDA	95.89%	1.03%	0.00%	3.08%	
LDT1	98.59%	0.02%	0.00%	1.39%	
LDT2	97.95%	0.80%	0.00%	1.25%	
MDV	96.17%	2.69%	0.00%	1.14%	
LHD1	55.00%	45.00%	0.00%	0.00%	
LHD2	35.41%	64.59%	0.00%	0.00%	
MHD	15.79%	84.21%	0.00%	0.00%	<< Equal to T6 (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
HHD	0.10%	96.67%	3.23%	0.00%	<< Equal to T7 (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
OBUS	46.53%	53.47%	0.00%	0.00%	<< Motor coach, all other buses, and OBUS (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
UBUS	18.82%	0.00%	81.18%	0.00%	
MCY	100.00%	0.00%	0.00%	0.00%	
SBUS	38.13%	61.87%	0.00%	0.00%	
MH	69.11%	30.89%	0.00%	0.00%	

PROPOSED CONDITIONS

Vehicle type	Gasoline			Diesel			CNG			Electricity		
	VMT	mpg	Gallons	VMT	mpg	Gallons	VMT	mpg	Gallons	VMT	m/kWh	kWh
LDA	14,159,250	33.55	421,998	152,368	52.50	2,902	0	0.00	0	454,804	3.09	147,168
LDT1	1,105,024	28.67	38,545	193	26.18	7	0	0.00	0	15,607	3.09	5,050
LDT2	5,355,919	26.93	198,850	43,842	38.29	1,145	0	0.00	0	68,092	3.09	22,034
MDV	2,466,961	21.70	113,704	68,978	29.06	2,373	0	0.00	0	29,351	3.09	9,497
LHD1	188,686	10.87	17,363	154,392	22.22	6,949	0	0.00	0	0	3.09	0
LHD2	48,215	9.43	5,113	87,946	20.06	4,385	0	0.00	0	0	3.09	0
MHD	97,876	5.17	18,923	521,794	11.53	45,273	0	0.00	0	0	3.09	0
HHD	406	4.59	88	406,559	7.34	55,390	13,594	2.33	5,846	0	3.09	0
OBUS	19,353	5.29	3,658	22,241	9.42	2,360	0	0.00	0	0	3.09	0
UBUS	6,591	4.18	1,576	0	0.00	0	28,434	3.86	7,360	0	3.09	0
MCY	130,116	37.08	3,509	0	0.00	0	0	0.00	0	0	3.09	0
SBUS	5,414	9.34	580	8,784	7.66	1,146	0	0.00	0	0	3.09	0
MH	14,295	5.35	2,672	6,389	10.72	596	0	0.00	0	0	3.09	0
	23,598,107		**826,580**	**1,473,487**		**122,528**	**42,028**		**13,206**	**567,853**		**183,749**

EMFAC Fuel Usage: Year 2021

Vehicle type	GAS			DSL			NG			Electricity
	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day
All other buses	0	0	0.00	28,864	2,840	10.16	0	0	0.00	0
LDA	49,395,345	1,598,253	30.91	478,207	9,845	48.57	0	0	0.00	969,374
LDT1	5,154,285	193,687	26.61	1,053	43	24.66	0	0	0.00	29,846
LDT2	16,989,289	697,086	24.37	117,529	3,334	35.25	0	0	0.00	112,688
LHD1	1,349,255	127,764	10.56	943,814	44,295	21.31	0	0	0.00	0
LHD2	228,273	24,874	9.18	360,088	18,732	19.22	0	0	0.00	0
MCY	414,998	11,163	37.18	0	0	0.00	0	0	0.00	0
MDV	11,280,044	570,838	19.76	268,375	10,040	26.73	0	0	0.00	48,350
MH	65,647	12,775	5.14	28,541	2,752	10.37	0	0	0.00	0
Motor coach	0	0	0.00	17,770	2,747	6.47	0	0	0.00	0
OBUS	44,567	8,792	5.07	0	0	0.00	0	0	0.00	0
PTO	0	0	0.00	32,064	6,505	4.93	0	0	0.00	0
SBUS	21,212	2,332	9.10	40,865	5,523	7.40	0	0	0.00	0
T6	404,523	79,978	5.06	1,820,284	172,963	10.52	0	0	0.00	0
T7	1,000	235	4.27	1,191,349	180,433	6.60	35,200	15,826	2.22	0
UBUS	19,936	5,418	3.68	0	0	0.00	86,004	21,676	3.97	0
Total	**85,368,374**	**3,333,196**	**25.61**	**5,328,802**	**460,053**	**11.58**	**121,204**	**37,502**	**3.23**	**1,160,259**

Source: EMFAC2017 (v1.0.3) Emissions Inventory
Region Type: Sub-Area
Region: Orange (SC)
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumptior

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
Orange (SC)	2021	All Other Buses	Aggregate	Aggregate	DSL	489.5173907	28864.46334	4111.946082	2.840492113
Orange (SC)	2021	LDA	Aggregate	Aggregate	GAS	1272194.252	49395344.62	6031793.312	1598.252893
Orange (SC)	2021	LDA	Aggregate	Aggregate	DSL	11968.50216	478206.5743	56894.24355	9.844879983
Orange (SC)	2021	LDA	Aggregate	Aggregate	ELEC	24402.3541	969374.2917	121670.9087	0
Orange (SC)	2021	LDT1	Aggregate	Aggregate	GAS	138088.6679	5154285.362	639473.8437	193.6872161
Orange (SC)	2021	LDT1	Aggregate	Aggregate	DSL	52.53006429	1053.207272	175.5674352	0.042704415
Orange (SC)	2021	LDT1	Aggregate	Aggregate	ELEC	736.4099521	29846.36824	3686.952909	0
Orange (SC)	2021	LDT2	Aggregate	Aggregate	GAS	451361.7314	16989288.78	2116057.763	697.086435
Orange (SC)	2021	LDT2	Aggregate	Aggregate	DSL	2682.916665	117528.5037	13243.22453	3.333972
Orange (SC)	2021	LDT2	Aggregate	Aggregate	ELEC	3387.284773	112687.7678	17148.89595	0
Orange (SC)	2021	LHD1	Aggregate	Aggregate	GAS	36469.93186	1349254.713	543347.6444	127.7637745
Orange (SC)	2021	LHD1	Aggregate	Aggregate	DSL	22847.66428	943814.0687	287394.8743	44.29523914
Orange (SC)	2021	LHD2	Aggregate	Aggregate	GAS	6432.280162	228273.1716	95831.39032	24.87376132
Orange (SC)	2021	LHD2	Aggregate	Aggregate	DSL	8869.193114	360087.5062	111563.2919	18.73222298
Orange (SC)	2021	MCY	Aggregate	Aggregate	GAS	57618.81526	414997.9139	115237.6305	11.16260839
Orange (SC)	2021	MDV	Aggregate	Aggregate	GAS	313061.5155	11280043.77	1450191.278	570.838295
Orange (SC)	2021	MDV	Aggregate	Aggregate	DSL	6526.199201	268374.8474	31964.49387	10.04043389
Orange (SC)	2021	MDV	Aggregate	Aggregate	ELEC	1390.884605	48350.43346	7141.914624	0
Orange (SC)	2021	MH	Aggregate	Aggregate	GAS	6951.392672	65646.83572	695.4173229	12.77547607
Orange (SC)	2021	MH	Aggregate	Aggregate	DSL	2962.130067	28541.01333	296.2130067	2.752124257
Orange (SC)	2021	Motor Coach	Aggregate	Aggregate	DSL	136.688673	17769.97851	1995.654625	2.74707647
Orange (SC)	2021	OBUS	Aggregate	Aggregate	GAS	1004.319594	44567.4328	20094.42644	8.791910485
Orange (SC)	2021	PTO	Aggregate	Aggregate	DSL	0	32064.15628	0	6.504525593
Orange (SC)	2021	SBUS	Aggregate	Aggregate	GAS	502.9339776	21212.30254	2011.73591	2.332297057
Orange (SC)	2021	SBUS	Aggregate	Aggregate	DSL	1306.944821	40864.66059	15081.96203	5.52274999
Orange (SC)	2021	T6 Ag	Aggregate	Aggregate	DSL	1.07	8.275469859	4.708	0.001066984
Orange (SC)	2021	T6 CAIRP heavy	Aggregate	Aggregate	DSL	91.5183997	18084.96653	1336.168636	1.574890307
Orange (SC)	2021	T6 CAIRP small	Aggregate	Aggregate	DSL	46.53667594	2432.533864	679.4354687	0.225760103
Orange (SC)	2021	T6 instate constructio	Aggregate	Aggregate	DSL	402.2413083	27371.83029	1818.517316	2.737425608
Orange (SC)	2021	T6 instate constructio	Aggregate	Aggregate	DSL	2804.587232	145116.7282	12679.42983	14.24886989
Orange (SC)	2021	T6 instate heavy	Aggregate	Aggregate	DSL	4409.869074	619995.951	50889.27771	56.27430861
Orange (SC)	2021	T6 instate small	Aggregate	Aggregate	DSL	19100.15235	976478.8171	220413.11	94.60628522
Orange (SC)	2021	T6 OOS heavy	Aggregate	Aggregate	DSL	51.81844845	10297.36372	756.5493473	0.895610673
Orange (SC)	2021	T6 OOS small	Aggregate	Aggregate	DSL	27.67164105	1438.597202	404.0059593	0.133482046
Orange (SC)	2021	T6 Public	Aggregate	Aggregate	DSL	880.276836	13409.38955	2670.173066	1.688822835
Orange (SC)	2021	T6 utility	Aggregate	Aggregate	DSL	335.7179041	5650.023815	3860.755898	0.576495199
Orange (SC)	2021	T6TS	Aggregate	Aggregate	GAS	7541.153449	404522.6567	150883.3982	79.97840237
Orange (SC)	2021	T7 Ag	Aggregate	Aggregate	DSL	1	7.879362911	4.4	0.001528733
Orange (SC)	2021	T7 CAIRP	Aggregate	Aggregate	DSL	972.9939174	172789.5784	14205.71119	25.01508229
Orange (SC)	2021	T7 CAIRP constructior	Aggregate	Aggregate	DSL	108.8087326	19661.42347	491.9200496	2.680242521
Orange (SC)	2021	T7 NNOOS	Aggregate	Aggregate	DSL	1050.114496	210652.5487	15331.67165	29.24599318
Orange (SC)	2021	T7 NOOS	Aggregate	Aggregate	DSL	382.0355409	67887.09089	5577.718897	10.06399282
Orange (SC)	2021	T7 POLA	Aggregate	Aggregate	DSL	1312.770111	165521.1665	9977.052846	27.00389995
Orange (SC)	2021	T7 Public	Aggregate	Aggregate	DSL	1034.741303	20965.2498	3138.715283	3.666877413
Orange (SC)	2021	T7 Single	Aggregate	Aggregate	DSL	2252.287741	161481.5001	25991.08826	24.22766572
Orange (SC)	2021	T7 single constructior	Aggregate	Aggregate	DSL	693.7016151	48776.3753	3136.198031	7.381733578
Orange (SC)	2021	T7 SWCV	Aggregate	Aggregate	DSL	337.5483088	13791.67699	1316.438404	6.751611495
Orange (SC)	2021	T7 SWCV	Aggregate	Aggregate	NG	864.7854825	35199.86136	3372.663382	15.825835
Orange (SC)	2021	T7 tractor	Aggregate	Aggregate	DSL	1977.918588	268235.5645	25119.56606	38.05611122
Orange (SC)	2021	T7 tractor constructio	Aggregate	Aggregate	DSL	579.2819539	40236.21531	2618.911191	6.129444357
Orange (SC)	2021	T7 utility	Aggregate	Aggregate	DSL	66.18291232	1342.754914	761.1034916	0.209160293
Orange (SC)	2021	T7IS	Aggregate	Aggregate	GAS	9.817535344	1000.457735	196.4292472	0.234511054
Orange (SC)	2021	UBUS	Aggregate	Aggregate	GAS	211.0170233	19935.56685	844.0680932	5.41802309
Orange (SC)	2021	UBUS	Aggregate	Aggregate	DSL	0	0	0	0
Orange (SC)	2021	UBUS	Aggregate	Aggregate	NG	742.5582597	86003.65359	2970.233039	21.67599997

EMFAC Fuel Usage: Year 2022

Vehicle type	GAS			DSL			NG			ELEC
	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day
All other buses	0	0	0.00	29,582	2,828	10.46	0	0	0.00	0
LDA	49,671,090	1,564,655	31.75	501,185	10,062	49.81	0	0	0.00	1,148,304
LDT1	5,238,639	192,103	27.27	1,011	40	25.09	0	0	0.00	43,266
LDT2	16,909,367	671,285	25.19	124,888	3,448	36.22	0	0	0.00	143,730
LHD1	1,319,671	123,791	10.66	978,243	45,262	21.61	0	0	0.00	0
LHD2	225,103	24,307	9.26	374,620	19,215	19.50	0	0	0.00	0
MCY	421,009	11,330	37.16	0	0	0.00	0	0	0.00	0
MDV	11,130,322	546,444	20.37	281,488	10,244	27.48	0	0	0.00	73,855
MH	65,026	12,480	5.21	28,530	2,724	10.48	0	0	0.00	0
Motor coach	0	0	0.00	18,084	2,713	6.67	0	0	0.00	0
OBUS	44,125	8,576	5.15	0	0	0.00	0	0	0.00	0
PTO	0	0	0.00	33,066	6,502	5.09	0	0	0.00	0
SBUS	22,060	2,406	9.17	40,079	5,359	7.48	0	0	0.00	0
T6	390,927	76,686	5.10	1,862,214	171,184	10.88	0	0	0.00	0
T7	1,077	245	4.40	1,217,802	178,979	6.80	37,693	16,703	2.26	0
UBUS	20,054	5,428	3.69	0	0	0.00	86,514	22,403	3.86	0
Total	**85,458,470**	**3,239,737**	**26.38**	**5,490,793**	**458,560**	**11.97**	**124,207**	**39,106**	**3.18**	**1,409,155**

Source: EMFAC2017 (v1.0.3) Emissions Inventory
Region Type: Sub-Area
Region: Orange (SC)
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
Orange (SC)	2022	All Other Buses	Aggregate	Aggregate	DSL	493.8195683	29581.57559	4148.084373	2.827695838
Orange (SC)	2022	LDA	Aggregate	Aggregate	GAS	1295599.689	49671089.81	6144925.715	1564.655171
Orange (SC)	2022	LDA	Aggregate	Aggregate	DSL	12739.0078	501185.1456	60554.66609	10.06178735
Orange (SC)	2022	LDA	Aggregate	Aggregate	ELEC	28393.86772	1148303.54	141298.9123	0
Orange (SC)	2022	LDT1	Aggregate	Aggregate	GAS	142048.7173	5238638.572	658516.7666	192.1032237
Orange (SC)	2022	LDT1	Aggregate	Aggregate	DSL	49.5183793	1010.879054	166.4183188	0.040286436
Orange (SC)	2022	LDT1	Aggregate	Aggregate	ELEC	1032.066464	43266.26956	5186.810022	0
Orange (SC)	2022	LDT2	Aggregate	Aggregate	GAS	455350.0099	16909367.12	2134201.258	671.2853684
Orange (SC)	2022	LDT2	Aggregate	Aggregate	DSL	2933.773502	124887.9477	14421.82259	3.447911648
Orange (SC)	2022	LDT2	Aggregate	Aggregate	ELEC	4402.869216	143730.0815	22245.82792	0
Orange (SC)	2022	LHD1	Aggregate	Aggregate	GAS	36147.86941	1319671.421	538549.3939	123.791382
Orange (SC)	2022	LHD1	Aggregate	Aggregate	DSL	24040.18403	978243.4579	302395.2725	45.2616289
Orange (SC)	2022	LHD2	Aggregate	Aggregate	GAS	6433.829843	225103.3004	95854.47825	24.30747932
Orange (SC)	2022	LHD2	Aggregate	Aggregate	DSL	9390.080241	374620.1723	118115.3967	19.21500982
Orange (SC)	2022	MCY	Aggregate	Aggregate	GAS	59324.20714	421008.6598	118648.4143	11.33048778
Orange (SC)	2022	MDV	Aggregate	Aggregate	GAS	313214.6089	11130322.04	1450299.414	546.4436615
Orange (SC)	2022	MDV	Aggregate	Aggregate	DSL	7004.701757	281488.2471	34186.63889	10.24432923
Orange (SC)	2022	MDV	Aggregate	Aggregate	ELEC	2172.991185	73854.79623	11123.90302	0
Orange (SC)	2022	MH	Aggregate	Aggregate	GAS	6865.363572	65025.63092	686.8109718	12.47967279
Orange (SC)	2022	MH	Aggregate	Aggregate	DSL	3020.855236	28529.60126	302.0855236	2.723510025
Orange (SC)	2022	Motor Coach	Aggregate	Aggregate	DSL	134.1934225	18084.3755	1959.223969	2.713209821
Orange (SC)	2022	OBUS	Aggregate	Aggregate	GAS	1010.920693	44124.77606	20226.50123	8.575575308
Orange (SC)	2022	PTO	Aggregate	Aggregate	DSL	0	33065.707	0	6.502244055
Orange (SC)	2022	SBUS	Aggregate	Aggregate	GAS	529.8434458	22060.40853	2119.373783	2.405828386
Orange (SC)	2022	SBUS	Aggregate	Aggregate	DSL	1279.904224	40079.35319	14769.9173	5.359382114
Orange (SC)	2022	T6 Ag	Aggregate	Aggregate	DSL	1.07	8.275469859	4.708	0.001066984
Orange (SC)	2022	T6 CAIRP heavy	Aggregate	Aggregate	DSL	93.14712045	18463.66517	1359.947959	1.55641611
Orange (SC)	2022	T6 CAIRP small	Aggregate	Aggregate	DSL	47.63828781	2471.582331	695.519002	0.22363382
Orange (SC)	2022	T6 instate construction heavy	Aggregate	Aggregate	DSL	414.9759872	27770.38279	1876.090304	2.658869569
Orange (SC)	2022	T6 instate construction small	Aggregate	Aggregate	DSL	2767.702049	147229.7267	12512.67336	14.00880881
Orange (SC)	2022	T6 instate heavy	Aggregate	Aggregate	DSL	4469.13874	640921.7605	51573.24143	55.72376156
Orange (SC)	2022	T6 instate small	Aggregate	Aggregate	DSL	19324.09961	994433.5215	222997.4303	93.78037364
Orange (SC)	2022	T6 OOS heavy	Aggregate	Aggregate	DSL	52.90106772	10502.53281	772.3555887	0.885170959
Orange (SC)	2022	T6 OOS small	Aggregate	Aggregate	DSL	28.42468514	1468.707571	415.0004031	0.13283096
Orange (SC)	2022	T6 Public	Aggregate	Aggregate	DSL	865.670485	13245.19275	2625.867135	1.639906284
Orange (SC)	2022	T6 utility	Aggregate	Aggregate	DSL	337.9574371	5698.994115	3886.510527	0.572791934
Orange (SC)	2022	T6TS	Aggregate	Aggregate	GAS	7524.246571	390927.133	150545.1254	76.68639152
Orange (SC)	2022	T7 Ag	Aggregate	Aggregate	DSL	1	7.73408398	4.4	0.001503812
Orange (SC)	2022	T7 CAIRP	Aggregate	Aggregate	DSL	988.9314933	175813.36	14438.3998	24.94943046
Orange (SC)	2022	T7 CAIRP construction	Aggregate	Aggregate	DSL	110.6218848	19947.70719	500.1172404	2.659483787
Orange (SC)	2022	T7 NNOOS	Aggregate	Aggregate	DSL	1070.601355	214339.315	15630.77979	28.81919701
Orange (SC)	2022	T7 NOOS	Aggregate	Aggregate	DSL	390.5525345	69075.5237	5702.067003	10.0570406
Orange (SC)	2022	T7 POLA	Aggregate	Aggregate	DSL	1350.087025	175065.1518	10260.66139	28.10619045
Orange (SC)	2022	T7 Public	Aggregate	Aggregate	DSL	1038.122073	21034.31119	3148.970286	3.622769795
Orange (SC)	2022	T7 Single	Aggregate	Aggregate	DSL	2351.100258	166525.5098	27131.37101	23.97321606
Orange (SC)	2022	T7 single construction	Aggregate	Aggregate	DSL	708.4033598	49486.59256	3202.664047	7.16258616
Orange (SC)	2022	T7 SWCV	Aggregate	Aggregate	DSL	310.0164561	12666.77009	1209.064179	6.200492228
Orange (SC)	2022	T7 SWCV	Aggregate	Aggregate	NG	925.5580333	37692.78896	3609.67633	16.70265719
Orange (SC)	2022	T7 tractor	Aggregate	Aggregate	DSL	2008.403478	271663.5515	25506.72418	37.18012021
Orange (SC)	2022	T7 tractor construction	Aggregate	Aggregate	DSL	591.7742545	40822.08202	2675.388396	6.037322198
Orange (SC)	2022	T7 utility	Aggregate	Aggregate	DSL	66.70871193	1354.438898	767.1501872	0.209700883
Orange (SC)	2022	T7IS	Aggregate	Aggregate	GAS	9.612146044	1076.873786	192.3198181	0.244872884
Orange (SC)	2022	UBUS	Aggregate	Aggregate	GAS	212.2694682	20053.89001	849.0778729	5.427673939
Orange (SC)	2022	UBUS	Aggregate	Aggregate	DSL	0	0	0	0
Orange (SC)	2022	UBUS	Aggregate	Aggregate	NG	746.9655502	86514.10928	2987.862201	22.40345048

EMFAC Fuel Usage: Year 2023

Vehicle type	GAS			DSL			NG			ELEC
	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day
All other buses	0	0	0.00	30,341	2,805	10.82	0	0	0.00	0
LDA	49,965,794	1,530,774	32.64	521,945	10,210	51.12	0	0	0.00	1,363,746
LDT1	5,324,604	190,388	27.97	970	38	25.61	0	0	0.00	58,817
LDT2	16,860,834	647,146	26.05	131,714	3,538	37.23	0	0	0.00	177,682
LHD1	1,293,611	120,026	10.78	1,009,903	46,031	21.94	0	0	0.00	0
LHD2	222,130	23,737	9.36	388,074	19,613	19.79	0	0	0.00	0
MCY	426,338	11,479	37.14	0	0	0.00	0	0	0.00	0
MDV	11,014,473	523,982	21.02	293,855	10,400	28.25	0	0	0.00	101,133
MH	64,511	12,223	5.28	28,555	2,700	10.58	0	0	0.00	0
Motor coach	0	0	0.00	18,402	2,675	6.88	0	0	0.00	0
OBUS	43,737	8,382	5.22	0	0	0.00	0	0	0.00	0
PTO	0	0	0.00	34,063	6,468	5.27	0	0	0.00	0
SBUS	22,929	2,482	9.24	39,300	5,196	7.56	0	0	0.00	0
T6	377,899	73,547	5.14	1,903,588	167,519	11.36	0	0	0.00	0
T7	1,170	260	4.50	1,244,042	172,031	7.23	40,133	17,538	2.29	0
UBUS	20,172	4,824	4.18	0	0	0.00	87,025	22,536	3.86	0
Total	**85,638,202**	**3,149,249**	**27.19**	**5,644,753**	**449,226**	**12.57**	**127,157**	**40,074**	**3.17**	**1,701,376**

1,092,789,551

1.04%

81875000 11322001.58

Source: EMFAC2017 (v1.0.3) Emissions Inventory
Region Type: Sub-Area
Region: Orange (SC)
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
Orange (SC)	2023	All Other Buses	Aggregate	Aggregate	DSL	497.4884829	30341.42021	4178.903257	2.805137976
Orange (SC)	2023	LDA	Aggregate	Aggregate	GAS	1317264.299	49965793.64	6248383.008	1530.774164
Orange (SC)	2023	LDA	Aggregate	Aggregate	DSL	13431.01148	521944.8541	63854.3682	10.21006873
Orange (SC)	2023	LDA	Aggregate	Aggregate	ELEC	33012.02837	1363745.619	164035.8627	0
Orange (SC)	2023	LDT1	Aggregate	Aggregate	GAS	145926.018	5324604.48	676933.8582	190.3875858
Orange (SC)	2023	LDT1	Aggregate	Aggregate	DSL	46.29888067	970.2407912	157.1623518	0.037881245
Orange (SC)	2023	LDT1	Aggregate	Aggregate	ELEC	1366.204347	58816.77113	6870.769993	0
Orange (SC)	2023	LDT2	Aggregate	Aggregate	GAS	459128.0523	16860833.77	2151241.261	647.1457437
Orange (SC)	2023	LDT2	Aggregate	Aggregate	DSL	3171.575849	131714.3685	15530.20474	3.538230746
Orange (SC)	2023	LDT2	Aggregate	Aggregate	ELEC	5547.578192	177681.564	27961.08308	0
Orange (SC)	2023	LHD1	Aggregate	Aggregate	GAS	35833.39433	1293610.747	533864.1837	120.02561
Orange (SC)	2023	LHD1	Aggregate	Aggregate	DSL	25197.20917	1009903.321	316949.1932	46.0310456
Orange (SC)	2023	LHD2	Aggregate	Aggregate	GAS	6427.170235	222129.8261	95755.26002	23.73696478
Orange (SC)	2023	LHD2	Aggregate	Aggregate	DSL	9897.553217	388074.4324	124498.7684	19.61347913
Orange (SC)	2023	MCY	Aggregate	Aggregate	GAS	60907.74419	426337.9157	121815.4884	11.47916891
Orange (SC)	2023	MDV	Aggregate	Aggregate	GAS	313407.6541	11014472.81	1450734.231	523.9817028
Orange (SC)	2023	MDV	Aggregate	Aggregate	DSL	7459.366276	293854.6559	36276.35582	10.40034972
Orange (SC)	2023	MDV	Aggregate	Aggregate	ELEC	3044.278972	101132.5162	15528.53705	0
Orange (SC)	2023	MH	Aggregate	Aggregate	GAS	6790.047028	64511.29463	679.2763047	12.22260418
Orange (SC)	2023	MH	Aggregate	Aggregate	DSL	3077.212238	28555.305	307.7212238	2.700205907
Orange (SC)	2023	Motor Coach	Aggregate	Aggregate	DSL	130.5785169	18401.53809	1906.446347	2.675147509
Orange (SC)	2023	OBUS	Aggregate	Aggregate	GAS	1014.708676	43737.41029	20302.29118	8.382453786
Orange (SC)	2023	PTO	Aggregate	Aggregate	DSL	0	34062.86189	0	6.468358644
Orange (SC)	2023	SBUS	Aggregate	Aggregate	GAS	557.167251	22929.00008	2228.669004	2.481912376
Orange (SC)	2023	SBUS	Aggregate	Aggregate	DSL	1252.958306	39300.2503	14458.96513	5.19639825
Orange (SC)	2023	T6 Ag	Aggregate	Aggregate	DSL	0.862231182	6.668568375	3.793817203	0.000743957
Orange (SC)	2023	T6 CAIRP heavy	Aggregate	Aggregate	DSL	96.13981948	18837.71383	1403.641364	1.541338376
Orange (SC)	2023	T6 CAIRP small	Aggregate	Aggregate	DSL	48.22250844	2511.489818	704.0486232	0.219534634
Orange (SC)	2023	T6 instate construction heavy	Aggregate	Aggregate	DSL	427.2850212	28135.87435	1931.738968	2.562220756
Orange (SC)	2023	T6 instate construction small	Aggregate	Aggregate	DSL	2659.36752	149167.4465	12022.89716	13.45602022
Orange (SC)	2023	T6 instate heavy	Aggregate	Aggregate	DSL	4632.974164	662141.6492	53463.87952	55.64228225
Orange (SC)	2023	T6 instate small	Aggregate	Aggregate	DSL	19005.22892	1011749.443	219317.7068	90.92936563
Orange (SC)	2023	T6 OOS heavy	Aggregate	Aggregate	DSL	54.67448669	10706.34735	798.2475056	0.876211975
Orange (SC)	2023	T6 OOS small	Aggregate	Aggregate	DSL	28.84054333	1498.437544	421.0719326	0.130910917
Orange (SC)	2023	T6 Public	Aggregate	Aggregate	DSL	851.6779496	13084.6738	2583.423111	1.592357941
Orange (SC)	2023	T6 utility	Aggregate	Aggregate	DSL	342.9365029	5748.175315	3943.769783	0.568062046
Orange (SC)	2023	T6TS	Aggregate	Aggregate	GAS	7500.789376	377898.997	150075.7938	73.54713884
Orange (SC)	2023	T7 Ag	Aggregate	Aggregate	DSL	1.063174002	8.222677017	4.677965609	0.001524266
Orange (SC)	2023	T7 CAIRP	Aggregate	Aggregate	DSL	982.9303991	178866.8185	14350.78383	24.44800502
Orange (SC)	2023	T7 CAIRP construction	Aggregate	Aggregate	DSL	110.8329168	20210.24295	501.0713076	2.606613712
Orange (SC)	2023	T7 NNOOS	Aggregate	Aggregate	DSL	1103.523756	218062.2243	16111.44684	28.36132135
Orange (SC)	2023	T7 NOOS	Aggregate	Aggregate	DSL	389.5370519	70275.62649	5687.240958	9.854066818
Orange (SC)	2023	T7 POLA	Aggregate	Aggregate	DSL	1386.102284	184529.8958	10534.37736	25.75409743
Orange (SC)	2023	T7 Public	Aggregate	Aggregate	DSL	1043.383866	21140.08402	3164.931058	3.584559973
Orange (SC)	2023	T7 Single	Aggregate	Aggregate	DSL	2446.303618	171547.3811	28230.00459	23.63979345
Orange (SC)	2023	T7 single construction	Aggregate	Aggregate	DSL	722.5047551	50137.89549	3266.415907	6.891174012
Orange (SC)	2023	T7 SWCV	Aggregate	Aggregate	DSL	283.0552486	11565.17884	1103.915469	5.660972092
Orange (SC)	2023	T7 SWCV	Aggregate	Aggregate	NG	985.3985608	40132.57541	3843.054387	17.53838201
Orange (SC)	2023	T7 tractor	Aggregate	Aggregate	DSL	2015.109589	274972.5133	25591.89178	35.31413012
Orange (SC)	2023	T7 tractor construction	Aggregate	Aggregate	DSL	607.1515489	41359.3496	2744.908547	5.704690443
Orange (SC)	2023	T7 utility	Aggregate	Aggregate	DSL	67.31892338	1366.23584	774.1676189	0.210095409
Orange (SC)	2023	T7IS	Aggregate	Aggregate	GAS	9.811189686	1169.863795	196.3022832	0.260101575
Orange (SC)	2023	UBUS	Aggregate	Aggregate	GAS	213.5219131	20172.21316	854.0876526	4.824274807
Orange (SC)	2023	UBUS	Aggregate	Aggregate	DSL	0	0	0	0
Orange (SC)	2023	UBUS	Aggregate	Aggregate	NG	751.3728408	87024.56496	3005.491363	22.53563665

EMFAC Fuel Usage: Year 2024

Vehicle type	GAS			DSL			NG			ELEC
	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day
All other buses	0	0	0.00	31,167	2,853	10.92	0	0	0.00	0
LDA	50,207,251	1,496,363	33.55	540,280	10,290	52.50	0	0	0.00	1,612,689
LDT1	5,404,034	188,500	28.67	945	36	26.18	0	0	0.00	76,322
LDT2	16,818,806	624,435	26.93	137,673	3,595	38.29	0	0	0.00	213,825
LHD1	1,269,667	116,835	10.87	1,038,905	46,757	22.22	0	0	0.00	0
LHD2	219,450	23,273	9.43	400,280	19,958	20.06	0	0	0.00	0
MCY	431,035	11,625	37.08	0	0	0.00	0	0	0.00	0
MDV	10,907,785	502,746	21.70	304,990	10,494	29.06	0	0	0.00	129,775
MH	63,982	11,960	5.35	28,597	2,668	10.72	0	0	0.00	0
Motor coach	0	0	0.00	18,740	2,707	6.92	0	0	0.00	0
OBUS	43,428	8,209	5.29	0	0	0.00	0	0	0.00	0
PTO	0	0	0.00	35,070	6,580	5.33	0	0	0.00	0
SBUS	23,797	2,549	9.34	38,614	5,040	7.66	0	0	0.00	0
T6	364,690	70,509	5.17	1,944,223	168,688	11.53	0	0	0.00	0
T7	1,270	276	4.59	1,271,032	173,168	7.34	42,498	18,277	2.33	0
UBUS	20,291	4,851	4.18	0	0	0.00	87,535	22,657	3.86	0
Total	**85,775,486**	**3,062,132**	**28.01**	**5,790,518**	**452,836**	**12.79**	**130,033**	**40,935**	**3.18**	**2,032,611**

1,062,559,695

1.05%

81875000 11154809.42

Source: EMFAC2017 (v1.0.3) Emissions Inventory
Region Type: Sub-Area
Region: Orange (SC)
Calendar Year: 2024
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
Orange (SC)	2024	All Other Buses	Aggregate	Aggregate	DSL	516.1339688	31167.1134	4335.525338	2.852839855
Orange (SC)	2024	LDA	Aggregate	Aggregate	GAS	1337490.995	50207250.91	6343722.318	1496.363092
Orange (SC)	2024	LDA	Aggregate	Aggregate	DSL	14052.74116	540279.7011	66848.46524	10.29037482
Orange (SC)	2024	LDA	Aggregate	Aggregate	ELEC	38213.64694	1612689.314	189628.5946	0
Orange (SC)	2024	LDT1	Aggregate	Aggregate	GAS	149731.2088	5404033.518	694761.265	188.4996059
Orange (SC)	2024	LDT1	Aggregate	Aggregate	DSL	44.08303123	944.9735888	151.0016428	0.036101695
Orange (SC)	2024	LDT1	Aggregate	Aggregate	ELEC	1734.875988	76322.38505	8717.218595	0
Orange (SC)	2024	LDT2	Aggregate	Aggregate	GAS	462837.1411	16818805.72	2167762.981	624.4348212
Orange (SC)	2024	LDT2	Aggregate	Aggregate	DSL	3391.132854	137673.4842	16547.13863	3.595286368
Orange (SC)	2024	LDT2	Aggregate	Aggregate	ELEC	6803.92639	213824.6052	34199.81692	0
Orange (SC)	2024	LHD1	Aggregate	Aggregate	GAS	35500.27712	1269667.479	528901.2337	116.8354543
Orange (SC)	2024	LHD1	Aggregate	Aggregate	DSL	26315.39616	1038905.117	331014.5789	46.75749537
Orange (SC)	2024	LHD2	Aggregate	Aggregate	GAS	6420.174666	219449.6556	95651.03647	23.27317245
Orange (SC)	2024	LHD2	Aggregate	Aggregate	DSL	10385.10939	400280.4391	130631.6116	19.95846307
Orange (SC)	2024	MCY	Aggregate	Aggregate	GAS	62471.01534	431035.3333	124942.0307	11.62453692
Orange (SC)	2024	MDV	Aggregate	Aggregate	GAS	313457.4392	10907785.12	1450691.697	502.7461045
Orange (SC)	2024	MDV	Aggregate	Aggregate	DSL	7889.854795	304989.8796	38231.32539	10.49400836
Orange (SC)	2024	MDV	Aggregate	Aggregate	ELEC	3994.854671	129775.1768	20300.83382	0
Orange (SC)	2024	MH	Aggregate	Aggregate	GAS	6712.679833	63982.30387	671.5364905	11.9599545
Orange (SC)	2024	MH	Aggregate	Aggregate	DSL	3130.727871	28597.15485	313.0727871	2.668408183
Orange (SC)	2024	Motor Coach	Aggregate	Aggregate	DSL	134.5750663	18740.4099	1964.795968	2.70691928
Orange (SC)	2024	OBUS	Aggregate	Aggregate	GAS	1021.888238	43427.56638	20445.93986	8.2094807
Orange (SC)	2024	PTO	Aggregate	Aggregate	DSL	0	35070.38273	0	6.579978979
Orange (SC)	2024	SBUS	Aggregate	Aggregate	GAS	584.491221	23797.35365	2337.964884	2.548887643
Orange (SC)	2024	SBUS	Aggregate	Aggregate	DSL	1229.046344	38613.77331	14183.02441	5.039661909
Orange (SC)	2024	T6 Ag	Aggregate	Aggregate	DSL	0.894541568	5.38222795	3.9359829	0.00061431
Orange (SC)	2024	T6 CAIRP heavy	Aggregate	Aggregate	DSL	100.4887577	19226.8223	1467.135863	1.534412597
Orange (SC)	2024	T6 CAIRP small	Aggregate	Aggregate	DSL	50.42856361	2555.061209	736.2570287	0.219656036
Orange (SC)	2024	T6 instate construction heavy	Aggregate	Aggregate	DSL	436.5984907	28468.30496	1973.844801	2.563996039
Orange (SC)	2024	T6 instate construction small	Aggregate	Aggregate	DSL	2746.66544	150929.8878	12417.56767	13.45857308
Orange (SC)	2024	T6 instate heavy	Aggregate	Aggregate	DSL	4920.928017	683146.592	56786.82706	56.43860486
Orange (SC)	2024	T6 instate small	Aggregate	Aggregate	DSL	19905.40508	1028696.111	229705.6148	91.3617365
Orange (SC)	2024	T6 OOS heavy	Aggregate	Aggregate	DSL	57.13612908	10919.85162	834.1874846	0.871762599
Orange (SC)	2024	T6 OOS small	Aggregate	Aggregate	DSL	30.22358569	1528.991618	441.264351	0.131372301
Orange (SC)	2024	T6 Public	Aggregate	Aggregate	DSL	839.8307045	12948.75237	2547.486468	1.546248807
Orange (SC)	2024	T6 utility	Aggregate	Aggregate	DSL	347.2427597	5797.573126	3993.291737	0.561111061
Orange (SC)	2024	T6TS	Aggregate	Aggregate	GAS	7456.463322	364690.4142	149188.9181	70.50895005
Orange (SC)	2024	T7 Ag	Aggregate	Aggregate	DSL	1.239149331	8.60202375	5.452257055	0.001622563
Orange (SC)	2024	T7 CAIRP	Aggregate	Aggregate	DSL	1000.664374	182133.8524	14609.69986	24.47391989
Orange (SC)	2024	T7 CAIRP construction	Aggregate	Aggregate	DSL	111.8994182	20449.03075	505.8929192	2.593999828
Orange (SC)	2024	T7 NNOOS	Aggregate	Aggregate	DSL	1145.781657	222045.6433	16728.4122	28.16083381
Orange (SC)	2024	T7 NOOS	Aggregate	Aggregate	DSL	397.6758856	71559.73866	5806.06793	9.873150495
Orange (SC)	2024	T7 POLA	Aggregate	Aggregate	DSL	1420.853619	193898.6803	10798.4875	27.09774475
Orange (SC)	2024	T7 Public	Aggregate	Aggregate	DSL	1048.781355	21249.3448	3181.30344	3.539722429
Orange (SC)	2024	T7 Single	Aggregate	Aggregate	DSL	2508.793583	176621.4574	28951.13012	24.0825349
Orange (SC)	2024	T7 single construction	Aggregate	Aggregate	DSL	725.7727454	50730.2841	3281.190364	6.888315634
Orange (SC)	2024	T7 SWCV	Aggregate	Aggregate	DSL	258.1315809	10546.83816	1006.713166	5.162530888
Orange (SC)	2024	T7 SWCV	Aggregate	Aggregate	NG	1043.368776	42497.96197	4069.138227	18.27738533
Orange (SC)	2024	T7 tractor	Aggregate	Aggregate	DSL	2127.185413	278562.5722	27015.25475	35.3688573
Orange (SC)	2024	T7 tractor construction	Aggregate	Aggregate	DSL	614.5826567	41848.01805	2778.504296	5.714463616
Orange (SC)	2024	T7 utility	Aggregate	Aggregate	DSL	67.92421333	1378.118004	781.1284533	0.210203008
Orange (SC)	2024	T7IS	Aggregate	Aggregate	GAS	10.12464296	1269.902073	202.5738563	0.276397571
Orange (SC)	2024	UBUS	Aggregate	Aggregate	GAS	214.7743581	20290.53631	859.0974323	4.851227153
Orange (SC)	2024	UBUS	Aggregate	Aggregate	DSL	0	0	0	0
Orange (SC)	2024	UBUS	Aggregate	Aggregate	NG	755.7801313	87535.02065	3023.120525	22.65714971
									6.438402902

Appendix D Cultural Resources Records Search

Appendices

This page intentionally left blank.

South Central Coastal Information Center
California State University, Fullerton
Department of Anthropology MH-426
800 North State College Boulevard
Fullerton, CA 92834-6846
657.278.5395

California Historical Resources Information System
Los Angeles, Orange, Ventura and San Bernardino Counties
sccic@fullerton.edu

9/17/2020 SCCIC File #: 21583.7795

Jasmine A. Osman
PLACEWORKS
3 MacArthur Place, Suite 1100
Santa Ana, CA 92707

Re: Record Search Results for the Brea Plaza Shopping Center – 1639 East Imperial Highway in the City of Brea

The South Central Coastal Information Center received your records search request for the project area referenced above, located on the La Habra and Yorba Linda, CA USGS 7.5' quadrangles. The following summary reflects the results of the records search for the project area and a ½-mile radius. The search includes a review of all recorded archaeological and built-environment resources as well as a review of cultural resource reports on file. In addition, the California Points of Historical Interest (SPHI), the California Historical Landmarks (SHL), the California Register of Historical Resources (CAL REG), the National Register of Historic Places (NRHP), and the California State Built Environment Resources Directory (BERD) listings were reviewed for the above referenced project site and a ¼-mile radius. Due to the sensitive nature of cultural resources, archaeological site locations are not released.

RECORDS SEARCH RESULTS SUMMARY

Archaeological Resources* (*see Recommendations section)	Within project area: 0 Within project radius: 2
Built-Environment Resources	Within project area: 0 Within project radius: 0
Reports and Studies	Within project area: 2 Within project radius: 12
OHP Built Environment Resources Directory (BERD) 2019	Within project area: 0 Within ¼-mile radius: 0
California Points of Historical Interest (SPHI) 2019	Within project area: 0 Within ¼-mile radius: 0
California Historical Landmarks (SHL) 2019	Within project area: 0 Within ¼-mile radius: 0
California Register of Historical Resources (CAL REG) 2019	Within project area: 0 Within ¼-mile radius: 0
National Register of Historic Places (NRHP) 2019	Within project area: 0 Within ¼-mile radius: 0
Archaeological Determinations of Eligibility (ADOE): 2012	Within project area: 0 Within project radius: 0

HISTORIC MAP REVIEW - Anaheim, CA (1896, 1942) 15' USGS historic maps indicate that in 1896 there was no visible development within the project area or the project search radius. In 1942, there was still no visible development within the project area. There were several roads and buildings within the project search radius which was located within the historic place name of Brea. The Fullerton Reservoir was located south of the project area.

RECOMMENDATIONS

*When we report that no archaeological resources are recorded in your project area or within a specified radius around the project area; that does not necessarily mean that nothing is there. It may simply mean that the area has not been studied and/or that no information regarding the archaeological sensitivity of the property has been filed at this office. The reported records search result does not preclude the possibility that surface or buried artifacts might be found during a survey of the property or ground-disturbing activities.

The archaeological sensitivity of the project location is unknown because there are no previous studies for the subject property. Additionally, the natural ground-surface appears to be obscured by urban development; consequently, surface artifacts would not be visible during a survey. While there are currently no recorded archaeological sites within the project area, buried resources could potentially be unearthed during project activities. Therefore, customary caution and a halt-work condition should be in place for all ground-disturbing activities. In the event that any evidence of cultural resources is discovered, all work within the vicinity of the find should stop until a qualified archaeological consultant can assess the find and make recommendations. Excavation of potential cultural resources should not be attempted by project personnel. It is also recommended that the Native American Heritage Commission be consulted to identify if any additional traditional cultural properties or other sacred sites are known to be in the area. The NAHC may also refer you to local tribes with particular knowledge of potential sensitivity. The NAHC and local tribes may offer additional recommendations to what is provided here and may request an archaeological monitor.

For your convenience, you may find a professional consultant**at www.chrisinfo.org. Any resulting reports by the qualified consultant should be submitted to the South Central Coastal Information Center as soon as possible.

**The SCCIC does not endorse any particular consultant and makes no claims about the qualifications of any person listed. Each consultant on this list self-reports that they meet current professional standards.

If you have any questions regarding the results presented herein, please contact the office at 657.278.5395 Monday through Thursday 9:00 am to 3:30 pm. Should you require any additional information for the above referenced project, reference the SCCIC number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System,

Stacy St. James

Stacy St. James

Digitally signed by Stacy St. James
Date: 2020.11.02 09:19:41 -08'00'

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the California Historical Resources Information System (CHRIS) Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

The California Office of Historic Preservation (OHP) contracts with the California Historical Resources Information System's (CHRIS) regional Information Centers (ICs) to maintain information in the CHRIS inventory and make it available to local, state, and federal agencies, cultural resource professionals, Native American tribes, researchers, and the public. Recommendations made by IC coordinators or their staff regarding the interpretation and application of this information are advisory only. Such recommendations do not necessarily represent the evaluation or opinion of the State Historic Preservation Officer in carrying out the OHP's regulatory authority under federal and state law.

Appendix E Native American Heritage Commission Tribal Consultation List & Tribal Consultation

Appendices

This page intentionally left blank.

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Merri Lopez-Keifer
Luiseño

PARLIAMENTARIAN
Russell Attebery
Karuk

COMMISSIONER
Marshall McKay
Wintun

COMMISSIONER
William Mungary
Paiute/White Mountain Apache

COMMISSIONER
Julie Tumamait-Stenslie
Chumash

COMMISSIONER
[**Vacant**]

COMMISSIONER
[**Vacant**]

EXECUTIVE SECRETARY
Christina Snider
Pomo

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

June 10, 2020

Sheri Vander Dussen
City of Brea

Via Email to: sheri.vanderdussen@kimley-horn.com

Re: Native American Consultation, Pursuant to Senate Bill 18 (SB18), Government Codes §65352.3 and §65352.4, as well as Assembly Bill 52 (AB52), Public Resources Codes §21080.1, §21080.3.1 and §21080.3.2, Brea Plaza Hotel and Apartments Expansion Project, Orange County

Dear Ms. Vander Dussen:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties or projects.

Government Codes §65352.3 and §65352.4 require local governments to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of avoiding, protecting, and/or mitigating impacts to cultural places when creating or amending General Plans, Specific Plans and Community Plans.

Public Resources Codes §21080.3.1 and §21080.3.2 requires public agencies to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of avoiding, protecting, and/or mitigating impacts to tribal cultural resources as defined, for California Environmental Quality Act (CEQA) projects.

The law does not preclude local governments and agencies from initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction. The NAHC believes that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

Best practice for the AB52 process and in accordance with Public Resources Code §21080.3.1(d), is to do the following:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The NAHC also recommends, but does not require that lead agencies include in their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential affect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

    - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE, such as known archaeological sites;
    - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
    - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the APE; and
    - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

    - Any report that may contain site forms, site significance, and suggested mitigation measures.

      All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code Section 6254.10.

3. The result of the Sacred Lands File (SFL) check conducted through the Native American Heritage Commission was negative.

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event, that they do, having the information beforehand well help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Tribal Consultation List
Orange County
6/10/2020

Campo Band of Diegueno Mission Indians
Ralph Goff, Chairperson
36190 Church Road, Suite 1 — Diegueno
Campo, CA, 91906
Phone: (619) 478 - 9046
Fax: (619) 478-5818
rgoff@campo-nsn.gov

Ewiiaapaayp Band of Kumeyaay Indians
Michael Garcia, Vice Chairperson
4054 Willows Road — Diegueno
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126
michaelg@leaningrock.net

Ewiiaapaayp Band of Kumeyaay Indians
Robert Pinto, Chairperson
4054 Willows Road — Diegueno
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126
wmicklin@leaningrock.net

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393 — Gabrieleno
Covina, CA, 91723
Phone: (626) 926 - 4131
admin@gabrielenoindians.org

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 — Gabrieleno
San Gabriel, CA, 91778
Phone: (626) 483 - 3564
Fax: (626) 286-1262
GTTribalcouncil@aol.com

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231 — Gabrielino
Los Angeles, CA, 90012
Phone: (951) 807 - 0479
sgoad@gabrielino-tongva.com

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Chairperson
P.O. Box 490 — Gabrielino
Bellflower, CA, 90707
Phone: (562) 761 - 6417
Fax: (562) 761-6417
gtongva@gmail.com

Gabrielino-Tongva Tribe
Charles Alvarez,
23454 Vanowen Street — Gabrielino
West Hills, CA, 91307
Phone: (310) 403 - 6048
roadkingcharles@aol.com

Juaneno Band of Mission Indians Acjachemen Nation - Belardes
Matias Belardes, Chairperson
32161 Avenida Los Amigos — Juaneno
San Juan Capisttrano, CA, 92675
Phone: (949) 293 - 8522
kaamalam@gmail.com

La Posta Band of Diegueno Mission Indians
Gwendolyn Parada, Chairperson
8 Crestwood Road — Diegueno
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
LP13boots@aol.com

La Posta Band of Diegueno Mission Indians
Javaughn Miller, Tribal Administrator
8 Crestwood Road — Diegueno
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
jmiller@LPtribe.net

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Government Code Sections 65352.3, 65352.4 et seq. and Public Resources Code Sections 21080.3.1 for the proposed Brea Plaza Hotel and Apartments Expansion Project, Orange County.

Manzanita Band of Kumeyaay Nation
Angela Elliott Santos, Chairperson
P.O. Box 1302 Diegueno
Boulevard, CA, 91905
Phone: (619) 766 - 4930
Fax: (619) 766-4957

Mesa Grande Band of Diegueno Mission Indians
Michael Linton, Chairperson
P.O Box 270 Diegueno
Santa Ysabel, CA, 92070
Phone: (760) 782 - 3818
Fax: (760) 782-9092
mesagrandeband@msn.com

Soboba Band of Luiseno Indians
Scott Cozart, Chairperson
P. O. Box 487 Cahuilla
San Jacinto, CA, 92583 Luiseno
Phone: (951) 654 - 2765
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov

Sycuan Band of the Kumeyaay Nation
Cody Martinez, Chairperson
1 Kwaaypaay Court Kumeyaay
El Cajon, CA, 92019
Phone: (619) 445 - 2613
Fax: (619) 445-1927
ssilva@sycuan-nsn.gov

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Government Code Sections 65352.3, 65352.4 et seq. and Public Resources Code Sections 21080.3.1 for the proposed Brea Plaza Hotel and Apartments Expansion Project, Orange County.

From: "Padilla, Lacy (TRBL)" <lpadilla@aguacaliente.net>
Date: September 22, 2020 at 10:45:29 AM PDT
To: "Vander Dussen, Sheri" <sheri.vanderdussen@kimley-horn.com>
Subject: SB18 & AB52 Brea Plaza Hotel and Apartments Expansion

Greetings,

A records check of the Tribal Historic preservation office's cultural registry revealed that this project is not located within the Tribe's Traditional Use Area. Therefore, we defer to the other tribes in the area. This letter shall conclude our consultation efforts.

Thank you,

Lacy Padilla
Archaeologist
Agua Caliente Band of Cahuilla Indians
5401 Dinah Shore Drive Palm Springs, CA 92264
D: 760-699-6956 I C: 760-333-5222

From: Joyce Perry <kaamalam@gmail.com>
Sent: Tuesday, July 28, 2020 11:51 AM
To: Vander Dussen, Sheri
Subject: Re: Notice of Preparation (NOP) and Scoping Meeting for the Brea Plaza Hotel and Apartments Expansion Project Draft Environmental Impact Report

Good Afternoon,

I am writing on behalf of the Juaneno Band of Mission Indians, Acjachemen Nation- Belardes in response to a July 27th NOP of an Environmental Impact Report for the Brea Plaza Hotel and Apartments Expansion Project. We wish to consult on this project and look forward to reviewing the DEIR when it becomes available. Can you please provide information regarding the following:

- When was the initial structure slated for demolition built? If it was before 1980 when CEQA guidelines were in place, the soil was likely not monitored.
- What are the results from a Sacred Lands File Search?
- What are the results from a search with the California Historic Resources Information Systems?

Thank you, and I look forward to hearing from you.

Húu'uni 'óomaqati yáamaqati.
Teach peace
Joyce Stanfield Perry
Payomkawichum Kaamalam - President
Juaneño Band of Mission Indians, Acjachemen Nation
Tribal Manager, Cultural Resource Director

GABRIELENO BAND OF MISSION INDIANS - KIZH NATION
Historically known as The Gabrielino Tribal Council - San Gabriel Band of Mission Indians
recognized by the State of California as the aboriginal tribe of the Los Angeles basin

July 27, 2020

Project Name: Brea Plaza Hotel and Apartments Expansion Project

Dear Tracy Steinkruger,

Thank you for your letter dated July 27, 2020 regarding AB52 consultation. The above proposed project location is within our Ancestral Tribal Territory; therefore, our Tribal Government requests to schedule a consultation with you as the lead agency, to discuss the project and the surrounding location in further detail.

Please contact us at your earliest convenience. ***Please Note:AB 52, "consultation" shall have the same meaning as provided in SB 18 (Govt. Code Section 65352.4).***

Thank you for your time,

Andrew Salas, Chairman
Gabrieleno Band of Mission Indians – Kizh Nation
1(844)390-0787

Andrew Salas, Chairman | Nadine Salas, Vice-Chairman | Dr. Christina Swindall Martinez, secretary
Albert Perez, treasurer I | Martha Gonzalez Lemos, treasurer II | Richard Gradias, Chairman of the council of Elders

PO Box 393 Covina, CA 91723 admin@gabrielenoindians.org

Most Important Things for Agencies to Know About AB52:

- An EIR, MND, or ND can not be certified until AB-52 tribal consultation has concluded.
- Agreed mitigation measures with the tribe, MUST be recommended for inclusion in the environmental document.
- Signature confirming acceptance of these mitigation measures recommended by our Tribal Government is required within 14 days of receipt to conclude AB52 consultation.

Tribal Cultural Resources Mitigation Measures within Kizh Nation Tribal Territory:

Note: To avoid compliance issues with the following laws, all Native American Monitoring shall be conducted by a documented lineal descendant from the ancestral Tribe of the project area (NAGPRA Law 10.14)

- The Native American Graves Protection and Repatriation Act (NAGPRA), Public Law-101-601, 25 U.S.C. 3001 et seq., 104 Stat. 3048.
- CEQA Guidelines Section15064.5, PRC 5097.98 (d)(1).
- The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

If you are receiving these measures, The Gabrieleño Band of Mission Indians Kizh -Nation are the direct lineal descendants of your project area. The Kizh Nation ONLY responds and consults on projects within their ANCESTRAL tribal territory. The Kizh Nation possesses Tribal archives including documented historical information as well as multiple members who possess unique knowledge derived from oral tradition passed down through generations of the Tribe in order to provide the expertise needed to identify whether a project is located within a culturally sensitive area given its proximity to village areas, commerce areas, recreation areas, ceremonial areas, and burial locations.

Native American Heritage Commission (NAHC) Guidelines for Native American Monitors/Consultants (approved 9/13/05): By acting as a liaison between Native American, archaeologist, developers, contactors and public agency, a Native American monitor/consultant can ensure that cultural features are treated appropriately from the Native American point of view. This can help others involved in a project to coordinate mitigation measures. These guidelines are intended to provide prospective monitors/consultants, and people who hire monitors/consultants, with an understanding of the scope and extant of knowledge that should be expected.

Mitigation Guidelines for Tribal Cultural Resources (TCRs): CEQA now defines TCRs as an independent element separate from archaeological resources. Environmental documents shall address a separate Tribal Cultural Resources section that includes a thorough analysis of the impacts to only TCRs and includes separate and independent mitigation measures created with tribal input under AB-52 consultations. Therefore, all agreements, mitigation, and conditions of approval regarding TCRs shall be handled solely with the Tribal Government and conversely all agreements, mitigation, and conditions of approval regarding Archaeological Resources shall be handled by an Archaeological resource company.

MITIGATION MEASURES

Retain a Native American Monitor/Consultant: Prior to the commencement of any ground disturbing activity at the project site, the project applicant shall retain a Native American Monitor approved by the Gabrieleno Band of Mission Indians-Kizh Nation – the tribe that consulted on this project pursuant to Assembly Bill A52 - SB18 (the "Tribe" or the "Consulting Tribe"). A copy of the executed contract shall be submitted to the Lead Agency prior to the issuance of any permit necessary to commence a ground-disturbing activity. The Tribal monitor will only be present on-site during the construction phases that involve ground-disturbing activities. Ground disturbing activities are defined by the Tribe as activities that may include, but are not limited to, pavement removal, potholing or auguring, grubbing, tree removals, boring, grading, excavation, drilling, and trenching, within the project area. The Tribal Monitor will complete daily monitoring logs that will provide descriptions of the day's activities, including construction activities, locations, soil, and any cultural materials identified. The on-site monitoring shall end when all ground-disturbing activities on the Project Site are completed, or when the Tribal Representatives and Tribal Monitor have indicated that all upcoming ground-disturbing activities at the Project Site have little to no potential for impacting Tribal Cultural Resources. Upon discovery of any Tribal Cultural Resources, construction activities shall cease in the immediate vicinity of the find (not less than the surrounding 50 feet) until the find can be assessed. All Tribal Cultural Resources unearthed by project activities shall be evaluated by the Tribal monitor approved by the Consulting Tribe and a qualified archaeologist if one is present. If the resources are Native American in origin, the Consulting Tribe will retain it/them in the form and/or manner the Tribe deems appropriate, for educational, cultural and/or historic purposes. If human remains and/or grave goods are discovered or recognized at the Project Site, all ground disturbance shall immediately cease, and the county coroner shall be notified per Public Resources Code Section 5097.98, and Health & Safety Code Section 7050.5. Human remains and grave/burial goods shall be treated alike per California Public Resources Code section 5097.98(d)(1) and (2). Work may continue in other parts of the Project site while evaluation and, if necessary, mitigation takes place (CEQA Guidelines Section 15064.5[f]). Preservation in place (i.e., avoidance) is the preferred manner of treatment. If preservation in place is not feasible, treatment may include implementation of archaeological data recovery excavations to remove the resource along with subsequent laboratory processing and analysis. Any historic archaeological material that is not Native American in origin (non-TCR) shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, it shall be offered to a local school or historical society in the area for educational purposes.

Unanticipated Discovery of Human Remains and Associated Funerary Objects:
Native American human remains are defined in PRC 5097.98 (d)(1) as an inhumation or cremation, and in any state of decomposition or skeletal completeness. Funerary objects, called associated grave goods in PRC 5097.98, are also to be treated according to this statute. Health and Safety Code 7050.5 dictates that any discoveries of human skeletal material shall be immediately reported to the County Coroner and excavation halted until the coroner has determined the nature of the remains. If the coroner recognizes the human remains to be those of a Native American or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the NAHC and PRC 5097.98 shall be followed.

Resource Assessment & Continuation of Work Protocol:

Upon discovery of human remains, the tribal and/or archaeological monitor/consultant/consultant will immediately divert work at minimum of 100 feet and place an exclusion zone around the discovery location. The monitor/consultant(s) will then notify the Tribe, the qualified lead archaeologist, and the construction manager who will call the coroner. Work will continue to be diverted while the coroner determines whether the remains are human and subsequently Native American. The discovery is to be kept confidential and secure to prevent any further disturbance. If the finds are determined to be Native American, the coroner will notify the NAHC as mandated by state law who will then appoint a Most Likely Descendent (MLD).

Kizh-Gabrieleno Procedures for burials and funerary remains:

If the Gabrieleno Band of Mission Indians – Kizh Nation is designated MLD, the Koo-nas-gna Burial Policy shall be implemented. To the Tribe, the term "human remains" encompasses more than human bones. In ancient as well as historic times, Tribal Traditions included, but were not limited to, the preparation of the soil for burial, the burial of funerary objects with the deceased, and the ceremonial burning of human remains. The prepared soil and cremation soils are to be treated in the same manner as bone fragments that remain intact. Associated funerary objects are objects that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later; other items made exclusively for burial purposes or to contain human remains can also be considered as associated funerary objects.

Treatment Measures:

Prior to the continuation of ground disturbing activities, the landowner shall arrange a designated site location within the footprint of the project for the respectful reburial of the human remains and/or ceremonial objects. In the case where discovered human remains cannot be fully documented and recovered on the same day, the remains will be covered with muslin cloth and a steel plate that can be moved by heavy equipment placed over the excavation opening to protect the remains. If this type of steel plate is not available, a 24-hour guard should be posted outside of working hours. The Tribe will make every effort to recommend diverting the project and keeping the remains in situ and protected. If the project cannot be diverted, it may be determined that burials will be removed. The Tribe will work closely with the qualified archaeologist to ensure that the excavation is treated carefully, ethically and respectfully. If data recovery is approved by the Tribe, documentation shall be taken which includes at a minimum detailed descriptive notes and sketches. Additional types of documentation shall be approved by the Tribe for data recovery purposes. Cremations will either be removed in bulk or by means as necessary to ensure completely recovery of all material. If the discovery of human remains includes four or more burials, the location is considered a cemetery and a separate treatment plan shall be created. Once complete, a final report of all activities is to be submitted to the Tribe and the NAHC. The Tribe does NOT authorize any scientific study or the utilization of any invasive and/or destructive diagnostics on human remains.

Each occurrence of human remains and associated funerary objects will be stored using opaque cloth bags. All human remains, funerary objects, sacred objects and objects of cultural patrimony will be removed to a secure container on site if possible. These items should be retained and reburied within six months of recovery. The site of reburial/repatriation shall be on the project site but at a location agreed upon between the Tribe and the landowner at a site to be protected in perpetuity. There shall be no publicity regarding any cultural materials recovered.

Professional Standards: Native American and Archaeological monitoring during construction projects will be consistent with current professional standards. All feasible care to avoid any unnecessary disturbance, physical modification, or separation of TCR's shall be taken. The Native American monitor must be approved by the Gabrieleno Band of Mission Indians-Kizh Nation. Principal personnel for Archaeology must meet the Secretary of Interior standards for archaeology and have a minimum of 10 years of experience as a principal investigator working with Native American archaeological sites in southern California.

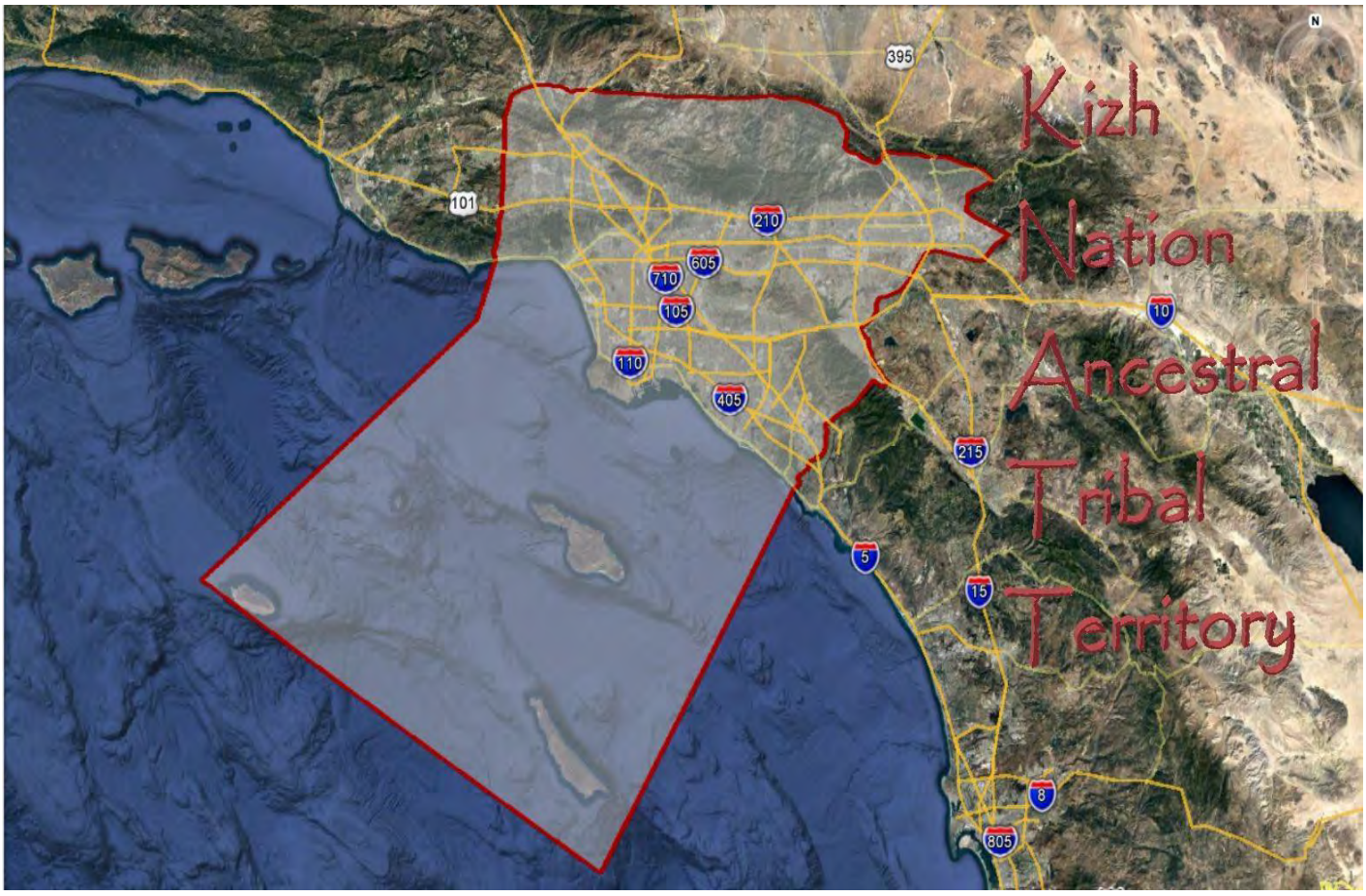
Acceptance of Tribal Government Recommended Mitigation Measures:

By _____ Date: _____
Lead Agency Representative Signature

Revised: July 2020

Attachment A

Kizh Nation Ancestral Tribal Territory extended along the coast from Malibu Creek in Los Angeles County down to Aliso Creek in Orange County and encompassed the Channel Islands of Catalina (Pimugna), San Nicolas (Haraasnga), and San Clemente (Kiinkenga). Our inland border was the San Gabriel Mountains (Hidakupa) and eastwardly our territory extended to parts of San Bernardino (Waatsngna), Orange, and Riverside counties.



Rincon Band of Luiseño Indians

CULTURAL RESOURCES DEPARTMENT

One Government Center Lane | Valley Center | CA 92082
(760) 749-1051 | Fax: (760) 749-8901 | rincon-nsn.gov

July 27, 2020

Sent via email: Sheri.vanderdussen@kinley-horn.com
Sheri Vanderdussen
City of Brea
1 Civic Center Circle
Brea, CA 92821-5732

Re: Brea Plaza Hotel and Apartments Expansion

Dear Ms. Vanderdussen,

This letter is written on behalf of Rincon Band of Luiseño Indians, ("Rincon Band" or "Band"), a federally recognized Indian Tribe and sovereign government.

The Band has received the notification for the above referenced project. The location identified within project documents is not within the Band's specific Area of Historic Interest (AHI).

At this time, we have no additional information to provide. We recommend that you directly contact a Tribe that is closer to the project and may have pertinent information.

Thank you for submitting this project for Tribal review. If you have additional questions or concerns, please do not hesitate to contact our office at your convenience at (760) 297-2635 or via electronic mail at crd@rincon-nsn.gov.

Thank you for the opportunity to protect and preserve our cultural assets.

Sincerely,

Deneen Pelton

Administrative Assistant II
Cultural Resources Department

Bo Mazzetti, Chairman | Tishmall Turner, Vice Chair | Laurie E. Gonzalez, Council Member | Alfonso Kolb, Sr., Council Member | John Constantino, Council Member

Appendix F Service Provider Responses

Appendices

This page intentionally left blank.

Brea Olinda Unified School District

August 25, 2020

Sent Via email: josman@placeworks.com

Jasmine Osman
Project Manager
Placeworks
3 MacArthur Place, #1100
Santa Ana, CA 92707

RE: Preparation of a Draft Environmental Impact Report for the Proposed Brea Plaza Hotel and Apartments Expansion Project in the City of Brea

Ms Osman

Please find attached our input to your questionnaire regarding the impact on Brea Olinda Unified School District. As we commented, The School District would welcome the opportunity to discuss the impacts of the proposed project and examine methods to ensure quality school facilities can be provided for students generated from the proposed project. The School District would be interested in discussing ways to ensure the Proposed Project fully mitigates its impact on the School District's facilities to ensure that quality school facilities can be provided for new residents.

If you have any questions, please contact me at (714) 990-7827.

Sincerely,

Richard Champion
Assistant Superintendent, Business Services
Brea-Olinda Unified School District

Enc: Questionnaire

Proposed Brea Plaza Hotel and Apartments Expansion Project
School District Questionnaire

1. Please indicate which schools would likely serve the proposed project.

The proposed project is located within the attendance boundaries of the following schools:

Grades K-6: Brea Country Hills Elementary School
Grades 7-8: Brea Junior High School
Grades 9-12: Brea Olinda High School

2. What is the capacity of each of the schools?

The table below lists the approximate capacities for the schools utilizing the current classroom counts and the loading standards of the State of California. These figures do not account for the need to reconstruct school facilities to maintain their availability to accommodate students generated from new residential and commercial/industrial development.

School	Capacity
Brea Country Hills Elementary School	625
Brea Junior High School	918
Brea Olinda High School	2,295

3. What is the average enrollment (10-year average) of each school that would serve the project site?

School	Ten Year Average Enrollment
Brea Country Hills Elementary School	601
Brea Junior High School	918
Brea Olinda High School	1,871

4. Would these schools be able to accommodate a potential increase in enrollment?

While the schools listed above have sufficient capacity at this time that does not take into account the reconstruction needs that have been identified in the School District's 2018 Facilities Master Plan. Each of the facilities listed above has significant needs for reconstruction to ensure the facilities are available to accommodate student enrollment from the Proposed Project. As noted below, this also does not take into account the cumulative impact of other development within the School District.

5. What impact will the proposed project, in combination with all the other projects planned in the area, have on the ability of the Brea Olinda Unified School District to provide educational services in the area?

As identified in the Residential and Commercial/Industrial Development School Fee Justification Study for Brea-Olinda Unified School District dated May 8, 2020 ("Development Impact Study"), the cumulative impact of new residential and commercial/industrial construction will require the construction and reconstruction of school facilities to accommodate new student enrollment from such development. The Development Impact Study identifies a cost impact of $6.82 per square foot for new single family detached units and $7.29 per square foot for new multi-family attached units.

6. Has the District adopted a fee program, pursuant to Senate Bill 50, that levies statutory school impact fees per residential (or non-residential) building square foot that may be levied for school construction? If yes, what is the current School Fee?

The School District currently levies fees on new residential development in the amount of $4.08 per square foot and fees on new commercial/industrial development in the amount of $0.66 per square foot.

7. Please add any comments you may wish to make regarding this matter.

The School District would welcome the opportunity to discuss the impacts of the Proposed Project with the applicant and examine methods to ensure quality school facilities can be provided for students generated from the Proposed Project. We understand that the fees identified above are the maximum the School District can charge for new residential development, but as identified in the Development Impact Study, these fees are not adequate to fully mitigate the impact of such construction. The School District, therefore, would be interested in discussing ways to ensure the Proposed Project more fully mitigates its impact on the School District's facilities to ensure that quality school facilities can be provided for new residents.

Response Prepared By:

Richard Champion	Assistant Superintendent, Business Services
Name	Title
Brea Olinda Unified School District	08/25/2020
Agency	Date

Proposed Brea Plaza Expansion Project
Police Questionnaire

Please verify/respond to the following:

1. Please confirm the following station responds to calls from the project site:
   a. the Brea Police Station located at 1 Civic Center Circle, Brea.

2. Please indicate the type of service calls or service demands anticipated by the proposed uses (residential, office, hotel).

   Since this location is currently a shopping center, for 2019 there were 304 calls for service (CFS) in the Brea Plaza. The top categories of CFS were traffic, alarm, theft, suspicious subjects/circumstances, disturbances/other, and patrol checks. This proposed project indicates 189 apartment units (ranging from studio to 4 bedrooms) as well as office space. By introducing 189 apartments as well as office space there would be an increase of CFS. It is anticipated, based on data from other apartments within the City of Brea, CFS would include disturbances, suspicious activity, theft and alarm calls.

3. Given the existing level of staffing and equipment, will the police department be able to provide police services to the proposed project? If not, please indicate what will be required to serve the project.

   Based upon the methodology from the February 2020 Management Partners Brea Police Department Review of Police Services and Staffing report, 189 apartment units would increase the population to 530 persons approximately. In addition, the increase of population would produce an increase in annual CFS by 323. This increased work load upon the police department, would necessitate additional staffing to maintain the current level of service within the community.

4. What impact will the proposed project, in combination with all the other projects planned in the area, have on the ability of the police department to provide police services in the area?

   In addition to this project, there is an anticipated project within the Brea Mall, which is located on the other side of the 57 Freeway. While still in development, having two significant projects within close proximity to this project, produces traffic congestion, and increase workload within a small geographic area. Additionally, there is a current project located at Imperial Hwy/St. College Blvd, which is a smaller shopping center; however, with an In-n-Out restaurant and other high demand shopping/restaurant draws, the geographic compaction is significant.

Proposed Brea Plaza Expansion Project
Police Questionnaire

5. What conditions will the Police Department require or recommended to reduce safety hazards and reduce potential impacts on police service?

   To increase public safety, the police department would request ALPR (license plate reader system), fiber optic cable to connect to existing fiber network, and funding for fixed mounted cameras for a city-wide camera system which is currently under development.

6. Please add any comments you may wish to make regarding this matter.

   The Brea Shopping Center has traffic issues, and under non-Covid 19 conditions, is significantly impacted by traffic. Ingress/egress routes out of the center are limited and only one currently is controlled by a traffic signal (Imperial/Brea Plaza), and that signal controls egress traffic to a West bound exit only. A detailed study/plan of how to control traffic into and out of the proposed project is suggested and the ability of public safety personnel to access the project would be required.

Response Prepared By:

David A. Dickinson/Police Captain

Name		**Title**
Brea Police Department	**3/11/21**	
Agency		**Date**

Proposed Brea Plaza Expansion Project
Fire Questionnaire

Please verify/respond to the following:

1. Please list any additional stations that would respond to the site:

Fire Stations and Equipment Serving the Project Site

Station	Address	Equipment
City of Brea Fire Department		
Brea Fire Department – Station #1	555 North Berry Street, Brea	Type 1 – Advanced Life Support, 3 personnel
Brea Fire Department – Station #2	200 North Brea Boulevard, Brea	Pierce/tiller – Advanced Life Support, 4 personnel
Fullerton Fire Department		
Fullerton Fire Department – Station #4	3251 North Harbor Boulevard, Fullerton	Type 1 – Advanced Life Support, 4 personnel
Los Angeles County Fire Department		
LACFD – Station 191	850 West La Habra Boulevard, La Habra	2 paramedics
LACFD – Station 192	520 South Harbor Boulevard, La Habra	Type 1 – Advanced Life Support, 3 personnel
LACFD – Station 193	1000 West Risner Way, La Habra	Type 1 – Advanced Life Support, 3 personnel

2. What is the approximate fire flow requirement for the proposed project?

Fire flow requirement for this project as proposed will be:

- Parking Structure – 4,500 GPM for 4 hours with 5 provided fire hydrants
- Apartment Building – 6,000 GPM for 4 hours with 6 provided fire hydrants

3. The Department's standard is 6 minutes to first arriving unit on scene. What is the average response time to the project site?

Response times for the surrounding area/districts were evaluated for the previous calendar year (2020). On average, the "dispatch to on-scene time" for a Brea Fire unit to arrive is 7 minutes and 30 seconds.
After evaluating the 89 ft height of the multi-story project, it is important to note the extended response time of the Brea Fire Department's ladder truck. The "dispatch to on-scene time" for the ladder truck company is 7 minutes and 52 seconds.

4. Are there any existing deficiencies in the level of fire protection service currently provided to the area including and surrounding the project site?

The Brea Fire Department operates a 2007 ladder truck, which continues to experience an exacerbated amount of mechanical issues. Its out-of-service time is growing more frequently each year, having already performed at least one complete engine replacement. As a specialized, tactically-specific apparatus, these mechanical issues often leave the community void of its technical capabilities. A city the size of Brea deploys one ladder truck, which is in alignment with National Fire Protection Association (NFPA) standards for its call volume and identified hazards. In attempt to remedy this shortcoming, the city purchased a used 1999 ladder truck to serve as a reserve, however, it too continues to experience ongoing mechanical

faults. In the two years since its purchase, the City has invested in excess of 4 times its purchase cost.

5. Would this project have a significant impact on the ability to maintain adequate level of fire protection service to the area?

Taking into consideration the intended height and occupancy use, the ladder truck deficiencies of the Brea Fire Department are highlighted by the sheer scope and scale of this project. The specific duties of this apparatus and its highly trained crew are a critical component of fire department operations. Such duties include multi-story rescues of trapped victims, roof operations, multi-level ventilation tactics, elevated master streams and water supply and so on. Without the reliability of a modern ladder truck, the City and its Fire Department may be potentially incapable of the appropriate response and mitigation of an incident throughout this development and beyond.

Additionally, Orange County Fire Annex operational response standards require 2 ladder trucks to be on every working structure fire. California mutual and automatic aid agreements operate under a working theory that each participating agency be able to provide a like-for-like service to each other. Brea Fire must be able to provide at least one of its own ladder trucks for incidents in its jurisdiction, and seek assistance from neighboring jurisdictions for the second ladder truck. In turn, Brea Fire must be able to offer its apparatus for the assisting agencies as well. Without a reliable ladder truck, Brea risks losing its automatic and mutual aid agreements with its surrounding and cooperating agencies.

6. What conditions will the Fire Department require or recommended to reduce fire hazards and reduce potential impacts on fire service?

The Brea Fire Department requests this development provide funding for a new ladder truck to responsibly maintain its response requirements, provide adequate protection for this project and its intended residents and lastly, aid in the successful overall execution of the Brea Fire Department's mission. In doing so, OC Fire Annex procedure, NFPA 1710 and our ISO 3 rating remain met in tact allowing for community security and reduced insurance premiums overall. ***Estimated value of request - $1.7 million***

The project would comply with the current California Fire and Building Codes, adopted City ordinances, and applicable national standards. The following fire protection systems would be required: automatic fire sprinkler systems throughout the parking structure and structures, automatic fire alarm system, fire pump, an automatic secondary on-site water supply, and an emergency responder radio coverage system. Additionally, fire apparatus access roads would be provided to ensure adequate accessibility to the proposed structure.

7. Please add any other comments you may wish to make regarding this project.

Fire impact fees cannot be used to replace preexisting apparatus and are independent of the above request. Please contact Deputy Chief / Fire Marshal Chris Nigg for any further questions or clarification of the above.

Response Prepared By:

Chris Nigg / Peter Salgado	Deputy Fire Marshal / Fire Protection Analyst
Name	**Title**
Brea Fire Department	**April 13, 2021**
Agency	**Date**

Appendix G Sewer Study

Appendices

This page intentionally left blank.

C.A. ENGINEERING, INC.

Planning • Engineering • Surveying

SEWER STUDY

FOR

Brea Plaza Redevelopment Project
1639 E. Imperial Highway
Brea, CA 92821

City of Brea

Preparation Date: March 5th, 2021
Revised: May 25th, 2021
Revised: June 22nd, 2021

PLANS PREPARED UNDER THE SUPERVISION OF:

6/22/21

Fred Cornwell, P.E. - R.C.E 45591 **Date**

13821 Newport Ave., Su. 110• Tustin, CA 92780 • Phone (949) 724-9480 • Fax (949) 724-9484

Proposed Site

The proposed project consists of redeveloping 2.2 acres of the approximately 13.7 acre existing retail site known as the Brea Plaza. The proposed project will involve the demolition of the movie theater building, as well as the asphalt drive aisles/parking areas, concrete walkways, and landscaped planters within the project area, and the construction of one eight-story apartment building.

The upper five stories of the building will contain 189 residential apartments (of which 15 are co-living units), and the lower three stories will consist of concrete podium parking. A roof garden and pool will be located on the fourth level of the building. The project will also include asphalt drive aisles, a concrete loading dock area, and concrete walkways. In addition, the proposed development will construct a two-story office building over a portion of an existing multi-tenant retail building, and a one-story office building over a portion of the existing Custom Comfort Mattress store.

The existing on-site sewer system will be utilized, and, if necessary, improved to provide adequate conveyance for the increased sewer flow.

Methodology

This sewer report is prepared to quantify the existing and proposed flows tributary to the proposed and existing sewers which will serve the proposed project. The City of Brea design flow criteria from the 2005 Sewer Master Plan will be used to calculate the proposed gallons per day (GPD) that the new development will contribute to the existing sewer system. In addition, the design criteria will also be used to estimate the amount of existing tributary flows that the various upstream residences, schools, offices, etc. are contributing to the downstream sewer connection.

This estimate of existing flows will be compared to actual monitoring data which was conducted on the previously mentioned downstream connection manhole location on Imperial Avenue. Finally, we will analyze the impact that the “calculated” additional flows will have on each section of the sewer system. We will be using the computer program “FlowMaster v5.15” produced by Haestad Methods to perform these calculations.

Existing Flows:

The average dry weather existing sewer flow rates were calculated using the unit flow factors contained in Table 1 of the City of Brea Design Standards. Results are summarized below in "Table A" and show that Brea Plaza is currently produces a total of 75,446 Gallons per day (GPD). All sewer flows from Brea Plaza are directed to the Imperial Avenue Manhole. This manhole also serves as a junction for upstream sewer flows from surrounding tributary areas.

The attached "Exhibit A" uses the City of Brea sewer atlas to give a visual representation of how the surrounding tributary areas were counted, and how they flow downstream to the Imperial Avenue manhole. Per "Table A" below the surrounding tributary areas produce a total average dry weather flow of 492,816 GPD.

In total, the average dry weather (Qadw) existing sewer flow rate is 568,262 GPD or 0.88 cfs. Using the City of Brea Design Standards this 0.88 cfs can be converted from average dry weather to peak dry weather (Qpdw) using the formula Qpdw = (1.84)*(Qadw^.92). Similarly, peak dry weather is converted to peak wet weather (Qpww) using the formula Qpww = 1.25*Qpdw. The converted values shown in "Table B" result in a peak dry weather value of 1.63 cfs, and a peak wet weather value of 2.04 cfs.

Table A: Average Dry Weather Existing Flow Rates
(Utilizing the City of Brea's Design Guidelines)

Brea Plaza						
Existing	Type	Area/Seats	Unit Flow Factor	GPD	CFS	Sewer Sections Tributary To
Mercury Insurance	General Offices	93605 SF (2 Stories)	73.5 GPD/TSF	13,760	0.021	A-F
Grocery/ Market	General Commercial	16,213 SF	73.5 GPD/TSF	1,192	0.002	A-F
Tux/ Beauty Shop	General Commercial	3,143 SF	73.5 GPD/TSF	231	0.000	A-F
Total Wine/ Other	Shopping Center	37,505 SF	73.5 GPD/TSF	2,757	0.004	A-F
Buca Di Beppo	Restaurant	7,672 SF	1575 GPD/TSF	12,083	0.019	B-F
Fed-Ex/ Sushi/Other	General Commercial	8,015 SF	73.5 GPD/TSF	589	0.001	C-F
Creamistry/ Wax	General Commercial	6,781 SF	73.5 GPD/TSF	498	0.001	C-F
Lucilles Bbq	Restaurant	10,487 SF	1575 GPD/TSF	16,517	0.026	D-F
Brea Plaza 5 Cinema (To Be Removed)	Theater	~1125 Seats	8.4 GPD/SEAT	9,450	0.015	E-F
Shopping Center	Shopping Center	37,753 SF	73.5 GPD/TSF	2,775	0.004	E-F
Fish Grill/ Panera	Restaurant	9,491 SF	1575 GPD/TSF	14,948	0.023	E-F
Att/ Chick-Fil-A	General Commercial	8,789 SF	73.5 GPD/TSF	646	0.001	F
			Brea Plaza Total	**75,446**	**0.117**	

Surrounding Areas					
Existing	Type	Area/DU	Unit Flow Factor	GPD	CFS
R1	Low Density Residential	323	270 GPD/DU	87,210	0.135
R2	Medium Density Residential	1014	248 GPD/DU	251,472	0.389
R3	High Density Residential	573	210 GPD/DU	120,330	0.186
CP	General Offices	406,726 SF	73.5 GPD/TSF	29,894	0.046
C-RC	Commercial Recreational	7.726 AC	3.15 GPD/AC	24	0.000
SCH	Schools	370	10.5 GPD/Student	3,885	0.006
		Surrounding Areas Total		**492,816**	**0.762**
		Total Existing		**568,262**	**0.879**

Table B: Existing Flow Rate Conversion – Average Dry Weather to Peak Wet Weather (Utilizing the City of Brea's Design Guidelines)

Calculated Flow Rates		GPD	CFS
Avg Dry Weather:	Qadw	568,262	0.88
Peak Dry Weather:	Qpdw (1.84*Qadw^.92)		1.63
Peak Wet Weather:	Qpww (1.25*Qpdw)		2.04

Table C: Imperial Avenue Manhole Monitored Flow Rates

Monitored Flow Rates	GPM	GPD	CFS
Average	283.07	407,621	0.63
Minimum	82.15		0.18
Maximum	491.18		1.09

The Imperial Avenue manhole was monitored under dry weather conditions from October 28th to November 5th, 2020. Results from this monitoring are shown in "Appendix B" and are summarized in "Table C" above. An average of 283.07 GPM or 407,621 GPD was monitored; 72% of the "calculated" average dry weather flow rate of 568,262 GPD. This monitored average dry weather flow rate of 283.07 GPM is equivalent to 0.63 cfs. "Table C" also shows the peak dry weather monitored flow rate of 1.09 cfs. Since this monitored peak dry weather flow rate of 1.09 cfs is lower than the "calculated" peak dry weather flow rate of 1.63 cfs; the more conservative "calculated" values will be used to analyze the sewer segments in the subsequent sections of this report.

Proposed Flows:

For the new proposed development, the average dry weather sewer flow rates were calculated using the unit flow factors contained in Table 4-2 of the City of Brea 2005 Sewer Master Plan. To calculate the proposed flows the 189 residential units were separated into 174 single units and 15 co-living units. Ten of the co-living units have 4 bedrooms for a product of 40 units; while 5 co-living units have 3 bedrooms for a product of 15 units. The 174 single units and 55 co-living units were using in the proposed flow rate calculations for a total of 229 units.

Results of the proposed flow rate calculations are summarized in "Table D" below and show that the new proposed development will add 49,658 Gallons per day (GPD) to the existing sewer system. However, since the existing Theater is being demolished, the 9,450 GPD it produces (see table "A") will be deducted for a net total of 40,208 GPD.

Table D: Average Dry Weather Proposed Flow Rates (Utilizing the City of Brea's Design Guidelines)

Proposed Apartment Calculations					
Floor/Level	Type	Dwelling Units	Unit Flow Factor	GPD	CFS
3-7	Single Units	174	210 GPD/DU	36,540	0.057
3-7	Co-Living Units	55	210 GPD/DU	11,550	0.018
Proposed Office Calculations					
Floor/Level	Type	Area (SF)	Unit Flow Factor	GPD	CFS
2-4	Offices	21,335	73.5 GPD/TSF	1,568	0.002
			Total Proposed	**49,658**	**0.077**
Reduction of Theater Flows Due to Building Removal					
Floor/Level	Type	Dwelling Units	Unit Flow Factor	GPD	CFS
-	Theater	~1,125 Seats	8.4 GPD/Seat	(9,450)	(0.015)
			Net Total	**40,208**	0.062

The "calculated" average dry weather net flow rate of 40,208 GPD for the new development is equivalent to 0.062 cfs. Per "Table E" below, the proposed peak dry weather flow rate is 0.143 cfs, and the proposed peak wet weather flow rate is 0.179 cfs. During the sewer section analysis, these proposed flow rates will be added to the existing flow rates to analyze the impact of the new development on each sewer section.

Table E: Proposed Flow Rate Conversion - Average Dry Weather to Peak Wet Weather (Utilizing the City of Brea's Design Guidelines)

Proposed Flow Rates		GPD	CFS
Avg Dry Weather:	Total GPD (Qadw)	40,208	0.062
Peak Dry Weather:	Qpdw (1.84*Qadw^.92)		0.143
Peak Wet Weather:	Qpww (1.25*Qpdw)		**0.179**

As shown in "Exhibit B", the existing sewer lines will be used to convey Brea Plaza flows from the existing and proposed tributary buildings. The flows are directed southerly where they confluence with flows from the surrounding areas (see "Exhibit A") at the Imperial Ave. manhole. Using "FlowMaster v5.15" the sewer sections shown in "Exhibit B" were analyzed to determine adequate capacity. The FlowMaster output calculations can be found in Appendix A.

Per the City of Brea Design Standards found in the 2005 Sewer Master Plan, for existing pipes the depth to pipe diameter ratio (d/D) shall be a maximum of 0.64 for peak dry weather flow rates, and 0.75 for peak wet weather flow rates.

"Table F" located below summarizes the results of the section analysis. Only peak dry weather and peak wet weather conditions were analyzed. Results show that all of the onsite Brea Plaza

sewer pipe sections (sections A-F) are adequately sized to convey both the existing and proposed flows for each weather condition.

Section G is the critical section since it must convey all of the onsite flows, as well as the flows from the surrounding areas shown in “Exhibit A.” Under peak dry weather conditions the d/D ratio increases from 0.46 to 0.49 as the sewer flow increases from 1.63 cfs to 1.78 cfs. The proposed depth to pipe diameter ratio of 0.49 is well below the design limit of 0.64.

Under peak wet weather conditions the d/D ratio increases from 0.53 to 0.55 as the sewer flow increases from 2.04 cfs to 2.22 cfs. The proposed depth to pipe diameter ratio of 0.55 is well below the design limit of 0.75.

Table F: Sewer Section Flow Table

Average Dry Weather								
SECTION	SIZE (IN)	EX. FLOW (cfs)	PRO. FLOW (cfs)	LENGTH	SLOPE	EX. DEPTH/PIPE DIA. RATIO	PRO. DEPTH/PIPE DIA. RATIO	PRO. VELOCITY (fps)
A	8	0.03	0.09	245.80	0.0092	-	-	-
B	8	0.05	0.11	68.17	0.0089	-	-	-
C	8	0.05	0.11	224.31	0.0058	-	-	-
D	8	0.07	0.14	223.59	0.0104	-	-	-
E	8	0.12	0.18	185.01	0.0314	-	-	-
F	8	0.12	0.18	101.11	0.1266	-	-	-
G	12	0.88	0.94	246.98	0.0110	-	-	-

Peak Dry Weather = 1.84 * Avg Dry Weather ^ 0.92 (Proposed Flows Add an Additional 0.144 cfs)								
SECTION	SIZE (IN)	EX. FLOW (cfs)	PRO. FLOW (cfs)	LENGTH	SLOPE	EX. DEPTH/PIPE DIA. RATIO	PRO. DEPTH/PIPE DIA. RATIO	PRO. VELOCITY (fps)
A	8	0.07	0.21	245.80	0.0092	0.11' / 0.67' = 0.17	0.19' / 0.67' = 0.29	2.52
B	8	0.11	0.25	68.17	0.0089	0.14' / 0.67' = 0.21	0.21' / 0.67' = 0.32	2.62
C	8	0.11	0.26	224.31	0.0058	0.16' / 0.67' = 0.24	0.24' / 0.67' = 0.36	2.27
D	8	0.17	0.31	223.59	0.0104	0.17' / 0.67' = 0.26	0.23' / 0.67' = 0.35	2.94
E	8	0.25	0.40	185.01	0.0314	0.15' / 0.67' = 0.23	0.20' / 0.67' = 0.30	4.70
F	8	0.26	0.40	101.11	0.1266	0.11' / 0.67' = 0.17	0.14' / 0.67' = 0.21	7.71
G	12	1.63	1.78	246.98	0.0110	***0.46' / 1.00' = 0.46***	***0.49' / 1.00' = 0.49***	4.70

Peak Wet Weather = 1.25 * Peak Dry Weather (Proposed Flows Add an Additional 0.180 cfs)								
SECTION	SIZE (IN)	EX. FLOW (cfs)	PRO. FLOW (cfs)	LENGTH	SLOPE	EX. DEPTH/PIPE DIA. RATIO	PRO. DEPTH/PIPE DIA. RATIO	PRO. VELOCITY (fps)
A	8	0.09	0.26	245.8	0.0092	0.13' / 0.67' = 0.20	0.21' / 0.67' = 0.32	2.68
B	8	0.14	0.32	68.17	0.0089	0.16' / 0.67' = 0.24	0.24' / 0.67' = 0.36	2.80
C	8	0.14	0.32	224.31	0.0058	0.18' / 0.67' = 0.27	0.27' / 0.67' = 0.41	2.40
D	8	0.21	0.39	223.59	0.0104	0.19' / 0.67' = 0.29	0.26' / 0.67' = 0.39	3.13
E	8	0.32	0.49	185.01	0.0314	0.17' / 0.67' = 0.26	0.22' / 0.67' = 0.33	4.97
F	8	0.32	0.50	101.11	0.1266	0.12' / 0.67' = 0.18	0.15' / 0.67' = 0.23	8.23
G	12	2.04	2.22	246.98	0.0110	***0.53' / 1.00' = 0.53***	***0.55' / 1.00' = 0.55***	4.96

Conclusion:

As shown in the flow tables, under peak dry weather conditions the proposed flow depth to pipe diameter ratios are well below the 64% limit for the existing 8” and 12” sewer pipes at a maximum ratio of 0.36 and 0.49 respectively.

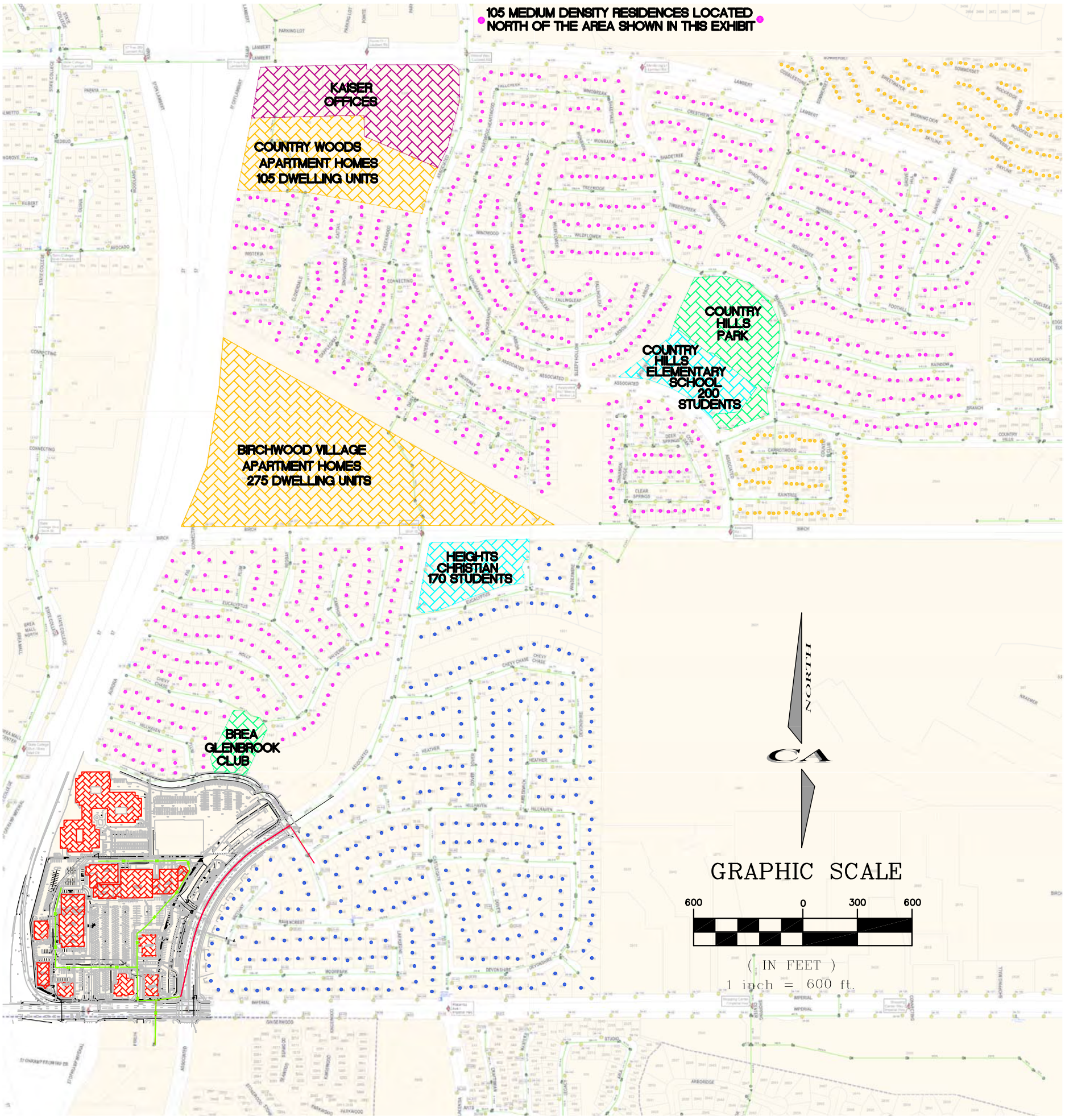
Similarity, under peak wet weather conditions the proposed flow depth to pipe diameter ratios are well below the 75% limit for the existing 8” and 12” sewer pipes at a maximum ratio of 0.41 and 0.55 respectively.

Therefore all existing sewer pipes are currently sized to adequately convey the additional tributary flows from the proposed Brea Plaza development.

EXHIBIT A:
BREA PLAZA SEWER DESIGN FLOW TRIBUTARY AREA MAP

EXHIBIT "A"

BREA PLAZA SEWER DESIGN FLOW ESTIMATION MAP

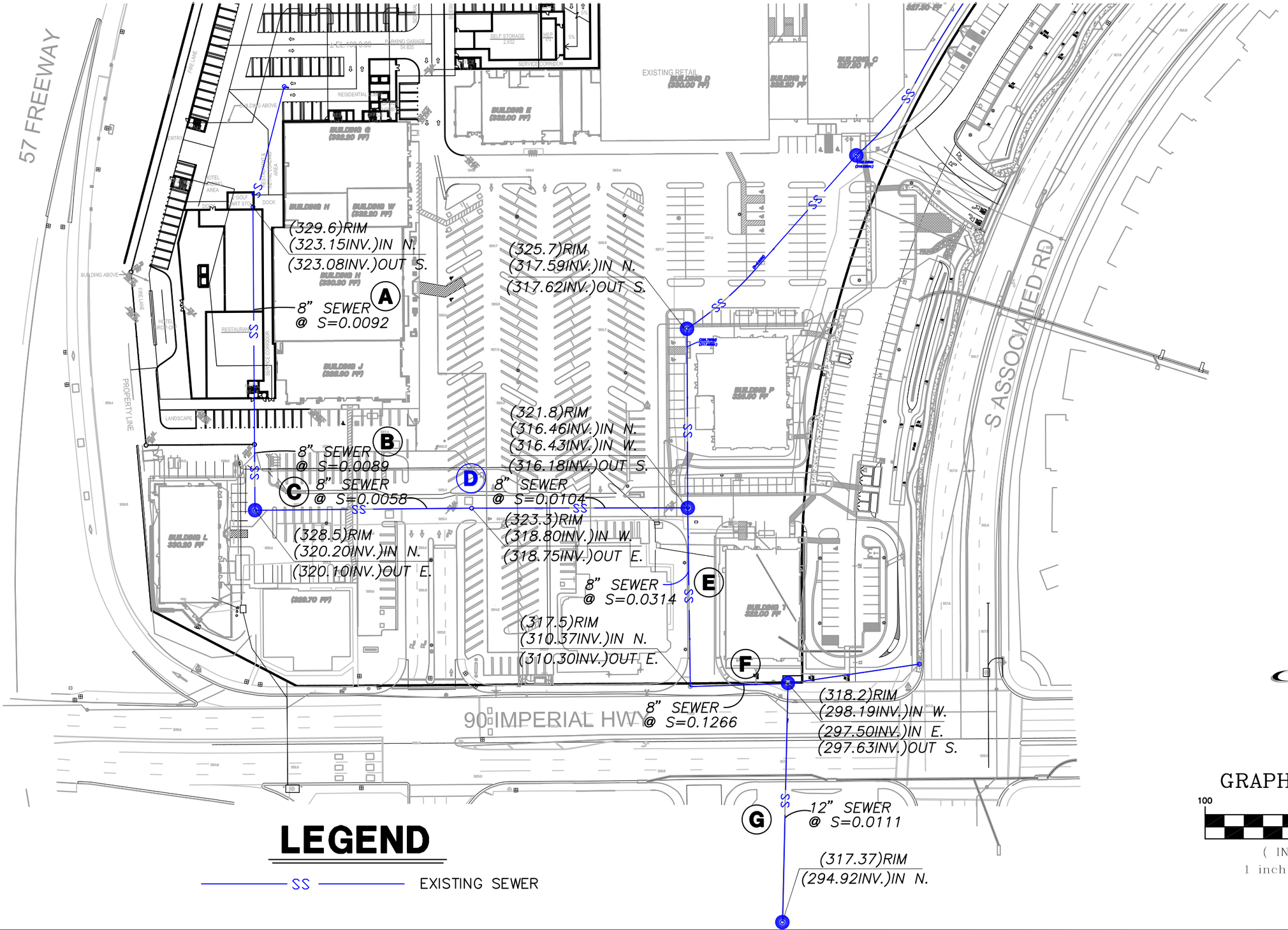


LEGEND

- EXISTING BREA PLAZA BUILDINGS
- COMMERCIAL RECREATIONAL (C–RC)
- SCHOOL (SCH)
- HIGH DENSITY RESIDENTIAL (R3)
- GENERAL OFFICES (CP)
- LOW DENSITY RESIDENTIAL (R1)
- MEDIUM DENSITY RESIDENTIAL (R2)
- HIGH DENSITY RESIDENTIAL (R3)
- SS — PROPOSED/EXISTING SEWER

EXHIBIT B: SEWER SECTION ANALYSIS

EXHIBIT "B": BREA PLAZA SEWER SECTION ANALYSIS



LEGEND

SS EXISTING SEWER

NORTH

CA

GRAPHIC SCALE

100 0 50 100

(IN FEET)

1 inch = 100 ft.

APPENDIX A: FLOW MASTER SEWER CALCULATIONS

Section A: Peak Dry Weather (Existing)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.009200	ft/ft
Diameter	8.00	in
Discharge	0.07	cfs

Results		
Depth	0.11	ft
Flow Area	0.04	ft^2
Wetted Perimeter	0.56	ft
Top Width	0.50	ft
Critical Depth	0.12	ft
Percent Full	16.67	
Critical Slope	0.006715	ft/ft
Velocity	1.83	ft/s
Velocity Head	0.05	ft
Specific Energy	0.16	ft
Froude Number	1.16	
Maximum Discharge	1.25	cfs
Full Flow Capacity	1.16	cfs
Full Flow Slope	0.000034	ft/ft
Flow is supercritical.		

Section A: Peak Dry Weather (Proposed)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.009200	ft/ft
Diameter	8.00	in
Discharge	0.21	cfs

Results		
Depth	0.19	ft
Flow Area	0.08	ft^2
Wetted Perimeter	0.76	ft
Top Width	0.60	ft
Critical Depth	0.21	ft
Percent Full	28.82	
Critical Slope	0.006430	ft/ft
Velocity	2.52	ft/s
Velocity Head	0.10	ft
Specific Energy	0.29	ft
Froude Number	1.20	
Maximum Discharge	1.25	cfs
Full Flow Capacity	1.16	cfs
Full Flow Slope	0.000302	ft/ft
Flow is supercritical.		

Section B: Peak Dry Weather (Existing)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.008900	ft/ft
Diameter	8.00	in
Discharge	0.11	cfs

Results		
Depth	0.14	ft
Flow Area	0.05	ft^2
Wetted Perimeter	0.63	ft
Top Width	0.54	ft
Critical Depth	0.15	ft
Percent Full	20.98	
Critical Slope	0.006517	ft/ft
Velocity	2.07	ft/s
Velocity Head	0.07	ft
Specific Energy	0.21	ft
Froude Number	1.16	
Maximum Discharge	1.23	cfs
Full Flow Capacity	1.14	cfs
Full Flow Slope	0.000083	ft/ft
Flow is supercritical.		

Section B: Peak Dry Weather (Proposed)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.008900	ft/ft
Diameter	8.00	in
Discharge	0.25	cfs

Results		
Depth	0.21	ft
Flow Area	0.10	ft^2
Wetted Perimeter	0.80	ft
Top Width	0.62	ft
Critical Depth	0.23	ft
Percent Full	31.82	
Critical Slope	0.006462	ft/ft
Velocity	2.62	ft/s
Velocity Head	0.11	ft
Specific Energy	0.32	ft
Froude Number	1.18	
Maximum Discharge	1.23	cfs
Full Flow Capacity	1.14	cfs
Full Flow Slope	0.000428	ft/ft
Flow is supercritical.		

Section C: Peak Dry Weather (Existing)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.005800	ft/ft
Diameter	8.00	in
Discharge	0.11	cfs

Results		
Depth	0.16	ft
Flow Area	0.06	ft^2
Wetted Perimeter	0.67	ft
Top Width	0.56	ft
Critical Depth	0.15	ft
Percent Full	23.35	
Critical Slope	0.006519	ft/ft
Velocity	1.78	ft/s
Velocity Head	0.05	ft
Specific Energy	0.20	ft
Froude Number	0.94	
Maximum Discharge	0.99	cfs
Full Flow Capacity	0.92	cfs
Full Flow Slope	0.000083	ft/ft
Flow is subcritical.		

Section C: Peak Dry Weather (Proposed)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.005800	ft/ft
Diameter	8.00	in
Discharge	0.26	cfs

Results		
Depth	0.24	ft
Flow Area	0.11	ft^2
Wetted Perimeter	0.86	ft
Top Width	0.64	ft
Critical Depth	0.24	ft
Percent Full	36.37	
Critical Slope	0.006475	ft/ft
Velocity	2.27	ft/s
Velocity Head	0.08	ft
Specific Energy	0.32	ft
Froude Number	0.95	
Maximum Discharge	0.99	cfs
Full Flow Capacity	0.92	cfs
Full Flow Slope	0.000463	ft/ft
Flow is subcritical.		

Section D: Peak Dry Weather (Existing)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.010400	ft/ft
Diameter	8.00	in
Discharge	0.17	cfs

Results		
Depth	0.17	ft
Flow Area	0.07	ft^2
Wetted Perimeter	0.70	ft
Top Width	0.58	ft
Critical Depth	0.19	ft
Percent Full	25.09	
Critical Slope	0.006427	ft/ft
Velocity	2.48	ft/s
Velocity Head	0.10	ft
Specific Energy	0.26	ft
Froude Number	1.27	
Maximum Discharge	1.33	cfs
Full Flow Capacity	1.23	cfs
Full Flow Slope	0.000198	ft/ft
Flow is supercritical.		

Section D: Peak Dry Weather (Proposed)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.010400	ft/ft
Diameter	8.00	in
Discharge	0.31	cfs

Results		
Depth	0.23	ft
Flow Area	0.11	ft^2
Wetted Perimeter	0.83	ft
Top Width	0.63	ft
Critical Depth	0.26	ft
Percent Full	34.19	
Critical Slope	0.006548	ft/ft
Velocity	2.94	ft/s
Velocity Head	0.13	ft
Specific Energy	0.36	ft
Froude Number	1.27	
Maximum Discharge	1.33	cfs
Full Flow Capacity	1.23	cfs
Full Flow Slope	0.000658	ft/ft
Flow is supercritical.		

Section E: Peak Dry Weather (Existing)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.031400	ft/ft
Diameter	8.00	in
Discharge	0.25	cfs

Results		
Depth	0.15	ft
Flow Area	0.06	ft^2
Wetted Perimeter	0.67	ft
Top Width	0.56	ft
Critical Depth	0.23	ft
Percent Full	23.07	
Critical Slope	0.006462	ft/ft
Velocity	4.10	ft/s
Velocity Head	0.26	ft
Specific Energy	0.42	ft
Froude Number	2.20	
Maximum Discharge	2.30	cfs
Full Flow Capacity	2.14	cfs
Full Flow Slope	0.000428	ft/ft
Flow is supercritical.		

Section E: Peak Dry Weather (Proposed)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.031400	ft/ft
Diameter	8.00	in
Discharge	0.40	cfs

Results		
Depth	0.20	ft
Flow Area	0.09	ft^2
Wetted Perimeter	0.76	ft
Top Width	0.61	ft
Critical Depth	0.29	ft
Percent Full	29.28	
Critical Slope	0.006735	ft/ft
Velocity	4.70	ft/s
Velocity Head	0.34	ft
Specific Energy	0.54	ft
Froude Number	2.21	
Maximum Discharge	2.30	cfs
Full Flow Capacity	2.14	cfs
Full Flow Slope	0.001096	ft/ft
Flow is supercritical.		

Section F: Peak Dry Weather (Existing)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.126600	ft/ft
Diameter	8.00	in
Discharge	0.26	cfs

Results		
Depth	0.11	ft
Flow Area	0.04	ft^2
Wetted Perimeter	0.56	ft
Top Width	0.50	ft
Critical Depth	0.24	ft
Percent Full	16.68	
Critical Slope	0.006475	ft/ft
Velocity	6.79	ft/s
Velocity Head	0.72	ft
Specific Energy	0.83	ft
Froude Number	4.31	
Maximum Discharge	4.62	cfs
Full Flow Capacity	4.30	cfs
Full Flow Slope	0.000463	ft/ft
Flow is supercritical.		

Section F: Peak Dry Weather (Proposed)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.126600	ft/ft
Diameter	8.00	in
Discharge	0.40	cfs

Results		
Depth	0.14	ft
Flow Area	0.05	ft^2
Wetted Perimeter	0.63	ft
Top Width	0.54	ft
Critical Depth	0.29	ft
Percent Full	20.61	
Critical Slope	0.006736	ft/ft
Velocity	7.71	ft/s
Velocity Head	0.92	ft
Specific Energy	1.06	ft
Froude Number	4.38	
Maximum Discharge	4.62	cfs
Full Flow Capacity	4.30	cfs
Full Flow Slope	0.001096	ft/ft
Flow is supercritical.		

Section G: Peak Dry Weather (Existing)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.011000	ft/ft
Diameter	12.00	in
Discharge	1.63	cfs

Results		
Depth	0.46	ft
Flow Area	0.35	ft^2
Wetted Perimeter	1.49	ft
Top Width	1.00	ft
Critical Depth	0.54	ft
Percent Full	46.20	
Critical Slope	0.006388	ft/ft
Velocity	4.60	ft/s
Velocity Head	0.33	ft
Specific Energy	0.79	ft
Froude Number	1.36	
Maximum Discharge	4.02	cfs
Full Flow Capacity	3.74	cfs
Full Flow Slope	0.002093	ft/ft
Flow is supercritical.		

Section G: Peak Dry Weather (Proposed)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.011000	ft/ft
Diameter	12.00	in
Discharge	1.78	cfs

Results		
Depth	0.49	ft
Flow Area	0.38	ft^2
Wetted Perimeter	1.54	ft
Top Width	1.00	ft
Critical Depth	0.57	ft
Percent Full	48.60	
Critical Slope	0.006567	ft/ft
Velocity	4.70	ft/s
Velocity Head	0.34	ft
Specific Energy	0.83	ft
Froude Number	1.35	
Maximum Discharge	4.02	cfs
Full Flow Capacity	3.74	cfs
Full Flow Slope	0.002496	ft/ft
Flow is supercritical.		

Section A: Peak Wet Weather (Existing)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.009200	ft/ft
Diameter	8.00	in
Discharge	0.09	cfs

Results		
Depth	0.13	ft
Flow Area	0.05	ft^2
Wetted Perimeter	0.60	ft
Top Width	0.52	ft
Critical Depth	0.14	ft
Percent Full	18.85	
Critical Slope	0.006593	ft/ft
Velocity	1.97	ft/s
Velocity Head	0.06	ft
Specific Energy	0.19	ft
Froude Number	1.17	
Maximum Discharge	1.25	cfs
Full Flow Capacity	1.16	cfs
Full Flow Slope	0.000055	ft/ft
Flow is supercritical.		

Section A: Peak Wet Weather (Proposed)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.009200	ft/ft
Diameter	8.00	in
Discharge	0.26	cfs

Results		
Depth	0.21	ft
Flow Area	0.10	ft^2
Wetted Perimeter	0.80	ft
Top Width	0.62	ft
Critical Depth	0.24	ft
Percent Full	32.19	
Critical Slope	0.006474	ft/ft
Velocity	2.68	ft/s
Velocity Head	0.11	ft
Specific Energy	0.33	ft
Froude Number	1.20	
Maximum Discharge	1.25	cfs
Full Flow Capacity	1.16	cfs
Full Flow Slope	0.000463	ft/ft
Flow is supercritical.		

Section B: Peak Wet Weather (Existing)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.008900	ft/ft
Diameter	8.00	in
Discharge	0.14	cfs

Results		
Depth	0.16	ft
Flow Area	0.06	ft^2
Wetted Perimeter	0.68	ft
Top Width	0.57	ft
Critical Depth	0.17	ft
Percent Full	23.66	
Critical Slope	0.006453	ft/ft
Velocity	2.22	ft/s
Velocity Head	0.08	ft
Specific Energy	0.23	ft
Froude Number	1.17	
Maximum Discharge	1.23	cfs
Full Flow Capacity	1.14	cfs
Full Flow Slope	0.000134	ft/ft
Flow is supercritical.		

Section B: Peak Wet Weather (Proposed)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.008900	ft/ft
Diameter	8.00	in
Discharge	0.32	cfs

Results		
Depth	0.24	ft
Flow Area	0.11	ft^2
Wetted Perimeter	0.86	ft
Top Width	0.64	ft
Critical Depth	0.26	ft
Percent Full	36.24	
Critical Slope	0.006565	ft/ft
Velocity	2.80	ft/s
Velocity Head	0.12	ft
Specific Energy	0.36	ft
Froude Number	1.17	
Maximum Discharge	1.23	cfs
Full Flow Capacity	1.14	cfs
Full Flow Slope	0.000701	ft/ft
Flow is supercritical.		

Section C: Peak Wet Weather (Existing)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.005800	ft/ft
Diameter	8.00	in
Discharge	0.14	cfs

Results		
Depth	0.18	ft
Flow Area	0.07	ft^2
Wetted Perimeter	0.72	ft
Top Width	0.59	ft
Critical Depth	0.17	ft
Percent Full	26.36	
Critical Slope	0.006454	ft/ft
Velocity	1.90	ft/s
Velocity Head	0.06	ft
Specific Energy	0.23	ft
Froude Number	0.95	
Maximum Discharge	0.99	cfs
Full Flow Capacity	0.92	cfs
Full Flow Slope	0.000134	ft/ft
Flow is subcritical.		

Section C: Peak Wet Weather (Proposed)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.005800	ft/ft
Diameter	8.00	in
Discharge	0.32	cfs

Results		
Depth	0.27	ft
Flow Area	0.13	ft^2
Wetted Perimeter	0.92	ft
Top Width	0.66	ft
Critical Depth	0.26	ft
Percent Full	40.69	
Critical Slope	0.006565	ft/ft
Velocity	2.40	ft/s
Velocity Head	0.09	ft
Specific Energy	0.36	ft
Froude Number	0.94	
Maximum Discharge	0.99	cfs
Full Flow Capacity	0.92	cfs
Full Flow Slope	0.000701	ft/ft
Flow is subcritical.		

Section D: Peak Wet Weather (Existing)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.010400	ft/ft
Diameter	8.00	in
Discharge	0.21	cfs

Results		
Depth	0.19	ft
Flow Area	0.08	ft^2
Wetted Perimeter	0.74	ft
Top Width	0.60	ft
Critical Depth	0.21	ft
Percent Full	27.93	
Critical Slope	0.006430	ft/ft
Velocity	2.63	ft/s
Velocity Head	0.11	ft
Specific Energy	0.29	ft
Froude Number	1.27	
Maximum Discharge	1.33	cfs
Full Flow Capacity	1.23	cfs
Full Flow Slope	0.000302	ft/ft
Flow is supercritical.		

Section D: Peak Wet Weather (Proposed)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.010400	ft/ft
Diameter	8.00	in
Discharge	0.39	cfs

Results		
Depth	0.26	ft
Flow Area	0.12	ft^2
Wetted Perimeter	0.89	ft
Top Width	0.65	ft
Critical Depth	0.29	ft
Percent Full	38.66	
Critical Slope	0.006711	ft/ft
Velocity	3.13	ft/s
Velocity Head	0.15	ft
Specific Energy	0.41	ft
Froude Number	1.26	
Maximum Discharge	1.33	cfs
Full Flow Capacity	1.23	cfs
Full Flow Slope	0.001042	ft/ft
Flow is supercritical.		

Section E: Peak Wet Weather (Existing)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.031400	ft/ft
Diameter	8.00	in
Discharge	0.32	cfs

Results		
Depth	0.17	ft
Flow Area	0.07	ft^2
Wetted Perimeter	0.72	ft
Top Width	0.59	ft
Critical Depth	0.26	ft
Percent Full	26.13	
Critical Slope	0.006565	ft/ft
Velocity	4.41	ft/s
Velocity Head	0.30	ft
Specific Energy	0.48	ft
Froude Number	2.21	
Maximum Discharge	2.30	cfs
Full Flow Capacity	2.14	cfs
Full Flow Slope	0.000701	ft/ft
Flow is supercritical.		

Section E: Peak Wet Weather (Proposed)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.031400	ft/ft
Diameter	8.00	in
Discharge	0.49	cfs

Results		
Depth	0.22	ft
Flow Area	0.10	ft^2
Wetted Perimeter	0.81	ft
Top Width	0.62	ft
Critical Depth	0.33	ft
Percent Full	32.53	
Critical Slope	0.006979	ft/ft
Velocity	4.97	ft/s
Velocity Head	0.38	ft
Specific Energy	0.60	ft
Froude Number	2.21	
Maximum Discharge	2.30	cfs
Full Flow Capacity	2.14	cfs
Full Flow Slope	0.001644	ft/ft
Flow is supercritical.		

Section F: Peak Wet Weather (Existing)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.126600	ft/ft
Diameter	8.00	in
Discharge	0.32	cfs

Results		
Depth	0.12	ft
Flow Area	0.04	ft^2
Wetted Perimeter	0.59	ft
Top Width	0.52	ft
Critical Depth	0.26	ft
Percent Full	18.46	
Critical Slope	0.006566	ft/ft
Velocity	7.22	ft/s
Velocity Head	0.81	ft
Specific Energy	0.93	ft
Froude Number	4.35	
Maximum Discharge	4.62	cfs
Full Flow Capacity	4.30	cfs
Full Flow Slope	0.000701	ft/ft
Flow is supercritical.		

Section F: Peak Wet Weather (Proposed)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.126600	ft/ft
Diameter	8.00	in
Discharge	0.50	cfs

Results		
Depth	0.15	ft
Flow Area	0.06	ft^2
Wetted Perimeter	0.67	ft
Top Width	0.56	ft
Critical Depth	0.33	ft
Percent Full	23.03	
Critical Slope	0.007009	ft/ft
Velocity	8.23	ft/s
Velocity Head	1.05	ft
Specific Energy	1.21	ft
Froude Number	4.41	
Maximum Discharge	4.62	cfs
Full Flow Capacity	4.30	cfs
Full Flow Slope	0.001712	ft/ft
Flow is supercritical.		

Section G: Peak Wet Weather (Existing)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.011000	ft/ft
Diameter	12.00	in
Discharge	2.04	cfs

Results		
Depth	0.53	ft
Flow Area	0.42	ft^2
Wetted Perimeter	1.62	ft
Top Width	1.00	ft
Critical Depth	0.61	ft
Percent Full	52.69	
Critical Slope	0.006916	ft/ft
Velocity	4.86	ft/s
Velocity Head	0.37	ft
Specific Energy	0.89	ft
Froude Number	1.32	
Maximum Discharge	4.02	cfs
Full Flow Capacity	3.74	cfs
Full Flow Slope	0.003279	ft/ft
Flow is supercritical.		

Section G: Peak Wet Weather (Proposed)
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	487-4 Brea Plaza Sewer Study
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.011000	ft/ft
Diameter	12.00	in
Discharge	2.22	cfs

Results		
Depth	0.55	ft
Flow Area	0.45	ft^2
Wetted Perimeter	1.68	ft
Top Width	0.99	ft
Critical Depth	0.64	ft
Percent Full	55.49	
Critical Slope	0.007188	ft/ft
Velocity	4.96	ft/s
Velocity Head	0.38	ft
Specific Energy	0.94	ft
Froude Number	1.30	
Maximum Discharge	4.02	cfs
Full Flow Capacity	3.74	cfs
Full Flow Slope	0.003883	ft/ft
Flow is supercritical.		

APPENDIX B: MONITORED FLOW DATA RESULTS & METHODOLOGY

Site Report 11/06/2020

Confidential Proprietary Information

CA Engineering

2020.10 Imperial MH

MH at ~1647 E. Imperial Hwy
Brea, CA 92821
MH # unknown

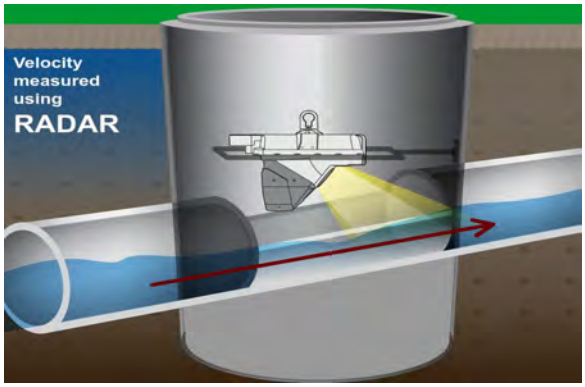
Access:
MH in greenspace between sidewalk & address

System Type:
Sanitary [X] Storm [ ]

Install Date: 10/28/2020

Map

Technology



Traffic Plan

Flow Meter			
Meter Depth: 221"			
MH Coordinates: 33.910942, -117.880687			
Moderate to rapid open channel hydraulics with turbulence due to MH configuration			
Avg Velocity	Avg Measured Level		Multiplier
3.4 fps	3.4"		1.0
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
Three inlets from east, north & west; monitored downstream line to get total flow.			
Traffic Safety			
No formal TCP required; used cones & signs per site-specific WATCH Diagram 3			
Land Use			
Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	243"
Monitored Pipe Size	12"
Inner Pipe Size (In/Out)	12"/12"
Pipe Shape	Round
Pipe Condition	Good
Manhole Material	Concrete
Silt	0"
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	21.64"
Sensor Dist. to Crown	9.64"
Sensor Direction	Downstream
Flow Heading	South

Meter Site Document

2020.10 Imperial MH

MH at ~1647 E. Imperial Hwy

Brea, CA 92821

Site

Manhole Before Install

Installation Process

Installed

Monitored Pipe Size

Downstream

Temporary Flow Study

CA Engineering

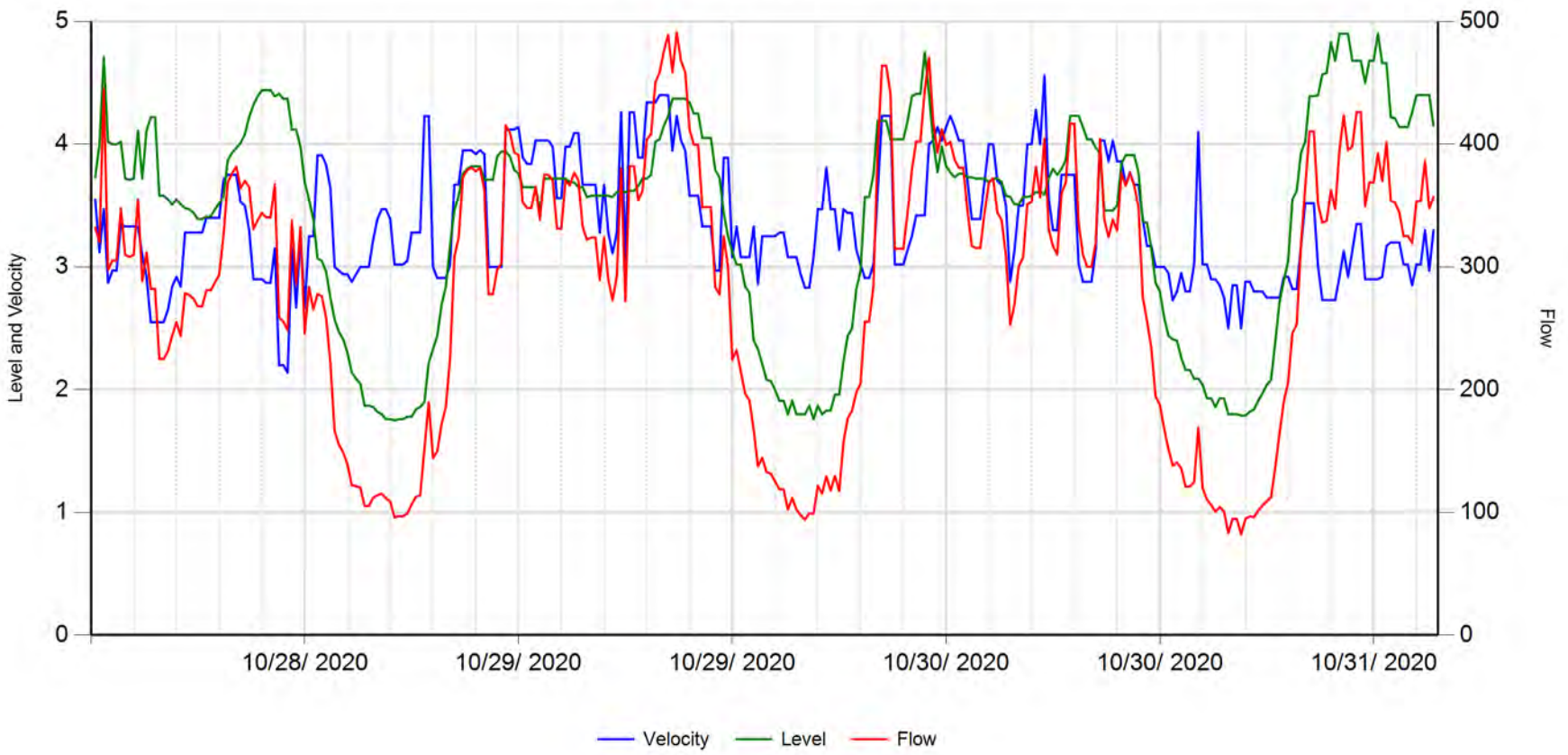
2020.10 Imperial MH

Meter Start Date		From	10/28/2020
Meter Stop Date		To	11/5/2020
Velocity (fps)		Level (in)	Flow (mgd)
Average	3.398	3.406	0.414
Maximum	4.560	5.080	0.707
Minimum	2.140	1.710	0.118
Pipe Size		12.000	
Estimated Capacity (mgd)		Not Calculated	
Capacity Used		Not Calculated	
Sensor Type		Hach - Flodar	

Utility Systems, Science and Software

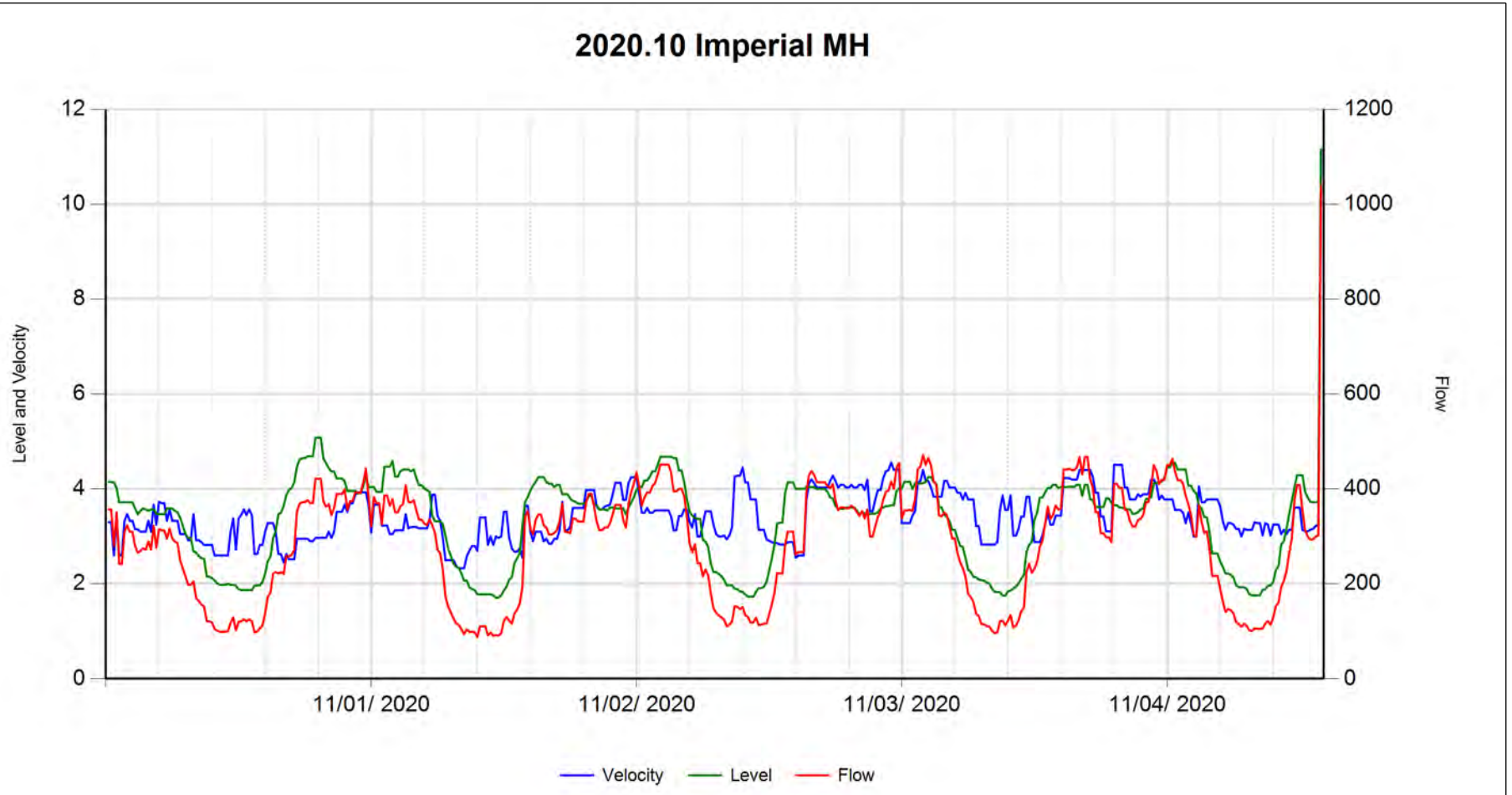
9314 Bond Av, Suite A
El Cajon, CA 92021

601 N. Parkcenter Dr, Suite 209
Santa Ana, CA 92705



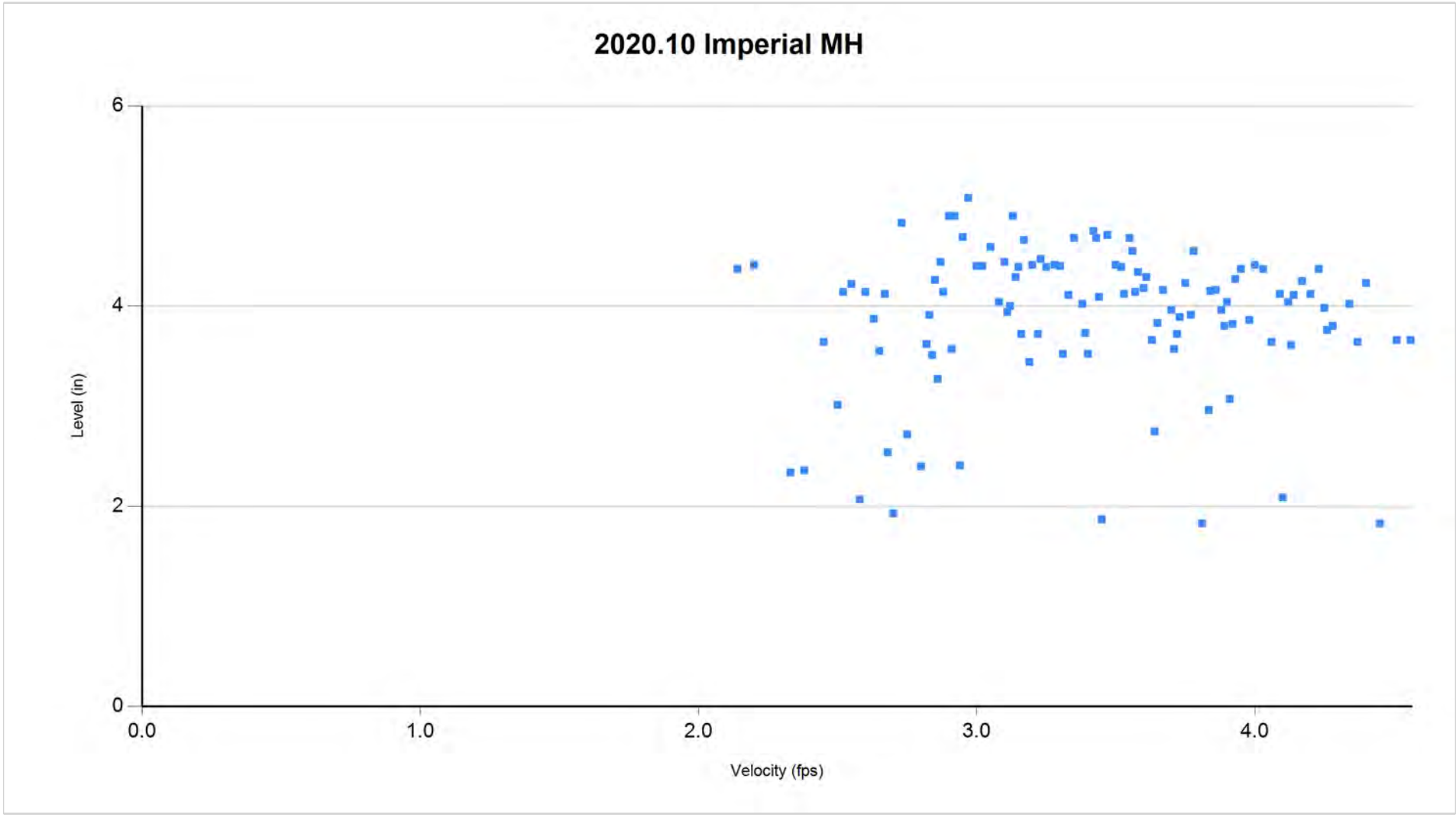
	Velocity (fps)	Level (in)	Flow (gpm)		
Average	3.353	3.405	283.073	**RainFall**	Inches
Maximum	4.560	4.900	491.179		
Minimum	2.140	1.750	82.153		

11/06/2020



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	3.418	3.345	282.490	**RainFall**	Inches
Maximum	4.560	5.080	471.596		
Minimum	2.330	1.710	87.778		

11/06/2020



10/28/2020 thru 11/05/2020

11/6/2020 1:35:54 PM

Methods & Procedures & Equipment

Methods and Procedures

Utility Systems Science & Software provided the CA Engineering Group with an off the shelf, non-proprietary flow monitoring solution that included two state of the art Hach Flo-Dar® AV Sensor systems. The project course of action is listed below. The US^3 team:

- Assessed permitting and traffic control at the sites on E. Imperial Hwy in Brea and in Fullerton, CA.
- Validated the sites for suitability for sewer flow monitoring for the Brea Plaza Project.
- Obtained an Encroachment Permit from the City of Brea.
- Coordinated with the City Inspector for installation and removal of equipment.
- Installed and removed traffic control in accord with approved site-specific Work Area Traffic Control Handbook (WATCH) Diagrams for both the installation and removal of flow monitoring equipment.
- Installed and calibrated the equipment per manufacturer recommendations.
- Removed the equipment, validated the data and prepared the data reports.
    - The data supports the conclusion that there is capacity available in the monitored sewer lines since the depth for the peak flows observed during this study did not exceed the d/D limit of 0.50 at either site at any time.
    - Imperial MH: maximum d/D = ~0.42 and peak flow = ~0.7073 mgd (~1.0944 cfs).
    - Perlin MH: maximum d/D = ~0.41 and peak flow = ~0.7815 mgd (~1.2092 cfs).

Equipment

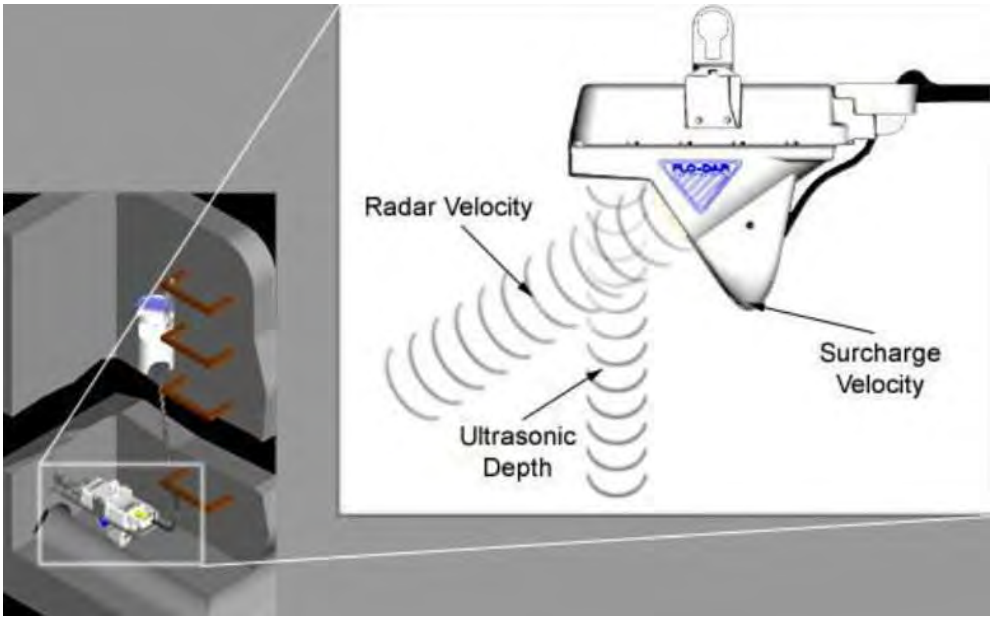


Figure: Equipment installed for the Sewer Flow Monitoring Study

Figure: Web-Enabled Flo-Dar® AV Sensor, Radar-Based Velocity/Area Flow Meter

SPECIFICATIONS

- **Enclosure**
  - IP68 Waterproof rating, Polystyrene
- **Dimensions**
  - 160.5 W x 432.2 L x 297 D mm (6.32 x 16.66 x 11.7 in.),
  - With SVS, D = 387 mm (15.2 in.)
- **Weight**
  - 4.8 kg (10.5 lbs.)
- **Operating Temperature**
  - -10 to 50°C (14 to 122°F)
- **Storage Temperature**
  - -40 to 60°C (-40 to 140°F)
- **Power Requirements**
  - Supplied by FL900 Flow Logger, Flo-Logger, or Flo-Station

- **Interconnecting Cable**
  - Disconnect available at both sensor and logger or Flo-Station
  - Polyurethane, 0.400 (±0.015) in. diameter; IP68
  - Standard length 9 m (30 ft), maximum 305 m (1000 ft)
- **Cables – available in two styles:**
  - connectors at both ends
  - connector from sensor with open leads to desiccant hub, desiccant hub with connector to logger. A potting/sealant kit will be included. This can be used to run the cable through conduit.
- **Certification**
  - Certified to: FCC Part 15.245: FCC ID: VIC-FLODAR24
  - Industry Canada Spec. RSS210. v7: IC No.: 6149A-FLODAR24

SURCHARGE DEPTH MEASUREMENT

  - Auto zero function maintains zero error below 0.5 cm (0.2 in.)
- **Method**
  - Piezo-resistive pressure transducer with stainless steel diaphragm
- **Range**
  - 3.5 m (138 in.), overpressure rating 2.5 x full scale

VELOCITY MEASUREMENT

- **Method**
  - Radar
- **Range**
  - 0.23 to 6.10 m/s (0.75 to 20 ft/s)
- **Frequency Range**
  - 24.075 to 24.175 GHz, 15.2 mW (max.)
- **Accuracy**
  - ±0.5%; ±0.03 m/s (±0.1 ft/s)

DEPTH MEASUREMENT

- **Method**
  - Ultrasonic
- **Standard Operating Range from Flo-Dar® Housing to Liquid**
  - 0 to 152.4 cm (0 to 60 in.)
- **Optional Extended Level Operating Range from Transducer Face to Liquid**
  - 0 to 6.1 m (0 to 20 ft.) with 43.18 cm (17 in.) dead band, temperature compensated.
- **Accuracy**
  - ±1%; ±0.25 cm (±0.1 in.)

FLOW MEASUREMENT

- **Method**
  - Based on Continuity Equation
- **Accuracy**
  - ±5% of reading typical where flow is in a channel with uniform flow conditions and is not surcharged, ±1% full scale max.

SURCHARGE CONDITIONS DEPTH/VELOCITY DEPTH (Std with Flo-Dar® Sensor)

- **Surcharge depth supplied by Flo-Dar® sensor.**

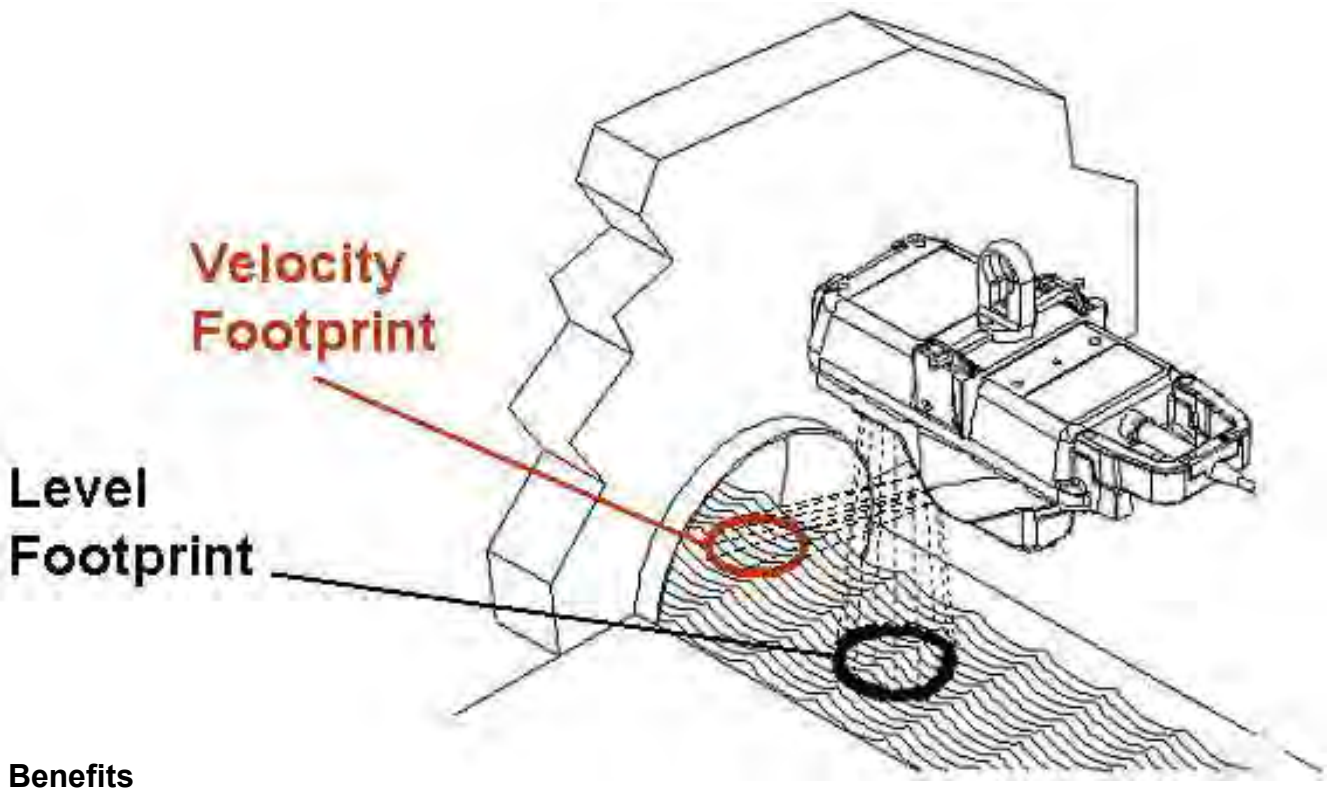
VELOCITY (Optional Surcharge Velocity Sensor)

- **Method**
  - Electromagnetic
- **Range**
  - ±4.8 m/s (±16 ft/s)
- **Accuracy**
  - ±0.15 ft/s or 4% of reading, whichever is greater.
- **Zero Stability**
  - ±0.05 ft/s

The Flo-Dar® Open Channel Flow Meters provide an innovative approach to open channel flow monitoring. Combining digital Doppler radar velocity sensing with ultrasonic pulse echo level sensing Flo-Dar® provides accurate open channel flow monitoring without the fouling problems associated with submerged sensors.

Perfect Solution for Difficult Flow Conditions:

- Flows with High Solids Content
- High Temperature Flows
- Caustic Flows
- Large Man-Made Channel
- High Velocities
- Shallow Flows



Benefits

1. Personnel have no contact with the flow during installation.
2. Maintenance caused by sensor fouling is eliminated
3. Field Replaceable/Interchangeable Sensors and Monitors

How It Works

Flo-Dar® transmits a digital Doppler radar beam that interacts with the fluid and reflects back signals at a different frequency than that which was transmitted. These reflected signals are compared with the transmitted frequency. The resulting frequency shift provides an accurate measure of the velocity and the direction of the flow. Level is detected by ultrasonic pulse echo. Flow is then calculated based on the Continuity Equation:

Q = V x A, Where Q = Flow, V = Average Velocity and A = Area

Accurate Flow Measurements

Flo-Dar® provides the user with highly accurate flow measurements under a wide range of flows and site conditions. By measuring the velocity of the fluid from above, Flo-Dar® eliminates accuracy problems inherent with submerged sensors including sensor disturbances, high solids content and distribution of reflectors.

US³ Company Information

US³ is a California Corporation **Federal ID No. 33-0729605** and qualifies as a Minority Business Enterprise. US³ has certified as an MBE with the California Public Utility Commission's authorized clearinghouse, **Verification Number: 97ES0008.**

US³ is a specialty service company for the Water & Waste Water industry, providing monitoring and control for Utilities since 1996. US³ is in the forefront of this industry by taking the proven technological approaches developed in other high-tech industries and applying them to protect one of our most precious natural resources - our water.

US³ engineers and technical personnel have applied advanced instrumentation system technology to water/wastewater open channel flow monitoring, pipeline evaluation, engineering, and data analysis, all coupled to the power of the Internet. This unique integrated systems approach allows the company to bring greater insight and intelligence to gathering information about water/wastewater system performance of our clients, and in turn, to support the fulfillment of their commitments to manage and cost effectively design, operate, and maintain these systems.

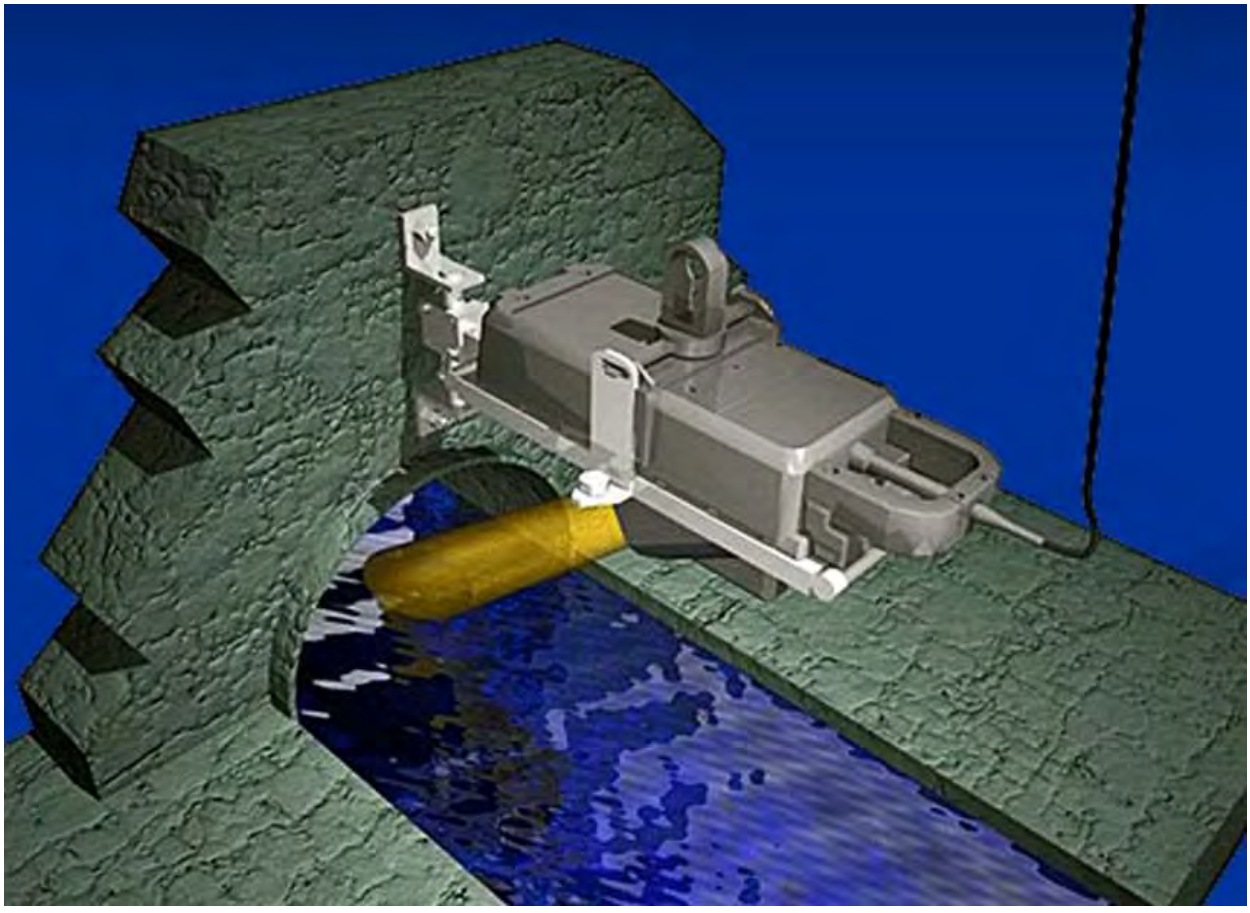


Figure: US³ utilizes exclusively Hach March-McBirney Flo-Dar® Meters

Moreover, ***US³*** supports Municipalities, Consulting Engineering firms and other water/waste water systems integrators by providing temporary technical services for engineering, software programming and technical site maintenance and calibration site support work, primarily in the Water and Waste Water industries.

Figure: All technicians are certified for Confined Space Entry.

Name, Title, Address and Telephone numbers of persons to contact concerning this report.

Darlene Szczublewski, PE
Senior Civil Engineer
darlene.szczublewski@uscubed.com

9314 Bond Av, Suite A
El Cajon, CA 92021
619-546-4281 (work)
619-246-5304 (cell)

Tom Williams
Engineering Manager
tom.williams@uscubed.com

9314 Bond Av, Suite A
El Cajon, CA 92021
619-546-4281 (work)
619-398-7799 (cell)

Appendix H Preliminary Hydrology Report

Appendices

This page intentionally left blank.

PRELIMINARY HYDROLOGY REPORT

Brea Plaza Mixed-Use Project

July 27, 2021

Prepared By:

Fred Cornwell, P.E., RCE 45591
CA Engineering, Inc.
13821 Newport Avenue, Suite 110
Tustin, CA 92780
fcornwell@ca-eng.net
949.724.9480

Prepared For:

BPI Brea LLC
417 S. Associated Rd, Suite 313
Brea, CA 92821
714.990.5715

C.A. ENGINEERING, INC.

Planning • Engineering • Surveying

PRELIMINARY HYDROLOGY REPORT

FOR

Brea Plaza Mixed Use
1639 E. Imperial Highway
Brea, CA 92821

Preparation Date: August 1st, 2020
Revised: June 9, 2021
Revised: July 27, 2021

PLANS PREPARED UNDER THE SUPERVISION OF:

7-27-2021

Fred Cornwell, P.E. - R.C.E 45591 Date

REGISTERED PROFESSIONAL ENGINEER
FRED CORNWELL
NO. 45591
CIVIL
STATE OF CALIFORNIA

13821 Newport Ave., Su. 110• Tustin, CA 92780 • Phone (949) 724-9480 • Fax (949) 724-9484

TABLE OF CONTENTS:

1. SITE
- 1.1 DESCRIPTION
- 1.2 METHODOLOGY
- 1.3 RESULTS
- 1.4 CONCLUSION

2. HYDROLOGY MAPS
- 2.1 EXISTING HYDROLOGY MAP
- 2.2 PROPOSED HYDROLOGY MAP

3. HYDROLOGY CALCULATIONS
- 3.1 EXISTING HYDROLOGY CALCULATIONS - RATIONAL METHOD (2, 25 & 100 YEAR STORM EVENTS)
- 3.2 PROPOSED HYDROLOGY CALCULATIONS - RATIONAL METHOD (2, 25 & 100 YEAR STORM EVENTS)
- 3.3 BASIN ROUTING CALCULATIONS (2, 25 & 100 YEAR STORM EVENTS)
- 3.4 BASIN, YBAR, & CULVERT CALCULATIONS
- 3.5 WINTR-55 PROGRAM HYDROLOGIC ANALYSIS REPORTS
- 3.6 SOIL MAP

SITE
(SECTION 1)

Description (Section 1.1)

Existing Site

The existing site is a retail center consisting of eight buildings and associated drive aisles and parking lots. The drainage for the project generally surface flows from the northwest to the southeast before being collected and conveyed by an on-site storm drain system to the Loftus Channel located along the eastern side of the site. A previous redevelopment of the center in 2011 constructed four concrete box culverts that replace the previous open trapezoidal channel allowing parking lots to be constructed over the box culverts.

The low flows are collected by 12" grated area drains at each catch basin location, and are then conveyed to vegetated swales located along the eastern boundary. These low flows are bio-treated by the vegetated swales and then directed to a drainage inlet that discharges to the Loftus box channel. Flows that exceed design storm flows are collected by the catch basins and conveyed directly to the Loftus Channel.

There are off-site flows coming onto the existing shopping center from the northerly property. The roof tributary areas have been determined by "best guess" since access was denied.

Proposed Site

The proposed project consists of redeveloping 2.2 acres of the approximately 13.7 acre existing retail site known as the Brea Plaza. The proposed project will involve the demolition of the movie theater building, as well as the asphalt drive aisles/parking areas, concrete walkways, and landscaped planters within the project area, and the construction of one eight-story apartment building.

The drainage patterns will remain consistent with the existing drainage patterns and a storm drain will be installed to convey the flows north of the proposed building to a 60" detention pipe located just upstream of the existing storm drain. This detention pipe is required to mitigate the increased flows due to the installation of the storm drain. The detention pipe has a 6" low flow outlet pipe that will restrict the flows up to the 2 year storm. A 12" pipe is proposed at the middle of the detention pipe to convey storm events larger than the 2 year storm. The outlets pipes are connected to a 24" proposed storm drain that will be an extension of the existing facility that connects to the existing Loftus box channel. To satisfy WQMP requirements, the on-site site low flows will be collected via an area drain system and conveyed to a modular wetlands system unit for treatment before flowing into the detention pipe and the extended storm drain. During larger storm events, high flows that are not captured by this area drain system will sheet flow to an existing catch basin that outlets into the Loftus box channel.

Methodology (Section 1.2)

The hydrologic calculations for the study were completed using AES software based on the Orange County Hydrology Manual methods. The Rational Method was used to determine the peak discharges for the pre- and post-developed conditions. The AES CH1 Unit Hydrograph Routing model was utilized to analyze the flows through the storage pipe.

The rational method flows at node 4 of the proposed hydrology map (Section 2.2) were input into the CH1 module to determine the outflow through the exit pipes and the depth of the storage required. The outflows from the CH1 were then added to the Rational Method as point flows using the Tc from the previous Rational Method and the Q's from the CH1 output.

In the hydrology calculations, we determined the flows for both the existing and proposed conditions. The sub areas and combined flows are shown on the hydrology maps in Section 2, while the raw output results are included in Sections 3.1 and 3.2 of this report.

The existing hydrology map shows two points (Points A & B) that are downstream of the proposed redevelopment. These points as shown on the existing hydrology map respectively correlate to nodes 5 and 10 shown on the proposed hydrology map.

We will analyze the pre and post flows at these points to determine the impact the proposed redevelopment will have on the existing drainage.

Results (Section 1.3)

Calculations

The values below are for the 2, 25 and 100 year storm events at the previously mentioned common downstream points "A" and "B".

Point "A"	2 Year	25 year	100 Year
Existing	9.78 CFS	21.78 CFS	28.09 CFS
Proposed	9.80 CFS	21.95 CFS	28.48 CFS
Increase (CFS) / %	0.02 CFS / 0.2%	0.17 CFS / 0.8%	0.39 CFS / 1.4%

Point "B"	2 Year	25 Year	100 Year
Existing	5.78 CFS	12.50 CFS	16.06 CFS
Proposed	5.78 CFS	12.50 CFS	16.06 CFS
Increase (CFS) / %	0.00 CFS / 0%	0.00 CFS / 0%	0.00 CFS / 0%

The proposed conditions result in a slight increase of flows at Point "A" due to putting the drainage into a pipe. The proposed pipe causes a reduction in the time of concentration (Tc) which subsequently increases the calculated flow. The 2 year, 25 year, and 100 year storms each experience a minimal increase of flows at Point "A" of 0.2%, 0.8%, and 1.4% respectively.

Due to maintaining the same drainage pattern, "Point B" flows are the same under existing and proposed conditions for all storm events.

Basin Routing

Basin Routing calculations were conducted to analyze how the proposed storm drain system will handle the 2 year, 25 year, and 100 year storm events (Sections 3.3 and 3.4).

The routing calculations show that during the 2 year storm event the detention facility will fill up to just under 2.0'. Since this is under the 12" outlet pipe, the outlet flows will be restricted to the 6" low flow pipe which reduces the flows and in turn allows for compliance with the hydromodification criteria summarized below.

The detention facility is also shown to adequately convey the 25 and 100 year storm events to the downstream storm drain. The previously mentioned 12" outlet pipe is being used during these two storm events, but outlet flows only experience a minimal increase of 0.8% and 1.4% respectively.

Hydromodification

For projects in North Orange County, Appendix I.4 of the Technical Guidance Document states that:

"Hydrologic Conditions of Concerns (HCOCs) are considered to exist if any streams located downstream from the project are determined to be potentially susceptible to hydromodification impacts and either of the following conditions exists:

- Post-development runoff volume for the 2-yr, 24-hr storm exceeds that of the pre- development[4] condition by more than 5 percent

  OR

- Time of concentration of post-development runoff for the 2-yr, 24-hr storm event is greater[5] than the time of concentration of the pre-development condition by more than 5 percent."

---

[4] In North Orange County (Order R8-2009-0030), predevelopment is defined as the existing conditions immediately prior to Project WQMP submittal.

[5] The North County Permit (Order R8-2009-0030), as adopted, provides the option of reducing Tc to less than the existing condition Tc (within 5 percent) as part of the primary and preferred option for mitigating HCOCs. However, a longer Tc is generally associated with natural conditions than urban conditions, and a longer Tc nearly universally results in lower concern for hydromodification impacts. In addition, it is not physically possible for a project to implement BMPs consistent with LID provisions of the permit without substantially increasing the Tc of the site. The use of retention BMPs results in water not discharged under design conditions, while the use of biotreatment BMPs general results in water not immediately discharged. Therefore, it would not generally be possible to mitigate HCOCs using the primary option for compliance described above while complying with LID requirements. This TGD therefore interprets this provision such that increases in Tc would be acceptable and reduction in Tc of more than 5 percent would not be acceptable. This interpretation is consistent with the overall goal of the permit to protect receiving waters from stormwater impacts to the MEP.

Appendix I.4 of the Technical Guidance Document further provides that if excess runoff volume from the 2-yr, 24-hr runoff event cannot feasibly be retained, the project shall "implement on-site or regional hydromodification controls such that the post- development runoff 2-yr, 24-hr peak flow rate is no greater than 110 percent of the pre- development runoff 2-yr, 24-hr peak flow rate."

With respect to the proposed project, not all of the downstream conveyance channels from the point of connection are "engineered, hardened, and regularly maintained to ensure design flow capacity." Therefore, the project has the potential for an HCOC. However, as set forth in the table below, the post-development run-off volume and time of concentration are within 105% of these values for the pre-development condition when assessing compliance at the location where runoff leaves the project site. These values were obtained utilizing the WinTR-55 Program (as required by Appendix IV.2 of the TGD). Copies of the WinTR-55 Program Hydrologic Analysis Reports are included in Section 3.5.

2-Yr / 24-Hr Storm	Runoff Volume	Time of Concentration (Tc)	Peak Flowrate
Pre-Development	13,496 CF	0.085 Hr (5.1 Minutes)	2.94 CFS
Post-Development	13,496 CF	0.088 Hr (5.28 Minutes)	2.94 CFS
Difference / %	0 CF / 0%	0.003 Hr / 3.53%	0 CFS / 0%

A hydrologic analysis conducted at the connection point of the new and existing storm drain (Point "A") reveals, however, that the post-development runoff peak flowrate would exceed, by more than 110%, the pre-development runoff peak flowrate for the two-year frequency storm event at this location. The proposed detention pipe, which will be installed just upstream of the existing storm drain, will reduce the post-development peak flowrate to 100.2% of the existing condition peak flowrate at this location, thereby mitigating the hydromodification impacts of the extended storm drain.

Conclusion (Section 1.4)

To summarize, storm flows from the 2.2 acres of proposed new development will be captured in localized area drains and conveyed to a 60" detention pipe. To satisfy WQMP requirements, the on-site site low flows will first be conveyed to a modular wetlands system unit for treatment before flowing into the detention pipe. In order to comply with HCOC requirements, the detention pipe will have a 6" low flow outlet to restrict outlet flows during the 2 year storm event. This results in a minimal increase of 0.02 CFS or 0.2% when compared to existing conditions. Outlet flows for the 25 year and 100 year storms also experience insignificant increases of 0.8% and 1.4%, respectively. Therefore the proposed storm drain system will be able to convey the 2 year, 25 year, and 100 year storms while limiting outlet flows and satisfying all drainage requirements.

HYDROLOGY MAPS
(SECTION 2)

EXISTING HYDROLOGY MAP
(SECTION 2.1)

S ASSOCIATED RD

IMPERIAL HIGHWAY

57 - ORANGE FREEWAY

POINT "B"
Q2=5.78
Q25=12.50
Q100=16.06
Tc=8.22 EL=327.4 (6)

POINT "A"
Q2=9.78
Q25=21.78
Q100=28.09
Tc=10.63 EL=321.3 (3)

Q2=1.02
Q25=2.18
Q100=2.80
Tc=6.39 EL=339.0 (5)

Q2=0.97
Q25=2.08
Q100=2.66
Tc=6.54 EL=339.8 (2)

ELEV= 345.0 (1)

ELEV= 345.0 (4)

A1 0.56

A2 7.80

A3 0.58

A4 3.32

L=470'

L=291'

L=288'

L=1237'

BUILDING J (327.50 FF)
BUILDING V (328.20 FF)
BUILDING D (330.00 FF)
BUILDING P (325.50 FF)
BUILDING Z (322.00 FF)
BUILDING F (332.20 FF)
BUILDING E (332.00 FF)
BUILDING G (332.20 FF)
BUILDING W (332.20 FF)
BUILDING H
BUILDING H (330.30 FF)
BUILDING J (328.90 FF)
BUILDING L (330.20 FF)

LEGEND:

DISCHARGE AT NODE (Q25 cfs) — NODE NUMBER
Q25=13.41 / Tc=11.37 EL=527.8 (4)
TIME OF CONCENTRATION — F.S. ELEVATION AT NODE(ft)

SUBAREA BOUNDARY
L=205'
FLOWPATH

A2 / 1.83 — SUBAREA DESIGNATION / TRIBUTARY AREA (AC.)

SOIL TYPE A

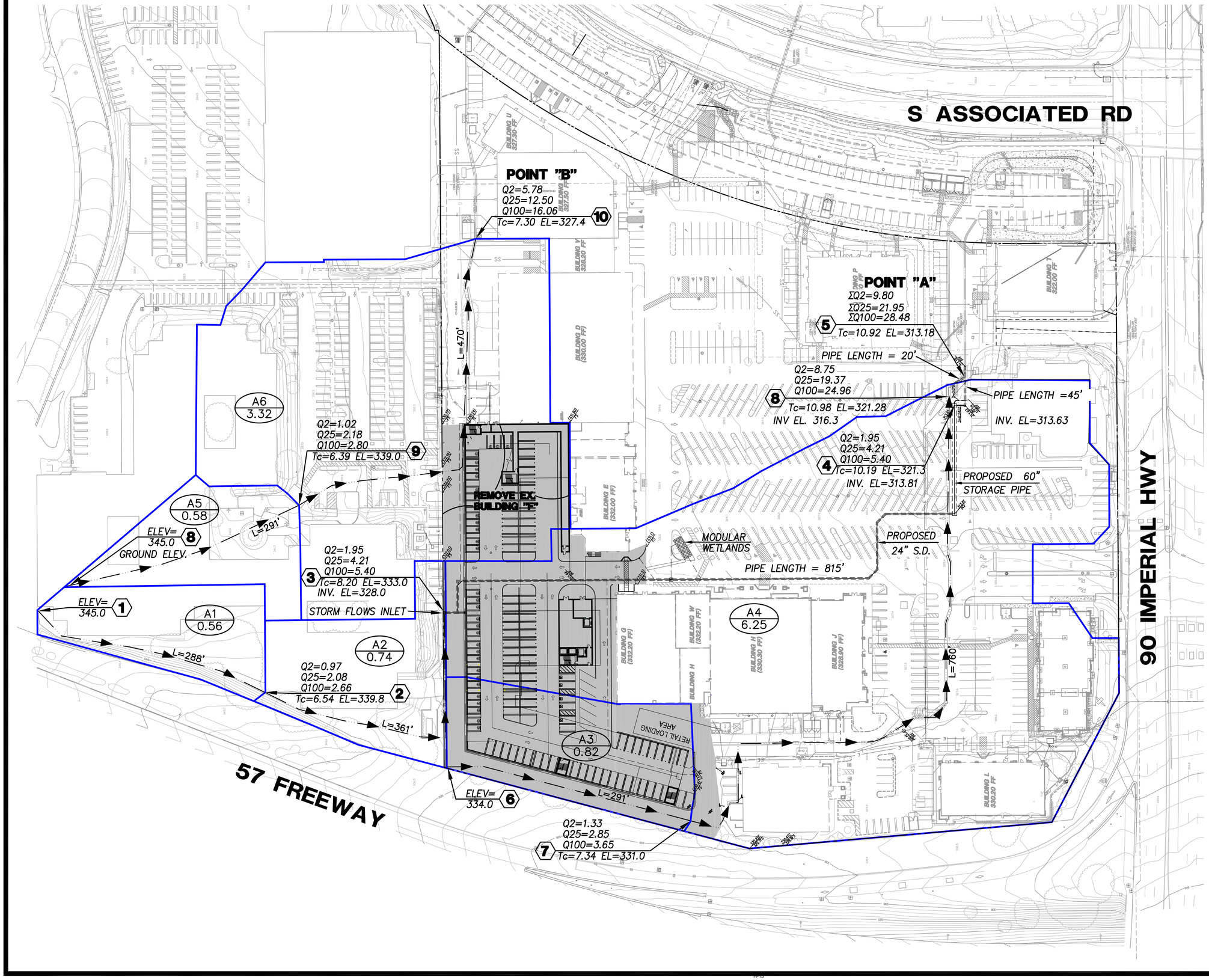
NORTH

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

CITY OF BREA

HYDROLOGY MAP (EXISTING CONDITION) BREA PLAZA IMPERIAL HIGHWAY

PROPOSED HYDROLOGY MAP
(SECTION 2.2)



POINT "A"-FLOW COMPONENT TABLE

STORM EVENT	Q STREAM 1	Q STREAM 2	PEAK Q
2 YR	1.07 CFS	8.75 CFS	9.80 CFS
25 YR	2.67 CFS	19.37 CFS	21.95 CFS
100 YR	3.65 CFS	24.96 CFS	28.48 CFS

LEGEND:

DISCHARGE AT NODE (Q25 cfs) — NODE NUMBER

Q25=13.41
Tc=11.37 EL=527.8 (4)

TIME OF CONCENTRATION — F.S. ELEVATION AT NODE(ft)

L=205' — SUBAREA BOUNDARY — FLOWPATH

A2 / 1.83 — SUBAREA DESIGNATION — TRIBUTARY AREA (AC.)

SOIL TYPE — A

12" PVC PIPE

24" HDPE PIPE

PROJECT AREA

NORTH

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

CITY OF BREA

HYDROLOGY MAP (PROPOSED CONDITION) BREA PLAZA IMPERIAL HIGHWAY

HYDROLOGY CALCULATIONS
(SECTION 3)

EXISTING HYDROLOGY CALCULATIONS - RATIONAL METHOD
(SECTION 3.1)

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2008 Advanced Engineering Software (aes)
             Ver. 15.0  Release Date: 04/01/2008  License ID 1420

                          Analysis prepared by:

                              CA Engineering
                          13821 Newport Ave., Ste 110
                               Tustin, Ca. 92780


 ************************** DESCRIPTION OF STUDY *************************
* EXISTING CONDITION                                                     *
* 2 YR STORM                                                             *
*                                                                        *
 **************************************************************************

  FILE NAME: 487-4EX.DAT
  TIME/DATE OF STUDY: 18:06 06/01/2021
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) I ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   288.00
  ELEVATION DATA: UPSTREAM(FEET) =    345.00  DOWNSTREAM(FEET) =    339.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
```

```
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.536
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.941
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 D        0.56      0.20     0.100    57    6.54
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      0.97
  TOTAL AREA(ACRES) =      0.56   PEAK FLOW RATE(CFS) =      0.97

****************************************************************************
  FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =    339.80
  DOWNSTREAM NODE ELEVATION(FEET) =    321.30
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1237.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.150
  PAVEMENT LIP(FEET) =  0.050   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.50
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.320
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 D        7.80      0.20     0.100    57
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      5.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.30
  AVERAGE FLOW DEPTH(FEET) =   0.33   FLOOD WIDTH(FEET) =   16.30
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   6.26   Tc(MIN.) =   12.79
  SUBAREA AREA(ACRES) =    7.80       SUBAREA RUNOFF(CFS) =    9.13
  EFFECTIVE AREA(ACRES) =    8.36     AREA-AVERAGED Fm(INCH/HR) =   0.02
  AREA-AVERAGED Fp(INCH/HR) =   0.20  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        8.4         PEAK FLOW RATE(CFS) =       9.78

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.39   FLOOD WIDTH(FEET) =   22.04
  FLOW VELOCITY(FEET/SEC.) =   3.55   DEPTH*VELOCITY(FT*FT/SEC) =   1.38
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =    1525.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.00
  ELEVATION DATA: UPSTREAM(FEET) =    345.00  DOWNSTREAM(FEET) =    339.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.391
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.966
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 D        0.58      0.20     0.100    57    6.39
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      1.02
  TOTAL AREA(ACRES) =      0.58   PEAK FLOW RATE(CFS) =      1.02

****************************************************************************
```

```
 FLOW PROCESS FROM NODE      5.00 TO NODE      6.00 IS CODE =  91
--------------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
================================================================================
 UPSTREAM NODE ELEVATION(FEET) =    339.00
 DOWNSTREAM NODE ELEVATION(FEET) =    327.40
 CHANNEL LENGTH THRU SUBAREA(FEET) =   470.00
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.150
 PAVEMENT LIP(FEET) =  0.050   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
 MAXIMUM DEPTH(FEET) =   0.50
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.693
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 D        3.26      0.20     0.100    57
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.45
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.11
 AVERAGE FLOW DEPTH(FEET) =   0.27   FLOOD WIDTH(FEET) =   10.09
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.90   Tc(MIN.) =    8.30
 SUBAREA AREA(ACRES) =    3.26       SUBAREA RUNOFF(CFS) =    4.91
 EFFECTIVE AREA(ACRES) =    3.84     AREA-AVERAGED Fm(INCH/HR) =   0.02
 AREA-AVERAGED Fp(INCH/HR) =   0.20  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        3.8         PEAK FLOW RATE(CFS) =       5.78

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.32   FLOOD WIDTH(FEET) =   14.54
 FLOW VELOCITY(FEET/SEC.) =   4.17   DEPTH*VELOCITY(FT*FT/SEC) =   1.31
 LONGEST FLOWPATH FROM NODE      4.00 TO NODE      6.00 =     761.00 FEET.
================================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =        3.8  TC(MIN.) =      8.30
 EFFECTIVE AREA(ACRES) =      3.84  AREA-AVERAGED Fm(INCH/HR)=  0.02
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap = 0.100
 PEAK FLOW RATE(CFS)   =       5.78
================================================================================
================================================================================
 END OF RATIONAL METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2008 Advanced Engineering Software (aes)
              Ver. 15.0  Release Date: 04/01/2008  License ID 1420

                           Analysis prepared by:

                               CA Engineering
                          13821 Newport Ave., Ste 110
                               Tustin, Ca. 92780


 ************************** DESCRIPTION OF STUDY **************************
* EXISTING CONDITION                                                      *
* 25 YR STORM                                                             *
*                                                                         *
 *************************************************************************

  FILE NAME: 487-4EX.DAT
  TIME/DATE OF STUDY: 18:07 06/01/2021
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   288.00
  ELEVATION DATA: UPSTREAM(FEET) =    345.00  DOWNSTREAM(FEET) =    339.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.536
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  4.145
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 D        0.56      0.20      0.100    75    6.54
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
```

```
  SUBAREA RUNOFF(CFS) =      2.08
  TOTAL AREA(ACRES) =      0.56   PEAK FLOW RATE(CFS) =      2.08

****************************************************************************
  FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =    339.80
  DOWNSTREAM NODE ELEVATION(FEET) =    321.30
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1237.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.150
  PAVEMENT LIP(FEET) =  0.050   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.50
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.915
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 D        7.80      0.20     0.100    75
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     11.87
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.66
  AVERAGE FLOW DEPTH(FEET) =   0.41   FLOOD WIDTH(FEET) =   24.15
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   5.64   Tc(MIN.) =   12.18
  SUBAREA AREA(ACRES) =    7.80       SUBAREA RUNOFF(CFS) =   20.32
  EFFECTIVE AREA(ACRES) =    8.36     AREA-AVERAGED Fm(INCH/HR) =   0.02
  AREA-AVERAGED Fp(INCH/HR) =   0.20  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        8.4         PEAK FLOW RATE(CFS) =      21.78

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.49   FLOOD WIDTH(FEET) =   31.77
  FLOW VELOCITY(FEET/SEC.) =   4.05   DEPTH*VELOCITY(FT*FT/SEC) =   1.98
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =    1525.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.00
  ELEVATION DATA: UPSTREAM(FEET) =    345.00  DOWNSTREAM(FEET) =    339.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.391
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  4.198
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 D        0.58      0.20     0.100    75    6.39
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      2.18
  TOTAL AREA(ACRES) =      0.58   PEAK FLOW RATE(CFS) =      2.18

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      6.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =    339.00
  DOWNSTREAM NODE ELEVATION(FEET) =    327.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   470.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.150
```

```
  PAVEMENT LIP(FEET) =  0.050   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.50
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.637
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 D       3.26      0.20     0.100    75
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      7.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.25
  AVERAGE FLOW DEPTH(FEET) =   0.34   FLOOD WIDTH(FEET) =   16.89
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.84   Tc(MIN.) =    8.24
  SUBAREA AREA(ACRES) =    3.26       SUBAREA RUNOFF(CFS) =   10.61
  EFFECTIVE AREA(ACRES) =    3.84     AREA-AVERAGED Fm(INCH/HR) =   0.02
  AREA-AVERAGED Fp(INCH/HR) =   0.20  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        3.8         PEAK FLOW RATE(CFS) =      12.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.39   FLOOD WIDTH(FEET) =   22.04
  FLOW VELOCITY(FEET/SEC.) =   4.53   DEPTH*VELOCITY(FT*FT/SEC) =   1.77
  LONGEST FLOWPATH FROM NODE      4.00 TO NODE      6.00 =     761.00 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.8  TC(MIN.) =      8.24
  EFFECTIVE AREA(ACRES) =      3.84  AREA-AVERAGED Fm(INCH/HR)=  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap = 0.100
  PEAK FLOW RATE(CFS)   =      12.50
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2008 Advanced Engineering Software (aes)
              Ver. 15.0  Release Date: 04/01/2008  License ID 1420

                           Analysis prepared by:

                               CA Engineering
                           13821 Newport Ave., Ste 110
                                Tustin, Ca. 92780


 ************************** DESCRIPTION OF STUDY ************************
* EXISTING CONDITION                                                    *
* 100 YR STORM                                                          *
*                                                                       *
 ************************************************************************

  FILE NAME: 487-4EX.DAT
  TIME/DATE OF STUDY: 18:08 06/01/2021
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   288.00
  ELEVATION DATA: UPSTREAM(FEET) =    345.00  DOWNSTREAM(FEET) =    339.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.536
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.307
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 D        0.56      0.20      0.100    91    6.54
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
```

```
  SUBAREA RUNOFF(CFS) =      2.66
  TOTAL AREA(ACRES) =      0.56   PEAK FLOW RATE(CFS) =      2.66

****************************************************************************
  FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =    339.80
  DOWNSTREAM NODE ELEVATION(FEET) =    321.30
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1237.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.150
  PAVEMENT LIP(FEET) =  0.050   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.754
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 D        7.80      0.20     0.100    91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     15.19
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.80
  AVERAGE FLOW DEPTH(FEET) =   0.44   FLOOD WIDTH(FEET) =   27.08
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   5.42   Tc(MIN.) =   11.96
  SUBAREA AREA(ACRES) =    7.80       SUBAREA RUNOFF(CFS) =   26.21
  EFFECTIVE AREA(ACRES) =    8.36     AREA-AVERAGED Fm(INCH/HR) =   0.02
  AREA-AVERAGED Fp(INCH/HR) =   0.20  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        8.4         PEAK FLOW RATE(CFS) =      28.09


  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.50   FLOOD WIDTH(FEET) =   33.00
  FLOW VELOCITY(FEET/SEC.) =   4.86   DEPTH*VELOCITY(FT*FT/SEC) =   2.43
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =    1525.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.00
  ELEVATION DATA: UPSTREAM(FEET) =    345.00  DOWNSTREAM(FEET) =    339.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.391
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.375
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 D        0.58      0.20     0.100    91    6.39
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      2.80
  TOTAL AREA(ACRES) =      0.58   PEAK FLOW RATE(CFS) =      2.80

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      6.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION (FEET) =    339.00
  DOWNSTREAM NODE ELEVATION(FEET) =    327.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   470.00
```

```
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.150
  PAVEMENT LIP(FEET) =  0.050   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.668
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 D        3.26      0.20     0.100    91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      9.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.39
  AVERAGE FLOW DEPTH(FEET) =   0.36   FLOOD WIDTH(FEET) =   19.23
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.79   Tc(MIN.) =    8.18
  SUBAREA AREA(ACRES) =    3.26       SUBAREA RUNOFF(CFS) =   13.64
  EFFECTIVE AREA(ACRES) =    3.84     AREA-AVERAGED Fm(INCH/HR) =   0.02
  AREA-AVERAGED Fp(INCH/HR) =   0.20  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        3.8         PEAK FLOW RATE(CFS) =      16.06

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.42   FLOOD WIDTH(FEET) =   24.74
  FLOW VELOCITY(FEET/SEC.) =   4.74   DEPTH*VELOCITY(FT*FT/SEC) =   1.98
  LONGEST FLOWPATH FROM NODE      4.00 TO NODE      6.00 =     761.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.8  TC(MIN.) =      8.18
  EFFECTIVE AREA(ACRES) =      3.84  AREA-AVERAGED Fm(INCH/HR)=  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap = 0.100
  PEAK FLOW RATE(CFS)   =      16.06
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

PROPOSED HYDROLOGY CALCULATIONS - RATIONAL METHOD
(SECTION 3.2)

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
       (c) Copyright 1983-2008 Advanced Engineering Software (aes)
           Ver. 15.0  Release Date: 04/01/2008  License ID 1420

                          Analysis prepared by:

                               CA Engineering
                          13821 Newport Ave., Ste 110
                               Tustin, Ca. 92780


 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED CONDITION                                                     *
* 2 YR STORM                                                             *
*                                                                        *
 ************************************************************************

  FILE NAME: 487-4PR.DAT
  TIME/DATE OF STUDY: 17:26 06/08/2021
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) I ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   288.00
  ELEVATION DATA: UPSTREAM(FEET) =    345.00  DOWNSTREAM(FEET) =    339.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
```

```
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.536
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.941
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 D        0.56      0.20     0.100    57    6.54
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      0.97
  TOTAL AREA(ACRES) =      0.56   PEAK FLOW RATE(CFS) =      0.97

****************************************************************************
  FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =    339.80
  DOWNSTREAM NODE ELEVATION(FEET) =    333.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   361.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.120
  PAVEMENT LIP(FEET) =  0.050   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.70
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.685
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 D        0.74      0.20     0.100    57
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      1.52
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.30
  AVERAGE FLOW DEPTH(FEET) =   0.20   FLOOD WIDTH(FEET) =    5.95
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.83   Tc(MIN.) =    8.36
  SUBAREA AREA(ACRES) =    0.74       SUBAREA RUNOFF(CFS) =    1.11
  EFFECTIVE AREA(ACRES) =    1.30     AREA-AVERAGED Fm(INCH/HR) =   0.02
  AREA-AVERAGED Fp(INCH/HR) =   0.20  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        1.3         PEAK FLOW RATE(CFS) =       1.95

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.22   FLOOD WIDTH(FEET) =    7.71
  FLOW VELOCITY(FEET/SEC.) =   3.35   DEPTH*VELOCITY(FT*FT/SEC) =   0.73
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =     649.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      4.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   328.00  DOWNSTREAM(FEET) =   313.81
  FLOW LENGTH(FEET) =   815.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   4.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.27
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.95
  PIPE TRAVEL TIME(MIN.) =   2.58    Tc(MIN.) =   10.94
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =    1464.00 FEET.

+--------------------------------------------------------------------------+
| FROM THE BASIN ROUTING                                                   |
| Q=1.07 TC=10.94                                                          |
| 2 YR OUTPUT                                                              |
+--------------------------------------------------------------------------+
```

```
****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   10.94   RAINFALL INTENSITY(INCH/HR) =  1.44
  EFFECTIVE AREA(ACRES) =     1.30
  TOTAL AREA(ACRES) =     1.30        PEAK FLOW RATE(CFS) =      1.07
  AREA-AVERAGED Fm(INCH/HR) =   0.02  AREA-AVERAGED Fp(INCH/HR) =   0.20
  AREA-AVERAGED Ap =  0.10
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   313.63  DOWNSTREAM(FEET) =   313.18
  FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   3.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.63
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.07
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   11.15
  LONGEST FLOWPATH FROM NODE      4.00 TO NODE      5.00 =    1509.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.15
  RAINFALL INTENSITY(INCH/HR) =   1.43
  AREA-AVERAGED Fm(INCH/HR) =  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.20
  AREA-AVERAGED Ap =  0.10
  EFFECTIVE STREAM AREA(ACRES) =       1.30
  TOTAL STREAM AREA(ACRES) =       1.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       1.07

****************************************************************************
  FLOW PROCESS FROM NODE      6.00 TO NODE      7.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.00
  ELEVATION DATA: UPSTREAM(FEET) =    334.00  DOWNSTREAM(FEET) =    331.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.342
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.816
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 D        0.82      0.20      0.100    57    7.34
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      1.33
  TOTAL AREA(ACRES) =      0.82   PEAK FLOW RATE(CFS) =      1.33
```

```
****************************************************************************
  FLOW PROCESS FROM NODE      7.00 TO NODE      8.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =    331.00
  DOWNSTREAM NODE ELEVATION(FEET) =    321.28
  CHANNEL LENGTH THRU SUBAREA(FEET) =   760.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.120
  PAVEMENT LIP(FEET) =  0.050   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.70
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.395
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 D        6.25      0.20     0.100    57
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      5.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.96
  AVERAGE FLOW DEPTH(FEET) =   0.31   FLOOD WIDTH(FEET) =   17.03
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   4.27   Tc(MIN.) =   11.61
  SUBAREA AREA(ACRES) =    6.25       SUBAREA RUNOFF(CFS) =    7.74
  EFFECTIVE AREA(ACRES) =    7.07     AREA-AVERAGED Fm(INCH/HR) =   0.02
  AREA-AVERAGED Fp(INCH/HR) =   0.20  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        7.1         PEAK FLOW RATE(CFS) =       8.75

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.36   FLOOD WIDTH(FEET) =   22.20
  FLOW VELOCITY(FEET/SEC.) =   3.18   DEPTH*VELOCITY(FT*FT/SEC) =   1.15
  LONGEST FLOWPATH FROM NODE      6.00 TO NODE      8.00 =    1051.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      8.00 TO NODE      5.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   316.30  DOWNSTREAM(FEET) =   313.18
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   5.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.75
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.75
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =   11.63
  LONGEST FLOWPATH FROM NODE      6.00 TO NODE      5.00 =    1071.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.63
  RAINFALL INTENSITY(INCH/HR) =   1.39
  AREA-AVERAGED Fm(INCH/HR) =  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.20
  AREA-AVERAGED Ap =  0.10
  EFFECTIVE STREAM AREA(ACRES) =       7.07
  TOTAL STREAM AREA(ACRES) =       7.07
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       8.75
```

```
  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1        1.07   11.15    1.429  0.20( 0.02) 0.10       1.3       4.00
      2        8.75   11.63    1.394  0.20( 0.02) 0.10       7.1       6.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1        9.67   11.15    1.429  0.20( 0.02) 0.10       8.1       4.00
      2        9.80   11.63    1.394  0.20( 0.02) 0.10       8.4       6.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       9.80    Tc(MIN.) =    11.63
  EFFECTIVE AREA(ACRES) =       8.37   AREA-AVERAGED Fm(INCH/HR) =  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =        8.4
  LONGEST FLOWPATH FROM NODE      4.00 TO NODE      5.00 =    1509.00 FEET.
 ============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        8.4  TC(MIN.) =     11.63
  EFFECTIVE AREA(ACRES) =      8.37  AREA-AVERAGED Fm(INCH/HR)=  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap = 0.100
  PEAK FLOW RATE(CFS)   =       9.80

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1        9.67   11.15    1.429  0.20( 0.02) 0.10       8.1       4.00
      2        9.80   11.63    1.394  0.20( 0.02) 0.10       8.4       6.00
 ============================================================================
 ============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      8.00 TO NODE      9.00 IS CODE =  21
 ----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.00
  ELEVATION DATA: UPSTREAM(FEET) =    345.00  DOWNSTREAM(FEET) =    339.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.391
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.966
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 D        0.58      0.20      0.100    57    6.39
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      1.02
  TOTAL AREA(ACRES) =      0.58   PEAK FLOW RATE(CFS) =      1.02

****************************************************************************
  FLOW PROCESS FROM NODE      9.00 TO NODE      10.00 IS CODE =  91
 ----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
 ============================================================================
  UPSTREAM NODE ELEVATION(FEET) =    339.00
  DOWNSTREAM NODE ELEVATION(FEET) =    327.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   470.00
```

```
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.150
  PAVEMENT LIP(FEET) =  0.050   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.50
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.693
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 D        3.26      0.20     0.100    57
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.45
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.11
  AVERAGE FLOW DEPTH(FEET) =   0.27   FLOOD WIDTH(FEET) =   10.09
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.90   Tc(MIN.) =    8.30
  SUBAREA AREA(ACRES) =    3.26       SUBAREA RUNOFF(CFS) =    4.91
  EFFECTIVE AREA(ACRES) =    3.84     AREA-AVERAGED Fm(INCH/HR) =   0.02
  AREA-AVERAGED Fp(INCH/HR) =   0.20  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        3.8         PEAK FLOW RATE(CFS) =       5.78

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.32   FLOOD WIDTH(FEET) =   14.54
  FLOW VELOCITY(FEET/SEC.) =   4.17   DEPTH*VELOCITY(FT*FT/SEC) =   1.31
  LONGEST FLOWPATH FROM NODE      4.00 TO NODE      6.00 =     761.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.8  TC(MIN.) =      8.30
  EFFECTIVE AREA(ACRES) =      3.84  AREA-AVERAGED Fm(INCH/HR)=  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap = 0.100
  PEAK FLOW RATE(CFS)   =       5.78
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2008 Advanced Engineering Software (aes)
             Ver. 15.0  Release Date: 04/01/2008  License ID 1420

                          Analysis prepared by:

                              CA Engineering
                          13821 Newport Ave., Ste 110
                               Tustin, Ca. 92780


 ************************** DESCRIPTION OF STUDY ************************
* PROPOSED CONDITION                                                     *
* 25 YR STORM                                                            *
*                                                                        *
 ************************************************************************

  FILE NAME: 487-4PR.DAT
  TIME/DATE OF STUDY: 17:29 06/08/2021
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   288.00
  ELEVATION DATA: UPSTREAM(FEET) =    345.00  DOWNSTREAM(FEET) =    339.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.536
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  4.145
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 D        0.56      0.20      0.100    75    6.54
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
```

```
  SUBAREA RUNOFF(CFS) =      2.08
  TOTAL AREA(ACRES) =      0.56   PEAK FLOW RATE(CFS) =      2.08

****************************************************************************
  FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =    339.80
  DOWNSTREAM NODE ELEVATION(FEET) =    333.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   361.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.120
  PAVEMENT LIP(FEET) =  0.050   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.70
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.620
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 D        0.74      0.20     0.100    75
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.28
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.40
  AVERAGE FLOW DEPTH(FEET) =   0.26   FLOOD WIDTH(FEET) =   11.64
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.77   Tc(MIN.) =    8.30
  SUBAREA AREA(ACRES) =    0.74       SUBAREA RUNOFF(CFS) =    2.40
  EFFECTIVE AREA(ACRES) =    1.30     AREA-AVERAGED Fm(INCH/HR) =   0.02
  AREA-AVERAGED Fp(INCH/HR) =   0.20  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        1.3         PEAK FLOW RATE(CFS) =       4.21

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.28   FLOOD WIDTH(FEET) =   13.71
  FLOW VELOCITY(FEET/SEC.) =   3.44   DEPTH*VELOCITY(FT*FT/SEC) =   0.95
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =     649.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      4.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   328.00  DOWNSTREAM(FEET) =   313.81
  FLOW LENGTH(FEET) =   815.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   6.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.59
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.21
  PIPE TRAVEL TIME(MIN.) =   2.06    Tc(MIN.) =   10.36
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =    1464.00 FEET.

+--------------------------------------------------------------------------+
| FROM THE BASIN ROUTING                                                   |
| Q=2.67 TC=10.36                                                          |
| 25 YR OUTPUT                                                             |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   10.36   RAINFALL INTENSITY(INCH/HR) =  3.19
  EFFECTIVE AREA(ACRES) =     1.30
```

```
  TOTAL AREA(ACRES) =     1.30        PEAK FLOW RATE(CFS) =      2.67
  AREA-AVERAGED Fm(INCH/HR) =   0.02  AREA-AVERAGED Fp(INCH/HR) =   0.20
  AREA-AVERAGED Ap =  0.10
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   313.63  DOWNSTREAM(FEET) =   313.18
  FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   5.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.75
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.67
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =   10.52
  LONGEST FLOWPATH FROM NODE      4.00 TO NODE      5.00 =    1509.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.52
  RAINFALL INTENSITY(INCH/HR) =   3.17
  AREA-AVERAGED Fm(INCH/HR) =  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.20
  AREA-AVERAGED Ap =  0.10
  EFFECTIVE STREAM AREA(ACRES) =       1.30
  TOTAL STREAM AREA(ACRES) =       1.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       2.67

****************************************************************************
  FLOW PROCESS FROM NODE      6.00 TO NODE      7.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.00
  ELEVATION DATA: UPSTREAM(FEET) =    334.00  DOWNSTREAM(FEET) =    331.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.342
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.881
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 D        0.82      0.20      0.100    75    7.34
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      2.85
  TOTAL AREA(ACRES) =      0.82   PEAK FLOW RATE(CFS) =      2.85

****************************************************************************
  FLOW PROCESS FROM NODE      7.00 TO NODE      8.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =    331.00
  DOWNSTREAM NODE ELEVATION(FEET) =    321.28
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   760.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.120
  PAVEMENT LIP(FEET) =  0.050   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.70
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.065
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 D        6.25      0.20     0.100    75
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     11.18
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.33
  AVERAGE FLOW DEPTH(FEET) =   0.39   FLOOD WIDTH(FEET) =   24.79
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   3.80   Tc(MIN.) =   11.14
  SUBAREA AREA(ACRES) =    6.25       SUBAREA RUNOFF(CFS) =   17.13
  EFFECTIVE AREA(ACRES) =    7.07     AREA-AVERAGED Fm(INCH/HR) =   0.02
  AREA-AVERAGED Fp(INCH/HR) =   0.20  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        7.1         PEAK FLOW RATE(CFS) =      19.37

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.46   FLOOD WIDTH(FEET) =   31.52
  FLOW VELOCITY(FEET/SEC.) =   3.69   DEPTH*VELOCITY(FT*FT/SEC) =   1.68
  LONGEST FLOWPATH FROM NODE      6.00 TO NODE      8.00 =    1051.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      8.00 TO NODE      5.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   316.30  DOWNSTREAM(FEET) =   313.18
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   7.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.30
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      19.37
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =   11.16
  LONGEST FLOWPATH FROM NODE      6.00 TO NODE      5.00 =    1071.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.16
  RAINFALL INTENSITY(INCH/HR) =   3.06
  AREA-AVERAGED Fm(INCH/HR) =  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.20
  AREA-AVERAGED Ap =  0.10
  EFFECTIVE STREAM AREA(ACRES) =       7.07
  TOTAL STREAM AREA(ACRES) =       7.07
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      19.37

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1        2.67   10.52    3.167  0.20( 0.02) 0.10       1.3       4.00
      2       19.37   11.16    3.062  0.20( 0.02) 0.10       7.1       6.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
```

```
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       21.56   10.52    3.167  0.20( 0.02) 0.10       8.0       4.00
      2       21.95   11.16    3.062  0.20( 0.02) 0.10       8.4       6.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      21.95    Tc(MIN.) =    11.16
  EFFECTIVE AREA(ACRES) =       8.37   AREA-AVERAGED Fm(INCH/HR) =  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =        8.4
  LONGEST FLOWPATH FROM NODE      4.00 TO NODE      5.00 =    1509.00 FEET.
 ============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        8.4  TC(MIN.) =     11.16
  EFFECTIVE AREA(ACRES) =      8.37  AREA-AVERAGED Fm(INCH/HR)=  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap = 0.100
  PEAK FLOW RATE(CFS)   =      21.95

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       21.56   10.52    3.167  0.20( 0.02) 0.10       8.0       4.00
      2       21.95   11.16    3.062  0.20( 0.02) 0.10       8.4       6.00
 ============================================================================
 ============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      8.00 TO NODE      9.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.00
  ELEVATION DATA: UPSTREAM(FEET) =    345.00  DOWNSTREAM(FEET) =    339.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.391
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  4.198
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 D        0.58      0.20     0.100    75    6.39
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      2.18
  TOTAL AREA(ACRES) =      0.58   PEAK FLOW RATE(CFS) =      2.18

****************************************************************************
  FLOW PROCESS FROM NODE      9.00 TO NODE      10.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
 ============================================================================
  UPSTREAM NODE ELEVATION(FEET) =    339.00
  DOWNSTREAM NODE ELEVATION(FEET) =    327.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   470.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.150
  PAVEMENT LIP(FEET) =  0.050   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.50
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.637
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  COMMERCIAL                  D        3.26      0.20     0.100    75
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      7.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.25
  AVERAGE FLOW DEPTH(FEET) =   0.34   FLOOD WIDTH(FEET) =   16.89
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.84   Tc(MIN.) =    8.24
  SUBAREA AREA(ACRES) =    3.26       SUBAREA RUNOFF(CFS) =   10.61
  EFFECTIVE AREA(ACRES) =    3.84     AREA-AVERAGED Fm(INCH/HR) =   0.02
  AREA-AVERAGED Fp(INCH/HR) =   0.20  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        3.8         PEAK FLOW RATE(CFS) =      12.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.39   FLOOD WIDTH(FEET) =   22.04
  FLOW VELOCITY(FEET/SEC.) =   4.53   DEPTH*VELOCITY(FT*FT/SEC) =   1.77
  LONGEST FLOWPATH FROM NODE      4.00 TO NODE      6.00 =     761.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.8  TC(MIN.) =      8.24
  EFFECTIVE AREA(ACRES) =      3.84  AREA-AVERAGED Fm(INCH/HR)=  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap = 0.100
  PEAK FLOW RATE(CFS)   =      12.50
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2008 Advanced Engineering Software (aes)
              Ver. 15.0  Release Date: 04/01/2008  License ID 1420

                           Analysis prepared by:

                               CA Engineering
                           13821 Newport Ave., Ste 110
                                Tustin, Ca. 92780


 ************************** DESCRIPTION OF STUDY ************************
* PROPOSED CONDITION                                                    *
* 100 YR STORM                                                          *
*                                                                       *
 ************************************************************************

  FILE NAME: 487-4PR.DAT
  TIME/DATE OF STUDY: 17:32 06/08/2021
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   288.00
  ELEVATION DATA: UPSTREAM(FEET) =    345.00  DOWNSTREAM(FEET) =    339.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.536
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.307
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 D        0.56      0.20      0.100    91    6.54
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
```

```
  SUBAREA RUNOFF(CFS) =      2.66
  TOTAL AREA(ACRES) =      0.56   PEAK FLOW RATE(CFS) =      2.66

****************************************************************************
  FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =    339.80
  DOWNSTREAM NODE ELEVATION(FEET) =    333.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   361.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.120
  PAVEMENT LIP(FEET) =  0.050   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.637
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 D        0.74      0.20     0.100    91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      4.20
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.47
  AVERAGE FLOW DEPTH(FEET) =   0.28   FLOOD WIDTH(FEET) =   13.61
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.73   Tc(MIN.) =    8.27
  SUBAREA AREA(ACRES) =    0.74       SUBAREA RUNOFF(CFS) =    3.08
  EFFECTIVE AREA(ACRES) =    1.30     AREA-AVERAGED Fm(INCH/HR) =   0.02
  AREA-AVERAGED Fp(INCH/HR) =   0.20  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        1.3         PEAK FLOW RATE(CFS) =       5.40

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.30   FLOOD WIDTH(FEET) =   15.78
  FLOW VELOCITY(FEET/SEC.) =   3.53   DEPTH*VELOCITY(FT*FT/SEC) =   1.05
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =     649.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      4.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   328.00  DOWNSTREAM(FEET) =   313.81
  FLOW LENGTH(FEET) =   815.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   7.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.08
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.40
  PIPE TRAVEL TIME(MIN.) =   1.92    Tc(MIN.) =   10.19
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =    1464.00 FEET.

+--------------------------------------------------------------------------+
| FROM THE BASIN ROUTING                                                   |
| Q=3.65 TC=10.19                                                          |
| 100 YR OUTPUT                                                            |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   10.19   RAINFALL INTENSITY(INCH/HR) =  4.11
  EFFECTIVE AREA(ACRES) =     1.30
```

```
  TOTAL AREA(ACRES) =     1.30        PEAK FLOW RATE(CFS) =      3.65
  AREA-AVERAGED Fm(INCH/HR) =   0.02  AREA-AVERAGED Fp(INCH/HR) =   0.20
  AREA-AVERAGED Ap =  0.10
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   313.63  DOWNSTREAM(FEET) =   313.18
  FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   6.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.19
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.65
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   10.33
  LONGEST FLOWPATH FROM NODE      4.00 TO NODE      5.00 =    1509.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.33
  RAINFALL INTENSITY(INCH/HR) =   4.08
  AREA-AVERAGED Fm(INCH/HR) =  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.20
  AREA-AVERAGED Ap =  0.10
  EFFECTIVE STREAM AREA(ACRES) =       1.30
  TOTAL STREAM AREA(ACRES) =       1.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       3.65

****************************************************************************
  FLOW PROCESS FROM NODE      6.00 TO NODE      7.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.00
  ELEVATION DATA: UPSTREAM(FEET) =    334.00  DOWNSTREAM(FEET) =    331.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.342
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.965
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 D        0.82      0.20      0.100    91    7.34
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      3.65
  TOTAL AREA(ACRES) =      0.82   PEAK FLOW RATE(CFS) =      3.65

****************************************************************************
  FLOW PROCESS FROM NODE      7.00 TO NODE      8.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =    331.00
  DOWNSTREAM NODE ELEVATION(FEET) =    321.28
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   760.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.120
  PAVEMENT LIP(FEET) =  0.050   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.942
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 D        6.25      0.20     0.100    91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     14.33
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.48
  AVERAGE FLOW DEPTH(FEET) =   0.42   FLOOD WIDTH(FEET) =   27.69
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   3.64   Tc(MIN.) =   10.98
  SUBAREA AREA(ACRES) =    6.25       SUBAREA RUNOFF(CFS) =   22.06
  EFFECTIVE AREA(ACRES) =    7.07     AREA-AVERAGED Fm(INCH/HR) =   0.02
  AREA-AVERAGED Fp(INCH/HR) =   0.20  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        7.1         PEAK FLOW RATE(CFS) =      24.96

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.49   FLOOD WIDTH(FEET) =   35.04
  FLOW VELOCITY(FEET/SEC.) =   3.89   DEPTH*VELOCITY(FT*FT/SEC) =   1.91
  LONGEST FLOWPATH FROM NODE      6.00 TO NODE      8.00 =    1051.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      8.00 TO NODE      5.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   316.30  DOWNSTREAM(FEET) =   313.18
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   8.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.93
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.96
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =   10.99
  LONGEST FLOWPATH FROM NODE      6.00 TO NODE      5.00 =    1071.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.99
  RAINFALL INTENSITY(INCH/HR) =   3.94
  AREA-AVERAGED Fm(INCH/HR) =  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.20
  AREA-AVERAGED Ap =  0.10
  EFFECTIVE STREAM AREA(ACRES) =       7.07
  TOTAL STREAM AREA(ACRES) =       7.07
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      24.96

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1        3.65   10.33    4.082  0.20( 0.02) 0.10       1.3       4.00
      2       24.96   10.99    3.939  0.20( 0.02) 0.10       7.1       6.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
```

```
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       27.96   10.33    4.082  0.20( 0.02) 0.10       7.9       4.00
      2       28.48   10.99    3.939  0.20( 0.02) 0.10       8.4       6.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      28.48    Tc(MIN.) =    10.99
  EFFECTIVE AREA(ACRES) =       8.37   AREA-AVERAGED Fm(INCH/HR) =  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =        8.4
  LONGEST FLOWPATH FROM NODE      4.00 TO NODE      5.00 =    1509.00 FEET.
 ============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        8.4  TC(MIN.) =     10.99
  EFFECTIVE AREA(ACRES) =      8.37  AREA-AVERAGED Fm(INCH/HR)=  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap = 0.100
  PEAK FLOW RATE(CFS)   =      28.48

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       27.96   10.33    4.082  0.20( 0.02) 0.10       7.9       4.00
      2       28.48   10.99    3.939  0.20( 0.02) 0.10       8.4       6.00
 ============================================================================
****************************************************************************
  FLOW PROCESS FROM NODE      8.00 TO NODE      9.00 IS CODE =  21
 ----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.00
  ELEVATION DATA: UPSTREAM(FEET) =    345.00  DOWNSTREAM(FEET) =    339.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.391
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.375
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 D        0.58      0.20      0.100    91    6.39
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      2.80
  TOTAL AREA(ACRES) =      0.58   PEAK FLOW RATE(CFS) =      2.80

 ****************************************************************************
  FLOW PROCESS FROM NODE      9.00 TO NODE      10.00 IS CODE =  91
 ----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
 ============================================================================
  UPSTREAM NODE ELEVATION(FEET) =    339.00
  DOWNSTREAM NODE ELEVATION(FEET) =    327.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   470.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.150
  PAVEMENT LIP(FEET) =  0.050   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.668
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 D        3.26      0.20      0.100    91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      9.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.39
  AVERAGE FLOW DEPTH(FEET) =   0.36   FLOOD WIDTH(FEET) =   19.23
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.79   Tc(MIN.) =    8.18
  SUBAREA AREA(ACRES) =    3.26       SUBAREA RUNOFF(CFS) =   13.64
  EFFECTIVE AREA(ACRES) =    3.84     AREA-AVERAGED Fm(INCH/HR) =   0.02
  AREA-AVERAGED Fp(INCH/HR) =   0.20  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        3.8         PEAK FLOW RATE(CFS) =      16.06

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.42   FLOOD WIDTH(FEET) =   24.74
  FLOW VELOCITY(FEET/SEC.) =   4.74   DEPTH*VELOCITY(FT*FT/SEC) =   1.98
  LONGEST FLOWPATH FROM NODE      4.00 TO NODE      6.00 =     761.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.8  TC(MIN.) =      8.18
  EFFECTIVE AREA(ACRES) =      3.84  AREA-AVERAGED Fm(INCH/HR)=  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap = 0.100
  PEAK FLOW RATE(CFS)   =      16.06
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

BASIN ROUTING CALCULATIONS -
(SECTION 3.3)

```
**************************************************************************
                    SMALL AREA UNIT HYDROGRAPH MODEL
==========================================================================
         (C) Copyright 1989-2008 Advanced Engineering Software (aes)
             Ver. 15.0  Release Date: 04/01/2008  License ID 1420

                          Analysis prepared by:

                               CA Engineering
                          13821 Newport Ave., Ste 110
                               Tustin, Ca. 92780


**************************************************************************
--------------------------------------------------------------------------

 Problem Descriptions:



--------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 1.05
    TOTAL CATCHMENT AREA(ACRES) =    1.30
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.020
    LOW LOSS FRACTION = 0.570
    TIME OF CONCENTRATION(MIN.) = 10.94
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) =   2
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.19
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.40
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.53
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  0.89
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  1.22
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  2.05

--------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.18
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.04

**************************************************************************
  TIME     VOLUME       Q    0.        2.5       5.0       7.5      10.0
 (HOURS)    (AF)      (CFS)
--------------------------------------------------------------------------
  0.14      0.0001      0.02  Q         .         .         .         .
  0.32      0.0004      0.02  Q         .         .         .         .
  0.50      0.0007      0.02  Q         .         .         .         .
  0.68      0.0010      0.02  Q         .         .         .         .
  0.87      0.0013      0.02  Q         .         .         .         .
  1.05      0.0015      0.02  Q         .         .         .         .
  1.23      0.0018      0.02  Q         .         .         .         .
  1.41      0.0021      0.02  Q         .         .         .         .
  1.60      0.0024      0.02  Q         .         .         .         .
  1.78      0.0027      0.02  Q         .         .         .         .
  1.96      0.0030      0.02  Q         .         .         .         .
  2.14      0.0033      0.02  Q         .         .         .         .
  2.33      0.0037      0.02  Q         .         .         .         .
  2.51      0.0040      0.02  Q         .         .         .         .
```

2.69	0.0043	0.02	Q	.	.	.	.
2.87	0.0046	0.02	Q	.	.	.	.
3.05	0.0049	0.02	Q	.	.	.	.
3.24	0.0053	0.02	Q	.	.	.	.
3.42	0.0056	0.02	Q	.	.	.	.
3.60	0.0060	0.02	Q	.	.	.	.
3.78	0.0063	0.02	Q	.	.	.	.
3.97	0.0067	0.02	Q	.	.	.	.
4.15	0.0071	0.03	Q	.	.	.	.
4.33	0.0074	0.03	Q	.	.	.	.
4.51	0.0078	0.03	Q	.	.	.	.
4.70	0.0082	0.03	Q	.	.	.	.
4.88	0.0086	0.03	Q	.	.	.	.
5.06	0.0090	0.03	Q	.	.	.	.
5.24	0.0095	0.03	Q	.	.	.	.
5.42	0.0099	0.03	Q	.	.	.	.
5.61	0.0103	0.03	Q	.	.	.	.
5.79	0.0108	0.03	Q	.	.	.	.
5.97	0.0112	0.03	Q	.	.	.	.
6.15	0.0117	0.03	Q	.	.	.	.
6.34	0.0122	0.03	Q	.	.	.	.
6.52	0.0127	0.03	Q	.	.	.	.
6.70	0.0132	0.03	Q	.	.	.	.
6.88	0.0137	0.03	Q	.	.	.	.
7.07	0.0142	0.04	Q	.	.	.	.
7.25	0.0147	0.04	Q	.	.	.	.
7.43	0.0153	0.04	Q	.	.	.	.
7.61	0.0158	0.04	Q	.	.	.	.
7.80	0.0164	0.04	Q	.	.	.	.
7.98	0.0170	0.04	Q	.	.	.	.
8.16	0.0176	0.04	Q	.	.	.	.
8.34	0.0182	0.04	Q	.	.	.	.
8.52	0.0188	0.04	Q	.	.	.	.
8.71	0.0195	0.04	Q	.	.	.	.
8.89	0.0201	0.04	Q	.	.	.	.
9.07	0.0208	0.05	Q	.	.	.	.
9.25	0.0215	0.05	Q	.	.	.	.
9.44	0.0222	0.05	Q	.	.	.	.
9.62	0.0229	0.05	Q	.	.	.	.
9.80	0.0237	0.05	Q	.	.	.	.
9.98	0.0244	0.05	Q	.	.	.	.
10.17	0.0252	0.05	Q	.	.	.	.
10.35	0.0261	0.06	Q	.	.	.	.
10.53	0.0269	0.06	Q	.	.	.	.
10.71	0.0278	0.06	Q	.	.	.	.
10.89	0.0287	0.06	Q	.	.	.	.
11.08	0.0296	0.06	Q	.	.	.	.
11.26	0.0305	0.06	Q	.	.	.	.
11.44	0.0315	0.07	Q	.	.	.	.
11.62	0.0325	0.07	Q	.	.	.	.
11.81	0.0336	0.07	Q	.	.	.	.
11.99	0.0347	0.07	Q	.	.	.	.
12.17	0.0360	0.10	Q	.	.	.	.
12.35	0.0375	0.10	Q	.	.	.	.
12.54	0.0391	0.11	Q	.	.	.	.
12.72	0.0407	0.11	Q	.	.	.	.
12.90	0.0424	0.11	Q	.	.	.	.
13.08	0.0441	0.12	Q	.	.	.	.
13.27	0.0460	0.12	Q	.	.	.	.
13.45	0.0479	0.13	Q	.	.	.	.
13.63	0.0499	0.14	Q	.	.	.	.
13.81	0.0519	0.14	Q	.	.	.	.
13.99	0.0541	0.15	Q	.	.	.	.
14.18	0.0565	0.16	Q	.	.	.	.
14.36	0.0590	0.18	Q	.	.	.	.
14.54	0.0617	0.18	Q	.	.	.	.

14.72	0.0647	0.20	Q	.	.	.	.
14.91	0.0678	0.21	Q	.	.	.	.
15.09	0.0713	0.24	Q	.	.	.	.
15.27	0.0751	0.26	.Q	.	.	.	.
15.45	0.0793	0.29	.Q	.	.	.	.
15.64	0.0837	0.30	.Q	.	.	.	.
15.82	0.0894	0.45	.Q	.	.	.	.
16.00	0.0976	0.63	. Q	.	.	.	.
16.18	0.1170	1.94	. Q	.	.	.	.
16.36	0.1343	0.36	.Q	.	.	.	.
16.55	0.1391	0.28	.Q	.	.	.	.
16.73	0.1430	0.23	Q	.	.	.	.
16.91	0.1462	0.19	Q	.	.	.	.
17.09	0.1489	0.17	Q	.	.	.	.
17.28	0.1513	0.15	Q	.	.	.	.
17.46	0.1534	0.13	Q	.	.	.	.
17.64	0.1553	0.12	Q	.	.	.	.
17.82	0.1570	0.11	Q	.	.	.	.
18.01	0.1587	0.10	Q	.	.	.	.
18.19	0.1600	0.08	Q	.	.	.	.
18.37	0.1611	0.07	Q	.	.	.	.
18.55	0.1621	0.07	Q	.	.	.	.
18.73	0.1631	0.06	Q	.	.	.	.
18.92	0.1640	0.06	Q	.	.	.	.
19.10	0.1648	0.05	Q	.	.	.	.
19.28	0.1656	0.05	Q	.	.	.	.
19.46	0.1664	0.05	Q	.	.	.	.
19.65	0.1671	0.05	Q	.	.	.	.
19.83	0.1678	0.04	Q	.	.	.	.
20.01	0.1684	0.04	Q	.	.	.	.
20.19	0.1690	0.04	Q	.	.	.	.
20.38	0.1696	0.04	Q	.	.	.	.
20.56	0.1702	0.04	Q	.	.	.	.
20.74	0.1707	0.03	Q	.	.	.	.
20.92	0.1712	0.03	Q	.	.	.	.
21.11	0.1717	0.03	Q	.	.	.	.
21.29	0.1721	0.03	Q	.	.	.	.
21.47	0.1726	0.03	Q	.	.	.	.
21.65	0.1730	0.03	Q	.	.	.	.
21.83	0.1734	0.03	Q	.	.	.	.
22.02	0.1738	0.03	Q	.	.	.	.
22.20	0.1742	0.02	Q	.	.	.	.
22.38	0.1746	0.02	Q	.	.	.	.
22.56	0.1749	0.02	Q	.	.	.	.
22.75	0.1753	0.02	Q	.	.	.	.
22.93	0.1756	0.02	Q	.	.	.	.
23.11	0.1759	0.02	Q	.	.	.	.
23.29	0.1762	0.02	Q	.	.	.	.
23.48	0.1765	0.02	Q	.	.	.	.
23.66	0.1768	0.02	Q	.	.	.	.
23.84	0.1771	0.02	Q	.	.	.	.
24.02	0.1774	0.02	Q	.	.	.	.
24.20	0.1775	0.00	Q	.	.	.	.

Problem Descriptions:

==========

FLOW-THROUGH DETENTION BASIN MODEL

SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:

```
     CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =   10.940
     DEAD STORAGE(AF) =       0.00
     SPECIFIED DEAD STORAGE(AF) FILLED =       0.00
     ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00


                    INFLOW
                      |
                      |
                      |
                      V                __effective depth
                -------------          |   (and volume)
                |           |    |     |
                | detention |    |....V.............
                |   basin   |<-->|          outflow
                |           |    |........._________
                -------------    |         |   \
                      |          | storage |     basin outlet
                      V          -----------
                   OUTFLOW


     DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
     TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   6
     *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
     *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
     *      0.000      0.000      0.000**      1.000      0.008      0.810*
     *      2.000      0.022      1.270**      3.000      0.037      1.610*
     *      4.000      0.050      1.890**      5.000      0.059      2.130*
-------------------------------------------------------------------------------
     BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
      INTERVAL   DEPTH   {S-O*DT/2}   {S+O*DT/2}
       NUMBER   (FEET)   (ACRE-FEET)  (ACRE-FEET)
           1     0.00       0.00000      0.00000
           2     1.00       0.00226      0.01446
           3     2.00       0.01231      0.03145
           4     3.00       0.02458      0.04884
           5     4.00       0.03601      0.06449
           6     5.00       0.04254      0.07464
     WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT INTERVAL(MIN.)
-------------------------------------------------------------------------------
     DETENTION BASIN ROUTING RESULTS:
     NOTE: COMPUTED BASIN DEPTH, OUTFLOW, AND STORAGE QUANTITIES
           OCCUR AT THE GIVEN TIME. BASIN INFLOW VALUES REPRESENT THE
           AVERAGE INFLOW DURING THE RECENT HYDROGRAPH UNIT INTERVAL.

        TIME  DEAD-STORAGE  INFLOW  EFFECTIVE  OUTFLOW  EFFECTIVE
       (HRS)   FILLED(AF)    (CFS)  DEPTH(FT)   (CFS)   VOLUME(AF)
-------------------------------------------------------------------------------
       0.137        0.000     0.02       0.02     0.01       0.000
       0.319        0.000     0.02       0.02     0.02       0.000
       0.502        0.000     0.02       0.02     0.02       0.000
       0.684        0.000     0.02       0.02     0.02       0.000
       0.866        0.000     0.02       0.02     0.02       0.000
       1.049        0.000     0.02       0.02     0.02       0.000
       1.231        0.000     0.02       0.02     0.02       0.000
       1.413        0.000     0.02       0.02     0.02       0.000
       1.596        0.000     0.02       0.02     0.02       0.000
       1.778        0.000     0.02       0.02     0.02       0.000
       1.960        0.000     0.02       0.02     0.02       0.000
       2.143        0.000     0.02       0.03     0.02       0.000
       2.325        0.000     0.02       0.03     0.02       0.000
       2.507        0.000     0.02       0.03     0.02       0.000
       2.690        0.000     0.02       0.03     0.02       0.000
       2.872        0.000     0.02       0.03     0.02       0.000
       3.054        0.000     0.02       0.03     0.02       0.000
```

3.237	0.000	0.02	0.03	0.02	0.000
3.419	0.000	0.02	0.03	0.02	0.000
3.601	0.000	0.02	0.03	0.02	0.000
3.784	0.000	0.02	0.03	0.02	0.000
3.966	0.000	0.02	0.03	0.02	0.000
4.148	0.000	0.03	0.03	0.02	0.000
4.331	0.000	0.03	0.03	0.03	0.000
4.513	0.000	0.03	0.03	0.03	0.000
4.695	0.000	0.03	0.03	0.03	0.000
4.878	0.000	0.03	0.03	0.03	0.000
5.060	0.000	0.03	0.03	0.03	0.000
5.242	0.000	0.03	0.03	0.03	0.000
5.425	0.000	0.03	0.04	0.03	0.000
5.607	0.000	0.03	0.04	0.03	0.000
5.789	0.000	0.03	0.04	0.03	0.000
5.972	0.000	0.03	0.04	0.03	0.000
6.154	0.000	0.03	0.04	0.03	0.000
6.336	0.000	0.03	0.04	0.03	0.000
6.519	0.000	0.03	0.04	0.03	0.000
6.701	0.000	0.03	0.04	0.03	0.000
6.883	0.000	0.03	0.04	0.03	0.000
7.066	0.000	0.04	0.04	0.03	0.000
7.248	0.000	0.04	0.04	0.04	0.000
7.430	0.000	0.04	0.05	0.04	0.000
7.613	0.000	0.04	0.05	0.04	0.000
7.795	0.000	0.04	0.05	0.04	0.000
7.977	0.000	0.04	0.05	0.04	0.000
8.160	0.000	0.04	0.05	0.04	0.000
8.342	0.000	0.04	0.05	0.04	0.000
8.524	0.000	0.04	0.05	0.04	0.000
8.707	0.000	0.04	0.05	0.04	0.000
8.889	0.000	0.04	0.05	0.04	0.000
9.071	0.000	0.05	0.06	0.04	0.000
9.254	0.000	0.05	0.06	0.05	0.000
9.436	0.000	0.05	0.06	0.05	0.000
9.618	0.000	0.05	0.06	0.05	0.001
9.801	0.000	0.05	0.06	0.05	0.001
9.983	0.000	0.05	0.06	0.05	0.001
10.165	0.000	0.05	0.07	0.05	0.001
10.348	0.000	0.06	0.07	0.05	0.001
10.530	0.000	0.06	0.07	0.06	0.001
10.712	0.000	0.06	0.07	0.06	0.001
10.895	0.000	0.06	0.07	0.06	0.001
11.077	0.000	0.06	0.08	0.06	0.001
11.259	0.000	0.06	0.08	0.06	0.001
11.442	0.000	0.07	0.08	0.07	0.001
11.624	0.000	0.07	0.08	0.07	0.001
11.806	0.000	0.07	0.09	0.07	0.001
11.989	0.000	0.07	0.09	0.07	0.001
12.171	0.000	0.10	0.12	0.08	0.001
12.353	0.000	0.10	0.12	0.10	0.001
12.536	0.000	0.11	0.13	0.10	0.001
12.718	0.000	0.11	0.13	0.11	0.001
12.900	0.000	0.11	0.14	0.11	0.001
13.083	0.000	0.12	0.14	0.12	0.001
13.265	0.000	0.12	0.15	0.12	0.001
13.447	0.000	0.13	0.16	0.13	0.001
13.630	0.000	0.14	0.17	0.13	0.001
13.812	0.000	0.14	0.17	0.14	0.001
13.994	0.000	0.15	0.18	0.14	0.002
14.177	0.000	0.16	0.20	0.15	0.002
14.359	0.000	0.18	0.21	0.17	0.002
14.541	0.000	0.18	0.23	0.18	0.002
14.724	0.000	0.20	0.25	0.19	0.002
14.906	0.000	0.21	0.26	0.21	0.002
15.088	0.000	0.24	0.29	0.23	0.002

15.271	0.000	0.26	0.32	0.25	0.003
15.453	0.000	0.29	0.35	0.27	0.003
15.635	0.000	0.30	0.37	0.29	0.003
15.818	0.000	0.45	0.53	0.36	0.004
16.000	0.000	0.63	0.74	0.51	0.006
16.182	0.000	1.94	1.97	0.93	0.021
16.365	0.000	0.36	1.17	**1.07**	0.011
16.547	0.000	0.28	0.57	0.68	0.005
16.729	0.000	0.23	0.33	0.36	0.003
16.912	0.000	0.19	0.25	0.23	0.002
17.094	0.000	0.17	0.22	0.19	0.002
17.276	0.000	0.15	0.19	0.16	0.002
17.459	0.000	0.13	0.17	0.14	0.001
17.641	0.000	0.12	0.15	0.13	0.001
17.823	0.000	0.11	0.14	0.12	0.001
18.006	0.000	0.10	0.13	0.11	0.001
18.188	0.000	0.08	0.10	0.09	0.001
18.370	0.000	0.07	0.09	0.08	0.001
18.553	0.000	0.07	0.08	0.07	0.001
18.735	0.000	0.06	0.08	0.06	0.001
18.917	0.000	0.06	0.07	0.06	0.001
19.100	0.000	0.05	0.07	0.06	0.001
19.282	0.000	0.05	0.06	0.05	0.001
19.464	0.000	0.05	0.06	0.05	0.001
19.647	0.000	0.05	0.06	0.05	0.000
19.829	0.000	0.04	0.05	0.05	0.000
20.011	0.000	0.04	0.05	0.04	0.000
20.194	0.000	0.04	0.05	0.04	0.000
20.376	0.000	0.04	0.05	0.04	0.000
20.558	0.000	0.04	0.04	0.04	0.000
20.741	0.000	0.03	0.04	0.04	0.000
20.923	0.000	0.03	0.04	0.03	0.000
21.105	0.000	0.03	0.04	0.03	0.000
21.288	0.000	0.03	0.04	0.03	0.000
21.470	0.000	0.03	0.04	0.03	0.000
21.652	0.000	0.03	0.03	0.03	0.000
21.835	0.000	0.03	0.03	0.03	0.000
22.017	0.000	0.03	0.03	0.03	0.000
22.199	0.000	0.02	0.03	0.03	0.000
22.382	0.000	0.02	0.03	0.02	0.000
22.564	0.000	0.02	0.03	0.02	0.000
22.746	0.000	0.02	0.03	0.02	0.000
22.929	0.000	0.02	0.03	0.02	0.000
23.111	0.000	0.02	0.03	0.02	0.000
23.293	0.000	0.02	0.02	0.02	0.000
23.476	0.000	0.02	0.02	0.02	0.000
23.658	0.000	0.02	0.02	0.02	0.000
23.840	0.000	0.02	0.02	0.02	0.000
24.023	0.000	0.02	0.02	0.02	0.000
24.205	0.000	0.00	0.00	0.01	0.000

Problem Descriptions:

RATIONAL METHOD CALIBRATION COEFFICIENT = 1.05
TOTAL CATCHMENT AREA(ACRES) = 1.30
SOIL-LOSS RATE, Fm,(INCH/HR) = 0.020
LOW LOSS FRACTION = 0.570
TIME OF CONCENTRATION(MIN.) = 10.94
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA

ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED
RETURN FREQUENCY(YEARS) = 2
5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.19
30-MINUTE POINT RAINFALL VALUE(INCHES) = 0.40
1-HOUR POINT RAINFALL VALUE(INCHES) = 0.53
3-HOUR POINT RAINFALL VALUE(INCHES) = 0.89
6-HOUR POINT RAINFALL VALUE(INCHES) = 1.22
24-HOUR POINT RAINFALL VALUE(INCHES) = 2.05

TOTAL CATCHMENT RUNOFF VOLUME(ACRE-FEET) = 0.18
TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) = 0.04

****

TIME (HOURS)	VOLUME (AF)	Q (CFS)	0.	2.5	5.0	7.5	10.0
0.14	0.0001	0.02	Q	.	.	.	.
0.32	0.0004	0.02	Q	.	.	.	.
0.50	0.0007	0.02	Q	.	.	.	.
0.68	0.0010	0.02	Q	.	.	.	.
0.87	0.0013	0.02	Q	.	.	.	.
1.05	0.0015	0.02	Q	.	.	.	.
1.23	0.0018	0.02	Q	.	.	.	.
1.41	0.0021	0.02	Q	.	.	.	.
1.60	0.0024	0.02	Q	.	.	.	.
1.78	0.0027	0.02	Q	.	.	.	.
1.96	0.0030	0.02	Q	.	.	.	.
2.14	0.0033	0.02	Q	.	.	.	.
2.33	0.0037	0.02	Q	.	.	.	.
2.51	0.0040	0.02	Q	.	.	.	.
2.69	0.0043	0.02	Q	.	.	.	.
2.87	0.0046	0.02	Q	.	.	.	.
3.05	0.0049	0.02	Q	.	.	.	.
3.24	0.0053	0.02	Q	.	.	.	.
3.42	0.0056	0.02	Q	.	.	.	.
3.60	0.0060	0.02	Q	.	.	.	.
3.78	0.0063	0.02	Q	.	.	.	.
3.97	0.0067	0.02	Q	.	.	.	.
4.15	0.0071	0.03	Q	.	.	.	.
4.33	0.0074	0.03	Q	.	.	.	.
4.51	0.0078	0.03	Q	.	.	.	.
4.70	0.0082	0.03	Q	.	.	.	.
4.88	0.0086	0.03	Q	.	.	.	.
5.06	0.0090	0.03	Q	.	.	.	.
5.24	0.0095	0.03	Q	.	.	.	.
5.42	0.0099	0.03	Q	.	.	.	.
5.61	0.0103	0.03	Q	.	.	.	.
5.79	0.0108	0.03	Q	.	.	.	.
5.97	0.0112	0.03	Q	.	.	.	.
6.15	0.0117	0.03	Q	.	.	.	.
6.34	0.0122	0.03	Q	.	.	.	.
6.52	0.0127	0.03	Q	.	.	.	.
6.70	0.0132	0.03	Q	.	.	.	.
6.88	0.0137	0.03	Q	.	.	.	.
7.07	0.0142	0.04	Q	.	.	.	.
7.25	0.0147	0.04	Q	.	.	.	.
7.43	0.0153	0.04	Q	.	.	.	.
7.61	0.0158	0.04	Q	.	.	.	.
7.80	0.0164	0.04	Q	.	.	.	.
7.98	0.0170	0.04	Q	.	.	.	.
8.16	0.0176	0.04	Q	.	.	.	.
8.34	0.0182	0.04	Q	.	.	.	.
8.52	0.0188	0.04	Q	.	.	.	.
8.71	0.0195	0.04	Q	.	.	.	.

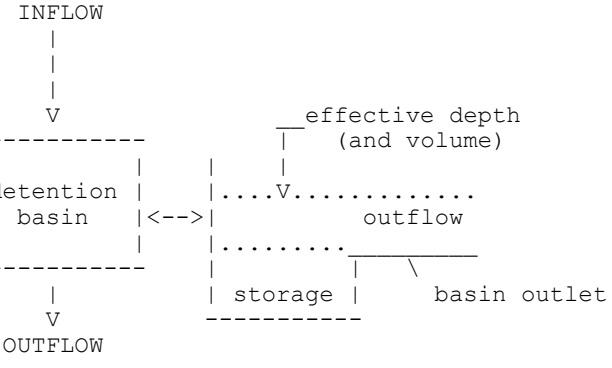
8.89	0.0201	0.04	Q	.	.	.	.
9.07	0.0208	0.05	Q	.	.	.	.
9.25	0.0215	0.05	Q	.	.	.	.
9.44	0.0222	0.05	Q	.	.	.	.
9.62	0.0229	0.05	Q	.	.	.	.
9.80	0.0237	0.05	Q	.	.	.	.
9.98	0.0244	0.05	Q	.	.	.	.
10.17	0.0252	0.05	Q	.	.	.	.
10.35	0.0261	0.06	Q	.	.	.	.
10.53	0.0269	0.06	Q	.	.	.	.
10.71	0.0278	0.06	Q	.	.	.	.
10.89	0.0287	0.06	Q	.	.	.	.
11.08	0.0296	0.06	Q	.	.	.	.
11.26	0.0305	0.06	Q	.	.	.	.
11.44	0.0315	0.07	Q	.	.	.	.
11.62	0.0325	0.07	Q	.	.	.	.
11.81	0.0336	0.07	Q	.	.	.	.
11.99	0.0347	0.07	Q	.	.	.	.
12.17	0.0360	0.10	Q	.	.	.	.
12.35	0.0375	0.10	Q	.	.	.	.
12.54	0.0391	0.11	Q	.	.	.	.
12.72	0.0407	0.11	Q	.	.	.	.
12.90	0.0424	0.11	Q	.	.	.	.
13.08	0.0441	0.12	Q	.	.	.	.
13.27	0.0460	0.12	Q	.	.	.	.
13.45	0.0479	0.13	Q	.	.	.	.
13.63	0.0499	0.14	Q	.	.	.	.
13.81	0.0519	0.14	Q	.	.	.	.
13.99	0.0541	0.15	Q	.	.	.	.
14.18	0.0565	0.16	Q	.	.	.	.
14.36	0.0590	0.18	Q	.	.	.	.
14.54	0.0617	0.18	Q	.	.	.	.
14.72	0.0647	0.20	Q	.	.	.	.
14.91	0.0678	0.21	Q	.	.	.	.
15.09	0.0713	0.24	Q	.	.	.	.
15.27	0.0751	0.26	.Q	.	.	.	.
15.45	0.0793	0.29	.Q	.	.	.	.
15.64	0.0837	0.30	.Q	.	.	.	.
15.82	0.0894	0.45	.Q	.	.	.	.
16.00	0.0976	0.63	. Q	.	.	.	.
16.18	0.1170	1.94	. Q	.	.	.	.
16.36	0.1343	0.36	.Q	.	.	.	.
16.55	0.1391	0.28	.Q	.	.	.	.
16.73	0.1430	0.23	Q	.	.	.	.
16.91	0.1462	0.19	Q	.	.	.	.
17.09	0.1489	0.17	Q	.	.	.	.
17.28	0.1513	0.15	Q	.	.	.	.
17.46	0.1534	0.13	Q	.	.	.	.
17.64	0.1553	0.12	Q	.	.	.	.
17.82	0.1570	0.11	Q	.	.	.	.
18.01	0.1587	0.10	Q	.	.	.	.
18.19	0.1600	0.08	Q	.	.	.	.
18.37	0.1611	0.07	Q	.	.	.	.
18.55	0.1621	0.07	Q	.	.	.	.
18.73	0.1631	0.06	Q	.	.	.	.
18.92	0.1640	0.06	Q	.	.	.	.
19.10	0.1648	0.05	Q	.	.	.	.
19.28	0.1656	0.05	Q	.	.	.	.
19.46	0.1664	0.05	Q	.	.	.	.
19.65	0.1671	0.05	Q	.	.	.	.
19.83	0.1678	0.04	Q	.	.	.	.
20.01	0.1684	0.04	Q	.	.	.	.
20.19	0.1690	0.04	Q	.	.	.	.
20.38	0.1696	0.04	Q	.	.	.	.
20.56	0.1702	0.04	Q	.	.	.	.
20.74	0.1707	0.03	Q	.	.	.	.

```
 20.92      0.1712      0.03  Q          .          .          .          .
 21.11      0.1717      0.03  Q          .          .          .          .
 21.29      0.1721      0.03  Q          .          .          .          .
 21.47      0.1726      0.03  Q          .          .          .          .
 21.65      0.1730      0.03  Q          .          .          .          .
 21.83      0.1734      0.03  Q          .          .          .          .
 22.02      0.1738      0.03  Q          .          .          .          .
 22.20      0.1742      0.02  Q          .          .          .          .
 22.38      0.1746      0.02  Q          .          .          .          .
 22.56      0.1749      0.02  Q          .          .          .          .
 22.75      0.1753      0.02  Q          .          .          .          .
 22.93      0.1756      0.02  Q          .          .          .          .
 23.11      0.1759      0.02  Q          .          .          .          .
 23.29      0.1762      0.02  Q          .          .          .          .
 23.48      0.1765      0.02  Q          .          .          .          .
 23.66      0.1768      0.02  Q          .          .          .          .
 23.84      0.1771      0.02  Q          .          .          .          .
 24.02      0.1774      0.02  Q          .          .          .          .
 24.20      0.1775      0.00  Q          .          .          .          .
-------------------------------------------------------------------------------

  Problem Descriptions:
```

```
===============================================================================
     FLOW-THROUGH DETENTION BASIN MODEL

     SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
     CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =   10.940
     DEAD STORAGE(AF) =       0.00
     SPECIFIED DEAD STORAGE(AF) FILLED =       0.00
     ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
```




```
     DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
     TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   6
     *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
     *   (FEET)  (ACRE-FEET)    (CFS)   **   (FEET)  (ACRE-FEET)    (CFS)   *
     *      0.000      0.000      0.000**      1.000      0.008      0.810*
     *      2.000      0.022      1.270**      3.000      0.037      3.670*
     *      4.000      0.050      6.630**      5.000      0.059      8.300*
-------------------------------------------------------------------------------
     BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
      INTERVAL   DEPTH   {S-O*DT/2}   {S+O*DT/2}
       NUMBER   (FEET)   (ACRE-FEET)  (ACRE-FEET)
           1     0.00       0.00000      0.00000
```

2	1.00	0.00226	0.01446
3	2.00	0.01231	0.03145
4	3.00	0.00906	0.06436
5	4.00	0.00030	0.10020
6	5.00	-0.00395	0.12113

WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT INTERVAL(MIN.)

DETENTION BASIN ROUTING RESULTS:

NOTE: COMPUTED BASIN DEPTH, OUTFLOW, AND STORAGE QUANTITIES OCCUR AT THE GIVEN TIME. BASIN INFLOW VALUES REPRESENT THE AVERAGE INFLOW DURING THE RECENT HYDROGRAPH UNIT INTERVAL.

TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	EFFECTIVE DEPTH(FT)	OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
0.137	0.000	0.02	0.02	0.01	0.000
0.319	0.000	0.02	0.02	0.02	0.000
0.502	0.000	0.02	0.02	0.02	0.000
0.684	0.000	0.02	0.02	0.02	0.000
0.866	0.000	0.02	0.02	0.02	0.000
1.049	0.000	0.02	0.02	0.02	0.000
1.231	0.000	0.02	0.02	0.02	0.000
1.413	0.000	0.02	0.02	0.02	0.000
1.596	0.000	0.02	0.02	0.02	0.000
1.778	0.000	0.02	0.02	0.02	0.000
1.960	0.000	0.02	0.02	0.02	0.000
2.143	0.000	0.02	0.03	0.02	0.000
2.325	0.000	0.02	0.03	0.02	0.000
2.507	0.000	0.02	0.03	0.02	0.000
2.690	0.000	0.02	0.03	0.02	0.000
2.872	0.000	0.02	0.03	0.02	0.000
3.054	0.000	0.02	0.03	0.02	0.000
3.237	0.000	0.02	0.03	0.02	0.000
3.419	0.000	0.02	0.03	0.02	0.000
3.601	0.000	0.02	0.03	0.02	0.000
3.784	0.000	0.02	0.03	0.02	0.000
3.966	0.000	0.02	0.03	0.02	0.000
4.148	0.000	0.03	0.03	0.02	0.000
4.331	0.000	0.03	0.03	0.03	0.000
4.513	0.000	0.03	0.03	0.03	0.000
4.695	0.000	0.03	0.03	0.03	0.000
4.878	0.000	0.03	0.03	0.03	0.000
5.060	0.000	0.03	0.03	0.03	0.000
5.242	0.000	0.03	0.03	0.03	0.000
5.425	0.000	0.03	0.04	0.03	0.000
5.607	0.000	0.03	0.04	0.03	0.000
5.789	0.000	0.03	0.04	0.03	0.000
5.972	0.000	0.03	0.04	0.03	0.000
6.154	0.000	0.03	0.04	0.03	0.000
6.336	0.000	0.03	0.04	0.03	0.000
6.519	0.000	0.03	0.04	0.03	0.000
6.701	0.000	0.03	0.04	0.03	0.000
6.883	0.000	0.03	0.04	0.03	0.000
7.066	0.000	0.04	0.04	0.03	0.000
7.248	0.000	0.04	0.04	0.04	0.000
7.430	0.000	0.04	0.05	0.04	0.000
7.613	0.000	0.04	0.05	0.04	0.000
7.795	0.000	0.04	0.05	0.04	0.000
7.977	0.000	0.04	0.05	0.04	0.000
8.160	0.000	0.04	0.05	0.04	0.000
8.342	0.000	0.04	0.05	0.04	0.000
8.524	0.000	0.04	0.05	0.04	0.000
8.707	0.000	0.04	0.05	0.04	0.000
8.889	0.000	0.04	0.05	0.04	0.000
9.071	0.000	0.05	0.06	0.04	0.000
9.254	0.000	0.05	0.06	0.05	0.000

9.436	0.000	0.05	0.06	0.05	0.000
9.618	0.000	0.05	0.06	0.05	0.001
9.801	0.000	0.05	0.06	0.05	0.001
9.983	0.000	0.05	0.06	0.05	0.001
10.165	0.000	0.05	0.07	0.05	0.001
10.348	0.000	0.06	0.07	0.05	0.001
10.530	0.000	0.06	0.07	0.06	0.001
10.712	0.000	0.06	0.07	0.06	0.001
10.895	0.000	0.06	0.07	0.06	0.001
11.077	0.000	0.06	0.08	0.06	0.001
11.259	0.000	0.06	0.08	0.06	0.001
11.442	0.000	0.07	0.08	0.07	0.001
11.624	0.000	0.07	0.08	0.07	0.001
11.806	0.000	0.07	0.09	0.07	0.001
11.989	0.000	0.07	0.09	0.07	0.001
12.171	0.000	0.10	0.12	0.08	0.001
12.353	0.000	0.10	0.12	0.10	0.001
12.536	0.000	0.11	0.13	0.10	0.001
12.718	0.000	0.11	0.13	0.11	0.001
12.900	0.000	0.11	0.14	0.11	0.001
13.083	0.000	0.12	0.14	0.12	0.001
13.265	0.000	0.12	0.15	0.12	0.001
13.447	0.000	0.13	0.16	0.13	0.001
13.630	0.000	0.14	0.17	0.13	0.001
13.812	0.000	0.14	0.17	0.14	0.001
13.994	0.000	0.15	0.18	0.14	0.002
14.177	0.000	0.16	0.20	0.15	0.002
14.359	0.000	0.18	0.21	0.17	0.002
14.541	0.000	0.18	0.23	0.18	0.002
14.724	0.000	0.20	0.25	0.19	0.002
14.906	0.000	0.21	0.26	0.21	0.002
15.088	0.000	0.24	0.29	0.23	0.002
15.271	0.000	0.26	0.32	0.25	0.003
15.453	0.000	0.29	0.35	0.27	0.003
15.635	0.000	0.30	0.37	0.29	0.003
15.818	0.000	0.45	0.53	0.36	0.004
16.000	0.000	0.63	0.74	0.51	0.006
16.182	0.000	1.94	1.97	0.93	0.021
16.365	0.000	0.36	1.17	1.07	0.011
16.547	0.000	0.28	0.57	0.68	0.005
16.729	0.000	0.23	0.33	0.36	0.003
16.912	0.000	0.19	0.25	0.23	0.002
17.094	0.000	0.17	0.22	0.19	0.002
17.276	0.000	0.15	0.19	0.16	0.002
17.459	0.000	0.13	0.17	0.14	0.001
17.641	0.000	0.12	0.15	0.13	0.001
17.823	0.000	0.11	0.14	0.12	0.001
18.006	0.000	0.10	0.13	0.11	0.001
18.188	0.000	0.08	0.10	0.09	0.001
18.370	0.000	0.07	0.09	0.08	0.001
18.553	0.000	0.07	0.08	0.07	0.001
18.735	0.000	0.06	0.08	0.06	0.001
18.917	0.000	0.06	0.07	0.06	0.001
19.100	0.000	0.05	0.07	0.06	0.001
19.282	0.000	0.05	0.06	0.05	0.001
19.464	0.000	0.05	0.06	0.05	0.001
19.647	0.000	0.05	0.06	0.05	0.000
19.829	0.000	0.04	0.05	0.05	0.000
20.011	0.000	0.04	0.05	0.04	0.000
20.194	0.000	0.04	0.05	0.04	0.000
20.376	0.000	0.04	0.05	0.04	0.000
20.558	0.000	0.04	0.04	0.04	0.000
20.741	0.000	0.03	0.04	0.04	0.000
20.923	0.000	0.03	0.04	0.03	0.000
21.105	0.000	0.03	0.04	0.03	0.000
21.288	0.000	0.03	0.04	0.03	0.000

21.470	0.000	0.03	0.04	0.03	0.000
21.652	0.000	0.03	0.03	0.03	0.000
21.835	0.000	0.03	0.03	0.03	0.000
22.017	0.000	0.03	0.03	0.03	0.000
22.199	0.000	0.02	0.03	0.03	0.000
22.382	0.000	0.02	0.03	0.02	0.000
22.564	0.000	0.02	0.03	0.02	0.000
22.746	0.000	0.02	0.03	0.02	0.000
22.929	0.000	0.02	0.03	0.02	0.000
23.111	0.000	0.02	0.03	0.02	0.000
23.293	0.000	0.02	0.02	0.02	0.000
23.476	0.000	0.02	0.02	0.02	0.000
23.658	0.000	0.02	0.02	0.02	0.000
23.840	0.000	0.02	0.02	0.02	0.000
24.023	0.000	0.02	0.02	0.02	0.000
24.205	0.000	0.00	0.00	0.01	0.000

```
**************************************************************************
                    SMALL AREA UNIT HYDROGRAPH MODEL
==========================================================================
         (C) Copyright 1989-2008 Advanced Engineering Software (aes)
             Ver. 15.0  Release Date: 04/01/2008  License ID 1420

                          Analysis prepared by:

                              CA Engineering
                          13821 Newport Ave., Ste 110
                               Tustin, Ca. 92780


**************************************************************************
--------------------------------------------------------------------------

 Problem Descriptions:
  25 YEAR STORM
  BASIN ROUTING

--------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 1.02
    TOTAL CATCHMENT AREA(ACRES) =    1.30
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.020
    LOW LOSS FRACTION = 0.330
    TIME OF CONCENTRATION(MIN.) = 10.36
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) =  25
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.40
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.87
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  1.15
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  1.94
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  2.71
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  4.49

--------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.44
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.04

**************************************************************************
  TIME     VOLUME       Q    0.        2.5       5.0       7.5      10.0
 (HOURS)    (AF)      (CFS)
--------------------------------------------------------------------------
  0.11      0.0000      0.00  Q         .         .         .         .
  0.29      0.0005      0.06  Q         .         .         .         .
  0.46      0.0014      0.07  Q         .         .         .         .
  0.63      0.0023      0.07  Q         .         .         .         .
  0.81      0.0033      0.07  Q         .         .         .         .
  0.98      0.0042      0.07  Q         .         .         .         .
  1.15      0.0052      0.07  Q         .         .         .         .
  1.32      0.0062      0.07  Q         .         .         .         .
  1.50      0.0072      0.07  Q         .         .         .         .
  1.67      0.0081      0.07  Q         .         .         .         .
  1.84      0.0092      0.07  Q         .         .         .         .
  2.01      0.0102      0.07  Q         .         .         .         .
  2.19      0.0112      0.07  Q         .         .         .         .
  2.36      0.0122      0.07  Q         .         .         .         .
  2.53      0.0133      0.07  Q         .         .         .         .
  2.70      0.0143      0.07  Q         .         .         .         .
  2.88      0.0154      0.08  Q         .         .         .         .
  3.05      0.0165      0.08  Q         .         .         .         .
```

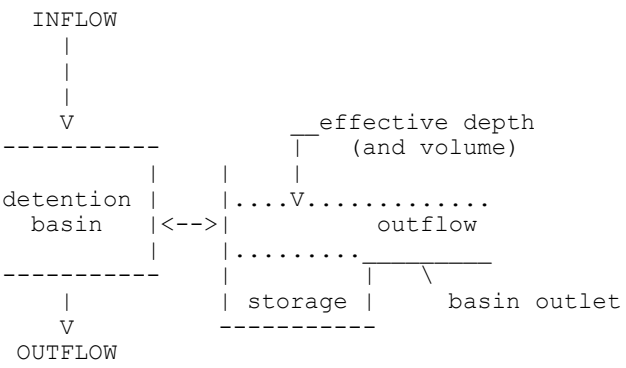
3.22	0.0176	0.08	Q	.	.	.	.
3.40	0.0187	0.08	Q	.	.	.	.
3.57	0.0198	0.08	Q	.	.	.	.
3.74	0.0210	0.08	Q	.	.	.	.
3.91	0.0221	0.08	Q	.	.	.	.
4.09	0.0233	0.08	Q	.	.	.	.
4.26	0.0245	0.08	Q	.	.	.	.
4.43	0.0257	0.08	Q	.	.	.	.
4.60	0.0269	0.08	Q	.	.	.	.
4.78	0.0281	0.09	Q	.	.	.	.
4.95	0.0293	0.09	Q	.	.	.	.
5.12	0.0306	0.09	Q	.	.	.	.
5.29	0.0318	0.09	Q	.	.	.	.
5.47	0.0331	0.09	Q	.	.	.	.
5.64	0.0344	0.09	Q	.	.	.	.
5.81	0.0358	0.09	Q	.	.	.	.
5.99	0.0371	0.09	Q	.	.	.	.
6.16	0.0385	0.10	Q	.	.	.	.
6.33	0.0398	0.10	Q	.	.	.	.
6.50	0.0412	0.10	Q	.	.	.	.
6.68	0.0427	0.10	Q	.	.	.	.
6.85	0.0441	0.10	Q	.	.	.	.
7.02	0.0456	0.10	Q	.	.	.	.
7.19	0.0470	0.10	Q	.	.	.	.
7.37	0.0485	0.11	Q	.	.	.	.
7.54	0.0501	0.11	Q	.	.	.	.
7.71	0.0516	0.11	Q	.	.	.	.
7.88	0.0532	0.11	Q	.	.	.	.
8.06	0.0548	0.11	Q	.	.	.	.
8.23	0.0564	0.12	Q	.	.	.	.
8.40	0.0581	0.12	Q	.	.	.	.
8.58	0.0598	0.12	Q	.	.	.	.
8.75	0.0615	0.12	Q	.	.	.	.
8.92	0.0633	0.12	Q	.	.	.	.
9.09	0.0651	0.13	Q	.	.	.	.
9.27	0.0669	0.13	Q	.	.	.	.
9.44	0.0687	0.13	Q	.	.	.	.
9.61	0.0706	0.13	Q	.	.	.	.
9.78	0.0725	0.14	Q	.	.	.	.
9.96	0.0745	0.14	Q	.	.	.	.
10.13	0.0765	0.14	Q	.	.	.	.
10.30	0.0786	0.15	Q	.	.	.	.
10.47	0.0807	0.15	Q	.	.	.	.
10.65	0.0828	0.15	Q	.	.	.	.
10.82	0.0850	0.16	Q	.	.	.	.
10.99	0.0873	0.16	Q	.	.	.	.
11.17	0.0896	0.16	Q	.	.	.	.
11.34	0.0920	0.17	Q	.	.	.	.
11.51	0.0944	0.17	Q	.	.	.	.
11.68	0.0969	0.18	Q	.	.	.	.
11.86	0.0995	0.18	Q	.	.	.	.
12.03	0.1021	0.19	Q	.	.	.	.
12.20	0.1053	0.25	Q	.	.	.	.
12.37	0.1090	0.27	.Q	.	.	.	.
12.55	0.1129	0.28	.Q	.	.	.	.
12.72	0.1170	0.29	.Q	.	.	.	.
12.89	0.1211	0.29	.Q	.	.	.	.
13.06	0.1254	0.31	.Q	.	.	.	.
13.24	0.1299	0.31	.Q	.	.	.	.
13.41	0.1345	0.33	.Q	.	.	.	.
13.58	0.1392	0.34	.Q	.	.	.	.
13.76	0.1441	0.35	.Q	.	.	.	.
13.93	0.1493	0.36	.Q	.	.	.	.
14.10	0.1546	0.39	.Q	.	.	.	.
14.27	0.1602	0.39	.Q	.	.	.	.
14.45	0.1660	0.42	.Q	.	.	.	.

14.62	0.1722	0.44	.Q	.	.	.	.
14.79	0.1788	0.48	.Q	.	.	.	.
14.96	0.1859	0.51	. Q	.	.	.	.
15.14	0.1936	0.57	. Q	.	.	.	.
15.31	0.2020	0.61	. Q	.	.	.	.
15.48	0.2109	0.63	. Q	.	.	.	.
15.65	0.2203	0.69	. Q	.	.	.	.
15.83	0.2329	1.07	. Q	.	.	.	.
16.00	0.2509	1.46	. Q	.	.	.	.
16.17	0.2913	4.21	.	. Q	.	.	.
16.35	0.3271	0.81	. Q	.	.	.	.
16.52	0.3376	0.66	. Q	.	.	.	.
16.69	0.3461	0.54	. Q	.	.	.	.
16.86	0.3532	0.46	.Q	.	.	.	.
17.04	0.3594	0.41	.Q	.	.	.	.
17.21	0.3650	0.38	.Q	.	.	.	.
17.38	0.3702	0.35	.Q	.	.	.	.
17.55	0.3749	0.32	.Q	.	.	.	.
17.73	0.3794	0.30	.Q	.	.	.	.
17.90	0.3835	0.28	.Q	.	.	.	.
18.07	0.3875	0.27	.Q	.	.	.	.
18.24	0.3907	0.19	Q	.	.	.	.
18.42	0.3933	0.18	Q	.	.	.	.
18.59	0.3957	0.17	Q	.	.	.	.
18.76	0.3981	0.16	Q	.	.	.	.
18.94	0.4003	0.15	Q	.	.	.	.
19.11	0.4024	0.14	Q	.	.	.	.
19.28	0.4044	0.14	Q	.	.	.	.
19.45	0.4063	0.13	Q	.	.	.	.
19.63	0.4082	0.13	Q	.	.	.	.
19.80	0.4099	0.12	Q	.	.	.	.
19.97	0.4117	0.12	Q	.	.	.	.
20.14	0.4133	0.11	Q	.	.	.	.
20.32	0.4149	0.11	Q	.	.	.	.
20.49	0.4165	0.11	Q	.	.	.	.
20.66	0.4180	0.10	Q	.	.	.	.
20.83	0.4195	0.10	Q	.	.	.	.
21.01	0.4209	0.10	Q	.	.	.	.
21.18	0.4223	0.10	Q	.	.	.	.
21.35	0.4236	0.09	Q	.	.	.	.
21.53	0.4249	0.09	Q	.	.	.	.
21.70	0.4262	0.09	Q	.	.	.	.
21.87	0.4274	0.09	Q	.	.	.	.
22.04	0.4286	0.08	Q	.	.	.	.
22.22	0.4298	0.08	Q	.	.	.	.
22.39	0.4309	0.08	Q	.	.	.	.
22.56	0.4321	0.08	Q	.	.	.	.
22.73	0.4332	0.08	Q	.	.	.	.
22.91	0.4342	0.07	Q	.	.	.	.
23.08	0.4353	0.07	Q	.	.	.	.
23.25	0.4363	0.07	Q	.	.	.	.
23.42	0.4373	0.07	Q	.	.	.	.
23.60	0.4383	0.07	Q	.	.	.	.
23.77	0.4393	0.07	Q	.	.	.	.
23.94	0.4402	0.07	Q	.	.	.	.
24.12	0.4411	0.06	Q	.	.	.	.
24.29	0.4416	0.00	Q	.	.	.	.

Problem Descriptions:

```
================================================================================
     FLOW-THROUGH DETENTION BASIN MODEL

     SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
     CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =   10.360
     DEAD STORAGE(AF) =       0.00
     SPECIFIED DEAD STORAGE(AF) FILLED =       0.00
     ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
```




```
     DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
     TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   6
     *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
     *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
     *      0.000      0.000     0.000**      1.000      0.008      0.810*
     *      2.000      0.022     1.270**      3.000      0.037      3.670*
     *      4.000      0.050     6.630**      5.000      0.059      8.300*
--------------------------------------------------------------------------------
     BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
      INTERVAL   DEPTH   {S-O*DT/2}   {S+O*DT/2}
       NUMBER   (FEET)   (ACRE-FEET)  (ACRE-FEET)
           1     0.00       0.00000      0.00000
           2     1.00       0.00258      0.01414
           3     2.00       0.01282      0.03094
           4     3.00       0.01052      0.06290
           5     4.00       0.00295      0.09755
           6     5.00      -0.00063      0.11781
     WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT INTERVAL(MIN.)
--------------------------------------------------------------------------------
     DETENTION BASIN ROUTING RESULTS:
     NOTE: COMPUTED BASIN DEPTH, OUTFLOW, AND STORAGE QUANTITIES
           OCCUR AT THE GIVEN TIME. BASIN INFLOW VALUES REPRESENT THE
           AVERAGE INFLOW DURING THE RECENT HYDROGRAPH UNIT INTERVAL.

        TIME  DEAD-STORAGE  INFLOW  EFFECTIVE  OUTFLOW  EFFECTIVE
       (HRS)   FILLED(AF)    (CFS)  DEPTH(FT)   (CFS)   VOLUME(AF)
--------------------------------------------------------------------------------
       0.115        0.000     0.00       0.00     0.00       0.000
       0.287        0.000     0.06       0.07     0.03       0.001
       0.460        0.000     0.07       0.08     0.06       0.001
       0.633        0.000     0.07       0.08     0.06       0.001
       0.805        0.000     0.07       0.08     0.07       0.001
       0.978        0.000     0.07       0.08     0.07       0.001
       1.151        0.000     0.07       0.08     0.07       0.001
       1.323        0.000     0.07       0.08     0.07       0.001
       1.496        0.000     0.07       0.09     0.07       0.001
       1.669        0.000     0.07       0.09     0.07       0.001
       1.841        0.000     0.07       0.09     0.07       0.001
       2.014        0.000     0.07       0.09     0.07       0.001
       2.187        0.000     0.07       0.09     0.07       0.001
```

2.359	0.000	0.07	0.09	0.07	0.001
2.532	0.000	0.07	0.09	0.07	0.001
2.705	0.000	0.07	0.09	0.07	0.001
2.877	0.000	0.08	0.09	0.08	0.001
3.050	0.000	0.08	0.09	0.08	0.001
3.223	0.000	0.08	0.10	0.08	0.001
3.395	0.000	0.08	0.10	0.08	0.001
3.568	0.000	0.08	0.10	0.08	0.001
3.741	0.000	0.08	0.10	0.08	0.001
3.913	0.000	0.08	0.10	0.08	0.001
4.086	0.000	0.08	0.10	0.08	0.001
4.259	0.000	0.08	0.10	0.08	0.001
4.431	0.000	0.08	0.10	0.08	0.001
4.604	0.000	0.08	0.10	0.08	0.001
4.777	0.000	0.09	0.11	0.09	0.001
4.949	0.000	0.09	0.11	0.09	0.001
5.122	0.000	0.09	0.11	0.09	0.001
5.295	0.000	0.09	0.11	0.09	0.001
5.467	0.000	0.09	0.11	0.09	0.001
5.640	0.000	0.09	0.11	0.09	0.001
5.813	0.000	0.09	0.11	0.09	0.001
5.985	0.000	0.09	0.12	0.09	0.001
6.158	0.000	0.10	0.12	0.09	0.001
6.331	0.000	0.10	0.12	0.10	0.001
6.503	0.000	0.10	0.12	0.10	0.001
6.676	0.000	0.10	0.12	0.10	0.001
6.849	0.000	0.10	0.13	0.10	0.001
7.021	0.000	0.10	0.13	0.10	0.001
7.194	0.000	0.10	0.13	0.10	0.001
7.367	0.000	0.11	0.13	0.11	0.001
7.539	0.000	0.11	0.13	0.11	0.001
7.712	0.000	0.11	0.13	0.11	0.001
7.885	0.000	0.11	0.14	0.11	0.001
8.057	0.000	0.11	0.14	0.11	0.001
8.230	0.000	0.12	0.14	0.11	0.001
8.403	0.000	0.12	0.14	0.12	0.001
8.575	0.000	0.12	0.15	0.12	0.001
8.748	0.000	0.12	0.15	0.12	0.001
8.921	0.000	0.12	0.15	0.12	0.001
9.093	0.000	0.13	0.15	0.12	0.001
9.266	0.000	0.13	0.16	0.13	0.001
9.439	0.000	0.13	0.16	0.13	0.001
9.611	0.000	0.13	0.16	0.13	0.001
9.784	0.000	0.14	0.17	0.13	0.001
9.957	0.000	0.14	0.17	0.14	0.001
10.129	0.000	0.14	0.17	0.14	0.001
10.302	0.000	0.15	0.18	0.14	0.001
10.475	0.000	0.15	0.18	0.15	0.002
10.647	0.000	0.15	0.19	0.15	0.002
10.820	0.000	0.16	0.19	0.15	0.002
10.993	0.000	0.16	0.20	0.16	0.002
11.165	0.000	0.16	0.20	0.16	0.002
11.338	0.000	0.17	0.21	0.17	0.002
11.511	0.000	0.17	0.21	0.17	0.002
11.683	0.000	0.18	0.22	0.17	0.002
11.856	0.000	0.18	0.22	0.18	0.002
12.029	0.000	0.19	0.23	0.18	0.002
12.201	0.000	0.25	0.29	0.21	0.002
12.374	0.000	0.27	0.33	0.25	0.003
12.547	0.000	0.28	0.34	0.27	0.003
12.719	0.000	0.29	0.35	0.28	0.003
12.892	0.000	0.29	0.36	0.29	0.003
13.065	0.000	0.31	0.38	0.30	0.003
13.237	0.000	0.31	0.39	0.31	0.003
13.410	0.000	0.33	0.40	0.32	0.003
13.583	0.000	0.34	0.41	0.33	0.003

13.755	0.000	0.35	0.43	0.34	0.004
13.928	0.000	0.36	0.45	0.36	0.004
14.101	0.000	0.39	0.47	0.37	0.004
14.273	0.000	0.39	0.48	0.39	0.004
14.446	0.000	0.42	0.52	0.41	0.004
14.619	0.000	0.44	0.54	0.43	0.005
14.791	0.000	0.48	0.59	0.46	0.005
14.964	0.000	0.51	0.62	0.49	0.005
15.137	0.000	0.57	0.69	0.53	0.006
15.309	0.000	0.61	0.74	0.58	0.006
15.482	0.000	0.63	0.78	0.61	0.006
15.655	0.000	0.69	0.84	0.65	0.007
15.827	0.000	1.07	1.19	0.79	0.011
16.000	0.000	1.46	1.67	1.01	0.017
16.173	0.000	4.21	3.19	**2.67**	0.039
16.345	0.000	0.81	1.39	2.61	0.014
16.518	0.000	0.66	1.11	0.92	0.010
16.691	0.000	0.54	0.80	0.76	0.007
16.863	0.000	0.46	0.61	0.57	0.005
17.036	0.000	0.41	0.52	0.46	0.004
17.209	0.000	0.38	0.47	0.40	0.004
17.381	0.000	0.35	0.44	0.37	0.004
17.554	0.000	0.32	0.40	0.34	0.003
17.727	0.000	0.30	0.38	0.32	0.003
17.899	0.000	0.28	0.36	0.30	0.003
18.072	0.000	0.27	0.34	0.28	0.003
18.245	0.000	0.19	0.25	0.24	0.002
18.417	0.000	0.18	0.22	0.19	0.002
18.590	0.000	0.17	0.21	0.17	0.002
18.763	0.000	0.16	0.20	0.16	0.002
18.935	0.000	0.15	0.19	0.16	0.002
19.108	0.000	0.14	0.18	0.15	0.002
19.281	0.000	0.14	0.17	0.14	0.001
19.453	0.000	0.13	0.17	0.14	0.001
19.626	0.000	0.13	0.16	0.13	0.001
19.799	0.000	0.12	0.15	0.13	0.001
19.971	0.000	0.12	0.15	0.12	0.001
20.144	0.000	0.11	0.14	0.12	0.001
20.317	0.000	0.11	0.14	0.11	0.001
20.489	0.000	0.11	0.13	0.11	0.001
20.662	0.000	0.10	0.13	0.11	0.001
20.835	0.000	0.10	0.13	0.10	0.001
21.007	0.000	0.10	0.12	0.10	0.001
21.180	0.000	0.10	0.12	0.10	0.001
21.353	0.000	0.09	0.12	0.09	0.001
21.525	0.000	0.09	0.11	0.09	0.001
21.698	0.000	0.09	0.11	0.09	0.001
21.871	0.000	0.09	0.11	0.09	0.001
22.043	0.000	0.08	0.10	0.09	0.001
22.216	0.000	0.08	0.10	0.08	0.001
22.389	0.000	0.08	0.10	0.08	0.001
22.561	0.000	0.08	0.10	0.08	0.001
22.734	0.000	0.08	0.09	0.08	0.001
22.907	0.000	0.07	0.09	0.08	0.001
23.079	0.000	0.07	0.09	0.07	0.001
23.252	0.000	0.07	0.09	0.07	0.001
23.425	0.000	0.07	0.09	0.07	0.001
23.597	0.000	0.07	0.08	0.07	0.001
23.770	0.000	0.07	0.08	0.07	0.001
23.943	0.000	0.07	0.08	0.07	0.001
24.115	0.000	0.06	0.08	0.07	0.001
24.288	0.000	0.00	0.01	0.04	0.000

```
**************************************************************************
                    SMALL AREA UNIT HYDROGRAPH MODEL
==========================================================================
         (C) Copyright 1989-2008 Advanced Engineering Software (aes)
             Ver. 15.0  Release Date: 04/01/2008  License ID 1420

                          Analysis prepared by:

                              CA Engineering
                          13821 Newport Ave., Ste 110
                               Tustin, Ca. 92780


**************************************************************************
--------------------------------------------------------------------------

 Problem Descriptions:
  100 YEAR STORM
  BASIN ROUTING

--------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 1.01
    TOTAL CATCHMENT AREA(ACRES) =    1.30
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.020
    LOW LOSS FRACTION = 0.280
    TIME OF CONCENTRATION(MIN.) = 10.19
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) = 100
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.52
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  1.09
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  1.45
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  2.43
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  3.36
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  5.63

--------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.56
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.05

**************************************************************************
  TIME     VOLUME       Q    0.        2.5       5.0       7.5      10.0
 (HOURS)    (AF)      (CFS)
--------------------------------------------------------------------------
  0.04      0.0000      0.00  Q         .         .         .         .
  0.21      0.0006      0.09  Q         .         .         .         .
  0.38      0.0019      0.09  Q         .         .         .         .
  0.55      0.0032      0.09  Q         .         .         .         .
  0.72      0.0044      0.09  Q         .         .         .         .
  0.88      0.0057      0.09  Q         .         .         .         .
  1.05      0.0070      0.09  Q         .         .         .         .
  1.22      0.0083      0.09  Q         .         .         .         .
  1.39      0.0097      0.09  Q         .         .         .         .
  1.56      0.0110      0.10  Q         .         .         .         .
  1.73      0.0124      0.10  Q         .         .         .         .
  1.90      0.0137      0.10  Q         .         .         .         .
  2.07      0.0151      0.10  Q         .         .         .         .
  2.24      0.0165      0.10  Q         .         .         .         .
  2.41      0.0179      0.10  Q         .         .         .         .
  2.58      0.0193      0.10  Q         .         .         .         .
  2.75      0.0207      0.10  Q         .         .         .         .
  2.92      0.0222      0.10  Q         .         .         .         .
```

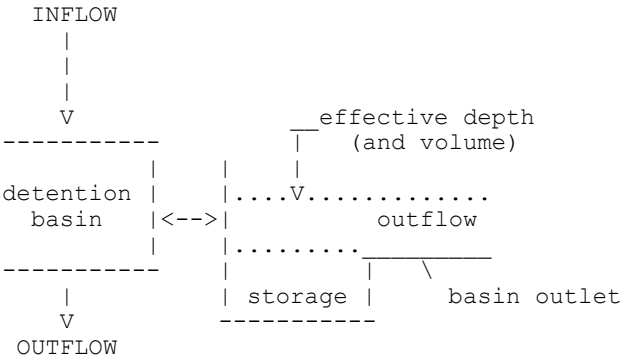
3.09	0.0236	0.10	Q	.	.	.	.
3.26	0.0251	0.11	Q	.	.	.	.
3.43	0.0266	0.11	Q	.	.	.	.
3.60	0.0281	0.11	Q	.	.	.	.
3.77	0.0296	0.11	Q	.	.	.	.
3.94	0.0312	0.11	Q	.	.	.	.
4.11	0.0327	0.11	Q	.	.	.	.
4.28	0.0343	0.11	Q	.	.	.	.
4.45	0.0359	0.11	Q	.	.	.	.
4.62	0.0375	0.12	Q	.	.	.	.
4.79	0.0391	0.12	Q	.	.	.	.
4.96	0.0408	0.12	Q	.	.	.	.
5.13	0.0424	0.12	Q	.	.	.	.
5.30	0.0441	0.12	Q	.	.	.	.
5.47	0.0458	0.12	Q	.	.	.	.
5.64	0.0476	0.12	Q	.	.	.	.
5.81	0.0493	0.13	Q	.	.	.	.
5.98	0.0511	0.13	Q	.	.	.	.
6.15	0.0529	0.13	Q	.	.	.	.
6.32	0.0547	0.13	Q	.	.	.	.
6.49	0.0565	0.13	Q	.	.	.	.
6.66	0.0584	0.13	Q	.	.	.	.
6.83	0.0603	0.14	Q	.	.	.	.
7.00	0.0622	0.14	Q	.	.	.	.
7.17	0.0641	0.14	Q	.	.	.	.
7.34	0.0661	0.14	Q	.	.	.	.
7.51	0.0681	0.14	Q	.	.	.	.
7.68	0.0701	0.15	Q	.	.	.	.
7.85	0.0722	0.15	Q	.	.	.	.
8.02	0.0743	0.15	Q	.	.	.	.
8.19	0.0764	0.15	Q	.	.	.	.
8.36	0.0785	0.16	Q	.	.	.	.
8.53	0.0807	0.16	Q	.	.	.	.
8.70	0.0830	0.16	Q	.	.	.	.
8.87	0.0852	0.16	Q	.	.	.	.
9.04	0.0875	0.17	Q	.	.	.	.
9.21	0.0899	0.17	Q	.	.	.	.
9.38	0.0923	0.17	Q	.	.	.	.
9.55	0.0947	0.17	Q	.	.	.	.
9.72	0.0972	0.18	Q	.	.	.	.
9.89	0.0997	0.18	Q	.	.	.	.
10.06	0.1023	0.19	Q	.	.	.	.
10.23	0.1049	0.19	Q	.	.	.	.
10.40	0.1076	0.19	Q	.	.	.	.
10.57	0.1103	0.20	Q	.	.	.	.
10.74	0.1131	0.20	Q	.	.	.	.
10.90	0.1159	0.21	Q	.	.	.	.
11.07	0.1189	0.21	Q	.	.	.	.
11.24	0.1219	0.22	Q	.	.	.	.
11.41	0.1249	0.22	Q	.	.	.	.
11.58	0.1281	0.23	Q	.	.	.	.
11.75	0.1313	0.23	Q	.	.	.	.
11.92	0.1346	0.24	Q	.	.	.	.
12.09	0.1382	0.27	.Q	.	.	.	.
12.26	0.1424	0.32	.Q	.	.	.	.
12.43	0.1470	0.33	.Q	.	.	.	.
12.60	0.1517	0.34	.Q	.	.	.	.
12.77	0.1566	0.35	.Q	.	.	.	.
12.94	0.1616	0.36	.Q	.	.	.	.
13.11	0.1668	0.38	.Q	.	.	.	.
13.28	0.1721	0.38	.Q	.	.	.	.
13.45	0.1777	0.40	.Q	.	.	.	.
13.62	0.1834	0.41	.Q	.	.	.	.
13.79	0.1893	0.44	.Q	.	.	.	.
13.96	0.1955	0.45	.Q	.	.	.	.
14.13	0.2020	0.48	.Q	.	.	.	.

```
 14.30      0.2089      0.49  .Q        .         .         .         .
 14.47      0.2161      0.53  . Q       .         .         .         .
 14.64      0.2237      0.55  . Q       .         .         .         .
 14.81      0.2318      0.60  . Q       .         .         .         .
 14.98      0.2405      0.64  . Q       .         .         .         .
 15.15      0.2500      0.71  . Q       .         .         .         .
 15.32      0.2603      0.77  .  Q      .         .         .         .
 15.49      0.2714      0.81  .  Q      .         .         .         .
 15.66      0.2833      0.90  .  Q      .         .         .         .
 15.83      0.2987      1.29  .    Q    .         .         .         .
 16.00      0.3202      1.77  .      Q  .         .         .         .
 16.17      0.3705      5.39  .         .         .Q        .         .
 16.34      0.4157      1.05  .   Q     .         .         .         .
 16.51      0.4288      0.83  .  Q      .         .         .         .
 16.68      0.4394      0.67  . Q       .         .         .         .
 16.85      0.4481      0.58  . Q       .         .         .         .
 17.02      0.4558      0.51  . Q       .         .         .         .
 17.19      0.4626      0.46  .Q        .         .         .         .
 17.36      0.4688      0.42  .Q        .         .         .         .
 17.53      0.4745      0.39  .Q        .         .         .         .
 17.70      0.4799      0.37  .Q        .         .         .         .
 17.87      0.4849      0.35  .Q        .         .         .         .
 18.04      0.4896      0.33  .Q        .         .         .         .
 18.21      0.4937      0.24  Q         .         .         .         .
 18.38      0.4970      0.23  Q         .         .         .         .
 18.55      0.5001      0.22  Q         .         .         .         .
 18.72      0.5031      0.21  Q         .         .         .         .
 18.89      0.5060      0.20  Q         .         .         .         .
 19.06      0.5087      0.19  Q         .         .         .         .
 19.23      0.5113      0.18  Q         .         .         .         .
 19.40      0.5139      0.18  Q         .         .         .         .
 19.57      0.5163      0.17  Q         .         .         .         .
 19.74      0.5186      0.16  Q         .         .         .         .
 19.91      0.5209      0.16  Q         .         .         .         .
 20.08      0.5231      0.15  Q         .         .         .         .
 20.25      0.5252      0.15  Q         .         .         .         .
 20.42      0.5273      0.14  Q         .         .         .         .
 20.59      0.5293      0.14  Q         .         .         .         .
 20.76      0.5312      0.14  Q         .         .         .         .
 20.93      0.5331      0.13  Q         .         .         .         .
 21.09      0.5349      0.13  Q         .         .         .         .
 21.26      0.5367      0.13  Q         .         .         .         .
 21.43      0.5385      0.12  Q         .         .         .         .
 21.60      0.5402      0.12  Q         .         .         .         .
 21.77      0.5419      0.12  Q         .         .         .         .
 21.94      0.5435      0.11  Q         .         .         .         .
 22.11      0.5451      0.11  Q         .         .         .         .
 22.28      0.5466      0.11  Q         .         .         .         .
 22.45      0.5482      0.11  Q         .         .         .         .
 22.62      0.5496      0.11  Q         .         .         .         .
 22.79      0.5511      0.10  Q         .         .         .         .
 22.96      0.5525      0.10  Q         .         .         .         .
 23.13      0.5539      0.10  Q         .         .         .         .
 23.30      0.5553      0.10  Q         .         .         .         .
 23.47      0.5567      0.10  Q         .         .         .         .
 23.64      0.5580      0.09  Q         .         .         .         .
 23.81      0.5593      0.09  Q         .         .         .         .
 23.98      0.5606      0.09  Q         .         .         .         .
 24.15      0.5618      0.09  Q         .         .         .         .
 24.32      0.5625      0.00  Q         .         .         .         .
--------------------------------------------------------------------------------

 Problem Descriptions:
```

```
================================================================================
     FLOW-THROUGH DETENTION BASIN MODEL

     SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
     CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =   10.190
     DEAD STORAGE(AF) =       0.00
     SPECIFIED DEAD STORAGE(AF) FILLED =       0.00
     ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
```




```
     DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
     TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   6
     *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
     *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
     *      0.000      0.000      0.000**      1.000      0.008      0.810*
     *      2.000      0.022      1.270**      3.000      0.037      3.670*
     *      4.000      0.050      6.630**      5.000      0.059      8.300*
--------------------------------------------------------------------------------
     BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
      INTERVAL   DEPTH   {S-O*DT/2}   {S+O*DT/2}
       NUMBER   (FEET)   (ACRE-FEET)  (ACRE-FEET)
           1     0.00       0.00000      0.00000
           2     1.00       0.00268      0.01404
           3     2.00       0.01297      0.03079
           4     3.00       0.01095      0.06247
           5     4.00       0.00372      0.09678
           6     5.00       0.00034      0.11684
     WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT INTERVAL(MIN.)
--------------------------------------------------------------------------------
     DETENTION BASIN ROUTING RESULTS:
     NOTE: COMPUTED BASIN DEPTH, OUTFLOW, AND STORAGE QUANTITIES
           OCCUR AT THE GIVEN TIME. BASIN INFLOW VALUES REPRESENT THE
           AVERAGE INFLOW DURING THE RECENT HYDROGRAPH UNIT INTERVAL.

        TIME  DEAD-STORAGE  INFLOW  EFFECTIVE  OUTFLOW  EFFECTIVE
       (HRS)   FILLED(AF)    (CFS)  DEPTH(FT)   (CFS)   VOLUME(AF)
--------------------------------------------------------------------------------
       0.036        0.000     0.00       0.00     0.00       0.000
       0.206        0.000     0.09       0.09     0.04       0.001
       0.375        0.000     0.09       0.11     0.08       0.001
       0.545        0.000     0.09       0.11     0.09       0.001
       0.715        0.000     0.09       0.11     0.09       0.001
       0.885        0.000     0.09       0.11     0.09       0.001
       1.055        0.000     0.09       0.11     0.09       0.001
       1.225        0.000     0.09       0.12     0.09       0.001
       1.394        0.000     0.09       0.12     0.09       0.001
       1.564        0.000     0.10       0.12     0.10       0.001
```

1.734	0.000	0.10	0.12	0.10	0.001
1.904	0.000	0.10	0.12	0.10	0.001
2.074	0.000	0.10	0.12	0.10	0.001
2.244	0.000	0.10	0.12	0.10	0.001
2.413	0.000	0.10	0.12	0.10	0.001
2.583	0.000	0.10	0.13	0.10	0.001
2.753	0.000	0.10	0.13	0.10	0.001
2.923	0.000	0.10	0.13	0.10	0.001
3.093	0.000	0.10	0.13	0.10	0.001
3.263	0.000	0.11	0.13	0.10	0.001
3.432	0.000	0.11	0.13	0.11	0.001
3.602	0.000	0.11	0.13	0.11	0.001
3.772	0.000	0.11	0.13	0.11	0.001
3.942	0.000	0.11	0.14	0.11	0.001
4.112	0.000	0.11	0.14	0.11	0.001
4.282	0.000	0.11	0.14	0.11	0.001
4.451	0.000	0.11	0.14	0.11	0.001
4.621	0.000	0.12	0.14	0.11	0.001
4.791	0.000	0.12	0.14	0.12	0.001
4.961	0.000	0.12	0.15	0.12	0.001
5.131	0.000	0.12	0.15	0.12	0.001
5.301	0.000	0.12	0.15	0.12	0.001
5.470	0.000	0.12	0.15	0.12	0.001
5.640	0.000	0.12	0.15	0.12	0.001
5.810	0.000	0.13	0.15	0.12	0.001
5.980	0.000	0.13	0.16	0.13	0.001
6.150	0.000	0.13	0.16	0.13	0.001
6.320	0.000	0.13	0.16	0.13	0.001
6.489	0.000	0.13	0.16	0.13	0.001
6.659	0.000	0.13	0.16	0.13	0.001
6.829	0.000	0.14	0.17	0.13	0.001
6.999	0.000	0.14	0.17	0.14	0.001
7.169	0.000	0.14	0.17	0.14	0.001
7.339	0.000	0.14	0.17	0.14	0.001
7.508	0.000	0.14	0.18	0.14	0.001
7.678	0.000	0.15	0.18	0.14	0.001
7.848	0.000	0.15	0.18	0.15	0.002
8.018	0.000	0.15	0.18	0.15	0.002
8.188	0.000	0.15	0.19	0.15	0.002
8.358	0.000	0.16	0.19	0.15	0.002
8.527	0.000	0.16	0.19	0.16	0.002
8.697	0.000	0.16	0.20	0.16	0.002
8.867	0.000	0.16	0.20	0.16	0.002
9.037	0.000	0.17	0.20	0.16	0.002
9.207	0.000	0.17	0.21	0.17	0.002
9.377	0.000	0.17	0.21	0.17	0.002
9.546	0.000	0.17	0.21	0.17	0.002
9.716	0.000	0.18	0.22	0.18	0.002
9.886	0.000	0.18	0.22	0.18	0.002
10.056	0.000	0.19	0.23	0.18	0.002
10.226	0.000	0.19	0.23	0.19	0.002
10.396	0.000	0.19	0.24	0.19	0.002
10.565	0.000	0.20	0.24	0.19	0.002
10.735	0.000	0.20	0.25	0.20	0.002
10.905	0.000	0.21	0.25	0.20	0.002
11.075	0.000	0.21	0.26	0.21	0.002
11.245	0.000	0.22	0.26	0.21	0.002
11.415	0.000	0.22	0.27	0.22	0.002
11.584	0.000	0.23	0.28	0.22	0.002
11.754	0.000	0.23	0.29	0.23	0.002
11.924	0.000	0.24	0.29	0.24	0.002
12.094	0.000	0.27	0.33	0.25	0.003
12.264	0.000	0.32	0.39	0.29	0.003
12.434	0.000	0.33	0.41	0.32	0.003
12.603	0.000	0.34	0.42	0.33	0.003
12.773	0.000	0.35	0.43	0.34	0.004

12.943	0.000	0.36	0.44	0.36	0.004
13.113	0.000	0.38	0.46	0.37	0.004
13.283	0.000	0.38	0.47	0.38	0.004
13.453	0.000	0.40	0.49	0.39	0.004
13.622	0.000	0.41	0.51	0.40	0.004
13.792	0.000	0.44	0.53	0.42	0.004
13.962	0.000	0.45	0.55	0.44	0.005
14.132	0.000	0.48	0.58	0.46	0.005
14.302	0.000	0.49	0.61	0.48	0.005
14.471	0.000	0.53	0.65	0.51	0.005
14.641	0.000	0.55	0.68	0.54	0.006
14.811	0.000	0.60	0.73	0.57	0.006
14.981	0.000	0.64	0.77	0.61	0.006
15.151	0.000	0.71	0.86	0.66	0.007
15.321	0.000	0.77	0.93	0.72	0.008
15.490	0.000	0.81	0.98	0.77	0.008
15.660	0.000	0.90	1.07	0.82	0.009
15.830	0.000	1.29	1.45	0.93	0.014
16.000	0.000	1.77	2.04	1.19	0.022
16.170	0.000	5.39	3.76	**3.65**	0.047
16.340	0.000	1.05	1.36	3.45	0.013
16.510	0.000	0.83	1.24	0.95	0.012
16.679	0.000	0.67	1.03	0.87	0.009
16.849	0.000	0.58	0.79	0.73	0.007
17.019	0.000	0.51	0.66	0.59	0.006
17.189	0.000	0.46	0.59	0.51	0.005
17.359	0.000	0.42	0.54	0.45	0.004
17.528	0.000	0.39	0.50	0.42	0.004
17.698	0.000	0.37	0.46	0.39	0.004
17.868	0.000	0.35	0.44	0.36	0.004
18.038	0.000	0.33	0.41	0.34	0.003
18.208	0.000	0.24	0.32	0.30	0.003
18.378	0.000	0.23	0.29	0.25	0.002
18.547	0.000	0.22	0.27	0.23	0.002
18.717	0.000	0.21	0.26	0.22	0.002
18.887	0.000	0.20	0.25	0.21	0.002
19.057	0.000	0.19	0.24	0.20	0.002
19.227	0.000	0.18	0.23	0.19	0.002
19.397	0.000	0.18	0.22	0.18	0.002
19.566	0.000	0.17	0.21	0.17	0.002
19.736	0.000	0.16	0.20	0.17	0.002
19.906	0.000	0.16	0.20	0.16	0.002
20.076	0.000	0.15	0.19	0.16	0.002
20.246	0.000	0.15	0.19	0.15	0.002
20.416	0.000	0.14	0.18	0.15	0.002
20.586	0.000	0.14	0.17	0.14	0.001
20.755	0.000	0.14	0.17	0.14	0.001
20.925	0.000	0.13	0.16	0.14	0.001
21.095	0.000	0.13	0.16	0.13	0.001
21.265	0.000	0.13	0.16	0.13	0.001
21.435	0.000	0.12	0.15	0.13	0.001
21.604	0.000	0.12	0.15	0.12	0.001
21.774	0.000	0.12	0.15	0.12	0.001
21.944	0.000	0.11	0.14	0.12	0.001
22.114	0.000	0.11	0.14	0.11	0.001
22.284	0.000	0.11	0.14	0.11	0.001
22.454	0.000	0.11	0.13	0.11	0.001
22.624	0.000	0.11	0.13	0.11	0.001
22.793	0.000	0.10	0.13	0.10	0.001
22.963	0.000	0.10	0.13	0.10	0.001
23.133	0.000	0.10	0.12	0.10	0.001
23.303	0.000	0.10	0.12	0.10	0.001
23.473	0.000	0.10	0.12	0.10	0.001
23.642	0.000	0.09	0.12	0.09	0.001
23.812	0.000	0.09	0.11	0.09	0.001

23.982	0.000	0.09	0.11	0.09	0.001
24.152	0.000	0.09	0.11	0.09	0.001
24.322	0.000	0.00	0.02	0.05	0.000

BASIN, YBAR, & CULVERT CALCULATIONS
(SECTION 3.4)

STORAGE PIPE CALCULATIONS

BREA PLAZA

VOLUME = 130 LF - 60" DIA. PIPE

OUTFLOW:

SEE CULVERT MASTER OUTPUT

6" OUTLET (L = 14.03', S = 0.0164)
12" OUTLET (L = 8.89', S = 0.0245)

		6" OUTLET	12" OUTLET	TOTAL	STORAGE PIPE	
DEPTH	WS ELEV	FLOW	FLOW	FLOW		
FT	FT	CFS	CFS	CFS	CF	AF
0	313.81	-	-	-	0	0
1	314.81	0.81	-	0.81	364	0.008356
2	315.81	1.27	-	1.27	953	0.021878
3	316.81	1.61	2.06	3.67	1599	0.036708
4	317.81	1.89	4.74	6.63	2189	0.050253
5	318.81	2.13	6.17	8.30	2552	0.058586

Y BAR CALCULATIONS

DEVELOPED AREA - RAMONA AVE.

25 YEAR STORM

P24= 5.63 in

SUBAREA	ACRES	CN	S	Ia	Yj	Yj*Aj
A1	0.56	86	1.63	0.33	0.72	0.40
A2	0.74	86	1.63	0.33	0.72	0.53

$Y=(\sum Yj*Aj)/A$ Y= 0.72

TOTAL 1.30 Ybar=1-Y Ybar= 0.28

Culvert Calculator Report
487-4 Storage Culvert

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	314.81	ft	Headwater Depth/ Height	2.00	
Computed Headwater Elevation	314.81	ft	Discharge	0.81	cfs
Inlet Control HW Elev	314.81	ft	Tailwater Elevation	313.58	ft
Outlet Control HW Elev	314.70	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	313.81	ft	Downstream Invert	313.58	ft
Length	14.03	ft	Constructed Slope	0.016393	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	0.37	ft
Slope Type	Steep		Normal Depth	0.36	ft
Flow Regime	Supercritical		Critical Depth	0.45	ft
Velocity Downstream	5.13	ft/s	Critical Slope	0.010826	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.010	
Section Material	PVC		Span	0.50	ft
Section Size	6 inch		Rise	0.50	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev	314.70	ft	Upstream Velocity Head	0.30	ft
Ke	0.50		Entrance Loss	0.15	ft

Inlet Control Properties					
Inlet Control HW Elev	314.81	ft	Flow Control	Submerged	
Inlet Type	Square edge w/headwall		Area Full	0.2	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

© Haestad Methods, Inc. 37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

Culvert Calculator Report
487-4 Storage Culvert

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	315.81	ft	Headwater Depth/ Height	4.00	
Computed Headwater Elevation	315.81	ft	Discharge	1.27	cfs
Inlet Control HW Elev	315.81	ft	Tailwater Elevation	313.58	ft
Outlet Control HW Elev	315.48	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	313.81	ft	Downstream Invert	313.58	ft
Length	14.03	ft	Constructed Slope	0.016393	ft/ft

Hydraulic Profile					
Profile	CompositeM2Pressure		Depth, Downstream	0.49	ft
Slope Type	Mild		Normal Depth	N/A	ft
Flow Regime	Subcritical		Critical Depth	0.49	ft
Velocity Downstream	6.51	ft/s	Critical Slope	0.027103	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.010	
Section Material	PVC		Span	0.50	ft
Section Size	6 inch		Rise	0.50	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev	315.48	ft	Upstream Velocity Head	0.65	ft
Ke	0.50		Entrance Loss	0.33	ft

Inlet Control Properties					
Inlet Control HW Elev	315.81	ft	Flow Control	Submerged	
Inlet Type	Square edge w/headwall		Area Full	0.2	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

© Haestad Methods, Inc.

Culvert Calculator Report
487-4 Storage Culvert

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	316.81	ft	Headwater Depth/ Height	6.00	
Computed Headwater Elevation	316.81	ft	Discharge	1.61	cfs
Inlet Control HW Elev	316.81	ft	Tailwater Elevation	313.58	ft
Outlet Control HW Elev	316.32	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	313.81	ft	Downstream Invert	313.58	ft
Length	14.03	ft	Constructed Slope	0.016393	ft/ft

Hydraulic Profile					
Profile	CompositeM2Pressure		Depth, Downstream	0.50	ft
Slope Type	Mild		Normal Depth	N/A	ft
Flow Regime	Subcritical		Critical Depth	0.50	ft
Velocity Downstream	8.20	ft/s	Critical Slope	0.044938	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.010	
Section Material	PVC		Span	0.50	ft
Section Size	6 inch		Rise	0.50	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev	316.32	ft	Upstream Velocity Head	1.04	ft
Ke	0.50		Entrance Loss	0.52	ft

Inlet Control Properties					
Inlet Control HW Elev	316.81	ft	Flow Control	Submerged	
Inlet Type	Square edge w/headwall		Area Full	0.2	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

© Haestad Methods, Inc.

Culvert Calculator Report
487-4 Storage Culvert

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	317.81	ft	Headwater Depth/ Height	8.00	
Computed Headwater Elevation	317.81	ft	Discharge	1.89	cfs
Inlet Control HW Elev	317.81	ft	Tailwater Elevation	313.58	ft
Outlet Control HW Elev	317.17	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	313.81	ft	Downstream Invert	313.58	ft
Length	14.03	ft	Constructed Slope	0.016393	ft/ft

Hydraulic Profile					
Profile	CompositeM2Pressure		Depth, Downstream	0.50	ft
Slope Type	Mild		Normal Depth	N/A	ft
Flow Regime	Subcritical		Critical Depth	0.50	ft
Velocity Downstream	9.61	ft/s	Critical Slope	0.062924	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.010	
Section Material	PVC		Span	0.50	ft
Section Size	6 inch		Rise	0.50	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev	317.17	ft	Upstream Velocity Head	1.43	ft
Ke	0.50		Entrance Loss	0.72	ft

Inlet Control Properties					
Inlet Control HW Elev	317.81	ft	Flow Control	Submerged	
Inlet Type	Square edge w/headwall		Area Full	0.2	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

© Haestad Methods, Inc.

Culvert Calculator Report
487-4 Storage Culvert

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	318.81	ft	Headwater Depth/ Height	10.00	
Computed Headwater Elevation	318.81	ft	Discharge	2.13	cfs
Inlet Control HW Elev	318.81	ft	Tailwater Elevation	313.58	ft
Outlet Control HW Elev	318.01	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	313.81	ft	Downstream Invert	313.58	ft
Length	14.03	ft	Constructed Slope	0.016393	ft/ft

Hydraulic Profile					
Profile	CompositeM2Pressure		Depth, Downstream	0.50	ft
Slope Type	Mild		Normal Depth	N/A	ft
Flow Regime	Subcritical		Critical Depth	0.50	ft
Velocity Downstream	10.83	ft/s	Critical Slope	0.081215	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.010	
Section Material	PVC		Span	0.50	ft
Section Size	6 inch		Rise	0.50	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev	318.01	ft	Upstream Velocity Head	1.82	ft
Ke	0.50		Entrance Loss	0.91	ft

Inlet Control Properties					
Inlet Control HW Elev	318.81	ft	Flow Control	Submerged	
Inlet Type	Square edge w/headwall		Area Full	0.2	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

© Haestad Methods, Inc.

Culvert Calculator Report
487-4 Storage Culvert

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	316.81	ft	Headwater Depth/ Height	1.00	
Computed Headwater Elevation	316.81	ft	Discharge	2.06	cfs
Inlet Control HW Elev	316.63	ft	Tailwater Elevation	313.58	ft
Outlet Control HW Elev	316.81	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	315.81	ft	Downstream Invert	313.63	ft
Length	8.89	ft	Constructed Slope	0.245219	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	0.26	ft
Slope Type	Steep		Normal Depth	0.20	ft
Flow Regime	Supercritical		Critical Depth	0.61	ft
Velocity Downstream	12.38	ft/s	Critical Slope	0.004109	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.010	
Section Material	PVC		Span	1.00	ft
Section Size	12 inch		Rise	1.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev	316.81	ft	Upstream Velocity Head	0.26	ft
Ke	0.50		Entrance Loss	0.13	ft

Inlet Control Properties					
Inlet Control HW Elev	316.63	ft	Flow Control	Unsubmerged	
Inlet Type	Square edge w/headwall		Area Full	0.8	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

© Haestad Methods, Inc.

Culvert Calculator Report
487-4 Storage Culvert

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	317.81	ft	Headwater Depth/ Height	2.00	
Computed Headwater Elevation	317.81	ft	Discharge	4.74	cfs
Inlet Control HW Elev	317.81	ft	Tailwater Elevation	313.58	ft
Outlet Control HW Elev	317.66	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	315.81	ft	Downstream Invert	313.63	ft
Length	8.89	ft	Constructed Slope	0.245219	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	0.45	ft
Slope Type	Steep		Normal Depth	0.31	ft
Flow Regime	Supercritical		Critical Depth	0.90	ft
Velocity Downstream	13.77	ft/s	Critical Slope	0.009220	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.010	
Section Material	PVC		Span	1.00	ft
Section Size	12 inch		Rise	1.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev	317.66	ft	Upstream Velocity Head	0.63	ft
Ke	0.50		Entrance Loss	0.31	ft

Inlet Control Properties					
Inlet Control HW Elev	317.81	ft	Flow Control	Submerged	
Inlet Type	Square edge w/headwall		Area Full	0.8	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

© Haestad Methods, Inc. 37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

Culvert Calculator Report
487-4 Storage Culvert

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	318.81	ft	Headwater Depth/ Height	3.00	
Computed Headwater Elevation	318.81	ft	Discharge	6.17	cfs
Inlet Control HW Elev	318.81	ft	Tailwater Elevation	313.58	ft
Outlet Control HW Elev	318.25	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	315.81	ft	Downstream Invert	313.63	ft
Length	8.89	ft	Constructed Slope	0.245219	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	0.53	ft
Slope Type	Steep		Normal Depth	0.35	ft
Flow Regime	Supercritical		Critical Depth	0.96	ft
Velocity Downstream	14.50	ft/s	Critical Slope	0.015435	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.010	
Section Material	PVC		Span	1.00	ft
Section Size	12 inch		Rise	1.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev	318.25	ft	Upstream Velocity Head	0.98	ft
Ke	0.50		Entrance Loss	0.49	ft

Inlet Control Properties					
Inlet Control HW Elev	318.81	ft	Flow Control	Submerged	
Inlet Type	Square edge w/headwall		Area Full	0.8	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

© Haestad Methods, Inc.

WINTR-55 PROGRAM
HYDROLOGIC ANALYSIS REPORTS
(SECTION 3.5)

WinTR-55 Current Data Description

--- Identification Data ---

User: 487-4 WQMP
Project: Brea Plaza Mixed-Use
SubTitle: Existing
State: California
County: Orange
Filename: S:\487-4 BREA PLAZA PHASE 2\WQMP\WinTR-55 Existing Condition.w55

Date: 6/22/2021
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
A1		Outlet	2.2	97	0.1

Total area: 2.20 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
2.05	.0	.0	.0	.0	.0	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type I
Dimensionless Unit Hydrograph: <standard>

Brea Plaza Mixed-Use
Existing
Orange County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
2.05	.0	.0	.0	.0	.0	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type I
Dimensionless Unit Hydrograph: <standard>

Brea Plaza Mixed-Use
Existing
Orange County, California

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 2-Yr (cfs)
SUBAREAS	
A1	2.94
REACHES	
OUTLET	2.94

Brea Plaza Mixed-Use
Existing
Orange County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs) (hr)
SUBAREAS	
A1	2.94 9.92
REACHES	
OUTLET	2.94

Brea Plaza Mixed-Use
Existing
Orange County, California

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
A1	2.20	0.100	97	Outlet	

Total Area: 2.20 (ac)

Brea Plaza Mixed-Use
Existing
Orange County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
A1							
SHEET	88	0.0350	0.011				0.018
SHALLOW	348	0.0050	0.025				0.067
					Time of Concentration		0.1

0.0850
(rounded up to 0.1 by Program)

Brea Plaza Mixed-Use
Existing
Orange County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
A1	Open space; grass cover > 75% (good)	D	.166	80
	Paved parking lots, roofs, driveways	D	2.035	98
	Total Area / Weighted Curve Number		2.2	97

WinTR-20 Printed Page File Beginning of Input Data List
TR20.inp

WinTR-20: Version 1.10 0 0 0.05
Brea Plaza Mixed-Use
Existing

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

STORM ANALYSIS:
2-Yr 2.05 Type I 2

STRUCTURE RATING:

GLOBAL OUTPUT:
2 0.05 YYYYN YYYYNN

WinTR-20 Printed Page File End of Input Data List

Brea Plaza Mixed-Use
Existing

Name of printed page file:
TR20.out

Existing 2-yr Runoff volume =
1.690 inches x 2.20 acres x 43,560 sq-ft/ac x
1 ft/12 inches = 13,496 cu-ft

STORM 2-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
A1	0.003		1.690		9.92	2.94	855.15

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
4.454	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.498	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.543	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.587	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.631	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.675	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.719	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.764	0.05	0.05	0.05	0.06	0.06	0.06	0.06
4.808	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.852	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.896	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.941	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.985	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.029	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.073	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.117	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.162	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.206	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.250	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.294	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.338	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.383	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.427	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.471	0.06	0.06	0.06	0.07	0.07	0.07	0.07
5.515	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.559	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.604	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.648	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.692	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.736	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.781	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.825	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.869	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.913	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.957	0.07	0.07	0.07	0.07	0.07	0.07	0.07

6.002	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.046	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.090	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.134	0.07	0.07	0.08	0.08	0.08	0.08	0.08
6.178	0.08	0.08	0.08	0.08	0.08	0.08	0.08

Brea Plaza Mixed-Use
Existing

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.223	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.267	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.311	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.355	0.08	0.08	0.08	0.08	0.09	0.09	0.09
6.399	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.444	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.488	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.532	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.576	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.621	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.665	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.709	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.753	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.797	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.842	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.886	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.930	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.974	0.11	0.11	0.11	0.11	0.11	0.11	0.11
7.018	0.11	0.11	0.11	0.11	0.11	0.11	0.12
7.063	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.107	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.151	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.195	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.239	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.284	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.328	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.372	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.416	0.12	0.12	0.12	0.12	0.12	0.12	0.13
7.461	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.505	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.549	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.593	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.637	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.682	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.726	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.770	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.814	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.858	0.13	0.13	0.13	0.13	0.13	0.13	0.14
7.903	0.14	0.14	0.14	0.14	0.14	0.14	0.14
7.947	0.14	0.14	0.14	0.14	0.14	0.14	0.14
7.991	0.14	0.14	0.14	0.14	0.14	0.14	0.14
8.035	0.14	0.14	0.14	0.14	0.14	0.14	0.14
8.079	0.14	0.14	0.14	0.14	0.14	0.15	0.15
8.124	0.15	0.15	0.15	0.15	0.15	0.15	0.15
8.168	0.15	0.15	0.16	0.16	0.16	0.16	0.16
8.212	0.16	0.16	0.16	0.16	0.16	0.16	0.17
8.256	0.17	0.17	0.17	0.17	0.17	0.17	0.17
8.301	0.17	0.18	0.18	0.18	0.18	0.18	0.18
8.345	0.18	0.18	0.18	0.18	0.19	0.19	0.19
8.389	0.19	0.19	0.19	0.19	0.19	0.19	0.19
8.433	0.20	0.20	0.20	0.20	0.20	0.20	0.20

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

Brea Plaza Mixed-Use
Existing

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.477	0.20	0.21	0.21	0.21	0.21	0.21	0.21
8.522	0.21	0.21	0.21	0.21	0.21	0.22	0.22
8.566	0.22	0.22	0.22	0.22	0.22	0.22	0.22
8.610	0.23	0.23	0.23	0.23	0.23	0.23	0.23
8.654	0.23	0.23	0.24	0.24	0.24	0.24	0.24
8.698	0.24	0.24	0.24	0.24	0.24	0.24	0.25
8.743	0.25	0.25	0.25	0.25	0.25	0.25	0.25
8.787	0.26	0.26	0.26	0.26	0.26	0.26	0.26
8.831	0.26	0.26	0.26	0.26	0.27	0.27	0.27
8.875	0.27	0.27	0.27	0.27	0.27	0.27	0.28
8.919	0.28	0.28	0.28	0.28	0.28	0.28	0.28
8.964	0.28	0.29	0.29	0.29	0.29	0.29	0.29
9.008	0.29	0.29	0.29	0.29	0.30	0.30	0.30
9.052	0.30	0.30	0.30	0.31	0.31	0.31	0.31
9.096	0.31	0.31	0.31	0.32	0.32	0.32	0.32
9.141	0.32	0.32	0.33	0.33	0.33	0.33	0.34
9.185	0.34	0.34	0.34	0.34	0.34	0.35	0.35
9.229	0.35	0.35	0.35	0.36	0.36	0.36	0.36
9.273	0.37	0.37	0.37	0.37	0.37	0.37	0.38
9.317	0.38	0.38	0.38	0.38	0.38	0.39	0.39
9.362	0.39	0.40	0.40	0.40	0.40	0.40	0.41
9.406	0.41	0.41	0.41	0.41	0.41	0.42	0.42
9.450	0.42	0.42	0.43	0.43	0.43	0.43	0.43
9.494	0.44	0.44	0.44	0.44	0.45	0.45	0.46
9.538	0.47	0.49	0.50	0.52	0.53	0.55	0.56
9.583	0.58	0.59	0.60	0.61	0.62	0.63	0.64
9.627	0.65	0.67	0.70	0.72	0.75	0.78	0.82
9.671	0.85	0.87	0.90	0.92	0.94	0.96	0.98
9.715	1.00	1.02	1.05	1.08	1.13	1.18	1.23
9.759	1.28	1.34	1.39	1.44	1.49	1.53	1.56

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

9.804	1.59	1.62	1.66	1.70	1.76	1.83	1.92
9.848	2.03	2.13	2.25	2.36	2.46	2.56	2.65
9.892	2.73	2.80	2.85	2.90	2.93	2.94	2.94
9.936	2.92	2.89	2.84	2.79	2.73	2.67	2.61
9.981	2.55	2.50	2.46	2.42	2.39	2.35	2.31
10.025	2.26	2.19	2.11	2.01	1.89	1.78	1.66
10.069	1.54	1.44	1.33	1.24	1.16	1.10	1.04
10.113	1.00	0.96	0.92	0.89	0.86	0.84	0.82
10.157	0.79	0.78	0.76	0.75	0.73	0.72	0.71
10.202	0.71	0.70	0.69	0.69	0.68	0.67	0.67
10.246	0.66	0.65	0.65	0.64	0.63	0.62	0.62
10.290	0.61	0.61	0.61	0.60	0.60	0.60	0.59
10.334	0.59	0.58	0.58	0.57	0.56	0.56	0.55
10.378	0.55	0.54	0.54	0.53	0.53	0.53	0.52
10.423	0.52	0.52	0.51	0.50	0.50	0.49	0.49
10.467	0.48	0.47	0.47	0.46	0.46	0.45	0.45
10.511	0.45	0.45	0.44	0.44	0.44	0.43	0.43
10.555	0.42	0.42	0.41	0.41	0.41	0.40	0.40
10.599	0.40	0.40	0.39	0.39	0.39	0.39	0.39
10.644	0.39	0.38	0.38	0.38	0.38	0.38	0.38
10.688	0.37	0.37	0.37	0.37	0.37	0.37	0.37

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
10.732	0.37	0.37	0.36	0.36	0.36	0.36	0.36
10.776	0.36	0.36	0.35	0.35	0.35	0.35	0.35
10.821	0.35	0.35	0.35	0.35	0.35	0.34	0.34
10.865	0.34	0.34	0.34	0.34	0.34	0.33	0.33
10.909	0.33	0.33	0.33	0.33	0.33	0.33	0.33
10.953	0.33	0.32	0.32	0.32	0.32	0.32	0.32
10.997	0.32	0.31	0.31	0.31	0.31	0.31	0.31

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

11.042	0.31	0.31	0.31	0.31	0.31	0.30	0.30
11.086	0.30	0.30	0.30	0.30	0.30	0.30	0.30
11.130	0.30	0.30	0.30	0.30	0.30	0.30	0.30
11.174	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.218	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.263	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.307	0.29	0.29	0.29	0.28	0.28	0.28	0.28
11.351	0.28	0.28	0.28	0.28	0.28	0.28	0.28
11.395	0.28	0.28	0.28	0.28	0.28	0.28	0.28
11.439	0.28	0.28	0.28	0.28	0.27	0.27	0.27
11.484	0.27	0.27	0.27	0.27	0.27	0.27	0.27
11.528	0.27	0.27	0.27	0.27	0.27	0.27	0.27
11.572	0.27	0.27	0.27	0.27	0.27	0.27	0.26
11.616	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.661	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.705	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.749	0.26	0.26	0.25	0.25	0.25	0.25	0.25
11.793	0.25	0.25	0.25	0.25	0.25	0.25	0.25
11.837	0.25	0.25	0.25	0.25	0.25	0.25	0.25
11.882	0.25	0.25	0.25	0.24	0.24	0.24	0.24
11.926	0.24	0.24	0.24	0.24	0.24	0.24	0.24
11.970	0.24	0.24	0.24	0.24	0.24	0.24	0.24
12.014	0.24	0.24	0.24	0.24	0.24	0.24	0.24
12.058	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.103	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.147	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.191	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.235	0.23	0.23	0.23	0.23	0.22	0.22	0.22
12.279	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.324	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.368	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.412	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.456	0.22	0.22	0.22	0.22	0.22	0.21	0.21
12.501	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.545	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.589	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.633	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.677	0.21	0.21	0.21	0.21	0.21	0.21	0.21

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

12.722	0.21	0.21	0.20	0.20	0.20	0.20	0.20
12.766	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.810	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.854	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.898	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.943	0.20	0.20	0.19	0.19	0.19	0.19	0.19

Brea Plaza Mixed-Use
Existing

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.987	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.031	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.075	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.119	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.164	0.19	0.19	0.19	0.18	0.18	0.18	0.18
13.208	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.252	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.296	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.341	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.385	0.18	0.18	0.18	0.18	0.18	0.17	0.17
13.429	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.473	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.517	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.562	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.606	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.650	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.694	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.738	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.783	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.827	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.871	0.15	0.15	0.15	0.15	0.15	0.15	0.15
13.915	0.15	0.15	0.15	0.15	0.15	0.15	0.15

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

13.959	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.004	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.048	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.092	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.136	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.181	0.15	0.14	0.14	0.14	0.14	0.14	0.14
14.225	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.269	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.313	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.357	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.402	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.446	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.490	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.534	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.578	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.623	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.667	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.711	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.755	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.799	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.844	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.888	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.932	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.976	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.021	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.065	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.109	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.153	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.197	0.14	0.14	0.14	0.14	0.14	0.14	0.14

Line
Start Time ---------- Flow Values @ time increment of 0.006 hr ----------
(hr) (cfs) (cfs) (cfs) (cfs) (cfs) (cfs) (cfs)

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

15.242	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.286	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.330	0.14	0.14	0.14	0.13	0.13	0.13	0.13
15.374	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.418	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.463	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.507	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.551	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.595	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.639	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.684	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.728	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.772	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.816	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.861	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.905	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.949	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.993	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.037	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.082	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.126	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.170	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.214	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.258	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.303	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.347	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.391	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.435	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.479	0.13	0.13	0.13	0.12	0.12	0.12	0.12
16.524	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.568	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.612	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.656	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.701	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.745	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.789	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.833	0.12	0.12	0.12	0.12	0.12	0.12	0.12

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

16.877	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.922	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.966	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.010	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.054	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.098	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.143	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.187	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.231	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.275	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.319	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.364	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.408	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.452	0.12	0.12	0.12	0.12	0.12	0.12	0.12

Brea Plaza Mixed-Use
Existing

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
17.496	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.541	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.585	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.629	0.12	0.12	0.12	0.12	0.11	0.11	0.11
17.673	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.717	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.762	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.806	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.850	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.894	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.938	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.983	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.027	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.071	0.11	0.11	0.11	0.11	0.11	0.11	0.11

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

18.115	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.159	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.204	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.248	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.292	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.336	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.381	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.425	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.469	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.513	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.557	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.602	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.646	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.690	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.734	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.778	0.11	0.10	0.10	0.10	0.10	0.10	0.10
18.823	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.867	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.911	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.955	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.999	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.044	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.088	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.132	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.176	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.221	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.265	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.309	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.353	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.397	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.442	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.486	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.530	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.574	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.618	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.663	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.707	0.10	0.10	0.10	0.10	0.10	0.10	0.10

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

Brea Plaza Mixed-Use
Existing

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
19.751	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.795	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.839	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.884	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.928	0.09	0.09	0.09	0.09	0.09	0.09	0.09
19.972	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.016	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.061	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.105	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.149	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.193	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.237	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.282	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.326	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.370	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.414	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.458	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.503	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.547	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.591	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.635	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.679	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.724	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.768	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.812	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.856	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.901	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.945	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.989	0.09	0.09	0.09	0.09	0.09	0.09	0.09

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

21.033	0.09	0.09	0.09	0.09	0.08	0.08	0.08
21.077	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.122	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.166	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.210	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.254	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.298	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.343	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.387	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.431	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.475	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.519	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.564	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.608	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.652	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.696	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.741	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.785	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.829	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.873	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.917	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.962	0.08	0.08	0.08	0.08	0.08	0.08	0.08

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
22.006	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.050	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.094	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.138	0.08	0.08	0.08	0.08	0.08	0.08	0.07
22.183	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.227	0.07	0.07	0.07	0.07	0.07	0.07	0.07

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

22.271	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.315	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.359	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.404	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.448	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.492	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.536	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.581	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.625	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.669	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.713	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.757	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.802	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.846	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.890	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.934	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.978	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.023	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.067	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.111	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.155	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.199	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.244	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.288	0.07	0.07	0.06	0.06	0.06	0.06	0.06
23.332	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.376	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.421	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.465	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.509	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.553	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.597	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.642	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.686	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.730	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.774	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.818	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.863	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.907	0.06	0.06	0.06	0.06	0.06	0.06	0.06

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

23.951	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.995	0.06	0.06	0.06	0.06	0.06	0.06	0.05
24.039	0.05						

Brea Plaza Mixed-Use
Existing

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.003		1.690		9.92	2.94	855.15

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.454	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.498	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.543	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.587	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.631	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.675	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.719	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.764	0.05	0.05	0.05	0.06	0.06	0.06	0.06
4.808	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.852	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.896	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.941	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.985	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.029	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.073	0.06	0.06	0.06	0.06	0.06	0.06	0.06

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

5.117	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.162	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.206	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.250	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.294	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.338	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.383	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.427	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.471	0.06	0.06	0.06	0.07	0.07	0.07	0.07
5.515	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.559	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.604	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.648	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.692	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.736	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.781	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.825	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.869	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.913	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.957	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.002	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.046	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.090	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.134	0.07	0.07	0.08	0.08	0.08	0.08	0.08
6.178	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.223	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.267	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.311	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.355	0.08	0.08	0.08	0.08	0.09	0.09	0.09
6.399	0.09	0.09	0.09	0.09	0.09	0.09	0.09

Line
Start Time ---------- Flow Values @ time increment of 0.006 hr ----------

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.444	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.488	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.532	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.576	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.621	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.665	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.709	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.753	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.797	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.842	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.886	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.930	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.974	0.11	0.11	0.11	0.11	0.11	0.11	0.11
7.018	0.11	0.11	0.11	0.11	0.11	0.11	0.12
7.063	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.107	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.151	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.195	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.239	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.284	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.328	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.372	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.416	0.12	0.12	0.12	0.12	0.12	0.12	0.13
7.461	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.505	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.549	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.593	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.637	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.682	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.726	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.770	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.814	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.858	0.13	0.13	0.13	0.13	0.13	0.13	0.14
7.903	0.14	0.14	0.14	0.14	0.14	0.14	0.14
7.947	0.14	0.14	0.14	0.14	0.14	0.14	0.14
7.991	0.14	0.14	0.14	0.14	0.14	0.14	0.14

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

8.035	0.14	0.14	0.14	0.14	0.14	0.14	0.14
8.079	0.14	0.14	0.14	0.14	0.14	0.15	0.15
8.124	0.15	0.15	0.15	0.15	0.15	0.15	0.15
8.168	0.15	0.15	0.16	0.16	0.16	0.16	0.16
8.212	0.16	0.16	0.16	0.16	0.16	0.16	0.17
8.256	0.17	0.17	0.17	0.17	0.17	0.17	0.17
8.301	0.17	0.18	0.18	0.18	0.18	0.18	0.18
8.345	0.18	0.18	0.18	0.18	0.19	0.19	0.19
8.389	0.19	0.19	0.19	0.19	0.19	0.19	0.19
8.433	0.20	0.20	0.20	0.20	0.20	0.20	0.20
8.477	0.20	0.21	0.21	0.21	0.21	0.21	0.21
8.522	0.21	0.21	0.21	0.21	0.21	0.22	0.22
8.566	0.22	0.22	0.22	0.22	0.22	0.22	0.22
8.610	0.23	0.23	0.23	0.23	0.23	0.23	0.23
8.654	0.23	0.23	0.24	0.24	0.24	0.24	0.24

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.698	0.24	0.24	0.24	0.24	0.24	0.24	0.25
8.743	0.25	0.25	0.25	0.25	0.25	0.25	0.25
8.787	0.26	0.26	0.26	0.26	0.26	0.26	0.26
8.831	0.26	0.26	0.26	0.26	0.27	0.27	0.27
8.875	0.27	0.27	0.27	0.27	0.27	0.27	0.28
8.919	0.28	0.28	0.28	0.28	0.28	0.28	0.28
8.964	0.28	0.29	0.29	0.29	0.29	0.29	0.29
9.008	0.29	0.29	0.29	0.29	0.30	0.30	0.30
9.052	0.30	0.30	0.30	0.31	0.31	0.31	0.31
9.096	0.31	0.31	0.31	0.32	0.32	0.32	0.32
9.141	0.32	0.32	0.33	0.33	0.33	0.33	0.34
9.185	0.34	0.34	0.34	0.34	0.34	0.35	0.35
9.229	0.35	0.35	0.35	0.36	0.36	0.36	0.36

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

9.273	0.37	0.37	0.37	0.37	0.37	0.37	0.38
9.317	0.38	0.38	0.38	0.38	0.38	0.39	0.39
9.362	0.39	0.40	0.40	0.40	0.40	0.40	0.41
9.406	0.41	0.41	0.41	0.41	0.41	0.42	0.42
9.450	0.42	0.42	0.43	0.43	0.43	0.43	0.43
9.494	0.44	0.44	0.44	0.44	0.45	0.45	0.46
9.538	0.47	0.49	0.50	0.52	0.53	0.55	0.56
9.583	0.58	0.59	0.60	0.61	0.62	0.63	0.64
9.627	0.65	0.67	0.70	0.72	0.75	0.78	0.82
9.671	0.85	0.87	0.90	0.92	0.94	0.96	0.98
9.715	1.00	1.02	1.05	1.08	1.13	1.18	1.23
9.759	1.28	1.34	1.39	1.44	1.49	1.53	1.56
9.804	1.59	1.62	1.66	1.70	1.76	1.83	1.92
9.848	2.03	2.13	2.25	2.36	2.46	2.56	2.65
9.892	2.73	2.80	2.85	2.90	2.93	2.94	2.94
9.936	2.92	2.89	2.84	2.79	2.73	2.67	2.61
9.981	2.55	2.50	2.46	2.42	2.39	2.35	2.31
10.025	2.26	2.19	2.11	2.01	1.89	1.78	1.66
10.069	1.54	1.44	1.33	1.24	1.16	1.10	1.04
10.113	1.00	0.96	0.92	0.89	0.86	0.84	0.82
10.157	0.79	0.78	0.76	0.75	0.73	0.72	0.71
10.202	0.71	0.70	0.69	0.69	0.68	0.67	0.67
10.246	0.66	0.65	0.65	0.64	0.63	0.62	0.62
10.290	0.61	0.61	0.61	0.60	0.60	0.60	0.59
10.334	0.59	0.58	0.58	0.57	0.56	0.56	0.55
10.378	0.55	0.54	0.54	0.53	0.53	0.53	0.52
10.423	0.52	0.52	0.51	0.50	0.50	0.49	0.49
10.467	0.48	0.47	0.47	0.46	0.46	0.45	0.45
10.511	0.45	0.45	0.44	0.44	0.44	0.43	0.43
10.555	0.42	0.42	0.41	0.41	0.41	0.40	0.40
10.599	0.40	0.40	0.39	0.39	0.39	0.39	0.39
10.644	0.39	0.38	0.38	0.38	0.38	0.38	0.38
10.688	0.37	0.37	0.37	0.37	0.37	0.37	0.37
10.732	0.37	0.37	0.36	0.36	0.36	0.36	0.36
10.776	0.36	0.36	0.35	0.35	0.35	0.35	0.35
10.821	0.35	0.35	0.35	0.35	0.35	0.34	0.34
10.865	0.34	0.34	0.34	0.34	0.34	0.33	0.33
10.909	0.33	0.33	0.33	0.33	0.33	0.33	0.33

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

Brea Plaza Mixed-Use
Existing

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.953	0.33	0.32	0.32	0.32	0.32	0.32	0.32
10.997	0.32	0.31	0.31	0.31	0.31	0.31	0.31
11.042	0.31	0.31	0.31	0.31	0.31	0.30	0.30
11.086	0.30	0.30	0.30	0.30	0.30	0.30	0.30
11.130	0.30	0.30	0.30	0.30	0.30	0.30	0.30
11.174	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.218	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.263	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.307	0.29	0.29	0.29	0.28	0.28	0.28	0.28
11.351	0.28	0.28	0.28	0.28	0.28	0.28	0.28
11.395	0.28	0.28	0.28	0.28	0.28	0.28	0.28
11.439	0.28	0.28	0.28	0.28	0.27	0.27	0.27
11.484	0.27	0.27	0.27	0.27	0.27	0.27	0.27
11.528	0.27	0.27	0.27	0.27	0.27	0.27	0.27
11.572	0.27	0.27	0.27	0.27	0.27	0.27	0.26
11.616	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.661	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.705	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.749	0.26	0.26	0.25	0.25	0.25	0.25	0.25
11.793	0.25	0.25	0.25	0.25	0.25	0.25	0.25
11.837	0.25	0.25	0.25	0.25	0.25	0.25	0.25
11.882	0.25	0.25	0.25	0.24	0.24	0.24	0.24
11.926	0.24	0.24	0.24	0.24	0.24	0.24	0.24
11.970	0.24	0.24	0.24	0.24	0.24	0.24	0.24
12.014	0.24	0.24	0.24	0.24	0.24	0.24	0.24
12.058	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.103	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.147	0.23	0.23	0.23	0.23	0.23	0.23	0.23

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

12.191	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.235	0.23	0.23	0.23	0.23	0.22	0.22	0.22
12.279	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.324	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.368	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.412	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.456	0.22	0.22	0.22	0.22	0.22	0.21	0.21
12.501	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.545	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.589	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.633	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.677	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.722	0.21	0.21	0.20	0.20	0.20	0.20	0.20
12.766	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.810	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.854	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.898	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.943	0.20	0.20	0.19	0.19	0.19	0.19	0.19
12.987	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.031	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.075	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.119	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.164	0.19	0.19	0.19	0.18	0.18	0.18	0.18

Brea Plaza Mixed-Use
Existing

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
13.208	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.252	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.296	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.341	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.385	0.18	0.18	0.18	0.18	0.18	0.17	0.17

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

13.429	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.473	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.517	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.562	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.606	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.650	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.694	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.738	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.783	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.827	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.871	0.15	0.15	0.15	0.15	0.15	0.15	0.15
13.915	0.15	0.15	0.15	0.15	0.15	0.15	0.15
13.959	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.004	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.048	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.092	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.136	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.181	0.15	0.14	0.14	0.14	0.14	0.14	0.14
14.225	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.269	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.313	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.357	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.402	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.446	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.490	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.534	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.578	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.623	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.667	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.711	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.755	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.799	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.844	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.888	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.932	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.976	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.021	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.065	0.14	0.14	0.14	0.14	0.14	0.14	0.14

STORM 2-Yr

SUB-AREA:

A1	Outlet	.00344	97.	.1	

STREAM REACH:

15.109	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.153	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.197	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.242	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.286	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.330	0.14	0.14	0.14	0.13	0.13	0.13	0.13
15.374	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.418	0.13	0.13	0.13	0.13	0.13	0.13	0.13

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
15.463	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.507	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.551	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.595	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.639	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.684	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.728	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.772	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.816	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.861	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.905	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.949	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.993	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.037	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.082	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.126	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.170	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.214	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.258	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.303	0.13	0.13	0.13	0.13	0.13	0.13	0.13

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

16.347	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.391	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.435	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.479	0.13	0.13	0.13	0.12	0.12	0.12	0.12
16.524	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.568	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.612	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.656	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.701	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.745	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.789	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.833	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.877	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.922	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.966	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.010	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.054	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.098	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.143	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.187	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.231	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.275	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.319	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.364	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.408	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.452	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.496	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.541	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.585	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.629	0.12	0.12	0.12	0.12	0.11	0.11	0.11
17.673	0.11	0.11	0.11	0.11	0.11	0.11	0.11

Line

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
17.717	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.762	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.806	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.850	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.894	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.938	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.983	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.027	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.071	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.115	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.159	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.204	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.248	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.292	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.336	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.381	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.425	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.469	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.513	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.557	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.602	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.646	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.690	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.734	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.778	0.11	0.10	0.10	0.10	0.10	0.10	0.10
18.823	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.867	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.911	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.955	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.999	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.044	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.088	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.132	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.176	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.221	0.10	0.10	0.10	0.10	0.10	0.10	0.10

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

19.265	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.309	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.353	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.397	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.442	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.486	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.530	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.574	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.618	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.663	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.707	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.751	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.795	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.839	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.884	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.928	0.09	0.09	0.09	0.09	0.09	0.09	0.09

Brea Plaza Mixed-Use
Existing

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
19.972	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.016	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.061	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.105	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.149	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.193	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.237	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.282	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.326	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.370	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.414	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.458	0.09	0.09	0.09	0.09	0.09	0.09	0.09

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

20.503	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.547	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.591	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.635	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.679	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.724	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.768	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.812	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.856	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.901	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.945	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.989	0.09	0.09	0.09	0.09	0.09	0.09	0.09
21.033	0.09	0.09	0.09	0.09	0.08	0.08	0.08
21.077	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.122	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.166	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.210	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.254	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.298	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.343	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.387	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.431	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.475	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.519	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.564	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.608	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.652	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.696	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.741	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.785	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.829	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.873	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.917	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.962	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.006	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.050	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.094	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.138	0.08	0.08	0.08	0.08	0.08	0.08	0.07

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:
22.183 0.07 0.07 0.07 0.07 0.07 0.07 0.07

Brea Plaza Mixed-Use
Existing

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
22.227	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.271	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.315	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.359	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.404	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.448	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.492	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.536	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.581	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.625	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.669	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.713	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.757	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.802	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.846	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.890	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.934	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.978	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.023	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.067	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.111	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.155	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.199	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.244	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.288	0.07	0.07	0.06	0.06	0.06	0.06	0.06
23.332	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.376	0.06	0.06	0.06	0.06	0.06	0.06	0.06

WinTR-20 Printed Page File Beginning of Input Data List
TR20.inp

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

23.421	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.465	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.509	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.553	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.597	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.642	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.686	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.730	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.774	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.818	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.863	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.907	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.951	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.995	0.06	0.06	0.06	0.06	0.06	0.06	0.05
24.039	0.05						

Brea Plaza Mixed-Use
Existing

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	Peak Flow by Storm 2-Yr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)
A1	0.003		2.94				
OUTLET	0.003		2.94				

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:

	A1	Outlet	.00344	97.	.1

STREAM REACH:

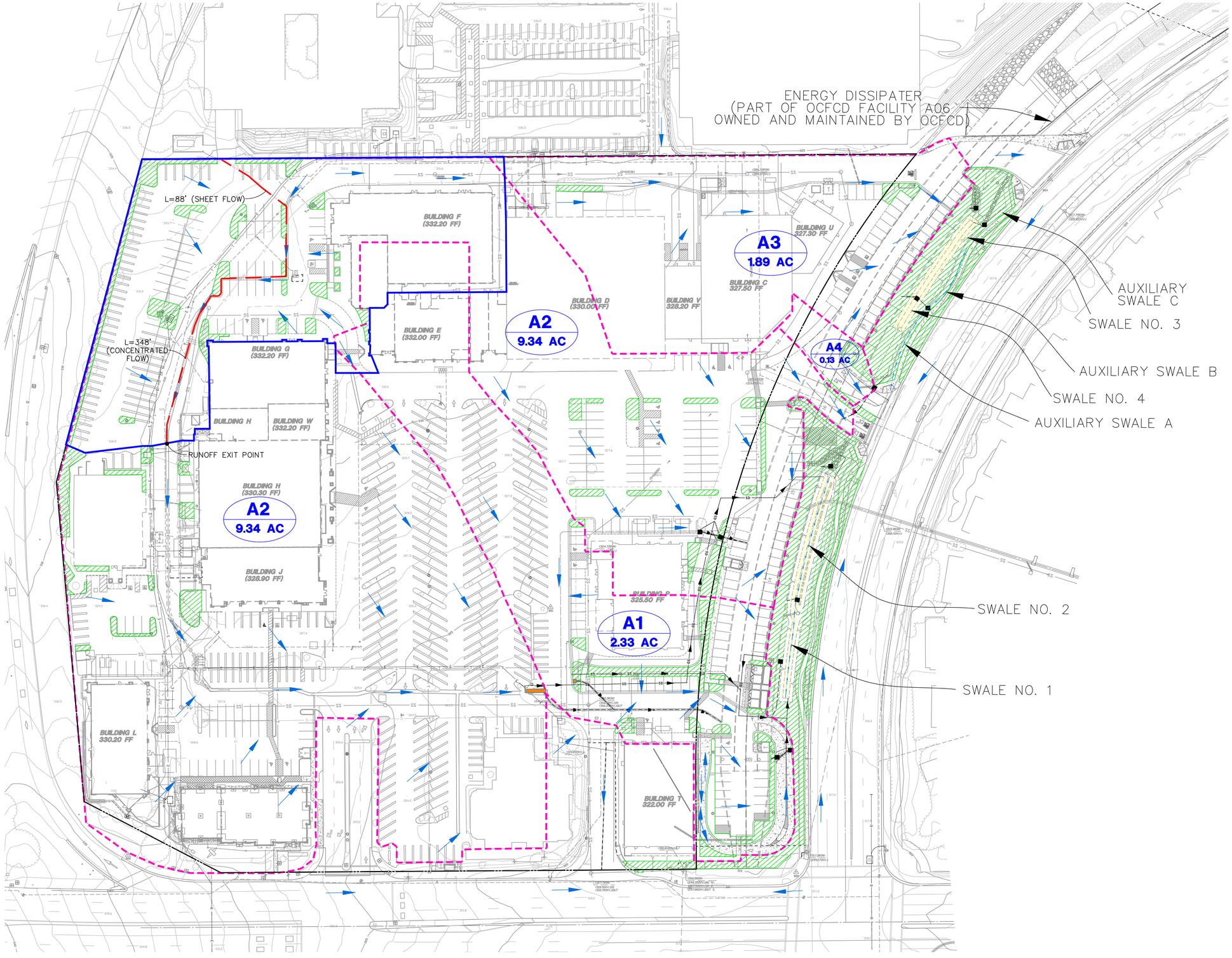
WinTR-20 Printed Page File Beginning of Input Data List
TR20.inp

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:



PROJECT DATA:

EXISTING SITE DRAINAGE AREAS (TOTAL): 13.69 AC (596,336 SF)

PROPOSED PROJECT AREA: 2.20 AC (95,864 SF)
EXISTING IMPERVIOUS AREA: 92.5% (88,630 SF)
EXISTING PERVIOUS AREA: 7.5% (7,234 SF)

CURRENT USE: COMMERCIAL

WATERSHED:
SAN GABRIEL–COYOTE CREEK WATERSHED

LEGEND — STRUCTURAL / TREATMENT BMPS

- LANDSCAPE AREA EFFICIENT IRRIGATION
  LANDSCAPE AREA RUNOFF–MINIMIZING DESIGN
- CATCH BASIN / STORM DRAIN INLET
- FLOW PATTERN
- EXISTING DRAINAGE AREAS **A1**
- PROPOSED PROJECT AREA
- VEGETATED SWALE
- SD — LOW FLOW STORM DRAIN
- HIGH FLOW STORM DRAIN
- FLOW PATH

NORTH

CA

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

PREPARED BY:

CA ENGINEERING, INC.
Planning • Engineering • Surveying
13821 NEWPORT AVE., STE 110
TUSTIN, CA 92780
949-724-9480 949-724-9484 FAX

OWNER:

BPI Brea LLC
417 S. Associated Rd, Suite 313
Brea, CA 92821
CONTACT: WAAD J. NADHIR
TELEPHONE: (248) 792-5071

CITY OF BREA
WATER QUALITY MANAGEMENT PLAN
EXISTING WQMP DRAINAGE AREAS
BREA PLAZA
IMPERIAL HIGHWAY

SHEET 1 OF 1

H-116

S:\457-4 BREA PLAZA PHASE 2\WQMP\457-4 WQMP Site Plan.dwg Last Modified: 22 Jun 2021 – 3:53pm
Plotted on: 23 Jun 2021 – 5:32am by cward

WinTR-55 Current Data Description

--- Identification Data ---

User: 487-4 WQMP
Project: Brea Plaza Mixed-Use
SubTitle: Proposed
State: California
County: Orange
Filename: \\CA-SVR1\Shared\487-4 BREA PLAZA PHASE 2\WQMP\WinTR-55 Proposed Condition.w55

Date: 6/23/2021
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
A1		Outlet	2.2	97	0.1

Total area: 2.20 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
2.05	.0	.0	.0	.0	.0	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type I
Dimensionless Unit Hydrograph: <standard>

Brea Plaza Mixed-Use
Proposed
Orange County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
2.05	.0	.0	.0	.0	.0	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type I
Dimensionless Unit Hydrograph: <standard>

Brea Plaza Mixed-Use
Proposed
Orange County, California

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 2-Yr (cfs)
SUBAREAS	
A1	2.94
REACHES	
OUTLET	2.94

487-4 WQMP

Brea Plaza Mixed-Use
Proposed
Orange County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs) (hr)
SUBAREAS	
A1	2.94 9.92
REACHES	
OUTLET	2.94

Brea Plaza Mixed-Use
Proposed
Orange County, California

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
A1	2.20	0.100	97	Outlet	

Total Area: 2.20 (ac)

Brea Plaza Mixed-Use
Proposed
Orange County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
A1							
SHEET	28	0.0200	0.011				0.009
SHALLOW	283	0.0050	0.025				0.055
CHANNEL	333	0.0398	0.013	0.09	1.05	4.405	0.021
CHANNEL	46	0.0033	0.013	3.14	6.28	4.259	0.003
					Time of Concentration		0.1

0.0880
(rounded up to 0.1 by Program)

Brea Plaza Mixed-Use
Proposed
Orange County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
A1	Open space; grass cover > 75% (good)	D	.079	80
	Paved parking lots, roofs, driveways	D	2.121	98
	Total Area / Weighted Curve Number		2.2	97

WinTR-20 Printed Page File Beginning of Input Data List
TR20.inp

WinTR-20: Version 1.10 0 0 0.05
Brea Plaza Mixed-Use
Proposed

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

STORM ANALYSIS:
2-Yr 2.05 Type I 2

STRUCTURE RATING:

GLOBAL OUTPUT:
2 0.05 YYYYN YYYYNN

WinTR-20 Printed Page File End of Input Data List

Brea Plaza Mixed-Use
Proposed

Name of printed page file:
TR20.out

Proposed 2-yr Runoff volume =
1.690 inches x 2.20 acres x 43,560 sq-ft/ac x
1 ft/12 inches = 13,496 cu-ft

STORM 2-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
A1	0.003		1.690		9.92	2.94	855.15

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
4.454	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.498	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.543	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.587	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.631	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.675	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.719	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.764	0.05	0.05	0.05	0.06	0.06	0.06	0.06
4.808	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.852	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.896	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.941	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.985	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.029	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.073	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.117	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.162	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.206	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.250	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.294	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.338	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.383	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.427	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.471	0.06	0.06	0.06	0.07	0.07	0.07	0.07
5.515	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.559	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.604	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.648	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.692	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.736	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.781	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.825	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.869	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.913	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.957	0.07	0.07	0.07	0.07	0.07	0.07	0.07

6.002	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.046	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.090	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.134	0.07	0.07	0.08	0.08	0.08	0.08	0.08
6.178	0.08	0.08	0.08	0.08	0.08	0.08	0.08

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
6.223	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.267	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.311	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.355	0.08	0.08	0.08	0.08	0.09	0.09	0.09
6.399	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.444	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.488	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.532	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.576	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.621	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.665	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.709	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.753	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.797	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.842	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.886	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.930	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.974	0.11	0.11	0.11	0.11	0.11	0.11	0.11
7.018	0.11	0.11	0.11	0.11	0.11	0.11	0.12
7.063	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.107	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.151	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.195	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.239	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.284	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.328	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.372	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.416	0.12	0.12	0.12	0.12	0.12	0.12	0.13
7.461	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.505	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.549	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.593	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.637	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.682	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.726	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.770	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.814	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.858	0.13	0.13	0.13	0.13	0.13	0.13	0.14
7.903	0.14	0.14	0.14	0.14	0.14	0.14	0.14
7.947	0.14	0.14	0.14	0.14	0.14	0.14	0.14
7.991	0.14	0.14	0.14	0.14	0.14	0.14	0.14
8.035	0.14	0.14	0.14	0.14	0.14	0.14	0.14
8.079	0.14	0.14	0.14	0.14	0.14	0.15	0.15
8.124	0.15	0.15	0.15	0.15	0.15	0.15	0.15
8.168	0.15	0.15	0.16	0.16	0.16	0.16	0.16
8.212	0.16	0.16	0.16	0.16	0.16	0.16	0.17
8.256	0.17	0.17	0.17	0.17	0.17	0.17	0.17
8.301	0.17	0.18	0.18	0.18	0.18	0.18	0.18
8.345	0.18	0.18	0.18	0.18	0.19	0.19	0.19
8.389	0.19	0.19	0.19	0.19	0.19	0.19	0.19
8.433	0.20	0.20	0.20	0.20	0.20	0.20	0.20

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.477	0.20	0.21	0.21	0.21	0.21	0.21	0.21
8.522	0.21	0.21	0.21	0.21	0.21	0.22	0.22
8.566	0.22	0.22	0.22	0.22	0.22	0.22	0.22
8.610	0.23	0.23	0.23	0.23	0.23	0.23	0.23
8.654	0.23	0.23	0.24	0.24	0.24	0.24	0.24
8.698	0.24	0.24	0.24	0.24	0.24	0.24	0.25
8.743	0.25	0.25	0.25	0.25	0.25	0.25	0.25
8.787	0.26	0.26	0.26	0.26	0.26	0.26	0.26
8.831	0.26	0.26	0.26	0.26	0.27	0.27	0.27
8.875	0.27	0.27	0.27	0.27	0.27	0.27	0.28
8.919	0.28	0.28	0.28	0.28	0.28	0.28	0.28
8.964	0.28	0.29	0.29	0.29	0.29	0.29	0.29
9.008	0.29	0.29	0.29	0.29	0.30	0.30	0.30
9.052	0.30	0.30	0.30	0.31	0.31	0.31	0.31
9.096	0.31	0.31	0.31	0.32	0.32	0.32	0.32
9.141	0.32	0.32	0.33	0.33	0.33	0.33	0.34
9.185	0.34	0.34	0.34	0.34	0.34	0.35	0.35
9.229	0.35	0.35	0.35	0.36	0.36	0.36	0.36
9.273	0.37	0.37	0.37	0.37	0.37	0.37	0.38
9.317	0.38	0.38	0.38	0.38	0.38	0.39	0.39
9.362	0.39	0.40	0.40	0.40	0.40	0.40	0.41
9.406	0.41	0.41	0.41	0.41	0.41	0.42	0.42
9.450	0.42	0.42	0.43	0.43	0.43	0.43	0.43
9.494	0.44	0.44	0.44	0.44	0.45	0.45	0.46
9.538	0.47	0.49	0.50	0.52	0.53	0.55	0.56
9.583	0.58	0.59	0.60	0.61	0.62	0.63	0.64
9.627	0.65	0.67	0.70	0.72	0.75	0.78	0.82
9.671	0.85	0.87	0.90	0.92	0.94	0.96	0.98
9.715	1.00	1.02	1.05	1.08	1.13	1.18	1.23
9.759	1.28	1.34	1.39	1.44	1.49	1.53	1.56

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

9.804	1.59	1.62	1.66	1.70	1.76	1.83	1.92
9.848	2.03	2.13	2.25	2.36	2.46	2.56	2.65
9.892	2.73	2.80	2.85	2.90	2.93	2.94	2.94
9.936	2.92	2.89	2.84	2.79	2.73	2.67	2.61
9.981	2.55	2.50	2.46	2.42	2.39	2.35	2.31
10.025	2.26	2.19	2.11	2.01	1.89	1.78	1.66
10.069	1.54	1.44	1.33	1.24	1.16	1.10	1.04
10.113	1.00	0.96	0.92	0.89	0.86	0.84	0.82
10.157	0.79	0.78	0.76	0.75	0.73	0.72	0.71
10.202	0.71	0.70	0.69	0.69	0.68	0.67	0.67
10.246	0.66	0.65	0.65	0.64	0.63	0.62	0.62
10.290	0.61	0.61	0.61	0.60	0.60	0.60	0.59
10.334	0.59	0.58	0.58	0.57	0.56	0.56	0.55
10.378	0.55	0.54	0.54	0.53	0.53	0.53	0.52
10.423	0.52	0.52	0.51	0.50	0.50	0.49	0.49
10.467	0.48	0.47	0.47	0.46	0.46	0.45	0.45
10.511	0.45	0.45	0.44	0.44	0.44	0.43	0.43
10.555	0.42	0.42	0.41	0.41	0.41	0.40	0.40
10.599	0.40	0.40	0.39	0.39	0.39	0.39	0.39
10.644	0.39	0.38	0.38	0.38	0.38	0.38	0.38
10.688	0.37	0.37	0.37	0.37	0.37	0.37	0.37

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
10.732	0.37	0.37	0.36	0.36	0.36	0.36	0.36
10.776	0.36	0.36	0.35	0.35	0.35	0.35	0.35
10.821	0.35	0.35	0.35	0.35	0.35	0.34	0.34
10.865	0.34	0.34	0.34	0.34	0.34	0.33	0.33
10.909	0.33	0.33	0.33	0.33	0.33	0.33	0.33
10.953	0.33	0.32	0.32	0.32	0.32	0.32	0.32
10.997	0.32	0.31	0.31	0.31	0.31	0.31	0.31

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

11.042	0.31	0.31	0.31	0.31	0.31	0.30	0.30
11.086	0.30	0.30	0.30	0.30	0.30	0.30	0.30
11.130	0.30	0.30	0.30	0.30	0.30	0.30	0.30
11.174	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.218	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.263	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.307	0.29	0.29	0.29	0.28	0.28	0.28	0.28
11.351	0.28	0.28	0.28	0.28	0.28	0.28	0.28
11.395	0.28	0.28	0.28	0.28	0.28	0.28	0.28
11.439	0.28	0.28	0.28	0.28	0.27	0.27	0.27
11.484	0.27	0.27	0.27	0.27	0.27	0.27	0.27
11.528	0.27	0.27	0.27	0.27	0.27	0.27	0.27
11.572	0.27	0.27	0.27	0.27	0.27	0.27	0.26
11.616	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.661	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.705	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.749	0.26	0.26	0.25	0.25	0.25	0.25	0.25
11.793	0.25	0.25	0.25	0.25	0.25	0.25	0.25
11.837	0.25	0.25	0.25	0.25	0.25	0.25	0.25
11.882	0.25	0.25	0.25	0.24	0.24	0.24	0.24
11.926	0.24	0.24	0.24	0.24	0.24	0.24	0.24
11.970	0.24	0.24	0.24	0.24	0.24	0.24	0.24
12.014	0.24	0.24	0.24	0.24	0.24	0.24	0.24
12.058	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.103	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.147	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.191	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.235	0.23	0.23	0.23	0.23	0.22	0.22	0.22
12.279	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.324	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.368	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.412	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.456	0.22	0.22	0.22	0.22	0.22	0.21	0.21
12.501	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.545	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.589	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.633	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.677	0.21	0.21	0.21	0.21	0.21	0.21	0.21

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

12.722	0.21	0.21	0.20	0.20	0.20	0.20	0.20
12.766	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.810	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.854	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.898	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.943	0.20	0.20	0.19	0.19	0.19	0.19	0.19

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.987	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.031	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.075	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.119	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.164	0.19	0.19	0.19	0.18	0.18	0.18	0.18
13.208	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.252	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.296	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.341	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.385	0.18	0.18	0.18	0.18	0.18	0.17	0.17
13.429	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.473	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.517	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.562	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.606	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.650	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.694	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.738	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.783	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.827	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.871	0.15	0.15	0.15	0.15	0.15	0.15	0.15
13.915	0.15	0.15	0.15	0.15	0.15	0.15	0.15

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

13.959	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.004	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.048	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.092	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.136	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.181	0.15	0.14	0.14	0.14	0.14	0.14	0.14
14.225	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.269	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.313	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.357	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.402	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.446	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.490	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.534	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.578	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.623	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.667	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.711	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.755	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.799	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.844	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.888	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.932	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.976	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.021	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.065	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.109	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.153	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.197	0.14	0.14	0.14	0.14	0.14	0.14	0.14

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

15.242	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.286	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.330	0.14	0.14	0.14	0.13	0.13	0.13	0.13
15.374	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.418	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.463	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.507	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.551	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.595	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.639	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.684	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.728	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.772	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.816	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.861	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.905	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.949	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.993	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.037	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.082	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.126	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.170	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.214	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.258	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.303	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.347	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.391	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.435	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.479	0.13	0.13	0.13	0.12	0.12	0.12	0.12
16.524	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.568	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.612	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.656	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.701	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.745	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.789	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.833	0.12	0.12	0.12	0.12	0.12	0.12	0.12

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

16.877	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.922	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.966	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.010	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.054	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.098	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.143	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.187	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.231	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.275	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.319	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.364	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.408	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.452	0.12	0.12	0.12	0.12	0.12	0.12	0.12

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
17.496	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.541	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.585	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.629	0.12	0.12	0.12	0.12	0.11	0.11	0.11
17.673	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.717	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.762	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.806	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.850	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.894	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.938	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.983	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.027	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.071	0.11	0.11	0.11	0.11	0.11	0.11	0.11

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:

A1	Outlet	.00344	97.	.1

STREAM REACH:

18.115	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.159	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.204	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.248	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.292	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.336	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.381	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.425	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.469	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.513	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.557	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.602	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.646	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.690	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.734	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.778	0.11	0.10	0.10	0.10	0.10	0.10	0.10
18.823	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.867	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.911	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.955	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.999	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.044	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.088	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.132	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.176	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.221	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.265	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.309	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.353	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.397	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.442	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.486	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.530	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.574	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.618	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.663	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.707	0.10	0.10	0.10	0.10	0.10	0.10	0.10

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
19.751	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.795	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.839	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.884	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.928	0.09	0.09	0.09	0.09	0.09	0.09	0.09
19.972	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.016	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.061	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.105	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.149	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.193	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.237	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.282	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.326	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.370	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.414	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.458	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.503	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.547	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.591	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.635	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.679	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.724	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.768	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.812	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.856	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.901	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.945	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.989	0.09	0.09	0.09	0.09	0.09	0.09	0.09

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

21.033	0.09	0.09	0.09	0.09	0.08	0.08	0.08
21.077	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.122	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.166	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.210	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.254	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.298	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.343	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.387	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.431	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.475	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.519	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.564	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.608	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.652	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.696	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.741	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.785	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.829	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.873	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.917	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.962	0.08	0.08	0.08	0.08	0.08	0.08	0.08

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
22.006	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.050	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.094	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.138	0.08	0.08	0.08	0.08	0.08	0.08	0.07
22.183	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.227	0.07	0.07	0.07	0.07	0.07	0.07	0.07

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

22.271	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.315	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.359	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.404	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.448	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.492	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.536	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.581	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.625	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.669	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.713	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.757	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.802	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.846	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.890	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.934	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.978	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.023	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.067	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.111	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.155	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.199	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.244	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.288	0.07	0.07	0.06	0.06	0.06	0.06	0.06
23.332	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.376	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.421	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.465	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.509	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.553	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.597	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.642	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.686	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.730	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.774	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.818	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.863	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.907	0.06	0.06	0.06	0.06	0.06	0.06	0.06

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

23.951	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.995	0.06	0.06	0.06	0.06	0.06	0.06	0.05
24.039	0.05						

Brea Plaza Mixed-Use
Proposed

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.003		1.690		9.92	2.94	855.15

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.454	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.498	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.543	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.587	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.631	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.675	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.719	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.764	0.05	0.05	0.05	0.06	0.06	0.06	0.06
4.808	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.852	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.896	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.941	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.985	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.029	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.073	0.06	0.06	0.06	0.06	0.06	0.06	0.06

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

5.117	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.162	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.206	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.250	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.294	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.338	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.383	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.427	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.471	0.06	0.06	0.06	0.07	0.07	0.07	0.07
5.515	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.559	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.604	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.648	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.692	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.736	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.781	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.825	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.869	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.913	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.957	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.002	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.046	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.090	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.134	0.07	0.07	0.08	0.08	0.08	0.08	0.08
6.178	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.223	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.267	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.311	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.355	0.08	0.08	0.08	0.08	0.09	0.09	0.09
6.399	0.09	0.09	0.09	0.09	0.09	0.09	0.09

Line
Start Time ---------- Flow Values @ time increment of 0.006 hr ----------

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.444	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.488	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.532	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.576	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.621	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.665	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.709	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.753	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.797	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.842	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.886	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.930	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.974	0.11	0.11	0.11	0.11	0.11	0.11	0.11
7.018	0.11	0.11	0.11	0.11	0.11	0.11	0.12
7.063	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.107	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.151	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.195	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.239	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.284	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.328	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.372	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.416	0.12	0.12	0.12	0.12	0.12	0.12	0.13
7.461	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.505	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.549	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.593	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.637	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.682	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.726	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.770	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.814	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.858	0.13	0.13	0.13	0.13	0.13	0.13	0.14
7.903	0.14	0.14	0.14	0.14	0.14	0.14	0.14
7.947	0.14	0.14	0.14	0.14	0.14	0.14	0.14
7.991	0.14	0.14	0.14	0.14	0.14	0.14	0.14

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

8.035	0.14	0.14	0.14	0.14	0.14	0.14	0.14
8.079	0.14	0.14	0.14	0.14	0.14	0.15	0.15
8.124	0.15	0.15	0.15	0.15	0.15	0.15	0.15
8.168	0.15	0.15	0.16	0.16	0.16	0.16	0.16
8.212	0.16	0.16	0.16	0.16	0.16	0.16	0.17
8.256	0.17	0.17	0.17	0.17	0.17	0.17	0.17
8.301	0.17	0.18	0.18	0.18	0.18	0.18	0.18
8.345	0.18	0.18	0.18	0.18	0.19	0.19	0.19
8.389	0.19	0.19	0.19	0.19	0.19	0.19	0.19
8.433	0.20	0.20	0.20	0.20	0.20	0.20	0.20
8.477	0.20	0.21	0.21	0.21	0.21	0.21	0.21
8.522	0.21	0.21	0.21	0.21	0.21	0.22	0.22
8.566	0.22	0.22	0.22	0.22	0.22	0.22	0.22
8.610	0.23	0.23	0.23	0.23	0.23	0.23	0.23
8.654	0.23	0.23	0.24	0.24	0.24	0.24	0.24

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.698	0.24	0.24	0.24	0.24	0.24	0.24	0.25
8.743	0.25	0.25	0.25	0.25	0.25	0.25	0.25
8.787	0.26	0.26	0.26	0.26	0.26	0.26	0.26
8.831	0.26	0.26	0.26	0.26	0.27	0.27	0.27
8.875	0.27	0.27	0.27	0.27	0.27	0.27	0.28
8.919	0.28	0.28	0.28	0.28	0.28	0.28	0.28
8.964	0.28	0.29	0.29	0.29	0.29	0.29	0.29
9.008	0.29	0.29	0.29	0.29	0.30	0.30	0.30
9.052	0.30	0.30	0.30	0.31	0.31	0.31	0.31
9.096	0.31	0.31	0.31	0.32	0.32	0.32	0.32
9.141	0.32	0.32	0.33	0.33	0.33	0.33	0.34
9.185	0.34	0.34	0.34	0.34	0.34	0.35	0.35
9.229	0.35	0.35	0.35	0.36	0.36	0.36	0.36

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

9.273	0.37	0.37	0.37	0.37	0.37	0.37	0.38
9.317	0.38	0.38	0.38	0.38	0.38	0.39	0.39
9.362	0.39	0.40	0.40	0.40	0.40	0.40	0.41
9.406	0.41	0.41	0.41	0.41	0.41	0.42	0.42
9.450	0.42	0.42	0.43	0.43	0.43	0.43	0.43
9.494	0.44	0.44	0.44	0.44	0.45	0.45	0.46
9.538	0.47	0.49	0.50	0.52	0.53	0.55	0.56
9.583	0.58	0.59	0.60	0.61	0.62	0.63	0.64
9.627	0.65	0.67	0.70	0.72	0.75	0.78	0.82
9.671	0.85	0.87	0.90	0.92	0.94	0.96	0.98
9.715	1.00	1.02	1.05	1.08	1.13	1.18	1.23
9.759	1.28	1.34	1.39	1.44	1.49	1.53	1.56
9.804	1.59	1.62	1.66	1.70	1.76	1.83	1.92
9.848	2.03	2.13	2.25	2.36	2.46	2.56	2.65
9.892	2.73	2.80	2.85	2.90	2.93	2.94	2.94
9.936	2.92	2.89	2.84	2.79	2.73	2.67	2.61
9.981	2.55	2.50	2.46	2.42	2.39	2.35	2.31
10.025	2.26	2.19	2.11	2.01	1.89	1.78	1.66
10.069	1.54	1.44	1.33	1.24	1.16	1.10	1.04
10.113	1.00	0.96	0.92	0.89	0.86	0.84	0.82
10.157	0.79	0.78	0.76	0.75	0.73	0.72	0.71
10.202	0.71	0.70	0.69	0.69	0.68	0.67	0.67
10.246	0.66	0.65	0.65	0.64	0.63	0.62	0.62
10.290	0.61	0.61	0.61	0.60	0.60	0.60	0.59
10.334	0.59	0.58	0.58	0.57	0.56	0.56	0.55
10.378	0.55	0.54	0.54	0.53	0.53	0.53	0.52
10.423	0.52	0.52	0.51	0.50	0.50	0.49	0.49
10.467	0.48	0.47	0.47	0.46	0.46	0.45	0.45
10.511	0.45	0.45	0.44	0.44	0.44	0.43	0.43
10.555	0.42	0.42	0.41	0.41	0.41	0.40	0.40
10.599	0.40	0.40	0.39	0.39	0.39	0.39	0.39
10.644	0.39	0.38	0.38	0.38	0.38	0.38	0.38
10.688	0.37	0.37	0.37	0.37	0.37	0.37	0.37
10.732	0.37	0.37	0.36	0.36	0.36	0.36	0.36
10.776	0.36	0.36	0.35	0.35	0.35	0.35	0.35
10.821	0.35	0.35	0.35	0.35	0.35	0.34	0.34
10.865	0.34	0.34	0.34	0.34	0.34	0.33	0.33
10.909	0.33	0.33	0.33	0.33	0.33	0.33	0.33

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.953	0.33	0.32	0.32	0.32	0.32	0.32	0.32
10.997	0.32	0.31	0.31	0.31	0.31	0.31	0.31
11.042	0.31	0.31	0.31	0.31	0.31	0.30	0.30
11.086	0.30	0.30	0.30	0.30	0.30	0.30	0.30
11.130	0.30	0.30	0.30	0.30	0.30	0.30	0.30
11.174	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.218	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.263	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.307	0.29	0.29	0.29	0.28	0.28	0.28	0.28
11.351	0.28	0.28	0.28	0.28	0.28	0.28	0.28
11.395	0.28	0.28	0.28	0.28	0.28	0.28	0.28
11.439	0.28	0.28	0.28	0.28	0.27	0.27	0.27
11.484	0.27	0.27	0.27	0.27	0.27	0.27	0.27
11.528	0.27	0.27	0.27	0.27	0.27	0.27	0.27
11.572	0.27	0.27	0.27	0.27	0.27	0.27	0.26
11.616	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.661	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.705	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.749	0.26	0.26	0.25	0.25	0.25	0.25	0.25
11.793	0.25	0.25	0.25	0.25	0.25	0.25	0.25
11.837	0.25	0.25	0.25	0.25	0.25	0.25	0.25
11.882	0.25	0.25	0.25	0.24	0.24	0.24	0.24
11.926	0.24	0.24	0.24	0.24	0.24	0.24	0.24
11.970	0.24	0.24	0.24	0.24	0.24	0.24	0.24
12.014	0.24	0.24	0.24	0.24	0.24	0.24	0.24
12.058	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.103	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.147	0.23	0.23	0.23	0.23	0.23	0.23	0.23

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

12.191	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.235	0.23	0.23	0.23	0.23	0.22	0.22	0.22
12.279	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.324	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.368	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.412	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.456	0.22	0.22	0.22	0.22	0.22	0.21	0.21
12.501	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.545	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.589	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.633	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.677	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.722	0.21	0.21	0.20	0.20	0.20	0.20	0.20
12.766	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.810	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.854	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.898	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.943	0.20	0.20	0.19	0.19	0.19	0.19	0.19
12.987	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.031	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.075	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.119	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.164	0.19	0.19	0.19	0.18	0.18	0.18	0.18

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
13.208	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.252	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.296	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.341	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.385	0.18	0.18	0.18	0.18	0.18	0.17	0.17

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

13.429	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.473	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.517	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.562	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.606	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.650	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.694	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.738	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.783	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.827	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.871	0.15	0.15	0.15	0.15	0.15	0.15	0.15
13.915	0.15	0.15	0.15	0.15	0.15	0.15	0.15
13.959	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.004	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.048	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.092	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.136	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.181	0.15	0.14	0.14	0.14	0.14	0.14	0.14
14.225	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.269	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.313	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.357	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.402	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.446	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.490	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.534	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.578	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.623	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.667	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.711	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.755	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.799	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.844	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.888	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.932	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.976	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.021	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.065	0.14	0.14	0.14	0.14	0.14	0.14	0.14

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

15.109	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.153	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.197	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.242	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.286	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.330	0.14	0.14	0.14	0.13	0.13	0.13	0.13
15.374	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.418	0.13	0.13	0.13	0.13	0.13	0.13	0.13

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
15.463	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.507	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.551	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.595	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.639	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.684	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.728	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.772	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.816	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.861	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.905	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.949	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.993	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.037	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.082	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.126	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.170	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.214	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.258	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.303	0.13	0.13	0.13	0.13	0.13	0.13	0.13

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

16.347	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.391	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.435	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.479	0.13	0.13	0.13	0.12	0.12	0.12	0.12
16.524	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.568	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.612	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.656	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.701	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.745	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.789	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.833	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.877	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.922	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.966	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.010	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.054	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.098	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.143	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.187	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.231	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.275	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.319	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.364	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.408	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.452	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.496	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.541	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.585	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.629	0.12	0.12	0.12	0.12	0.11	0.11	0.11
17.673	0.11	0.11	0.11	0.11	0.11	0.11	0.11

Line

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
17.717	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.762	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.806	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.850	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.894	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.938	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.983	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.027	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.071	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.115	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.159	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.204	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.248	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.292	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.336	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.381	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.425	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.469	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.513	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.557	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.602	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.646	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.690	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.734	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.778	0.11	0.10	0.10	0.10	0.10	0.10	0.10
18.823	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.867	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.911	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.955	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.999	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.044	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.088	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.132	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.176	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.221	0.10	0.10	0.10	0.10	0.10	0.10	0.10

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

19.265	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.309	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.353	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.397	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.442	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.486	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.530	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.574	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.618	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.663	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.707	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.751	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.795	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.839	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.884	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.928	0.09	0.09	0.09	0.09	0.09	0.09	0.09

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
19.972	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.016	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.061	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.105	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.149	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.193	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.237	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.282	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.326	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.370	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.414	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.458	0.09	0.09	0.09	0.09	0.09	0.09	0.09

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

20.503	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.547	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.591	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.635	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.679	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.724	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.768	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.812	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.856	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.901	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.945	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.989	0.09	0.09	0.09	0.09	0.09	0.09	0.09
21.033	0.09	0.09	0.09	0.09	0.08	0.08	0.08
21.077	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.122	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.166	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.210	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.254	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.298	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.343	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.387	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.431	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.475	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.519	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.564	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.608	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.652	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.696	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.741	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.785	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.829	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.873	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.917	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.962	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.006	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.050	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.094	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.138	0.08	0.08	0.08	0.08	0.08	0.08	0.07

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:
22.183 0.07 0.07 0.07 0.07 0.07 0.07 0.07

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
22.227	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.271	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.315	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.359	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.404	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.448	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.492	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.536	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.581	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.625	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.669	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.713	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.757	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.802	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.846	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.890	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.934	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.978	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.023	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.067	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.111	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.155	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.199	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.244	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.288	0.07	0.07	0.06	0.06	0.06	0.06	0.06
23.332	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.376	0.06	0.06	0.06	0.06	0.06	0.06	0.06

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

23.421	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.465	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.509	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.553	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.597	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.642	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.686	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.730	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.774	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.818	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.863	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.907	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.951	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.995	0.06	0.06	0.06	0.06	0.06	0.06	0.05
24.039	0.05						

Brea Plaza Mixed-Use
Proposed

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	Peak Flow by Storm 2-Yr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)
A1	0.003		2.94				
OUTLET	0.003		2.94				

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:

	A1	Outlet	.00344	97.	.1

STREAM REACH:

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:

	A1	Outlet	.00344	97.	.1

STREAM REACH:

LOCATIONS WHERE OFF-SITE FLOWS ENTER ON-SITE STORM DRAIN SYSTEM

L=28' (SHEET FLOW)

L=283' (CONCENTRATED FLOW)

RESIDENTIAL ROOF

A1
2.20 AC

MECHANICAL SCREEN

BREEZE WAY

BLD. ABV.

ROOF GARDEN
13,779 SF
(25% PERVIOUS) = 3,445 SF

STAIRS

MECHANICAL SCREEN

STAIRS

CORE

OPEN TO BELOW

RETAIL LOADING AREA

STAIRS

L=333'
(CHANNEL FLOW)
4" PIPE)

L=46'
(CHANNEL FLOW)
(24" PIPE)

RUNOFF EXIT POINT

BUILDING D
(330.00 FF)

BUILDING E
(332.00 FF)

BUILDING G
(332.20 FF)

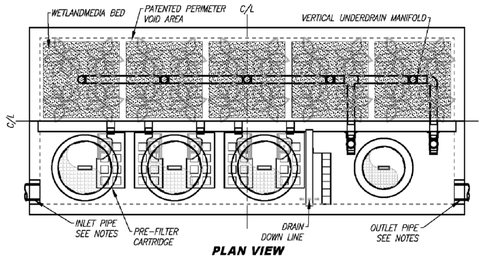
BUILDING H
(332.20 FF)

BUILDING W
(332.20 FF)

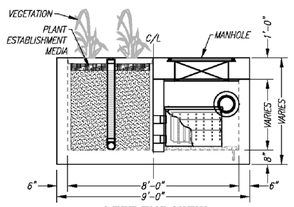
BUILDING H
(330.30 FF)

BUILDING J
(328.90 FF)

BUILDING P
325.50 FF



PLAN VIEW



LEFT END VIEW

MODULAR WETLANDS L-8-24-V

N.T.S.

PROJECT DATA:

TOTAL SITE AREA: 13.7 AC
PROPOSED PROJECT AREA: 2.20 AC (95,864 SF)

BUILDING FOOTPRINT (LESS PERVIOUS ROOFTOP AREAS): 62,316 SF
DRIVE AISLES: 22,020 SF
CONCRETE WALKWAY & LOADING AREA: 8,083 SF

3,445 SF LANDSCAPING/POOL AREA PROVIDED
(3.6% PERVIOUS AREA)

CURRENT USE: COMMERCIAL
PROPOSED USE: COMMERCIAL/RESIDENTIAL

WATERSHED:
SAN GABRIEL-COYOTE CREEK WATERSHED

WATER QUALITY CALCULATIONS
AREA 1 : MODULAR WETLANDS UNIT SIZING

AREA 1 – 95,864 SF / 2.20 AC (96.4% IMPERVIOUS)
DESIGN FLOWRATE (Qd) = C * DI * DA * 43,560 / (12in x 3600sec)
RUNOFF COEFFICIENT (C) = 0.75 * Imp% + 0.15 = 0.75 * 0.964 + 0.15 = 0.87
DI = DESIGN INTENSITY (in/hr) = 0.26 in/hr
DA = DRAINAGE AREA: 2.20 AC
DESIGN FLOWRATE (Qd) = 0.87 * 0.26in/hr * 2.20 AC * 43,560 / (12in x 3600sec)
= 0.502 cfs

OFF-SITE

AREA 2 – 110,204 SF / 2.53 AC (71.9% IMPERVIOUS)
DESIGN FLOWRATE (Qd) = C * DI * DA * 43,560 / (12in x 3600sec)
RUNOFF COEFFICIENT (C) = 0.75 * Imp% + 0.15 = 0.75 * 0.719 + 0.15 = 0.69
DI = DESIGN INTENSITY (in/hr) = 0.26 in/hr
DA = DRAINAGE AREA: 2.53 AC
DESIGN FLOWRATE (Qd) = 0.69 * 0.26in/hr * 2.53 AC * 43,560 / (12in x 3600sec)
= 0.458 cfs

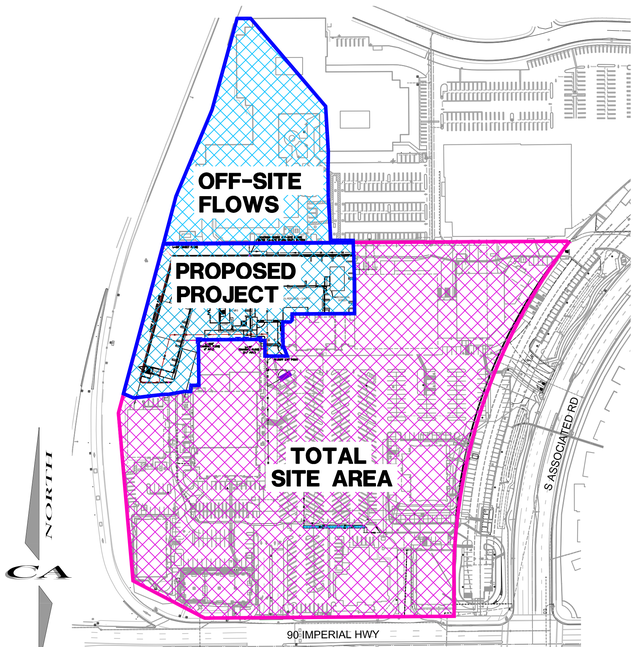
OFF-SITE TO BE TREATED: 50%*0.458=0.229
TOTAL TO BE TREATED: 0.502+0.229=0.731

MODULAR WETLANDS SELECTED SIZING : MWS-L-8-24 (8' x 24' BOX)
HIGH CAPACITY MODEL – 3.6

TREATMENT FLOW RATE (Qf) = 0.734 cfs
TREATMENT FLOW RATE (Qf) > DESIGN FLOWRATE (Qd)
0.734 cfs > 0.731 cfs

CERTIFICATION NOTE:

SELF-CERTIFICATIONS FROM A STATE LICENSED PROFESSIONAL ENGINEER OR THIRD-PARTY CERTIFICATIONS ARE REQUIRED OF ALL BMP'S CONSTRUCTED ON THIS PLAN OR FINAL CERTIFICATE OF OCCUPANCY WILL NOT BE GRANTED FROM THE CITY.



INDEX MAP

SCALE: 1"=150'

LEGEND: STRUCTURAL / TREATMENT BMPS

- LANDSCAPE AREA EFFICIENT IRRIGATION
  LANDSCAPE AREA RUNOFF-MINIMIZING DESIGN
- MODULAR WETLANDS
- FLOW PATTERN
- DRAINAGE AREAS **A1**
- BUILDING PAD AREAS
- CONCRETE (DRIVEWAY/GUTTERS/SIDEWALKS)
- DRIVE AISLES
- STORAGE PIPE
- PROPRIETARY CATCH BASIN INSERT FILTERS
- SD — STORM DRAIN
- FLOW PATH

LID BMP LOCATION (MWS UNIT)

BMP#1 (LAT: 33.9123139° / LONG: -117.8818472°)

GRAPHIC SCALE

30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

PREPARED BY:

CA ENGINEERING, INC.
Planning • Engineering • Surveying
13821 NEWPORT AVE., STE 110
TUSTIN, CA 92780
949-724-9480 949-724-9484 FAX

OWNER:

BPI Brea LLC
417 S. Associated Rd, Suite 313
Brea, CA 92821
CONTACT: WAAD J. NADHIR
TELEPHONE: (248) 792-5071

WATER QUALITY MANAGEMENT PLAN
BMP EXHIBIT (SITE PLAN)
BREA PLAZA
1639 E. IMPERIAL HIGHWAY, BREA, CA

SHEET 1 OF 1

H-154

S:\457-4 BREA PLAZA PHASE 2\WQMP\457-4 WQMP Site Plan.dwg Last Modified: 27 Jul 2021 - 5:59pm
Plotted on: 27 Jul 2021 - 6:04pm by tconnell

SOIL MAP
(SECTION 3.6)

Search

Properties and Qualities Ratings

Open All | Close All

- Soil Chemical Properties
- Soil Erosion Factors
- Soil Health Properties
- Soil Physical Properties

Soil Qualities and Features

- AASHTO Group Classification (Surface)
- AASHTO Group Index
- Depth to a Selected Soil Restrictive Layer
- Depth to Any Soil Restrictive Layer
- Drainage Class
- Frost Action
- Frost-Free Days
- Hydrologic Soil Group

View Description | View Rating

View Options

Map ☑
Table ☑
Description of Rating ☑
Rating Options ☑
☐ Detailed Description

Advanced Options

Aggregation Method: Dominant Condition
Component Percent Cutoff:
Tie-break Rule: ○ Lower ◉ Higher

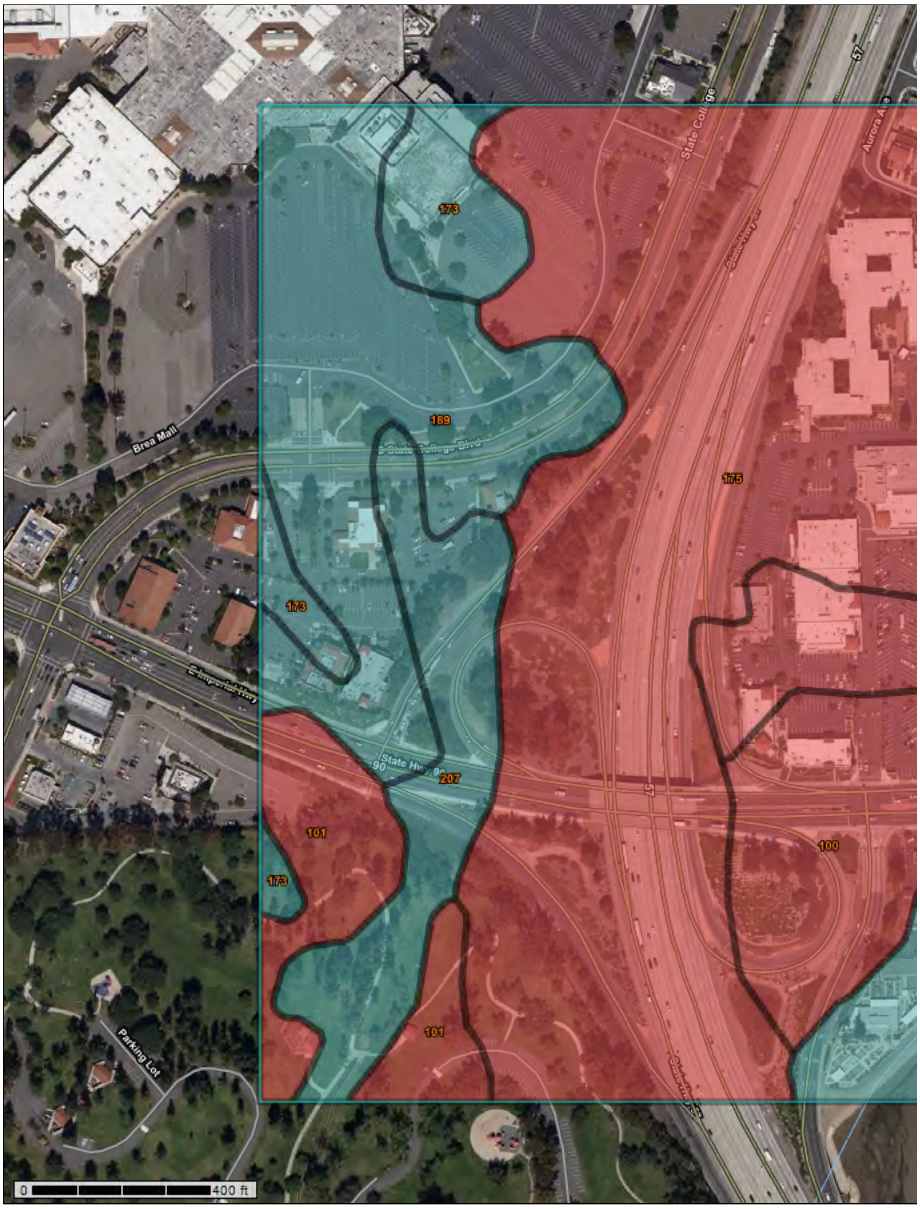
View Description | View Rating

- Map Unit Name
- Parent Material Name
- Representative Slope
- Soil Slippage Potential
- Unified Soil Classification (Surface)

Water Features

Map — Hydrologic Soil Group

Scale (not to scale)



Warning: Soil Ratings Map may not be valid at this scale.

You have zoomed in beyond the scale at which the soil map for this area is intended to be used. Ma
design of map units and the level of detail shown in the resulting soil map are dependent on that ma

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of map
been shown at a more detailed scale.

Tables — Hydrologic Soil Group — Summary By Map Unit

Summary by Map Unit — Orange County and Part of Riverside County, California (CA678)

Summary by Map Unit — Orange County and Part of Riverside County, California (CA678)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Totals for Area of Interest			**164.9**	**100.0%**

Summary by Map Unit — Orange County and Part of Riverside County, California (CA678)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
100	Alo clay, 9 to 15 percent slopes	D	34.0	20.7%
101	Alo clay, 15 to 30 percent slopes, dry	D	15.0	9.1%
173	Myford sandy loam, 2 to 9 percent slopes	C	3.7	2.2%
175	Myford sandy loam, 9 to 15 percent slopes	D	48.0	29.1%
189	Rincon clay loam, 9 to 15 percent slopes, MLRA 19	C	13.3	8.0%
207	Sorrento loam, 2 to 9 percent slopes, warm MAAT, MLRA 19	C	25.7	15.6%
217	Xeralfic arents, loamy, 2 to 9 percent slopes		25.2	15.3%
Totals for Area of Interest			**164.9**	**100.0%**

Description — Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options — Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

FOIA | Accessibility Statement | Privacy Policy | Non-Discrimination Statement | Information Quality | USA.gov | White House

Appendix I Preliminary Water Quality Management Plan

Appendices

This page intentionally left blank.

CA ENGINEERING

BREA PLAZA
MIXED-USE PROJECT
(PLN-2020-00034)

1639 E. Imperial Hwy
Brea, CA 92821

Preliminary Water Quality Management Plan

Prepared By:

CA Engineering, Inc.
13821 Newport Avenue, Suite 110
Tustin, CA 92780
949.724.9480 / fcornwell@ca-eng.net

Prepared For:

BPI Brea LLC
417 S. Associated Rd, Suite 313
Brea, CA 92821
714.990.5715

Date Prepared: August 20, 2020
Date Revised: June 23, 2021
Date Revised: July 27, 2021

County of Orange/Santa Ana Region Priority Project

Preliminary Water Quality Management Plan (P-WQMP)

Project Name:

BREA PLAZA MIXED-USE PROJECT (PLN-2020-00034)

APN 319-102-25 & 319-102-32

1639 E. IMPERIAL HIGHWAY

BREA, CA 92821

Prepared for:
BPI Brea LLC
417 S. Associated Road, Suite 313
Brea, CA 92821
714-990-5715

Prepared by:
CA Engineering, Inc.
Fred Cornwell, P.E.
13821 Newport Avenue, Suite 110
Tustin, CA 92780
949-724-9480 (x2012) / fcornwell@ca-eng.net

Date Prepared: August 20, 2020
Date Revised: June 23, 2021
Date Revised: July 27, 2021

Fred Cornwell, RCE #45591

Project Owner's Certification			
Planning Application No. (If applicable)	**PLN-2020-00034**	Grading Permit No.	**Not Issued Yet**
Tract/Parcel Map and Lot(s) No.	**N/A**	Building Permit No.	**Not Issued Yet**
Address of Project Site and APN (If no address, specify Tract/Parcel Map and Lot Numbers)			**1639 E. Imperial Hwy. Brea, CA 92821** **APN 319-102-25 & 319-102-32**

This Water Quality Management Plan (WQMP) has been prepared for BPI Brea LLC by CA Engineering, Inc. The WQMP is intended to comply with the requirements of the County of Orange NPDES Stormwater Program requiring the preparation of the plan.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan , including the ongoing operation and maintenance of all best management practices (BMPs), and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Orange County Drainage Area Management Plan (DAMP) and the intent of the non-point source NPDES Permit for Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the incorporated Cities of Orange County within the Santa Ana Region. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the WQMP. An appropriate number of approved and signed copies of this document shall be available on the subject site in perpetuity.

Owner:	**BPI Brea LLC**		
Name / Title	Waad J. Nadhir / Authorized Signatory of BOSC Inc.		
Company	BOSC Inc., Manager of BPI Brea LLC		
Address	417 S. Associated Road, Suite 313, Brea, California 92821		
Email	wnadhir@bosc.com		
Telephone #	714-990-5715		
I understand my responsibility to implement the provisions of this WQMP including the ongoing operation and maintenance of the best management practices (BMPs) described herein.			
Owner Signature		Date	

Preparer (Engineer): Fred Cornwell, P.E.			
Title	Principal	PE Registration #	45591
Company	CA Engineering, Inc.		
Address	13821 Newport Avenue, Suite 110, Tustin, CA 92780		
Email	fcornwell@ca-eng.net		
Telephone #	949-724-9480 (x2012)		

I hereby certify that this Water Quality Management Plan is in compliance with, and meets the requirements set forth in, Order No. R8-2009-0030/NPDES No. CAS618030, of the Santa Ana Regional Water Quality Control Board.

Preparer Signature		Date	7-27-2021
Place Stamp Here	REGISTERED PROFESSIONAL ENGINEER FRED CORNWELL NO. 45591 CIVIL STATE OF CALIFORNIA		

TABLE OF CONTENTS

Section I **Permit(s) and Water Quality Conditions of Approval or Issuance.....1**
Section II **Project Description.....2**
Section III **Site Description.....14**
Section IV **Best Management Practices (BMPs).....20**
Section V **Inspection/Maintenance Responsibility for BMPs.....43**
Section VI **BMP Exhibit (Site Plan) 55**
Section VII **Educational Materials.....56**

Appendices

Appendix A.....Educational Materials

- .....The Ocean Begins at Your Front Door
- .....Responsible Pest Control
- .....Sewage Spill Reference Guide
- .....Tips for Landscape & Gardening
- .....Tips for Pool Maintenance
- .....Tips for Projects Using Paint
- .....Proper Maintenance Practices for Your Business

Appendix B.....Post Construction BMP Fact Sheets

- .....SD-10 Site Design & Landscape Planning
- .....SD-12 Efficient Irrigation
- .....SD-13 Storm Drain Signage
- .....SD-31 Maintenance Bays & Docks
- .....SC-35 Safer Alternative Products
- .....SC-42 Building Repair and Construction
- .....IC3 Building Maintenance
- .....IC7 Landscape Maintenance
- .....IC10 Outdoor Loading/Unloading of Materials
- .....IC15 Parking and Storage Area Maintenance
- .....IC16 Pool and Fountain Cleaning
- .....IC17 Spill Prevention and Cleanup
- .....IC21 Waste Handling and Disposal

Appendix C.....Susceptibility Analysis Map for San Gabriel-Coyote Creek Watershed

Appendix D.....Rainfall Zone Map for Orange County

Appendix E.....Southern California Geotechnical, Inc.'s Geotechnical Feasibility Study, Proposed Brea Plaza Mixed Use Development, NWC Imperial Highway at Associated Road, Brea, California, dated July 30, 2020

Appendix F……Southern California Geotechnical, Inc.'s Results of Infiltration Testing, Proposed Brea Plaza Mixed Use Development, NWC Imperial Highway at Associated Road, Brea, California, dated July 30, 2020

Appendix G……NRCS Hydrologic Soils Groups Map for Orange County

Appendix H……Operation and Maintenance (O&M) Plan

Appendix I……Record of BMP Implementation, Maintenance and Inspection

Appendix J……Inspection Report for Modular Wetlands System; Cleaning and Maintenance Report for Modular Wetlands System

Appendix K……Notice of Transfer of Responsibility for WQMP

Appendix L……WinTR-55 Program Hydrologic Analysis Reports for the Brea Plaza Mixed-Use Project

Appendix M……Approved Water Quality Management Plan for Brea Plaza, dated January 17, 2011

Appendix N……Water Quality Conditions of Approval (To Be Included in Final WQMP)

Appendix O……BMP Maintenance Self-Certification Form for the City of Brea

Appendix P……City of Brea Project Specific WQMP Summary Report

Exhibits and Attachments Included in Section VI:

- **Vicinity Map**
- **BMP Exhibit (Site Plan) for Proposed Project**
- **Existing WQMP Drainage Areas Exhibit (Overall Site)**
- **Kristar FloGard +PLUS Catch Basin Insert Filter Specifications**
- **BMP Fact Sheet—BIO-7: Proprietary Biotreatment**
- **Modular Wetlands System Stormwater Biofiltration Guide (Specifications and Sizing Options)**
- **MWS Linear 2.0 HGL Sizing Calculations Table**
- **Standard Detail for Proposed Modular Wetlands System Unit (MWS-L-8-24-V High Capacity Model 3.6)**
- **Maintenance Guidelines for Modular Wetlands System**
- **State Water Resources Control Board's Certified Full Capture System List of Trash Treatment Control Devices (Updated May 2021)**

Section I Permit(s) and Water Quality Conditions of Approval or Issuance

Project Infomation			
Permit/Application No. (If applicable)	**PLN-2020-00034**	Grading or Building Permit No. (If applicable)	**Not Issued Yet**
Address of Project Site (or Tract Map and Lot Number if no address) and APN	**1639 E. Imperial Highway, Brea, CA 92821** **APN 319-102-25 & 319-102-32**		
Water Quality Conditions of Approval or Issuance			
Water Quality Conditions of Approval or Issuance applied to this project. (Please list verbatim.)	**No Conditions of Approval for the Project have been issued yet.**		
Was a Conceptual Water Quality Management Plan previously approved for this project?	**No. This document is the Preliminary WQMP for the Project.**		
Watershed-Based Plan Conditions			
Applicable Watershed	**San Gabriel-Coyote Creek Watershed**		
Provide applicable conditions from watershed - based plans including WIHMPs and TMDLS.	**WIHMP proposed for San Gabriel-Coyote Creek Watershed but not yet adopted per ocwatershed.com.** **TMDLs for Coyote Creek—Metals (Copper, Lead) and Indicator Bacteria** **TMDLs for San Gabriel River Estuary—Metals (Copper) and Indicator Bacteria**		

Section II Project Description

II.1 Project Description

Description of Proposed Project	
Development Category (From Model WQMP, Table 7.11-2; or -3):	**Significant Redevelopment Project.** Development Category No. 8 from Table 7.II-2 of the Model WQMP defines the following as a priority project for the North Orange County Permit Area: "All significant redevelopment projects, where significant redevelopment is defined as the addition or replacement of 5,000 or more square feet of impervious surface on an already developed site. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of the facility, or emergency redevelopment activity required to protect public health and safety. If the redevelopment results in the addition or replacement of less than 50 percent of the impervious area on-site and the existing development was not subject to WQMP requirement, the numeric sizing criteria discussed in Section 7.II-2.0 only applies to the addition or replacement area. If the addition or replacement accounts for 50 percent or more of the impervious area, the Project WQMP requirements apply to the entire development." **The proposed project area is located on an already developed site measuring approximately 13.7 acres. The site is occupied by Brea Plaza, which consists of several commercial buildings, asphalt parking areas/drive aisles, concrete walkways, and landscaping. The existing site also includes four vegetated swales which were constructed to treat stormwater runoff as part of the initial redevelopment of Brea Plaza in 2011. The proposed project will involve the demolition of one building and the parking lot, concrete walkways, and landscape areas that are within the project area. The proposed area to be disturbed measures 95,864 square feet (2.20 acres), and comprises 16.1% of the overall site area. While the proposed project will add and/or replace 5,000 or more square feet of impervious surface on an already developed site, the work will result in the addition or replacement of less than 50% of the impervious area on the entire site. Accordingly, the proposed development is a Priority Project, but the numeric sizing criteria only applies to the proposed project area.**

<table>
<tr><td>Land Use</td><td colspan="4">Mixed Use: Commercial/Industrial Development and Attached Residential Development</td></tr>
<tr><td>Project Area (ft²): 95,864</td><td colspan="2">Number of Dwelling Units: 189</td><td colspan="2">SIC Code: 7011 and 6513</td></tr>
<tr><td rowspan="2">Project Area</td><td colspan="2">Pervious</td><td colspan="2">Impervious</td></tr>
<tr><td>Area
(acres or sq ft)</td><td>Percentage</td><td>Area
(acres or sq ft)</td><td>Percentage</td></tr>
<tr><td>Pre-Project Conditions</td><td>7,234 sq. ft.</td><td>7.5%</td><td>88,630 sq. ft.</td><td>92.5%</td></tr>
<tr><td>Post-Project Conditions</td><td>3,445 sq. ft.</td><td>3.6%</td><td>92,419 sq. ft.</td><td>96.4%</td></tr>
<tr><td>Drainage Patterns/Connections</td><td colspan="4">The overall site where the proposed project will be located is an approximately 13.7 acre existing retail center (Brea Plaza) consisting of six buildings and associated drive aisles and parking lots. The site topography slopes from the northwest corner towards the southeast, and generally ranges from 336± feet mean sea level (msl) in the northern region to 329± feet msl in the southern region.

Brea Plaza was previously redeveloped in 2011. At that time, four concrete box culverts were constructed to replace the previous open trapezoidal channel (Loftus Channel) allowing parking lots to be constructed over the box culverts. In addition, a Water Quality Management Plan, dated January 17, 2011, was prepared for the prior redevelopment project and was approved on February 3, 2011. Pursuant to the 2011 WQMP, the redevelopment project area was divided into four drainage areas, which measured 13.69 acres in total. The low flows from each drainage area delineated in the 2011 WQMP are collected via 12" grated area drains and then conveyed to vegetated swales located along the eastern boundary. After the storm flows are bio-treated in the vegetated swales, they are conveyed to a drainage inlet which discharges to the Loftus box channel. Flows that exceed the design storm flows bypass the grated area drains and are collected by catch basins and conveyed to Loftus Channel directly. An exhibit depicting the existing WQMP drainage areas and vegetated swales, and outlining the new proposed project area, is included in Section VI of this P-WQMP. A complete copy of the 2011 WQMP is attached to this P-WQMP as Exhibit M.</td></tr>
</table>

The drainage for the proposed project generally follows the existing flow characteristics. Storm flows draining from 2.53 acres of the property to the north sheet flow onto the proposed development. These off-site flows were unable to be routed around the proposed project due to grading and site constraints.

The existing on-site storm drain will be extended to the northern side of the proposed building. The off-site flows draining from the property to the north and the project area storm flows will be collected by grated inlets and conveyed to this extended storm drain system, resulting in the commingling of on and off-site flows. A diversion structure will be constructed on the new storm drain line which will convey the low flows to a Modular Wetlands System ("MWS") unit (a BIO-7: Proprietary Biotreatment BMP). The MWS unit will act as the project's LID BMP, and will be installed in a landscaped parking lot island located just south of the proposed project area. To mitigate the off-site flows, the proposed MWS unit will be upsized to treat the project flow rate of 0.502 cfs as well as half of the off-site water quality flow rate—which is 0.229 cfs—for a total treatment capacity of 0.731 cfs. In addition to LID treatment, FloGard catch basin inserts have been provided for Full Capture System compliance.

The diverted high flows and the treated low flows draining from the MWS unit will be conveyed to a 60" detention pipe. The detention pipe will outlet the flows, at a restricted rate, to the extended on-site storm drain. The extended storm drain will connect to the existing storm drain system which flows to Loftus Channel. The storm flow inlets, diversion structure, MWS unit, and detention pipe will be located as identified on the BMP Exhibit (Site Plan) included in Section VI of this P-WQMP.

Storm flows that exceed the capacity of the project area grated inlets will sheet flow to the existing catch basins located throughout the overall site, and these excess flows will be conveyed to Loftus Channel by the existing on-site storm drain system.

The site's storm water flows are discharged to Loftus Channel, which drains to Fullerton Creek, which flows to Coyote Creek, which in turn flows to the San Gabriel River Reach 1 (Estuary to Firestone), which outlets to the Pacific Ocean at the San Gabriel River Estuary. Hydrologic Conditions of Concern potentially exist for the project since not all of the downstream conveyance channels that will receive runoff from the

	project are engineered, hardened, and regularly maintained to ensure design flow capacity. (See Section II.3 of this P-WQMP.) However, since the post-development run-off volume and time of concentration are within 105% of these values for the pre-development condition, the project has no HCOCs pursuant to Section 7.II-2.4.2.2 of the Model WQMP and Section 2.2.3.1 of the Technical Guidance Document. (See the WinTR-55 Program Hydrologic Analysis Reports for the Brea Plaza Mixed-Use Project, copies of which are attached to this P-WQMP as Appendix L.)
Narrative Project Description: (Use as much space as necessary.)	The proposed project area is located in the northwest portion of Brea Plaza, an approximately 13.7 acre retail shopping center, located at 1639 E. Imperial Highway, in the City of Brea, California. Brea Plaza is bounded to the north by a Mercury Insurance office building, to the west by the Orange Freeway (SR 57), to the south by Imperial Highway, and to the east by Associated Road. The proposed project area measures approximately 95,864 square feet (2.20 acres), which comprises roughly 16.1% of the overall site. The project area is currently developed with a movie theater, asphalt drive aisles/parking areas, concrete walkways, and landscaping, and is 92.5% impervious. The proposed project will involve the demolition of the movie theater building, as well as the asphalt drive aisles/parking areas, concrete walkways, and landscaped planters within the project area, and the construction of one eight-story apartment building. The upper five stories of the building will contain 189 residential apartments, and the lower three stories will consist of concrete podium parking. A roof garden and pool will be located on the fourth level of the building. The project will also include asphalt drive aisles, a concrete loading dock area, and concrete walkways. In addition, the proposed development will construct a two-story office building over a portion of an existing multi-tenant retail building, and a one-story office building over a portion of the existing Custom Comfort Mattress store. The new offices have been excluded from the project area since they are being constructed over existing buildings and will not increase the disturbed area. The proposed building will have a footprint of approximately 62,316 square feet (which excludes the pervious roof garden areas), and the asphalt drive aisles and concrete areas will occupy 30,103 square feet,

	for a total impervious area of 92,419 square feet, or 96.4% of the project site. The project will also include 3,445 square feet of landscaping/pool area, for a total pervious area of 3.6% of the project site. There are no outdoor trash enclosures proposed for the project, and no streets, roads, or highway projects are planned to be constructed. There are no known materials or wastes that are anticipated to be used or produced during the operation of the Brea Plaza Mixed-Use Project that would be classified as "hazardous." Further, none of the materials to be used at the facility will be stored outside. The project will not violate any water quality standards because the project will be required to meet the City's NPDES permit discharge requirements.

II.2 Potential Stormwater Pollutants

Urban runoff from a developed site and storm water pollution associated with the runoff has the potential to contribute pollutants to the municipal storm drain system and ultimately to the tributary receiving waters. Pollutants that are commonly associated with urban development include suspended solids/sediment, nutrients, metals, microbial pathogens, oil and grease, toxic organic compounds, and trash and debris. The pollutants of concern for a specific project are based upon the pollutants identified by regulatory agencies as impairing receiving waters, and pollutants that are anticipated or potentially could be generated by the project based on the proposed land uses. Identifying the anticipated/potential pollutants will allow the project WQMP to appropriately assign BMPs to effectively mitigate storm water pollution prior to the runoff discharging off-site.

Table 2.1 of the Technical Guidance Document to Orange County's Model WQMP, dated May 19, 2011, lists the pollutants of concern generated by various land uses and is reprinted below:

Priority Project Categories and/or Project Features	General Pollutant Categories							
	Suspended Solid/ Sediments	Nutrients	Heavy Metals	Pathogens (Bacteria/ Virus)	Pesticides	Oil & Grease	Toxic Organic Compounds	Trash & Debris
Detached Residential Development	E	E	N	E	E	E	N	E
Attached Residential Development	E	E	N	E	E	E(2)	N	E
Commercial/ Industrial Development	E(1)	E(1)	E(5)	E(3)	E(1)	E	E	E
Automotive Repair Shops	N	N	E	N	N	E	E	E
Restaurants	E(1)(2)	E(1)	E(2)	E	E(1)	E	N	E
Hillside Development >5,000 ft²	E	E	N	E	E	E	N	E
Parking Lots	E	E(1)	E	E(4)	E(1)	E	E	E
Streets, Highways, & Freeways	E	E (1)	E	E(4)	E(1)	E	E	E
Retail Gasoline Outlets	N	N	E	N	N	E	E	E

E = expected to be of concern
N = not expected to be of concern

(1) Expected pollutant if landscaping exists on-site, otherwise not expected.
(2) Expected pollutant if the project includes uncovered parking areas, otherwise not expected.
(3) Expected pollutant if land use involves food or animal waste products, otherwise not expected.
(4) Bacterial indicators are routinely detected in pavement runoff.
(5) Expected if outdoor storage or metal roofs, otherwise not expected.

The table below identifies the potential pollutants of concern for the proposed Brea Plaza Mixed-Use Project, as set forth in Table 2.1 of the Technical Guidance Document under "Commercial/Industrial Development" and/or "Attached Residential Development:"

Pollutants of Concern			
Pollutant	Check One for each: E=Expected to be of concern N=Not Expected to be of concern		Additional Information and Comments
Suspended-Solid/ Sediment	**E**		Identified as an anticipated and/or potential pollutant for Commercial/Industrial Developments and/or Attached Residential Developments in Table 2.1 of the TGD.
Nutrients	**E**		Identified as an anticipated and/or potential pollutant for Commercial/Industrial Developments and/or Attached Residential Developments in Table 2.1 of the TGD.
Heavy Metals		**N**	Not identified as an anticipated and/or potential pollutant for Commercial/Industrial Developments and/or Attached Residential Developments in Table 2.1 of the TGD.
Pathogens (Bacteria/Virus)	**E**		Identified as an anticipated and/or potential pollutant for Commercial/Industrial Developments and/or Attached Residential Developments in Table 2.1 of the TGD.
Pesticides	**E**		Identified as an anticipated and/or potential pollutant for Commercial/Industrial Developments and/or Attached Residential Developments in Table 2.1 of the TGD.

Oil and Grease	**E**		Identified as an anticipated and/or potential pollutant for Commercial/Industrial Developments and/or Attached Residential Developments in Table 2.1 of the TGD.
Toxic Organic Compounds	**E**		Identified as an anticipated and/or potential pollutant for Commercial/Industrial Developments and/or Attached Residential Developments in Table 2.1 of the TGD.
Trash and Debris	**E**		Identified as an anticipated and/or potential pollutant for Commercial/Industrial Developments and/or Attached Residential Developments in Table 2.1 of the TGD.

Suspended Solids / Sediment consist of soils or other surficial materials that are eroded and then transported or deposited by wind, water, or gravity. Excessive sedimentation can increase turbidity, clog fish gills, reduce spawning habitat, lower young aquatic organisms survival rates, smother bottom dwelling organisms, and suppress aquatic vegetation growth. Sediments in runoff also transport other pollutants that adhere to them, including trace metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and phosphorus. The largest source of suspended solids/sediment is typically erosion from disturbed soils.

Nutrients include the macro-nutrients nitrogen and phosphorus. They commonly exist in the form of mineral salts dissolved or suspended in water and as particulate organic matter transported by storm water. Excessive discharge of nutrients to water bodies and streams can cause eutrophication, including excessive aquatic algae and plant growth, loss of dissolved oxygen, release of toxins in sediment, and significant swings in hydrogen ion concentration (pH). Primary sources of nutrients in urban runoff are fertilizers, trash and debris, and eroded soils. Urban areas with improperly managed landscapes can be substantial sources.

Pathogens (Bacteria / Viruses) include bacteria and viruses, which are ubiquitous microorganisms that thrive under a range of environmental conditions. Water containing excessive pathogenic bacteria and viruses can create a harmful environment for humans and aquatic life. The source of pathogenic bacteria and viruses is typically the transport of animal or human fecal wastes from the watershed, but pathogenic organisms do occur in the natural environment.

Pesticides include pesticides and herbicides comprised of chemical compounds commonly used to control nuisance growth or prevalence of organisms. Water containing excessive pesticides and herbicides can constitute a hazard to humans and aquatic life. Areas with improperly managed landscapes, including excessive or improper application of pesticides and/or herbicides, can be a substantial source.

Oil and Grease are characterized as high-molecular weight organic compounds. Elevated oil and grease content can decrease the aesthetic value of the water body, as well as the water quality. Introduction of these pollutants to water bodies may occur due to the wide uses and applications of some of these products in municipal, residential, commercial, industrial, and construction areas. Primary sources of oil and grease are petroleum hydrocarbon products, motor products from leaking vehicles, esters, oils, fats, waxes, and high molecular-weight fatty acids.

Toxic Organic Compounds include organic compounds (pesticides, solvents, hydrocarbons) which at toxic concentrations constitute a hazard to humans and aquatic organisms. Storm water coming into contact with organic compounds can transport excessive levels of organics to receiving waters. Dirt, grease, and grime retained in cleaning fluid or rinse water may also adsorb levels of organic compounds that are harmful or hazardous to aquatic life. Sources of organic compounds include landscape maintenance areas, vehicle maintenance areas, waste handling areas, and potentially most other urban areas.

Trash and Debris includes trash, such as paper, plastic, and various waste materials, that can typically be found throughout the urban landscape, and debris which includes waste products of natural origin which are not naturally discharged to water bodies such as landscaping waste, woody debris, etc. The presence of trash and debris may have a significant impact on the recreational value of a water body and upon the health of aquatic habitat.

II.3 Hydrologic Conditions of Concern

[X] No – Show map (and see discussion below)

[ ] Yes – Describe applicable hydrologic conditions of concern below. *Refer to Section 2.2.3 in the TGD.*

In the North Orange County permit area, where the Brea Plaza Mixed-Use Project is located, downstream channels are considered not susceptible to hydromodification, and therefore projects do not have the potential for an HCOC, if "[a]ll downstream conveyance channels that will receive runoff from the project are engineered, hardened, and regularly maintained to ensure design flow capacity, and no sensitive stream habitat areas will be affected." (See Section 7.II-2.3.3 of the Model WQMP.) If, however, any of the project's downstream channels are susceptible to hydromodification, Section 7.II-2.4.2.2 of the Model WQMP further provides that:

"A project does not have an HCOC if either of the following conditions is met:

- The volumes and time of concentration of stormwater runoff for the post-development condition do not significantly exceed those of the predevelopment condition for a two-year frequency storm event (a difference of five percent or less is considered insignificant).
- The site infiltrates at least the runoff from a two-year storm event."

With respect to the proposed Brea Plaza Mixed-Use Project, not all of the downstream conveyance channels from the point of connection are "engineered, hardened, and regularly maintained to ensure design flow capacity." Therefore, the project has the potential for an HCOC. (See the Susceptibility Analysis Map for San Gabriel-Coyote Creek Watershed, Figure 1 of the Technical Guidance Document, a copy of which is attached to this P-WQMP as Appendix C.)

However, as set forth in the chart below, both the volume and time of concentration of stormwater runoff for the post-development condition are within 105% of these values for the pre-development condition for a two-year frequency storm event. Therefore, the project does not have an HCOC. In addition, the post-development peak flowrate is identical to the pre-development peak flowrate for a two-year frequency storm event. (See the WinTR-55 Program Hydrologic Analysis Reports for the Brea Plaza Mixed-Use Project, copies of which are attached to this P-WQMP as Appendix L.)

2-Yr / 24-Hr Storm	Runoff Volume	Time of Concentration (Tc)	Peak Flowrate
Pre-Development	13,496 CF	0.085 Hr (5.1 Minutes)	2.94 CFS
Post-Development	13,496 CF	0.088 Hr (5.28 Minutes)	2.94 CFS
Difference / %	0 CF / 0%	0.003 Hr / 3.53%	0 CFS / 0%

II.4 Post Development Drainage Characteristics

The overall site where the proposed project will be located is an approximately 13.7 acre existing retail center (Brea Plaza) consisting of six buildings and associated drive aisles and parking lots. The site topography slopes from the northwest corner towards the southeast, and generally ranges from 336± feet mean sea level (msl) in the northern region to 329± feet msl in the southern region.

Brea Plaza was previously redeveloped in 2011. At that time, four concrete box culverts were constructed to replace the previous open trapezoidal channel (Loftus Channel) allowing parking lots to be constructed over the box culverts. In addition, a Water Quality Management Plan, dated January 17, 2011, was prepared for the prior redevelopment project and was approved on February 3, 2011. Pursuant to the 2011 WQMP, the redevelopment project area was divided into four drainage areas, which measured 13.69 acres in total. The low flows from each drainage area delineated in the 2011 WQMP are collected via 12" grated area drains and then conveyed to vegetated swales located along the eastern boundary. After the storm flows are bio-treated in the vegetated swales, they are conveyed to a drainage inlet which discharges to the Loftus box channel. Flows that exceed the design storm flows bypass the grated area drains and are collected by catch basins and conveyed to Loftus Channel directly. An exhibit depicting the existing WQMP drainage areas and vegetated swales, and outlining the new proposed project area, is included in Section VI of this P-WQMP. A complete copy of the 2011 WQMP is attached to this P-WQMP as Exhibit M.

The drainage for the proposed project generally follows the existing flow characteristics. Storm flows draining from 2.53 acres of the property to the north sheet flow onto the proposed development. These off-site flows were unable to be routed around the proposed project due to grading and site constraints.

The existing on-site storm drain will be extended to the northern side of the proposed building. The off-site flows draining from the property to the north and the project area storm flows will be collected by grated inlets and conveyed to this extended storm drain system, resulting in the commingling of on and off-site flows. A diversion structure will be constructed on the new storm drain line which will convey the low flows to a Modular Wetlands System ("MWS") unit (a BIO-7: Proprietary Biotreatment BMP). The MWS unit will act as the project's LID BMP, and will be installed in a landscaped parking lot island located just south of the proposed project area. To mitigate the off-site flows, the proposed MWS unit will be upsized to treat the project flow rate of 0.502 cfs as well as half of the off-site water quality flow rate—which is 0.229 cfs—for a total treatment capacity of 0.731 cfs. In addition to LID treatment, FloGard catch basin inserts have been

provided for Full Capture System compliance.

The diverted high flows and the treated low flows draining from the MWS unit will be conveyed to a 60"detention pipe. The detention pipe will outlet the flows, at a restricted rate, to the extended on-site storm drain. The extended storm drain will connect to the existing storm drain system which flows to Loftus Channel. The storm flow inlets, diversion structure, MWS unit, and detention pipe will be located as identified on the BMP Exhibit (Site Plan) included in Section VI of this P-WQMP.

Storm flows that exceed the capacity of the project area grated inlets will sheet flow to the existing catch basins located throughout the overall site, and these excess flows will be conveyed to Loftus Channel by the existing on-site storm drain system.

The site's storm water flows are discharged to Loftus Channel, which drains to Fullerton Creek, which flows to Coyote Creek, which in turn flows to the San Gabriel River Reach 1 (Estuary to Firestone), which outlets to the Pacific Ocean at the San Gabriel River Estuary. Hydrologic Conditions of Concern potentially exist for the project since not all of the downstream conveyance channels that will receive runoff from the project are engineered, hardened, and regularly maintained to ensure design flow capacity. (See Section II.3 of this P-WQMP.) However, since the post-development run-off volume and time of concentration are within 105% of these values for the pre-development condition, the project has no HCOCs pursuant to Section 7.II-2.4.2.2 of the Model WQMP and Section 2.2.3.1 of the Technical Guidance Document. (See the WinTR-55 Program Hydrologic Analysis Reports for the Brea Plaza Mixed-Use Project, copies of which are attached to this P-WQMP as Appendix L.)

II.5 Property Ownership/Management

All portions of the project and site are owned by BPI Brea LLC. The individual at BPI Brea LLC responsible for this project and all related water quality issues is Waad Nadhir. Mr. Nadhir's contact information is as follows: 417 S. Associated Road, Suite 313, Brea, California 92821; phone number (714) 990-5715; email address wnadhir@bosc.com. All maintenance responsibilities, including the implementation and maintenance of BMPs for the Brea Plaza Mixed-Use Project, shall be performed by BPI Brea LLC.

Section III Site Description

III.1 Physical Setting

Name of Planned Community/Planning Area (if applicable)	**N/A**
Location/Address	**1639 E. Imperial Highway, Brea, CA 92821**
General Plan Land Use Designation	**General Commercial (C-G)**
Zoning	**General Commercial (C-G)**
Acreage of Project Site	**2.20 acres**
Predominant Soil Type	**The project area is underlain by artificial fill soils extending to depths of 5½ to 8½± feet below the existing site grades. The artificial fill soils generally consist of medium dense to very dense silty fine sand with trace clay nodules and clayey fine sand, as well as stiff to hard silty clay and fine sandy clay. Under the artificial fill soils, native terrace deposits extend to at least the maximum depth explored of 50± feet below ground surface. The near surface terrace deposits (within the upper 5½ to 22± feet) generally consist of medium dense to very dense fine sand, silty fine sand and occasionally fine sandy silt. Terrace deposits extending deeper than 22± feet generally consist of very stiff to hard silty clay and fine sandy clay, as well as medium dense to very dense fine sand.** **(See pages 7-8 of Southern California Geotechnical, Inc.'s Geotechnical Feasibility Study, Proposed Brea Plaza Mixed Use Development, NWC Imperial Highway at Associated Road, Brea, California, dated July 30, 2020 (the "Geotechnical Report"), a copy of which is attached to this P-WQMP as Appendix E.)** **The soils in the project area are classified as HSG D. (See the NRCS Hydrologic Soils Groups Map for Orange County, Figure XVI-2a of the Technical Guidance Document, a copy of which is attached to this P-WQMP as Appendix G.)**

III.2 Site Characteristics

Site Characteristics	
Precipitation Zone	**0.90 inches** **(See Appendix D of this WQMP—Rainfall Zone Map for Orange County, Figure XVI-1, TGD)**
Topography	**Flat**
Drainage Patterns/Connections	The overall site where the proposed project will be located is an approximately 13.7 acre existing retail center (Brea Plaza) consisting of six buildings and associated drive aisles and parking lots. The site topography slopes from the northwest corner towards the southeast, and generally ranges from 336± feet mean sea level (msl) in the northern region to 329± feet msl in the southern region. Brea Plaza was previously redeveloped in 2011. At that time, four concrete box culverts were constructed to replace the previous open trapezoidal channel (Loftus Channel) allowing parking lots to be constructed over the box culverts. In addition, a Water Quality Management Plan, dated January 17, 2011, was prepared for the prior redevelopment project and was approved on February 3, 2011. Pursuant to the 2011 WQMP, the redevelopment project area was divided into four drainage areas, which measured 13.69 acres in total. The low flows from each drainage area delineated in the 2011 WQMP are collected via 12" grated area drains and then conveyed to vegetated swales located along the eastern boundary. After the storm flows are bio-treated in the vegetated swales, they are conveyed to a drainage inlet which discharges to the Loftus box channel. Flows that exceed the design storm flows bypass the grated area drains and are collected by catch basins and conveyed to Loftus Channel directly. An exhibit depicting the existing WQMP drainage areas and vegetated swales, and outlining the new proposed project area, is included in Section VI of this P-WQMP. A complete copy of the 2011 WQMP is attached to this P-WQMP as Exhibit M. The drainage for the proposed project generally follows the existing flow characteristics. Storm flows draining from 2.53 acres of the property to the north sheet flow onto the proposed development.

	These off-site flows were unable to be routed around the proposed project due to grading and site constraints. The existing on-site storm drain will be extended to the northern side of the proposed building. The off-site flows draining from the property to the north and the project area storm flows will be collected by grated inlets and conveyed to this extended storm drain system, resulting in the commingling of on and off-site flows. A diversion structure will be constructed on the new storm drain line which will convey the low flows to a Modular Wetlands System ("MWS") unit (a BIO-7: Proprietary Biotreatment BMP). The MWS unit will act as the project's LID BMP, and will be installed in a landscaped parking lot island located just south of the proposed project area. To mitigate the off-site flows, the proposed MWS unit will be upsized to treat the project flow rate of 0.502 cfs as well as half of the off-site water quality flow rate—which is 0.229 cfs—for a total treatment capacity of 0.731 cfs. In addition to LID treatment, FloGard catch basin inserts have been provided for Full Capture System compliance. The diverted high flows and the treated low flows draining from the MWS unit will be conveyed to a 60"detention pipe. The detention pipe will outlet the flows, at a restricted rate, to the extended on-site storm drain. The extended storm drain will connect to the existing storm drain system which flows to Loftus Channel. The storm flow inlets, diversion structure, MWS unit, and detention pipe will be located as identified on the BMP Exhibit (Site Plan) included in Section VI of this P-WQMP. Storm flows that exceed the capacity of the project area grated inlets will sheet flow to the existing catch basins located throughout the overall site, and these excess flows will be conveyed to Loftus Channel by the existing on-site storm drain system. The site's storm water flows are discharged to Loftus Channel, which drains to Fullerton Creek, which flows to Coyote Creek, which in turn flows to the San Gabriel River Reach 1 (Estuary to Firestone), which outlets to the Pacific Ocean at the San Gabriel River Estuary. Hydrologic Conditions of Concern potentially exist for the project since not all of the downstream conveyance channels that will receive runoff from the project are engineered, hardened, and regularly

	maintained to ensure design flow capacity. (See Section II.3 of this P-WQMP.) However, since the post-development run-off volume and time of concentration are within 105% of these values for the pre-development condition, the project has no HCOCs pursuant to Section 7.II-2.4.2.2 of the Model WQMP and Section 2.2.3.1 of the Technical Guidance Document. (See the WinTR-55 Program Hydrologic Analysis Reports for the Brea Plaza Mixed-Use Project, copies of which are attached to this P-WQMP as Appendix L.)
Soil Type, Geology, and Infiltration Properties	**The project area is underlain by artificial fill soils extending to depths of 5½ to 8½± feet below the existing site grades. The artificial fill soils generally consist of medium dense to very dense silty fine sand with trace clay nodules and clayey fine sand, as well as stiff to hard silty clay and fine sandy clay. Under the artificial fill soils, native terrace deposits extend to at least the maximum depth explored of 50± feet below ground surface. The near surface terrace deposits (within the upper 5½ to 22± feet) generally consist of medium dense to very dense fine sand, silty fine sand and occasionally fine sandy silt. Terrace deposits extending deeper than 22± feet generally consist of very stiff to hard silty clay and fine sandy clay, as well as medium dense to very dense fine sand. (See pages 7-8 of the Geotechnical Report attached to this P-WQMP as Appendix E.)** **Two infiltration tests were performed at the subject site. The infiltration rates at these locations range from 0.03 to 0.36 inches per hour. According to the infiltration report prepared by the geotechnical engineer for the project, "The major factors affecting the lack of infiltration at these borings is the presence of medium stiff to hard clayey soils at the test depths. Although an infiltration rate of 0.36 inches per hour was calculated for Infiltration Test No. I-2, negligible infiltration was measured at Infiltration Test Nos. I-1. Therefore, infiltration is not considered feasible for this site, due to the test results and the type of soils encountered at the boring locations." (See page 6 of Southern California Geotechnical, Inc.'s Results of Infiltration Testing, Proposed Brea Plaza Mixed Use Development, NWC Imperial Highway at Associated Road, Brea, California, dated July 30, 2020 (the "Infiltration Report"), a copy of which is attached to this P-WQMP as Appendix F.)**

Hydrogeologic (Groundwater) Conditions	**Groundwater was measured at a depth of 22½± feet below ground surface during the geotechnical engineer's borings. The historic high groundwater at the site is approximately 18± feet below ground surface. (See page 8 of the Geotechnical Report attached to this P-WQMP as Appendix E.)**
Geotechnical Conditions (relevant to infiltration)	**Infiltration at the site is infeasible due to the impermeable soils and low measured infiltration rate of 0.03 inches/hour. (See page 6 of the Infiltration Report attached to this P-WQMP as Appendix F.)**
Off-Site Drainage	**Storm flows draining from 2.53 acres of the property to the north sheet flow onto the proposed development. These off-site flows were unable to be routed around the proposed project due to grading and site constraints. A storm drain will be extended to the northern side of the proposed new building to collect the offsite flows, and storm water flows from the project area will be conveyed to the same extended storm drain system, which will result in the commingling of on and offsite flows. A diversion structure will be constructed on the new storm drain line to convey the low flows to a Modular Wetlands System unit for treatment. To mitigate the off-site flows, the proposed MWS unit will be upsized to treat the project flow rate of 0.502 cfs as well as half of the off-site water quality flow rate—which is 0.229 cfs—for a total treatment capacity of 0.731 cfs. In addition to LID treatment, FloGard catch basin inserts have been provided for Full Capture System compliance.**
Utility and Infrastructure Information	**The only utilities associated with the proposed development are the water, sewer, storm drain, gas and electrical connections. These laterals will supply the necessary utility connections for the proposed development. There are no main lines contained on the site. The proposed Modular Wetlands System unit will not interfere with any on-site utilities.**

III.3 Watershed Description

Receiving Waters	**The storm drain discharges to Loftus Diversion Channel, which drains to Fullerton Creek, which flows to Coyote Creek, which in turn flows to the San Gabriel River Reach 1 (Estuary to Firestone), which outlets to the Pacific Ocean at the San Gabriel River Estuary.**
303(d) Listed Impairments	**Coyote Creek: Copper-Dissolved (Metals); Indicator Bacteria (Pathogens); Iron (Metals); Malathion (Pesticides); pH; and Toxicity** **San Gabriel River—Reach 1 (Estuary to Firestone): pH and Water Temperature** **San Gabriel River Estuary : Copper (Metals); Dioxin (other Organics); Indicator Bacteria (Pathogens); Nickel (Metals); and Oxygen-Dissolved (Nutrients)**
Applicable TMDLs	**TMDLs for Coyote Creek—Metals (Copper, Lead) and Indicator Bacteria** **TMDLs for San Gabriel River Estuary—Metals (Copper) and Indicator Bacteria**
Pollutants of Concern for the Project	**Suspended-Solids/Sediment, Nutrients, Pathogens (Bacteria/Virus), Pesticides, Oil & Grease, Toxic Organic Compounds, Trash & Debris**
Environmentally Sensitive and Special Biological Significant Areas	**The proposed project does not directly discharge to, and is not within or adjacent to, an ESA.**

Section IV Best Management Practices (BMPs)

IV. 1 Project Performance Criteria

(NOC Permit Area only) Is there an approved WIHMP or equivalent for the project area that includes more stringent LID feasibility criteria or if there are opportunities identified for implementing LID on regional or sub-regional basis?	YES ☐	NO **X**
If yes, describe WIHMP feasibility criteria or regional/sub-regional LID opportunities.	**Not applicable. A WIHMP has been proposed for the San Gabriel-Coyote Creek Watershed, but it has not been adopted yet per ocwatershed.com.**	

Project Performance Criteria	
If HCOC exists, list applicable hydromodification control performance criteria (Section 7.II-2.4.2.2 in MWQMP)	**No HCOCs exist.**

<table>
<tr><td>List applicable LID performance criteria (Section 7.II-2.4.3 from MWQMP)</td><td>Priority Projects must infiltrate, harvest and use, evapotranspire, or biotreat/biofilter the 85th percentile of the 24-hour storm event (Design Capture Volume).</td></tr>
<tr><td>List applicable treatment control BMP performance criteria (Section 7.II-3.2.2 from MWQMP)</td><td>Capture and treat runoff from the 24-hour, 85th percentile storm event, and drawdown the captured/treated volume in 48 hours following end of event.</td></tr>
<tr><td>Calculate LID design storm capture volume for Project.</td><td>The project site contains one drainage area (Drainage Area A1), which utilizes a Modular Wetlands System unit as the selected LID BMP. The Design Storm Capture Volume (DCV) has been calculated to be 6,253 CF as set forth below. The detailed calculations used to determine the DCV are set forth in Section IV.3.4 of this WQMP.
<table>
<tr><th>DRAINAGE AREA</th><th>ACREAGE OF DRAINAGE AREA</th><th>DCV (CF)</th></tr>
<tr><td>Area A1</td><td>2.20 AC</td><td>6,253</td></tr>
</table></td></tr>
</table>

IV.2. Site Design and Drainage

The overall site where the proposed project will be located is an approximately 13.7 acre existing retail center (Brea Plaza) consisting of six buildings and associated drive aisles and parking lots. The site topography slopes from the northwest corner towards the southeast, and generally ranges from 336± feet mean sea level (msl) in the northern region to 329± feet msl in the southern region.

Brea Plaza was previously redeveloped in 2011. At that time, four concrete box culverts were constructed to replace the previous open trapezoidal channel (Loftus Channel) allowing parking lots to be constructed over the box culverts. In addition, a Water Quality Management Plan, dated January 17, 2011, was prepared for the prior redevelopment project and was approved on February 3, 2011. Pursuant to the 2011 WQMP, the redevelopment project area was divided into four drainage areas, which measured 13.69 acres in total. The low flows from each drainage area delineated in the 2011 WQMP are collected via 12" grated area drains and then conveyed to vegetated swales located along the eastern boundary. After the storm flows are bio-treated in the vegetated swales, they are conveyed to a drainage inlet which discharges to the Loftus box channel. Flows that exceed the design storm flows bypass the grated area drains and are collected by catch basins and conveyed to Loftus Channel directly. An exhibit depicting the existing WQMP drainage areas and vegetated swales, and outlining the new proposed project area, is included in Section VI of this P-WQMP. A complete copy of the 2011 WQMP is attached to this P-WQMP as Exhibit M.

The drainage for the proposed project generally follows the existing flow characteristics. Storm flows draining from 2.53 acres of the property to the north sheet flow onto the proposed development. These off-site flows were unable to be routed around the proposed project due to grading and site constraints.

The existing on-site storm drain will be extended to the northern side of the proposed building. The off-site flows draining from the property to the north and the project area storm flows will be collected by grated inlets and conveyed to this extended storm drain system, resulting in the commingling of on and off-site flows. A diversion structure will be constructed on the new storm drain line which will convey the low flows to a Modular Wetlands System ("MWS") unit (a BIO-7: Proprietary Biotreatment BMP). The MWS unit will act as the project's LID BMP, and will be installed in a landscaped parking lot island located just south of the proposed project area. To mitigate the off-site flows, the proposed MWS unit will be upsized to treat the project flow rate of 0.502 cfs as well as half of the off-site water quality flow rate—which is 0.229 cfs—for a total treatment capacity of 0.731 cfs. In addition to LID treatment, FloGard catch basin inserts have been provided for Full Capture System compliance.

A proprietary biotreatment device was selected as the project's LID BMP because infiltration at the site is infeasible due to the impermeable soils and low measured infiltration rate of 0.03 inches/hour, and because there is insufficient available space to construct a traditional biotreatment planter.

The diverted high flows and the treated low flows draining from the MWS unit will be conveyed to a 60"detention pipe. The detention pipe will outlet the flows, at a restricted rate, to the extended on-site storm drain. The extended storm drain will connect to the existing storm drain system which flows to Loftus Channel. The storm flow inlets, diversion structure, MWS unit, and detention pipe will be located as identified on the BMP Exhibit (Site Plan) included in Section VI of this P-WQMP.

Storm flows that exceed the capacity of the project area grated inlets will sheet flow to the existing catch basins located throughout the overall site, and these excess flows will be conveyed to Loftus Channel by the existing on-site storm drain system.

The site's storm water flows are discharged to Loftus Channel, which drains to Fullerton Creek, which flows to Coyote Creek, which in turn flows to the San Gabriel River Reach 1 (Estuary to Firestone), which outlets to the Pacific Ocean at the San Gabriel River Estuary. Hydrologic Conditions of Concern potentially exist for the project since not all of the downstream conveyance channels that will receive runoff from the project are engineered, hardened, and regularly maintained to ensure design flow capacity. (See Section II.3 of this P-WQMP.) However, since the post-development run-off volume and time of concentration are within 105% of these values for the pre-development condition, the project has no HCOCs pursuant to Section 7.II-2.4.2.2 of the Model WQMP and Section 2.2.3.1 of the Technical Guidance Document. (See the WinTR-55 Program Hydrologic Analysis Reports for the Brea Plaza Mixed-Use Project, copies of which are attached to this P-WQMP as Appendix L.)

IV.3 LID BMP Selection and Project Conformance Analysis

Each sub-section below documents that the proposed design features conform to the applicable project performance criteria via check boxes, tables, calculations, narratives, and/or references to worksheets.

IV.3.1 Hydrologic Source Controls (HSCs)

Name	Included?
Localized on-lot infiltration	**No**
Impervious area dispersion (e.g. roof top disconnection)	**No**
Street trees (canopy interception)	**No**
Residential rain barrels (not actively managed)	**No**
Green roofs/Brown roofs	**No**
Blue roofs	**No**
Impervious area reduction (e.g. permeable pavers, site design)	**No**

The proposed BMP, BIO-7: Proprietary Biotreatment (Modular Wetlands System), will biotreat the entire LID Design Storm Capture Volume. Therefore, Hydrologic Source Controls are not required for the proposed Brea Plaza Mixed-Use Project.

IV.3.2 Infiltration BMPs

Name	Included?
Bioretention without underdrains	**No**
Rain gardens	**No**
Porous landscaping	**No**
Infiltration planters	**No**
Retention swales	**No**
Infiltration trenches	**No**
Infiltration basins	**No**
Drywells	**No**
Subsurface infiltration galleries	**No**
French drains	**No**
Permeable asphalt	**No**
Permeable concrete	**No**
Permeable concrete pavers	**No**

It is infeasible to infiltrate the LID Design Storm Capture Volume at the project site due to the impermeable soils and low measured infiltration rate of 0.03 inches/hour. (See page 6 of the Infiltration Report attached to this P-WQMP as Appendix F.)

The proposed LID BMP, BIO-7: Proprietary Biotreatment (Modular Wetlands System), will be utilized to biotreat the entire LID Design Storm Capture Volume.

See also Table 2.7 from the Technical Guidance Document below.

Table 2.7: Infiltration BMP Feasibility Worksheet

	Infeasibility Criteria	*Yes*	*No*
1	**Would Infiltration BMPs pose significant risk for groundwater related concerns?** Refer to Appendix VIII (Worksheet I) for guidance on groundwater-related Infiltration feasibility criteria.		**X**
Provide basis: Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
2	Would Infiltration BMPs **pose significant risk of increasing risk of geotechnical hazards that cannot be mitigated to an acceptable level?** (Yes if the answer to any of the following questions is yes, as established by a geotechnical expert): • The BMP can only be located less than 50 feet away from slopes steeper than 15 percent. • The BMP can only be located less than eight feet from building foundations or an alternative setback. • A study prepared by a geotechnical professional or an available watershed study substantiates that storm water infiltration would potentially result in significantly increased risks of geotechnical hazards that cannot be mitigated to an acceptable level.		**X**
Provide basis: Summarize findings of studies, provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
3	Would infiltration of the DCV from drainage area **violate downstream water rights?**		**X**
Provide basis: Summarize findings of studies, provide reference to studies, calculations, maps, data sources, etc.			
	Partial Infeasibility Criteria	*Yes*	*No*
4	Is proposed infiltration facility **located on HSG D soils** or the site geotechnical investigation identifies presence of soil characteristics which support categorization as D soils?	**X**	
Provide basis:			

The soils in the project area are classified as HSG D. (See Section 3.5 of the Hydrology Report attached to this P-WQMP as Appendix L.)

Summarize findings of studies, provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

5	Is **measured infiltration rate below proposed facility less than 0.3 inches per hour?** This calculation shall be based on the methods described in Appendix VII.	**X**	

Provide basis:

Two infiltration tests were performed at the subject site. The infiltration rates at these locations range from 0.03 to 0.36 inches per hour. According to the infiltration report prepared by the geotechnical engineer for the project, "The major factors affecting the lack of infiltration at these borings is the presence of medium stiff to hard clayey soils at the test depths. Although an infiltration rate of 0.36 inches per hour was calculated for Infiltration Test No. I-2, negligible infiltration was measured at Infiltration Test Nos. I-1. Therefore, infiltration is not considered feasible for this site, due to the test results and the type of soils encountered at the boring locations." (See page 6 of the Infiltration Report attached to this P-WQMP as Appendix F.)

Summarize findings of studies, provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

6	Would **reduction of over predeveloped conditions cause impairments to downstream beneficial uses, such as change of seasonality of ephemeral washes or increased discharge of contaminated groundwater to surface waters?**		**X**

Provide citation to applicable study and summarize findings relative to the amount of infiltration that is permissible:

Summarize findings of studies, provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

7	Would **an increase in infiltration over predeveloped conditions cause impairments to downstream beneficial uses, such as change of seasonality of ephemeral washes or increased discharge of contaminated groundwater to surface waters?**		**X**

Provide citation to applicable study and summarize findings relative to the amount of infiltration that is permissible:

Summarize findings of studies, provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

Infiltration Screening Results (check box corresponding to result):			
8	Is there substantial evidence that infiltration from the project would result in a significant increase in I & I to the sanitary sewer that cannot be sufficiently mitigated? (See Appendix XVII) Provide narrative discussion and supporting evidence: Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability. **The referenced document is not attached to the current version of the TGD.**		**X**
9	**If any answer from row 1-3 is yes**: infiltration of any volume Is not feasible within the DMA or equivalent. Provide basis: Summarize findings of infeasibility screening		**X**
10	**If any answer from row 4-7 is yes**, infiltration is permissible but is not presumed to be feasible for the entire DCV. Criteria for designing biotreatment BMPs to achieve the maximum feasible infiltration and ET shall apply. Provide basis: Summarize findings of infeasibility screening	**X**	
11	If all answers to rows 1 through 11 are no, infiltration of the full DCV is potentially feasible, BMPs must be designed to infiltrate the full DCV to the maximum extent practicable.	**N/A**	

IV.3.3 Evapotranspiration, Rainwater Harvesting BMPs

Name	Included?
All HSCs; *See Section IV.3.1*	**No**
Surface-based infiltration BMPs	**No**
Biotreatment BMPs	**No**
Above-ground cisterns and basins	**No**
Underground detention	**No**

The proposed BMP, BIO-7: Proprietary Biotreatment (Modular Wetlands System), will biotreat the entire LID Design Storm Capture Volume. Therefore, no other evapotranspiration or rainwater harvesting BMPs will be utilized at the site.

IV.3.4 Biotreatment BMPs

Name	Included?
Bioretention with underdrains	**No**
Stormwater planter boxes with underdrains	**No**
Rain gardens with underdrains	**No**
Constructed wetlands	**No**
Vegetated swales	**No**
Vegetated filter strips	**No**
Proprietary biotreatment systems	**Yes**
Wet extended detention basin	**No**
Dry extended detention basins	**No**

The proposed BIO-7: Proprietary Biotreatment BMP (Modular Wetlands System) will biotreat the entire LID Design Storm Capture Volume. (See Worksheet B below for the calculation of the DCV for Drainage Area A1.)

Pursuant to the MWS Linear 2.0 HGL Sizing Calculations table, a copy of which is included in Section VI of this P-WQMP, the proposed Modular Wetlands System unit (Model #MWS-L-8-24-V-High Capacity Model 3.6) has a treatment flowrate of 0.734 cfs.

The required design flowrate for the project area is 0.502 cfs (as calculated below). However, as discussed previously, to mitigate the off-site flows, the proposed MWS unit will be upsized to treat the project flow rate of 0.502 cfs as well as half of the off-site water quality flow rate—which is 0.229 cfs (as calculated below)—for a total minimum design flow rate of 0.731 cfs. Therefore, the treatment flowrate of the selected BIO-7: Proprietary Biotreatment BMP (Modular Wetlands System unit) exceeds the design flowrate for the project's Drainage Area A1.

DRAINAGE AREA A1 – MODULAR WETLANDS SYSTEM

Worksheet B: Simple Design Capture Volume Sizing Method

Step 1: Determine the design capture storm depth used for calculating volume				
1	Enter design capture storm depth from Figure III.1, *d* (inches)	d=	0.90	inches
2	Enter the effect of provided HSCs, d_{HSC} (inches) (Worksheet A)	d_{HSC}=	0.00	inches
3	Calculate the remainder of the design capture storm depth, $d_{remainder}$ (inches) (Line 1 – Line 2)	$d_{remainder}$=	0.90	inches
Step 2: Calculate the DCV				
1	Enter Project area tributary to BMP (s), *A* (acres)	A=	2.20	acres
2	Enter Project Imperviousness, *imp* (unitless)	imp=	0.964	
3	Calculate runoff coefficient, *C= (0.75 x imp) + 0.15*	C=	0.87	
4	Calculate runoff volume, V_{design}= *(C x* $d_{remainder}$ *x A x 43560 x (1/12))*	V_{design}=	6,253	cu-ft

Flow-based Proprietary BMP Sizing (TGD Appendix III.3.3)

Q = C × i × A x 43,560 ft^2/ac / (12 in/ft x 3600 sec/hr)

For the project area:

Q = design flowrate, cfs

C = runoff coefficient = 0.87 (see Worksheet B above)

i = design intensity (inches) = 0.26 in/hr

A = tributary area (acres) = 2.20 acres

Q = 0.87 x 0.26 in/hr x 2.20 ac x 43,560 ft^2/ac / (12 in/ft x 3600 sec/hr) = 0.502 cfs

For the offsite area draining onto the project area (2.53 acres / 71.9% impervious):

Q = design flowrate, cfs

C = runoff coefficient = (0.75 x 0.719) + 0.15 = 0.69

i = design intensity (inches) = 0.26 in/hr

A = tributary area (acres) = 2.53 acres

Q = 0.69 x 0.26 in/hr x 2.53 ac x 43,560 ft^2/ac / (12 in/ft x 3600 sec/hr) = 0.458 cfs

Off-site design flowrate to be treated: 50% x 0.458 cfs = 0.229 cfs

Total design flowrate to be treated: 0.502 cfs + 0.229 cfs = 0.731 cfs

Treatment flowrate of MWS Unit (Model #MWS-L-8-24-V-High Capacity Model 3.6) = 0.734 cfs > 0.731 cfs

IV.3.5 Hydromodification Control BMPs

Hydromodification Control BMPs	
BMP Name	**BMP Description**

With respect to the proposed Brea Plaza Mixed-Use Project, not all of the downstream conveyance channels from the point of connection are "engineered, hardened, and regularly maintained to ensure design flow capacity." Therefore, the project has the potential for an HCOC. (See the Susceptibility Analysis Map for San Gabriel-Coyote Creek Watershed, Figure 1 of the Technical Guidance Document, a copy of which is attached to this P-WQMP as Appendix C.)

However, since the post-development run-off volume and time of concentration are within 105% of these values for the pre-development condition, the project has no HCOCs pursuant to Section 7.II-2.4.2.2 of the Model WQMP and Section 2.2.3.1 of the Technical Guidance Document. (See the WinTR-55 Program Hydrologic Analysis Reports for the Brea Plaza Mixed-Use Project, copies of which are attached to this P-WQMP as Appendix L.) The compliance point for this assessment of the project's pre- and post-development runoff volume and time of concentration is located where runoff leaves the project site, pursuant to Section 5.3.1 of the Technical Guidance Document.

While the project area generates no HCOCs, a Hydromodification Control BMP (a 60" detention pipe with a restricted outlet) will be utilized for the overall site to mitigate the increased flows caused by the installation of the extended storm drain. Currently, the off-site flows and project area high flows sheet flow across the overall site and are collected by catch basins that discharge to Loftus Channel. In the proposed condition, the off-site flows, project area low flows, and a portion of the project area high flows will be conveyed by the extended 24" storm drain pipe to the existing storm drain, which is located to the south of the proposed project area, in the southern portion of the overall site. (The low flows will be diverted to a Modular Wetland System unit for treatment prior to being discharged to the existing storm drain.) At the connection point of the new and existing storm drain, the post-development runoff peak flowrate would exceed, by more than 110%, the pre-development runoff peak flowrate for the two-year frequency storm event. Therefore, the proposed detention pipe will be installed just upstream of the existing storm drain to reduce the post-development peak flowrate to 100.2% of the existing condition peak flowrate. (See the Project Hydrology Report.)

IV.3.6 Regional/Sub-Regional LID BMPs

Regional/Sub-Regional LID BMPs
The proposed BMP, BIO-7: Proprietary Biotreatment (Modular Wetlands System), will biotreat the entire LID Design Storm Capture Volume. Therefore, no Regional/Sub-Regional LID BMPs will be utilized at the site.

IV.3.7 Treatment Control BMPs

Treatment Control BMPs	
BMP Name	**BMP Description**
The proposed LID BMP, BIO-7: Proprietary Biotreatment (Modular Wetlands System), will biotreat the entire LID Design Storm Capture Volume. In addition, the proposed Modular Wetlands System unit and the proposed filters for the grated inlets (FloGard +Plus Insert Filters) have been certified by the State Water Resources Control Board as trash treatment control devices that meet the Full Capture System definition. (See the State Water Resources Control Board's Certified Full Capture System List of Trash Treatment Control Devices (Updated May 2021), a copy of which is included in Section VI of this P-WQMP.) No other Treatment Control BMPs will be utilized at the site.	

IV.3.8 Non-Structural Source Control BMPs

Non-Structural Source Control BMPs				
Identifier	Name	Check One		If not applicable, state brief reason
		Included	Not Applicable	
N1	Education for Property Owners, Tenants and Occupants	X		
N2	Activity Restrictions	X		
N3	Common Area Landscape Management	X		
N4	BMP Maintenance	X		
N5	Title 22 CCR Compliance (How development will comply)		X	Not applicable. The project site will not require Title 22 CCR compliance since the operation of the project site will not generate hazardous wastes as part of its routine operations.
N6	Local Industrial Permit Compliance		X	Not applicable.
N7	Spill Contingency Plan		X	Not applicable. No hazardous waste is expected to be stored on site.
N8	Underground Storage Tank Compliance		X	Not applicable. No underground storage tanks are proposed.
N9	Hazardous Materials Disclosure Compliance		X	Not applicable. The project will not handle or dispose of hazardous materials as part of its routine operations.
N10	Uniform Fire Code Implementation		X	Not applicable. No hazardous waste is expected to be stored on site.
N11	Common Area Litter Control	X		
N12	Employee Training	X		
N13	Housekeeping of Loading Docks	X		
N14	Common Area Catch Basin Inspection	X		

N15	Street Sweeping Private Streets and Parking Lots	X		
N16	Retail Gasoline Outlets		X	Not applicable. None proposed.

N1 Property Owner Education

The Owner will review the environmental awareness educational materials and BMP Fact Sheets included in Appendices A and B of this Project WQMP prior to or during the commencement of operations at the Brea Plaza Mixed-Use Project. Among other things, these materials will inform the Owner of the impacts of dumping oil, paints, solvents or other potentially harmful chemicals into the storm drain; the proper use and management of fertilizers, pesticides and herbicides in landscaping practices; the impacts of littering and improper watering; and proper maintenance practices for the business.

N2 Activity Restrictions

The Owner shall identify surface water quality protection requirements to ensure that surface water quality activities shall be conducted in conformance with the Project WQMP as it relates to the handling and disposal of contaminants and, through the use of employee training manuals or another equally effective method, shall develop corresponding use restrictions. The use restrictions shall include, but not be limited to, the following:

(a) The Owner shall periodically provide to his employees environmental awareness education materials made available by the local municipalities. These materials will describe the use of chemicals (including car wash chemicals, pesticides and fertilizers) that should be limited to the covered property with no discharge of specified wastes via hosing or other direct discharge to gutter, catch basins, settling basins and storm drains.

(b) The Owner shall require the use of fertilizers and pesticides to be in strict conformance with City and County guidelines.

(c) The Owner shall prohibit the discharge of leaf litter, grass clippings, trash, animal wastes, paint, or masonry wastes to streets or storm drain systems.

(d) The Owner shall prohibit hosing down any paved surface where the result would be the flow of non-storm water into the street or storm drains.

(e) The Owner shall prohibit oil changing or other auto repairs that could discharge pollutants.

N3 Common Area Landscape Management

Management programs will be designed and implemented by the Owner to maintain all of the landscaped areas within the project site. These programs will include how to mitigate the potential dangers of fertilizer and pesticide usage, require that fertilizer and pesticide usage shall be consistent with City and County guidelines, discuss utilization of water-efficient landscaping practices, require that maintenance be consistent with the County Water Conservation Resolution or the City equivalent, and detail the proper disposal of landscape wastes.

The Owner shall implement irrigation and landscaping which will utilize moisture sensors, smart timers, rain shut-off valves and the grouping of plants with similar water requirements in order to prevent excess irrigation and its corresponding runoff. The Owner shall also maintain erosion control devices on the property until adequate vegetation coverage has been achieved following establishment of the landscape plantings.

The Owner shall also perform periodic inspection and adjustment of the automatic irrigation system for valve and sprinkler operation and irrigation spray heads for damage as necessary to ensure adequate moisture delivery without allowing overspray or excessive watering that would lead to unnecessary runoff.

N4 BMP Maintenance

The Owner shall be responsible for implementation of each applicable non-structural BMP as well as scheduling inspection and maintenance cleaning of all applicable structural BMP facilities. The Owner, through its landscape or other maintenance contractor, will be responsible for inspection and maintenance activities in landscape areas. Debris and other water pollutants will be controlled, contained and disposed of in a proper manner by the maintenance contractor. Refer to Section V.

N11 Common Area Litter Control

The Owner will be responsible to provide or arrange for weekly sweeping and trash pick-up at the site. The Owner may contract with its landscape or other maintenance contractor to perform these duties, as well as to conduct weekly inspections of all trash receptacles to make sure lids are closed and pick-up of any excess trash on the ground has occurred, and to note and investigate any trash disposal violations.

N12 Employee Training

The Owner shall establish an education program for his employees and/or contractors to inform and train personnel engaged in maintenance activities regarding the impact of dumping oil, paints, solvents or other potentially harmful chemicals into the storm drain; the proper use of fertilizers and pesticides in landscaping maintenance practices; and the impacts of littering and improper water disposal.

N13 Housekeeping of Loading Docks

The Owner shall keep the loading docks in a clean and orderly condition through a regular program of sweeping and litter control and immediate cleanup of spills and broken containers. Cleanup procedures should minimize or eliminate the use of water. If wash water is used, it must be disposed of in an approved manner and not discharged to the storm drain system. If there are no other alternatives, discharge of non-stormwater flow to the sanitary sewer must be at an acceptable discharge point such as a cleanout, oil/water separator, grease interceptor, or industrial sewer connection. All sewer discharges shall be in accordance with the Orange County Sanitation District's Wastewater Discharge Regulations and/or Washwater Disposal Guidelines.

N14 Common Area Catch Basin Inspection

All catch basin inlets will be inspected and maintained by Owner at least once a year, prior to the rainy season (no later than October 1st of each year), and before and after all major storms

N15 Parking Lot Sweeping

The Owner, through his employees and/or landscaping or other maintenance contractor, shall sweep all parking areas and drive aisles within the project at least once a month, or more often if needed. Debris, sediment and trash picked up during sweeping operations will be deposited in the trash receptacles.

IV.3.9 Structural Source Control BMPs

Structural Source Control BMPs				
Identifier	**Name**	**Check One**		**If not applicable, state brief reason**
		Included	**Not Applicable**	
S1	Provide storm drain system stenciling and signage	X		
S2	Design and construct outdoor material storage areas to reduce pollution introduction		X	Not applicable. No outdoor material storage areas are proposed.
S3	Design and construct trash and waste storage areas to reduce pollution introduction		X	Not applicable. No outdoor trash and waste storage areas are proposed.
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	X		
S5	Protect slopes and channels and provide energy dissipation		X	Not applicable. The project site has no slopes or channels.
	Incorporate requirements applicable to individual priority project categories (from SDRWQCB NPDES Permit)			
S6	Dock areas	X		
S7	Maintenance bays		X	Not applicable. No maintenance bays are proposed.
S8	Vehicle wash areas		X	Not applicable. No vehicle wash areas are proposed.
S9	Outdoor processing areas		X	Not applicable. No outdoor processing areas are proposed.
S10	Equipment wash areas		X	Not applicable. No equipment wash areas are proposed.
S11	Fueling areas		X	Not applicable. No fueling areas are proposed.
S12	Hillside landscaping		X	Not applicable. No hillside landscaping is proposed.
S13	Wash water control for food preparation areas		X	Not applicable. No food preparation areas are proposed.
S14	Community car wash racks		X	Not applicable. No community car wash racks are proposed.

Structural BMPs shall be installed by the Owner at the Brea Plaza Mixed-Use Project through the construction and development of the project. For instance, irrigation systems shall be designed by a licensed landscape architect and installed by a qualified contractor to the specifications and standards of the City of Brea and the County of Orange. Thereafter, these structural source control BMPs shall be maintained by the Owner.

S1 Provide Storm Drain System Stenciling and Signage (CASQA SD-13)

The Owner is responsible for labeling all of the project's storm drain inlets and catch basins with the phrase, "NO DUMPING! DRAINS TO OCEAN," or an equally effective phrase, to alert the public to the destination of pollutants discharged into storm water. This signage is to be included on the project plans. The signage and stenciling shall be maintained for legibility by the Owner.

S4 Use Efficient Irrigation Systems and Landscape Design (CASQA SD-12)

The Owner shall direct its landscaping architect to design the timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the municipal storm drain system. The following methods to reduce excessive irrigation runoff shall be incorporated where determined applicable and feasible:

1. Employing rain shutoff devices to prevent irrigation after precipitation.

2. Designing irrigation systems to each landscape area's specific water requirements.

3. Using flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.

4. Implementing a landscape plan consistent with County Water Conservation Resolution or city equivalent, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

5. The timing and application methods of irrigation water shall be designed to minimize the runoff of excess irrigation water into the municipal storm drain system.

6. Employing other comparable, equally effective, methods to reduce irrigation water runoff.

7. Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider other design features, such as:

   (a) Use mulches (such as wood chips or shredded wood products) in planter areas without ground cover to minimize sediment in runoff.

   (b) Install appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant material where possible and/or as recommended by the landscape architect.

(c) Leave a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible.

(d) Choose plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth.

The Owner shall be responsible for implementing and maintaining efficient irrigation systems for all landscaping including but not limited to provisions for water sensors, programmable irrigation cycles, and rain shutoff devices. The irrigation systems shall comply with local and statewide ordinances related to irrigation efficiency. The Owner shall also be responsible for the installation and maintenance of all landscape areas utilizing similar planting materials with similar water requirements to reduce excess irrigation runoff.

S6 Loading Dock Areas (CASQA SD-31)

The Owner shall ensure that the loading /unloading dock areas shall include the following:

1. Covered loading dock areas, or drainage designed to preclude run-on and runoff, unless the material loaded and unloaded at the docks does not have potential to contribute to stormwater pollution, and this use is ensured for the life of the facility.

2. Direct connections to the municipal storm drain system from below grade loading docks (truck wells) or similar structures are prohibited. Stormwater can be discharged through a permitted connection to the storm drain system with a treatment control BMP applicable to the use.

3. Other comparable and equally effective features that prevent unpermitted discharges to the municipal storm drain system.

4. Housekeeping of loading docks shall be consistent with N13.

IV.4 Alternative Compliance Plan (If Applicable)

The proposed BMP, BIO-7: Proprietary Biotreatment (Modular Wetlands System), will biotreat the entire LID Design Storm Capture Volume. Therefore, no Alternative Compliance Plan will be utilized at the site.

IV.4.1 Water Quality Credits

<table>
<tr><th colspan="5">Description of Proposed Project</th></tr>
<tr><td colspan="5">Project Types that Qualify for Water Quality Credits (Select all that apply):</td></tr>
<tr><td colspan="2">☐ Redevelopment projects that reduce the overall impervious footprint of the project site.</td><td colspan="2">☐Brownfield redevelopment, meaning redevelopment, expansion, or reuse of real property which may be complicated by the presence or potential presence of hazardous substances, pollutants or contaminants, and which have the potential to contribute to adverse ground or surface WQ if not redeveloped.</td><td>☐ Higher density development projects which include two distinct categories (credits can only be taken for one category): those with more than seven units per acre of development (lower credit allowance); vertical density developments, for example, those with a Floor to Area Ratio (FAR) of 2 or those having more than 18 units per acre (greater credit allowance).</td></tr>
<tr><td colspan="2">☐ Mixed use development, such as a combination of residential, commercial, industrial, office, institutional, or other land uses which incorporate design principles that can demonstrate environmental benefits that would not be realized through single use projects (e.g. reduced vehicle trip traffic with the potential to reduce sources of water or air pollution).</td><td colspan="2">☐ Transit-oriented developments, such as a mixed use residential or commercial area designed to maximize access to public transportation; similar to above criterion, but where the development center is within one half mile of a mass transit center (e.g. bus, rail, light rail or commuter train station). Such projects would not be able to take credit for both categories, but may have greater credit assigned</td><td>☐ Redevelopment projects in an established historic district, historic preservation area, or similar significant city area including core City Center areas (to be defined through mapping).</td></tr>
<tr><td>☐Developments with dedication of undeveloped portions to parks, preservation areas and other pervious uses.</td><td>☐ Developments in a city center area.</td><td>☐ Developments in historic districts or historic preservation areas.</td><td>☐ Live-work developments, a variety of developments designed to support residential and vocational needs together – similar to criteria to mixed use development; would not be able to take credit for both categories.</td><td>☐ In-fill projects, the conversion of empty lots and other underused spaces into more beneficially used spaces, such as residential or commercial areas.</td></tr>
<tr><td>Calculation of Water Quality Credits (if applicable)</td><td colspan="4">The proposed BMP, BIO-7: Proprietary Biotreatment (Modular Wetlands System), will biotreat the entire LID Design Storm Capture Volume. Therefore, no Water Quality Credits will be claimed for the Project WQMP.</td></tr>
</table>

IV.4.2 Alternative Compliance Plan Information

The proposed BMP, BIO-7: Proprietary Biotreatment (Modular Wetlands System), will biotreat the entire LID Design Storm Capture Volume. Therefore, no Alternative Compliance Plan will be utilized at the site.

Section V Inspection/Maintenance Responsibility for BMPs

BPI Brea LLC (the owner of the project), shall assume all BMP inspection and maintenance responsibilities for the Brea Plaza Mixed-Use Project located in Brea, California.

CONTACT NAME	**Waad Nadhir**
COMPANY	**BPI Brea LLC**
ADDRESS	**417 S. Associated Road, Suite 313** **Brea, CA 92821**
PHONE /EMAIL	**(714) 990-5715) / wnadhir@bosc.com**

A copy of the Operation and Maintenance Plan is attached to the Project WQMP as Appendix H.

A Maintenance Covenant and Agreement (with copies of the Operation and Maintenance Plan and WQMP Site Plan attached) will be recorded in the County Recorder's Office with respect to the Project Property prior to approval of the Final WQMP.

Should the maintenance responsibility be transferred at any time during the operational life of the Brea Plaza Mixed-Use Project, a formal notice of transfer shall be submitted to the City of Brea at the time the maintenance responsibility of the property subject to this WQMP is transferred. A Notice of Transfer of Responsibility form is included in Appendix K. The transfer of responsibility shall be incorporated into this WQMP as an amendment.

CERTIFICATION OF BMP MAINTENANCE

The Owner shall verify BMP implementation and ongoing maintenance through inspection, self-certification, survey, or other equally effective measure. The forms that may be used to record the implementation, maintenance, and inspection of BMPs are included in Appendices I and J. A BMP Maintenance Self-Certification Form for the City of Brea, which is to be completed by the Owner and the party responsible for the maintenance and operation of the BMPs, is included in Appendix O.

The Owner shall retain operation, inspection and maintenance records of the project's BMPs, and these records will be made available to the City or County upon request. All records must be maintained for at least five (5) years after the recorded inspection date for the lifetime of the project.

LONG-TERM FUNDING FOR BMP MAINTENANCE

The Owner shall be responsible for long-term funding for BMP maintenance. BMPs shall be maintained throughout the year, and inspection and maintenance activities shall be documented in this WQMP.

ACCESS EASEMENT FOR CITY / COUNTY INSPECTION

None. The City of Brea may conduct verifications to assure that implementation and appropriate maintenance of structural and non-structural BMPs prescribed within this WQMP are taking place at the project site.

The table below identifies the party responsible for performing the inspection and maintenance of each BMP for the Brea Plaza Mixed-Use Project, and details the maintenance and inspection activities to be performed and the frequency with which each shall be performed.

BMP Inspection/Maintenance			
BMP	**Reponsible Party(s)**	**Inspection/ Maintenance Activities Required**	**Minimum Frequency of Activities**
N1. Education for Property Owners, Tenants and Occupants (Non-Structural Source Control BMP)	**BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com**	Educational materials shall be reviewed and made available on-site prior to commencement of operation of the Brea Plaza Redevelopment Project. Refer to Appendices A and B of the Project WQMP for a list of applicable educational materials and BMP Fact Sheets.	Upon occupancy, and annually thereafter
N2. Activity Restrictions (Non-Structural Source Control BMP)	**BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com**	The owner shall include in any employee training manual, lease, and/or CCRs the on-site activity restrictions, including but not limited to: (1) No hosing down of any paved surface where the water would flow directly to the street, gutter or storm drain; (2) No car washing outside of established community car wash areas (if any); and (3) No disposal of wash water in the street, gutter or storm drain—all wash water must be disposed of in a mop sink or an area with a floor drain.	Continuous

BMP Inspection/Maintenance			
BMP	**Reponsible Party(s)**	**Inspection/ Maintenance Activities Required**	**Minimum Frequency of Activities**
N3. Common Area Landscape Management (Non-Structural Source Control BMP)	**BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com**	Ongoing maintenance must be consistent with the City's adopted water conservation ordinance, plus fertilizer and pesticide usage consistent with the "County Management Guidelines for Use of Fertilizers and Pesticides." Landscaping irrigation systems shall be adjusted and properly maintained to prevent over spray runoffs. Green waste shall not be blown or swept into, or disposed of, in the street, gutter, public right-of-way, or storm drain catch basins or inlets. Leaf blowers, if used, shall be used to move green waste into piles so they can be swept and picked up and disposed of in green waste recycling containers.	Weekly

BMP Inspection/Maintenance			
BMP	**Reponsible Party(s)**	**Inspection/ Maintenance Activities Required**	**Minimum Frequency of Activities**
N4. BMP Maintenance (Non-Structural Source Control BMP)	**BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com**	Owner shall be responsible for implementation of each non- structural BMP and regularly scheduled cleaning of all BMP structural facilities. Records of inspections and BMP maintenance shall be maintained by the owner and shall be available for review upon request.	Continuous
N11. Common Area Litter Control (Non-Structural Source Control BMP)	**BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com**	An adequate number of trash receptacles shall be provided at the site. Litter patrol, emptying of trash receptacles at the facility, violation investigation, reporting and other litter control activities shall be performed in conjunction with maintenance activities.	Weekly

BMP Inspection/Maintenance			
BMP	**Reponsible Party(s)**	**Inspection/ Maintenance Activities Required**	**Minimum Frequency of Activities**
N12. Employee Training (Non-Structural Source Control BMP)	**BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com**	The Owner shall prepare a training manual(s) for existing and future employees. The manual should include information on non-point source pollution and how to use proper Best Management Practices (BMPs) to minimize runoff pollutants. Training shall be provided upon hire and at regular intervals thereafter.	Upon hire, and annually thereafter

BMP Inspection/Maintenance			
BMP	**Reponsible Party(s)**	**Inspection/ Maintenance Activities Required**	**Minimum Frequency of Activities**
N13. Housekeeping of Loading Docks (Non-Structural Source Control BMP)	**BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com**	Keep all fluids indoors. Clean up spills immediately and keep spills from entering storm drain system. Cleanup procedures should minimize or eliminate the use of water. If wash water is used, it must be disposed of in an approved manner and not discharged to the storm drain system. If there are no other alternatives, discharge of non-stormwater flow to the sanitary sewer must be at an acceptable discharge point such as a cleanout, oil/water separator, grease interceptor, or industrial sewer connection. All sewer discharges shall be in accordance with the Orange County Sanitation District's Wastewater Discharge Regulations and/or Washwater Disposal Guidelines. Area shall be inspected weekly for proper containment and shall be swept weekly.	Continuous

BMP Inspection/Maintenance			
BMP	**Reponsible Party(s)**	**Inspection/ Maintenance Activities Required**	**Minimum Frequency of Activities**
N14. Common Area Catch Basin Inspection (Non-Structural Source Control BMP)	**BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com**	The catch basins will be inspected, cleaned and maintained on an annual basis, in the early fall prior to the start of the rainy season, and before and after all major storms.	Annually, and before and after all major storms
N15. Street Sweeping Private Streets and Parking Lots (Non-Structural Source Control BMP)	**BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com**	The Owner or his agent must sweep all drive aisles and parking areas regularly (minimum monthly), and prior to the storm season (no later than October 1st each year). Sweeping shall be done with a vacuum-type sweeper. Under no circumstances are outdoor areas/lots to be rinsed or washed with water unless said rinse/wash water is collected and disposed of properly (i.e. into the sewer).	Monthly

BMP Inspection/Maintenance			
BMP	**Reponsible Party(s)**	**Inspection/ Maintenance Activities Required**	**Minimum Frequency of Activities**
S1. Provide Storm Drain System Stenciling and Signage (Structural Source Control BMP)	**BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com**	Storm drain stencils shall be inspected for legibility, at a minimum, once prior to the storm season, and no later than October 1st of each year. Those signs determined to be illegible will be re-stenciled as soon as possible.	Annually
S4. Use Efficient Irrigation Systems & Landscape Design (Structural Source Control BMP)	**BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com**	Projects shall design the timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the municipal storm drain system. Irrigation practices shall comply with local and statewide ordinances related to irrigation efficiency.	Continuous

BMP Inspection/Maintenance			
BMP	**Reponsible Party(s)**	**Inspection/ Maintenance Activities Required**	**Minimum Frequency of Activities**
S6. Loading Dock Areas (Structural Source Control BMP)	**BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com**	Keep all fluids indoors. Clean up spills immediately and keep spills from entering storm drain system. Cleanup procedures should minimize or eliminate the use of water. If wash water is used, it must be disposed of in an approved manner and not discharged to the storm drain system. If there are no other alternatives, discharge of non-stormwater flow to the sanitary sewer must be at an acceptable discharge point such as a cleanout, oil/water separator, grease interceptor, or industrial sewer connection. All sewer discharges shall be in accordance with the Orange County Sanitation District's Wastewater Discharge Regulations and/or Washwater Disposal Guidelines. Area shall be inspected weekly for proper containment and shall be swept weekly.	Continuous

BMP Inspection/Maintenance			
BMP	**Reponsible Party(s)**	**Inspection/ Maintenance Activities Required**	**Minimum Frequency of Activities**
Treatment Control BMP #1 Proprietary Catch Basin Insert Filters (Kristar FloGard +Plus Insert Filters or Approved Equivalent)	**BPI Brea LLC (Owner)** **417 S. Associated Road, Suite 313** **Brea, CA 92821** **Contact: Waad Nadhir** **wnadhir@bosc.com**	Twice a year, prior to and after the rainy season, and after major storm events, the catch basin insert filters shall be visually inspected for damage, have all sediment and debris removed, and the filter medium pouches shall be replaced if necessary. The owner may conduct this maintenance himself, or may enter into a service contract for the maintenance of the insert filters as detailed in the Kristar FloGard +Plus Specs/Maintenance Requirements brochure, located in Section VI of the Project WQMP.	Every Six Months (Approximately April 1st and October 1st) and Immediately After Major Storm Events

BMP Inspection/Maintenance			
BMP	**Reponsible Party(s)**	**Inspection/ Maintenance Activities Required**	**Minimum Frequency of Activities**
LID BMP # 1 (Biotreatment) Modular Wetlands System (BIO-7: Proprietary Biotreatment)	**BPI Brea LLC (Owner)** **417 S. Associated Road, Suite 313** **Brea, CA 92821** **Contact: Waad Nadhir** **wnadhir@bosc.com**	The Modular Wetlands System is to be maintained monthly as part of routine landscape maintenance activities, and shall be visually inspected monthly and immediately after major storm events to remove collected litter and foreign debris from the screening device. Every 12 to 24 months, the following maintenance should be performed: remove sediment from the Separation Chamber, replace the Cartridge Filter Media, and replace the Drain Down Filter Media. Additional/detailed maintenance instructions for the Modular Wetlands System are contained in the "Maintenance Guidelines for Modular Wetlands System," a copy of which is included in Section VI of the project WQMP.	Screening Device Maintenance: Monthly And Immediately After Major Storm Events Separation Chamber, Cartridge Filter Media, and Drain Down Filter Media Maintenance: Every 12 to 24 Months

Section VI BMP Exhibit (Site Plan)

VI.1 BMP Exhibit (Site Plan)

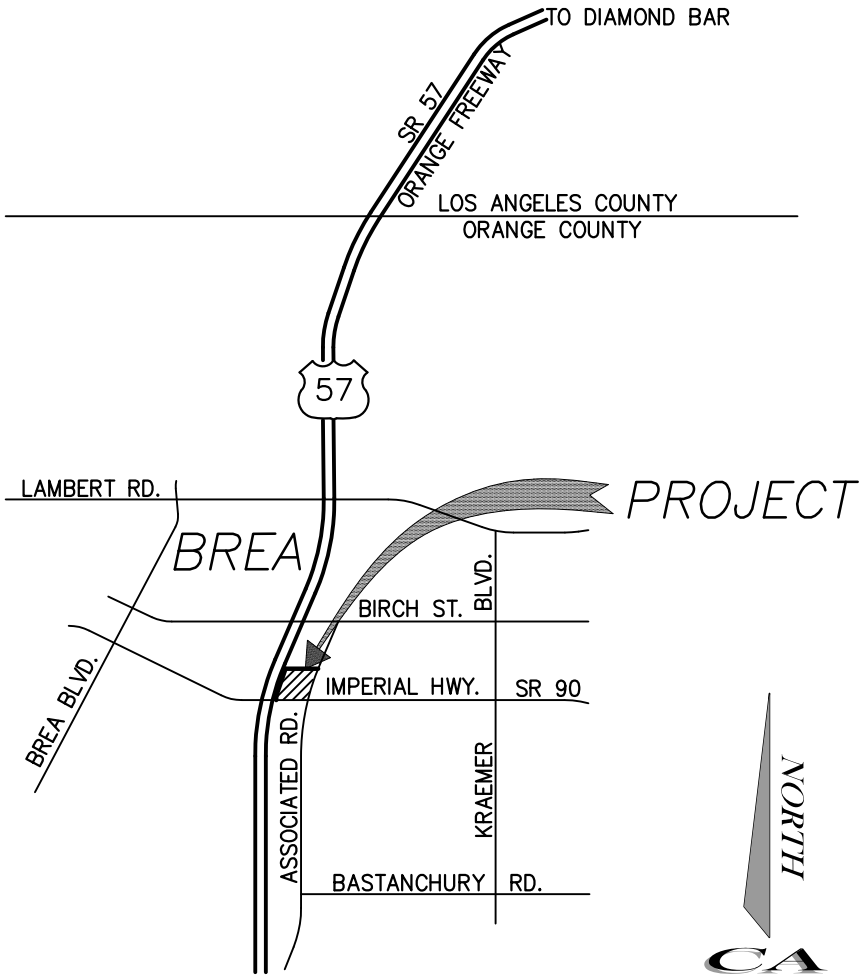
The following documents are included in this section of the WQMP:

- **Vicinity Map**
- **BMP Exhibit (Site Plan) for Proposed Project**
- **Existing WQMP Drainage Areas Exhibit (Overall Site)**
- **Kristar FloGard +PLUS Catch Basin Insert Filter Specifications**
- **BMP Fact Sheet—BIO-7: Proprietary Biotreatment**
- **Modular Wetlands System Stormwater Biofiltration Guide (Specifications and Sizing Options)**
- **MWS Linear 2.0 HGL Sizing Calculations Table**
- **Standard Detail for Proposed Modular Wetlands System Unit (MWS-L-8-24-V High Capacity Model 3.6)**
- **Maintenance Guidelines for Modular Wetlands System**
- **State Water Resources Control Board's Certified Full Capture System List of Trash Treatment Control Devices (Updated May 2021)**

VI.2 Submittal and Recordation of Water Quality Management Plan

Following approval of the Final Project-Specific WQMP, the approved WQMP (including BMP Exhibit, Operations and Maintenance (O&M) Plan, and Appendices) shall be recorded in the Orange County Clerk-Recorder's Office prior to close-out of grading and/or building permit. Educational Materials are not required to be included.

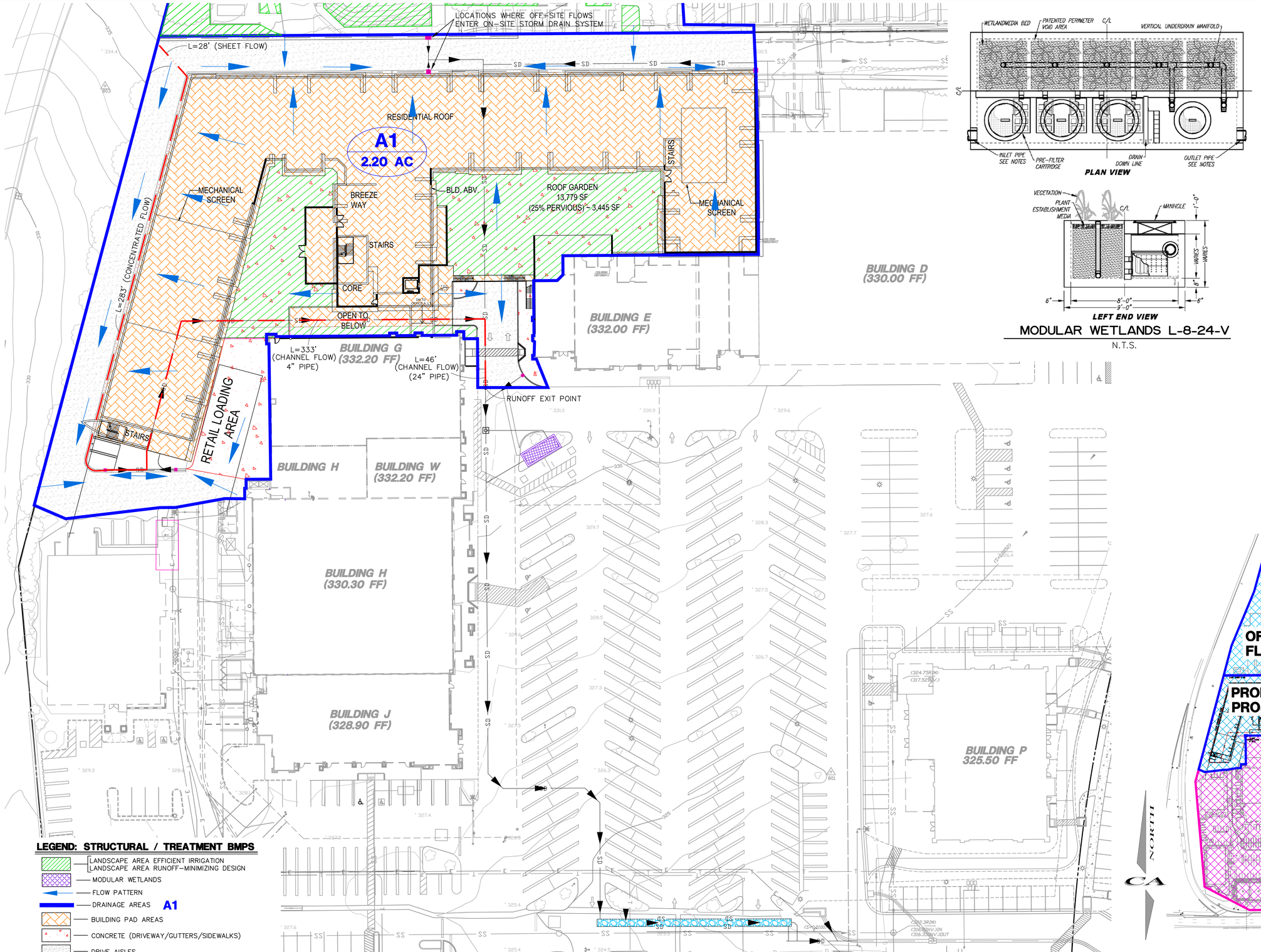
VICINITY MAP



VICINITY MAP

N.T.S.

BMP EXHIBIT (SITE PLAN)
FOR PROPOSED PROJECT



PLAN VIEW

LEFT END VIEW

MODULAR WETLANDS L-8-24-V

N.T.S.

PROJECT DATA:

TOTAL SITE AREA: 13.7 AC
PROPOSED PROJECT AREA: 2.20 AC (95,864 SF)

BUILDING FOOTPRINT (LESS PERVIOUS ROOFTOP AREAS): 62,316 SF
DRIVE AISLES: 22,020 SF
CONCRETE WALKWAY & LOADING AREA: 8,083 SF

3,445 SF LANDSCAPING/POOL AREA PROVIDED
(3.6% PERVIOUS AREA)

CURRENT USE: COMMERCIAL
PROPOSED USE: COMMERCIAL/RESIDENTIAL

WATERSHED:
SAN GABRIEL-COYOTE CREEK WATERSHED

WATER QUALITY CALCULATIONS
AREA 1 : MODULAR WETLANDS UNIT SIZING

AREA 1 – 95,864 SF / 2.20 AC (96.4% IMPERVIOUS)
DESIGN FLOWRATE (Qd) = C * DI * DA * 43,560 / (12in x 3600sec)
RUNOFF COEFFICIENT (C) = 0.75 * Imp% + 0.15 = 0.75 * 0.964 + 0.15 = 0.87
DI = DESIGN INTENSITY (in/hr) = 0.26 in/hr
DA = DRAINAGE AREA: 2.20 AC
DESIGN FLOWRATE (Qd) = 0.87 * 0.26in/hr * 2.20 AC * 43,560 / (12in x 3600sec)
= 0.502 cfs

OFF-SITE

AREA 2 – 110,204 SF / 2.53 AC (71.9% IMPERVIOUS)
DESIGN FLOWRATE (Qd) = C * DI * DA * 43,560 / (12in x 3600sec)
RUNOFF COEFFICIENT (C) = 0.75 * Imp% + 0.15 = 0.75 * 0.719 + 0.15 = 0.69
DI = DESIGN INTENSITY (in/hr) = 0.26 in/hr
DA = DRAINAGE AREA: 2.53 AC
DESIGN FLOWRATE (Qd) = 0.69 * 0.26in/hr * 2.53 AC * 43,560 / (12in x 3600sec)
= 0.458 cfs

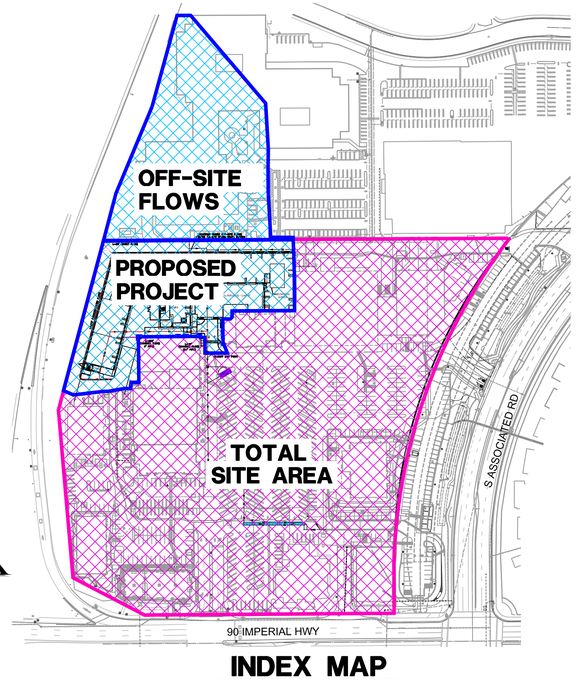
OFF-SITE TO BE TREATED: 50%*0.458=0.229
TOTAL TO BE TREATED: 0.502+0.229=0.731

MODULAR WETLANDS SELECTED SIZING : MWS-L-8-24 (8' x 24' BOX)
HIGH CAPACITY MODEL – 3.6

TREATMENT FLOW RATE (Qf) = 0.734 cfs
TREATMENT FLOW RATE (Qf) > DESIGN FLOWRATE (Qd)
0.734 cfs > 0.731 cfs

CERTIFICATION NOTE:

SELF-CERTIFICATIONS FROM A STATE LICENSED PROFESSIONAL ENGINEER OR THIRD-PARTY CERTIFICATIONS ARE REQUIRED OF ALL BMP'S CONSTRUCTED ON THIS PLAN OR FINAL CERTIFICATE OF OCCUPANCY WILL NOT BE GRANTED FROM THE CITY.



INDEX MAP

SCALE: 1"=150'

LEGEND: STRUCTURAL / TREATMENT BMPS

- LANDSCAPE AREA EFFICIENT IRRIGATION / LANDSCAPE AREA RUNOFF-MINIMIZING DESIGN
- MODULAR WETLANDS
- FLOW PATTERN
- DRAINAGE AREAS A1
- BUILDING PAD AREAS
- CONCRETE (DRIVEWAY/GUTTERS/SIDEWALKS)
- DRIVE AISLES
- STORAGE PIPE
- PROPRIETARY CATCH BASIN INSERT FILTERS
- SD — STORM DRAIN
- FLOW PATH

LID BMP LOCATION (MWS UNIT)

BMP#1 (LAT: 33.9123139° / LONG: -117.8818472°)

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

PREPARED BY:

CA ENGINEERING, INC.
Planning • Engineering • Surveying
13821 NEWPORT AVE., STE 110
TUSTIN, CA 92780
949-724-9480 949-724-9484 FAX

OWNER:

BPI Brea LLC
417 S. Associated Rd, Suite 313
Brea, CA 92821
CONTACT: WAAD J. NADHIR
TELEPHONE: (248) 792-5071

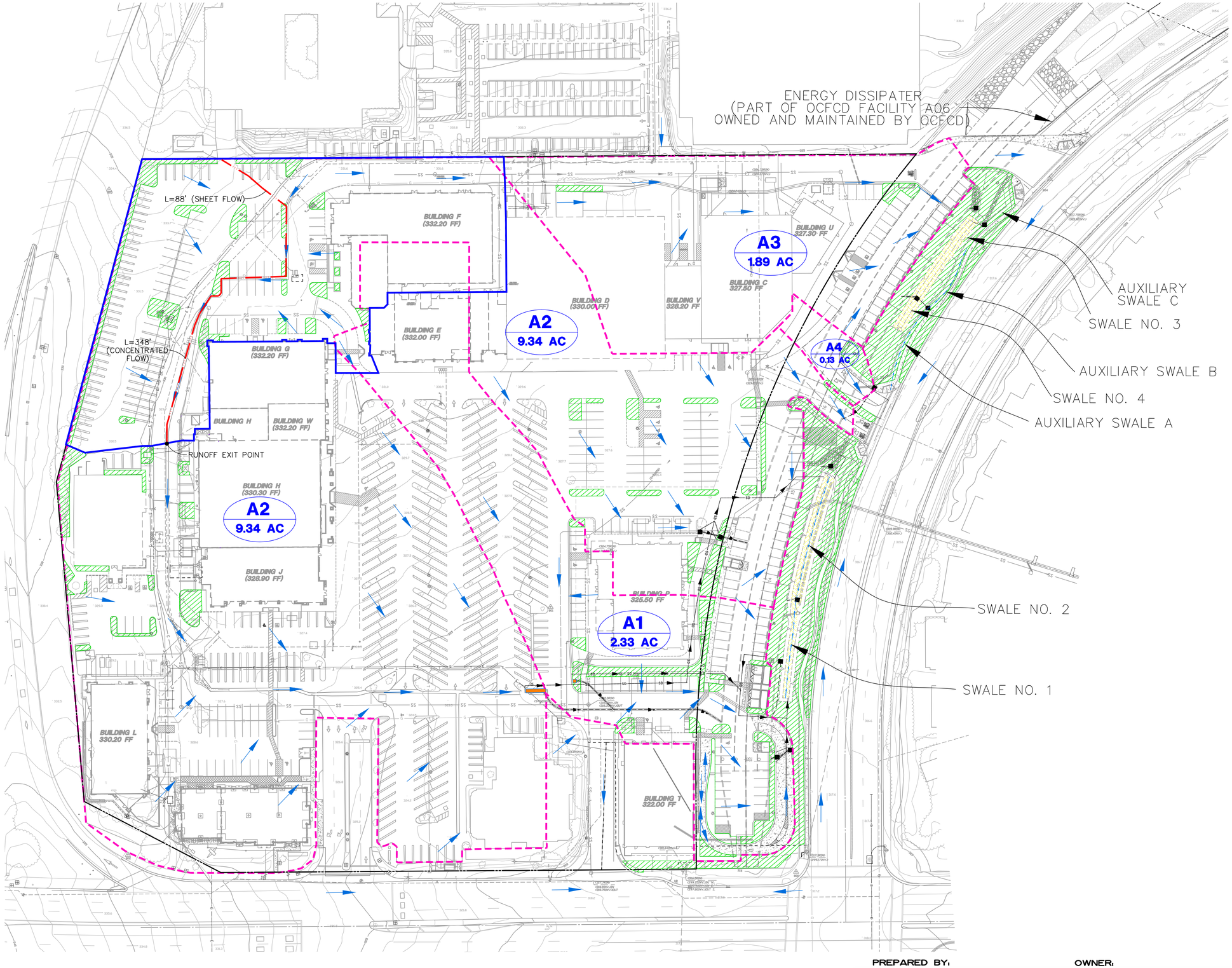
WATER QUALITY MANAGEMENT PLAN
BMP EXHIBIT (SITE PLAN)
BREA PLAZA
1639 E. IMPERIAL HIGHWAY, BREA, CA

SHEET 1 OF 1

S:\457-4 BREA PLAZA (PHASE 2)\WQMP\457-4 WQMP Site Plan.dwg Last Modified: 27 Jul 2021 - 5:59pm
Plotted on: 27 Jul 2021 - 6:04pm by tconnell

EXISTING WQMP DRAINAGE AREAS EXHIBIT

(OVERALL SITE)



PROJECT DATA:

EXISTING SITE DRAINAGE AREAS (TOTAL): 13.69 AC (596,336 SF)

PROPOSED PROJECT AREA: 2.20 AC (95,864 SF)
EXISTING IMPERVIOUS AREA: 92.5% (88,630 SF)
EXISTING PERVIOUS AREA: 7.5% (7,234 SF)

CURRENT USE: COMMERCIAL

WATERSHED:
SAN GABRIEL–COYOTE CREEK WATERSHED

LEGEND — STRUCTURAL / TREATMENT BMPS

- LANDSCAPE AREA EFFICIENT IRRIGATION
  LANDSCAPE AREA RUNOFF–MINIMIZING DESIGN
- CATCH BASIN / STORM DRAIN INLET
- FLOW PATTERN
- EXISTING DRAINAGE AREAS **A1**
- PROPOSED PROJECT AREA
- VEGETATED SWALE
- SD — LOW FLOW STORM DRAIN
- HIGH FLOW STORM DRAIN
- FLOW PATH

NORTH

CA

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

PREPARED BY:

CA ENGINEERING, INC.
Planning • Engineering • Surveying
13821 NEWPORT AVE., STE 110
TUSTIN, CA 92780
949-724-9480 949-724-9484 FAX

OWNER:

BPI Brea LLC
417 S. Associated Rd, Suite 313
Brea, CA 92821
CONTACT: WAAD J. NADHIR
TELEPHONE: (248) 792-5071

CITY OF BREA
WATER QUALITY MANAGEMENT PLAN
EXISTING WQMP DRAINAGE AREAS
BREA PLAZA
IMPERIAL HIGHWAY

SHEET 1 OF 1

S:\457-4 BREA PLAZA PHASE 2\WQMP\457-4 WQMP Site Plan.dwg Last Modified: 22 Jun 2021 – 3:03pm
Plotted on: 23 Jun 2021 – 5:32am by cward

KRISTAR FLOGARD +PLUS CATCH BASIN INSERT FILTER SPECIFICATIONS

Innovative stormwater management products

KRISTAR

FloGard® +PLUS

Catch Basin Insert Filter

FloGard®+PLUS Catch Basin Insert Filter

GENERAL FILTER CONFIGURATION

FloGard®+PLUS catch basin insert filter shall provide solids filtration through a filter screen or filter liner, and hydrocarbon capture shall be effected using a non-leaching absorbent material contained in a pouch or similar removable restraint. Hydrocarbon absorbent shall not be placed at an exposed location at the entry to the filter that would allow blinding by debris and sediment without provision for self-cleaning in operation.

Filter shall conform to the dimensions of the inlet in which it is applied, allow removal and replacement of all internal components, and allow complete inspection and cleaning in the field.

FLOW CAPACITY

Filter shall provide two internal high-flow bypass locations that in total exceed the inlet peak flow capacity. Filter shall provide filtered flow capacity in excess of the required "first flush" treatment flow. Unit shall not impede flow into or through the catch basin when properly sized and installed.

MATERIALS

Filter support frame shall be constructed of type 304 stainless steel. Filter screen, when used in place of filter liner, shall be type 304 or 316 stainless steel, with an apparent opening size of not less than 4 U.S. mesh. Filter liner, when used in place of filter screen, shall be woven polypropylene geotextile fabric liner with an apparent opening size (AOS) of not less than 40 U.S. mesh as determined by ASTM D 4751. Filter liner shall include a support basket of polypropylene geogrid with stainless steel cable reinforcement.

Filter frame shall be rated at a minimum 25-year service life. All other materials, with the exception of the hydrocarbon absorbent, shall have a rated service life in excess of 2 years.

FloGard®+PLUS TEST RESULTS SUMMARY

Testing Agency	% TSS Removal	% Oil and Grease Removal	% PAH Removal
UCLA	80	70 to 80	
U of Auckland Tonking & Taylor Ltd. (for city of Auckland)	78 to 95		
U of Hawaii (for city of Honolulu)	80		20 to 40

FEATURES

- Easy to install, inspect and maintain
- Can be retrofitted to existing drain catch basins – or used in new projects
- Economical and efficient
- Catches pollutants where they are easiest to catch (at the inlet)
- No standing water – minimizes vector, bacteria and odor problems
- Can be incorporated as part of a "Treatment Train"

BENEFITS

- Lower installation, inspection and maintenance costs
- Versatile installation applications
- Higher return on investment
- Allows for installation on small and confined sites
- Minimizes vector, bacteria and odor problems
- Allows user to target specific pollutants

Innovative stormwater management products

FloGard® +PLUS
Catch Basin Insert Filter

KRISTAR

INSTALLATION AND MAINTENANCE
Filter shall be installed and maintained in accordance with manufacturer's general instructions and recommendations.

PERFORMANCE
Filter shall provide 80% removal of total suspended solids (TSS) from treated flow with a particle size distribution consistent with typical urban street deposited sediments. Filter shall capture at least 70% of oil and grease and 40% of total phosphorus (TP) associated with organic debris from treated flow. Unit shall provide for isolation of trapped pollutants, including debris, sediments, and floatable trash and hydrocarbons, from bypass flow such that re-suspension and loss of pollutants is minimized during peak flow events.

FloGard+PLUS Combination Inlet

FloGard+PLUS Flat Grate

FloGard+PLUS Round Gated Inlet

FloGard®+PLUS COMPETITIVE FEATURE COMPARISON

Evaluation of FloGard+PLUS Units (Based on flow-comparable units) (Scale 1-10, 10 being best)	FloGard+PLUS	Other Insert Filter Types**
Flow Rate	10	7
Removal Efficiency*	80%	45%
Capacity – Sludge and Oil	7	7
Service Life	10	3
Installation – Ease of Handling / Installation	8	6
Ease of Inspections & Maintenance	7	7
Value	**10**	**2**

*approximate, based on field sediment removal testing in urban street application **average

Long-Term Cost Comparison (Scale 1-10, 10 being lowest cost, higher number being best)	FloGard+PLUS	Other Insert Filter Types
Unit cost — initial ($/cfs treated)	10	4
Installation cost ($/cfs treated)	10	7
Adsorbent replacement (annual avg $/cfs treated)	10	2
Unit materials replacement (annual avg $/cfs treated)	10	10
Maintenance cost (annual avg $/cfs treated)	10	7
Total first yr ($/cfs treated)	10	5
Total Annual Avg ($/cfs treated, avg over 20 yrs)*	**10**	**5**

*assumes 3% annual inflation

Captured debris from FloGard+PLUS, Dana Point, CA

KriStar Enterprises, Inc.
360 Sutton Place
Santa Rosa, CA 95407

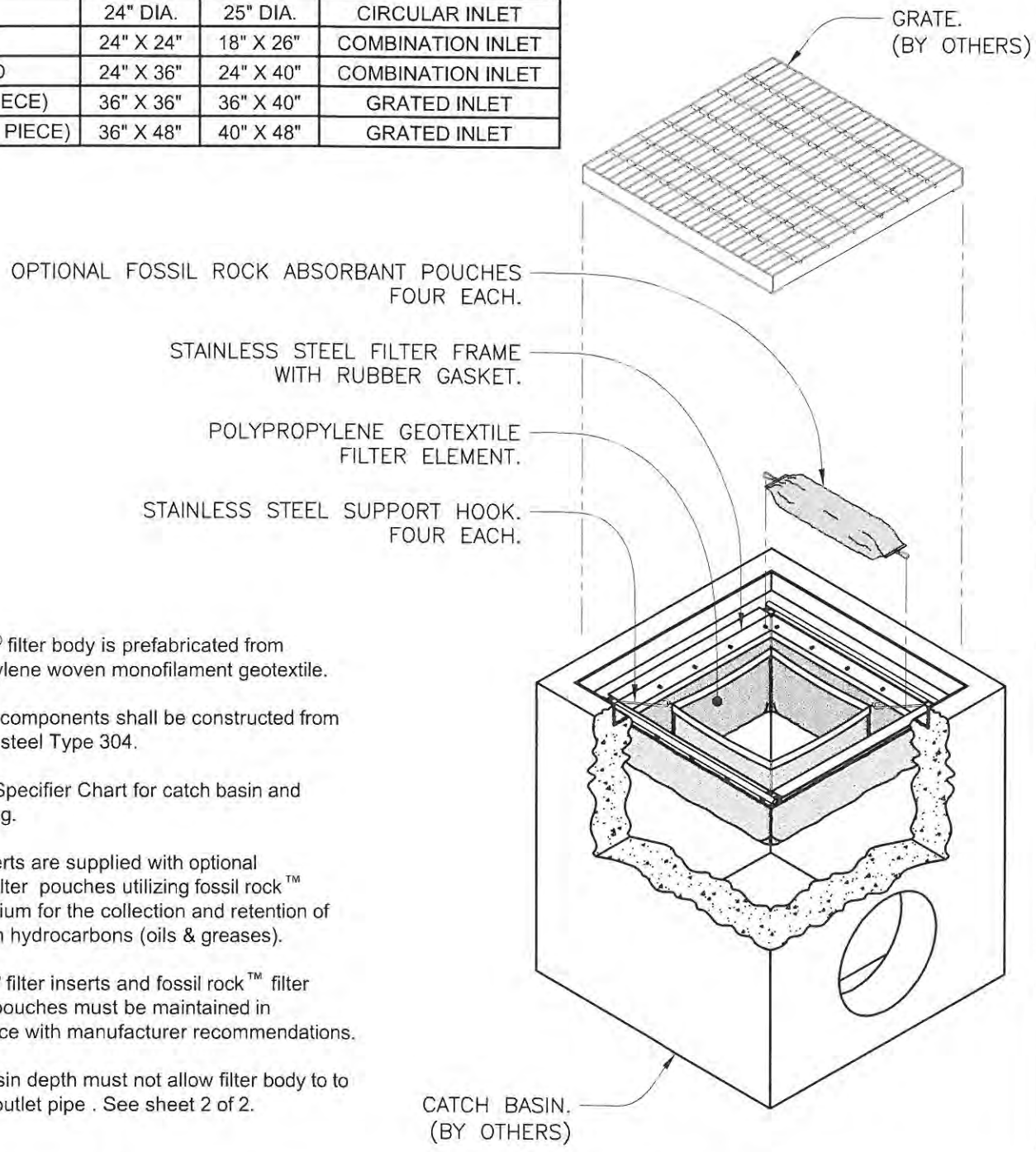
PH: 800-579-8819
FAX: 707-524-8186
www.kristar.com

© 2004-2009 KriStar Enterprises, Inc.
FGP-T 05.19.09.1M

FloGard® is a registered trademarks of KriStar Enterprises, Inc.

FG-0001

SPECIFIER CHART			
MODEL	INLET ID	GRATE OD	COMMENTS
FF-12D	12" X 12"	15" X 15"	GRATED INLET
FF-16D	16" X 16"	18" X 18"	GRATED INLET
FF-18D	18" X 18"	20" X 20"	GRATED INLET
FF-1836SD	18" X 36"	18" X 40"	GRATED INLET
FF-1836DGO	18" X 36"	18" X 40"	COMBINATION INLET
FF-24D	24" X 24"	26" X 26"	GRATED INLET
FF-2436D	24" X 36"	24" X 40"	GRATED INLET
FF-RF24D	24" DIA.	25" DIA.	CIRCULAR INLET
FF-24DGO	24" X 24"	18" X 26"	COMBINATION INLET
FF-2436DGO	24" X 36"	24" X 40"	COMBINATION INLET
FF-36D (2 PIECE)	36" X 36"	36" X 40"	GRATED INLET
FF-3648D (2 PIECE)	36" X 48"	40" X 48"	GRATED INLET



NOTES:

1. FloGard® filter body is prefabricated from polypropylene woven monofilament geotextile.
2. All metal components shall be constructed from stainless steel Type 304.
3. Refer to Specifier Chart for catch basin and filter sizing.
4. Filter inserts are supplied with optional "clip-in" filter pouches utilizing fossil rock™ filter medium for the collection and retention of petroleum hydrocarbons (oils & greases).
5. FloGard® filter inserts and fossil rock™ filter medium pouches must be maintained in accordance with manufacturer recommendations.
6. Catch basin depth must not allow filter body to to obstruct outlet pipe . See sheet 2 of 2.

TITLE

FloGard®

CATCH BASIN FILTER INSERT

KriStar Enterprises, Inc.
360 Sutton Place, Santa Rosa, CA 95407
Ph: 800.579.8819, Fax: 707.524.8186, www.kristar.com

DRAWING NO.	REV	ECO	DATE	SHEET
FG-0001	C	0109 JPR 12/4/12	JPR 12/18/06	1 OF 2

GENERAL SPECIFICATIONS FOR MAINTENANCE OF *FLO-GARD+PLUS*® CATCH BASIN INSERT FILTERS

SCOPE:

Federal, State and Local Clean Water Act regulations and those of insurance carriers require that stormwater filtration systems be maintained and serviced on a recurring basis. The intent of the regulations is to ensure that the systems, on a continuing basis, efficiently remove pollutants from stormwater runoff thereby preventing pollution of the nation's water resources. These specifications apply to the FloGard+Plus® Catch Basin Insert Filter.

RECOMMENDED FREQUENCY OF SERVICE:

Drainage Protection Systems (DPS) recommends that installed Flo-Gard+Plus® Catch Basin Insert Filters be serviced on a recurring basis. Ultimately, the frequency depends on the amount of runoff, pollutant loading and interference from debris (leaves, vegetation, cans, paper, etc.); however, it is recommended that each installation be serviced a minimum of three times per year, with a change of filter medium once per year. DPS technicians are available to do an on-site evaluation, upon request.

RECOMMENDED TIMING OF SERVICE:

DPS guidelines for the timing of service are as follows:

1. For areas with a definite rainy season: Prior to, during and following the rainy season.
2. For areas subject to year-round rainfall: On a recurring basis (at least three times per year).
3. For areas with winter snow and summer rain: Prior to and just after the snow season and during the summer rain season.
4. For installed devices not subject to the elements (washracks, parking garages, etc.): On a recurring basis (no less than three times per years).

SERVICE PROCEDURES:

1. The catch basin grate shall be removed and set to one side. The catch basin shall be visually inspected for defects and possible illegal dumping. If illegal dumping has occurred, the proper authorities and property owner representative shall be notified as soon as practicable.
2. Using an industrial vacuum, the collected materials shall be removed from the liner. (Note: DPS uses a truck-mounted vacuum for servicing Flo-Gard+Plus® catch basin inserts.)
3. When all of the collected materials have been removed, the filter medium pouches shall be removed by unsnapping the tether from the D-ring and set to one side. The filter liner, gaskets, stainless steel frame and mounting brackets, etc. shall be inspected for continued serviceability. Minor damage or defects found shall be corrected on-the-spot and a notation made on the Maintenance Record. More extensive deficiencies that affect the efficiency of the filter (torn liner, etc.), if approved by the customer representative, will be corrected and an invoice submitted to the representative along with the Maintenance Record.
4. The filter medium pouches shall be inspected for defects and continued serviceability and replaced as necessary and the pouch tethers re-attached to the liner's D-ring. See below.
5. The grate shall be replaced.

REPLACEMENT AND DISPOSAL OF EXPOSED FILTER MEDIUM AND COLLECTED DEBRIS

The frequency of filter medium pouch exchange will be in accordance with the existing DPS-Customer Maintenance Contract. DPS recommends that the medium be changed at least once per year. During the appropriate service, or if so determined by the service technician during a non-scheduled service, the filter medium pouches will be replaced with new pouches. Once the exposed pouches and debris have been removed, DPS has possession and must dispose of it in accordance with local, state and federal agency requirements.

DPS also has the capability of servicing all manner of catch basin inserts and catch basins without inserts, underground oil/water separators, stormwater interceptors and other such devices. All DPS personnel are highly qualified technicians and are confined space trained and certified. Call us at (888) 950-8826 for further information and assistance.

BMP FACT SHEET—

BIO-7: PROPRIETARY BIOTREATMENT

BIO-7: Proprietary Biotreatment

Proprietary biotreatment devices are devices that are manufactured to mimic natural systems such as bioretention areas by incorporating plants, soil, and microbes engineered to provide treatment at higher flow rates or volumes and with smaller footprints than their natural counterparts. Incoming flows are typically filtered through a planting media (mulch, compost, soil, plants, microbes, etc.) and either infiltrated or collected by an underdrain and delivered to the storm water conveyance system. Tree box filters are an increasingly common type of proprietary biotreatment device that are installed at curb level and filled with a bioretention type soil. For low to moderate flows they operate similarly to bioretention systems and are bypassed during high flows. Tree box filters are highly adaptable solutions that can be used in all types of development and in all types of soils but are especially applicable to dense urban parking lots, street, and roadways.

Also known as:

- *Catch basin planter box*
- *Bioretention vault*
- *Tree box filter*

Proprietary biotreatment
Source: http://www.americastusa.com /index.php/filterra/

Feasibility Screening Considerations

- Proprietary biotreatment devices that are unlined may cause incidental infiltration. Therefore, an evaluation of site conditions should be conducted to evaluate whether the BMP should include an impermeable liner to avoid infiltration into the subsurface.

Opportunity Criteria

- Drainage areas of 0.25 to 1.0 acres.
- Land use may include commercial, residential, mixed use, institutional, and subdivisions. Proprietary biotreatment facilities may also be applied in parking lot islands, traffic circles, road shoulders, and road medians.
- Must not adversely affect the level of flood protection provided by the drainage system.

OC-Specific Design Criteria and Considerations

☐ Frequent maintenance and the use of screens and grates to keep trash out may decrease the likelihood of clogging and prevent obstruction and bypass of incoming flows.

☐ Consult proprietors for specific criteria concerning the design and performance.

☐ Proprietary biotreatment may include specific media to address pollutants of concern. However, for proprietary device to be considered a biotreatment device the media must be capable of supporting rigorous growth of vegetation.

☐ Proprietary systems must be acceptable to the reviewing agency. Reviewing agencies shall have the discretion to request performance information. Reviewing agencies shall have the discretion to deny the use of a proprietary BMP on the grounds of performance, maintenance considerations, or other relevant factors.

☐ In right of way areas, plant selection should not impair traffic lines of site. Local jurisdictions may also limit plant selection in keeping with landscaping themes.

Computing Sizing Criteria for Proprietary Biotreatment Device

- Proprietary biotreatment devices can be volume based or flow-based BMPs.
- Volume-based proprietary devices should be sized using the Simple Design Capture Volume Sizing Method described in **Appendix III.3.1** or the Capture Efficiency Method for Volume-Based, Constant Drawdown BMPs described in **Appendix III.3.2**.
- The required design flowrate for flow-based proprietary devices should be computed using the Capture Efficiency Method for Flow-based BMPs described in **Appendix III.3.3**).

In South Orange County, the provided ponding plus pore volume must be checked to demonstrate that it is greater than 0.75 of the remaining DCV that this BMP is designed to address. Many propretary biotreatment BMPs will not be able to meet the definition of "biofiltration" that applies in South Orange County. See Section III.7 and Worksheet SOC-1.

Additional References for Design Guidance

- Los Angeles Unified School District (LAUSD) Stormwater Technical Manual, Chapter 4: http://www.laschools.org/employee/design/fs-studies-and-reports/download/white_paper_report_material/Storm_Water_Technical_Manual_2009-opt-red.pdf?version_id=76975850
- Los Angeles County Stormwater BMP Design and Maintenance Manual, Chapter 9: http://dpw.lacounty.gov/DES/design_manuals/StormwaterBMPDesignandMaintenance.pdf
- Santa Barbara BMP Guidance Manual, Chapter 6: http://www.santabarbaraca.gov/NR/rdonlyres/91D1FA75-C185-491E-A882-49EE17789DF8/0/Manual_071008_Final.pdf

MODULAR WETLANDS SYSTEM STORMWATER BIOFILTRATION GUIDE

(SPECIFICATIONS AND SIZING OPTIONS)

Bio Clean

A Forterra Company

Modular Wetlands® System Linear

A Stormwater Biofiltration Solution

OVERVIEW

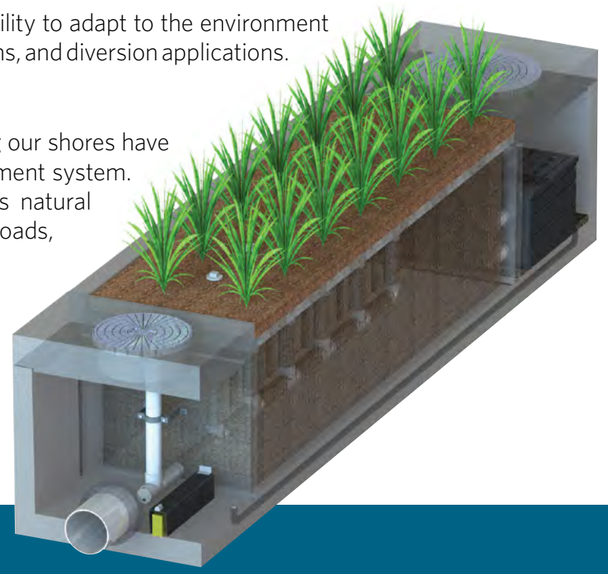
The Bio Clean Modular Wetlands® System Linear (MWS Linear) represents a pioneering breakthrough in stormwater technology as the only biofiltration system to utilize patented horizontal flow, allowing for a smaller footprint, higher treatment capacity, and a wide range of versatility. While most biofilters use little or no pretreatment, the Modular Wetlands System Linear incorporates an advanced pretreatment chamber that includes separation and pre-filter cartridges. In this chamber, sediment and hydrocarbons are removed from runoff before entering the biofiltration chamber, reducing maintenance costs and improving performance.

Horizontal flow also gives the system the unique ability to adapt to the environment through a variety of configurations, bypass orientations, and diversion applications.

The Urban Impact

For hundreds of years, natural wetlands surrounding our shores have played an integral role as nature's stormwater treatment system. But as cities grow and develop, our environment's natural filtration systems are blanketed with impervious roads, rooftops, and parking lots.

Bio Clean understands this loss and has spent years re-establishing nature's presence in urban areas, and rejuvenating waterways with the MWS Linear.



PERFORMANCE

The Modular Wetlands® System Linear continues to outperform other treatment methods with superior pollutant removal for TSS, heavy metals, nutrients, hydrocarbons, and bacteria. Since 2007 the MWS Linear has been field tested on numerous sites across the country and is proven to effectively remove pollutants through a combination of physical, chemical, and biological filtration processes. In fact, the MWS Linear harnesses some of the same biological processes found in natural wetlands in order to collect, transform, and remove even the most harmful pollutants.

66% REMOVAL OF DISSOLVED ZINC	**69%** REMOVAL OF TOTAL ZINC	**38%** REMOVAL OF DISSOLVED COPPER	**64%** REMOVAL OF TOTAL PHOSPHORUS	
45% REMOVAL OF NITROGEN	**50%** REMOVAL OF TOTAL COPPER	**95%** REMOVAL OF MOTOR OIL	**67%** REMOVAL OF ORTHO PHOSPHORUS	**85%** REMOVAL OF TSS

APPROVALS

The Modular Wetlands® System Linear has successfully met years of challenging technical reviews and testing from some of the most prestigious and demanding agencies in the nation and perhaps the world. Here is a list of some of the most high-profile approvals, certifications, and verifications from around the country.

Washington State Department of Ecology TAPE Approved

The MWS Linear is approved for General Use Level Designation (GULD) for Basic, Enhanced, and Phosphorus treatment at 1 gpm/ft^2 loading rate. The highest performing BMP on the market for all main pollutant categories.

California Water Resources Control Board, Full Capture Certification

The Modular Wetlands® System is the first biofiltration system to receive certification as a full capture trash treatment control device.

Virginia Department of Environmental Quality, Assignment

The Virginia Department of Environmental Quality assigned the MWS Linear the highest phosphorus removal rating for manufactured treatment devices to meet the new Virginia Stormwater Management Program (VSMP) regulation technical criteria.

Maryland Department of the Environment, Approved ESD

Granted Environmental Site Design (ESD) status for new construction, redevelopment, and retrofitting when designed in accordance with the design manual.

MASTEP Evaluation

The University of Massachusetts at Amherst – Water Resources Research Center issued a technical evaluation report noting removal rates up to 84% TSS, 70% total phosphorus, 68.5% total zinc, and more.

Rhode Island Department of Environmental Management, Approved BMP

Approved as an authorized BMP and noted to achieve the following minimum removal efficiencies: 85% TSS, 60% pathogens, 30% total phosphorus, and 30% total nitrogen.

Texas Commission on Environmental Quality

Atlanta Regional Commission

ADVANTAGES

- HORIZONTAL FLOW BIOFILTRATION
- GREATER FILTER SURFACE AREA
- PRETREATMENT CHAMBER
- PATENTED PERIMETER VOID AREA
- FLOW CONTROL
- NO DEPRESSED PLANTER AREA
- AUTO DRAINDOWN MEANS NO MOSQUITO VECTOR

OPERATION

The Modular Wetlands® System Linear is the most efficient and versatile biofiltration system on the market, and it is the only system with horizontal flow which:

- Improves performance
- Reduces footprint
- Minimizes maintenance

Figure 1 & Figure 2 illustrate the invaluable benefits of horizontal flow and the multiple treatment stages.

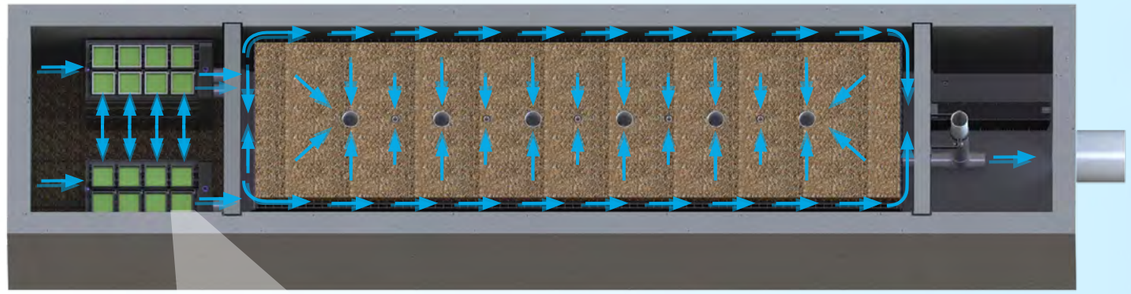


Figure 2,
Top View

2x to 3x more surface area than traditional downward flow bioretention systems.

1 PRETREATMENT

SEPARATION

- Trash, sediment, and debris are separated before entering the pre-filter boxes
- Designed for easy maintenance access

PRE-FILTER BOXES

- Over 25 sq. ft. of surface area per box
- Utilizes BioMediaGREEN™ filter material
- Removes over 80% of TSS and 90% of hydrocarbons
- Prevents pollutants that cause clogging from migrating to the biofiltration chamber

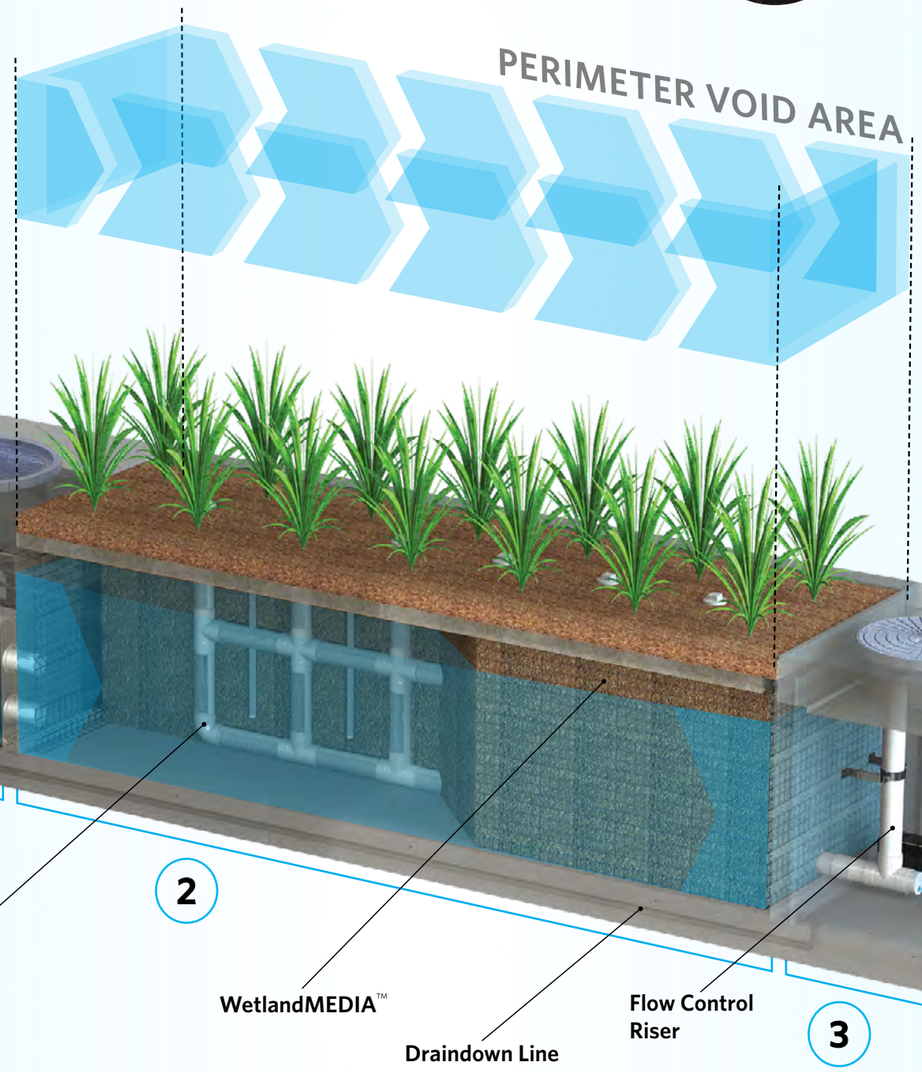


Figure 1

2 BIOFILTRATION

HORIZONTAL FLOW

- Less clogging than downward flow biofilters
- Water flow is subsurface
- Improves biological filtration

PATENTED PERIMETER VOID AREA

- Vertically extends void area between the walls and the WetlandMEDIA™ on all four sides
- Maximizes surface area of the media for higher treatment capacity

WETLANDMEDIA

- Contains no organics and removes phosphorus
- Greater surface area and 48% void space
- Maximum evapotranspiration
- High ion exchange capacity and lightweight

3 DISCHARGE

FLOW CONTROL

- Orifice plate controls flow of water through WetlandMEDIA™ to a level lower than the media's capacity
- Extends the life of the media and improves performance

DRAINDOWN FILTER

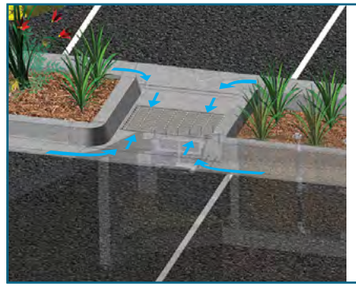
- The draindown is an optional feature that completely drains the pretreatment chamber
- Water that drains from the pretreatment chamber between storm events will be treated

CONFIGURATIONS

The Modular Wetlands® System Linear is the preferred biofiltration system of civil engineers across the country due to its versatile design. This highly versatile system has available "pipe-in" options on most models, along with built-in curb or grated inlets for simple integration into your storm drain design.

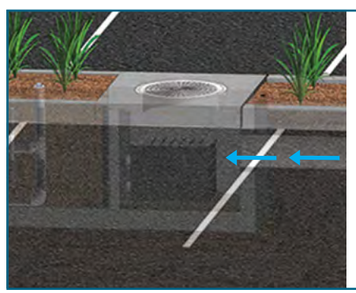
CURB TYPE

The Curb Type configuration accepts sheet flow through a curb opening and is commonly used along roadways and parking lots. It can be used in sump or flow-by conditions. Length of curb opening varies based on model and size.



GRATE TYPE

The Grate Type configuration offers the same features and benefits as the Curb Type but with a grated/drop inlet above the systems pretreatment chamber. It has the added benefit of allowing pedestrian access over the inlet. ADA-compliant grates are available to assure easy and safe access. The Grate Type can also be used in scenarios where runoff needs to be intercepted on both sides of landscape islands.



VAULT TYPE

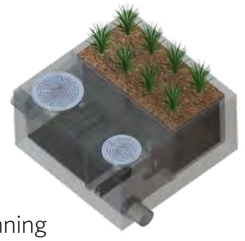
The system's patented horizontal flow biofilter is able to accept inflow pipes directly into the pretreatment chamber, meaning the Modular Wetlands® can be used in end-of-the-line installations. This greatly improves feasibility over typical decentralized designs that are required with other biofiltration/ bioretention systems. Another benefit of the "pipe-in" design is the ability to install the system downstream of underground detention systems to meet water quality volume requirements.

DOWNSPOUT TYPE

The Downspout Type is a variation of the Vault Type and is designed to accept a vertical downspout pipe from rooftop and podium areas. Some models have the option of utilizing an internal bypass, simplifying the overall design. The system can be installed as a raised planter, and the exterior can be stuccoed or covered with other finishes to match the look of adjacent buildings.

ORIENTATIONS

SIDE-BY-SIDE



The Side-By-Side orientation places the pretreatment and discharge chamber adjacent to one another with the biofiltration chamber running parallel on either side. This minimizes the system length, providing a highly compact footprint. It has been proven useful in situations such as streets with directly adjacent sidewalks, as half of the system can be placed under that sidewalk. This orientation also offers internal bypass options as discussed below.

END-TO-END

The End-To-End orientation places the pretreatment and discharge chambers on opposite ends of the biofiltration chamber, therefore minimizing the width of the system to 5 ft. (outside dimension). This orientation is perfect for linear projects and street retrofits where existing utilities and sidewalks limit the amount of space available for installation. One limitation of this orientation is that bypass must be external.

BYPASS

INTERNAL BYPASS WEIR (SIDE-BY-SIDE ONLY)

The Side-By-Side orientation places the pretreatment and discharge chambers adjacent to one another allowing for integration of internal bypass. The wall between these chambers can act as a bypass weir when flows exceed the system's treatment capacity, thus allowing bypass from the pretreatment chamber directly to the discharge chamber.

EXTERNAL DIVERSION WEIR STRUCTURE

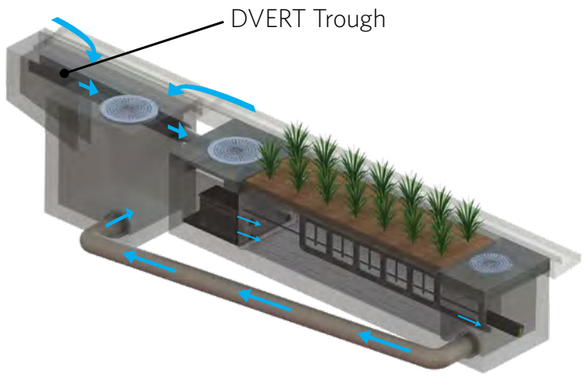
This traditional offline diversion method can be used with the Modular Wetlands® System Linear in scenarios where runoff is being piped to the system. These simple and effective structures are generally configured with two outflow pipes. The first is a smaller pipe on the upstream side of the diversion weir - to divert low flows over to the MWS Linear for treatment. The second is the main pipe that receives water once the system has exceeded treatment capacity and water flows over the weir.

FLOW-BY-DESIGN

This method is one in which the system is placed just upstream of a standard curb or grate inlet to intercept the first flush. Higher flows simply pass by the MWS Linear and into the standard inlet downstream.

DVERT LOW FLOW DIVERSION

This simple yet innovative diversion trough can be installed in existing or new curb and grate inlets to divert the first flush to the Modular Wetlands® System Linear via pipe. It works similar to a rain gutter and is installed just below the opening into the inlet. It captures the low flows and channels



them over to a connecting pipe exiting out the wall of the inlet and leading to the MWS Linear. The DVERT is perfect for retrofit and green street applications that allow the system to be installed anywhere space is available.

SPECIFICATIONS

FLOW-BASED DESIGNS

The Modular Wetlands® System Linear can be used in stand-alone applications to meet treatment flow requirements, and since it is the only biofiltration system that can accept inflow pipes several feet below the surface, it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.

MODEL #	DIMENSIONS	WETLANDMEDIA SURFACE AREA (sq. ft.)	TREATMENT FLOW RATE (cfs)
MWS-L-4-4	4′ x 4′	23	0.052
MWS-L-4-6	4′ x 6′	32	0.073
MWS-L-4-8	4′ x 8′	50	0.115
MWS-L-4-13	4′ x 13′	63	0.144
MWS-L-4-15	4′ x 15′	76	0.175
MWS-L-4-17	4′ x 17′	90	0.206
MWS-L-4-19	4′ x 19′	103	0.237
MWS-L-4-21	4′ x 21′	117	0.268
MWS-L-6-8	7′ x 9′	64	0.147
MWS-L-8-8	8′ x 8′	100	0.230
MWS-L-8-12	8′ x 12′	151	0.346
MWS-L-8-16	8′ x 16′	201	0.462
MWS-L-8-20	9′ x 21′	252	0.577
MWS-L-8-24	9′ x 25′	302	0.693
MWS-L-10-20	10' x 20'	302	0.693

VOLUME-BASED DESIGNS

HORIZONTAL FLOW BIOFILTRATION ADVANTAGE

MODULAR WETLANDS® SYSTEM LINEAR WITH URBANPOND™ PRESTORAGE

In the example above, the Modular Wetlands® System Linear is installed downstream of the UrbanPond storage system. The MWS Linear is designed for the water quality volume and will treat and discharge the required volume within local draindown time requirements. The MWS Linear's unique horizontal flow design, gives it benefits no other biofilter has - the ability to be placed downstream of detention ponds, extended dry detention basins, underground storage systems and permeable paver reservoirs. The system's horizontal flow configuration and built-in orifice control allows it to be installed with just 6" of fall between inlet and outlet pipe for a simple connection to projects with shallow downstream tie-in points.

UrbanPond
Single and Double Modules

DESIGN SUPPORT

Bio Clean engineers are trained to provide you with superior support for all volume sizing configurations throughout the country. Our vast knowledge of state and local regulations allow us to quickly and efficiently size a system to maximize feasibility. Volume control and hydromodification regulations are expanding the need to decrease the cost and size of your biofiltration system. Bio Clean will help you realize these cost savings with the MWS Linear, the only biofilter than can be used downstream of storage BMPs.

ADVANTAGES

- LOWER COST THAN FLOW-BASED DESIGN
- MEETS LID REQUIREMENTS
- BUILT-IN ORIFICE CONTROL STRUCTURE
- WORKS WITH DEEP INSTALLATIONS

APPLICATIONS

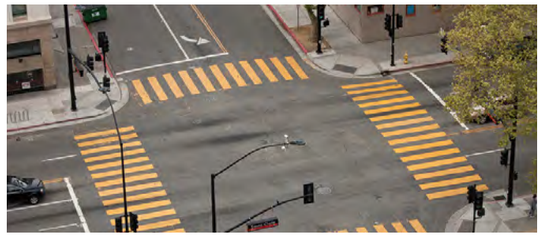
The Modular Wetlands® System Linear has been successfully used on numerous new construction and retrofit projects. The system's superior versatility makes it beneficial for a wide range of stormwater and waste water applications - treating rooftops, streetscapes, parking lots, and industrial sites.

INDUSTRIAL

Many states enforce strict regulations for discharges from industrial sites. The MWS Linear has helped various sites meet difficult EPA-mandated effluent limits for dissolved metals and other pollutants.

RESIDENTIAL

Low to high density developments can benefit from the versatile design of the MWS Linear. The system can be used in both decentralized LID design and cost-effective end-of-the-line configurations.



STREETS

Street applications can be challenging due to limited space. The MWS Linear is very adaptable, and it offers the smallest footprint to work around the constraints of existing utilities on retrofit projects.

PARKING LOTS

Parking lots are designed to maximize space and the Modular Wetlands'® 4 ft. standard planter width allows for easy integration into parking lot islands and other landscape medians.

COMMERCIAL

Compared to bioretention systems, the MWS Linear can treat far more area in less space, meeting treatment and volume control requirements.

MIXED USE

The MWS Linear can be installed as a raised planter to treat runoff from rooftops or patios, making it perfect for sustainable "live-work" spaces.

More applications include:

• Agriculture • Reuse • Low Impact Development • Waste Water

PLANT SELECTION

Abundant plants, trees, and grasses bring value and an aesthetic benefit to any urban setting, but those in the Modular Wetlands® System Linear do even more - they increase pollutant removal. What's not seen, but very important, is that below grade, the stormwater runoff/flow is being subjected to nature's secret weapon: a dynamic physical, chemical, and biological process working to break down and remove non-point source pollutants. The flow rate is controlled in the MWS Linear, giving the plants more contact time so that pollutants are more successfully decomposed, volatilized, and incorporated into the biomass of the Modular Wetlands'® micro/macro flora and fauna.

A wide range of plants are suitable for use in the Modular Wetlands®, but selections vary by location and climate. View suitable plants by visiting biocleanenvironmental.com/plants.

INSTALLATION

The Modular Wetlands® System Linear is simple, easy to install, and has a space-efficient design that offers lower excavation and installation costs compared to traditional tree-box type systems. The structure of the system resembles precast catch basin or utility vaults and is installed in a similar fashion.

The system is delivered fully assembled for quick installation. Generally, the structure can be unloaded and set in place in 15 minutes. Our experienced team of field technicians is available to supervise installations and provide technical support.

MAINTENANCE

Reduce your maintenance costs, man hours, and materials with the Modular Wetlands® System Linear. Unlike other biofiltration systems that provide no pretreatment, the MWS Linear is a self-contained treatment train which incorporates simple and effective pretreatment.

Maintenance requirements for the biofilter itself are almost completely eliminated, as the pretreatment chamber removes and isolates trash, sediments, and hydrocarbons. What's left is the simple maintenance of an easily accessible pretreatment chamber that can be cleaned by hand or with a standard vac truck. Only periodic replacement of low-cost media in the pre-filter boxes is required for long-term operation, and there is absolutely no need to replace expensive biofiltration media.

Bio Clean
A Forterra Company

5796 Armada Drive Suite 250
Carlsbad, CA 92008
855.566.3938
stormwater@forterrabp.com
biocleanenvironmental.com

01172020

MWS LINEAR 2.0 HGL SIZING CALCULATIONS TABLE

MWS Linear 2.0 HGL Sizing Calculations

MWS MODEL SIZE	WETLAND PERMITER LENGTH	LOADING RATE GPM/SF	HGL HEIGHT																												
			SHALLOW MODELS																			STANDARD HEIGHT MODEL	HIGH CAPACITY MODELS									
			1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.65	3.70	3.75	3.80	3.85	3.90	3.95
MWS-L-4-4	6.70	1.0	0.022	0.023	0.025	0.026	0.028	0.029	0.031	0.032	0.034	0.035	0.037	0.038	0.040	0.042	0.043	0.045	0.046	0.048	0.049	0.051	**0.052**	0.054	0.055	0.056	0.057	0.058	0.058	0.059	0.060	0.061
MWS-L-3-6	10.06	1.0	0.032	0.035	0.037	0.039	0.042	0.044	0.046	0.048	0.051	0.053	0.055	0.058	0.060	0.062	0.065	0.067	0.069	0.072	0.074	0.076	**0.078**	0.081	0.083	0.084	0.085	0.087	0.088	0.089	0.090	0.091
MWS-L-4-6	9.30	1.0	0.030	0.032	0.034	0.036	0.038	0.041	0.043	0.045	0.047	0.049	0.051	0.053	0.055	0.058	0.060	0.062	0.064	0.066	0.068	0.070	**0.073**	0.075	0.077	0.078	0.079	0.080	0.081	0.082	0.083	0.084
MWS-L-4-8	14.80	1.0	0.048	0.051	0.054	0.058	0.061	0.065	0.068	0.071	0.075	0.078	0.082	0.085	0.088	0.092	0.095	0.099	0.102	0.105	0.109	0.112	**0.115**	0.119	0.122	0.124	0.126	0.127	0.129	0.131	0.132	0.134
MWS-L-4-13	18.40	1.0	0.059	0.063	0.068	0.072	0.076	0.080	0.084	0.089	0.093	0.097	0.101	0.106	0.110	0.114	0.118	0.122	0.127	0.131	0.135	0.139	**0.144**	0.148	0.152	0.154	0.156	0.158	0.160	0.163	0.165	0.167
MWS-L-4-15	22.40	1.0	0.072	0.077	0.082	0.087	0.093	0.098	0.103	0.108	0.113	0.118	0.123	0.129	0.134	0.139	0.144	0.149	0.154	0.159	0.165	0.170	**0.175**	0.180	0.185	0.188	0.190	0.193	0.195	0.198	0.200	0.203
MWS-L-4-17	26.40	1.0	0.085	0.091	0.097	0.103	0.109	0.115	0.121	0.127	0.133	0.139	0.145	0.151	0.158	0.164	0.170	0.176	0.182	0.188	0.194	0.200	**0.206**	0.212	0.218	0.221	0.224	0.227	0.230	0.233	0.236	0.239
MWS-L-4-19	30.40	1.0	0.098	0.105	0.112	0.119	0.126	0.133	0.140	0.147	0.153	0.160	0.167	0.174	0.181	0.188	0.195	0.202	0.209	0.216	0.223	0.230	**0.237**	0.244	0.251	0.255	0.258	0.262	0.265	0.269	0.272	0.276
MWS-L-4-21	34.40	1.0	0.111	0.118	0.126	0.134	0.142	0.150	0.158	0.166	0.174	0.182	0.189	0.197	0.205	0.213	0.221	0.229	0.237	0.245	0.253	0.261	**0.268**	0.276	0.284	0.288	0.292	0.296	0.300	0.304	0.308	0.312
MWS-L-6-8	18.80	1.0	0.060	0.065	0.069	0.073	0.078	0.082	0.086	0.091	0.095	0.099	0.104	0.108	0.112	0.116	0.121	0.125	0.129	0.134	0.138	0.142	**0.147**	0.151	0.155	0.157	0.160	0.162	0.164	0.166	0.168	0.170
MWS-L-8-8	29.60	1.0	0.095	0.102	0.109	0.115	0.122	0.129	0.136	0.143	0.149	0.156	0.163	0.170	0.177	0.183	0.190	0.197	0.204	0.211	0.217	0.224	**0.231**	0.238	0.245	0.248	0.251	0.255	0.258	0.262	0.265	0.268
MWS-L-8-12	44.40	1.0	0.143	0.153	0.163	0.173	0.183	0.194	0.204	0.214	0.224	0.234	0.245	0.255	0.265	0.275	0.285	0.296	0.306	0.316	0.326	0.336	**0.346**	0.357	0.367	0.372	0.377	0.382	0.387	0.392	0.397	0.402
MWS-L-8-16	59.20	1.0	0.190	0.204	0.217	0.231	0.245	0.258	0.272	0.285	0.299	0.312	0.326	0.340	0.353	0.367	0.380	0.394	0.408	0.421	0.435	0.448	**0.462**	0.476	0.489	0.496	0.503	0.509	0.516	0.523	0.530	0.537
MWS-L-8-20	74.00	1.0	0.238	0.255	0.272	0.289	0.306	0.323	0.340	0.357	0.374	0.391	0.408	0.425	0.442	0.459	0.476	0.493	0.509	0.526	0.543	0.560	**0.577**	0.594	0.611	0.620	0.628	0.637	0.645	0.654	0.662	0.671
MWS-L-10-20 or MWS-L-8-24	88.80	1.0	0.285	0.306	0.326	0.346	0.367	0.387	0.408	0.428	0.448	0.469	0.489	0.509	0.530	0.550	0.571	0.591	0.611	0.632	0.652	0.673	**0.693**	0.713	0.734	0.744	0.754	0.764	0.774	0.785	0.795	0.805
4'x'4 media cage	14.80	1.0	0.048	0.051	0.054	0.058	0.061	0.065	0.068	0.071	0.075	0.078	0.082	0.085	0.088	0.092	0.095	0.099	0.102	0.105	0.109	0.112	**0.115**	0.119	0.122	0.124						

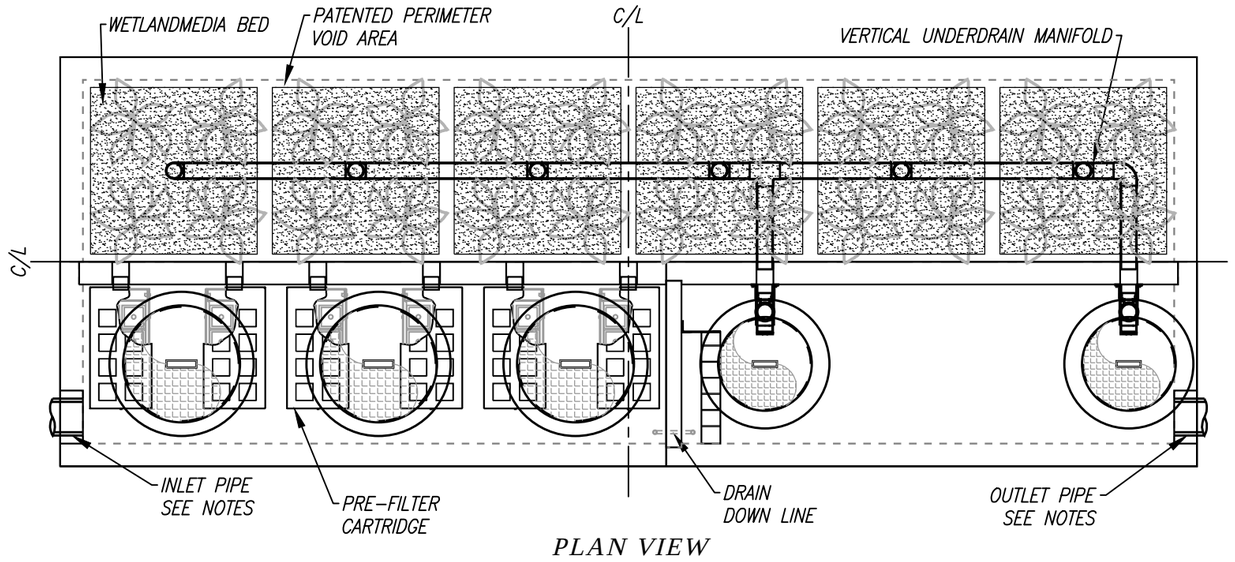
STANDARD DETAIL FOR PROPOSED MODULAR WETLANDS SYSTEM UNIT

(MWS-L-8-24-V

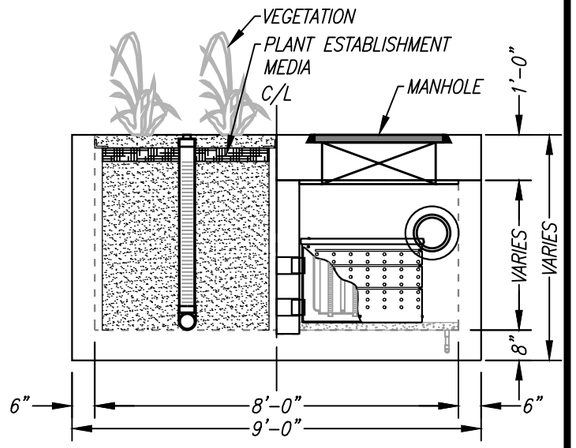
HIGH CAPACITY MODEL 3.6)

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION		BREA, CA	
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.734	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
FRAME & COVER	3EA ø30"	OPEN PLANTER	2EA ø24"
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



PLAN VIEW



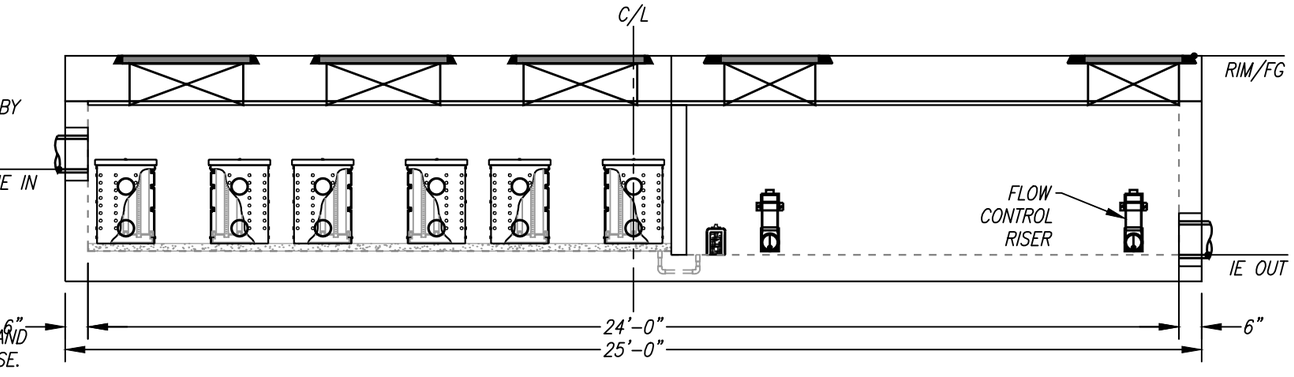
LEFT END VIEW

INSTALLATION NOTES

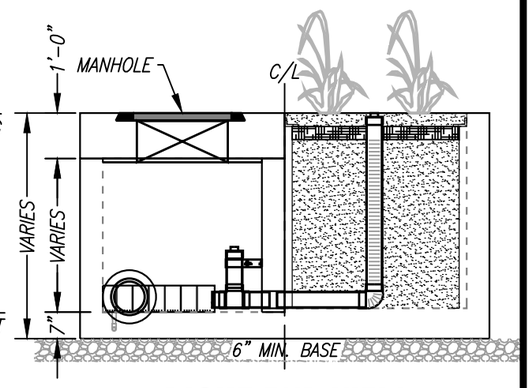
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.



ELEVATION VIEW



RIGHT END VIEW

TREATMENT FLOW (CFS)	0.734
OPERATING HEAD (FT)	3.6
PRETREATMENT LOADING RATE (GPM/SF)	2.1
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MODULAR WETLANDS

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

PROPRIETARY AND CONFIDENTIAL:

THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE SOLE PROPERTY OF FORTERRA AND ITS COMPANIES. THIS DOCUMENT, NOR ANY PART THEREOF, MAY BE USED, REPRODUCED OR MODIFIED IN ANY MANNER WITH OUT THE WRITTEN CONSENT OF FORTERRA.

Bio Clean
A Forterra Company

MWS-L-8-24-V
STORMWATER BIOFILTRATION SYSTEM STANDARD DETAIL

5/23/19 10:LEF

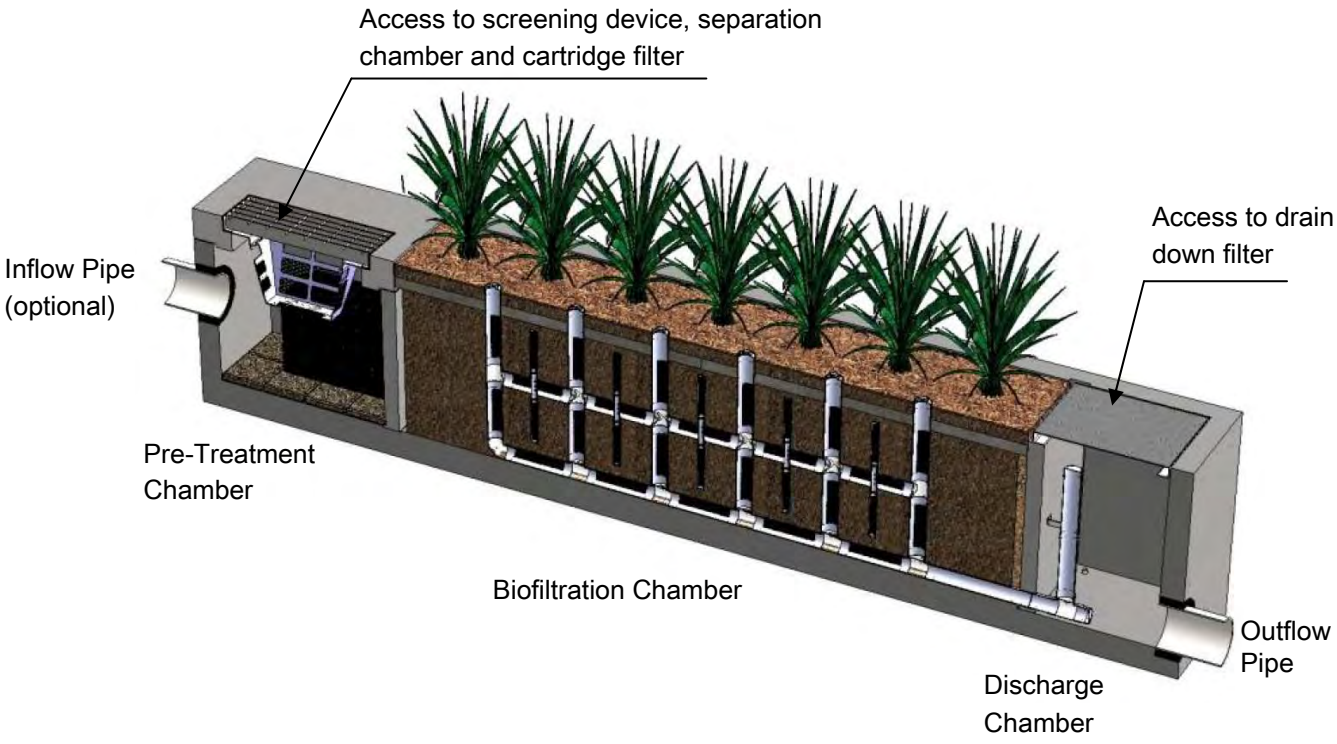
MAINTENANCE GUIDELINES FOR MODULAR WETLANDS SYSTEM

Maintenance Guidelines for Modular Wetland System - Linear

Maintenance Summary

- Remove Trash from Screening Device – average maintenance interval is 6 to 12 months.
  - (*5 minute average service time*).
- Remove Sediment from Separation Chamber – average maintenance interval is 12 to 24 months.
  - (*10 minute average service time*).
- Replace Cartridge Filter Media – average maintenance interval 12 to 24 months.
  - (*10-15 minute per cartridge average service time*).
- Replace Drain Down Filter Media – average maintenance interval is 12 to 24 months.
  - (*5 minute average service time*).
- Trim Vegetation – average maintenance interval is 6 to 12 months.
  - (*Service time varies*).

System Diagram



Maintenance Procedures

Screening Device

1. Remove grate or manhole cover to gain access to the screening device in the Pre-Treatment Chamber. Vault type units do not have screening device. Maintenance can be performed without entry.
2. Remove all pollutants collected by the screening device. Removal can be done manually or with the use of a vacuum truck. The hose of the vacuum truck will not damage the screening device.
3. Screening device can easily be removed from the Pre-Treatment Chamber to gain access to separation chamber and media filters below. Replace grate or manhole cover when completed.

Separation Chamber

1. Perform maintenance procedures of screening device listed above before maintaining the separation chamber.
2. With a pressure washer spray down pollutants accumulated on walls and cartridge filters.
3. Vacuum out Separation Chamber and remove all accumulated pollutants. Replace screening device, grate or manhole cover when completed.

Cartridge Filters

1. Perform maintenance procedures on screening device and separation chamber before maintaining cartridge filters.
2. Enter separation chamber.
3. Unscrew the two bolts holding the lid on each cartridge filter and remove lid.
4. Remove each of 4 to 8 media cages holding the media in place.
5. Spray down the cartridge filter to remove any accumulated pollutants.
6. Vacuum out old media and accumulated pollutants.
7. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase.
8. Replace the lid and tighten down bolts. Replace screening device, grate or manhole cover when completed.

Drain Down Filter

1. Remove hatch or manhole cover over discharge chamber and enter chamber.
2. Unlock and lift drain down filter housing and remove old media block. Replace with new media block. Lower drain down filter housing and lock into place.
3. Exit chamber and replace hatch or manhole cover.

Maintenance Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.

2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.

3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.

4. Entry into chambers may require confined space training based on state and local regulations.

5. No fertilizer shall be used in the Biofiltration Chamber.

6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may require irrigation.

Maintenance Procedure Illustration

Screening Device

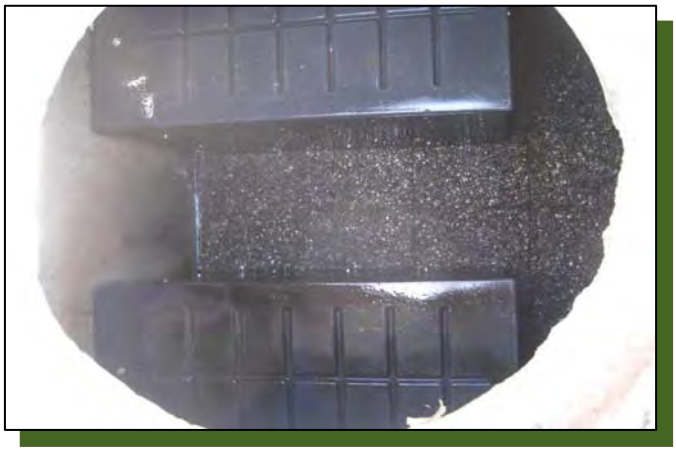
The screening device is located directly under the manhole or grate over the Pre-Treatment Chamber. It's mounted directly underneath for easy access and cleaning. Device can be cleaned by hand or with a vacuum truck.

Separation Chamber

The separation chamber is located directly beneath the screening device. It can be quickly cleaned using a vacuum truck or by hand. A pressure washer is useful to assist in the cleaning process.

Cartridge Filters

The cartridge filters are located in the Pre-Treatment chamber connected to the wall adjacent to the biofiltration chamber. The cartridges have removable tops to access the individual media filters. Once the cartridge is open media can be easily removed and replaced by hand or a vacuum truck.



Drain Down Filter

The drain down filter is located in the Discharge Chamber. The drain filter unlocks from the wall mount and hinges up. Remove filter block and replace with new block.

Trim Vegetation

Vegetation should be maintained in the same manner as surrounding vegetation and trimmed as needed. No fertilizer shall be used on the plants. Irrigation per the recommendation of the manufacturer and or landscape architect. Different types of vegetation requires different amounts of irrigation.

Inspection Form

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

Inspection Report
Modular Wetlands System

Project Name _____

Project Address _____ (city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ____/____/____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Inspection Checklist

Modular Wetland System Type (Curb, Grate or UG Vault): _____ Size (22', 14' or etc.): _____

Structural Integrity:	**Yes**	**No**	**Comments**
Damage to pre-treatment access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Damage to discharge chamber access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Does the MWS unit show signs of structural deterioration (cracks in the wall, damage to frame)?			
Is the inlet/outlet pipe or drain down pipe damaged or otherwise not functioning properly?			
Working Condition:			
Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit?			
Is there standing water in inappropriate areas after a dry period?			
Is the filter insert (if applicable) at capacity and/or is there an accumulation of debris/trash on the shelf system?			
Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe, bypass or cartridge filter? If yes, specify which one in the comments section. Note depth of accumulation in in pre-treatment chamber.			Depth:
Does the cartridge filter media need replacement in pre-treatment chamber and/or discharge chamber?			Chamber:
Any signs of improper functioning in the discharge chamber? Note issues in comments section.			
Other Inspection Items:			
Is there an accumulation of sediment/trash/debris in the wetland media (if applicable)?			
Is it evident that the plants are alive and healthy (if applicable)? Please note Plant Information below.			
Is there a septic or foul odor coming from inside the system?			

Waste:	**Yes**	**No**
Sediment / Silt / Clay		
Trash / Bags / Bottles		
Green Waste / Leaves / Foliage		

Recommended Maintenance	
No Cleaning Needed	
Schedule Maintenance as Planned	
Needs Immediate Maintenance	

Plant Information	
Damage to Plants	
Plant Replacement	
Plant Trimming	

Additional Notes: _____

2972 San Luis Rey Road, Oceanside, CA 92058 P (760) 433-7640 F (760) 433-3176

Maintenance Report

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

Cleaning and Maintenance Report
Modular Wetlands System

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ____/____/____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Site Map #	GPS Coordinates of Insert	Manufacturer / Description / Sizing	Trash Accumulation	Foliage Accumulation	Sediment Accumulation	Total Debris Accumulation	Condition of Media 25/50/75/100 (will be changed @ 75%)	Operational Per Manufactures' Specifications (If not, why?)
	Lat: Long:	MWS Catch Basins						
		MWS Sedimentation Basin						
		Media Filter Condition						
		Plant Condition						
		Drain Down Media Condition						
		Discharge Chamber Condition						
		Drain Down Pipe Condition						
		Inlet and Outlet Pipe Condition						

Comments:

2972 San Luis Rey Road, Oceanside, CA 92058 P. 760.433.7640 F. 760.433.3176

STATE WATER RESOURCES CONTROL BOARD'S CERTIFIED FULL CAPTURE SYSTEM LIST OF TRASH TREATMENT CONTROL DEVICES (UPDATED MAY 2021)

CERTIFIED FULL CAPTURE SYSTEM LIST OF TRASH TREATMENT CONTROL DEVICES (Updated May 2021)

Trash Provisions

In accordance with the Trash Provisions[1], all trash treatment control devices (Devices) installed after December 2, 2015 shall meet the Full Capture System definition[2] and be certified by the State Water Resources Control Board (State Water Board) Executive Director, or designee, prior to installation. The Devices included on this list are either: 1) new Devices certified by the State Water Board, or 2) grandfathered Devices from a list maintained by the San Francisco Regional Water Board prior to the adoption of the Trash Amendments. All new Device installations shall be designed according to the following criteria:

1. Appropriately sized to treat not less than the peak flowrate resulting from a 1-year, 1-hour storm event (design storm) or at least the same peak flows from the corresponding storm drain;
2. Do not bypass trash below the design storm under maximum operational loading conditions; and
3. Trap all particles that are 5 mm or greater up to the design flow[3] or at least the same peak flows from the corresponding storm drain; and do not have a

[1] Amendment to the Water Quality Control Plan for Ocean Waters of California to Control Trash and Part 1 Trash Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, And Estuaries of California adopted by the State Water Board.

[2] A Full Capture System is a treatment control, or series of treatment controls, including but not limited to, a multi-benefit project or a low-impact development control that traps all particles that are 5 mm or greater, and has a design treatment capacity that is either: of not less than the peak flow rate, Q, resulting from a one-year, one-hour storm in the subdrainage area, or b) appropriately sized to, and designed to carry at least the same flows as, the corresponding storm drain.

[3] The region specific one-year, one-hour storm (or design flow) may be obtained from the National Oceanic and Atmospheric Precipitation Estimates. https://www.weather.gov/media/owp/oh/hdsc/docs/Atlas14_Volume6.pdf

diversion structure present upstream such that a portion of the peak flow is not treated to trap all particles 5 mm or greater.

Vector Control Accessibility

According to the California Health and Safety Code[4], Landowners in California are legally responsible to abate (eliminate the source of) a public nuisance arising from their property, including mosquitoes. Mosquito vector control districts have substantial authority to access public and private property, inspect known or suspected sources of mosquitoes, abate mosquito sources, and charge the landowner for work performed and/or charge fees if a landowner is unwilling or unable to address a mosquito source arising from their property.

Depending on the its design, certain Devices may impede the mosquito vector control district's ability to (1) visually inspect the Device and/or storm vault for mosquito breeding, and (2) apply the appropriate chemical treatment. Moreover, some devices may create a habitat for mosquitoes. Prior to installation of any certified Device, the local mosquito vector control district should be contacted to ensure the installation conforms to the District's visual inspection, treatment, and vector breeding minimizing guidelines. The Mosquito Vector Control Association of California Review Team may also be contacted via email at: (Trashtreatment@mvcac.org).

New Device Certification or Fact Sheet Update

To apply for certification of a new Device, or to update a grandfathered Device fact sheet, the Device owner shall submit an application/fact sheet in accordance with the *Trash Treatment Control Device Certification and Fact Sheet Update Requirements.* Upon determining that a Device application is complete and meets the definition of a trash full capture system and is approved by the Mosquito Vector Control Association of California, the Executive Director Designee will place the Device on the State Water Board's *Certified Full Capture System List of Trash Treatment Control Devices*. This list will also identify updates to grandfathered Device fact sheets that satisfy the requirements.

The *Trash Treatment Control Device Certification and Fact Sheet Update Requirements* is found on the Trash Implementation Program webpage (https://www.waterboards.ca.gov/water_issues/programs/stormwater/trash_implementation.html).

Listing of any Device does not constitute an endorsement by the State Water Board. The Executive Director reserves the right to de-certify and remove any Device from this list that does not satisfy the requirements of the Trash Provisions, such as but not limited to when a Device is discontinued or is not approved by Mosquito Vector Control Association of California Review Team.

[4] Health & Safety Code sections 2001- 4(d); 2002; 2060 (b) and Health & Safety Code sections 2060-2067, 100170, and 100175.

CERTIFIED FULL CAPTURE SYSTEM LIST OF TRASH TREATMENT CONTROL DEVICES

To obtain a copy of the applications or fact sheets listed in Table 1 or Table 2 below, or to address questions regarding certification please contact Leo Cosentini at (916) 341-5524 or email address (leo.cosentini@waterboards.ca.gov)

CERTIFIED FULL CAPTURE SYSTEM LIST OF TRASH TREATMENT CONTROL DEVICES

TABLE 1 - CATCH BASIN INSERTS AND OTHER DEVICES

Owner / Website	Full Capture System Trash Device Brand Name	Date Application Certified or Fact Sheet Updated	Date Vector Control Accessibility Verified
AbTech, Industries Internet site (https://www.abtechindustries.com/)	Ultra Urban Filter Curb Opening and Drop-In	Application 25 05/1/20	4/8/20
Advanced Drainage Systems, Inc. FLEXSTORM Division internet site (http://www.inletfilters.com/)	FLEXSTORM Full Trash Capture Inserts	Application 3 03/15/18	None
Advanced Drainage Systems, Inc. FLEXSTORM Division internet site (http://www.inletfilters.com/)	FLEXSTORM Connector Pipe Screen	ADS-1 Not Updated	None
Bio Clean® Environmental Services, Inc. Internet site (http://www.biocleanenvironmental.com/products/)	Curb Inlet and Grate Inlet Filters	Application 4 03/15/18	None
Bio Clean® Environmental Services, Inc. Internet site (http://www.biocleanenvironmental.com/products/)	Modular Connector Pipe Trash Screen	BC-3 Updated 4/30/20	3/10/20
BrightWater™ Internet site (www.wearebrightwater.com/)	Connector Pipe Screen	Application 29 12/28/20	11/19/20
BrightWater™ Internet site (www.wearebrightwater.com/)	Curb Inlet Filter	Application 26 6/30/20	4/17/20
CleanWay® Environmental Partners, Inc. Internet site (http://Cleanwayusa.com/)	CleanWay Curb Inlet Filtration System	Application 7 03/15/18	None

CERTIFIED FULL CAPTURE SYSTEM LIST OF TRASH TREATMENT CONTROL DEVICES

Owner / Website	Full Capture System Trash Device Brand Name	Date Application Certified or Fact Sheet Updated	Date Vector Control Accessibility Verified
CleanWay® Environmental Partners, Inc. Internet site (http://Cleanwayusa.com/)	CleanWay Drop Inlet	Application 8 03/15/18	None
Coanda Inc. Internet site (http://www.coanda.com/)	Coanda Trash Screen and Debris Fence	COA-1 No Update	None
Ecology Control Industries Internet site (http://www.ecologycontrol.com/)	Debris Dam - Catch Basin Insert for Curb Inlet Design	ECI-1 Updated 06/17/20	04/29/20
Enviropod International: A Stormwater360 Group Company Internet site (https://www.enviropod.com/products/enviropod-littatrap-full-capture/)	Enviropod® LittaTrap™ Full Capture	Application 27 10/15/20	07/20/20
Filtrexx Sustainable Technologies Internet site (https://www.filtrexx.com/en/products/stormexx/)	StormExx® Clean	Application 16 08/10/18 Updated 11/25/19	12/06/19
Frog Creek Partners, LLC Internet site (https://frogcreek.partners/)	Gutter Bin® Channel Filtration System & Mundus Bag® Water Filter	Application 22 06/26/19	04/19/19
Frog Creek Partners, LLC Internet site (https://frogcreek.partners/)	Gutter Bin® Eco Drop Inlet Filter (DIF & DIF-C) & Mundus Bag® Water Filter	Application 24 02/18/20	12/06/19

CERTIFIED FULL CAPTURE SYSTEM LIST OF TRASH TREATMENT CONTROL DEVICES

Owner / Website	Full Capture System Trash Device Brand Name	Date Application Certified or Fact Sheet Updated	Date Vector Control Accessibility Verified
Frog Creek Partners, LLC Internet site (https://frogcreek.partners/)	Gutter Bin® Eco Curb Inlet Filter & Mundus Bag® Water Filter	Application 23 02/18/20	10/11/19
G2 Construction, Inc. Internet site (http://www.g2construction.com/products/)	G2 CPS-Mod™ and Removable CPS-Mod™ Screen	Application 18 06/26/19	03/15/19
G2 Construction, Inc. Internet site (http://www.g2construction.com/products/)	G2 Grated Inlet Trash Screen	Application 19 06/26/19	04/10/19
Inventive Resources, Inc. Internet site (http://www.IRIproducts.com/)	Water Decontaminator	Application 2 03/15/18	4/20/20
Oldcastle Infrastructure™ Internet site (https://oldcastleinfrastructure.com/brands/)	Flo Guard Curb Inlet Basket	OI-1 No Update	04/30/21
Oldcastle Infrastructure™ Internet site (https://oldcastleinfrastructure.com/brands/)	Flo Guard Grate Inlet Basket	OI-2 No Update	04/30/21
Oldcastle Infrastructure™ Internet site (https://oldcastleinfrastructure.com/brands/)	Flo Guard Outlet Trash Screen	OI-3 Updated 11/29/19	12/06/19

CERTIFIED FULL CAPTURE SYSTEM LIST OF TRASH TREATMENT CONTROL DEVICES

Owner / Website	Full Capture System Trash Device Brand Name	Date Application Certified or Fact Sheet Updated	Date Vector Control Accessibility Verified
Revel Environmental Manufacturing, Inc. Internet site (http://www.remfilters.com/)	**Triton™ Bioflex Inlet Trash Guard Catchbasin Polyester Fiber Mesh Trash Filter Insert**	**REM-1** **No Update**	**None**
Revel Environmental Manufacturing, Inc. Internet site (http://www.remfilters.com/)	**Triton™ Crescent Pipe Screen**	**Application 12** **07/10/18**	**03/15/19**
Revel Environmental Manufacturing, Inc. Internet site (http://www.remfilters.com/)	**Triton Perf-Full Trash Capture Insert**	**Application 13** **07/10/18**	**03/15/19**
Safe Drain Stormwater Holdings Inc. Internet site (http://www.safedrainusa.com/)	**Storm Vector Guard**	**Application 30** **02/11/21**	**12/17/20**
Stormtek Internet site (https://swimsclean.com/stormtek/) [formerly Advanced Solutions]	**Stormtek ST3 & STEG Catchbasin Connector Pipe**	**AS-1, A1S-2** **No Update**	**None**
United Stormwater, Inc. Internet site (http://www.unitedstormwater.com/)	**Connector Pipe Trash Screen**	**USW-1** **No Update**	**None**

CERTIFIED FULL CAPTURE SYSTEM LIST OF TRASH TREATMENT CONTROL DEVICES

TABLE 2 - HIGH FLOW CAPACITY TRASH DEVICES

Owner / Website	Full Capture System Trash Device Brand Name	Date Application Certified or Fact Sheet Updated	Date Vector Control Accessibility Verified
AquaShield™, Inc. Internet site (http://www.aquashieldinc.com/-aqua-swirl.html)	Aqua-Swirl® Stormwater Treatment System	Application 1 08/04/17 Updated 11/06/20	12/03/20
BaySaver Technologies® LLC/Advanced Drainage Systems Inc. Internet site (https://baysaver.com/products/barracuda/)	Barracuda Hydrodynamic Separator	Application 21 06/26/19	03/15/19
Bio Clean® Environmental Services, Inc. Internet site (http://www.biocleanenvironmental.com/products/)	Debris Separating Baffle Box	Application 6 03/15/18	07/28/20
Bio Clean® Environmental Services, Inc. Internet site (http://www.biocleanenvironmental.com/products/)	BioClean DeflectiveScreening Device	Application 20 06/26/19	07/28/20
Bio Clean® Environmental Services, Inc. Internet site (http://www.biocleanenvironmental.com/products/)	Modular Wetland System®	Application 15 07/10/18	03/15/19
Contech® Construction Products Internet site (http://www.conteches.com/products/stormwater-management/treatment/cds/)	Continuous Deflective Separator Hydrodynamic Separator	CCP-1HF No Update	None

CERTIFIED FULL CAPTURE SYSTEM LIST OF TRASH TREATMENT CONTROL DEVICES

Owner / Website	Full Capture System Trash Device Brand Name	Date Application Certified or Fact Sheet Updated	Date Vector Control Accessibility Verified
Jensen® Stormwater Systems Internet site (http://www.jensenengineeredsystems.com/)	**Jensen® Deflective Separators**	**Application 5** **03/15/18**	**12/06/19**
Hydro International® Internet site (https://www.hydro-int.com/)	**Downstream Defender (In-Line and Off-Line Configurations)**	**Application 14** **07/10/18**	**03/16/20**
Hydro International® Internet site (https://www.hydro-int.com/)	**First Defense® High-Capacity Full Trash Capture Device**	**Application 28** **10/30/20**	**08/20/20**
Hydro International® Internet site (https://www.hydro-int.com/)	**Hydro Up-Flo Filter®**	**Application 11** **07/18/18**	**03/16/20**
Hydro International® Internet site (https://www.hydro-Int.com/)	**Hydro DryScreen**	**Application 10** **07/10/18** **Updated 05/05/21**	**04/29/21**
Oldcastle Infrastructure™ Internet site (https://oldcastleinfrastructure.com/brands/)	**FloGard® NetTech**	**OI-11HF** **Updated 12/08/20**	**12/03/20**

CERTIFIED FULL CAPTURE SYSTEM LIST OF TRASH TREATMENT CONTROL DEVICES

Owner / Website	Full Capture System Trash Device Brand Name	Date Application Certified or Fact Sheet Updated	Date Vector Control Accessibility Verified
Oldcastle Infrastructure™ Internet site (https://oldcastleinfrastructure.com/brands/)	**Nutrient Separating Baffle Box®**	**Application 17** **10/12/18** **Updated 07/21/20**	**05/01/20**
Roscoe Moss Company Internet site (https://roscoemoss.com/products/stormwater-gross-solids-removal-device/)	**Storm Flo® Trash Screen – Linear Radial Gross Solids Removal Device**	**RMC-1HF** **No Update**	**None**
StormTrap® Modular Concrete Stormwater Management Internet site (http://stormtrap.com/)	**Inline Netting Trash Trap – Inline Pipe Net with Trash Screen**	**FCT-1HF** **No Update**	**None**
StormTrap® Modular Concrete Stormwater Management Internet site (http://stormtrap.com/)	**End of Pipe Netting Trash Trap –End of Pipe Net with Trash Screen**	**FCT-2HF** **No Update**	**None**
StormTrap® Modular Concrete Stormwater Management Internet site (http://stormtrap.com/)	**SiteSaver®**	**Application 9**	**03/18/21**

Section VII Educational Materials

Education Materials			
Residential Material (http://www.ocwatersheds.com)	**Check If Applicable**	**Business Material (http://www.ocwatersheds.com)**	**Check If Applicable**
The Ocean Begins at Your Front Door	X	Tips for the Automotive Industry	
Tips for Car Wash Fund-raisers		Tips for Using Concrete and Mortar	
Tips for the Home Mechanic		Tips for the Food Service Industry	
Homeowners Guide for Sustainable Water Use		Proper Maintenance Practices for Your Business	X
Household Tips		**Other Material**	**Check If Attached**
Proper Disposal of Household Hazardous Waste			
Recycle at Your Local Used Oil Collection Center (North County)			
Recycle at Your Local Used Oil Collection Center (Central County)			
Recycle at Your Local Used Oil Collection Center (South County)			
Tips for Maintaining a Septic Tank System			
Responsible Pest Control	X		
Sewer Spill	X		
Tips for the Home Improvement Projects			
Tips for Horse Care			
Tips for Landscaping and Gardening	X		
Tips for Pet Care			
Tips for Pool Maintenance	X		
Tips for Residential Pool, Landscape and Hardscape Drains			
Tips for Projects Using Paint	X		

APPENDICES

APPENDIX A

EDUCATIONAL MATERIALS

- The Ocean Begins at Your Front Door
- Responsible Pest Control
- Sewage Spill Reference Guide
- Tips for Landscape & Gardening
- Tips for Pool Maintenance
- Tips for Projects Using Paint
- Proper Maintenance Practices for Your Business

The Ocean Begins at Your Front Door

Follow these simple steps to help reduce water pollution:

Household Activities

- Do not rinse spills with water. Use dry cleanup methods such as applying cat litter or another absorbent material, sweep and dispose of in the trash. Take items such as used or excess batteries, oven cleaners, automotive fluids, painting products and cathode ray tubes, like TVs and computer monitors, to a Household Hazardous Waste Collection Center (HHWCC).
- For a HHWCC near you call (714) 834-6752 or visit www.oclandfills.com.
- Do not hose down your driveway, sidewalk or patio to the street, gutter or storm drain. Sweep up debris and dispose of it in the trash.

Automotive

- Take your vehicle to a commercial car wash whenever possible. If you wash your vehicle at home, choose soaps, cleaners, or detergents labeled non-toxic, phosphate- free or biodegradable. Vegetable and citrus-based products are typically safest for the environment.
- Do not allow washwater from vehicle washing to drain into the street, gutter or storm drain. Excess washwater should be disposed of in the sanitary sewer (through a sink or toilet) or onto an absorbent surface like your lawn.
- Monitor your vehicles for leaks and place a pan under leaks. Keep your vehicles well maintained to stop and prevent leaks.
- Never pour oil or antifreeze in the street, gutter or storm drain. Recycle these substances at a service station, a waste oil collection center or used oil recycling center. For the nearest Used Oil Collection Center call 1-800-CLEANUP or visit www.1800cleanup.org.

Pool Maintenance

- Pool and spa water must be dechlorinated and free of excess acid, alkali or color to be allowed in the street, gutter or storm drain.
- When it is not raining, drain dechlorinated pool and spa water directly into the sanitary sewer.
- Some cities may have ordinances that do not allow pool water to be disposed of in the storm drain. Check with your city.

Landscape and Gardening

- Do not over-water. Water your lawn and garden by hand to control the amount of water you use or set irrigation systems to reflect seasonal water needs. If water flows off your yard onto your driveway or sidewalk, your system is over-watering. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of waste by composting, hauling it to a permitted landfill, or as green waste through your city's recycling program.
- Follow directions on pesticides and fertilizer, (measure, do not estimate amounts) and do not use if rain is predicted within 48 hours.
- Take unwanted pesticides to a HHWCC to be recycled. For locations and hours of HHWCC, call (714) 834-6752 or visit www.oclandfills.com.

Trash

- Place trash and litter that cannot be recycled in securely covered trash cans.
- Whenever possible, buy recycled products.
- Remember: Reduce, Reuse, Recycle.

Pet Care

- Always pick up after your pet. Flush waste down the toilet or dispose of it in the trash. Pet waste, if left outdoors, can wash into the street, gutter or storm drain.
- If possible, bathe your pets indoors. If you must bathe your pet outside, wash it on your lawn or another absorbent/permeable surface to keep the washwater from entering the street, gutter or storm drain.
- Follow directions for use of pet care products and dispose of any unused products at a HHWCC.

Common Pollutants

Home Maintenance

- Detergents, cleaners and solvents
- Oil and latex paint
- Swimming pool chemicals
- Outdoor trash and litter

Lawn and Garden

- Pet and animal waste
- Pesticides
- Clippings, leaves and soil
- Fertilizer

Automobile

- Oil and grease
- Radiator fluids and antifreeze
- Cleaning chemicals
- Brake pad dust

The Ocean Begins at Your Front Door

Never allow pollutants to enter the street, gutter or storm drain!

Did You Know?

- Most people believe that the largest source of water pollution in urban areas comes from specific sources such as factories and sewage treatment plants. In fact, the largest source of water pollution comes from city streets, neighborhoods, construction sites and parking lots. This type of pollution is sometimes called “non-point source” pollution.
- There are two types of non-point source pollution: stormwater and urban runoff pollution.
- Stormwater runoff results from rainfall. When rainstorms cause large volumes of water to rinse the urban landscape, picking up pollutants along the way.
- Urban runoff can happen any time of the year when excessive water use from irrigation, vehicle washing and other sources carries trash, lawn clippings and other urban pollutants into storm drains.

Where Does It Go?

- Anything we use outside homes, vehicles and businesses – like motor oil, paint, pesticides, fertilizers and cleaners – can be blown or washed into storm drains.
- A little water from a garden hose or rain can also send materials into storm drains.
- Storm drains are separate from our sanitary sewer systems; unlike water in sanitary sewers (from sinks or toilets), water in storm drains is not treated before entering our waterways.

Sources of Non-Point Source Pollution

- Automotive leaks and spills.
- Improper disposal of used oil and other engine fluids.
- Metals found in vehicle exhaust, weathered paint, rust, metal plating and tires.
- Pesticides and fertilizers from lawns, gardens and farms.
- Improper disposal of cleaners, paint and paint removers.
- Soil erosion and dust debris from landscape and construction activities.
- Litter, lawn clippings, animal waste, and other organic matter.
- Oil stains on parking lots and paved surfaces.

The Effect on the Ocean

Non-point source pollution can have a serious impact on water quality in Orange County. Pollutants from the storm drain system can harm marine life as well as coastal and wetland habitats. They can also degrade recreation areas such as beaches, harbors and bays.

Stormwater quality management programs have been developed throughout Orange County to educate and encourage the public to protect water quality, monitor runoff in the storm drain system, investigate illegal dumping and maintain storm drains.

Support from Orange County residents and businesses is needed to improve water quality and reduce urban runoff pollution. Proper use and disposal of materials will help stop pollution before it reaches the storm drain and the ocean.

For More Information

Orange County Stormwater Program

California Environmental Protection Agency
www.calepa.ca.gov

- **Air Resources Board**
  www.arb.ca.gov
- **Department of Pesticide Regulation**
  www.cdpr.ca.gov
- **Department of Toxic Substances Control**
  www.dtsc.ca.gov
- **Integrated Waste Management Board**
  www.ciwmb.ca.gov
- **Office of Environmental Health Hazard Assessment**
  www.oehha.ca.gov
- **State Water Resources Control Board**
  www.waterboards.ca.gov

Earth 911 - Community-Specific Environmental Information 1-800-cleanup or visit www.1800cleanup.org

Health Care Agency's Ocean and Bay Water Closure and Posting Hotline
(714) 433-6400 or visit www.ocbeachinfo.com

Integrated Waste Management Dept. of Orange County (714) 834-6752 or visit www.oclandfills.com for information on household hazardous waste collection centers, recycling centers and solid waste collection

O.C. Agriculture Commissioner
(714) 447-7100 or visit www.ocagcomm.com

Stormwater Best Management Practice Handbook
Visit www.cabmphandbooks.com

UC Master Gardener Hotline
(714) 708-1646 or visit www.uccemg.com

The Orange County Stormwater Program has created and moderates an electronic mailing list to facilitate communications, take questions and exchange ideas among its users about issues and topics related to stormwater and urban runoff and the implementation of program elements. To join the list, please send an email to ocstormwaterinfo-join@list.ocwatersheds.com

Aliso Viejo	(949)	425-2535
Anaheim Public Works Operations	(714)	765-6860
Brea Engineering	(714)	990-7666
Buena Park Public Works	(714)	562-3655
Costa Mesa Public Services	(714)	754-5323
Cypress Public Works	(714)	229-6740
Dana Point Public Works	(949)	248-3584
Fountain Valley Public Works	(714)	593-4441
Fullerton Engineering Dept.	(714)	738-6853
Garden Grove Public Works	(714)	741-5956
Huntington Beach Public Works	(714)	536-5431
Irvine Public Works	(949)	724-6315
La Habra Public Services	(562)	905-9792
La Palma Public Works	(714)	690-3310
Laguna Beach Water Quality	(949)	497-0378
Laguna Hills Public Services	(949)	707-2650
Laguna Niguel Public Works	(949)	362-4337
Laguna Woods Public Works	(949)	639-0500
Lake Forest Public Works	(949)	461-3480
Los Alamitos Community Dev.	(562)	431-3538
Mission Viejo Public Works	(949)	470-3056
Newport Beach, Code & Water Quality Enforcement	(949)	644-3215
Orange Public Works	(714)	532-6480
Placentia Public Works	(714)	993-8245
Rancho Santa Margarita	(949)	635-1800
San Clemente Environmental Programs	(949)	361-6143
San Juan Capistrano Engineering	(949)	234-4413
Santa Ana Public Works	(714)	647-3380
Seal Beach Engineering	(562)	431-2527 x317
Stanton Public Works	(714)	379-9222 x204
Tustin Public Works/Engineering	(714)	573-3150
Villa Park Engineering	(714)	998-1500
Westminster Public Works/Engineering	(714)	898-3311 x446
Yorba Linda Engineering	(714)	961-7138
Orange County Stormwater Program	(877)	897-7455

Orange County 24-Hour
Water Pollution Problem Reporting Hotline
1-877-89-SPILL (1-877-897-7455)

On-line Water Pollution Problem Reporting Form
www.ocwatersheds.com

Printed on Recycled Paper

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities such as pest control can lead to water pollution if you're not careful. Pesticide treatments must be planned and applied properly to ensure that pesticides do not enter the street, gutter or storm drain. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never dump pesticides into the ocean, so don't let it enter the storm drains. Pesticides can cause significant damage to our environment if used improperly. If you are thinking of using a pesticide to control a pest, there are some important things to consider.

For more information,
please call
University of California Cooperative
Extension Master Gardeners at
(714) 708-1646
or visit these Web sites:
www.uccemg.org
www.ipm.ucdavis.edu

For instructions on collecting a specimen sample visit the Orange County Agriculture Commissioner's website at:
http://www.ocagcomm.com/ser_lab.asp

To report a spill, call the
Orange County 24-Hour
Water Pollution Problem
Reporting Hotline
at 1-877-89-SPILL (1-877-897-7455).

For emergencies, dial 911.

Information From:
Cheryl Wilen, Area IPM Advisor; Darren Haver, Watershed Management Advisor; Mary Louise Flint, IPM Education and Publication Director; Pamela M. Geisel, Environmental Horticulture Advisor; Carolyn L. Unruh, University of California Cooperative Extension staff writer. Photos courtesy of the UC Statewide IPM Program and Darren Haver.

Funding for this brochure has been provided in full or in part through an agreement with the State Water Resources Control Board (SWRCB) pursuant to the Costa-Machado Water Act of 2000 (Prop. 13).

Printed on Recycled Paper

Help Prevent Ocean Pollution:

Responsible Pest Control

Tips for Pest Control

Key Steps to Follow:

Step 1: Correctly identify the pest (insect, weed, rodent, or disease) and verify that it is actually causing the problem.

Three life stages of the common lady beetle, a beneficial insect.

This is important because beneficial insects are often mistaken for pests and sprayed with pesticides needlessly.

Consult with a Certified Nursery Professional at a local nursery or garden center or send a sample of the pest to the Orange County Agricultural Commissioner's Office.

Determine if the pest is still present – even though you see damage, the pest may have left.

Step 2: Determine how many pests are present and causing damage.

Small pest populations may be controlled more safely using non-pesticide techniques. These include removing food sources, washing off leaves with a strong stream of water, blocking entry into the home using caulking and replacing problem plants with ones less susceptible to pests.

Integrated Pest Management (IPM) usually combines several least toxic pest control methods for long-term prevention and management of pest problems without harming you, your family, or the environment.

UC CE University of California Cooperative Extension

Step 3: If a pesticide must be used, choose the least toxic chemical.

Obtain information on the least toxic pesticides that are effective at controlling the target pest from the UC Statewide Integrated Pest Management (IPM) Program's Web site at www.ipm.ucdavis.edu.

Seek out the assistance of a Certified Nursery Professional at a local nursery or garden center when selecting a pesticide. Purchase the smallest amount of pesticide available.

Apply the pesticide to the pest during its most vulnerable life stage. This information can be found on the pesticide label.

Step 4: Wear appropriate protective clothing.

Follow pesticide labels regarding specific types of protective equipment you should wear. Protective clothing should always be washed separately from other clothing.

Step 5: Continuously monitor external conditions when applying pesticides such as weather, irrigation, and the presence of children and animals.

Never apply pesticides when rain is predicted within the next 48 hours. Also, do not water after applying pesticides unless the directions say it is necessary.

Apply pesticides when the air is still; breezy conditions may cause the spray or dust to drift away from your targeted area.

In case of an emergency call 911 and/or the regional poison control number at (714) 634-5988 or (800) 544-4404 (CA only).

For general questions you may also visit www.calpoison.org.

Step 6: In the event of accidental spills, sweep up or use an absorbent agent to remove any excess pesticides. Avoid the use of water.

Be prepared. Have a broom, dust pan, or dry absorbent material, such as cat litter, newspapers or paper towels, ready to assist in cleaning up spills.

Contain and clean up the spill right away. Place contaminated materials in a doubled plastic bag. All materials used to clean up the spill should be properly disposed of according to your local Household Hazardous Waste Disposal site.

Step 7: Properly store and dispose of unused pesticides.

Purchase Ready-To-Use (RTU) products to avoid storing large concentrated quantities of pesticides.

Store unused chemicals in a locked cabinet.

Unused pesticide chemicals may be disposed of at a Household Hazardous Waste Collection Center.

Empty pesticide containers should be triple rinsed prior to disposing of them in the trash.

Household Hazardous Waste Collection Center
(714) 834-6752
www.oclandfills.com

PROJECT Pollution PREVENTION

pÉï~ÖÉ=péáää oÉÖìä~íçêó=oÉèìáêÉãÉåíë

^ ääçïáåÖëÉï~ÖÉ=íç=ÇáëÅÜ~êÜÇ=~ ÖìííÉê=çê=ëíçêã= Çê~áåã=ó=ëìÄàÉÁí=éçì=íç=éÉå~äïáÉë=åÇLçêçí JçÑJ éçÅåêÉíÅçëíëíç=êÉáäÄìëëÉÅáíáÉçêéíÄäáÅ=ÖÉåÅáíÑ%çê= ÅäÉ~åJíÉÑÑNçêíëK

eÉêÉ=~êÉ=íÜÉ=éÉêíáåÉåí=ÅçÇÉëÌ=ÑáåÉëÌ=åÇ=~ÖÉåÅó= Åçåí~ÅåãÑçêã~íáçãÜ~í=éëäK

Ìê~åÖÉ=`çìåíó=píçêäï~íÉê=mêçÖê~ã

OQ=eçìê=t=íÉê=çäïìíáçå=oÉéçêíáåÖ=eçíäåÉ=

1-877-89-SPILL=ENJUTTJUVTJTQRRF

- `çìåíó= ~åÇ=Åáíó=t~íÉê=èì~äáíó çêÇáã~åÅÉëëçÜáÄáíÇáëÅÜ~êÖÉë= Åçåí~áåäáÇçãäíí~åíëK

Ìê~åÖÉ=`çìåíó=eÉ~äíÜ=`~êÉ=^ÖÉåÅó båîáêçåãÉåí=ä=eÉ~äíÜ

ETNQF=QPPJSQNV

California Health and Safety Code, pÉÅíáçåë=RQNMJRQNS

- kç=éÉêëçåëÜ~ãäëÅÜ~êÖÉ=çêíéÉ~íÉÇëÉí~ÖÉ=çêçíÜÉêí=ëíÉ~åã= ã~åäÉëíÜ~ÖÉëìäíëäåÇçí~äáã~íáçêçêëêãäë~åÅÉK
- ^ åóéÉêëçã=Üç=Å~ìèÉë=çê=éÉêäáíë=~ ëÉí~ÖÉ=ÇáëÅÜ~êÖÉ=~åó= ëí~íÉ=íÉêëW
  - äìëí=áäãÉÇá~íÉäãçíáÑÜÜÉ=äçÅ~ÜÉ=äíÜ=ÖÉåÅóÑçëëÉêíáÅÉëÜ~íéêçíÉÅí= íÜÉ=public's ÜÉ~äíÜ=åÇ=ÑÉÖ=íÉëÜÅçí~ÅêÉÁÉáíáäÖ=íÉëëFK=
  - ïÜç=Ñ~áãçëêçíÇÉÜÉ=ëÉèìáêÉÇ=çíáÅÉç=ÜÉ=äçÅ~ÜÉ=~ äíÜ=ÖÉåÅó= áëÖíáäíóçÑ~áäëÇÉäÉ~åçê=åÇ=Ü~åÉëíäáëÜÉÇÅó=ÑáäÉÁÉíïÉÉå= $500–$1,000) ~åÇLçãáéêäëçåäÉáíÑçÉëëÜ~åäÉ=óÉ~íK

oÉÖáçå~ä=tíÉê=ni~äáíó=`çåíêçã=_ç~êÇ p~åí~=^å~=oÉÖáçå=p~å=aáÉÖç=oÉÖáçå

EVRNF=TUOJQNPM=====EURUF=QSTJOVRO

- oÉèìáêÉë=ÜÉ=éêÉÏÉåíáçåI=äáíáÖ~íáçåÉêëçåëÉí=ç=~åÇëÉéçêíáåÖçÑ= ëÉï~ÖÉ=ëéáääëK

`~äáÑçêåá~=IÑÑáÅÉ=çÑ=bãÉêÖÉåÖó=pÉêíáÅÉë

EUMMF=UROJTRRM

California Water Code, ^ êíáÅÉÜ=Ü~éíÉêÖ=pÉÅíáçåë=NPOSUJNPOTN **California Code of Regulations,** qíáíÉ=DPlaáíäéáçÑ=Ü~éíÉ¥K=OI=êíáÅÉÖ= pÉÅíáçåëQQORMJOOSM

- ^ åóéÉêëçåÜÇç=Å~ìèÉëçêéÉêäáíë=ëÉï~ÖÉ=áäÉ=ÅÉëëçÑ=MMMÜ=äáçåë= íç=ÄÉÇáëÅÜ~êÖÉÇ=íÉï=íÉêë **shall immediately notify the Office of Emergency Services.**
- ^ åóéÉêëçåÜÇç=Ñ~áãçëêçíáÇÉÜÉ=åçíáÅÉëÉèìáêÉÇ=çíÜÉ=äçÅ~ÜÉ=éÉå áíáçå= éÉ**guilty of a misdemeanor** ~åÇ=ëÜ~ää=ÄÉ=éìåíëÜÉÇ=ÉäÉëë=íÜ=Ñ~áäÉ= AOMIMMMÜ=ÇíçãáéêäëçåäÉáíÑçÉçí=äçÉ=Ü~ääÉ=óÉ~íK

DTP113 Rev 4/06
printed on recycled paper

pÉï ~ÖÉ=péáää oÉÑÉêÉåÅÉ=dìáÇÉ

Your Responsibilities as a Private Property Owner

oÉëáÇÉåÅÉë _ìëáåËëëÉë eçãÉçíáÉêL` çåÇçãáåáíìã=^ëëçÅá~íáçåë cÉÇÉê~ä=~åÇ=íÉ=`çãéäÉíÉë jáääí~êó=cÅáäáíáÉë

ORANGE COUNTY SANITATION DISTRICT — PROTECTING THE ENVIRONMENT

Orange County Sanitation District

COUNTY OF ORANGE CALIFORNIA

PROJECT Pollution PREVENTION

eÉ~äíÜ=`~êÉ=^ÖÉåÅó båîáêçåãÉåí~ä=eÉ~äíÜ ïïï KçÅí~íÉëëÜÉÇëëKÅçã

This brochure was designed courtesy of the Orange County Sanitation District (OCSD). For additional information, call (714) 962-2411, or visit their website at www.ocsd.com

tÜ~í=áë=~ pÉï~ÖÉ=péáääã\

pÉï~ ÖÉ=ëéáäëë=çÅÅìêë=ïÜ Éå=íÜÉ=ï~ ëíÉï ~Éê=ÄÉáåÖ= íê~åëéçêíÉÇçí~ìåÇÉê=éáéÉëë=çíÉêÑçÜëÇ=éáéÉKpÉï~ÖÉ=ëéáääëÅ=å= Å~ìèÉÜÉ~äíÜëÉí=Ü~ò~êÇçÑ=ã~ÖÉç=ÜçãÉë=~åÇäëéáÉëëÉëÉl= ~åÇ=ÜÉê~íÉå=ÜÉ=ÉåíáêçåáÉåíl= äçÅ~ã=íÉêï~óë=~åÇ= ÄÉ~ÅÜÉëK

`çããçå=`~ìëÉë çÑ=pÉï~ÖÉ=péáääë

d êÉ~ëÉ=Äì ãÇë=ì é=åëëÇÉ=~åÇ=ÉíÎ Éåíì ~ãäó=Äãç Åäë ëÉíÉêë=éáéÉëëKdëÉ~ëÉ ÖÉíë=áåíç=íÜÉ~ëÉíÉêë=Ñêçã=ÑçÇ= Éëí~ÑäáëÜÉåÉíÜçíëÉÜçÇÇêë~áåëÌ=äÉáäë=ëÑêçã=éççëäó= ã~åäí~áåÉÇçç=äÉêÅåá~ÖÉ=çêë=éÉ~ÇáåíÉêÅÉéíçëêK

píèÌÅìêÉ=éêçÇäáÉäë=Å~ìèÉÇÄó=ëÉÉêççíë~åáíÜÉ=äáåÉëÌ= ÄêçÅåÉåLÅê~ÅåÉÉçëÉlãáëëáåÖçê=ÄêçÅåÉåÅäÉ~åçíÅ=~ëë= çêìåÇÉêëáòÉÇçÉíÉêë=Å~=åÅ~ìèÉÄáçÅåÖ=ëÉ~ÇáåíÉêÅÉëK

fåÑáäíê~íáçåÅáäÑçêçÑfLfÉá~Åíë=ëáéÉ=Å~é~Åáíó=~åÇ= áë=Å~ìèÉÇ=ÜÉÅå= ÖêçìÇçí~íÉê=çê=ê~áäï~íÉêÉåíÉêë=ÜÉ= ëÉï Éê=ëóëíÉã =íÜëç ÖÜ=éáÉ=ÇÉÑÉÅíë=~åÇ=ÆÆÖ~ë= Åçåå ÉÅíáçåëK

vçì=^êÉ=oÉëéçåëíÄäÉ=Ñçê=~= pÉï~ÖÉ=péáää=`~ìèÉÇ=Äó=~=_äçÅå~ÖÉ= çê=_êÉ~â=á=åçìêëpÉïÉê=íáåÉëK>

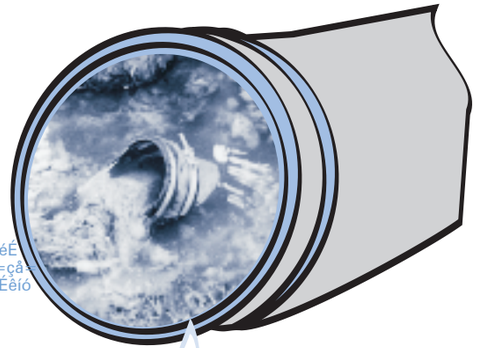
qáäÉ=áëçÑíÜÉÉëëÉåÅÉáåÇÉ~äáäÖÜ=ëÉí~ÖÉ=ëéáääëëKçì= ~êëÉèìáêÉÇçç=áääÉÇçí~íÉáíW

`çåíêçã=>åÇäáåáéáóòÉíÜÉëëéáääëKÉé ëéáääåÅçåí~áåÉÇ= çå=éêâí~íÉêëçéÉêíó=åÇçíçÑçÑíÉêëÌ=ëíçêã=Çê~áåë=åÇ= éìÄäáÄ=íÉêï~óë=ÄóëÜííáåÖçÑíÑçêã=ëáí=ëéáåÖíÉÑ=íÉëK

rëÉ= ë~åÇÄ~ÖëÇçÑçáêí=>åÇLçêéá~ëíáÅëÜÉÉíáåÖíç= éêÉíÉåí=ëÉï~ÖÉ=Ñêçã=ÉåíÉêëÉåíÖÜÉ=ëíçêã=Çê~áåëëíÉãK

`äÉ~éíÜÉ=ëÉíÉê=ÄäçÅå~ÖÉKäï~óëíÉ~ê=Öäçíëë=åÇ= ï~ëÜ~óçíê=Ü~åÇëÑ=äëêÉÅçãåÉåÇÉÇ=íÜ~í=éáìãÄáåäÖ= éêçÑÉëëáçå=ÄÉÁ~ääÑçëëáÉ~êáäÑçÇÉåÅÉ=íÜ~ëÉçÅå~ÖÉëÇ= åÉÅÉëë~êëÉé~åêK

^äï~óë=åçíáÑó=óçíê= Åáíó=ëÉïÉêÉéìÄäáÅ=çêâë= ÇÉé~êíáÉåí=çê=éìÅäáÇëÉïÉê=ÇáëíéêáÅÅÑçÑ=ëÉï~ÖÉ= ëéáääëÑ=íÜÉ=ëéçêíëÉëë=íÜÉ=ëéíçê=Çê~áåëë=åçíÜ= eÉ~äíÜ~=ëÉ=ÖÉåÅóÑ=~ÇçíáçåÉÑñí=ÉñÅÉÇçÑNIMMM= Ö~äçåëëçíáÑóÜÉÑÑNáÅÉÑëëÖÉåÖÉÇëÉÑÉçÑ íÜÉåëíÄÉêë=äáëíÉÇëê=äáëíÉçÇçÑ=åÇÜ~ëÉëëÉÑÑçÑ=



IíÉêÑäçïáåÖ ÄäÉ~åçíí=éáéÉ äçÅ~íÉÇ=çå éêáíí~íÉ=éêçÉÉíáíÉ

vçì=`çìäÇ=_É=iá~ÄäÉ

^ ääçïáåÖ=ëÉí~ÖÑêçã=óçìÉJçÉI=ÄìëáåÉëëçê=éêçÉÉíó=íç=ÇáëÅÜ~êÖÉ=Öíííêë=çêëíçã=Çê~áåë=ó=ëìÄàÉÁíó=íç=éÉå~äïáÉëë=åÇLçêçí JçÑJéçÅåÉÁÉçëíëíç=ÉáäÄìëëÉÅáíáÉë=çê=éìÅäáÇëÉïÉê=ÇáëíéêáÅÅÑçÑ=ëÉï~ÖÉ=ëéáääëÑ=íÜÉ=ëéçêíëÉëë=íÜÉ=ëéíçê=Çê~áåëëíÉãK

tÜ~í=íç=iççâ=çê

pÉï~ÖÉ=ëéáääëë=Å~å=ÄÉ=~=íÉêó=åçíáÅÉ~ÄäÉ=ÖìëÜáåÉ Ñêçã=ã~=åÜçäÉçêë=ëäçï=ïí~íÉê=äÉ~åÜ=íã~ó=íê=âÉíáãÉçíç= ÄÉåçíáÅÉÇçÉëëåçïí~íÉêëÌ=ëíçêã=Çê~áåëëíÉãK

¡ ççâ=ÑçêW

- aê~áå=Ä~åÅìéë=áåëéçÉ=íÜÉ=ÑÌáääÇáåÖ
- t Éí=ÖêçìÇ=~åÇ=ï~íÉê=äÉ~âáåÖ=~êçìÇ=ã~åÜçãÉ çåíç=óçìê=ëíÉÉíK
- i É~âáåÖ=ï~íÉê=Ñêçã=ÅäÉ~åçìë=çê=çìíëíáçÉ=Çê~áåë
- råìëì~ä=çÇçêçìë=ïÉí=~êÉ~ëW=ëáÇÉï~äåëÌ=ÉñíÉêå~ã ï~ääë=çê=ÖêçìÇçLä~åÇëÅ~éÉ=~êçìÇ=~K=ÄìáäÇáåÖ

`~ìíáçå

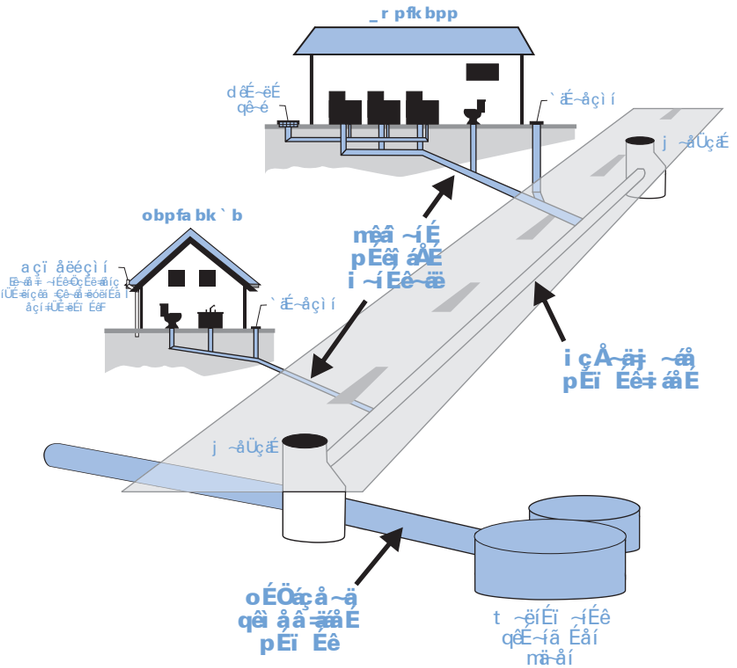
hÉÉé=éÉçëäÉ=~åÇ=éíìë=~ï~ó=Ñêçã=ÜÉ=~ÑÑÉÅíÉçÉ~K= råíÉÉ~íÉÇ=ëÉï~ÖÉ=Ü~ëëÜáÖÜÉêÎÉäë çÑ~çáëÉ~äÅ~ìëáÖ= îáêìëÉÉ=~åÇÄ~ÅíÉêá`~Käáçìê=äçÅ~ÜÉ=~íÜÅ=ëÉíçêã=äáëíÉÇ=ÉñíÉêå~ã äáëíÉÇçå=ÜÉÄ~ÅÑÑçÉÉ=áåÑçêã~íáçåK

fÑ~çì=pÉÉ=~=pÉï~ÖÉ=péáääã=IÅÅìëêáåÖ kçíáÑó=çìê=`~íó=pÉïÉêLìÄäáÅ=çêâë= aÉé~êíáÉåí=çê=ìÑäáÅ=pÉïÉê=aáëíêáÅí fjjbaf^ qbiv>

eçï=~=pÉïÉê póëíÉã=t çêâë

^=éêçéÉëçÉãÉêDë=ëÉïÉëáéÉë=~ÅÉ=ääÉÇ=ëÉêíáÅÉë=íÉê~ääÇ=êÉÅçåÅÉíÉÇíç=ã~êÖÉê=äçÅ~ãí=áå=åÇêÉÖáçå=íãíåå=äáåÉëíÉÇ=ä~íÉê~äãå=Nêçã=íÜÉ=ÅçååÉÅíáçå=í=íÜÉ=ÜçãÉ=íç=íÜÉ=ÅçååÉÅíáçå=íí=íÜÉ=ëìÄäáÅ=ëÉïÉê=ÉáåÅäïÇáãÖÉ=êÉ=íÇÉê=íÜÉëíêÉÉíFK=qÜÉëÉã~íÉê~äëëÉÜÉêÉëéçäëáÄáäáçÑíÜÉ=éêçéÉêíóçíåÉê=~ÅÇãëí=ÄÉ=ã~áåí~áåÉÇ=ÄóíÜÉéêçéÉêíóçíåÉê Kj=åó=ÅáíóíÖÉåÅáÉë=Ü~î É=~ÇçéíÉÇ=çêÇáã~åÅÉë=ëÉèì éáÖ=ã~áåíÉå~åÅÉçÑëÉêîíåÅÉã=íÉê~äëÉÅãí=íÜ=óçì ê=Åáó=ëÉï ÉêìçÅ~ã=éì ÄäÅ=ï çêâë=ÇÉé~êíãÉáíÑçãçêÉ~áåÑçëã~íáçåK

léÉê~íáçå=åÇã~áåíÉå~åÉçÑ**äçÅ~ã~åÇ=êÉÖáçå~ãÉíÉê=äáåÉë**~êÉíÜÉ~êÉëéçåëäJÄáäáíçÑëÜÉÅáíóëÉïÉêLéìÄäáÅçêâë=ÇÉé~êíãÉáíÑçãçêÉ~áåÑçëã~íáçåK==

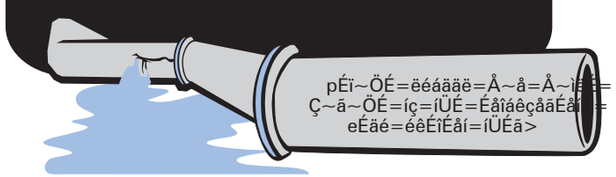


eçï=v çì=`~å mêÉíÉåí=pÉï~ÖÉ=péääëë

N **kÉíÉê= éìí= ÖêÉ~ëÉ=Ççïå= Ö~êÄ~ÖÉ Çáëéçë~äÜÇê~áåëêí=çáäÉíëK**

O **mÉêÑçêã =é ÉêáçÇáÅ= ÅåÉ~åáåÖ=íç= Éäääåå~íÉÖêÉ~ëÉÇÉÄêáë=åÇêçççíë=åå= óçìê=ëÉéíåÅÉí=íÉê~äëK**

P **oÉé~áê= ~åó=ëíéìÅíì ê~ä=éêçÄÉã ë=åå=óçìë=ëÉïÉê=ëóëíÉÃã=~åÇÉäääåå~íÉ= ~åó=ê~åïí ~íÉê=åÑëíêíáçåíáÑçï =äÉ~äëëåíçóçìë=ëÉéíÅÉíÉã=íÉê~äëK**



mêÉíÉåíáåÖ dêÉ~ëÉ=_äçÅâ~ÖÉë

qÜÉ=Çê~áÑëåçí=~ Çìãé>=oÉÅóÅäÉÇê=Çáëéçë ÉçÑëÖêÉ~ëÉ= éêçéÉëáó=åÇêÉíÉê=çìë=ÖêÉçïå=íÜÉÇê~ëÉçïå=íÜÉÇê~ëÉçïå=íÜÉ

eçãÉçïåÉêë= ëÜçìäÇ=ááñ=Ñ~ìëÜáäë=åÇêÖêÉ~ëÉáíÜ=~Äëçê JÄÉåí÷ëíÉ=ã~íÉêá~äëëÅÜ=éë>~éÉëÅçÑÑÉÖêçìåÇëÍçêâáííó= äáííÉê=~åÇ=éä~ÅÉ=áí=åá=íÜÉ=íê~ëÜK=táëÉ=ÑçççÇ=ëÅê~éë= ~åÇó~åë=åÇÇçìãé=ìÜÉã=áåíÜÉê~ëÜK

oÉëí~ìê~åíë=åÇÅçããÉêÇÅá~ãÑçççÇëÉêíáÅÉÉëí~ÄäáëÜãÉåíë= ëÜçìäÇ=äï~óëìëÉ="Kitchen _Éëí=j~å~ÖÉãÉåí=mractices." = qÜëëÉáåÄäìÇÉW=

- `ç äÉÅáëÖ=åÅççâáåÖÖÉ~ëÉ=åÇäëì áÇçáÑçêâ=éçíëì é~åë= ~åÇÑóÉêëáåÅçÉ êÉÇÖÉ~ëÉÅçí~åÉêëÑçêâÉÅóÄäÖK
- pÅê~éáåÇçê=Çêóìïáéáå Ö=ÉñÅÉëëÑççÇ=åÇÖêÉ~ëÉÑêçã= ÇáëÜÉëëíëÉl~é~åë=åÇÑêóÉêëíçÑÜÉíê~ëÜK
- fåëí~ääáÇçê=áåÅêÉÉåçå=~ãáÅÜÉÇçê~åëëK
- e~îáåÖëéáäëíáíóÉ~Çáëçã=áä~ÄÑÉÅäÉ~åëåÖ=ëéáäëëK
- mçéÉëó ~åí~åÅÖëÉ~ëÉíé~éëçëåíÉêÅÉéíçëëÄóÜ~î åÖ= íÜëã=ëÉã åÉÇçÉÇì ä~ëëK=ÜÉÅê~éçì êççÅ~äÅóÅçÇÉëK

lê~åÖÉ=`çìåíó ^ÖÉåÅó=oÉëéçåëáÄáäáíÉë

- **`áíó=pÉïÉ êÜmÄäáÅ=t çêâë=aÉé~êíáÉ åís—** oÉëéçåëáÄäÉ=Ñçê=éçíÉçÅáÉÅíáåÖëÉ~íáåÖ=éçéÉëíó=~åÇëíÉÉíëÍíëÍÜÉ~äçÅ~ãíçêã=Çê~áåëóíÉãl=ëÉï~ÖÉ=ÅçääÉÅíáçåëëíÉã=~åÇíÜÉêëíÄäáÅ=êÉ~ëK
- **mì ÄäáÅ=pÉï ÉêÞp~åáí~íççå=aëíêáÅí—** oÉëéçåëáÄäÉÑçêëêçíÉÅíáåÖëÉ~íáåÖëÉ~íáåÖ=åÇçÇáÉêíáÅÉ=çÅÉ~åLÄ~ñ=íÊêë=~åÇ=ã~ó=ÅäçëÉÑçççÇáÉêíáÅÉ=ÀìëáåÉëëÉëëáÑëéáäëçëÉë=íÜÉ=ëìÄäáÅÜÉ~äïÜK
- **oÉÖáçå~ät=~íÉê=nì~äáíó=`çåíêçä=Boards—** oÉëéçåëáÄäÉÑçêëêçíÉÅíáåÖÞí~íÉï=íÉêëK
- **l ê~åÖÉ=`çìåíó=píçêã ï ~íÉê=mêÖêã —** oÉëéçåëáÄäÉÑçêëêçíÉÅíáåÖÜ~êãÑìæçääíí~åíëÑêçã= ÄÉáåÜÇáëÅÜ~êÖÉÇ=~ëÜÉÇ=ëÜÉÇ=Áó=ëíçêâáí~íÉê=êìçêãÉÅ=ÅÜÉáÇÜÉÅáíóëÉïÉêLëìÄäáÅçêâë=ÇÉé~êíãÉáíÑçãçêÉ~áåÑçëã~íáçåK

vçì=`çìäÇ=_É=iá~ÄäÉ Ñçê=kçí=êçíÉÅíáåÖ íÜÉ=båîáêçåãÉåí

iç Å~ä=åÇëí=ÉíÉ=ÖÉåÅÉë=Ü~î É=æÉÖ~äæ=êæÇáåJ íáçå=åÇÉåÑçêÅÉã Éåí=ì íÜçêãó÷ç=Éåëì êÉ÷Ü~í= ëÉï ~ÖÉëéáæÉ=ÇÉêÉã ÉÇáÉÇK=

qÜÉó~ã~ó=êÉëéçÅç=åÇ=ëéäëïíáÜ=Åçåí~ååJã ÉåíÌ=êÉæÉî åÖ=éæÉ=ÄæÇåÉ~ÖÉël=~åÇLçê ÅåÉ~åJìëéçÑ÷íÜÉ=ëÉï~ÖÉ=ëéáäëëÉëéÉÅå~äæÑÑ= íÜÉ=ëéáäæÑëÑäçïíáåÖëÉíçêë=ëÉíçêã=Çê~áåëçê=çåíç= éìÄäáÅóêçéÉêíóK=

^=éêçéÉêíóçïíÉê=ã~ó=ÄÉ÷ÅÜ~êÖÉÑçê= Åçëíë=åÅì êêÉÇ=Äó=íÜÉëÉ=~ÖÉåÅÉë= êÉëéçåÇáÇÖ=íç=ëéáæÉë=ÑçãÃ=éêçÉÊêíáÉë=

líÜÉê=^ÖÉåÅáÉë

Orange County Health Care Agency	(714) 433-6419
Office of Emergency Services	(800) 852-7550

oÉéçêí=pÉï~ÖÉ=péääëë

`áíó=pÉïÉêLmÄäáÅ=çêâë=aÉé~êíáÉ åís

Aliso Viejo	(949) 425-2500
Anaheim	(714) 765-6860
Brea	(714) 990-7691
Buena Park	(714) 562-3655
Costa Mesa	(949) 645-8400
Cypress	(714) 229-6760
Dana Point	(949) 248-3562
Fountain Valley	(714) 593-4600
Fullerton	(714) 738-6897
Garden Grove	(714) 741-5375
Huntington Beach	(714) 536-5921
Irvine	(949) 453-5300
Laguna Beach	(949) 497-0765
Laguna Hills	(949) 707-2650
Laguna Niguel	(949) 362-4337
Laguna Woods	(949) 639-0500
La Habra	(562) 905-9792
Lake Forest	(949) 461-3480
La Palma	(714) 690-3310
Los Alamitos	(562) 431-3538
Mission Viejo	(949) 831-2500
Newport Beach	(949) 644-3011
Orange	(714) 532-6480
Orange County	(714) 567-6363
Placentia	(714) 993-8245
Rancho Santa Margarita	(949) 635-1800
San Clemente	(949) 366-1553
San Juan Capistrano	(949) 443-6363
Santa Ana	(714) 647-3380
Seal Beach	(562) 431-2527
Stanton	(714) 379-9222
Tustin	(714) 962-2411
Villa Park	(714) 998-1500
Westminster	(714) 893-3553
Yorba Linda	(714) 961-7170

mÄäáÅ=pÉïÉêLt=íÉê=aáëíêáÅíë

Costa Mesa Sanitary District	(714) 393-4433/ (949) 645-8400
El Toro Water District	(949) 837-0660
Emerald Bay Service District	(949) 494-8571
Garden Grove Sanitary District	(714) 741-5375
Irvine Ranch Water District	(949) 453-5300
Los Alamitos/Rossmoor Sewer District	(562) 431-2223
Midway City Sanitary District (Westminster)	(714) 893-3553
Moulton Niguel Water District	(949) 831-2500
Orange County Sanitation District	(714) 962-2411
Santa Margarita Water District	(949) 459-6420
South Coast Water District	(949) 499-4555
South Orange County Wastewater Authority	(949) 234-5400
Sunset Beach Sanitary District	(562) 493-9932
Trabuco Canyon Sanitary District	(949) 858-0277
Yorba Linda Water District	(714) 777-3018

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities can lead to water pollution if you're not careful. Fertilizers, pesticides and other chemicals that are left on yards or driveways can be blown or washed into storm drains that flow to the ocean. Overwatering lawns can also send materials into storm drains. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never pour gardening products into the ocean, so don't let them enter the storm drains. Follow these easy tips to help prevent water pollution.

For more information,
please call the
Orange County Stormwater Program
at **1-877-89-SPILL** (1-877-897-7455)
or visit
www.ocwatersheds.com

UCCE Master Gardener Hotline:
(714) 708-1646

To report a spill,
call the
Orange County 24-Hour
Water Pollution Problem
Reporting Hotline
1-877-89-SPILL (1-877-897-7455).

For emergencies, dial 911.

The tips contained in this brochure provide useful information to help prevent water pollution while landscaping or gardening. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

Printed on Recycled Paper

Help Prevent Ocean Pollution:

Tips for Landscape & Gardening

The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Tips for Landscape & Gardening

Never allow gardening products or polluted water to enter the street, gutter or storm drain.

General Landscaping Tips

- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.
- Plant native vegetation to reduce the amount of water, fertilizers, and pesticide applied to the landscape.

- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.

Garden & Lawn Maintenance

- Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro spray systems. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program.

- Use slow-release fertilizers to minimize leaching, and use organic fertilizers.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.

- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains. Dispose of empty containers in the trash.
- When available, use non-toxic alternatives to traditional pesticides, and use pesticides specifically designed to control the pest you are targeting. For more information, visit **www.ipm.ucdavis.edu**.
- If fertilizer is spilled, sweep up the spill before irrigating. If the spill is liquid, apply an absorbent material such as cat litter, and then sweep it up and dispose of it in the trash.
- Take unwanted pesticides to a Household Hazardous Waste Collection Center to be recycled. Locations are provided below.

Household Hazardous Waste Collection Centers

Anaheim:	1071 N. Blue Gum St.
Huntington Beach:	17121 Nichols St.
Irvine:	6411 Oak Canyon
San Juan Capistrano:	32250 La Pata Ave.

For more information, call (714) 834-6752 or visit www.oclandfills.com

Clean beaches and healthy creeks, rivers, bays, and ocean are important to Orange County. However, many common activities can lead to water pollution if you're not careful. Swimming pools and spas are common in Orange County, but they must be maintained properly to guarantee that chemicals aren't allowed to enter the street, where they can flow into the storm drains and then into the waterways. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never dump pool chemicals into the ocean, so don't let it enter the storm drains. Follow these easy tips to help prevent water pollution.

For more information,
please call the
Orange County Stormwater Program
at **1-877-89-SPILL** (1-877-897-7455)
or visit
www.ocwatersheds.com

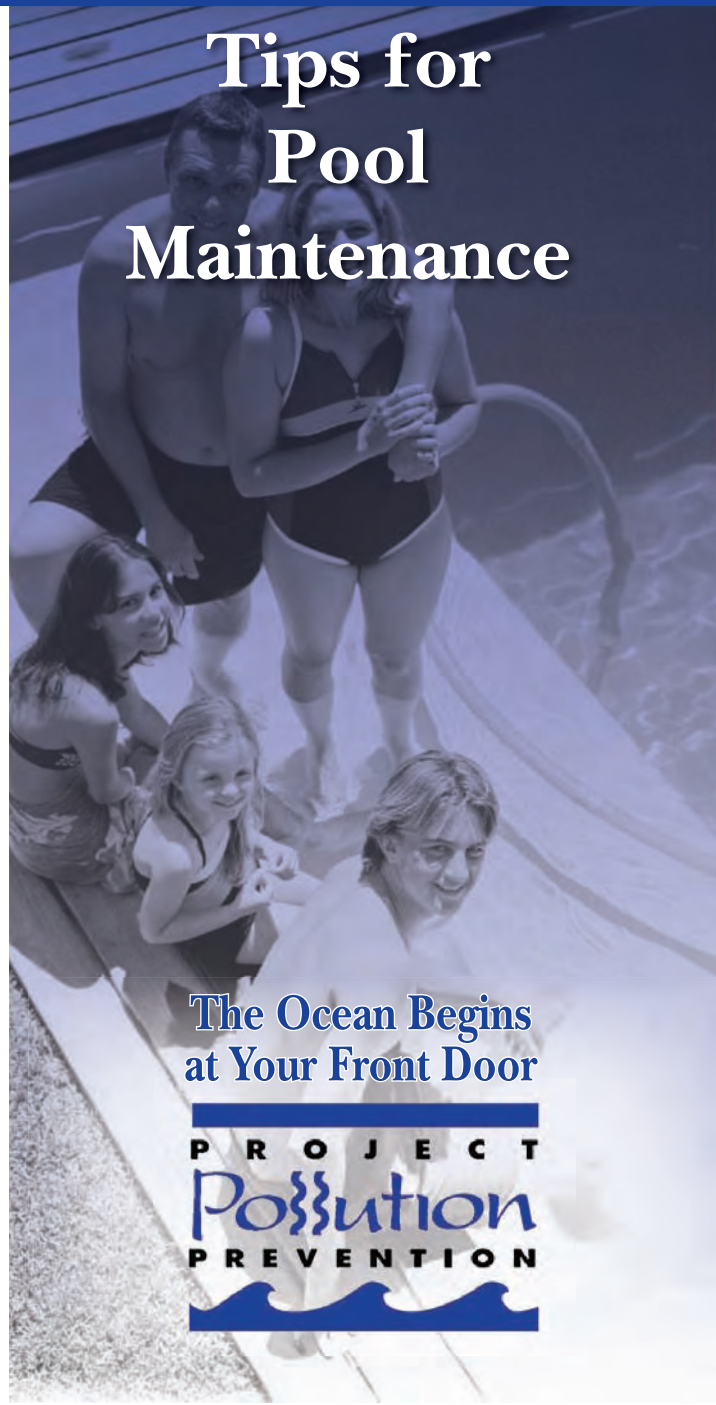
To report a spill,
call the
Orange County 24-Hour
Water Pollution Reporting Hotline
1-877-89-SPILL (1-877-897-7455).

For emergencies, dial 911.

The tips contained in this brochure provide useful information to help prevent water pollution while maintaining your pool. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

Help Prevent Ocean Pollution:

Tips for Pool Maintenance



The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Tips for Pool Maintenance

Many pools are plumbed to allow the pool to drain directly to the sanitary sewer. If yours is not, follow these instructions for disposing of pool and spa water.

Acceptable and Preferred Method of Disposal

When you cannot dispose of pool water in the sanitary sewer, the release of dechlorinated swimming pool water is allowed if all of these tips are followed:

- The residual chlorine does not exceed 0.1 mg/l (parts per million).
- The pH is between 6.5 and 8.5.
- The water is free of any unusual coloration, dirt or algae.
- There is no discharge of filter media.
- There is no discharge of acid cleaning wastes.
- Some cities may have ordinances that do not allow pool water to be disposed into a storm drain. Check with your city.

How to Know if You're Following the Standards

You can find out how much chlorine is in your water by using a pool testing kit. Excess chlorine can be removed by discontinuing the use of chlorine for a few days prior to discharge or by purchasing dechlorinating chemicals from a local pool supply company. Always make sure to follow the instructions that come with any products you use.

Doing Your Part

By complying with these guidelines, you will make a significant contribution toward keeping pollutants out of Orange County's creeks, streams, rivers, bays and the ocean. This helps to protect organisms that are sensitive to pool chemicals, and helps to maintain the health of our environment.

PROJECT Pollution PREVENTION

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities such as painting can lead to water pollution if you're not careful. Paint must be used, stored and disposed of properly to ensure that it does not enter the street, gutter or storm drain. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never dump paint into the ocean, so don't let it enter the storm drains. Follow these easy tips to help prevent water pollution.

For more information,
please call the
Orange County Stormwater Program
at **1-877-89-SPILL** (1-877-897-7455)
or visit
www.ocwatersheds.com

To report a spill,
call the
Orange County 24-Hour Water Pollution Problem Reporting Hotline
at **1-877-89-SPILL** (1-877-897-7455).

For emergencies, dial 911.

The tips contained in this brochure provide useful information to help prevent water pollution while using, storing and disposing of paint. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

Printed on Recycled Paper

Help Prevent Ocean Pollution:

Tips for Projects Using Paint

Tips for Projects Using Paint

Paint can cause significant damage to our environment. Whether you hire a contractor or do it yourself, it is important to follow these simple tips when purchasing, using, cleaning, storing and disposing of paint.

Purchasing Paint

- Measure the room or object to be painted, then buy only the amount needed.
- Whenever possible, use water-based paint since it usually does not require hazardous solvents such as paint thinner for cleanup.

Painting

- Use only one brush or roller per color of paint to reduce the amount of water needed for cleaning.
- Place open paint containers or trays on a stable surface and in a position that is unlikely to spill.
- Always use a tarp under the area or object being painted to collect paint drips and contain spills.

Cleaning

- Never clean brushes or rinse paint containers in the street, gutter or storm drain.
- For oil-based products, use as much of the paint on the brushes as possible. Clean brushes with thinner. To reuse thinner, pour it through a fine filter (e.g. nylon, metal gauze or filter paper) to remove solids such as leftover traces of paint.
- For water-based products, use as much of the paint on the brushes as possible, then rinse in the sink.
- Collect all paint chips and dust. Chips and dust from marine paints or paints containing lead, mercury or tributyl tin are hazardous waste. Sweep up and dispose of at a Household Hazardous Waste Collection Center (HHWCC).

Storing Paint

- Store paint in a dry location away from the elements.
- Store leftover water-based paint, oil-based paint and solvents separately in original or clearly marked containers.
- Avoid storing paint cans directly on cement floors. The bottom of the can will rust much faster on cement.
- Place the lid on firmly and store the paint can upside-down to prevent air from entering. This will keep the paint usable longer. Oil-based paint is usable for up to 15 years. Water-based paint remains usable for up to 10 years.

Alternatives to Disposal

- Use excess paint to apply another coat, for touch-ups, or to paint a closet, garage, basement or attic.
- Give extra paint to friends or family. Extra paint can also be donated to a local theatre group, low-income housing program or school.
- Take extra paint to an exchange program such as the **"Stop & Swap"** that allows you to drop off or pick up partially used home care products free of charge. **"Stop & Swap"** programs are available at most HHWCCs.
- For HHWCC locations and hours, call **(714) 834-6752** or visit **www.oclandfills.com**.

Disposing of Paint

- Never put wet paint in the trash.

For water-based paint:

- If possible, brush the leftover paint on cardboard or newspaper. Otherwise, allow the paint to dry in the can with the lid off in a well-ventilated area protected from the elements, children and pets. Stirring the paint every few days will speed up the drying.
- Large quantities of extra paint should be taken to a HHWCC.
- Once dried, paint and painted surfaces may be disposed of in the trash. When setting a dried paint can out for trash collection, leave the lid off so the collector will see that the paint has dried.

For oil-based paint:

- Oil-based paint is a household hazardous waste. All leftover paint should be taken to a HHWCC.

Aerosol paint:

- Dispose of aerosol paint cans at a HHWCC.

Spills

- Never hose down pavement or other impermeable surfaces where paint has spilled.
- Clean up spills immediately by using an absorbent material such as cat litter. Cat litter used to clean water-based paint spills can be disposed of in the trash. When cleaning oil-based paint spills with cat litter, it must be taken to a HHWCC.
- Immediately report spills that have entered the street, gutter or storm drain to the County's 24-Hour Water Pollution Problem Reporting Hotline at **(714) 567-6363** or visit **www.ocwatersheds.com** to fill out an incident reporting form.

PROJECT Pollution PREVENTION

Preventing water pollution at your commercial/industrial site

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many landscape and building maintenance activities can lead to water pollution if you're not careful. Paint, chemicals, plant clippings and other materials can be blown or washed into storm drains that flow to the ocean. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never pour soap or fertilizers into the ocean, so why would you let them enter the storm drains? Follow these easy tips to help prevent water pollution.

Some types of industrial facilities are required to obtain coverage under the State General Industrial Permit. For more information visit: **www.swrcb.ca.gov/stormwater/industrial.html**

For more information, please call the **Orange County Stormwater Program** at **1-877-89-SPILL** (1-877-897-7455) or visit **www.ocwatersheds.com**

To report a spill, call the **Orange County 24-Hour Water Pollution Problem Reporting Hotline** at **1-877-89-SPILL** (1-877-897-7455).

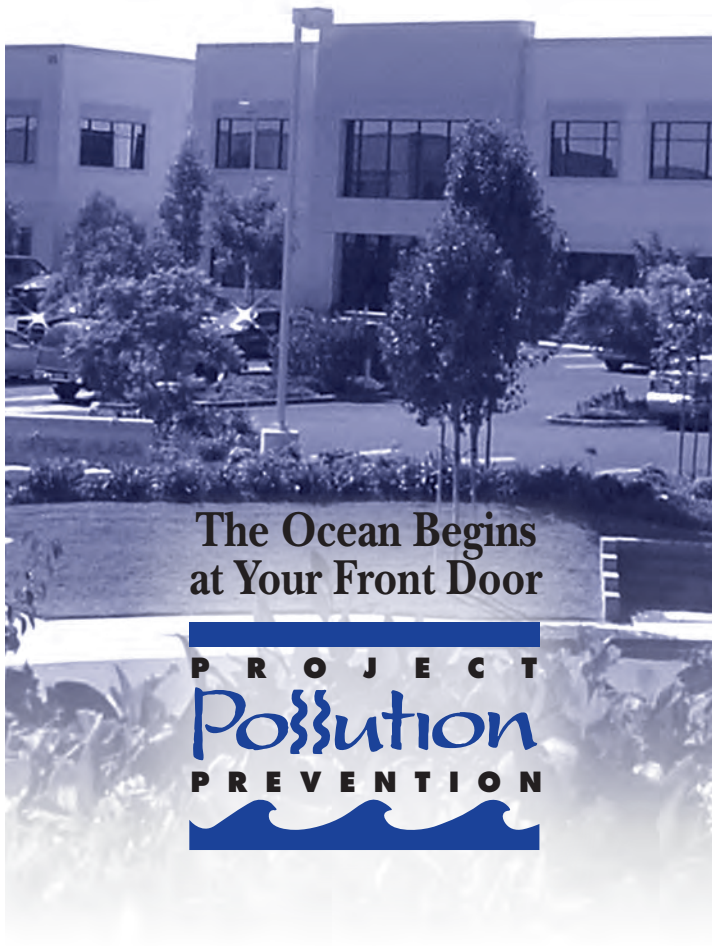
For emergencies, dial 911.

RECYCLE USED OIL

Printed on Recycled Paper

Help Prevent Ocean Pollution:

Proper Maintenance Practices for Your Business



The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Proper Maintenance Practices for your Business

Landscape Maintenance

- Compost grass clippings, leaves, sticks and other vegetation, or dispose of it at a permitted landfill or in green waste containers. Do not dispose of these materials in the street, gutter or storm drain.
- Irrigate slowly and inspect the system for leaks, overspraying and runoff. Adjust automatic timers to avoid overwatering.
- Follow label directions for the use and disposal of fertilizers and pesticides.
- Do not apply pesticides or fertilizers if rain is expected within 48 hours or if wind speeds are above 5 mph.
- Do not spray pesticides within 100 feet of waterways.
- Fertilizers should be worked into the soil rather than dumped onto the surface.
- If fertilizer is spilled on the pavement or sidewalk, sweep it up immediately and place it back in the container.

Building Maintenance

- Never allow washwater, sweepings or sediment to enter the storm drain.
- Sweep up dry spills and use cat litter, towels or similar materials to absorb wet spills. Dispose of it in the trash.
- If you wash your building, sidewalk or parking lot, you **must** contain the water. Use a shop vac to collect the water and contact your city or sanitation agency for proper disposal information. Do not let water enter the street, gutter or storm drain.
- Use drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of materials in the trash.
- Use a ground cloth or oversized tub for mixing paint and cleaning tools.
- Use a damp mop or broom to clean floors.
- Cover dumpsters to keep insects, animals, rainwater and sand from entering. Keep the area around the dumpster clear of trash and debris. Do not overfill the dumpster.
- Call your trash hauler to replace leaking dumpsters.
- Do not dump any toxic substance or liquid waste on the pavement, the ground, or near a storm drain. Even materials that seem harmless such as latex paint or biodegradable cleaners can damage the environment.

NEVER DISPOSE OF ANYTHING IN THE STORM DRAIN.

- Recycle paints, solvents and other materials. For more information about recycling and collection centers, visit **www.oclandfills.com**.
- Store materials indoors or under cover and away from storm drains.
- Use a construction and demolition recycling company to recycle lumber, paper, cardboard, metals, masonry, carpet, plastic, pipes, drywall, rocks, dirt, and green waste. For a listing of construction and demolition recycling locations in your area, visit **www.ciwmb.ca.gov/recycle.**
- Properly label materials. Familiarize employees with Material Safety Data Sheets.

PROJECT Pollution PREVENTION

APPENDIX B

POST CONSTRUCTION BMP FACT SHEETS

- SD-10 Site Design & Landscape Planning
- SD-12 Efficient Irrigation
- SD-13 Storm Drain Signage
- SD-31 Maintenance Bays & Docks
- SC-35 Safer Alternative Products
- SC-42 Building Repair and Construction
- IC3 Building Maintenance
- IC7 Landscape Maintenance
- IC10 Outdoor Loading/Unloading of Materials
- IC15 Parking and Storage Area Maintenance
- IC16 Pool and Fountain Cleaning
- IC17 Spill Prevention and Cleanup
- IC21 Waste Handling and Disposal

Site Design & Landscape Planning SD-10

Design Objectives

- ✓ Maximize Infiltration
- ✓ Provide Retention
- ✓ Slow Runoff
- ✓ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

CASQA California Stormwater Quality Association

SD-10 Site Design & Landscape Planning

Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.
- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Promote natural vegetation by using parking lot islands and other landscaped areas.
- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.
- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

SD-10 Site Design & Landscape Planning

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Efficient Irrigation SD-12

Design Objectives

- ✓ Maximize Infiltration
- ✓ Provide Retention
- ✓ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

CASQA California Stormwater Quality Association

- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ✓ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING –

CASQA California Stormwater Quality Association

DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.

- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Maintenance Bays & Docks SD-31

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ✓ Prohibit Dumping of Improper Materials
- ✓ Contain Pollutants
- Collect and Convey

Description

Several measures can be taken to prevent operations at maintenance bays and loading docks from contributing a variety of toxic compounds, oil and grease, heavy metals, nutrients, suspended solids, and other pollutants to the stormwater conveyance system.

Approach

In designs for maintenance bays and loading docks, containment is encouraged. Preventative measures include overflow containment structures and dead-end sumps. However, in the case of loading docks from grocery stores and warehouse/distribution centers, engineered infiltration systems may be considered.

Suitable Applications

Appropriate applications include commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for vehicle maintenance and repair are governed by Building and Fire Codes, and by current local agency ordinances, and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code requirements.

Designing New Installations

Designs of maintenance bays should consider the following:

- Repair/maintenance bays and vehicle parts with fluids should be indoors; or designed to preclude urban run-on and runoff.
- Repair/maintenance floor areas should be paved with Portland cement concrete (or equivalent smooth impervious surface).

CASQA California Stormwater Quality Association

- Repair/maintenance bays should be designed to capture all wash water leaks and spills. Provide impermeable berms, drop inlets, trench catch basins, or overflow containment structures around repair bays to prevent spilled materials and wash-down waters form entering the storm drain system. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.

- Other features may be comparable and equally effective.

The following designs of loading/unloading dock areas should be considered:

- Loading dock areas should be covered, or drainage should be designed to preclude urban run-on and runoff.

- Direct connections into storm drains from depressed loading docks (truck wells) are prohibited.

- Below-grade loading docks from grocery stores and warehouse/distribution centers of fresh food items should drain through water quality inlets, or to an engineered infiltration system, or an equally effective alternative. Pre-treatment may also be required.

- Other features may be comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Stormwater and non-stormwater will accumulate in containment areas and sumps with impervious surfaces. Contaminated accumulated water must be disposed of in accordance with applicable laws and cannot be discharged directly to the storm drain or sanitary sewer system without the appropriate permit.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Safer Alternative Products SC-35

Description

Promote the use of less harmful products and products that contain little or no TMDL pollutants. Alternatives exist for most product classes including chemical fertilizers, pesticides, cleaning solutions, janitorial chemicals, automotive and paint products, and consumables (batteries, fluorescent lamps).

Approach

Pattern a new program after the many established programs around the state and country. Integrate this best management practice as much as possible with existing programs at your facility.

Develop a comprehensive program based on:

- The "Precautionary Principle," which is an alternative to the "Risk Assessment" model that says it's acceptable to use a potentially harmful product until physical evidence of its harmful effects are established and deemed too costly from an environmental or public health perspective. For instance, a risk assessment approach might say it's acceptable to use a pesticide until there is direct proof of an environmental impact. The Precautionary Principle approach is used to evaluate whether a given product is safe, whether it is really necessary, and whether alternative products would perform just as well.
- Environmentally Preferable Purchasing Program to minimize the purchase of products containing hazardous ingredients used in the facility's custodial services, fleet maintenance, and facility maintenance in favor of using alternate products that pose less risk to employees and to the environment.
- Integrated Pest Management (IPM) or Less-Toxic Pesticide Program, which uses a pest management approach that minimizes the use of toxic chemicals and gets rid of pests by methods that pose a lower risk to employees, the public, and the environment.
- Energy Efficiency Program including no-cost and low-cost energy conservation and efficiency actions that can reduce both energy consumption and electricity bills, along with long-term energy efficiency investments.

Consider the following mechanisms for developing and implementing a comprehensive program:

- Policies

Objectives

- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	
Nutrients	✓
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

CASQA California Stormwater Quality Association

- Procedures
  - Standard operating procedures (SOPs)
  - Purchasing guidelines and procedures
  - Bid packages (services and supplies)
- Materials
  - Preferred or approved product and supplier lists
  - Product and supplier evaluation criteria
  - Training sessions and manuals
  - Fact sheets for employees

Implement this BMP in conjunction with the Vehicle and Equipment Management fact sheets (SC20 – SC22) and SC41, Building and Grounds Maintenance.

Training

- Employees who handle potentially harmful materials in the use of safer alternatives.
- Purchasing departments should be encouraged to procure less hazardous materials and products that contain little or no harmful substances or TMDL pollutants.

Regulations

This BMP has no regulatory requirements. Existing regulations already encourage facilities to reduce the use of hazardous materials through incentives such as reduced:

- Specialized equipment storage and handling requirements,
- Storm water runoff sampling requirements,
- Training and licensing requirements, and
- Record keeping and reporting requirements.

Equipment

- There are no major equipment requirements to this BMP.

Limitations

- Alternative products may not be available, suitable, or effective in every case.

Requirements

Cost Considerations

- The primary cost is for staff time to: 1) develop new policies and procedures and 2) educate purchasing departments and employees who handle potentially harmful materials about the availability, procurement, and use of safer alternatives.

- Some alternative products may be slightly more expensive than conventional products.

Supplemental Information

Employees and contractors / service providers can both be educated about safer alternatives by using information developed by a number of organizations including the references and resources listed below.

The following discussion provides some general information on safer alternatives. More specific information on particular hazardous materials and the available alternatives may be found in the references and resources listed below.

- Automotive products – Less toxic alternatives are not available for many automotive products, especially engine fluids. But there are alternatives to grease lubricants, car polishes, degreasers, and windshield washer solution. Rerefined motor oil is also available.
- Vehicle/Trailer lnbrication – Fifth wheel bearings on trucks require routine lubrication. Adhesive lubricants are available to replace typical chassis grease.
- Cleaners – Vegetables-based or citrus-based soaps are available to replace petroleum-based soaps/detergents.
- Paint products – Water-based paints, wood preservatives, stains, and finishes are available.
- Pesticides – Specific alternative products or methods exist to control most insects, fungi, and weeds.
- Chemical Fertilizers – Compost and soil amendments are natural alternatives.
- Consumables – Manufacturers have either reduced or are in the process of reducing the amount of heavy metals in consumables such as batteries and fluorescent lamps. All fluorescent lamps contain mercury, however low-mercury containing lamps are now available from most hardware and lighting stores. Fluorescent lamps are also more energy efficient than the average incandescent lamp.
- Janitorial chemicals – Even biodegradable soap can harm fish and wildlife before it biodegrades. Biodegradable does not mean non-toxic. Safer products and procedures are available for floor stripping and cleaning, as well as carpet, glass, metal, and restroom cleaning and disinfecting.

Examples

There are a number of business and trade associations, and communities with effective programs. Some of the more prominent are listed below in the references and resources section.

References and Resources

Note: Many of these references provide alternative products for materials that typically are used inside and disposed to the sanitary sewer as well as alternatives to products that usually end up in the storm drain.

General Sustainable Practices and Pollution Prevention Including Pollutant-Specific Information

California Department of Toxic Substances Control (www.dtsc.ca.gov)

California Integrated Waste Management Board (www.ciwmb.ca.gov)

City of Santa Monica (www.santa-monica.org/environment)

City of Palo Alto (www.city.palo-alto.ca.us/cleanbay)

City and County of San Francisco, Department of the Environment (www.ci.sf.ca.us/sfenvironment)

Earth 911 (www.earth911.org/master.asp)

Environmental Finance Center Region IX (www.greenstart.org/efc9)

Flex Your Power (www.flexyourpower.ca.gov)

GreenBiz.com (www.greenbiz.com)

Green Business Program (www.abag.org/bayarea/enviro/gbus/gb.html)

Pacific Industrial and Business Association (www.piba.org)

Sacramento Clean Water Business Partners (www.sacstormwater.org)

USEPA BMP fact sheet – Alternative products (http://cfpub.epa.gov/npdes/stormwater/menuofbmps/poll_2.cfm)

USEPA Region IX Pollution Prevention Program (www.epa.gov/region09/p2)

Western Regional Pollution Prevention Network (www.westp2net.org)

Metals (mercury, copper)

National Electrical Manufacturers Association - Environment, Health and Safety (www.nema.org)

Sustainable Conservation (www.suscon.org)

Auto Recycling Project

Brake Pad Partnership

Pesticides and Chemical Fertilizers

Bio-Integral Resource Center (www.birc.org)

California Department of Pesticide Regulation (www.cdpr.ca.gov)

University of California Statewide IPM Program (www.ipm.ucdavis.edu/default.html)

Dioxins

Bay Area Dioxins Project (http://dioxin.abag.ca.gov/)

Building Repair and Construction SC-42

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Recycle

Targeted Constituents

Sediment	✓
Nutrients	
Trash	✓
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Description

Modifications are common particularly at large industrial sites. The activity may vary from minor and normal building repair to major remodeling, or the construction of new facilities. These activities can generate pollutants including solvents, paints, paint and varnish removers, finishing residues, spent thinners, soap cleaners, kerosene, asphalt and concrete materials, adhesive residues, and old asbestos installation. Protocols in this fact sheet are intended to prevent or reduce the discharge of pollutants to stormwater from building repair, remodeling, and construction by using soil erosion controls, enclosing or covering building material storage areas, using good housekeeping practices, using safer alternative products, and training employees.

Approach

Pollution Prevention

- Recycle residual paints, solvents, lumber, and other materials to the maximum extent practical.
- Buy recycled products to the maximum extent practical.
- Inform on-site contractors of company policy on these matters and include appropriate provisions in their contract to ensure certain proper housekeeping and disposal practices are implemented.

CASQA California Stormwater Quality Association

- Make sure that nearby storm drains are well marked to minimize the chance of inadvertent disposal of residual paints and other liquids.

Suggested Protocols

Repair & Remodeling

- Follow BMPs identified in Construction BMP Handbook.
- Maintain good housekeeping practices while work is underway.
- Keep the work site clean and orderly. Remove debris in a timely fashion. Sweep the area.
- Cover materials of particular concern that must be left outside, particularly during the rainy season.
- Do not dump waste liquids down the storm drain.
- Dispose of wash water, sweepings, and sediments properly.
- Store materials properly that are normally used in repair and remodeling such as paints and solvents.
- Sweep out the gutter or wash the gutter and trap the particles at the outlet of the downspout if when repairing roofs, small particles have accumulated in the gutter. A sock or geofabric placed over the outlet may effectively trap the materials. If the downspout is tight lined, place a temporary plug at the first convenient point in the storm drain and pump out the water with a vactor truck, and clean the catch basin sump where you placed the plug.
- Properly store and dispose waste materials generated from construction activities. See Construction BMP Handbook.
- Clean the storm drain system in the immediate vicinity of the construction activity after it is completed.

Painting

- Enclose painting operations consistent with local air quality regulations and OSHA.
- Local air pollution regulations may, in many areas of the state, specify painting procedures which if properly carried out are usually sufficient to protect water quality.
- Develop paint handling procedures for proper use, storage, and disposal of paints.
- Transport paint and materials to and from job sites in containers with secure lids and tied down to the transport vehicle.
- Test and inspect spray equipment prior to starting to paint. Tighten all hoses and connections and do not overfill paint containers.
- Mix paint indoors before using so that any spill will not be exposed to rain. Do so even during dry weather because cleanup of a spill will never be 100% effective.
- Transfer and load paint and hot thermoplastic away from storm drain inlets.

- Do not transfer or load paint near storm drain inlets.
- Plug nearby storm drain inlets prior to starting painting and remove plugs when job is complete when there is significant risk of a spill reaching storm drains.
- Cover nearby storm drain inlets prior to starting work if sand blasting is used to remove paint.
- Use a ground cloth to collect the chips if painting requires scraping or sand blasting of the existing surface. Dispose the residue properly.
- Cover or enclose painting operations properly to avoid drift.
- Clean the application equipment in a sink that is connected to the sanitary sewer if using water based paints.
- Capture all cleanup-water and dispose of properly.
- Dispose of paints containing lead or tributyl tin and considered a hazardous waste properly.
- Store leftover paints if they are to be kept for the next job properly, or dispose properly.
- Recycle paint when possible. Dispose of paint at an appropriate household hazardous waste facility.

Training

Proper education of off-site contractors is often overlooked. The conscientious efforts of well trained employees can be lost by unknowing off-site contractors, so make sure they are well informed about what they are expected to do.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Clean up spills immediately.
- Excavate and remove the contaminated (stained) soil if a spill occurs on dirt.

Limitations

- This BMP is for minor construction only. The State's General Construction Activity Stormwater Permit has more requirements for larger projects. The companion "Construction Best Management Practice Handbook" contains specific guidance and best management practices for larger-scale projects.
- Hazardous waste that cannot be reused or recycled must be disposed of by a licensed hazardous waste hauler.
- Be certain that actions to help stormwater quality are consistent with Cal- and Fed-OSHA and air quality regulations.

SC-42 Building Repair and Construction

Requirements

Costs

These BMPs are generally low to modest in cost.

Maintenance

N/A

Supplemental Information

Further Detail of the BMP

Soil/Erosion Control

If the work involves exposing large areas of soil, employ the appropriate soil erosion and control techniques. See the Construction Best Management Practice Handbook. If old buildings are being torn down and not replaced in the near future, stabilize the site using measures described in SC-40 Contaminated or Erodible Areas.

If a building is to be placed over an open area with a storm drainage system, make sure the storm inlets within the building are covered or removed, or the storm line is connected to the sanitary sewer. If because of the remodeling a new drainage system is to be installed or the existing system is to be modified, consider installing catch basins as they serve as effective "in-line" treatment devices. See Treatment Control Fact Sheet TC-20 Wet Pond/Basin in Section 5 of the New Development and Redevelopment Handbook regarding design criteria. Include in the catch basin a "turn-down" elbow or similar device to trap floatables.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net/

IC3. BUILDING MAINTENANCE

Best Management Practices (BMPs)

A BMP is a technique, measure or structural control that is used for a given set of conditions to improve the quality of the stormwater runoff in a cost effective manner[1]. The minimum required BMPs for this activity are outlined in the box to the right. Implementation of pollution prevention/good housekeeping measures may reduce or eliminate the need to implement other more costly or complicated procedures. Proper employee training is key to the success of BMP implementation.

MINIMUM BEST MANAGEMENT PRACTICES

Pollution Prevention/Good Housekeeping

- Properly collect and dispose of water when pressure washing buildings, rooftops, and other large objects.
- Properly prepare work area before conducting building maintenance.
- Properly clean and dispose of equipment and wastes used and generated during building maintenance.
- Store toxic material under cover when not in use and during precipitation events.

Stencil storm drains

Training

- Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
- Provide on-going employee training in pollution prevention.

The BMPs outlined in this fact sheet target the following pollutants:

Targeted Constituents	
Sediment	x
Nutrients	x
Floatable Materials	
Metals	x
Bacteria	x
Oil & Grease	
Organics & Toxicants	
Pesticides	
Oxygen Demanding	

Provided below are specific procedures associated with each of the minimum BMPs along with procedures for additional BMPs that should be considered if this activity takes place at a facility located near a sensitive waterbody. In order to meet the requirements for medium and high priority facilities, the owners/operators must select, install and maintain appropriate BMPs on site. Since the selection of the appropriate BMPs is a site-specific process, the types and numbers of additional BMPs will vary for each facility.

1. Properly collect and dispose of water when pressure washing buildings, rooftops, and other large objects.
    - If pressure washing where the surrounding area is paved, use a water collection device that enables collection of wash water and associated solids. Use a sump pump, wet vacuum or similarly effective device to collect the runoff and loose materials. Dispose of the collected runoff and solids properly. Refer to fact sheet *IC24 Wastewater Disposal* for guidance on appropriate methods for disposal of wash water to the sanitary sewer.
    - If pressure washing on a landscaped area (with or without soap), runoff must be dispersed as sheet flow as much as possible, rather than as a concentrated stream. The wash runoff must remain on the landscaping and not drain to pavement.
2. Properly prepare work area before conducting building maintenance.
    - Use ground or drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of collected material daily.
    - Use a ground cloth or oversized tub for activities such as paint mixing and tool cleaning.

[1] EPA " *Preliminary Data Summary of Urban Stormwater Best Management Practices"*

3. Properly clean and dispose of equipment and wastes used and generated during building maintenance.
    - Clean paint brushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain. Brushes and tools covered with non-water-based paints, finishes, or other materials must be cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal.
    - Properly dispose of wash water, sweepings, and sediments.
    - Properly store equipment, chemicals, and wastes.
    - Do not dump any toxic substance or liquid waste on the pavement, the ground, or toward a storm drain.

    OPTIONAL:
    - Recycle residual paints, solvents, lumber, and other materials to the maximum extent practicable
4. Employ soil erosion and stabilization techniques when exposing large areas of soil.
    - Confine excavated materials to pervious surfaces away from storm drain inlets, sidewalks, pavement, and ditches. Material must be covered if rain is expected.
    - Use chemical stabilization or geosynthetics to stabilize bare ground surfaces.
5. Store toxic material under cover when not in use and during precipitation events.
6. Properly dispose of fluids from air conditioning, cooling tower, and condensate drains.
7. Regularly inspect air emission control equipment under AQMD permit.
8. Switch to non-toxic chemicals for maintenance when possible.
    - If cleaning agents are used, select biodegradable products whenever feasible
    - Consider using a waterless and non-toxic chemical cleaning method for graffiti removal (e.g. gels or spray compounds).
9. Use chemicals that can be recycled.
    - Buy recycled products to the maximum extent practicable

Training

1. Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
2. Train employees on proper spill containment and cleanup.
    - Establish training that provides employees with the proper tools and knowledge to immediately begin cleaning up a spill.
    - Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
    - Fact sheet IC17 discusses Spill Prevention and Control in detail.
3. Establish a regular training schedule, train all new employees, and conduct annual refresher training.
4. Use a training log or similar method to document training.

Stencil storm drains

Storm drain system signs act as highly visible source controls that are typically stenciled directly adjacent to storm drain inlets. Stencils should read "No Dumping Drains to Ocean".

References

California Storm Water Best Management Practice Handbook. Industrial and Commercial. 2003. www.cabmphandbooks.com

California Storm Water Best Management Practice Handbooks. Industrial/Commercial Best Management Practice Handbook. Prepared by Camp Dresser& McKee, Larry Walker Associates, Uribe and Associates, Resources Planning Associates for Stormwater Quality Task Force. March 1993.

King County Stormwater Pollution Control Manual. Best Management Practices for Businesses. King County Surface Water Management. July 1995. On-line: http://dnr.metrokc.gov/wlr/dss/spcm.htm

Stormwater Management Manual for Western Washington. Volume IV Source Control BMPs. Prepared by Washington State Department of Ecology Water Quality Program. Publication No. 99-14. August 2001.

For additional information contact:

County of Orange/ OC Watersheds
Main: (714) 955-0600
24 hr Water Pollution Hotline: 1-877-89-SPILL
or visit our website at www.ocwatersheds.com

IC7. LANDSCAPE MAINTENANCE

Best Management Practices (BMPs)

A BMP is a technique, measure or structural control that is used for a given set of conditions to improve the quality of the stormwater runoff in a cost effective manner[1]. The minimum required BMPs for this activity are outlined in the box to the right. Implementation of pollution prevention/good housekeeping measures may reduce or eliminate the need to implement other more costly or complicated procedures. Proper employee training is key to the success of BMP implementation.

MINIMUM BEST MANAGEMENT PRACTICES

Pollution Prevention/Good Housekeeping

- Properly store and dispose of gardening wastes.
- Use mulch or other erosion control measures on exposed soils.
- Properly manage irrigation and runoff.
- Properly store and dispose of chemicals.
- Properly manage pesticide and herbicide use.
- Properly manage fertilizer use.

Stencil storm drains

Training

- Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
- Provide on-going employee training in pollution prevention.

The BMPs outlined in this fact sheet target the following pollutants:

Targeted Constituents	
Sediment	x
Nutrients	x
Floatable Materials	x
Metals	
Bacteria	x
Oil & Grease	
Organics & Toxicants	
Pesticides	x
Oxygen Demanding	x

Provided below are specific procedures associated with each of the minimum BMPs along with procedures for additional BMPs that should be considered if this activity takes place at a facility located near a sensitive waterbody. In order to meet the requirements for medium and high priority facilities, the owners/operators must select, install and maintain appropriate BMPs on site. Since the selection of the appropriate BMPs is a site-specific process, the types and numbers of additional BMPs will vary for each facility.

1. Take steps to reduce landscape maintenance requirements.
    - Where feasible, retain and/or plant native vegetation with features that are determined to be beneficial. Native vegetation usually requires less maintenance than planting new vegetation.
    - When planting or replanting consider using low water use flowers, trees, shrubs, and groundcovers.
    - Consider alternative landscaping techniques such as naturescaping and xeriscaping.
2. Properly store and dispose of gardening wastes.
    - Dispose of grass clippings, leaves, sticks, or other collected vegetation as garbage at a permitted landfill or by composting.
    - Do not dispose of gardening wastes in streets, waterways, or storm drainage systems.
    - Place temporarily stockpiled material away from watercourses and storm drain inlets, and berm and/or cover.
3. Use mulch or other erosion control measures on exposed soils.

[1] EPA " *Preliminary Data Summary of Urban Stormwater Best Management Practices"*

4. Properly manage irrigation and runoff.
    - Irrigate slowly or pulse irrigate so the infiltration rate of the soil is not exceeded.
    - Inspect irrigation system regularly for leaks and to ensure that excessive runoff is not occurring.
    - If re-claimed water is used for irrigation, ensure that there is no runoff from the landscaped area(s).
    - If bailing of muddy water is required (e.g. when repairing a water line leak), do not put it in the storm drain; pour over landscaped areas.
    - Use automatic timers to minimize runoff.
    - Use popup sprinkler heads in areas with a lot of activity or where pipes may be broken. Consider the use of mechanisms that reduce water flow to broken sprinkler heads.
5. Properly store and dispose of chemicals.
    - Implement storage requirements for pesticide products with guidance from the local fire department and/or County Agricultural Commissioner.
    - Provide secondary containment for chemical storage.
    - Dispose of empty containers according to the instructions on the container label.
    - Triple rinse containers and use rinse water as product.
6. Properly manage pesticide and herbicide use.
    - Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of pesticides and herbicides and training of applicators and pest control advisors.
    - Follow manufacturers' recommendations and label directions.
    - Use pesticides only if there is an actual pest problem (not on a regular preventative schedule). When applicable use less toxic pesticides that will do the job. Avoid use of copper-based pesticides if possible. Use the minimum amount of chemicals needed for the job.
    - Do not apply pesticides if rain is expected or if wind speeds are above 5 mph.
    - Do not mix or prepare pesticides for application near storm drains. Prepare the minimum amount of pesticide needed for the job and use the lowest rate that will effectively control the targeted pest.
    - Whenever possible, use mechanical methods of vegetation removal rather than applying herbicides. Use hand weeding where practical.
    - Do not apply any chemicals directly to surface waters, unless the application is approved and permitted by the state. Do not spray pesticides within 100 feet of open waters.
    - Employ techniques to minimize off-target application (e.g. spray drift) of pesticides, including consideration of alternative application techniques.
    - When conducting mechanical or manual weed control, avoid loosening the soil, which could lead to erosion.
    - Purchase only the amount of pesticide that you can reasonably use in a given time period.
    - Careful soil mixing and layering techniques using a topsoil mix or composted organic material can be used as an effective measure to reduce herbicide use and watering.
7. Properly manage fertilizer use.
    - Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers.
    - Follow manufacturers' recommendations and label directions.
    - Employ techniques to minimize off-target application (e.g. spray drift) of fertilizer, including consideration of alternative application techniques. Calibrate fertilizer distributors to avoid excessive application.
    - Periodically test soils for determining proper fertilizer use.
    - Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.
    - Sweep pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
    - Use slow release fertilizers whenever possible to minimize leaching

8. Incorporate the following integrated pest management techniques where appropriate:
    - Mulching can be used to prevent weeds where turf is absent.
    - Remove insects by hand and place in soapy water or vegetable oil. Alternatively, remove insects with water or vacuum them off the plants.
    - Use species-specific traps (e.g. pheromone-based traps or colored sticky cards).
    - Sprinkle the ground surface with abrasive diatomaceous earth to prevent infestations by soft-bodied insects and slugs. Slugs also can be trapped in small cups filled with beer that are set in the ground so the slugs can get in easily.
    - In cases where microscopic parasites, such as bacteria and fungi, are causing damage to plants, the affected plant material can be removed and disposed of (pruning equipment should be disinfected with bleach to prevent spreading the disease organism).
    - Small mammals and birds can be excluded using fences, netting, and tree trunk guards.
    - Promote beneficial organisms, such as bats, birds, green lacewings, ladybugs, praying mantis, ground beetles, parasitic nematodes, trichogramma wasps, seedhead weevils, and spiders that prey on detrimental pest species.

Training

1. Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
2. Educate and train employees on the use of pesticides and pesticide application techniques. Only employees properly trained to use pesticides can apply them.
3. Train and encourage employees to use integrated pest management techniques.
4. Train employees on proper spill containment and cleanup.
    - Establish training that provides employees with the proper tools and knowledge to immediately begin cleaning up a spill.
    - Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
    - Fact sheet IC17 discusses Spill Prevention and Control in detail.
5. Establish a regular training schedule, train all new employees, and conduct annual refresher training.
6. Use a training log or similar method to document training.

Stencil storm drains

Storm drain system signs act as highly visible source controls that are typically stenciled directly adjacent to storm drain inlets. Stencils should read "No Dumping Drains to Ocean".

References

California Storm Water Best Management Practice Handbook. Industrial and Commercial. 2003. www.cabmphandbooks.com

California Storm Water Best Management Practice Handbooks. Industrial/Commercial Best Management Practice Handbook. Prepared by Camp Dresser& McKee, Larry Walker Associates, Uribe and Associates, Resources Planning Associates for Stormwater Quality Task Force. March 1993.

King County Stormwater Pollution Control Manual. Best Management Practices for Businesses. King County Surface Water Management. July 1995. On-line: http://dnr.metrokc.gov/wlr/dss/spcm.htm

Stormwater Management Manual for Western Washington. Volume IV Source Control BMPs. Prepared by Washington State Department of Ecology Water Quality Program. Publication No. 99-14. August 2001.

Water Quality Handbook for Nurseries. Oklahoma Cooperative Extension Service. Division of Agricultural Sciences and Natural Resources. Oklahoma State University. E-951. September 1999.

For additional information contact:

County of Orange/ OC Watersheds
Main: (714) 955-0600
24 hr Water Pollution Hotline: 1-877-89-SPILL
or visit our website at www.ocwatersheds.com

IC10. OUTDOOR LOADING/UNLOADING OF MATERIALS

Best Management Practices (BMPs)

A BMP is a technique, measure or structural control that is used for a given set of conditions to improve the quality of the stormwater runoff in a cost effective manner[1]. The minimum required BMPs for this activity are outlined in the box to the right. Implementation of pollution prevention/good housekeeping measures may reduce or eliminate the need to implement other more costly or complicated procedures. Proper employee training is key to the success of BMP implementation.

The BMPs outlined in this fact sheet target the following pollutants:

Targeted Constituents	
Sediment	x
Nutrients	x
Floatable Materials	
Metals	x
Bacteria	
Oil & Grease	x
Organics & Toxicants	x
Pesticides	x
Oxygen Demanding	

MINIMUM BEST MANAGEMENT PRACTICES

Pollution Prevention/Good Housekeeping

- Park vehicles and conduct loading/unloading only in designated loading/unloading areas so that spills or leaks can be contained.
- Clean loading/unloading areas regularly to remove potential sources of pollutants.
- Reduce exposure of materials to rain.
- Use drip pans underneath hose and pipe connections and other leak-prone spots during liquid transfer operations, and when making and breaking connections.
- Inspect equipment regularly.
- If possible, conduct loading and unloading in dry weather.

Stencil storm drains

Training

- Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
- Provide on-going employee training in pollution prevention.

Provided below are specific procedures associated with each of the minimum BMPs along with procedures for additional BMPs that should be considered if this activity takes place at a facility located near a sensitive waterbody. In order to meet the requirements for medium and high priority facilities, the owners/operators must select, install and maintain appropriate BMPs on site. Since the selection of the appropriate BMPs is a site-specific process, the types and numbers of additional BMPs will vary for each facility.

1. Properly design loading/unloading areas to prevent storm water runon, runoff of spills, etc.
    - Grade and/or berm the area to prevent runon.
    - Position roof downspouts to direct stormwater away from the area.
    - Grade and/or berm the loading/unloading area to a drain that is connected to a dead-end.
    - The area where truck transfers take place should be paved. If the liquid is reactive with the asphalt, Portland cement should be used to pave the area.
    - Avoid placing loading/unloading areas near storm drains.
2. Park vehicles and conduct loading/unloading only in designated loading/unloading areas so that spills or leaks can be contained.
3. Clean loading/unloading areas regularly to remove potential sources of pollutants. This includes outside areas that are regularly covered by containers or other materials.
4. Reduce exposure of materials to rain.
    - Cover the loading/unloading areas.
    - If a cover is unfeasible, use overhangs, or seals or door skirts to enclose areas.
5. Use drip pans underneath hose and pipe connections and other leak-prone spots during liquid transfer operations, and when making and breaking connections.

[1] EPA " *Preliminary Data Summary of Urban Stormwater Best Management Practices"*

6. Inspect equipment regularly
    - Designate a responsible party to check under delivery vehicles for leaking fluids, spilled materials, debris, or other foreign materials.
    - Check loading/unloading equipment regularly for leaks.
7. If possible, conduct loading and unloading in dry weather.

Training

1. Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
2. Train employees on proper spill containment and cleanup.
    - Establish training that provides employees with the proper tools and knowledge to immediately begin cleaning up a spill.
    - Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
    - Fact sheet IC17 discusses Spill Prevention and Control in detail.
3. Train employees on the proper techniques used during liquid transfers to avoid leaks and spills.
4. Train forklift operators on the proper loading and unloading procedures.
5. Establish a regular training schedule, train all new employees, and conduct annual refresher training.
6. Use a training log or similar method to document training.

Stencil storm drains

Storm drain system signs act as highly visible source controls that are typically stenciled directly adjacent to storm drain inlets. Stencils should read "No Dumping Drains to Ocean".

References

California Storm Water Best Management Practice Handbook. Industrial and Commercial. 2003. www.cabmphandbooks.com

California Storm Water Best Management Practice Handbooks. Industrial/Commercial Best Management Practice Handbook. Prepared by Camp Dresser& McKee, Larry Walker Associates, Uribe and Associates, Resources Planning Associates for Stormwater Quality Task Force. March 1993.

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

Stormwater Management Manual for Western Washington. Volume IV Source Control BMPs. Prepared by Washington State Department of Ecology Water Quality Program. Publication No. 99-14. August 2001.

For additional information contact:

County of Orange/ OC Watersheds
Main: (714) 955-0600
24 hr Water Pollution Hotline: 1-877-89-SPILL
or visit our website at www.ocwatersheds.com

IC15. PARKING AND STORAGE AREA MAINTENANCE

Best Management Practices (BMPs)

A BMP is a technique, measure or structural control that is used for a given set of conditions to improve the quality of the stormwater runoff in a cost effective manner[1]. The minimum required BMPs for this activity are outlined in the box to the right. Implementation of pollution prevention/good housekeeping measures may reduce or eliminate the need to implement other more costly or complicated procedures. Proper employee training is key to the success of BMP implementation.

MINIMUM BEST MANAGEMENT PRACTICES

Pollution Prevention/Good Housekeeping

- Conduct regular cleaning.
- Properly collect and dispose of wash water.
- Keep the parking and storage areas clean and orderly.
- Use absorbent materials and properly dispose of them when cleaning heavy oily deposits.
- When conducting surface repair work cover materials and clean paintbrushes and tools appropriately.

Stencil storm drains

Training

- Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
- Provide on-going employee training in pollution prevention.

The BMPs outlined in this fact sheet target the following pollutants:

Targeted Constituents	
Sediment	x
Nutrients	x
Floatable Materials	x
Metals	x
Bacteria	x
Oil & Grease	x
Organics & Toxicants	x
Pesticides	x
Oxygen Demanding	x

Provided below are specific procedures associated with each of the minimum BMPs along with procedures for additional BMPs that should be considered if this activity takes place at a facility located near a sensitive waterbody. In order to meet the requirements for medium and high priority facilities, the owners/operators must select, install and maintain appropriate BMPs on site. Since the selection of the appropriate BMPs is a site-specific process, the types and numbers of additional BMPs will vary for each facility.

1. Conduct regular cleaning.
    - Sweeping or vacuuming the parking facility is encouraged over other methods.
    - Sweep all parking lots at least once before the onset of the wet season.
    - Establish frequency of sweeping based on usage and field observations of waste accumulation.
2. Properly collect and dispose of wash water.
    - Block the storm drain or contain runoff.
    - Wash water should be collected and pumped to the sanitary sewer or discharged to a pervious surface, do not allow wash water to enter storm drains. Refer to fact sheet *IC24 Wastewater Disposal* for guidance on appropriate methods for disposal of wash water to the sanitary sewer.
    - Dispose of parking lot sweeping debris and dirt at a landfill.
3. Consider use of source treatment BMPs to treat runoff.
    - Allow sheet runoff to flow into biofilters (vegetated strip and swale) and/or infiltration devices.
    - Utilize sand filters or oleophilic collectors for oily waste in low quantities.

[1] EPA " *Preliminary Data Summary of Urban Stormwater Best Management Practices"*

4. Keep the parking and storage areas clean and orderly.
    - Clean out and cover litter receptacles frequently to prevent spillage.
    - Remove debris in a timely fashion.

    OPTIONAL:
    - Post "No Littering" signs.
5. When cleaning heavy oily deposits:
    - If possible, clean oily spots with absorbent materials.
    - Do not allow discharges to the storm drain.
    - Appropriately dispose of spilled materials and absorbents.
6. When conducting surface repair work:
    - Pre-heat, transfer or load hot bituminous material away from storm drain inlets.
    - Conduct surface repair work during dry weather to prevent contamination from contacting stormwater runoff.
    - Cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and clean any debris for proper disposal.
    - To avoid runoff, use only as much water as necessary for dust control.
    - Use drip pans or absorbent material to catch drips from paving equipment that is not in use. Dispose of collected material and absorbents properly.
7. Conduct inspections on a regular basis.
    - Designate personnel to conduct inspections of the parking facilities and stormwater conveyance systems associated with them.
    - Inspect cleaning equipment/sweepers for leaks on a regular basis.
8. Keep accurate maintenance logs to evaluate materials removed/stored and improvements made.
9. Arrange rooftop drains to prevent drainage directly onto paved surfaces.

Training

1. Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
2. Train employees on proper spill containment and cleanup.
    - Establish training that provides employees with the proper tools and knowledge to immediately begin cleaning up a spill.
    - Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
    - Fact sheet IC17 discusses Spill Prevention and Control in detail.
3. Provide regular training to field employees and/or contractors regarding cleaning of paved areas and proper operation of equipment.
4. Establish a regular training schedule, train all new employees, and conduct annual refresher training.
5. Use a training log or similar method to document training.

Stencil storm drains

Storm drain system signs act as highly visible source controls that are typically stenciled directly adjacent to storm drain inlets. Stencils should read "No Dumping Drains to Ocean".

References

California Storm Water Best Management Practice Handbook. Industrial and Commercial. 2003. www.cabmphandbooks.com

California Storm Water Best Management Practice Handbooks. Industrial/Commercial Best Management Practice Handbook. Prepared by Camp Dresser& McKee, Larry Walker Associates, Uribe and Associates, Resources Planning Associates for Stormwater Quality Task Force. March 1993.

King County Stormwater Pollution Control Manual. Best Management Practices for Businesses. King County Surface Water Management. July 1995. On-line: http://dnr.metrokc.gov/wlr/dss/spcm.htm

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

Stormwater Management Manual for Western Washington. Volume IV Source Control BMPs. Prepared by Washington State Department of Ecology Water Quality Program. Publication No. 99-14. August 2001.

For additional information contact:

County of Orange/ OC Watersheds
Main: (714) 955-0600
24 hr Water Pollution Hotline: 1-877-89-SPILL
or visit our website at www.ocwatersheds.com

IC16. POOL AND FOUNTAIN CLEANING

Best Management Practices (BMPs)

A BMP is a technique, measure or structural control that is used for a given set of conditions to improve the quality of the stormwater runoff in a cost effective manner[1]. The minimum required BMPs for this activity are outlined in the box to the right. Implementation of pollution prevention/good housekeeping measures may reduce or eliminate the need to implement other more costly or complicated procedures. Proper employee training is key to the success of BMP implementation.

MINIMUM BEST MANAGEMENT PRACTICES

Pollution Prevention/Good Housekeeping

- Prevent algae problems with regular cleaning, consistent adequate chlorine levels, and well-maintained water filtration and circulation systems.
- Discharge pool and fountain water properly.

Stencil storm drains

Training

- Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
- Provide on-going employee training in pollution prevention.

The BMPs outlined in this fact sheet target the following pollutants:

Targeted Constituents	
Sediment	x
Nutrients	x
Floatable Materials	x
Metals	
Bacteria	x
Oil & Grease	
Organics & Toxicants	x
Pesticides	x
Oxygen Demanding	x

Provided below are specific procedures associated with each of the minimum BMPs along with procedures for additional BMPs that should be considered if this activity takes place at a facility located near a sensitive waterbody. In order to meet the requirements for medium and high priority facilities, the owners/operators must select, install and maintain appropriate BMPs on site. Since the selection of the appropriate BMPs is a site-specific process, the types and numbers of additional BMPs will vary for each facility.

1. Prevent algae problems with regular cleaning, consistent adequate chlorine levels, and well-maintained water filtration and circulation systems.
    - Do not use copper-based algaecides.
    - Control algae with chlorine or other alternatives, such as sodium bromide.
2. Manage pH and water hardness to minimize corrosion of copper pipes.
3. Discharge pool and fountain water properly. Consider hiring a professional pool-draining service to collect all pool water for off-site disposal. If this is not feasible, adhere to the following:
    - When draining pools or fountains never discharge water to a street or storm drain, discharge to the sanitary sewer if permitted to do so. Refer to fact sheet *IC24 Wastewater Disposal* for guidance on appropriate methods for disposal of wash water to the sanitary sewer.
    - If draining a pool to the sanitary sewer, prevent backflow by maintaining an "air gap" between the discharge line and the sewer line (do not seal the connection between the hose and sewer line). Be sure to call the local sewer authority for guidance on flow rate restrictions, backflow prevention, and handling special cleaning waste (such as acid wash). Keep discharge flows to the low levels. Higher flow rates may be prohibited by local ordinance.

[1] EPA " *Preliminary Data Summary of Urban Stormwater Best Management Practices"*

- If water is dechlorinated with a neutralizing chemical or by allowing chlorine to dissipate for a few days (do not use the facility during this time), the water may be recycled/reused by draining it gradually onto a landscaped area. Water must be tested prior to discharge to ensure that chlorine is not present.
- Provide drip pans or buckets beneath drain pipe connections to catch leaks. This will be especially pertinent if pool or spa water that has not been dechlorinated is pumped through piping to a discharge location.

4. Properly clean and/or dispose of filters.
    - Never clean a filter in the street or near a storm drain.
    - Rinse cartridge filters onto a dirt area, and work filter residue into soil.
    - Backwash diatomaceous earth filters onto dirt. Dispose of spent diatomaceous earth in the garbage. Diatomaceous earth cannot be discharged to surface waters, storm drainage systems, septic systems, or on the ground.
    - If there is not a suitable dirt area, discharge filter backwash or rinsewater to the sanitary sewer if permitted to do so by the local sewering agency.

Training

1. Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
2. Train employees on proper spill containment and cleanup.
    - Establish training that provides employees with the proper tools and knowledge to immediately begin cleaning up a spill.
    - Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
    - Fact sheet IC17 discusses Spill Prevention and Control in detail.
3. Train maintenance personnel on the proper techniques for testing chlorine levels and applying neutralizing chemicals.
4. Establish a regular training schedule, train all new employees, and conduct annual refresher training.
5. Use a training log or similar method to document training.

Stencil storm drains

Storm drain system signs act as highly visible source controls that are typically stenciled directly adjacent to storm drain inlets. Stencils should read "No Dumping Drains to Ocean".

References

California Storm Water Best Management Practice Handbook. Industrial and Commercial. 2003. www.cabmphandbooks.com

King County Stormwater Pollution Control Manual. Best Management Practices for Businesses. 1995. King County Surface Water Management. July. On-line: http://dnr.metrokc.gov/wlr/dss/spcm.htm

Los Angeles County Stormwater Quality. Public Agency Activities Model Program. On-line: http://ladpw.org/wmd/npdes/public_TC.cfm

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

Santa Clara Valley Urban Runoff Pollution Prevention Program. Maintenance Best Management Practices for the Construction Industry. Brochures: Landscaping, Gardening, and Pool; Roadwork and Paving; and Fresh Concrete and Mortar Application. June 2001.

For additional information contact:

County of Orange/ OC Watersheds
Main: (714) 955-0600
24 hr Water Pollution Hotline: 1-877-89-SPILL
or visit our website at www.ocwatersheds.com

IC17. SPILL PREVENTION AND CLEANUP

Best Management Practices (BMPs)

A BMP is a technique, measure or structural control that is used for a given set of conditions to improve the quality of the stormwater runoff in a cost effective manner[1]. The minimum required BMPs for this activity are outlined in the box to the right. Implementation of pollution prevention/good housekeeping measures may reduce or eliminate the need to implement other more costly or complicated procedures. Proper employee training is key to the success of BMP implementation.

MINIMUM BEST MANAGEMENT PRACTICES

Pollution Prevention/Good Housekeeping

- Develop procedures to prevent/mitigate spills to storm drain systems.
- Post "No Dumping" signs with a phone number for reporting illegal dumping and disposal.
- Conduct routine cleaning, inspections, and maintenance.
- Properly store and handle chemical materials.
- Protect materials stored outside from stormwater runon.
- Secure drums stored in an area where unauthorized persons may gain access to prevent accidental spillage, pilferage, or any unauthorized use.
- Identify key spill response personnel.
- Clean up leaks and spills immediately.
- Report and track spills.

Stencil storm drains

Training

- Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
- Provide on-going employee training in pollution prevention.

The BMPs outlined in this fact sheet target the following pollutants:

Targeted Constituents	
Sediment	x
Nutrients	x
Floatable Materials	x
Metals	x
Bacteria	x
Oil & Grease	x
Organics & Toxicants	x
Pesticides	x
Oxygen Demanding	x

Provided below are specific procedures associated with each of the minimum BMPs along with procedures for additional BMPs that should be considered if this activity takes place at a facility located near a sensitive waterbody. In order to meet the requirements for medium and high priority facilities, the owners/operators must select, install and maintain appropriate BMPs on site. Since the selection of the appropriate BMPs is a site-specific process, the types and numbers of additional BMPs will vary for each facility.

Spill Prevention

1. Develop procedures to prevent/mitigate spills to storm drain systems.
   Standardize reporting procedures, containment, storage, and disposal activities, documentation, and follow-up procedures.
2. Post "No Dumping" signs with a phone number for reporting illegal dumping and disposal.
3. Conduct routine cleaning, inspections, and maintenance
   - Sweep and clean storage areas consistently at a designated frequency (e.g. weekly, monthly). DO NOT hose down areas to storm drains.
   - Place drip pans or absorbent materials beneath all mounted taps, and at all potential drip and spill locations during filling and unloading of tanks. Reuse, recycle, or properly dispose of any collected liquids or soiled absorbent materials.
   - Check tanks (and any containment sumps) frequently for leaks and spills. Replace tanks that are leaking, corroded, or otherwise deteriorating with tanks in good condition. Collect all spilled liquids and properly dispose of them.

[1] EPA " *Preliminary Data Summary of Urban Stormwater Best Management Practices"*

- Check for external corrosion of material containers, structural failures, spills and overfills due to operator error, failure of piping system, etc.
- Inspect tank foundations, connections, coatings, and tank walls and piping system.

4. Properly store and handle chemical materials.
    - Designate a secure material storage area that is paved with Portland cement concrete, free of cracks and gaps, and impervious in order to contain leaks and spills.
    - Do not store chemicals, drums, or bagged materials directly on the ground. Place these items in secondary containers.
    - Keep chemicals in their original containers, if feasible.
    - Keep containers well labeled according to their contents (e.g., solvent, gasoline).
    - Label hazardous substances regarding the potential hazard (corrosive, radioactive, flammable, explosive, poisonous).
    - Prominently display required labels on transported hazardous and toxic materials (per US DOT regulations).
5. Utilize secondary containment systems for liquid materials.
    - Surround storage tanks with a berm or other secondary containment system.
    - Slope the area inside the berm to a drain.
    - Drain liquids to the sanitary sewer if available. DO NOT discharge wash water to sanitary sewer until contacting the local sewer authority to find out if pretreatment is required
    - Pass accumulated stormwater in petroleum storage areas through an oil/water separator.
    - Use catch basin filtration inserts.
6. Protect materials stored outside from stormwater runon. Construct a berm around the perimeter of the material storage area to prevent the runon of uncontaminated stormwater from adjacent areas as well as runoff of stormwater from the material.
7. Secure drums stored in an area where unauthorized persons may gain access to prevent accidental spillage, pilferage, or any unauthorized use.

Spill Control and Cleanup Activities

8. Identify key spill response personnel.
9. Adopt the Orange County Hazardous Materials Area Plan or an equivalent plan, which includes a set of planned responses to hazardous materials emergencies. The plan should include:
    - Description of the facility, owner and address, activities and chemicals present
    - Facility map
    - Notification and evacuation procedures
    - Cleanup instructions
    - Identification of responsible departments
10. Clean up leaks and spills immediately.
    - Place a stockpile of spill cleanup materials where they will be readily accessible (e.g. near storage and maintenance areas).
    - Utilize dry cleaning methods to clean up spills to minimize the use of water. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous waste. Physical methods for the cleanup of dry chemicals include the use brooms, shovels, sweepers, or plows.
    - Never hose down or bury dry material spills. Sweep up the material and dispose of properly.
    - Clean up chemical materials with absorbents, gels, and foams. Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.
    - For larger spills, a private spill cleanup company or Hazmat team may be necessary.

11. Reporting
    1. Report spills that pose an immediate threat to human health or the environment to local agencies, such as the fire department, and the Regional Water Quality Control Board.
    2. Establish a system for tracking incidents. The system should be designed to identify the following:
        - Types and quantities (in some cases) of wastes
        - Patterns in time of occurrence (time of day/night, month, or year)
        - Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
        - Responsible parties
    3. Federal regulations require that any oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hour).

Training
1. Educate employees about spill prevention and cleanup.
    - Establish training that provides employees with the proper tools and knowledge to immediately begin cleaning up a spill.
    - Educate employees on aboveground storage tank requirements.
    - Train all employees upon hiring and conduct annual refresher training.
2. Train employees responsible for aboveground storage tanks and liquid transfers on the Spill Prevention Control and Countermeasure Plan.

Stencil storm drains

Storm drain system signs act as highly visible source controls that are typically stenciled directly adjacent to storm drain inlets. Stencils should read "No Dumping Drains to Ocean".

References

California Storm Water Best Management Practice Handbook. Industrial and Commercial. 2003. www.cabmphandbooks.com

California Storm Water Best Management Practice Handbooks. Industrial/Commercial Best Management Practice Handbook. Prepared by Camp Dresser& McKee, Larry Walker Associates, Uribe and Associates, Resources Planning Associates for Stormwater Quality Task Force. March 1993.

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

Stormwater Management Manual for Western Washington. Volume IV Source Control BMPs. Prepared by Washington State Department of Ecology Water Quality Program. Publication No. 99-14. August 2001.

For additional information contact:

County of Orange/ OC Watersheds
Main: (714) 955-0600
24 hr Water Pollution Hotline: 1-877-89-SPILL
or visit our website at www.ocwatersheds.com

IC21. WASTE HANDLING AND DISPOSAL

Best Management Practices (BMPs)

A BMP is a technique, measure or structural control that is used for a given set of conditions to improve the quality of the stormwater runoff in a cost effective manner[1]. The minimum required BMPs for this activity are outlined in the box to the right. Implementation of pollution prevention/good housekeeping measures may reduce or eliminate the need to implement other more costly or complicated procedures. Proper employee training is key to the success of BMP implementation.

MINIMUM BEST MANAGEMENT PRACTICES

Pollution Prevention/Good Housekeeping

- Prevent waste materials from coming in direct contact with wind or rain. .
- Keep waste collection areas clean.
- Secure solid waste containers when not in use.
- Regularly inspect, repair, and/or replace waste containers.
- Use all of a product before disposing of the container.
- Label and store hazardous wastes according to hazardous waste regulations.

Stencil storm drains

Training

- Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
- Provide on-going employee training in pollution prevention.

The BMPs outlined in this fact sheet target the following pollutants:

Targeted Constituents	
Sediment	x
Nutrients	x
Floatable Materials	x
Metals	x
Bacteria	x
Oil & Grease	x
Organics & Toxicants	x
Pesticides	x
Oxygen Demanding	x

Provided below are specific procedures associated with each of the minimum BMPs along with procedures for additional BMPs that should be considered if this activity takes place at a facility located near a sensitive waterbody. In order to meet the requirements for medium and high priority facilities, the owners/operators must select, install and maintain appropriate BMPs on site. Since the selection of the appropriate BMPs is a site-specific process, the types and numbers of additional BMPs will vary for each facility.

1. Prevent waste materials from coming in direct contact with wind or rain.
    - Cover the waste management area with a permanent roof.
    - If this is not feasible, cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropylene, or hypalon.
    - Cover dumpsters to prevent rain from washing out waste materials.
2. Design waste handling and disposal area to prevent stormwater runon.
    - Enclose the waste handling and disposal area or build a berm around it.
    - Position roof downspouts to direct stormwater away from waste handling and disposal area.
3. Design waste handling and disposal area to contain spills.
    - Place dumpsters or other waste receptacles on an impervious surface.
    - Construct a berm around the area to contain spills.
    - Install drains connected to the public sewer or the facility's process wastewater system within these contained areas. DO NOT discharge to a public sewer until contacting the local sewer authority to find out if pretreatment is required.

[1] EPA " *Preliminary Data Summary of Urban Stormwater Best Management Practices"*

4. Keep waste collection areas clean.
    - When cleaning around waste handling and disposal areas use dry methods when possible (e.g. sweeping, use of absorbents).
    - If water must be used, collect water and discharge to the sewer if permitted to do so. DO NOT discharge to a public sewer until contacting the local sewer authority to find out if pretreatment is required. If discharge to the sanitary sewer is not allowed, pump water to a tank and dispose of properly.
    - Post "No Littering" signs.
5. Secure solid waste containers when not in use.
6. Regularly inspect, repair, and/or replace waste containers.
7. Do not fill waste containers with washout water or any other liquid.
8. Use all of a product before disposing of the container.
9. Segregate wastes by type and label and date wastes.
    - Do not mix wastes; this can cause chemical reactions, make recycling impossible, and complicate disposal.
    - Ensure that only appropriate solid wastes are added to solid waste containers.
    - Certain wastes such as hazardous wastes, appliances, fluorescent lamps, pesticides, etc. may not be disposed of in solid waste containers.
10. Label and store hazardous wastes according to hazardous waste regulations.
    - Consult your local hazardous waste agency or Fire Department for details.
    - Obtain a hazardous waste generator license or permit if necessary.
12. Minimize waste.
    - Recycle materials whenever possible.
    - Modify processes or equipment to increase efficiency.
    - Identify and promote use of non-hazardous alternatives.
    - Reduction in the amount of waste generated can be accomplished using many different types of source controls such as:
        - Production planning and sequencing
        - Process or equipment modification
        - Raw material substitution or elimination
        - Loss prevention and housekeeping
        - Waste segregation and separation
        - Close loop recycling
    - Establish a material tracking system to increase awareness about material usage. This may reduce spills and minimize contamination, thus reducing the amount of waste produced.

Training

1. Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
2. Train employees in proper waste handling and disposal.
3. Train employees on proper spill containment and cleanup.
    - Establish training that provides employees with the proper tools and knowledge to immediately begin cleaning up a spill.
    - Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
    - Fact sheet IC17 discusses Spill Prevention and Control in detail.

4. Establish a regular training schedule, train all new employees, and conduct annual refresher training.
5. Use a training log or similar method to document training.

Stencil storm drains

Storm drain system signs act as highly visible source controls that are typically stenciled directly adjacent to storm drain inlets. Stencils should read “No Dumping Drains to Ocean”.

References

California Storm Water Best Management Practice Handbook. Industrial and Commercial. 2003. www.cabmphandbooks.com

California Storm Water Best Management Practice Handbooks. Industrial/Commercial Best Management Practice Handbook. Prepared by Camp Dresser& McKee, Larry Walker Associates, Uribe and Associates, Resources Planning Associates for Stormwater Quality Task Force. March 1993.

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

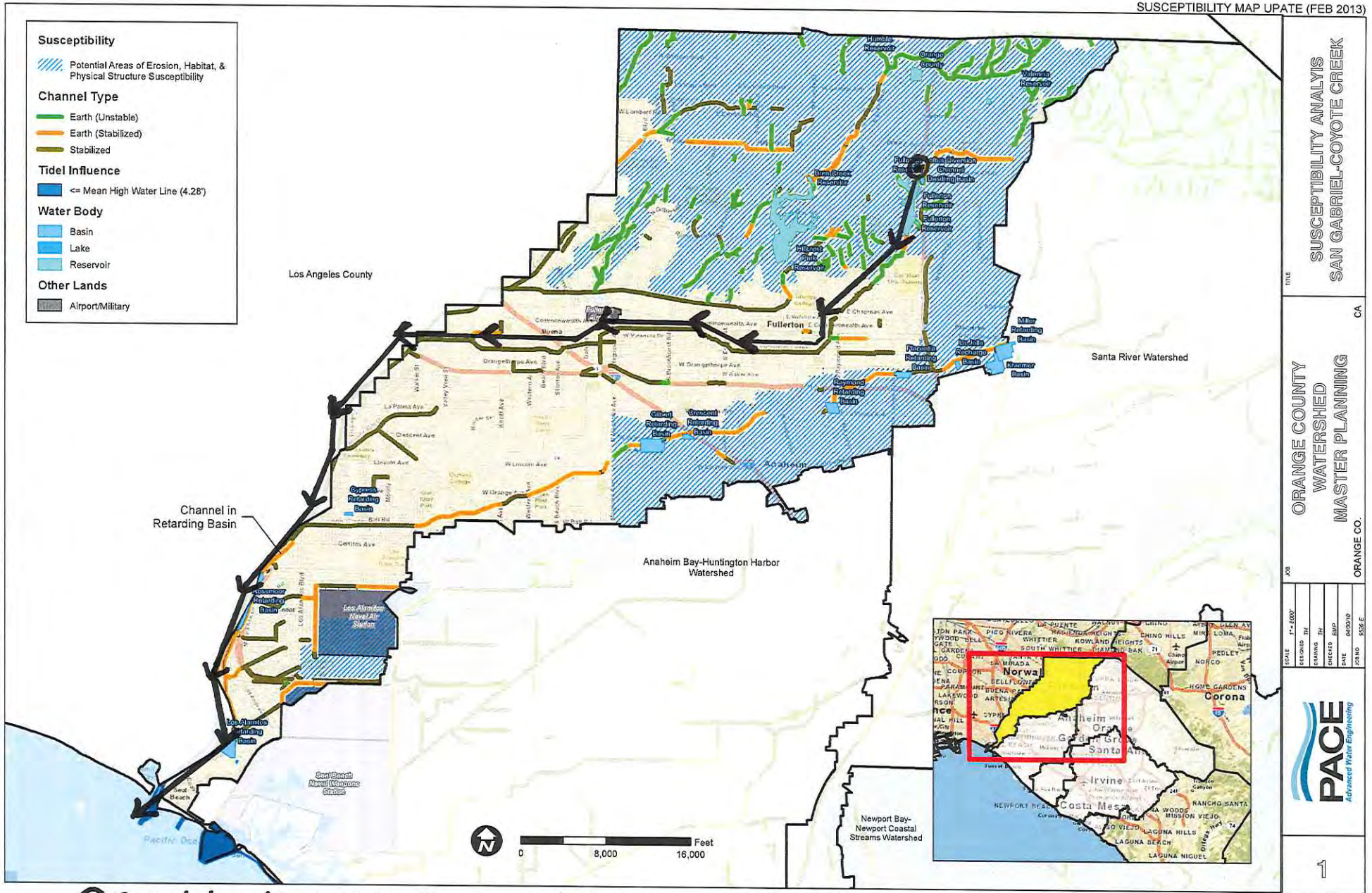
For additional information contact:

County of Orange/ OC Watersheds
Main: (714) 955-0600
24 hr Water Pollution Hotline: 1-877-89-SPILL
or visit our website at www.ocwatersheds.com

APPENDIX C

SUSCEPTIBILITY ANALYSIS MAP FOR SAN GABRIEL-COYOTE CREEK WATERSHED

SUSCEPTIBILITY MAP UPATE (FEB 2013)



SUSCEPTIBILITY ANALYIS
SAN GABRIEL-COYOTE CREEK

ORANGE COUNTY
WATERSHED
MASTER PLANNING

ORANGE CO. CA

PACE
Advanced Water Engineering

1

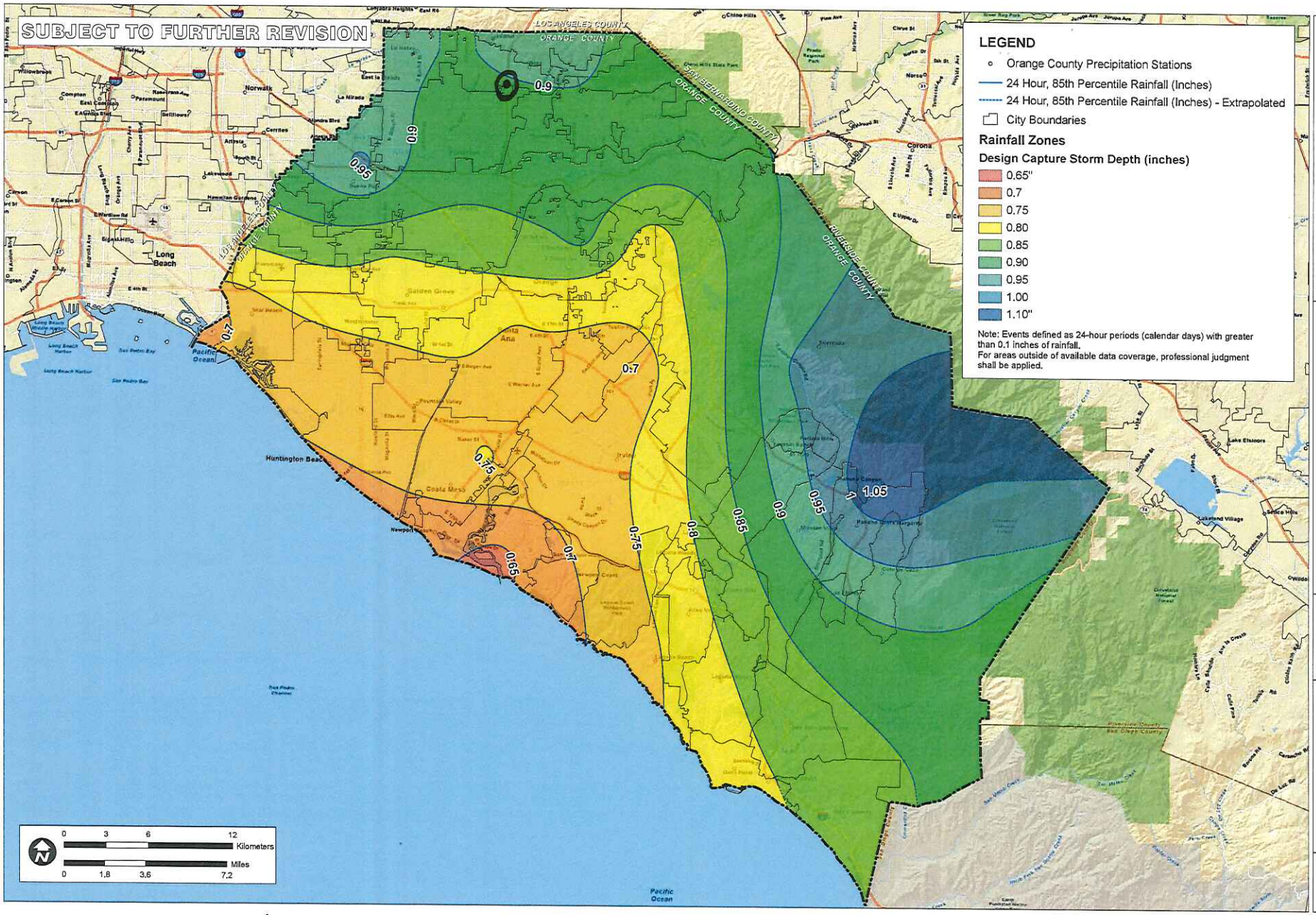
P:\952EM-GIS\Mxd\Susceptibility\Maps_20100505\V52AE_SanGabrielCoyoteCreek\Susceptibility_20100430.mxd

Project Location: 1639 E. Imperial Hwy, Brea, CA 92821

Drainage Flow From Project Site to Pacific Ocean

APPENDIX D

RAINFALL ZONE MAP FOR ORANGE COUNTY



TITLE: RAINFALL ZONES

ORANGE COUNTY TECHNICAL GUIDANCE DOCUMENT

JOB: ORANGE CO. CA

SCALE	1" = 18 miles
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	04/2010
JOB NO	9526.E

PACE Advanced Water Engineering

FIGURE XVI-1

P:\9526E\A-GIS\Mxd\Reports\Infiltration Feasibility_20110215\9526E_FigureXVI-1_RainfallZones_20110215.mxd

Project Location: 1639 E. Imperial Hwy., Brea, CA 92821

APPENDIX E

SOUTHERN CALIFORNIA GEOTECHNICAL, INC.'S GEOTECHNICAL FEASIBILITY STUDY, PROPOSED BREA PLAZA MIXED USE DEVELOPMENT, NWC IMPERIAL HIGHWAY AT ASSOCIATED ROAD, BREA, CALIFORNIA, DATED JULY 30, 2020

GEOTECHNICAL FEASIBILITY STUDY
PROPOSED BREA PLAZA
MIXED USE DEVELOPMENT

NWC Imperial Highway at Associated Road
Brea, California
For
BOSC Realty Advisors

SOUTHERN
CALIFORNIA
GEOTECHNICAL
A California Corporation

July 30, 2020

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BOSC Realty Advisors
888 W. Big Beaver Road, Suite 200
Troy, Michigan 48084

Attention: Mr. Waad J. Nadhir

Project No.: **20G168-1**

Subject: **Geotechnical Feasibility Study**
Proposed Brea Plaza Mixed Use Development
NWC Imperial Highway at Associated Road
Brea, California

Gentlemen:

In accordance with your request, we have conducted a geotechnical feasibility study at the subject site. We are pleased to present this report summarizing the conclusions and recommendations developed from our investigation.

We sincerely appreciate the opportunity to be of service on this project. We look forward to providing additional consulting services during the course of the project. If we may be of further assistance in any manner, please contact our office.

Respectfully Submitted,

SOUTHERN CALIFORNIA GEOTECHNICAL, INC.

Gregory K. Mitchell, GE 2364
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
GREGORY K. MITCHELL
No. 2364
GEOTECHNICAL
STATE OF CALIFORNIA

Robert G. Trazo, M.Sc., GE 2655
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
ROBERT TRAZO
No. 2655
GEOTECHNICAL
STATE OF CALIFORNIA

Distribution: (1) Addressee

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY 1

2.0 SCOPE OF SERVICES 3

3.0 SITE AND PROJECT DESCRIPTION 4

3.1 Site Conditions 4
3.2 Proposed Development 4

4.0 SUBSURFACE EXPLORATION 7

4.1 Scope of Exploration/Sampling Methods 7
4.2 Geotechnical Conditions 7

5.0 LABORATORY TESTING 9

6.0 CONCLUSIONS AND RECOMMENDATIONS 11

6.1 Seismic Design Considerations 11
6.2 Preliminary Geotechnical Design Considerations 13
6.3 Preliminary Site Grading Recommendations 15
6.4 Construction Considerations 18
6.5 Preliminary Foundation Design and Construction Recommendations 20
6.6 Preliminary Floor Slab Design and Construction Recommendations 21
6.7 Preliminary Retaining Wall Design and Construction 22
6.8 Preliminary Pavement Design Parameters Recommendations 24

7.0 GENERAL COMMENTS 27

APPENDICES

A Plate 1: Site Location Map
Plate 2: Boring Location Plan
B Boring Logs
C Laboratory Test Results
D Grading Guide Specifications
E Seismic Design Parameters
F Excerpts from Previous Geotechnical Reports

1.0 EXECUTIVE SUMMARY

Presented below is a brief summary of the conclusions and recommendations of this investigation. Since this summary is not all inclusive, it should be read in complete context with the entire report. It should be noted that this investigation was focused on determining the geotechnical feasibility of the proposed development. **This report is not a design-level investigation. Future studies, potentially including additional subsurface exploration, will be necessary to refine the preliminary design parameters that are presented within this report**.

Geotechnical Design Considerations

- Undocumented fill soils at borings drilled within the development area extend to depths of 5 to 10± feet below the existing site grades. The existing fill soils possess variable composition and strength, and are considered to represent undocumented fill. The results of laboratory testing indicate that some of the near-surface soils are compressible when loaded.
- The fill soils are underlain by high strength native terrace deposits.
- The proposed development is considered to be feasible with respect to the geotechnical conditions encountered at the boring locations at the site. The proposed structures will have relatively high column loads. The most feasible means of supporting the new structures is considered to be the use of shallow foundations supported within the terrace deposits. In any areas where the foundations do not extend into the terrace deposits, remedial grading will be necessary to remove and replace the existing undocumented fill soils.
- The proposed development includes two sections of office building that will be constructed over existing retail buildings. These structures will likely require deep foundations to reduce the impact to the existing retail tenants, and to avoid surcharging the foundations of the existing buildings.
- Based on the results of corrosivity testing, the on-site soils are considered to be corrosive to ductile iron and cast iron pipe.

Preliminary Site Preparation Recommendations

- Demolition of several structures associated with the existing development and areas of existing pavements will be required in order to facilitate construction of the new buildings. Debris resultant from demolition should be disposed of off-site. Alternatively, concrete and asphalt debris may be pulverized to a maximum 2-inch particle size, well mixed with the on-site soils, and incorporated into new structural fills or it may be crushed and made into crushed miscellaneous base (CMB).
- Preliminarily, the overexcavation within the building areas is recommended to extend to depths of at least 2 to 3 feet below existing and proposed building pad subgrade elevations, to provide a suitable floor slab subgrade. No specific overexcavation is expected to be necessary where foundations extend into the terrace deposits. Where foundations are not extended into the terrace deposits, overexcavation should be performed to remove all of the existing undocumented fill soils, and to a depth of at least 3 to 5 feet below bearing grade within the influence zones of any new foundations. These recommendations are subject to review and may be revised based on the results of the design-level geotechnical investigation.
- Preliminarily, the new parking area subgrade soils are recommended to be scarified to a depth of 12± inches, thoroughly moisture conditioned to within 2 to 4 percent above the optimum

moisture content and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density.

Preliminary Foundation Design Recommendations

- Conventional shallow foundations, supported in newly placed compacted fill.
- 4,000 to 5,000 lbs/ft^2 maximum allowable soil bearing pressure for footings supported in dense to very dense terrace deposits.
- 2,500 to 3,000 lbs/ft^2 maximum allowable soil bearing pressure for footings supported in structural fill.
- The design of the foundations will depend on the results of the future design-level geotechnical study. Minimum recommended reinforcement based on geotechnical conditions is expected to consist of four (4) No. 5 rebars (2 top and 2 bottom) in strip footings. Additional reinforcement may be necessary for structural considerations.

Preliminary Floor Slab Design Recommendations

- Conventional slabs-on-grade, minimum 5 to 6 inches thick.
- Steel reinforcement is expected to be necessary, based on the presence of expansive soils.
- The design of the floor slabs will depend on the results of the future design-level geotechnical study. The actual thickness and reinforcement of the floor slabs should be determined by the structural engineer.

Preliminary Pavement Design Recommendations

ASPHALT PAVEMENTS (R = 10)				
Materials	**Thickness (inches)**			
	Auto Parking (TI = 4.0)	Auto Drive Lanes (TI = 5.0)	Truck Traffic	
			(TI = 6.0)	(TI = 7.0)
Asphalt Concrete	3	3	3½	4
Aggregate Base	6	9	11	15
Compacted Subgrade	12	12	12	12

PORTLAND CEMENT CONCRETE PAVEMENTS (R = 10)			
Materials	**Thickness (inches)**		
	Auto Parking & Drives (TI = 5.0)	Truck Traffic	
		(TI = 6.0)	(TI = 7.0)
PCC	5	5½	6
Compacted Subgrade (95% Relative Compaction)	12	12	12

2.0 SCOPE OF SERVICES

The scope of services performed for this project was in general accordance with our Proposal No. 20P269, dated June 29, 2020. The scope of services included a visual site reconnaissance, subsurface exploration, field and laboratory geotechnical testing, and geotechnical engineering analysis to determine the geotechnical feasibility of the proposed development. This report also contains preliminary design criteria for building foundations, building floor slabs, and parking lot pavements. The evaluation of the environmental aspects of this site was beyond the scope of services for this feasibility study.

It should be noted that additional subsurface exploration, laboratory testing and engineering analysis will be necessary to provide a design-level geotechnical report, with specific foundation, floor slab, and grading recommendations for the new structures.

3.0 SITE AND PROJECT DESCRIPTION

3.1 Site Conditions

Brea Plaza Center is located at the northwest corner of Imperial Highway and Associated Road, in Brea, California. The overall site is bounded to the north by existing single-family residences, to the west by the 57 freeway, to the south by Imperial Highway, and to the east by Associated Road. The general location of the site is illustrated on the Site Location Map, enclosed as Plate 1 in Appendix A of this report.

Brea Plaza is a retail shopping center, approximately 15 acres in size. The specific subject site is a roughly L-shaped area, 2.7± acres in size, located in the western region of Brea Plaza, adjacent to the 57 Freeway. The subject site is presently developed with a Buca de Beppo restaurant, a Custom Comfort Mattress store, a movie theater, and a multi-tenant retail building. The remainder of the subject site is covered by asphaltic concrete (AC) pavements that are used for automobile and truck parking and drive lanes. Limited areas of the subject site are paved with Portland cement concrete (PCC) pavements. Concrete flatwork and landscaped planters are located throughout the existing development. The remaining areas of the Brea Plaza Center are developed with similar retail and restaurant buildings and AC pavements.

Topographic information for the site was obtained from a site plan provided by Architects Orange. The site topography slopes from the northwest corner towards the southeast. The elevation at the subject site generally ranges from 336± feet mean sea level (msl) in the northern region of the subject site to 329± feet msl in the southern region.

3.2 Proposed Development

A preliminary site plan was provided to our office by the client. The site will be developed with several new structures including a hotel, residential apartments, a restaurant, a self-storage building and an office building. The hotel will be located in the southwestern region of the site, will have a footprint of 15,000 to 20,000± ft² and will be 6 stories in height. The restaurant will be incorporated into the first story of the hotel. The apartment building will be located in the northern region of the site, and will have a footprint of 45,000± ft². This building will be a total of 7 stories in height, with the lower two levels consisting of a parking structure. The self-storage facility will be incorporated into the residential building. Two areas of new offices will be constructed over portions of the existing multi-tenant retail building and the Custom Comfort Mattress store. The office building will be 3 stories in height, with a footprint of 8,000± ft². The existing movie theater and Buco de Beppo restaurant will be demolished as part of the redevelopment. The buildings will be surrounded by asphaltic concrete or Portland cement concrete pavements for automobile parking and drive lanes. The proposed development is also expected to include some areas of concrete flatwork and landscape planters.

Preliminary structural information was obtained from the project structural engineer, Ficcadenti, Waggoner and Castle (FWC). We understand that the first floor of the hotel structure will consist

of a concrete podium below 5 levels of wood-frame construction. The residential building will be 2 levels of concrete podium and 5 levels of wood frame construction. The two sections of office building will consist of steel frame construction. New foundations will be required within the existing multi-tenant retail building that will remain in place below the new office building. Preliminary information provided by FWC indicates that typical maximum column loads for the proposed structures will be as follows:

ESTIMATED COLUMN LOADS

Structure	Dead Load	Sustained Live Load	Transient Live Load
Residential Building	625 kips	45 kips	180 kips
Hotel Building	475 kips	35 kips	140 kips
Office Building	350 kips	60 kips	90 kips

FWC has indicated that some isolated foundations may have slightly higher loads.

No significant amounts of below-grade construction, such as basements or crawl spaces, are expected to be included in the proposed development. Based on the assumed topography, cuts and fills of up to 3 to 6± feet are expected to be necessary to achieve the proposed site grades.

3.3 Previous Studies

Southern California Geotechnical, Inc. (SCG) was provided with a copy of a previous study conducted for the overall site by Pacific Soils Engineering (PSE). This document was prepared for storm drain improvements that have since been constructed in the eastern region of the Brea Plaza site. The report also included a summary of data collected during previous investigations at the site. A summary of the relevant information pertaining to the subject site from this document is presented below:

> Preliminary Geotechnical Investigation, Proposed Storm Drain Improvements for the Loftus Diversion Channel and the Brea Plaza Shopping Center, Northwest Corner of Imperial Highway and Associated Road, City of Brea, California, Prepared by Pacific Soils Engineering, Inc., dated March 26, 2008, Work Order 500690.

The overall subsurface exploration for this project consisted of thirteen (13) borings and ten (10) cone penetration tests. Boring Nos. HS-03, HS-04, HS-05, and HS-07, as well as CPT Nos. CPT-1, CPT-3, and CPT-4 were within the area of the specific subject site and will be the focus of this summary. The borings were advanced to depths of up to 21½ to 31½± feet below the existing site grades. Engineered fill soils were reportedly encountered beneath the pavements at several of the boring locations. It should be noted that PSE did not provide any documentation to confirm that the existing fill soils were monitored and tested during placement. The fill soils extended to depths of up to 2 to 10± feet below grade at these boring locations, and generally consisted of medium dense to dense medium dense to dense clayey sand, silty sand and sandy clay. Beneath the fill materials, all of the borings encountered terrace deposits, extending to at least the maximum depth explored of 31± feet. The terrace deposits generally consisted of stiff to hard sandy clay, dense to very dense sandy silt, silty sand, and clayey sand. Occasional layers of

gravelly sand and clayey silt were encountered. The results of expansion index testing performed for this report identified low to highly expansive soils at the boring locations. Ground water was encountered at most borings at depths between 10 and 30± feet (El. 303±). The report also notes that layers of perched groundwater were encountered during the investigation.

In Appendix D of this report, a previous report performed for the subject site was reviewed and summarized:

> Geotechnical Investigation, Proposed Shopping Center, Imperial Highway at Orange Freeway, Brea, California, Prepared by Converse Davis Dixon Associates, dated July 21, 1975, Project No. A-75-587-A.

The exploration for this investigation consisted of 12 borings advanced to depths of 3 to 30± feet below the site grades. The borings were advanced with a truck-mounted, rotary drilling machine equipped with a 16 to 20-inch diameter drilling bucket. Boring Nos. CD BH-3 through CD BH-5 are located within the subject site. Native alluvial soils were encountered at the ground surface of these 3 borings. The near surface alluvium within the upper 6½± feet generally consisted of stiff to very stiff clay and silty clay. Deeper alluvial soils, extending to at least 20± feet below ground surface, generally consisted of medium dense to very dense silty sand, sandy silt and silt. Occasional layers of very stiff/very dense sandy clay and clayey sand were encountered. Swell tests were conducted on Boring Nos. CD BH-3 and CD BH-5, results showed a 9.7 and 7.7 percent swell, respectively. No groundwater was encountered during the drilling of the relevant borings.

The relevant boring logs and lab data from the previous geotechnical reports are included in Appendix F of this report.

4.0 SUBSURFACE EXPLORATION

4.1 Scope of Exploration/Sampling Methods

The subsurface exploration conducted for this project consisted of four (4) borings (identified as Boring Nos. B-1 through B-4) advanced to depths of 25 to 50± feet below the existing site grades. All of the borings were logged during drilling by a member of our staff.

The borings were advanced with hollow-stem augers by a conventional truck-mounted drilling rig. Representative bulk and relatively undisturbed soil samples were taken during drilling. Relatively undisturbed soil samples were taken with a split barrel "Modified California Sampler" containing a series of one inch long, 2.416± inch diameter brass rings. This sampling method is described in ASTM Test Method D-3550. In-situ samples were also taken using a 1.4± inch inside diameter split spoon sampler, in general accordance with ASTM D-1586. At all of the boring locations these samplers are driven into the ground with successive blows of a 140-pound weight falling 30 inches. The blow counts obtained during driving are recorded for further analysis. Bulk samples were collected in plastic bags to retain their original moisture content. The relatively undisturbed ring samples were placed in molded plastic sleeves that were then sealed and transported to our laboratory.

The approximate locations of the borings are indicated on the Boring Location Plan, included as Plate 2 in Appendix A of this report. The Boring Logs, which illustrate the conditions encountered at the boring locations, as well as the results of some of the laboratory testing, are included in Appendix B.

4.2 Geotechnical Conditions

Pavements

Asphaltic concrete pavements were encountered at the ground surface of all boring locations. The pavement sections at these locations generally consists of 3 to 8± inches of AC underlain by 5 to 7± inches of crushed aggregate base.

Artificial Fill

Artificial fill soils were encountered beneath the pavements at Boring Nos. B-2 through B-4, extending to depths of 5½ to 6½± feet below the existing site grades. The artificial fill soils generally consist of medium dense to very dense silty fine sand with trace clay nodules and clayey fine sand, as well as stiff to hard silty clay and fine sandy clay. The fill soils possess a disturbed and mottled appearance with occasional artificial debris content (including fragments of wood, brick and asphaltic concrete) resulting in their classification as artificial fill.

Additional soils classified as possible fill were encountered beneath the pavement at Boring No. B-1 and beneath the fill at Boring No. B-4, extending to depths of 5½ to 8½± feet below ground surface. These soils possess similar characteristics to the fill soils, but lack any obvious indicators of fill such as brick or asphaltic concrete fragments.

Terrace Deposits

Native terrace deposits were encountered beneath the fill and/or possible fill soils at all of the boring locations, extending to at least the maximum depth explored of 50± feet below ground surface. The near surface terrace deposits (within the upper 5½ to 22± feet) generally consist of medium dense to very dense fine sand, silty fine sand and occasionally fine sandy silt. Terrace deposits extending deeper than 22± feet generally consist of very stiff to hard silty clay and fine sandy clay, as well as medium dense to very dense fine sand. Occasional layers of medium dense to dense clayey silt and silty fine sand were encountered. Trace to some calcareous nodules were observed in some of the terrace deposits. Boring No. B-1 encountered a fine to coarse sand layer at depths of 17 to 25± feet.

Groundwater

Free water was encountered during the drilling of all boring locations, at depths of 22½ to 23½± feet. A delayed groundwater level reading was taken at Boring No. B-2, 3± hours after the completion of the boring. At this boring location, water was present at a depth of 22½± feet below ground surface during the final measurement. Based on the moisture contents of the recovered soil samples and the delayed water measurements taken within the open boreholes, the static groundwater table is considered to have been present at depths of 22½± feet below the existing site grades at the time of the subsurface investigation.

As part of our research, we reviewed readily available groundwater data in order to determine regional groundwater depths. Recent water level data was obtained from the California State Water Resources Control Board, GeoTracker, website, http://geotracker.waterboards.ca.gov/. The nearest monitoring well on record is located approximately 475 feet southeast of the site. Water level readings within this monitoring well indicate a high groundwater level of 18± feet below the ground surface, in December 2011.

The Seismic Hazard Zone Report for the La Habra Quadrangle (SHZR 09), published by the California Geological Survey (CGS), includes a map of historic high groundwater depths. This map indicates a historic high water depth of 10 to 20 feet below grade in the vicinity of the subject site

5.0 LABORATORY TESTING

The soil samples recovered from the subsurface exploration were returned to our laboratory for further testing to determine selected physical and engineering properties of the soils. The tests are briefly discussed below. It should be noted that the test results are specific to the actual samples tested, and variations could be expected at other locations and depths.

Classification

All recovered soil samples were classified using the Unified Soil Classification System (USCS), in accordance with ASTM D-2488. The field identifications were then supplemented with additional visual classifications and/or by laboratory testing. The USCS classifications are shown on the Boring Logs and are periodically referenced throughout this report.

Dry Density and Moisture Content

The density has been determined for selected relatively undisturbed ring samples. These densities were determined in general accordance with the method presented in ASTM D-2937. The results are recorded as dry unit weight in pounds per cubic foot. The moisture contents are determined in accordance with ASTM D-2216, and are expressed as a percentage of the dry weight. These test results are presented on the Boring Logs.

Consolidation

Selected soil samples have been tested to determine their consolidation potential, in accordance with ASTM D-2435. The testing apparatus is designed to accept either natural or remolded samples in a one-inch-high ring, approximately 2.416 inches in diameter. Each sample is then loaded incrementally in a geometric progression and the resulting deflection is recorded at selected time intervals. Porous stones are in contact with the top and bottom of the sample to permit the addition or release of pore water. The samples are typically inundated with water at an intermediate load to determine their potential for collapse or heave. The results of the consolidation testing are plotted on Plates C-1 through C-8 in Appendix C of this report.

Consolidation tests were performed by PSE on several soil samples. The results of tests performed on borings located within the current development area are included in Appendix F of this report.

Maximum Dry Density and Optimum Moisture Content

A representative bulk sample was tested for its maximum dry density and optimum moisture content. The results have been obtained using the Modified Proctor procedure, per ASTM D-1557. These tests are generally used to compare the in-situ densities of undisturbed field samples, and for later compaction testing. Additional testing of other soil type or soil mixes may be necessary at a later date. The results of the testing are plotted on Plate C-9 in Appendix C of this report.

A maximum dry density test was also performed by PSE on a sample of soil from their boring HS-03. This test indicated a maximum dry density of 121.5 lbs/ft^3 and an optimum moisture content of 9.8 percent.

Soluble Sulfates

Representative samples of the near-surface soil were submitted to a subcontracted analytical laboratory for determination of soluble sulfate content. Soluble sulfates are naturally present in soils, and if the concentration is high enough, can result in degradation of concrete which comes into contact with these soils. The results of the soluble sulfate testing are presented below, and are discussed further in a subsequent section of this report.

Sample Identification	Soluble Sulfates (%)	Sulfate Classification
B-1 @ 0 to 5 feet	0.004	Not Applicable (S0)
B-3 @ 0 to 5 feet	0.013	Not Applicable (S0)

Corrosivity Testing

Representative bulk samples of the near-surface soils were submitted to a subcontracted corrosion engineering laboratory to identify potentially corrosive characteristics with respect to common construction materials. The corrosivity testing included a determination of the electrical resistivity, pH, and chloride and nitrate concentrations of the soils, as well as other tests. The results of some of these tests are presented below.

Sample Identification	Saturated Resistivity (ohm-cm)	pH	Chlorides (mg/kg)	Nitrates (mg/kg)
B-1 @ 0 to 5 feet	1,440	7.9	4	6
B-3 @ 0 to 5 feet	1,040	7.7	106	28

Expansion Index

The expansion potential of the on-site soils was determined in general accordance with ASTM D-4829 as required by the California Building Code (CBC). The testing apparatus is designed to accept a 4-inch-diameter, 1-inch high, remolded sample. The sample is initially remolded to 50± 1 percent saturation and then loaded with a surcharge equivalent to 144 pounds per square foot. The sample is then inundated with water, and allowed to swell against the surcharge. The resultant swell or consolidation is recorded after a 24-hour period. The result of the EI testing are as follows:

Sample Identification	Expansion Index	Expansive Potential
B-1 @ 0 to 5 feet	55	Medium
B-3 @ 0 to 5 feet	38	Low
Pacific Soils HS-03	45	Low
Pacific Soils HS-07	46	Low

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our review, field exploration, laboratory testing and geotechnical analysis, the proposed development is considered feasible from a geotechnical standpoint. **Based on the preliminary nature of this investigation, further geotechnical investigation may be required prior to construction of the proposed development.** The recommendations contained in this report should be taken into the design, construction, and grading considerations. The recommendations are contingent upon all grading and foundation construction activities being monitored by the geotechnical engineer of record.

The Grading Guide Specifications, included as Appendix D, should be considered part of this report, and should be incorporated into the project specifications. The contractor and/or owner of the development should bring to the attention of the geotechnical engineer any conditions that differ from those stated in this report, or which may be detrimental for the development.

6.1 Seismic Design Considerations

The subject site is located in an area which is subject to strong ground motions due to earthquakes. The performance of a site specific seismic hazards analysis was beyond the scope of this investigation. However, numerous faults capable of producing significant ground motions are located near the subject site. Due to economic considerations, it is not generally considered reasonable to design a structure that is not susceptible to earthquake damage. Therefore, significant damage to structures may be unavoidable during large earthquakes. The proposed structures should, however, be designed to resist structural collapse and thereby provide reasonable protection from serious injury, catastrophic property damage and loss of life.

Faulting and Seismicity

Research of available maps indicates that the subject site is not located within an Alquist-Priolo Earthquake Fault Zone. Furthermore, Southern California Geotechnical (SCG) did not identify any evidence of faulting during the geotechnical investigation. Therefore, the possibility of significant fault rupture on the site is considered to be low.

The potential for other geologic hazards such as seismically induced settlement, lateral spreading, tsunamis, inundation, seiches, flooding, and subsidence affecting the site is considered low.

2019 CBC Seismic Design Parameters

Based on the standards in place at the time of this report, we expect that the proposed building will be designed in accordance with the 2019 Edition of the California Building Code (CBC), which was adopted on January 1, 2020. The 2019 CBC Seismic Design Parameters have been generated using the SEAOC/OSHPD Seismic Design Maps Tool, a web-based software application available at the website www.seismicmaps.org. This software application calculates seismic design parameters in accordance with several building code reference documents, including ASCE 7-16, upon which the 2019 CBC is based. The application utilizes a database of risk-targeted maximum considered earthquake (MCE_R) site accelerations at 0.01-degree intervals for each of the code

documents. The table below was created using data obtained from the application. The output generated from this program is included as Plate E-1 of this report. Based on this output, the following parameters may be utilized for the subject site:

The 2019 CBC requires that a site-specific ground motion study be performed in accordance with Section 11.4.8 of ASCE 7-16 for Site Class D sites with a mapped S_1 value greater than 0.2. However, Section 11.4.8 of ASCE 7-16 also indicates an exception from the requirement for a site-specific ground motion hazard analysis for certain structures on Site Class D sites. The commentary for Section 11 of ASCE 7-16 (Page 534 of Section C11 of ASCE 7-16) indicates that "In general, this exception effectively limits the requirements for site-specific hazard analysis to very tall and or flexible structures at Site Class D sites." **Based on our understanding of the proposed development, the seismic design parameters presented below were calculated assuming that the exception in Section 11.4.8 applies to the proposed structure at this site. However, the structural engineer should verify that this exception is applicable to the proposed structures.** Based on the exception, the spectral response accelerations presented below were calculated using the site coefficients (F_a and F_v) from Tables 11.4-1 and 11.4-2 presented in Section 11.4.4 of ASCE 7-16.

2019 CBC SEISMIC DESIGN PARAMETERS

Parameter		Value
Mapped MCE_R Acceleration at 0.2 sec Period	S_S	1.803
Mapped MCE_R Acceleration at 1.0 sec Period	S_1	0.634
Site Class	---	D
Site Modified Spectral Acceleration at 0.2 sec Period	S_{MS}	1.803
Site Modified Spectral Acceleration at 1.0 sec Period	S_{M1}	1.078
Design Spectral Acceleration at 0.2 sec Period	S_{DS}	1.202
Design Spectral Acceleration at 1.0 sec Period	S_{D1}	0.719

It should be noted that the site coefficient F_v and the parameters S_{M1} and S_{D1} were not included in the SEAOC/OSHPD Seismic Design Maps Tool output for the ASCE 7-16. We calculated these parameters-based on Table 11.4-2 in Section 11.4.4 of ASCE 7-16 using the value of S_1 obtained from the Seismic Design Maps Tool, assuming that a site-specific ground motion hazards analysis is not required for the proposed buildings at this site.

Liquefaction

Liquefaction is the loss of the strength in generally cohesionless, saturated soils when the pore-water pressure induced in the soil by a seismic event becomes equal to or exceeds the overburden pressure. The primary factors which influence the potential for liquefaction include groundwater table elevation, soil type and grain size characteristics, relative density of the soil, initial confining pressure, and intensity and duration of ground shaking. The depth within which the occurrence of liquefaction may impact surface improvements is generally identified as the upper 50 feet below the existing ground surface. Liquefaction potential is greater in saturated, loose, poorly graded fine sands with a mean (d_{50}) grain size in the range of 0.075 to 0.2 mm (Seed and Idriss,

1971). Clayey (cohesive) soils or soils which possess clay particles (d<0.005mm) in excess of 20 percent (Seed and Idriss, 1982) are generally not considered to be susceptible to liquefaction, nor are those soils which are above the historic static groundwater table.

The Earthquake Zones of Required Investigation, La Habra Quadrangle map, published by the California Geological Survey (CGS), indicates that the subject site is not located within a designated liquefaction hazard zone. In addition, the subsurface conditions encountered at the subject site are not considered to be conducive to liquefaction. Based on the conditions encountered at the boring locations, and the mapping performed by the CGS, liquefaction is not considered to be a significant design concern for this project.

6.2 Preliminary Geotechnical Design Considerations

General

Artificial fill soils and possible fill soils were encountered beneath the pavements or at the ground surface at all of the boring locations, extending to depths of 5½ to 8½± feet below the existing site grades. Previous geotechnical investigations identified fill soils extending to depths of up to 10± feet. These fill soils possess variable densities and variable consolidation/collapse characteristics indicating that they do not represent engineered fill soils. Therefore, most of the fill soils encountered at this site are not considered suitable to support the foundation loads of the new structures. It will be necessary to either remove and replace these soils as engineered fill, or extend foundations for the development through these fill soils into the dense terrace deposits below.

The proposed office building will consist of two sections, both of which will be supported over existing retail buildings. We understand that priority is being given to minimizing the impact that construction of these office buildings will have on the tenants of the existing retail buildings. Based on the column loads that will be supported by the office building foundations, some type of deep foundations will likely be necessary to support the structures while providing minimal disturbance to the existing tenants. Preliminary information concerning deep foundation elements is provided in a subsequent section of this report. It is expected that supplemental subsurface exploration will be required in the area of the proposed office building in order to provide more specific deep foundation design data.

Construction of the proposed improvements will require excavation immediately adjacent to existing buildings, pavements, and possibly retaining walls and other miscellaneous site improvements. It is considered likely that shoring and/or slot cutting will be required for portions of the proposed construction. Detailed shoring design parameters can be developed once a specific foundation plan and grading plan have been developed.

Settlement

Based on the recommendations contained in this report, the foundations for the new development will be supported on newly placed compacted structural fill, or extended through any undocumented fill soils into dense to very dense Terrace deposits. Provided that the recommended remedial grading is completed and adequate foundation embedment is utilized,

the post-construction static settlements of the proposed structures are expected to be within tolerable limits.

Soluble Sulfates

The result of the soluble sulfate testing, as discussed in Section 5.0 of this report, indicates that the concentration of soluble sulfates within the selected samples of the on-site soils correspond to Category S0, with respect to the American Concrete Institute (ACI) Publication 318-05 Building Code Requirements for Structural Concrete and Commentary, Section 4.3. Therefore, specialized concrete mix designs are not considered to be necessary, with regard to sulfate protection purposes. It is, however, recommended that additional soluble sulfate testing be conducted at the time of the design-level geotechnical investigation and at the completion of rough grading to verify the soluble sulfate concentrations of the soils which are present at pad grade within the building areas.

Corrosion Potential

The results of laboratory testing indicate that the tested samples of the on-site soils possesses saturated resistivity values of 1,040 and 1,440 ohm-cm, and pH values of 7.7 and 7.9. These test results have been evaluated in accordance with guidelines published by the Ductile Iron Pipe Research Association (DIPRA). The DIPRA guidelines consist of a point system by which characteristics of the soils are used to quantify the corrosivity characteristics of the site. Resistivity and pH are two of the five factors that enter into the evaluation procedure. Redox potential, relative soil moisture content and sulfides are also included. Although sulfide testing was not part of the scope of services for this project, we have evaluated the corrosivity characteristics of the on-site soils using resistivity, pH and moisture content. **Based on these factors, and utilizing the DIPRA procedure, the on-site soils are considered to be corrosive to ferrous pipes. Therefore, corrosion protection is expected to be required for cast iron or ductile iron pipes.** It should be noted that SCG does not practice in the field of corrosion engineering, and therefore, the client may also wish to contact a corrosion engineer to provide a more thorough evaluation.

Relatively low concentrations (4 and 106 mg/kg) of chlorides were detected in the samples submitted for corrosivity testing. In general, soils possessing chloride concentrations in excess of 500 parts per million (ppm) are considered to be corrosive with respect to steel reinforcement within reinforced concrete. Based on the lack of any significant chlorides in the tested sample, the site is considered to have a C1 chloride exposure in accordance with the American Concrete Institute (ACI) Publication 318 Building Code Requirements for Structural Concrete and Commentary. Therefore, a specialized concrete mix design for reinforced concrete for protection against chloride exposure is not considered warranted. We recommend that additional corrosivity testing be performed at the time of the design-level geotechnical investigation in order to confirm the chloride exposure category.

Expansion

The near-surface soils encountered within the upper 10± feet at this site include interbedded layers of silty sands, sandy clays and silty clays. The result of expansion index testing performed on representative samples of these materials indicate that they possess low to medium expansion potentials (EI = 38 to 55). The preliminary design recommendations contained within this report

are based on the presence of low to medium expansive soils. We recommend that additional expansion index testing be performed at the time of the design-level geotechnical investigation and at the completion of rough grading in order to confirm the expansion potential of the near-surface soils at this site.

Shrinkage/Subsidence

Removal and recompaction of the near-surface fill soils is estimated to result in an average shrinkage of 7 to 12 percent. It should be noted that the potential shrinkage estimate is based on dry density testing performed on small-diameter samples taken at the boring locations. If a more accurate and precise shrinkage estimate is desired, SCG can perform a shrinkage study involving several excavated test-pits where in-place densities are determined using in-situ testing methods instead of laboratory density testing on small-diameter samples. Please contact SCG for details and a cost estimate regarding a shrinkage study, if desired.

Minor ground subsidence is expected to occur in the soils below the zone of removal, due to settlement and machinery working. The subsidence is estimated to be 0.10 feet.

These estimates are based on previous experience and the subsurface conditions encountered at the boring locations. The actual amount of subsidence is expected to be variable and will be dependent on the type of machinery used, repetitions of use, and dynamic effects, all of which are difficult to assess precisely.

Additional Geotechnical Investigation

As discussed above, the focus of the current phase of investigation was to determine the geotechnical feasibility of the proposed development at the subject site. Prior to preparing detailed grading or foundation plans, a site-specific, detailed geotechnical investigation should be performed. The purpose of this supplementary investigation will be to obtain more detailed data regarding the subsurface conditions at the subject site. The scope of this future investigation should be sufficient to provide detailed grading recommendations as well as foundation, floor slab, and pavement design recommendations.

6.3 Preliminary Site Grading Recommendations

The preliminary grading recommendations presented below are based on the design details that were available at the time of this report, and the subsurface conditions encountered at our boring locations. These recommendations are general and preliminary in nature, and should be confirmed as part of the future design-level geotechnical investigation.

Site Stripping and Demolition

Initial site stripping should include removal of all surficial vegetation from slopes or landscaped planters. Any organic topsoil and tree root masses should be removed during site stripping. The actual extent of site stripping should be determined in the field by the geotechnical engineer, based on the organic content and stability of the materials encountered.

The proposed development will require demolition of portions of the existing buildings and pavements. Any existing improvements that will not remain in place for use with the new development should be removed in their entirety. This should include all foundations, floor slabs, utilities, and any other subsurface improvements associated with the existing structures. Debris resultant from demolition should be disposed of off-site. These materials may be crushed and made into miscellaneous base for use in the proposed pavement areas.

Detailed structural information regarding the new buildings has not been provided to our office. Based on preliminary conversations with the project structural engineer, it is expected that the hotel and residential buildings will be supported on conventional shallow foundations. Small-diameter deep foundations may be utilized to support the structural loads of the new office building that will be constructed over the existing retail.

Treatment of Existing Soils: Hotel and Residential Buildings

Based on the borings performed for this study, as well as borings performed at the subject site as part of previous geotechnical investigations, the area of the proposed hotel and residential buildings is underlain by 5 to 10± feet of undocumented fill soils. These materials are underlain by relatively high strength terrace deposits. The most feasible means of supporting the proposed structures is to utilize shallow foundations which extend through the undocumented fill soils into the dense to very dense terrace deposits below. If this method of construction is utilized, no significant remedial grading will be necessary within the foundation areas of the proposed buildings.

Within a given structure, it is recommended that all foundations be supported within the dense terrace deposits, or on a newly placed layer of compacted structural fill, in order to limit differential settlements. Where foundations are supported on new structural fill soils, this layer of fill is typically 3 to 5± feet in thickness, but the precise depth should be determined during the design-level geotechnical investigation.

Any existing undocumented fill soil should also be removed from proposed building slab areas. It is also recommended that the slab areas be underlain by a newly placed layer of structural fill, at least 2 to 3 feet in thickness. The actual depth of overexcavation should be determined during the design-level geotechnical investigation.

Treatment of Existing Soils: Retaining Walls and Site Walls

Although not indicated on the site plan, it may be necessary to construct some small retaining walls or site walls at or near the existing surface grade. Overexcavation will also be necessary in these areas to remove all of the existing fill soils. The overexcavation depth should be expected to be on the order of 3 to 5 feet below proposed foundation bearing grade. Alternatively, the retaining wall foundations could be extended into the dense to very dense terrace deposits.

Treatment of Existing Soils: Parking Areas

Based on economic considerations, overexcavation of the existing soils in the new parking and drive areas is not considered warranted, with the exception of areas where lower strength, or unstable soils are identified by the geotechnical engineer during grading. Subgrade preparation

in the new parking and drive areas should initially consist of removal of all soils disturbed during stripping and demolition operations.

The geotechnical engineer should then evaluate the subgrade to identify any areas of additional unsuitable soils. Any such materials should be removed to a level of firm and unyielding soil. The exposed subgrade soils should then be scarified to a depth of 12± inches, moisture conditioned to at least 2 to 4 percent above optimum, and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density. Based on the presence of variable strength surficial soils throughout the site, it is expected that some isolated areas of additional overexcavation may be required to remove zones of lower strength, unsuitable soils.

The grading recommendations presented above for the proposed parking areas assume that the owner and/or developer can tolerate minor amounts of settlement within the proposed parking areas. The grading recommendations presented above do not completely mitigate the extent of the existing fill soils and low strength alluvium in the parking areas. As such, settlement and associated pavement distress could occur. Typically, repair of such distressed areas involves significantly lower costs than completely mitigating these soils at the time of construction. If the owner cannot tolerate the risk of such settlements, the parking and drive areas may also be overexcavated, with the removed soils replaced as compacted structural fill.

Fill Placement

- Fill soils should be placed in thin (6± inches), near-horizontal lifts, moisture conditioned to 2 to 4 percent above the optimum moisture content, and compacted. Drying of the on-site soils may be required before placement and compaction of structural fill.
- On-site soils may be used for fill provided they are cleaned of any debris to the satisfaction of the geotechnical engineer.
- All grading and fill placement activities should be completed in accordance with the requirements of the 2019 CBC and the grading code of the city of Brea.
- All fill soils should be compacted to at least 90 percent of the ASTM D-1557 maximum dry density. Fill soils should be well mixed.
- Compaction tests should be performed periodically by the geotechnical engineer as random verification of compaction and moisture content. These tests are intended to aid the contractor. Since the tests are taken at discrete locations and depths, they may not be indicative of the entire fill and therefore should not relieve the contractor of his responsibility to meet the job specifications.

Imported Structural Fill

All imported structural fill should consist of low expansive (EI < 40), well graded soils possessing at least 10 percent fines (that portion of the sample passing the No. 200 sieve). Additional specifications for structural fill are presented in the Grading Guide Specifications, included as Appendix D.

Utility Trench Backfill

In general, all utility trench backfill should be compacted to at least 90 percent of the ASTM D-1557 maximum dry density. Compacted trench backfill should conform to the requirements of the local grading code, and more restrictive requirements may be indicated by the city of Brea. All

utility trench backfills should be witnessed by the geotechnical engineer. The trench backfill soils should be compaction tested where possible; probed and visually evaluated elsewhere.

Utility trenches which parallel a footing, and extending below a 1h:1v plane projected from the outside edge of the footing should be backfilled with structural fill soils, compacted to at least 90 percent of the ASTM D-1557 standard. Pea gravel backfill should not be used for these trenches.

6.4 Construction Considerations

Excavation Considerations

The near-surface soils generally consist of a variety of materials, including sands, silts, and clays. Some of these materials may be subject to caving within shallow excavations. Where caving occurs within shallow excavations, flattened excavation slopes may be sufficient to provide excavation stability. On a preliminary basis, temporary excavation slopes consisting of sands and silty sands should be made no steeper than 2h:1v. Temporary excavation slopes consisting of clayey soils should be made no steeper than 1.5h:1v.

The contractor should take all necessary precautions during grading and foundation construction to prevent damage to structures and improvements which are adjacent to the proposed development. Deeper excavations may require some form of external stabilization such as shoring or bracing. Maintaining adequate moisture content within the near-surface soils will improve excavation stability. All excavation activities on this site should be conducted in accordance with Cal-OSHA regulations.

Moisture Sensitive Subgrade Soils

The near-surface soils generally consist of moist to very moist sands, sandy clays, and silty clays, and will become unstable if exposed to significant moisture infiltration or disturbance by construction traffic. If grading occurs during a period of relatively wet weather, an increase in subgrade instability should also be expected. The site should, therefore, be graded to prevent ponding of surface water and to prevent water from running into excavations.

If the construction schedule dictates that site grading will occur during a period of wet weather, allowances should be made for costs and delays associated with drying the on-site soils or import of a drier, less moisture sensitive fill material. Grading during wet or cool weather may also increase the depth of overexcavation in the pad area as well as the need for and/or the thickness of a crushed stone stabilization layer.

Expansive Soils

The near surface on-site soils have been determined to possess a low to medium expansion potential. Therefore, care should be given to proper moisture conditioning of all building pad subgrade soils to a moisture content of 2 to 4 percent above the Modified Proctor optimum during site grading. All imported fill soils should have very low expansive (EI < 20) characteristics. **In addition to adequately moisture conditioning the subgrade soils and fill soils during grading, special care must be taken to maintain moisture content of these soils at 2**

to 4 percent above the Modified Proctor optimum. This will require the contractor to frequently moisture condition these soils throughout the grading process, unless grading occurs during a period of relatively wet weather.

Due to the presence of expansive soils at this site, provisions should be made to limit the potential for surface water to penetrate the soils immediately adjacent to the structures. These provisions should include directing surface runoff into rain gutters and area drains, reducing the extent of landscaped areas around the structure, and sloping the ground surface away from the buildings. Where possible, it is recommended that landscaped planters not be located immediately adjacent to the building. If landscaped planters around the building are necessary, it is recommended that drought tolerant plants or a drip irrigation system be utilized, to minimize the potential for deep moisture penetration around the structure. Presented below is a list of additional soil moisture control recommendations that should be considered by the owner, developer, and civil engineer:

- Ponding and areas of low flow gradients in unpaved walkways, grass and planter areas should be avoided. In general, minimum drainage gradients of 2 percent should be maintained in unpaved areas.
- Bare soil within five feet of proposed structures should be sloped at a minimum 2 percent gradient away from the structure (about three inches of fall in five feet), or the same area could be paved with a minimum surface gradient of one percent. Pavement is preferable.
- Decorative gravel ground cover tends to provide a reservoir for surface water and may hide areas of ponding or poor drainage. Decorative gravel is, therefore, not recommended and should not be utilized for landscaping unless equipped with a subsurface drainage system designed by a licensed landscape architect.
- Positive drainage devices, such as graded swales, paved ditches, and catch basins should be installed at appropriate locations within the area of the proposed development.
- Concrete walks and flatwork should not obstruct the free flow of surface water to the appropriate drainage devices.
- Area drains should be recessed below grade to allow free flow of water into the drain. Concrete or brick flatwork joints should be sealed with mortar or flexible mastic.
- Gutter and downspout systems should be installed to capture all discharge from roof areas. Downspouts should discharge directly into a pipe or paved surface system to be conveyed offsite.
- Enclosed planters adjoining, or in close proximity to proposed structures, should be sealed at the bottom and provided with subsurface collection systems and outlet pipes.
- Depressed planters should be raised with soil to promote runoff (minimum drainage gradient two percent or five percent, see above), and/or equipped with area drains to eliminate ponding.
- Drainage outfall locations should be selected to avoid erosion of slopes and/or properly armored to prevent erosion of graded surfaces. No drainage should be directed over or towards adjoining slopes.
- All drainage devices should be maintained on a regular basis, including frequent observations during the rainy season to keep the drains free of leaves, soil and other debris.
- Landscape irrigation should conform to the recommendations of the landscape architect and should be performed judiciously to preclude either soaking or excessive drying of the foundation soils. This should entail regular watering during the drier portions of the year and little or no irrigation during the rainy season. Automatic sprinkler systems should, therefore, be switched to manual operation during the rainy season. Good irrigation practice typically requires frequent application of limited quantities of water that are sufficient to sustain plant growth, but do not excessively wet the soils. Ponding and/or run-off of irrigation water are indications of excessive watering.

Other provisions, as determined by the landscape architect or civil engineer, may also be appropriate.

Groundwater

The static groundwater table at this site is considered to exist at a depth of 22 to 23± feet. Therefore, groundwater is not expected to impact the grading or shallow foundation construction activities. Deep foundations, such as cast-in-drilled-hole (CIDH) piles or piers extending to depths of 20 feet or more will likely encounter groundwater, and groundwater control should be considered in the design and construction planning.

6.5 Preliminary Shallow Foundation Design Recommendations

Based on the preceding geotechnical design considerations and preliminary grading recommendations, it is assumed that the new building foundations will be underlain by existing dense to very dense terrace deposits, or newly placed structural fill soils, extending to depths of at least 3 to 5 feet below foundation bearing grades. Based on this subsurface profile, the proposed structures may be supported on conventional shallow foundations.

The foundation design parameters presented below provide anticipated ranges for the allowable soil bearing pressures. These ranges should be refined during the subsequent design-level geotechnical investigation.

Building Foundation Design Parameters

New square and rectangular footings may be designed as follows:

- Maximum, net allowable soil bearing pressure for footings supported on dense to very dense native terrace deposits: 4,000 to 5,000 lbs/ft^2.
- Maximum, net allowable soil bearing pressure for footings supported on newly-placed engineered fill soils: 2,500 to 3,000 lbs/ft^2.
- Minimum longitudinal steel reinforcement within strip footings: Four (4) No. 5 rebars (2 top and 2 bottom) due to the expansion potential of the on-site soils.
- The actual design of the foundations should be determined by the structural engineer.

General Foundation Design Recommendations

The allowable bearing pressures presented above may be increased by one-third when considering short duration wind or seismic loads. Additional reinforcement may be necessary for structural considerations. The actual design of the foundations should be determined by the structural engineer.

Estimated Foundation Settlements

Typically, foundations designed in accordance with the preliminary foundation design parameters presented above will experience total and differential settlements of less than 1.5 and 0.75 inches, respectively. A detailed settlement analysis should be conducted as part of the design-level geotechnical investigation, once detailed foundation loading information is available.

Lateral Load Resistance

Lateral load resistance will be developed by a combination of friction acting at the base of foundations and slabs and the passive earth pressure developed by footings below grade. The following friction and passive pressure may be used to resist lateral forces:

- Passive Earth Pressure: 225 to 275 lbs/ft^3
- Friction Coefficient: 0.25 to 0.30

6.6 Preliminary Deep Foundation Design Recommendations

Deep foundations may be the desirable method of support for the proposed office building, in order to minimize the impact to the tenants of the existing retail that will remain in place below the new office building. Typically, these deep foundations would consist of cast-in-drilled-hole (CIDH) piles. Based on the subsurface conditions encountered at this site, these piles would need to extend to depths of at least 15 to 20± feet. On a preliminary basis, CIDH piles extending to a depth of 20± feet would have the following approximate vertical capacities:

- 18-inch CIDH piles: 40 to 80 kips
- 24-inch CIDH piles: 55 to 110 kips
- 18-inch CIDH piles: 80 to 160 kips

Other types of specialty piles may also be feasible for this site, including pneumatically driven micro-piles or helical piles. These systems are typically designed and installed by a specialty contractor. We can provide geotechnical design parameters to such a contractor at the client's request.

6.7 Preliminary Floor Slab Design and Construction Recommendations

Subgrades which will support new floor slabs should be prepared in accordance with the recommendations contained in the ***Site Grading Recommendations*** section of this report. Preliminarily, the floors of the proposed structures may be constructed as conventional slabs-on-grade supported on newly placed structural fill. Based on geotechnical considerations, the floor slabs may be designed as follows:

- Minimum slab thickness: 5 to 6 inches.

- Steel reinforcement is expected to be necessary, based on the expansive potential of the soils underlying the subject site. Typically, No. 3 or No. 4 bars at 16 to 18 inches on center is adequate.

- Slab underlayment: If moisture sensitive floor coverings will be used then minimum slab underlayment should consist of a moisture vapor barrier constructed below the entire area of the proposed slab which will incorporate such coverings. The moisture vapor barrier should meet or exceed the Class A rating as defined by ASTM E 1745-97 and have a permeance rating less than 0.01 perms as described in ASTM E 96-95 and ASTM E 154-88. A polyolefin material such as Stego® Wrap Vapor Barrier or equivalent will meet these

specifications. The moisture vapor barrier should be properly constructed in accordance with all applicable manufacturer specifications. Given that a rock free subgrade is anticipated and that a capillary break is not required, sand below the barrier is not required. The need for sand and/or the amount of sand above the moisture vapor barrier should be specified by the structural engineer or concrete contractor. The selection of sand above the barrier is not a geotechnical engineering issue and hence outside our purview. Where moisture sensitive floor coverings are not anticipated, the vapor barrier may be eliminated.

- Moisture condition the floor slab subgrade soils to 2 to 4 percent above the Modified Proctor optimum moisture content, to a depth of 12 inches. The moisture content of the floor slab subgrade soils should be verified by the geotechnical engineer within 24 hours prior to concrete placement.

- Proper concrete curing techniques should be utilized to reduce the potential for slab curling or the formation of excessive shrinkage cracks.

The actual design of the floor slab should be completed by the structural engineer to verify adequate thickness and reinforcement. The recommendations presented above should be confirmed during the design level geotechnical investigation.

6.8 Preliminary Retaining Wall Design and Construction

Although not indicated on the site plan, some small (less than 6 feet in height) retaining walls may be required to facilitate the new site grades. The parameters recommended for use in the design of these walls are presented below.

Retaining Wall Design Parameters

Based on the soil conditions encountered at the boring locations, the following parameters may be used for preliminary design of new retaining walls for this site. **Most of the on-site soils consist of potentially expansive silty and sandy clays. These materials are not considered suitable for use as retaining wall backfill**. Therefore, we have provided parameters assuming the use of imported very low expansive soils for retaining wall backfill. These imported soils should consist of well graded sands or silty sands, possessing an internal angle of friction of at least 30 degrees when compacted to 90 percent relative compaction.

If desired, SCG could provide design parameters for an alternative select backfill material behind the retaining walls. The use of select backfill material could result in lower lateral earth pressures. In order to use the design parameters for the imported select fill, this material must be placed within the entire active failure wedge. This wedge is defined as extending from the heel of the retaining wall upwards at an angle of approximately 60° from horizontal. If select backfill material behind the retaining wall is desired, SCG should be contacted for supplementary recommendations.

RETAINING WALL DESIGN PARAMETERS

Design Parameter		Soil Type
		Imported Sands and Silty Sands
Internal Friction Angle (ϕ)		30°
Unit Weight		130 lbs/ft^3
Equivalent Fluid Pressure:	Active Condition (level backfill)	43 lbs/ft^3
	Active Condition (2h:1v backfill)	70 lbs/ft^3
	At-Rest Condition (level backfill)	65 lbs/ft^3

The walls should be designed using a soil-footing coefficient of friction of 0.25 and an equivalent passive pressure of 250 lbs/ft^3. The structural engineer should incorporate appropriate factors of safety in the design of the retaining walls.

The active earth pressure may be used for the design of retaining walls that do not directly support structures or support soils that in turn support structures and which will be allowed to deflect. The at-rest earth pressure should be used for walls that will not be allowed to deflect such as those which will support foundation bearing soils, or which will support foundation loads directly.

Where the soils on the toe side of the retaining wall are not covered by a "hard" surface such as a structure or pavement, the upper 1 foot of soil should be neglected when calculating passive resistance due to the potential for the material to become disturbed or degraded during the life of the structure.

Seismic Lateral Earth Pressures

In addition to the lateral earth pressures presented in the previous section, retaining walls which are more than 6 feet in height should be designed for a seismic lateral earth pressure, in accordance with the 2019 CBC. Based on the current site plan, it is not expected that any walls in excess of 6 feet in height will be required for this project. If any such walls are proposed, our office should be contacted for supplementary design recommendations.

Retaining Wall Foundation Design

Foundations to support new retaining walls should be designed in accordance with the general Foundation Design Parameters presented in a previous section of this report.

Backfill Material

The on-site soils are not considered suitable for use as retaining wall backfill. All retaining wall backfill soils should consist of imported very low expansive sands or silty sands. All backfill material placed within 3 feet of the back wall face should have a particle size no greater than 3 inches. The retaining wall backfill materials should be well graded.

It is recommended that a minimum 1 foot thick layer of free-draining granular material (less than 5 percent passing the No. 200 sieve) be placed against the face of the retaining walls. This material should extend from the top of the retaining wall footing to within 1 foot of the ground surface on the back side of the retaining wall. This material should be approved by the geotechnical engineer. In lieu of the 1 foot thick layer of free-draining material, a properly installed prefabricated drainage composite such as the MiraDRAIN 6000XL (or approved equivalent), which is specifically designed for use behind retaining walls, may be used. If the layer of free-draining material is not covered by an impermeable surface, such as a structure or pavement, a 12-inch thick layer of a low permeability soil should be placed over the backfill to reduce surface water migration to the underlying soils. The layer of free draining granular material should be separated from the backfill soils by a suitable geotextile, approved by the geotechnical engineer.

All retaining wall backfill should be placed and compacted under engineering controlled conditions in the necessary layer thicknesses to ensure an in-place density between 90 and 93 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D1557). Care should be taken to avoid over-compaction of the soils behind the retaining walls, and the use of heavy compaction equipment should be avoided.

Subsurface Drainage

As previously indicated, the retaining wall design parameters are based upon drained backfill conditions. Consequently, some form of permanent drainage system will be necessary in conjunction with the appropriate backfill material. Subsurface drainage may consist of either:

- A weep hole drainage system typically consisting of a series of 4-inch diameter holes in the wall situated slightly above the ground surface elevation on the exposed side of the wall and at an approximate 8-foot on-center spacing. The weep holes should include a 2 cubic foot pocket of open graded gravel, surrounded by an approved geotextile fabric, at each weep hole location.

- A 4-inch diameter perforated pipe surrounded by 2 cubic feet of gravel per linear foot of drain placed behind the wall, above the retaining wall footing. The gravel layer should be wrapped in a suitable geotextile fabric to reduce the potential for migration of fines. The footing drain should be extended to daylight or tied into a storm drainage system.

6.9 Preliminary Pavement Design Parameters Recommendations

Presented below are preliminary recommendations for the proposed pavements at the subject site. Grading recommendations for these pavement areas should be developed during the design-level geotechnical investigation.

Pavement Subgrades

It is anticipated that the new pavements will be supported on the existing fill soils that have been scarified, moisture conditioned, and recompacted. These materials generally consist of sandy clays and silty clays, as well as occasional zones of sands and silty sands. These materials are

expected to exhibit poor to fair pavement support characteristics, with estimated R-values of 10 to 25. R-value testing performed by SCG as part of a previous study at Brea Plaza indicated an R-value of 13. The subsequent pavement designs are based upon a conservatively assumed R-value of 10. Any fill material imported to the site should have support characteristics equal to or greater than that of the on-site soils and be placed and compacted under engineering controlled conditions. It may be desirable to perform R-value testing after the completion of rough grading to verify the R-value of the as-graded pavement subgrade.

It is recommended that R-value testing be performed during the design-level geotechnical investigation or after completion of rough grading. Depending upon the results of the R-value testing, it may be feasible to use thinner pavement sections in some areas of the site.

Asphaltic Concrete

Presented below are the recommended thicknesses for new flexible pavement structures consisting of asphaltic concrete over a granular base. The pavement designs are based on the traffic indices (TI's) indicated. The client and/or civil engineer should verify that these TI's are representative of the anticipated traffic volumes. If the client and/or civil engineer determine that the expected traffic volume will exceed the applicable traffic index, we should be contacted for supplementary recommendations. The design traffic indices equate to the following approximate daily traffic volumes over a 20-year design life, assuming six operational traffic days per week.

Traffic Index	No. of Heavy Trucks per Day
4.0	0
5.0	1
6.0	3
7.0	11

For the purpose of the traffic volumes indicated above, a truck is defined as a 5-axle tractor trailer unit with one 8-kip axle and two 32-kip tandem axles. All of the traffic indices allow for 1,000 automobiles per day.

ASPHALT PAVEMENTS (R = 10)				
Materials	Thickness (inches)			
	Auto Parking (TI = 4.0)	Auto Drive Lanes (TI = 5.0)	Truck Traffic	
			(TI = 6.0)	(TI = 7.0)
Asphalt Concrete	3	3	3½	4
Aggregate Base	6	9	11	15
Compacted Subgrade	12	12	12	12

The aggregate base course should be compacted to at least 95 percent of the ASTM D-1557 maximum dry density. The asphaltic concrete should be compacted to at least 95 percent of the batch plant-reported maximum density. The aggregate base course may consist of crushed aggregate base (CAB) or crushed miscellaneous base (CMB), which is a recycled gravel, asphalt

and concrete material. The gradation, R-Value, Sand Equivalent, and Percentage Wear of the CAB or CMB should comply with appropriate specifications contained in the current edition of the "Greenbook" Standard Specifications for Public Works Construction.

Portland Cement Concrete

The preparation of the subgrade soils within concrete pavement areas should be performed as previously described for proposed asphalt pavement areas. The minimum recommended thicknesses for the Portland Cement Concrete pavement sections are as follows:

PORTLAND CEMENT CONCRETE PAVEMENTS (R = 10)			
Materials	**Thickness (inches)**		
	Auto Parking & Drives (TI = 5.0)	Truck Traffic	
		(TI = 6.0)	(TI = 7.0)
PCC	5	5½	6
Compacted Subgrade (95% Relative Compaction)	12	12	12

The concrete should have a 28-day compressive strength of at least 3,000 psi. Reinforcing within all pavements should be designed by the structural engineer. The maximum joint spacing within all of the PCC pavements is recommended to be equal to or less than 30 times the pavement thickness. The actual joint spacing and reinforcing of the Portland cement concrete pavements should be determined by the structural engineer.

7.0 GENERAL COMMENTS

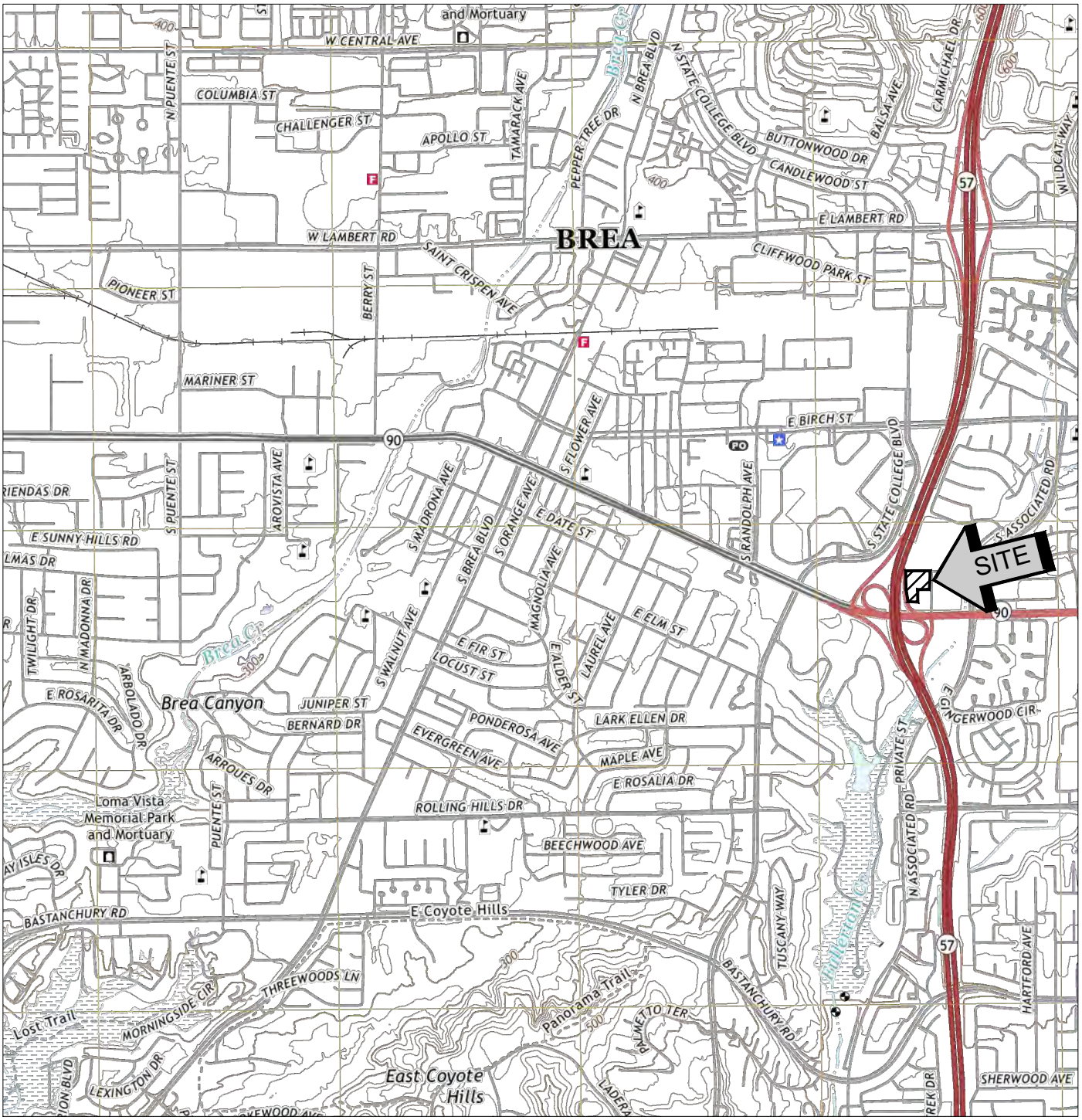
This report has been prepared as an instrument of service for use by the client, in order to aid in the evaluation of this property and to assist the architects and engineers in the design and preparation of the project plans and specifications. This report may be provided to the contractor(s) and other design consultants to disclose information relative to the project. However, this report is not intended to be utilized as a specification in and of itself, without appropriate interpretation by the project architect, civil engineer, and/or structural engineer. The reproduction and distribution of this report must be authorized by the client and Southern California Geotechnical, Inc. Furthermore, any reliance on this report by an unauthorized third party is at such party's sole risk, and we accept no responsibility for damage or loss which may occur. The client(s)' reliance upon this report is subject to the Engineering Services Agreement, incorporated into our proposal for this project.

The analysis of this site was based on a subsurface profile interpolated from limited discrete soil samples. While the materials encountered in the project area are considered to be representative of the total area, some variations should be expected between boring locations and sample depths. If the conditions encountered during construction vary significantly from those detailed herein, we should be contacted immediately to determine if the conditions alter the recommendations contained herein.

This report has been based on assumed or provided characteristics of the proposed development. It is recommended that the owner, client, architect, structural engineer, and civil engineer carefully review these assumptions to ensure that they are consistent with the characteristics of the proposed development. If discrepancies exist, they should be brought to our attention to verify that they do not affect the conclusions and recommendations contained herein. We also recommend that the project plans and specifications be submitted to our office for review to verify that our recommendations have been correctly interpreted.

The analysis, conclusions, and recommendations contained within this report have been promulgated in accordance with generally accepted professional geotechnical engineering practice. No other warranty is implied or expressed.

APPENDIX A



SOURCE: USGS TOPOGRAPHIC MAP OF THE LA HABRA QUADRANGLE, ORANGE COUNTY, CALIFORNIA, 2018

SITE LOCATION MAP

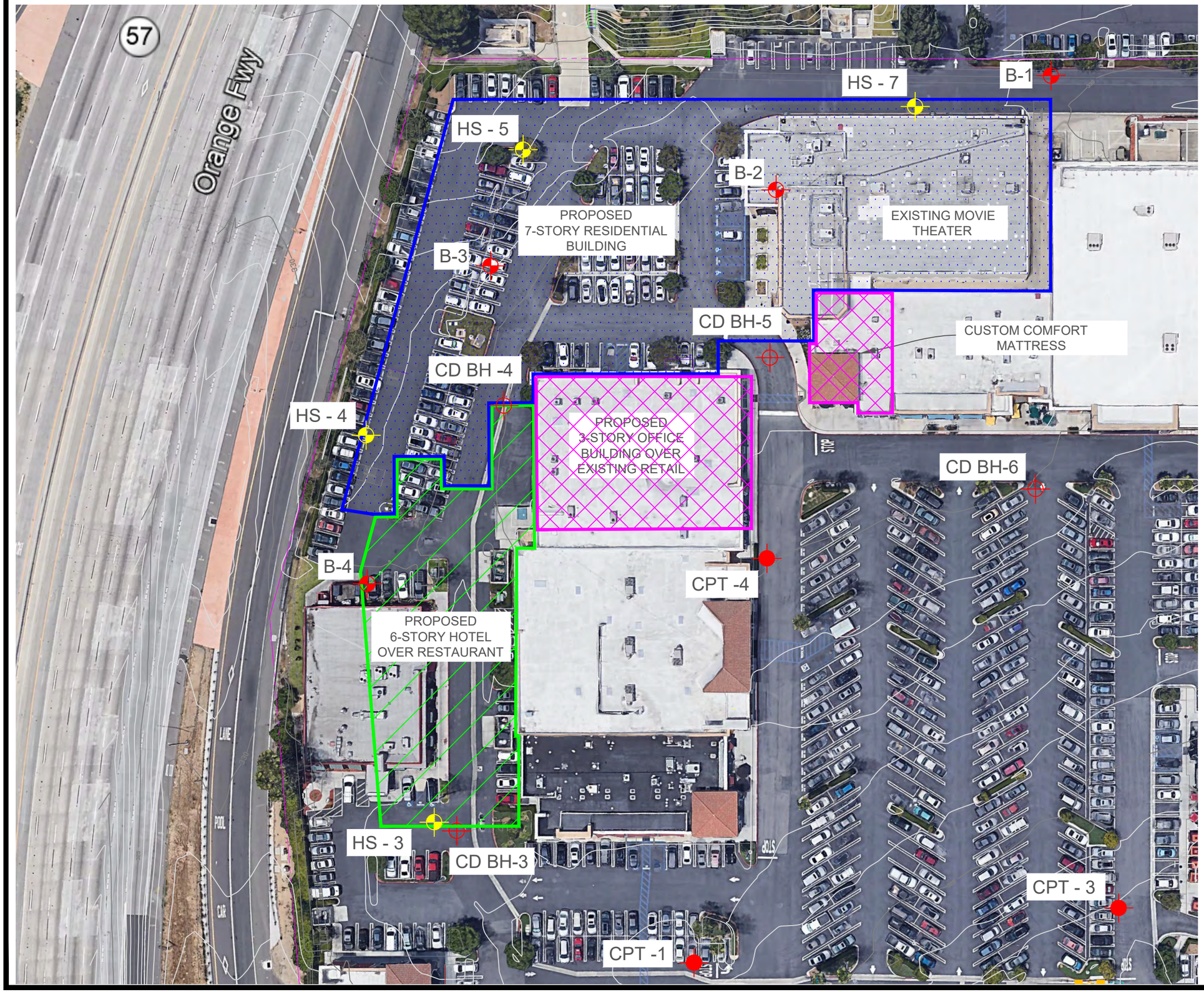
PROPOSED BREA PLAZA MIXED USE

BREA, CALIFORNIA

SCALE: 1" = 2000'	
DRAWN: JAH CHKD: DN	
SCG PROJECT 20G168-1	
PLATE 1	

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



GEOTECHNICAL LEGEND

- **APPROXIMATE BORING LOCATION**
- **APPROXIMATE 6-INCH DIAMETER BORING LOCATION (PACIFIC SOILS ENGINEERING)**
- **APPROXIMATE CPT LOCATION (PACIFIC SOILS ENGINEERING)**
- **APPROXIMATE 16 TO 24-INCH DIAMETER BORING LOCATION (CONVERSE, DAVIS, DIXON ASSOCIATES, 1975)**
- **PROPOSED 3-STORY OFFICE BUILDING OVER EXISTING RETAIL**
- **PROPOSED 6-STORY HOTEL OVER RESTAURANT**
- **PROPOSED 7-STORY RESIDENTIAL BUILDING**

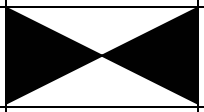
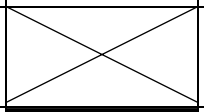
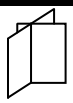
NOTE: CONCEPTUAL SITE PLAN PROVIDED BY ARCHITECTS ORANGE.

BORING LOCATION PLAN
PROPOSED BREA PLAZA MIXED USE
BREA, CALIFORNIA
SCALE: 1" = 60'
DRAWN: JAH CHKD: GKM
SCG PROJECT 20G168-1
PLATE 2

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL

APPENDIX B

BORING LOG LEGEND

SAMPLE TYPE	GRAPHICAL SYMBOL	SAMPLE DESCRIPTION
AUGER		SAMPLE COLLECTED FROM AUGER CUTTINGS, NO FIELD MEASUREMENT OF SOIL STRENGTH. (DISTURBED)
CORE		ROCK CORE SAMPLE: TYPICALLY TAKEN WITH A DIAMOND-TIPPED CORE BARREL. TYPICALLY USED ONLY IN HIGHLY CONSOLIDATED BEDROCK.
GRAB		SOIL SAMPLE TAKEN WITH NO SPECIALIZED EQUIPMENT, SUCH AS FROM A STOCKPILE OR THE GROUND SURFACE. (DISTURBED)
CS		CALIFORNIA SAMPLER: 2-1/2 INCH I.D. SPLIT BARREL SAMPLER, LINED WITH 1-INCH HIGH BRASS RINGS. DRIVEN WITH SPT HAMMER. (RELATIVELY UNDISTURBED)
NSR		NO RECOVERY: THE SAMPLING ATTEMPT DID NOT RESULT IN RECOVERY OF ANY SIGNIFICANT SOIL OR ROCK MATERIAL.
SPT		STANDARD PENETRATION TEST: SAMPLER IS A 1.4 INCH INSIDE DIAMETER SPLIT BARREL, DRIVEN 18 INCHES WITH THE SPT HAMMER. (DISTURBED)
SH		SHELBY TUBE: TAKEN WITH A THIN WALL SAMPLE TUBE, PUSHED INTO THE SOIL AND THEN EXTRACTED. (UNDISTURBED)
VANE		VANE SHEAR TEST: SOIL STRENGTH OBTAINED USING A 4 BLADED SHEAR DEVICE. TYPICALLY USED IN SOFT CLAYS-NO SAMPLE RECOVERED.

COLUMN DESCRIPTIONS

DEPTH: Distance in feet below the ground surface.

SAMPLE: Sample Type as depicted above.

BLOW COUNT: Number of blows required to advance the sampler 12 inches using a 140 lb hammer with a 30-inch drop. 50/3" indicates penetration refusal (>50 blows) at 3 inches. WH indicates that the weight of the hammer was sufficient to push the sampler 6 inches or more.

POCKET PEN.: Approximate shear strength of a cohesive soil sample as measured by pocket penetrometer.

GRAPHIC LOG: Graphic Soil Symbol as depicted on the following page.

DRY DENSITY: Dry density of an undisturbed or relatively undisturbed sample in lbs/ft^3.

MOISTURE CONTENT: Moisture content of a soil sample, expressed as a percentage of the dry weight.

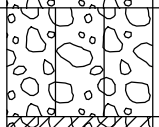
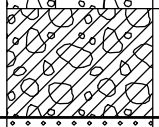
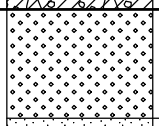
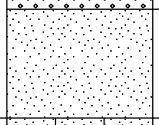
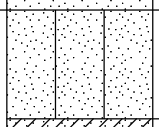
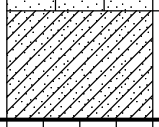
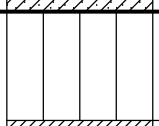
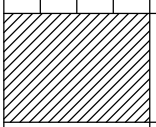
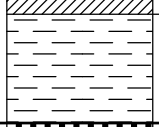
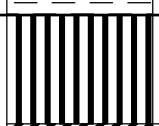
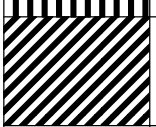
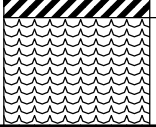
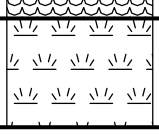
LIQUID LIMIT: The moisture content above which a soil behaves as a liquid.

PLASTIC LIMIT: The moisture content above which a soil behaves as a plastic.

PASSING #200 SIEVE: The percentage of the sample finer than the #200 standard sieve.

UNCONFINED SHEAR: The shear strength of a cohesive soil sample, as measured in the unconfined state.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-1

JOB NO.: 20G168-1
PROJECT: Proposed Brea Plaza Mixed Use
LOCATION: Brea, California

DRILLING DATE: 7/9/20
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jamie Hayward

WATER DEPTH: 23.5 feet
CAVE DEPTH: 19 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 330.5 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					4± inches Asphaltic Concrete, 7± inches Aggregate Base							
		18	3.5		POSSIBLE FILL: Brown fine Sandy Clay, trace to little Calcareous nodules, stiff to very stiff-moist to very moist		16					EI = 55 @ 0 to 5 feet
		18	1.5				16					
5												
		36			TERRACE DEPOSITS: Brown Clayey fine Sand, dense-damp		9					
		50			Light Brown fine Sand, trace Silt, very dense-damp to moist		9					
10												
					Red Brown Clayey fine Sand, little Calcareous veining/nodules, very dense-very moist							
		56					18					
15												
					Gray Brown to Brown fine to coarse Sand, trace to little Silt, trace fine to coarse Gravel, little Calcareous veining/nodules, very dense-moist to very moist							
		81/11"					12					
20												
		48			@ 23½ feet, 3-inch Clayey fine Sand lense, wet		15					
25					Boring Terminated at 25 feet							

TBL 20G168-1.GPJ SOCALGEO.GDT 7/30/20

TEST BORING LOG **PLATE B-1**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-2

JOB NO.: 20G168-1
PROJECT: Proposed Brea Plaza Mixed Use
LOCATION: Brea, California

DRILLING DATE: 7/9/20
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jamie Hayward

WATER DEPTH: 22.5 feet
CAVE DEPTH: 30 feet
READING TAKEN: 3 hours after Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 331.4 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					8± inches Asphaltic Concrete, 5½± inches Aggregate Base							
		56			FILL: Brown Silty fine Sand, trace Clay nodules, mottled, dense to very dense-damp	113	9					
		84				94	8					
5		71			FILL: Brown Silty Clay, little fine Sand, trace root fragments, mottled, hard-damp	96	9					Disturbed Sample
		79			TERRACE DEPOSITS: Light Brown fine Sand, trace Silt, very dense-damp	95	5					
		63			Light Gray Brown Silty fine Sand, medium dense to dense-damp to very moist	100	6					
10												
		28					16					
15												
		51				101	16					
20												
		28	2.5		Light Brown Silty Clay, trace to little fine Sand, very stiff-very moist		24					
25												
					Brown Silty fine Sand, dense-very moist to wet							
		45				98	24					
30												
		24	4.0		Red Brown to Brown fine Sandy Clay, very stiff to hard-very moist		17					

TBL 20G168-1.GPJ SOCALGEO.GDT 7/30/20

TEST BORING LOG

PLATE B-2a

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-2

JOB NO.: 20G168-1
PROJECT: Proposed Brea Plaza Mixed Use
LOCATION: Brea, California

DRILLING DATE: 7/9/20
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jamie Hayward

WATER DEPTH: 22.5 feet
CAVE DEPTH: 30 feet
READING TAKEN: 3 hours after Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION (Continued)	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					Red Brown to Brown fine Sandy Clay, very stiff-moist							
					Brown Silty Clay, trace fine Sand, trace Iron oxide staining, trace Calcareous nodules, stiff-very moist to wet							
40		20	3.5			89	36					
					Light Brown Clayey Silt, little fine Sand, very stiff-very moist to wet							
45		35	1.5				26					
50		22				92	28					
					Boring Terminated at 50 feet							

TBL 20G168-1.GPJ SOCALGEO.GDT 7/30/20

TEST BORING LOG

PLATE B-2b

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-3

JOB NO.: 20G168-1
PROJECT: Proposed Brea Plaza Mixed Use
LOCATION: Brea, California

DRILLING DATE: 7/9/20
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jamie Hayward

WATER DEPTH: 23.5 feet
CAVE DEPTH: 14 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 331.1 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					3½± inches Asphaltic Concrete; 7± inches Aggregate Base							
		14	2.5		FILL: Gray Brown fine Sandy Clay, trace wood fragments, trace brick fragments, trace Asphaltic concrete fragments, mottled, stiff-moist		14					EI = 38 @ 0 to 5 feet
		8	2.5				13					
5												
		36			TERRACE DEPOSITS: Brown Silty fine Sand, medium dense to dense-moist		15					
		20					11					
10												
					Light Brown fine Sand, trace Silt, dense-moist							
		47					8					
15												
					Light Brown Silty fine Sand, medium dense-moist							
		20					12					
					Light Brown fine Sandy Silt, little Clay, trace Calcareous veining, medium dense-very moist		26					
20												
					Light Brown Silty Clay, little fine Sand, very stiff-very moist to wet							
		19					27					
25												
					Boring Terminated at 25 feet							

TBL 20G168-1.GPJ SOCALGEO.GDT 7/30/20

TEST BORING LOG

PLATE B-3

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-4

JOB NO.: 20G168-1
PROJECT: Proposed Brea Plaza Mixed Use
LOCATION: Brea, California

DRILLING DATE: 7/9/20
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jamie Hayward

WATER DEPTH: 23.5 feet
CAVE DEPTH: 26 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 329.3 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					3± inches Asphaltic Concrete; 5± inches Aggregate Base							
		29			FILL: Brown to Light Brown Clayey fine Sand, mottled, medium dense-moist	106	15					
		34				104	16					
5		17				95	13					
		27	4.5		POSSIBLE FILL: Brown to Light Brown Clayey fine Sand to fine Sandy Clay, mottled, medium dense/very stiff-moist	108	18					
		41			TERRACE DEPOSITS: Light Brown fine Sand, trace Silt, medium dense-damp to moist	97	5					
10												
		36				94	7					
15												
					Light Brown Silty fine Sand, dense-moist							
		40					10					
20												
					Brown Silty Clay, little fine Sand, hard-very moist							
		58	4.5			109	20					
25												
					Light Brown Clayey Silt, little fine Sand, hard-wet							
		38					23					
30												
		23				104	20					
					Gray Brown fine Sand, trace Silt, medium dense-wet							

TBL 20G168-1.GPJ SOCALGEO.GDT 7/30/20

TEST BORING LOG

PLATE B-4a

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-4

JOB NO.: 20G168-1
PROJECT: Proposed Brea Plaza Mixed Use
LOCATION: Brea, California

DRILLING DATE: 7/9/20
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jamie Hayward

WATER DEPTH: 23.5 feet
CAVE DEPTH: 26 feet
READING TAKEN: At Completion

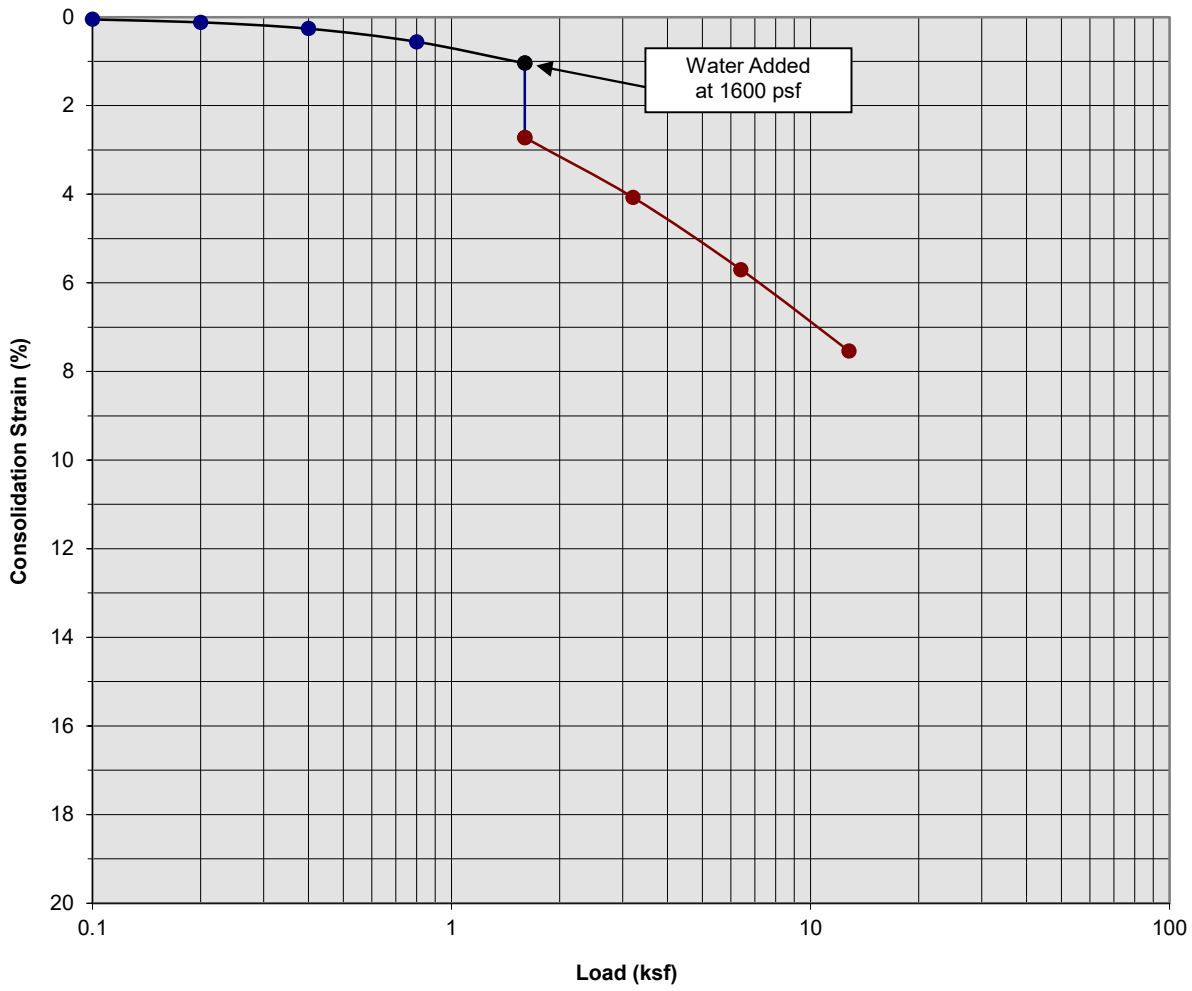
FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION (Continued)	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					Gray Brown fine Sand, trace Silt, medium dense-wet							
					Gray Brown Silty Clay, little fine Sand, hard-very moist to wet							
40		36	4.5				20					
45		43	3.5			106	19					
					Light Brown fine Sandy Clay, very stiff-very moist to wet							
50		24	3.0				27					
					Boring Terminated at 50 feet							

TBL 20G168-1.GPJ SOCALGEO.GDT 7/30/20

TEST BORING LOG **PLATE B-4b**

APPENDIX C

Consolidation/Collapse Test Results



Classification: FILL: Brown Silty Clay, little fine Sand

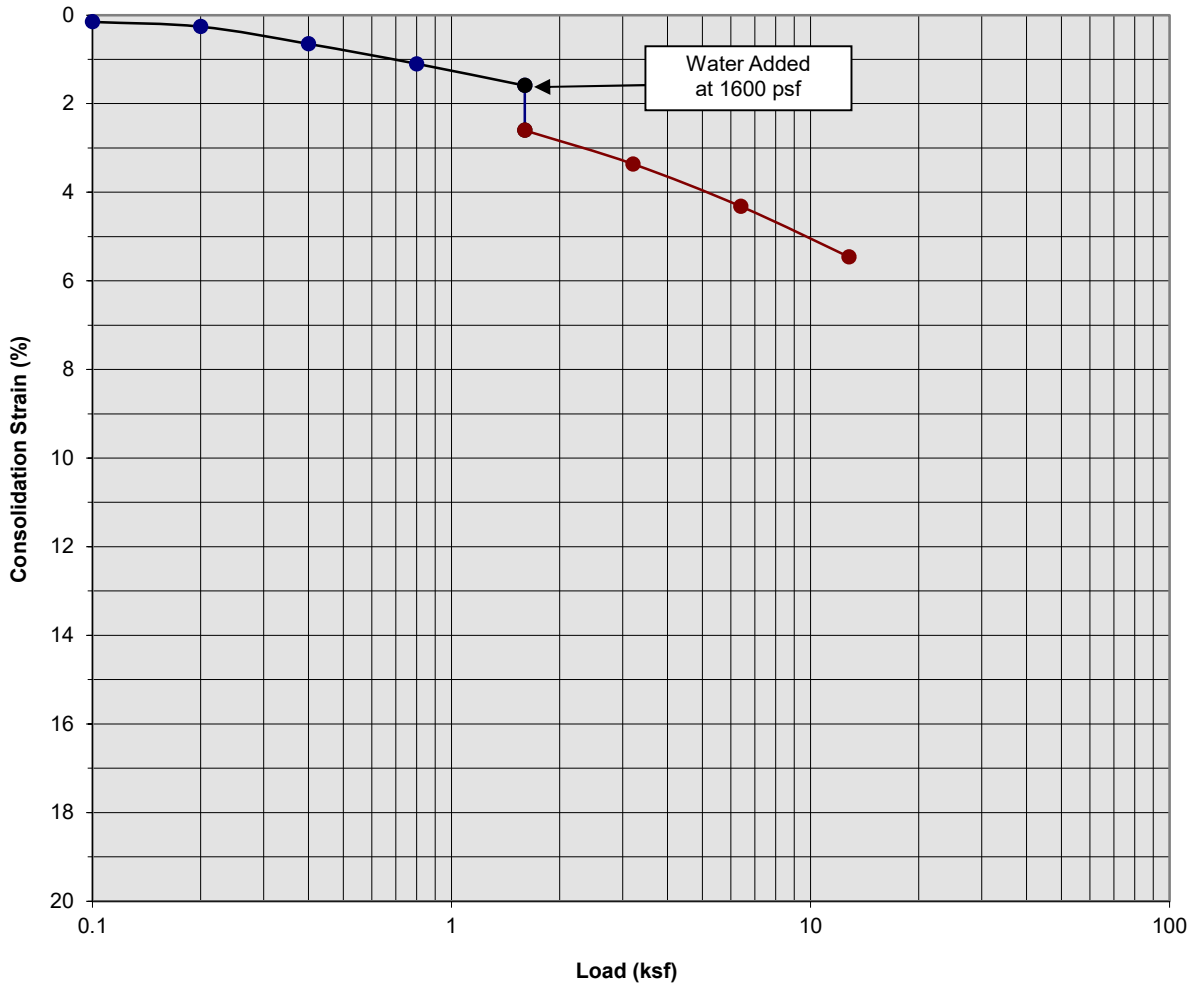
Boring Number:	B-2	Initial Moisture Content (%)	9
Sample Number:	---	Final Moisture Content (%)	24
Depth (ft)	5 to 6	Initial Dry Density (pcf)	95.7
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	103.2
Specimen Thickness (in)	1.0	Percent Collapse (%)	1.68

Proposed Brea Plaza Mixed Use
Brea, California
Project No. 20G168-1

PLATE C- 1

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



Classification: TERRACE: Light Gray Brown Silty fine Sand

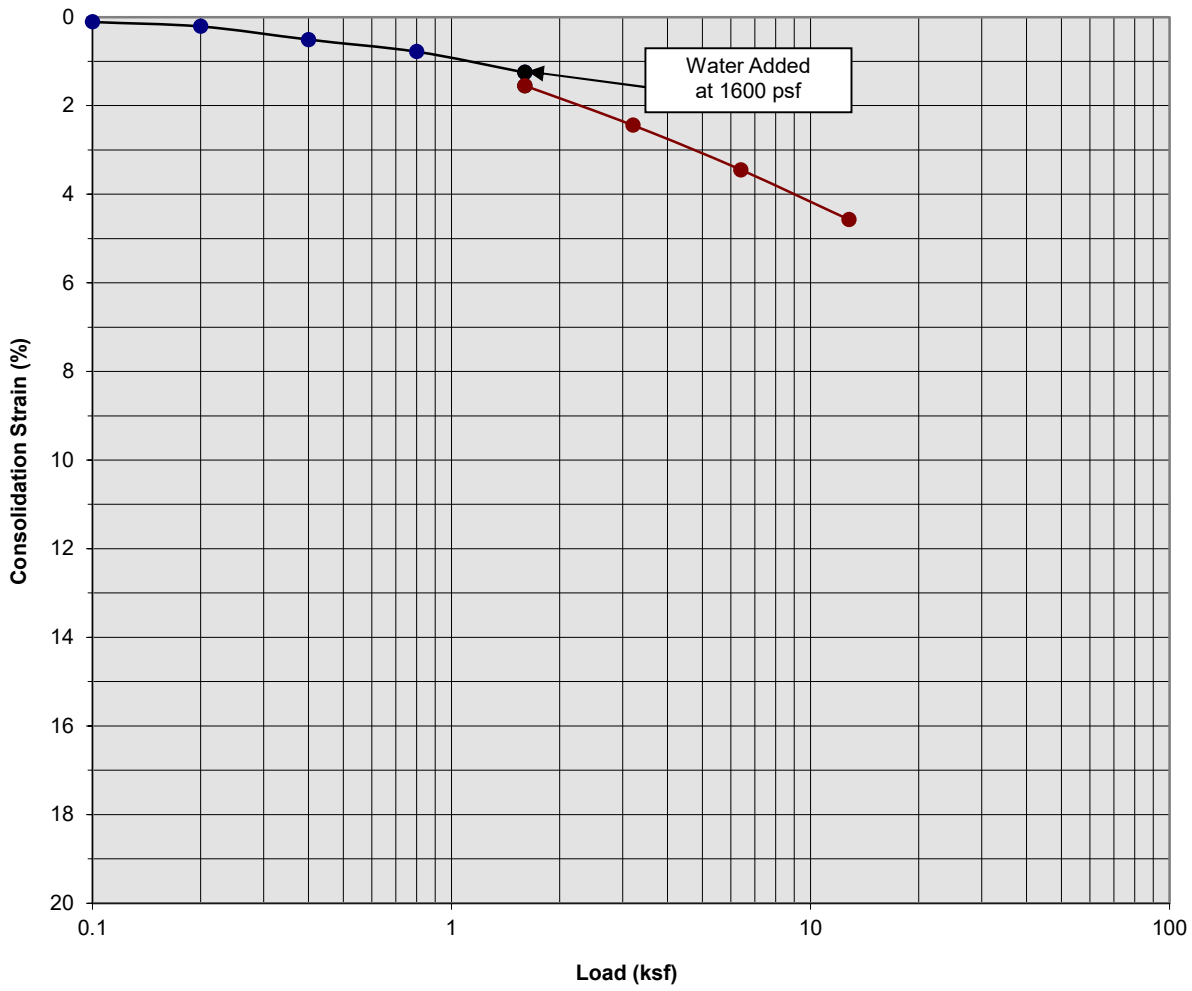
Boring Number:	B-2	Initial Moisture Content (%)	5
Sample Number:	---	Final Moisture Content (%)	21
Depth (ft)	9 to 10	Initial Dry Density (pcf)	100.9
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	106.4
Specimen Thickness (in)	1.0	Percent Collapse (%)	1.01

Proposed Brea Plaza Mixed Use
Brea, California
Project No. 20G168-1

PLATE C- 2

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



Classification: TERRACE: Light Gray Brown Silty fine Sand

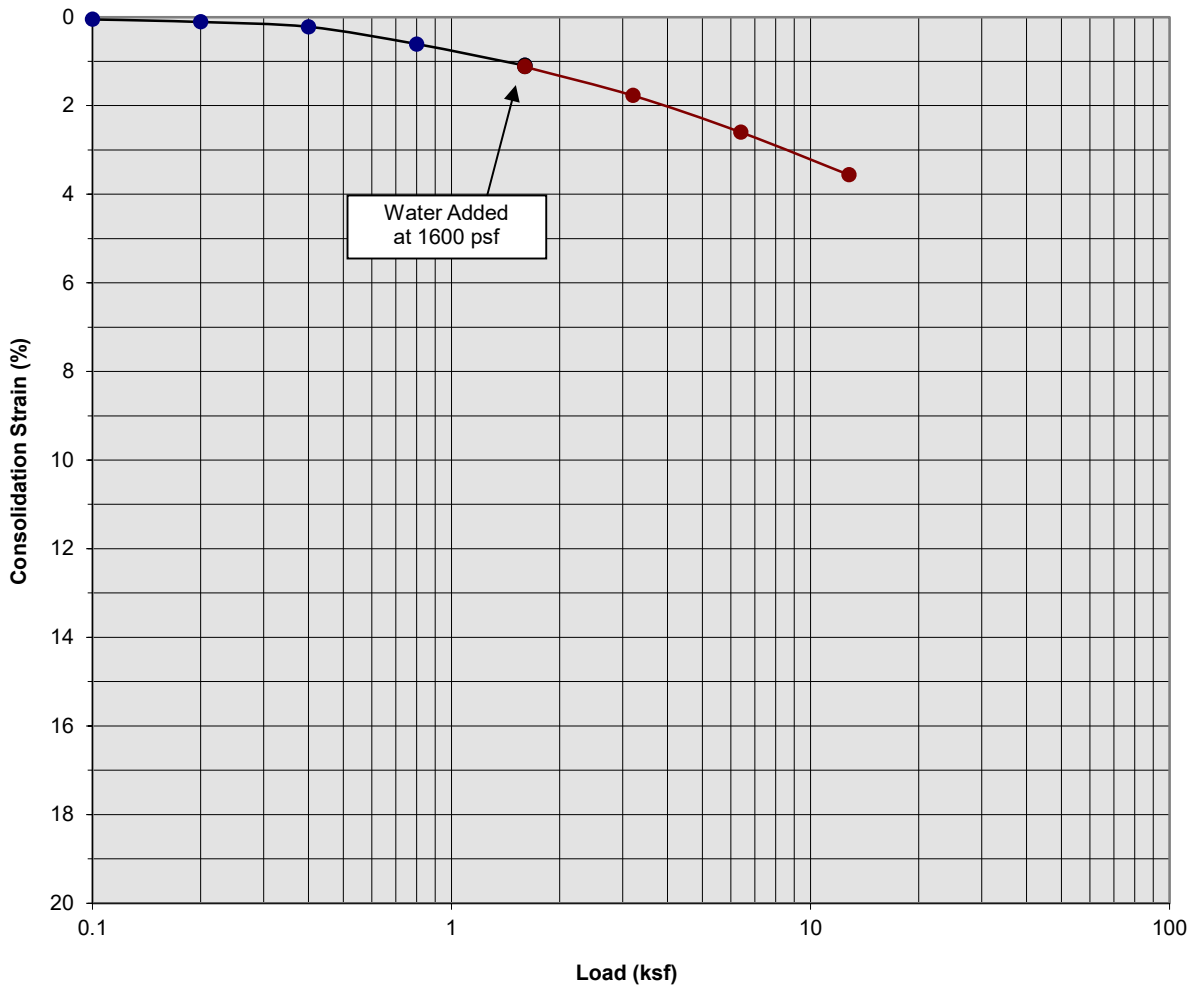
Boring Number:	B-2	Initial Moisture Content (%)	16
Sample Number:	---	Final Moisture Content (%)	19
Depth (ft)	19 to 20	Initial Dry Density (pcf)	100.8
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	105.5
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.30

Proposed Brea Plaza Mixed Use
Brea, California
Project No. 20G168-1

PLATE C- 3

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



Classification: TERRACE: Brown Silty fine Sand

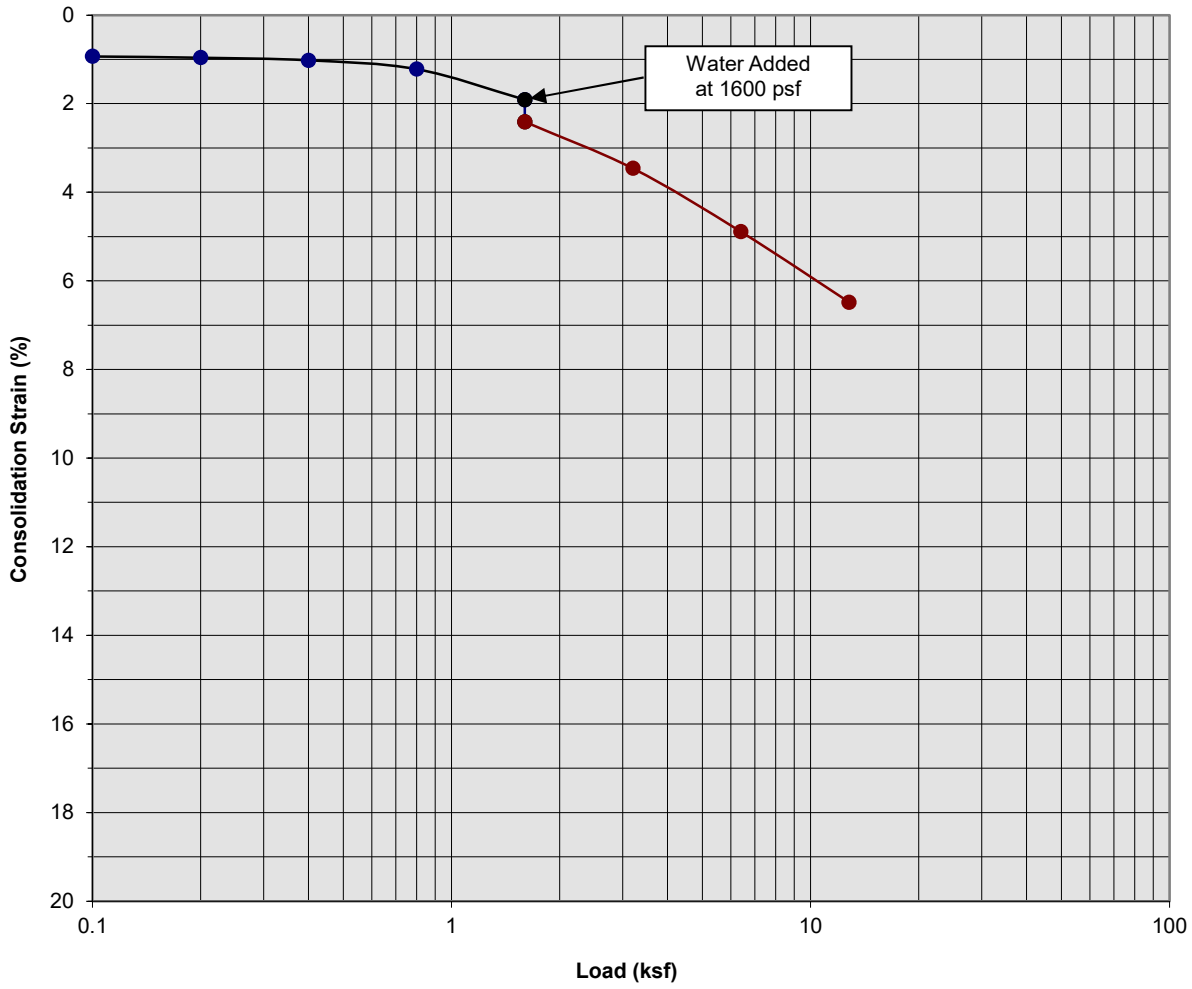
Boring Number:	B-2	Initial Moisture Content (%)	24
Sample Number:	---	Final Moisture Content (%)	23
Depth (ft)	29 to 30	Initial Dry Density (pcf)	98.3
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	101.9
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.03

Proposed Brea Plaza Mixed Use
Brea, California
Project No. 20G168-1

PLATE C- 4

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



Classification: FILL: Brown to Light Brown Clayey fine Sand

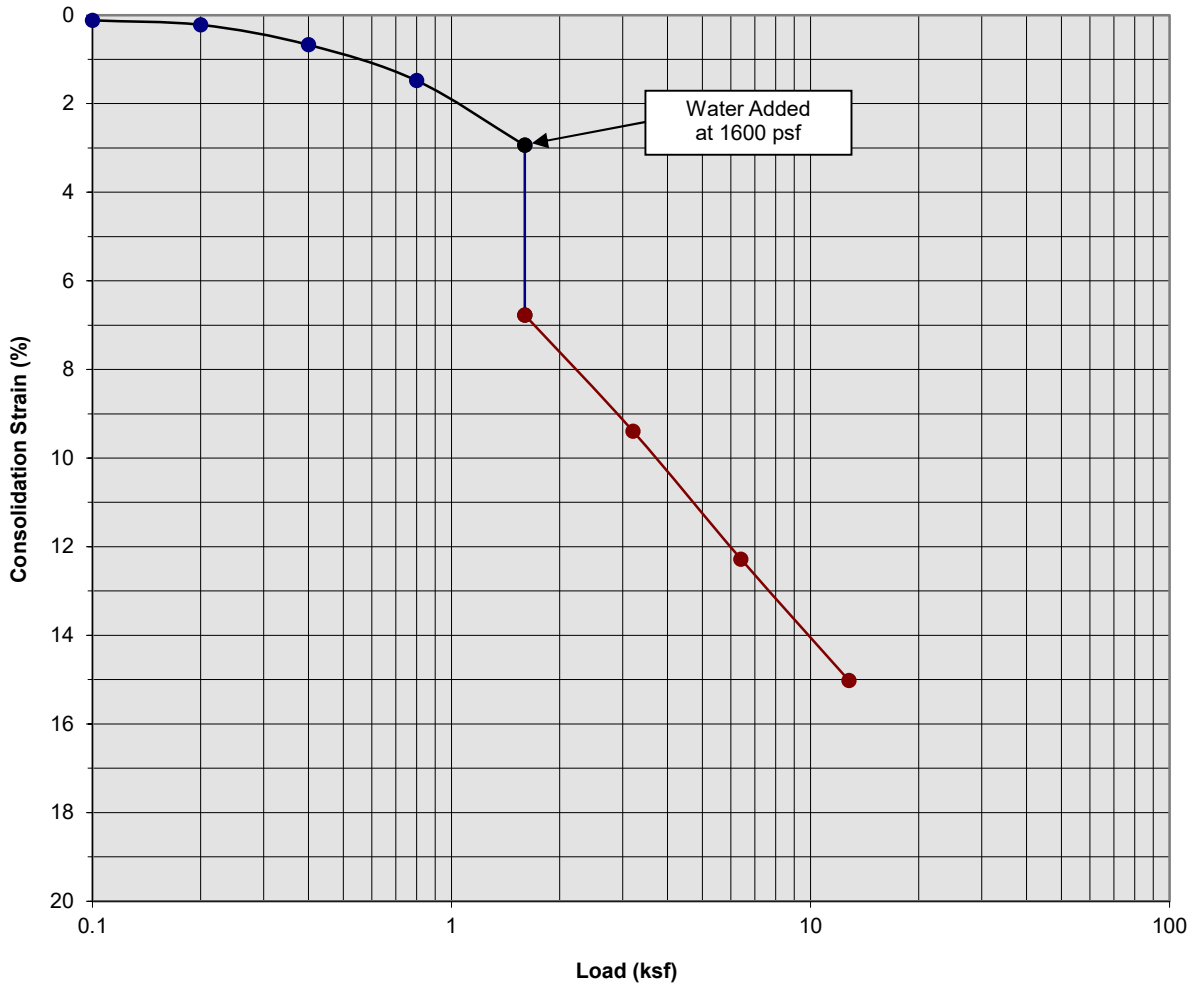
Boring Number:	B-4	Initial Moisture Content (%)	16
Sample Number:	---	Final Moisture Content (%)	17
Depth (ft)	3 to 4	Initial Dry Density (pcf)	104.0
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	112.3
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.50

Proposed Brea Plaza Mixed Use
Brea, California
Project No. 20G168-1

PLATE C- 5

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



Classification: FILL: Brown to Light Brown Clayey fine Sand

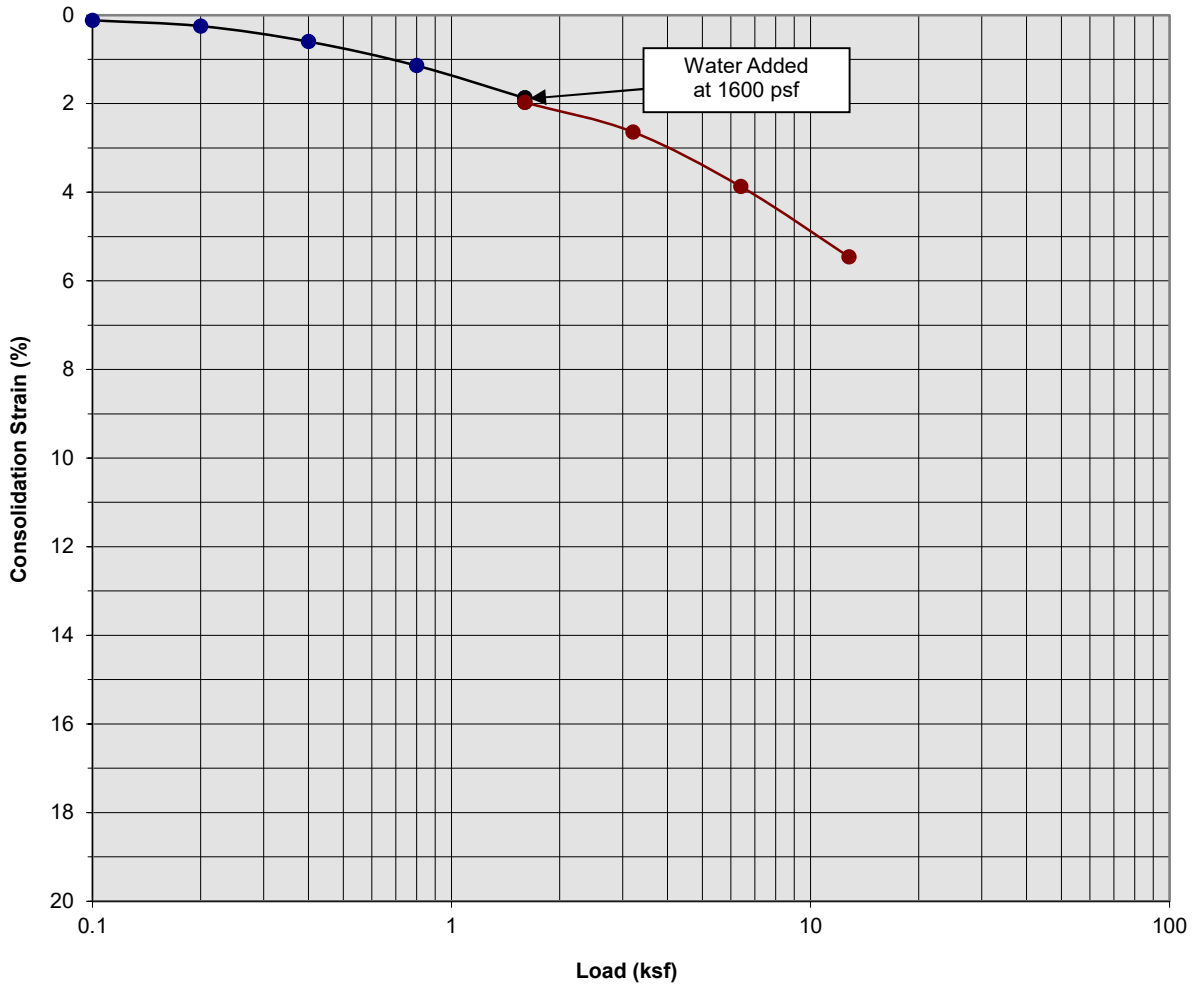
Boring Number:	B-4	Initial Moisture Content (%)	14
Sample Number:	---	Final Moisture Content (%)	20
Depth (ft)	5 to 6	Initial Dry Density (pcf)	94.7
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	112.0
Specimen Thickness (in)	1.0	Percent Collapse (%)	3.83

Proposed Brea Plaza Mixed Use
Brea, California
Project No. 20G168-1

PLATE C- 6

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



Classification: FILL: Light Brown Clayey fine Sand to fine Sandy Clay

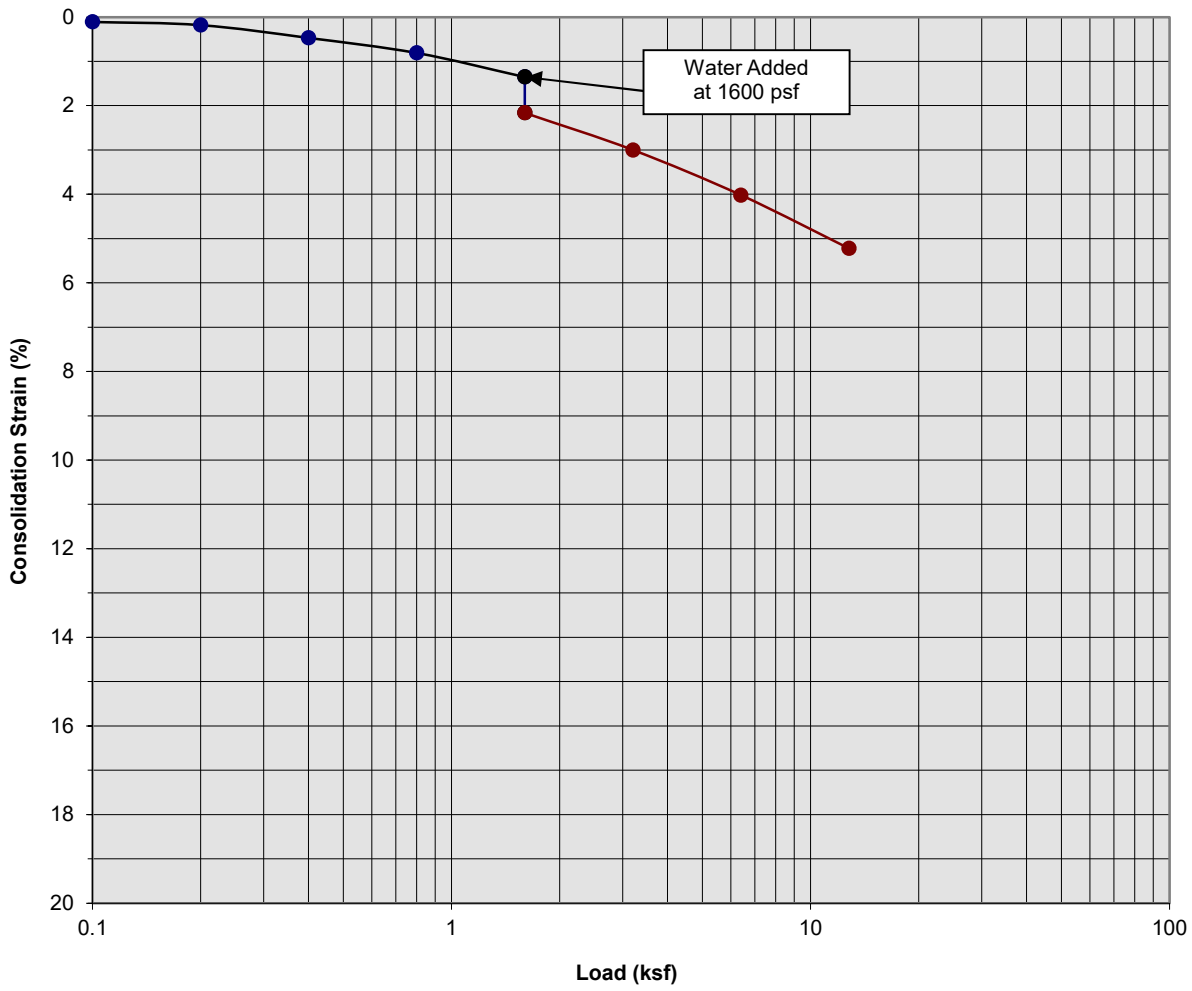
Boring Number:	B-4	Initial Moisture Content (%)	18
Sample Number:	---	Final Moisture Content (%)	19
Depth (ft)	7 to 8	Initial Dry Density (pcf)	108.1
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	114.7
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.10

Proposed Brea Plaza Mixed Use
Brea, California
Project No. 20G168-1

PLATE C- 7

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



Classification: TERRACE: Light Brown fine Sand, trace Silt

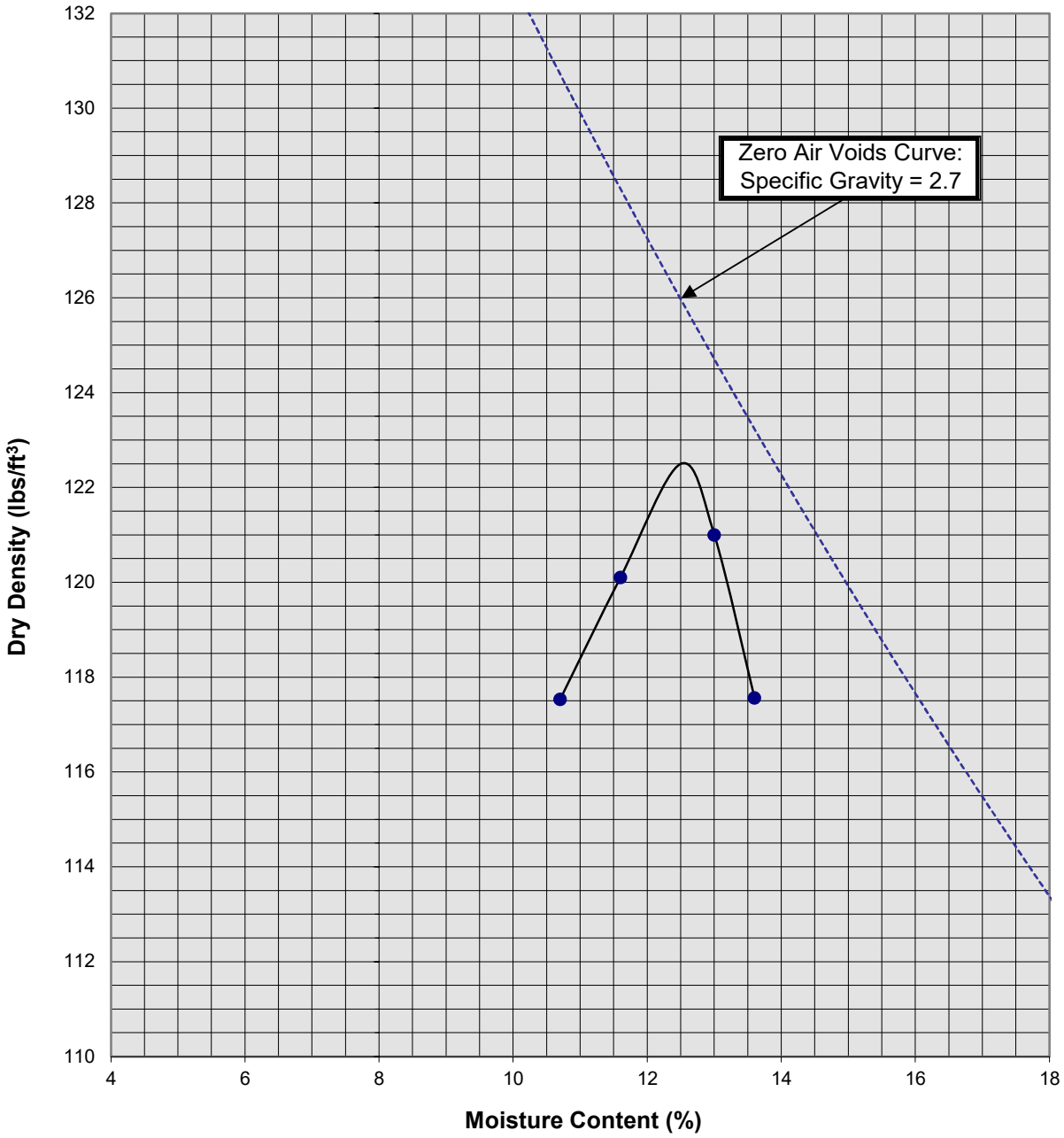
Boring Number:	B-4	Initial Moisture Content (%)	5
Sample Number:	---	Final Moisture Content (%)	22
Depth (ft)	9 to 10	Initial Dry Density (pcf)	97.4
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	102.1
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.81

Proposed Brea Plaza Mixed Use
Brea, California
Project No. 20G168-1

PLATE C- 8

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Moisture/Density Relationship
ASTM D-1557



Soil ID Number	B-1 @ 0-5'
Optimum Moisture (%)	12.5
Maximum Dry Density (pcf)	122.5
Soil Classification	Brown fine Sandy Clay trace to little Calcareous Nodules

Proposed Brea Plaza Mixed Use
Brea, California
Project No. 20G168-1

PLATE C-9

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

APPENDIX D

GRADING GUIDE SPECIFICATIONS

These grading guide specifications are intended to provide typical procedures for grading operations. They are intended to supplement the recommendations contained in the geotechnical investigation report for this project. Should the recommendations in the geotechnical investigation report conflict with the grading guide specifications, the more site specific recommendations in the geotechnical investigation report will govern.

General

- The Earthwork Contractor is responsible for the satisfactory completion of all earthwork in accordance with the plans and geotechnical reports, and in accordance with city, county, and applicable building codes.

- The Geotechnical Engineer is the representative of the Owner/Builder for the purpose of implementing the report recommendations and guidelines. These duties are not intended to relieve the Earthwork Contractor of any responsibility to perform in a workman-like manner, nor is the Geotechnical Engineer to direct the grading equipment or personnel employed by the Contractor.

- The Earthwork Contractor is required to notify the Geotechnical Engineer of the anticipated work and schedule so that testing and inspections can be provided. If necessary, work may be stopped and redone if personnel have not been scheduled in advance.

- The Earthwork Contractor is required to have suitable and sufficient equipment on the job-site to process, moisture condition, mix and compact the amount of fill being placed to the approved compaction. In addition, suitable support equipment should be available to conform with recommendations and guidelines in this report.

- Canyon cleanouts, overexcavation areas, processed ground to receive fill, key excavations, subdrains and benches should be observed by the Geotechnical Engineer prior to placement of any fill. It is the Earthwork Contractor's responsibility to notify the Geotechnical Engineer of areas that are ready for inspection.

- Excavation, filling, and subgrade preparation should be performed in a manner and sequence that will provide drainage at all times and proper control of erosion. Precipitation, springs, and seepage water encountered shall be pumped or drained to provide a suitable working surface. The Geotechnical Engineer must be informed of springs or water seepage encountered during grading or foundation construction for possible revision to the recommended construction procedures and/or installation of subdrains.

Site Preparation

- The Earthwork Contractor is responsible for all clearing, grubbing, stripping and site preparation for the project in accordance with the recommendations of the Geotechnical Engineer.

- If any materials or areas are encountered by the Earthwork Contractor which are suspected of having toxic or environmentally sensitive contamination, the Geotechnical Engineer and Owner/Builder should be notified immediately.

- Major vegetation should be stripped and disposed of off-site. This includes trees, brush, heavy grasses and any materials considered unsuitable by the Geotechnical Engineer.

- Underground structures such as basements, cesspools or septic disposal systems, mining shafts, tunnels, wells and pipelines should be removed under the inspection of the Geotechnical Engineer and recommendations provided by the Geotechnical Engineer and/or city, county or state agencies. If such structures are known or found, the Geotechnical Engineer should be notified as soon as possible so that recommendations can be formulated.

- Any topsoil, slopewash, colluvium, alluvium and rock materials which are considered unsuitable by the Geotechnical Engineer should be removed prior to fill placement.

- Remaining voids created during site clearing caused by removal of trees, foundations basements, irrigation facilities, etc., should be excavated and filled with compacted fill.

- Subsequent to clearing and removals, areas to receive fill should be scarified to a depth of 10 to 12 inches, moisture conditioned and compacted

- The moisture condition of the processed ground should be at or slightly above the optimum moisture content as determined by the Geotechnical Engineer. Depending upon field conditions, this may require air drying or watering together with mixing and/or discing.

Compacted Fills

- Soil materials imported to or excavated on the property may be utilized in the fill, provided each material has been determined to be suitable in the opinion of the Geotechnical Engineer. Unless otherwise approved by the Geotechnical Engineer, all fill materials shall be free of deleterious, organic, or frozen matter, shall contain no chemicals that may result in the material being classified as "contaminated," and shall be very low to non-expansive with a maximum expansion index (EI) of 50. The top 12 inches of the compacted fill should have a maximum particle size of 3 inches, and all underlying compacted fill material a maximum 6-inch particle size, except as noted below.

- All soils should be evaluated and tested by the Geotechnical Engineer. Materials with high expansion potential, low strength, poor gradation or containing organic materials may require removal from the site or selective placement and/or mixing to the satisfaction of the Geotechnical Engineer.

- Rock fragments or rocks less than 6 inches in their largest dimensions, or as otherwise determined by the Geotechnical Engineer, may be used in compacted fill, provided the distribution and placement is satisfactory in the opinion of the Geotechnical Engineer.

- Rock fragments or rocks greater than 12 inches should be taken off-site or placed in accordance with recommendations and in areas designated as suitable by the Geotechnical Engineer. These materials should be placed in accordance with Plate D-8 of these Grading Guide Specifications and in accordance with the following recommendations:

    - Rocks 12 inches or more in diameter should be placed in rows at least 15 feet apart, 15 feet from the edge of the fill, and 10 feet or more below subgrade. Spaces should be left between each rock fragment to provide for placement and compaction of soil around the fragments.

    - Fill materials consisting of soil meeting the minimum moisture content requirements and free of oversize material should be placed between and over the rows of rock or

concrete. Ample water and compactive effort should be applied to the fill materials as they are placed in order that all of the voids between each of the fragments are filled and compacted to the specified density.

- Subsequent rows of rocks should be placed such that they are not directly above a row placed in the previous lift of fill. A minimum 5-foot offset between rows is recommended.

- To facilitate future trenching, oversized material should not be placed within the range of foundation excavations, future utilities or other underground construction unless specifically approved by the soil engineer and the developer/owner representative.

- Fill materials approved by the Geotechnical Engineer should be placed in areas previously prepared to receive fill and in evenly placed, near horizontal layers at about 6 to 8 inches in loose thickness, or as otherwise determined by the Geotechnical Engineer for the project.

- Each layer should be moisture conditioned to optimum moisture content, or slightly above, as directed by the Geotechnical Engineer. After proper mixing and/or drying, to evenly distribute the moisture, the layers should be compacted to at least 90 percent of the maximum dry density in compliance with ASTM D-1557-78 unless otherwise indicated.

- Density and moisture content testing should be performed by the Geotechnical Engineer at random intervals and locations as determined by the Geotechnical Engineer. These tests are intended as an aid to the Earthwork Contractor, so he can evaluate his workmanship, equipment effectiveness and site conditions. The Earthwork Contractor is responsible for compaction as required by the Geotechnical Report(s) and governmental agencies.

- Fill areas unused for a period of time may require moisture conditioning, processing and recompaction prior to the start of additional filling. The Earthwork Contractor should notify the Geotechnical Engineer of his intent so that an evaluation can be made.

- Fill placed on ground sloping at a 5-to-1 inclination (horizontal-to-vertical) or steeper should be benched into bedrock or other suitable materials, as directed by the Geotechnical Engineer. Typical details of benching are illustrated on Plates D-2, D-4, and D-5.

- Cut/fill transition lots should have the cut portion overexcavated to a depth of at least 3 feet and rebuilt with fill (see Plate D-1), as determined by the Geotechnical Engineer.

- All cut lots should be inspected by the Geotechnical Engineer for fracturing and other bedrock conditions. If necessary, the pads should be overexcavated to a depth of 3 feet and rebuilt with a uniform, more cohesive soil type to impede moisture penetration.

- Cut portions of pad areas above buttresses or stabilizations should be overexcavated to a depth of 3 feet and rebuilt with uniform, more cohesive compacted fill to impede moisture penetration.

- Non-structural fill adjacent to structural fill should typically be placed in unison to provide lateral support. Backfill along walls must be placed and compacted with care to ensure that excessive unbalanced lateral pressures do not develop. The type of fill material placed adjacent to below grade walls must be properly tested and approved by the Geotechnical Engineer with consideration of the lateral earth pressure used in the design.

Foundations

- The foundation influence zone is defined as extending one foot horizontally from the outside edge of a footing, and proceeding downward at a ½ horizontal to 1 vertical (0.5:1) inclination.

- Where overexcavation beneath a footing subgrade is necessary, it should be conducted so as to encompass the entire foundation influence zone, as described above.

- Compacted fill adjacent to exterior footings should extend at least 12 inches above foundation bearing grade. Compacted fill within the interior of structures should extend to the floor subgrade elevation.

Fill Slopes

- The placement and compaction of fill described above applies to all fill slopes. Slope compaction should be accomplished by overfilling the slope, adequately compacting the fill in even layers, including the overfilled zone and cutting the slope back to expose the compacted core

- Slope compaction may also be achieved by backrolling the slope adequately every 2 to 4 vertical feet during the filling process as well as requiring the earth moving and compaction equipment to work close to the top of the slope. Upon completion of slope construction, the slope face should be compacted with a sheepsfoot connected to a sideboom and then grid rolled. This method of slope compaction should only be used if approved by the Geotechnical Engineer.

- Sandy soils lacking in adequate cohesion may be unstable for a finished slope condition and therefore should not be placed within 15 horizontal feet of the slope face.

- All fill slopes should be keyed into bedrock or other suitable material. Fill keys should be at least 15 feet wide and inclined at 2 percent into the slope. For slopes higher than 30 feet, the fill key width should be equal to one-half the height of the slope (see Plate D-5).

- All fill keys should be cleared of loose slough material prior to geotechnical inspection and should be approved by the Geotechnical Engineer and governmental agencies prior to filling.

- The cut portion of fill over cut slopes should be made first and inspected by the Geotechnical Engineer for possible stabilization requirements. The fill portion should be adequately keyed through all surficial soils and into bedrock or suitable material. Soils should be removed from the transition zone between the cut and fill portions (see Plate D-2).

Cut Slopes

- All cut slopes should be inspected by the Geotechnical Engineer to determine the need for stabilization. The Earthwork Contractor should notify the Geotechnical Engineer when slope cutting is in progress at intervals of 10 vertical feet. Failure to notify may result in a delay in recommendations.

- Cut slopes exposing loose, cohesionless sands should be reported to the Geotechnical Engineer for possible stabilization recommendations.

- All stabilization excavations should be cleared of loose slough material prior to geotechnical inspection. Stakes should be provided by the Civil Engineer to verify the location and dimensions of the key. A typical stabilization fill detail is shown on Plate D-5.

- Stabilization key excavations should be provided with subdrains. Typical subdrain details are shown on Plates D-6.

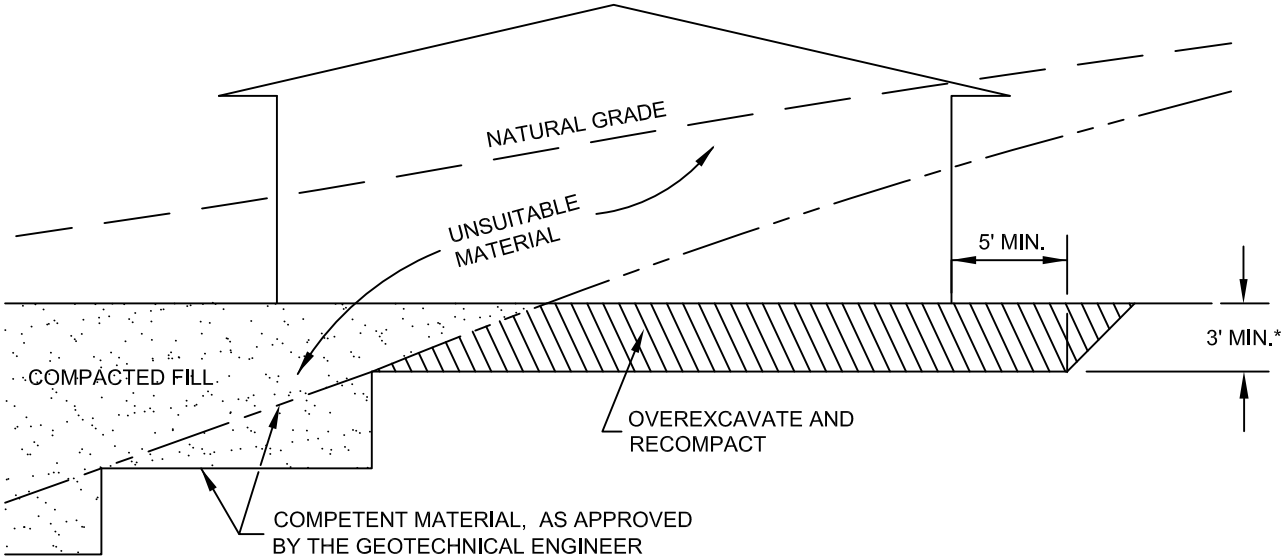
Subdrains

- Subdrains may be required in canyons and swales where fill placement is proposed. Typical subdrain details for canyons are shown on Plate D-3. Subdrains should be installed after approval of removals and before filling, as determined by the Soils Engineer.

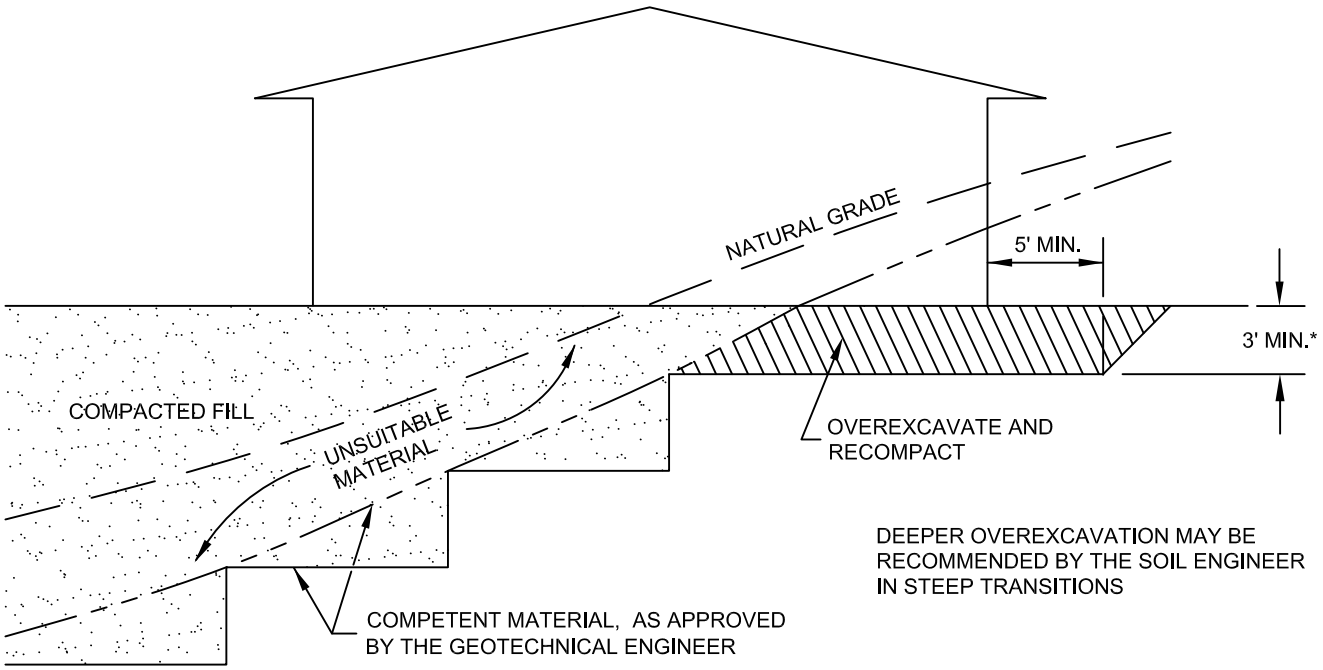
- Plastic pipe may be used for subdrains provided it is Schedule 40 or SDR 35 or equivalent. Pipe should be protected against breakage, typically by placement in a square-cut (backhoe) trench or as recommended by the manufacturer.

- Filter material for subdrains should conform to CALTRANS Specification 68-1.025 or as approved by the Geotechnical Engineer for the specific site conditions. Clean ¾-inch crushed rock may be used provided it is wrapped in an acceptable filter cloth and approved by the Geotechnical Engineer. Pipe diameters should be 6 inches for runs up to 500 feet and 8 inches for the downstream continuations of longer runs. Four-inch diameter pipe may be used in buttress and stabilization fills.

CUT LOT



CUT/FILL LOT (TRANSITION)



*SEE TEXT OF REPORT FOR SPECIFIC RECOMMENDATION. ACTUAL DEPTH OF OVEREXCAVATION MAY BE GREATER.

TRANSITION LOT DETAIL

GRADING GUIDE SPECIFICATIONS

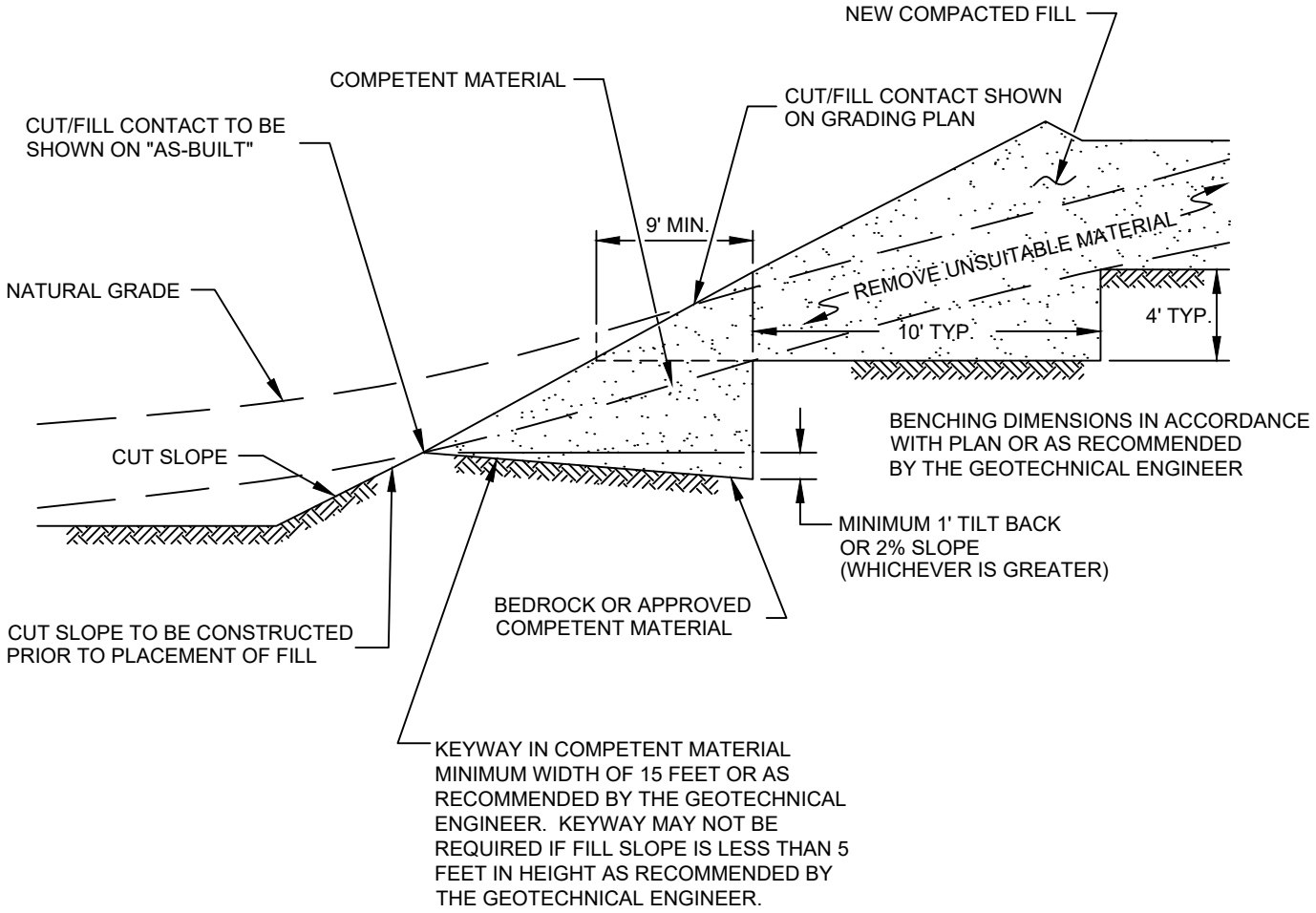
NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-1

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



FILL ABOVE CUT SLOPE DETAIL

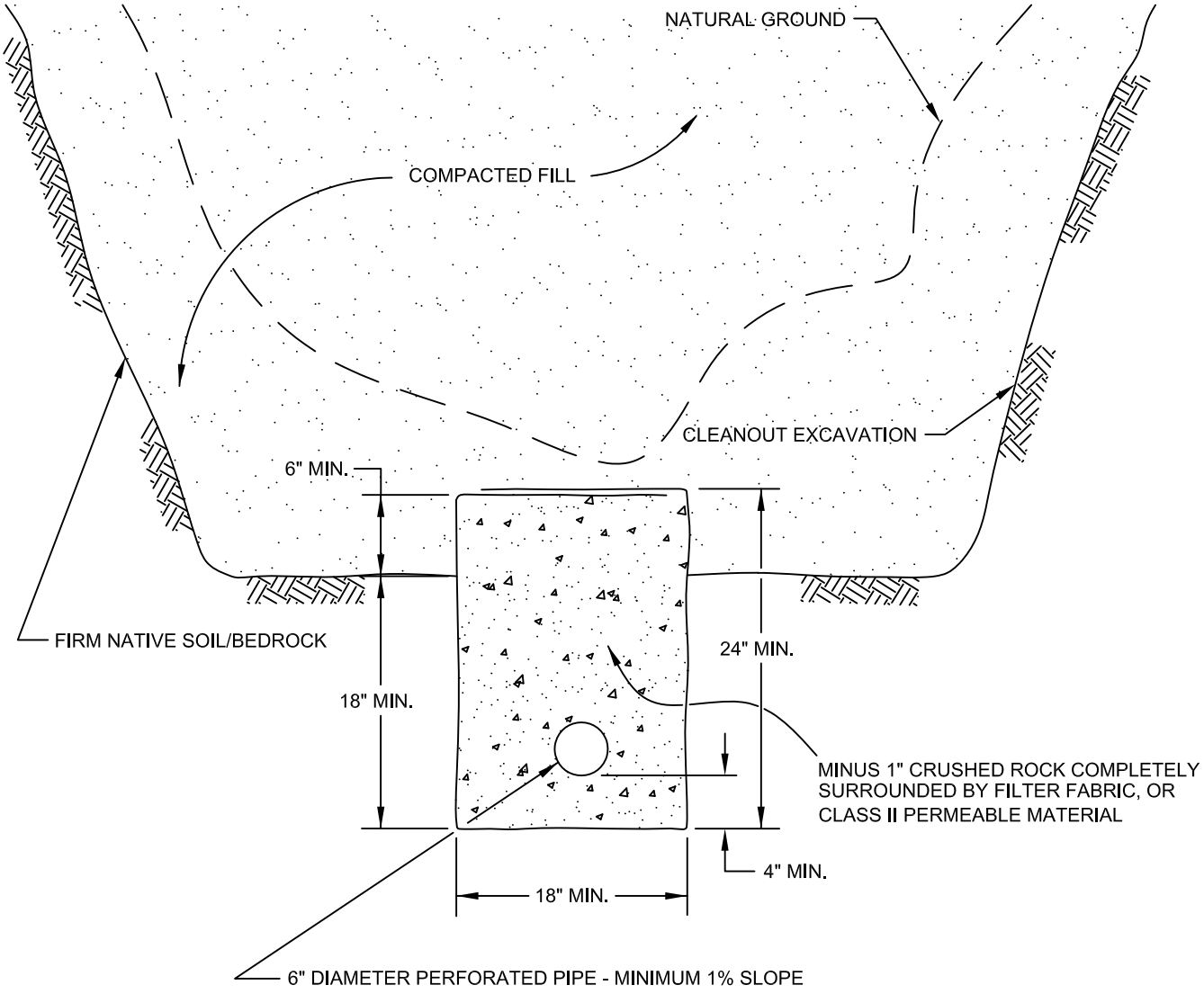
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-2

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



PIPE MATERIAL	DEPTH OF FILL OVER SUBDRAIN
ADS (CORRUGATED POLETHYLENE)	8
TRANSITE UNDERDRAIN	20
PVC OR ABS: SDR 35	35
SDR 21	100

SCHEMATIC ONLY
NOT TO SCALE

CANYON SUBDRAIN DETAIL

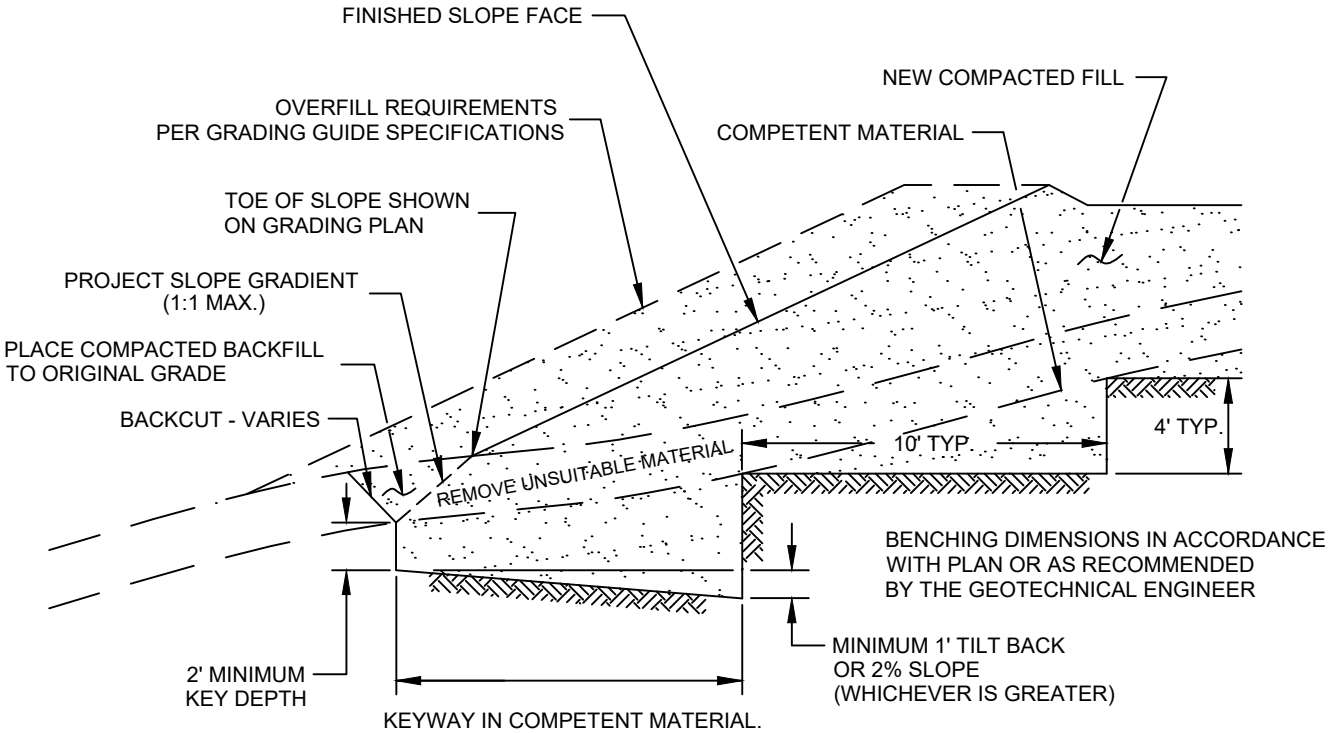
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-3

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



NOTE:
BENCHING SHALL BE REQUIRED WHEN NATURAL SLOPES ARE EQUAL TO OR STEEPER THAN 5:1 OR WHEN RECOMMENDED BY THE GEOTECHNICAL ENGINEER.

FILL ABOVE NATURAL SLOPE DETAIL

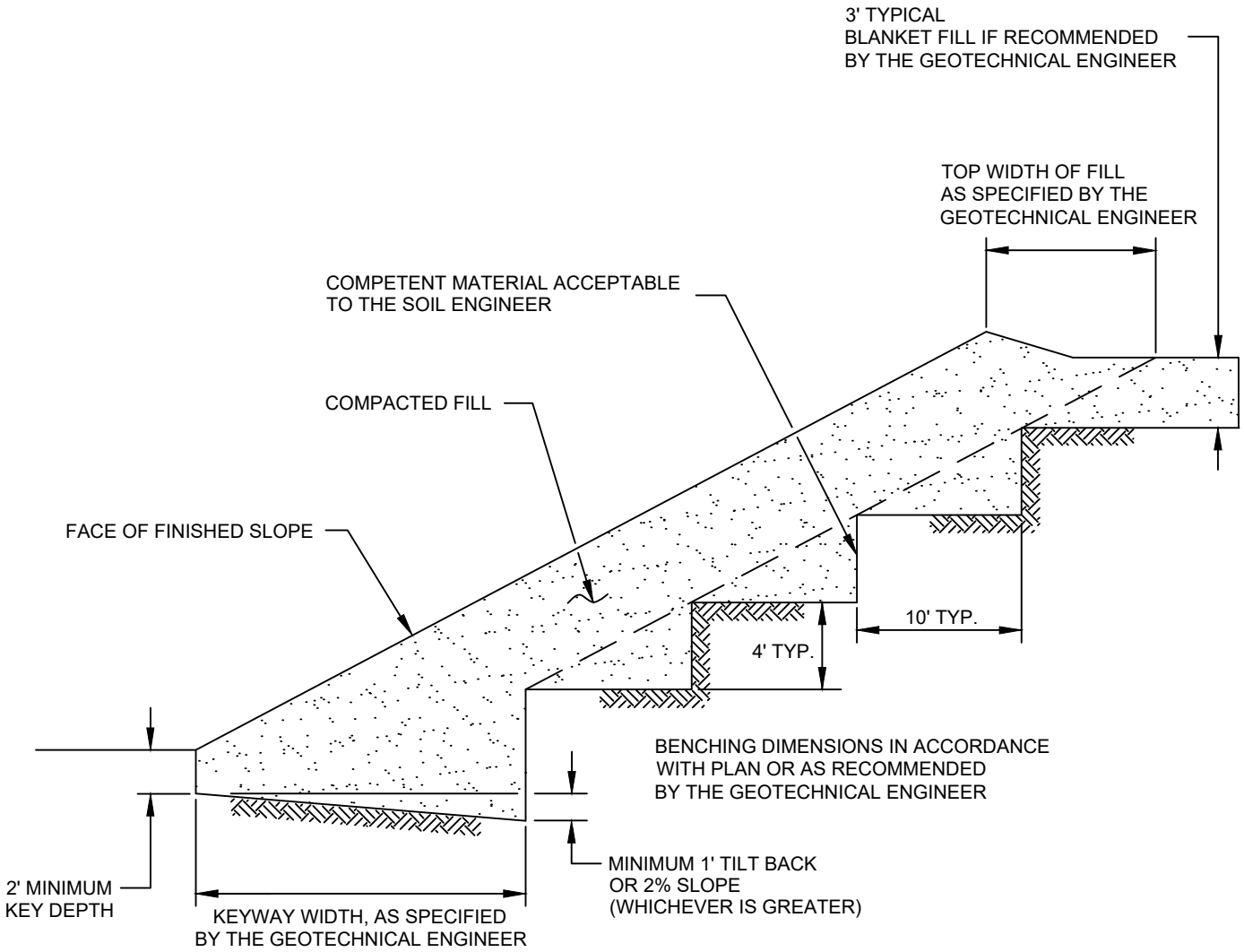
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-4

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



STABILIZATION FILL DETAIL

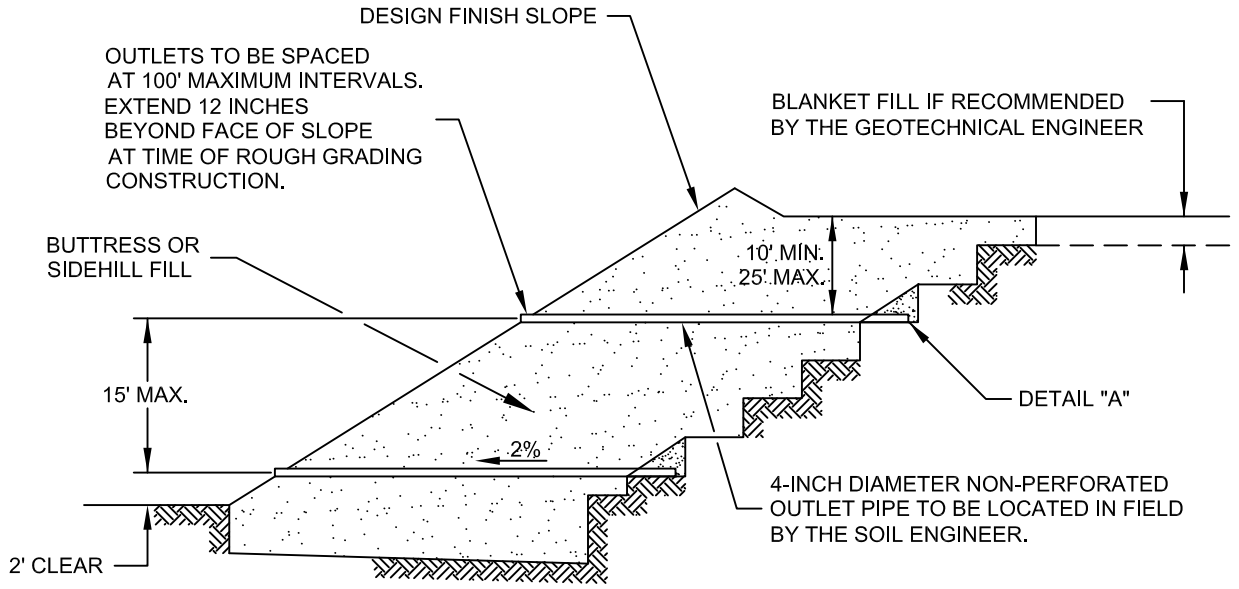
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-5

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



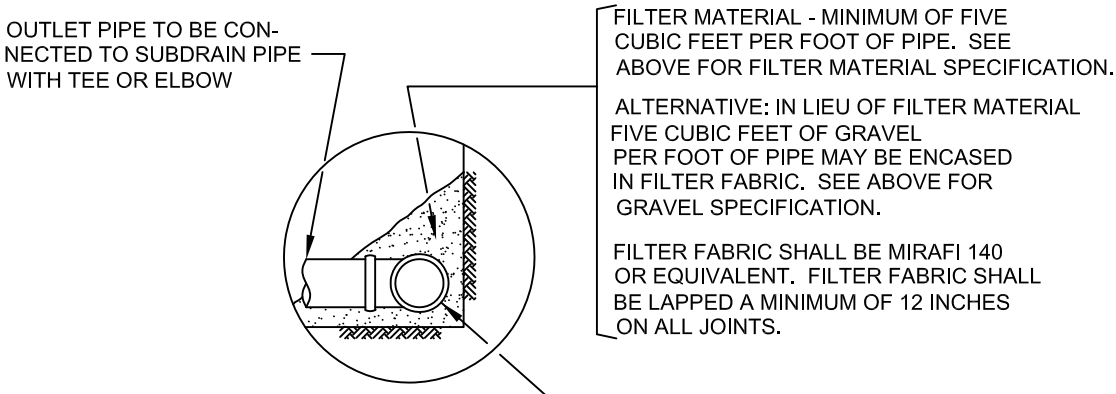
"FILTER MATERIAL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT: (CONFORMS TO EMA STD. PLAN 323)

SIEVE SIZE	PERCENTAGE PASSING
1"	100
3/4"	90-100
3/8"	40-100
NO. 4	25-40
NO. 8	18-33
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3

"GRAVEL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT:

SIEVE SIZE	MAXIMUM PERCENTAGE PASSING
1 1/2"	100
NO. 4	50
NO. 200	8

SAND EQUIVALENT = MINIMUM OF 50



DETAIL "A"

NOTES:
1. TRENCH FOR OUTLET PIPES TO BE BACKFILLED WITH ON-SITE SOIL.

SLOPE FILL SUBDRAINS

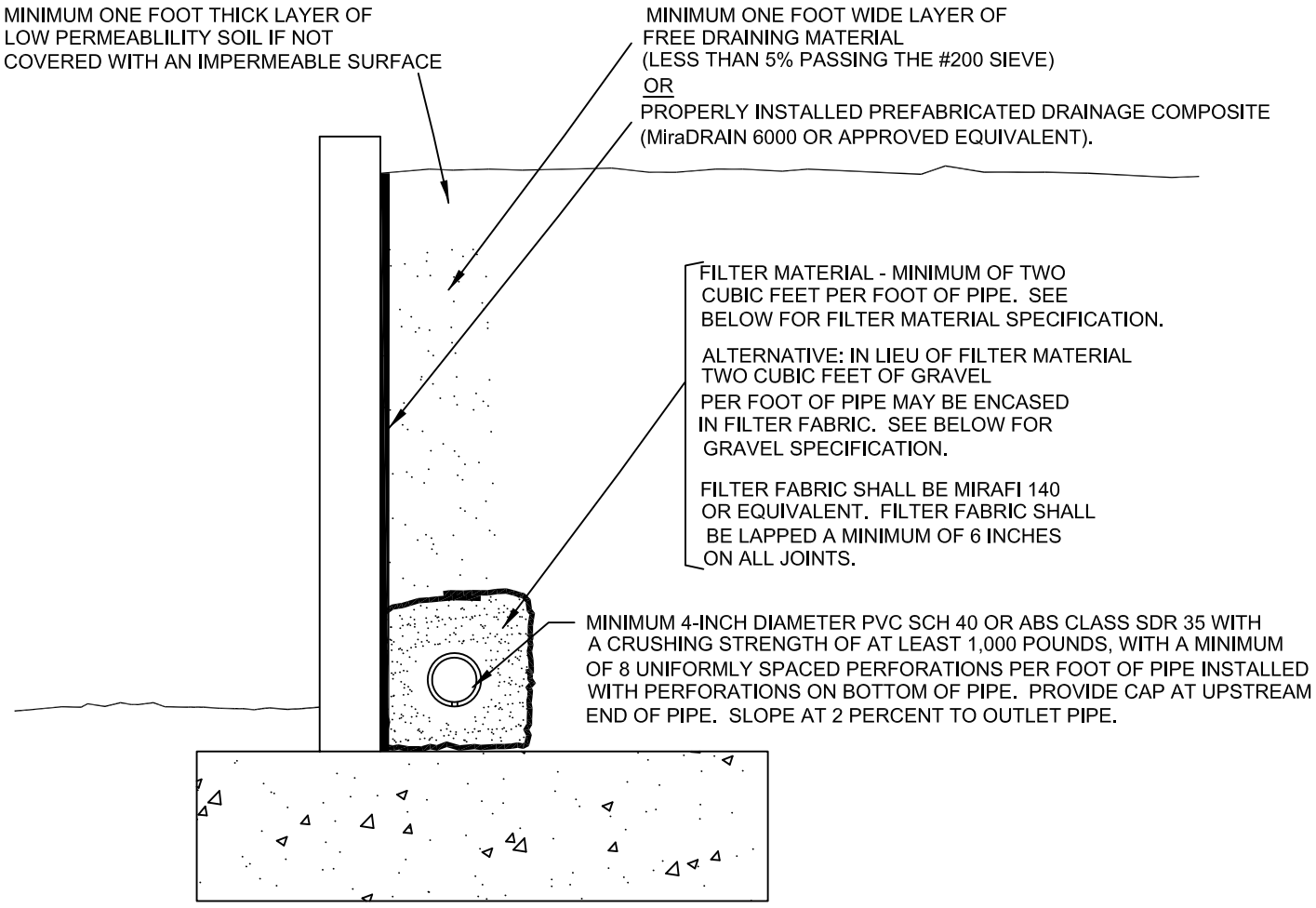
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-6

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



"FILTER MATERIAL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT: (CONFORMS TO EMA STD. PLAN 323)

SIEVE SIZE	PERCENTAGE PASSING
1"	100
3/4"	90-100
3/8"	40-100
NO. 4	25-40
NO. 8	18-33
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3

"GRAVEL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT:

SIEVE SIZE	MAXIMUM PERCENTAGE PASSING
1 1/2"	100
NO. 4	50
NO. 200	8

SAND EQUIVALENT = MINIMUM OF 50

RETAINING WALL BACKDRAINS

GRADING GUIDE SPECIFICATIONS

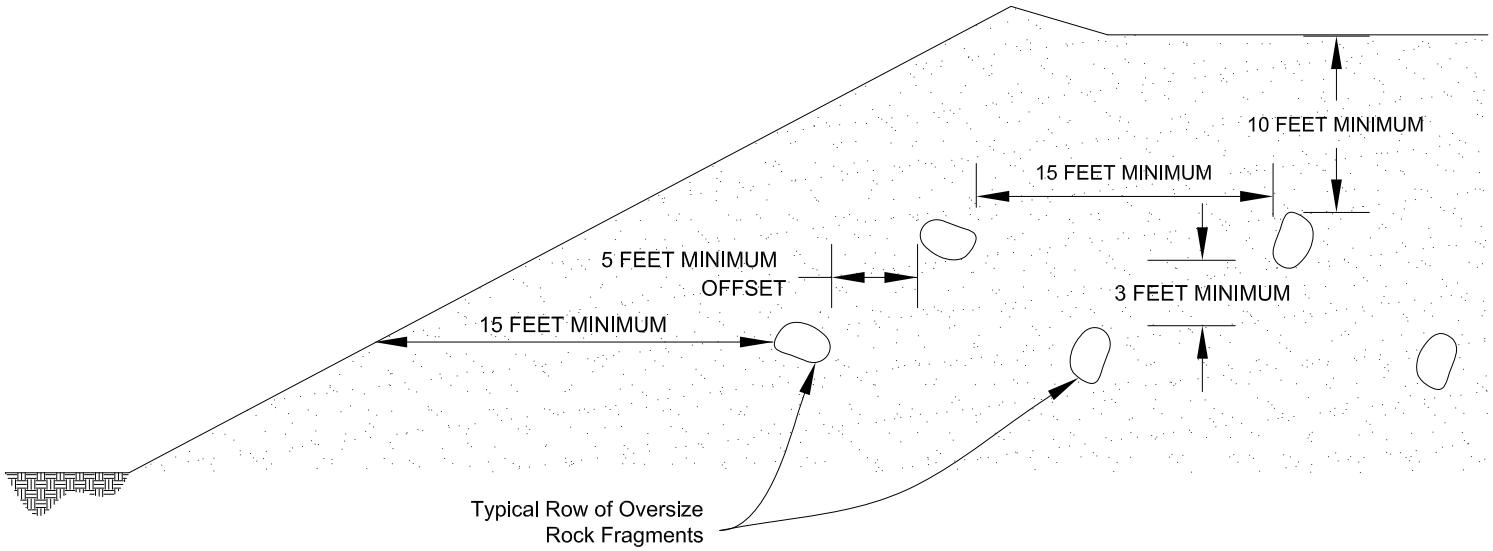
NOT TO SCALE

DRAWN: JAS
CHKD: GKM

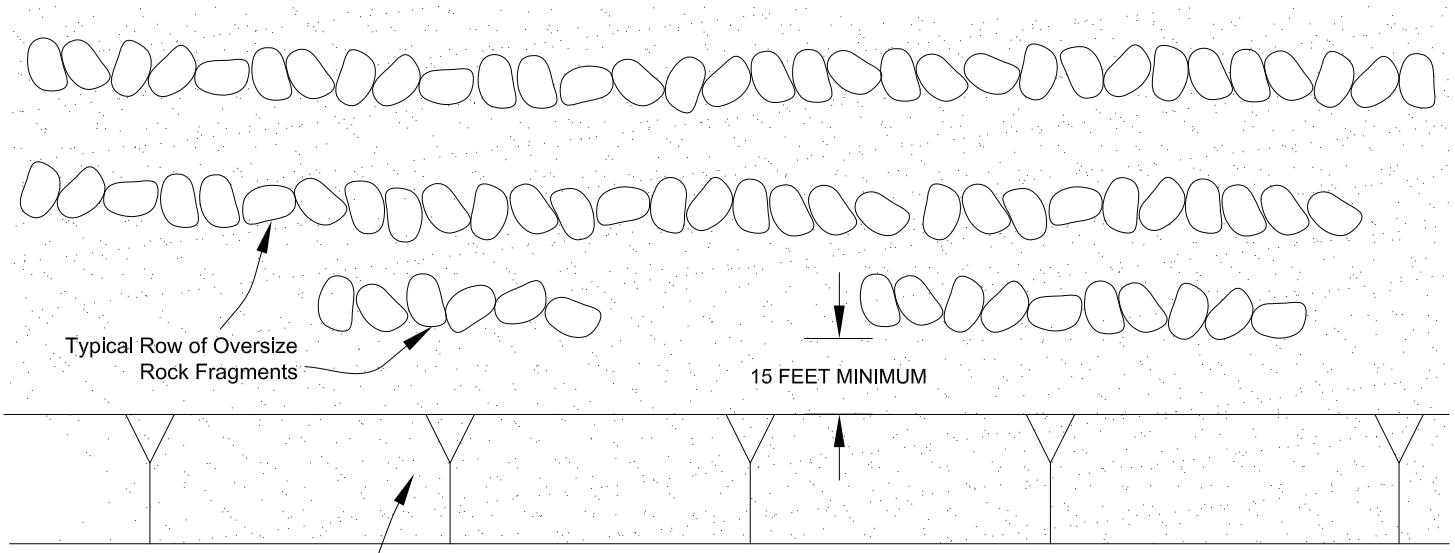
PLATE D-7

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



Section View



Plan View

PLACEMENT OF OVERSIZED MATERIAL

GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: PM
CHKD: GKM

PLATE D-8

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL

APPENDIX E

OSHPD

Latitude, Longitude: 33.912569, -117.882562

Date	7/20/2020, 1:24:10 PM
Design Code Reference Document	ASCE7-16
Risk Category	III
Site Class	D - Stiff Soil

Type	Value	Description
S_S	1.803	MCE_R ground motion. (for 0.2 second period)
S_1	0.634	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.803	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.202	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.781	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	0.86	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	1.803	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	2.001	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.21	Factored deterministic acceleration value. (0.2 second)
S1RT	0.634	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.702	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.858	Factored deterministic acceleration value. (1.0 second)
PGAd	0.92	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.901	Mapped value of the risk coefficient at short periods
C_{R1}	0.903	Mapped value of the risk coefficient at a period of 1 s

SOURCE: SEAOC/OSHPD Seismic Design Maps Tool
<https://seismicmaps.org/>

SEISMIC DESIGN PARAMETERS - 2019 CBC

PROPOSED BREA PLAZA MIXED USE

BREA, CALIFORNIA

DRAWN: JAH
CHKD: DN

SCG PROJECT
20G168-1

PLATE E-1

SoCalGeo SOUTHERN CALIFORNIA GEOTECHNICAL

APPENDIX F

TABLE C-1
SUMMARY OF LABORATORY TEST DATA
W.O. 500690

BORING	DEPTH (FEET)	SOIL DESCRIPTION	GROUP SYMBOL	MAXIMUM DENSITY (PCF)	OPTIMUM MOISTURE CONTENT (%)	DIRECT SHEAR	PLUS NO.4 SEIVE (plus 4.76mm) (%)	SAND (4.76mm-0.075mm) (%)	SILT (0.075mm-0.005mm) (%)	CLAY (minus 0.005mm) (%)	EXPANSION INDEX UBC 18-2	OTHER TESTS REMARKS
HS-01	15	Artificial Fill, Engineered (afe): Sandy Clay	CL				0	30	23	47		
HS-03	1	Artificial Fill, Engineered (afe): Sandy Clay	CL	121.5	9.8		4	46	23	27	45	
HS-03	10	Terrace Deposits (Qt): Sandy Clay	CL				0	31	27	42		
HS-04	10	Terrace Deposits (Qt): Silty Sand	SM				0	78	12	10		
HS-05	20	Terrace Deposits (Qt): Silty Sand	SM				0	84	8	8		
HS-06	7.5	Artificial Fill, Engineered (afe): Sandy Clay	CL			SEE PLATE C-14	0	45	22	33		
HS-06	15	Artificial Fill, Engineered (afe): Sandy Clay	CL				0	43	28	29		
HS-06	25	Terrace Deposits (Qt): Sand with Silt	SP-SM				0	90	3	7		Atterberg Limits- Non Plastic
HS-07	1	Terrace Deposits (Qt): Clayey Sand	SC				0	51	32	28	46	
HS-07	5	Terrace Deposits (Qt): Clayey Sand	SC				0	75	12	13		
HS-07	30	Terrace Deposits (Qt): Clayey Silt	ML				0	15	60	25		
HS-08	4	Artificial Fill, Engineered (afe): Sandy Clay	CL	123.3	10.8		1	49	21	29	35	
HS-08	5	Artificial Fill, Engineered (afe): Sandy Clay	CL			SEE PLATE C-14	0	45	23	32		
HS-08	10	Terrace Deposits (Qt): Clayey Sand	SC				0	55	15	30		
HS-09	8.5	Alluvium (Qal): Clayey Silt	ML				0	36	28	36		
HS-09	10	Alluvium (Qal): Clayey Silt	ML				0	23	45	32		
HS-09	15	Alluvium (Qal): Clayey Sand	SC				0	70	15	15		
HS-09	20	Alluvium (Qal): Sandy Clay	CL				0	42	32	26		Atterberg Limits- Plate C-16
HS-09	30	Terrace Deposits (Qt): Clayey Sand	SC				0	60	18	22		
HS-10	7.5	Alluvium (Qal): Clay	CL				0	27	43	30		
HS-10	13	Alluvium (Qal): Sandy Clay	CL				0	41	29	30		Atterberg Limits- Plate C-16
HS-10	15	Alluvium (Qal): Clayey Sand	SC				0	58	23	19		

TABLE C-1
SUMMARY OF LABORATORY TEST DATA
W.O. 500690

BORING	DEPTH (FEET)	SOIL DESCRIPTION	GROUP SYMBOL	MAXIMUM DENSITY (PCF)	OPTIMUM MOISTURE CONTENT (%)	DIRECT SHEAR	PLUS NO.4 SEIVE (plus 4.76mm) (%)	SAND (4.76mm-0.075mm) (%)	SILT (0.075mm-0.005mm) (%)	CLAY (minus 0.005mm) (%)	EXPANSION INDEX UBC 18-2	OTHER TESTS REMARKS
HS-10	20	Alluvium (Qal): Silty Sand	SM				0	78	10	12		
HS-10	30	Terrace Deposits (Qt): Sand with Silt	SP-SM				0	92	2	6		
HS-10	45	Terrace Deposits (Qt): Silty Sand	SM				0	52	30	18		
HS-11	7.5	Artificial Fill, Engineered (afe): Silty Clay	CL-ML				0	43	32	25		
HS-11	10	Alluvium (Qal): Clayey Sand	SC				0	50	30	20		
HS-11	11	Alluvium (Qal): Silty Clay	CL-ML				0	29	40	31		
HS-11	15	Alluvium (Qal): Silty Clay	CL-ML				0	36	32	32		
HS-11	20	Alluvium (Qal): Clayey Sand	SC			SEE PLATE C-15	0	62	25	13		
HS-11	25	Alluvium (Qal): Sandy Clay	CL				0	50	27	23		
HS-11	26	Alluvium (Qal): Silty Sand	SM				0	80	7	13		
HS-12	15	Alluvium (Qal): Silty Clay	CL-ML				0	37	33	30		
HS-12	20	Alluvium (Qal): Clayey Sand	SC				9	52	21	18		Atterberg Limits- Plate C-16
HS-13	7.5	Alluvium (Qal): Silty Clay	CL-ML				0	28	38	34		
HS-13	15	Alluvium (Qal): Silty Sand	SM				0	66	17	17		
HS-13	20	Terrace Deposits (Qt): Clayey Silt	ML				0	17	40	43		

of selected samples were evaluated by KYH Co., Analytical Laboratory. The results of these tests are included in the following table.

CHEMICAL TEST RESULTS				
Sample	**Sulfate Content (% wt.)***	**Chloride Content (% wt.)***	**pH**	**Resistivity (ohm-cm)**
HS-9 @ 7-10 feet	0.008	0.025	7.3	670
HS-10 @ 13 feet	<0.001	0.007	7.1	1,000
HS-11 @ 10-15 feet	<0.001	0.003	7.5	1,530
HS-12 @ 10-15 feet	0.009	0.004	7.4	1,160
*Sulfate Content and Chloride Content tests provided by KYH Co. Analytical Laboratory, Santa Ana, California				

GEOTECHNICAL BORING LOG

PROJECT NO.	500690	PROJECT NAME	Brea Plaza	BORING DESIG.	HS-03
DATE STARTED	10/22/07	GROUND ELEV.	329	LOGGED BY	SJD
DATE FINISHED	10/22/07	GW DEPTH (FT)	26	DRIVE WT.	140 lbs.
DRILLER	Martini	DROP	30 in.		
TYPE OF DRILL RIG	6" HSA				

DEPTH (Feet)	ELEV	SAMPLE TYPE	BLOWS	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
						6" Asphalt Concrete over 2" Silty Gravel				
					CL	ARTIFICIAL FILL, ENGINEERED (afe): SANDY CLAY, sand is fine to coarse-grained, brown to orangish brown, slightly moist				MAX El HY
		B				@ 3 ft. - moist, firm				
	325									
5		R	15			@ 5 ft. - some rounded gravel, moist to very moist, firm	20.0	99	79	
		R	21			@ 7.5 ft. - mottled, dark brown and brown, moist, firm	17.1	111	94	
	320					@ 8.5 ft. - dark brown, moist, firm, trace caliche, stringers are broken up (disturbed- fill)				
10		R	30		CL	TERRACE DEPOSITS (Qt): SANDY CLAY, dark brown, trace caliche, moist, stiff	15.6	115	95	CON HY
		S	5,5,7			@ 12.5 ft. - slightly mottled, dark brown to dark grayish, brown, trace orangish brown staining, moist, stiff				
	315									
15		R	38				14.9	116	92	
	310									
20		R	37			@ 20 ft. - slightly mottled, dark brown, brown, orangish brown, moist, stiff	15.9	114	94	
					ML	@ 21 ft. - SANDY SILT, sand is fine-grained, orangish brown, moist, stiff				
	305									
25		S	4,7,9		CL	@ 25 ft. - SANDY CLAY, sand is fine to medium-grained, orangish brown with some grayish brown layers, moist, stiff				
	300									
30		R	56		SC	@ 30 ft. - CLAYEY SAND, fine to coarse-grained, trace gravel, orangish brown, wet, dense	15.8	113	90	
						TOTAL DEPTH 31.5 FEET GROUNDWATER ENCOUNTERED AT 26.3 FEET				

SAMPLE TYPES:
- [R] RING (DRIVE) SAMPLE
- [S] SPT (SPLIT SPOON) SAMPLE
- [B] BULK SAMPLE
- [T] TUBE SAMPLE

▼ GROUNDWATER
▶ SEEPAGE

PACIFIC SOILS ENGINEERING, INC.

PLATE B-3

GEOTECHNICAL BORING LOG

PROJECT NO.	500690	PROJECT NAME	Brea Plaza	BORING DESIG.	HS-04
DATE STARTED	10/22/07	GROUND ELEV.	331	LOGGED BY	SJD
DATE FINISHED	10/22/07	GW DEPTH (FT)		DRIVE WT.	140 lbs.
DRILLER	Martini	DROP	30 in.		
TYPE OF DRILL RIG	6" HSA				

DEPTH (Feet)	ELEV	SAMPLE TYPE	BLOWS	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
						4" Asphalt Concrete over 3" Base				
	330				SC	**ARTIFICIAL FILL, ENGINEERED (afe):** CLAYEY SAND, fine to coarse-grained, orangish brown, moist, medium dense				
					SC	**TERRACE DEPOSITS (Qt):** CLAYEY SAND, fine to coarse-grained, orangish brown, moist, dense				
5		R	74			@ 5 ft. - slightly mottled, moist, very dense	12.4	119	84	
	325									
		R	89		SM	@ 7.5 ft. - SILTY SAND, fine-grained, orangish brown, slightly moist, very dense	7.3	102	31	
10		S	10,18,17			@ 10 ft. - finer grained, more silt, slightly moist, dense				HY
	320									
15		R	80			@ 15 ft. - some clay, slightly mottled, orangish brown, slightly moist, very dense	12.5	122	92	
	315									
20		S	10,9,10		ML	@ 20 ft. - SANDY SILT, sand is fine-grained, orangish brown, slightly moist, very stiff				
	310					TOTAL DEPTH 21.5 FEET NO GROUNDWATER ENCOUNTERED				

SAMPLE TYPES:
- [R] RING (DRIVE) SAMPLE
- [S] SPT (SPLIT SPOON) SAMPLE
- [B] BULK SAMPLE
- [T] TUBE SAMPLE

▼ GROUNDWATER
▶ SEEPAGE

PACIFIC SOILS ENGINEERING, INC.

PLATE B-4

GEOTECHNICAL BORING LOG

PROJECT NO.	500690	PROJECT NAME	Brea Plaza	BORING DESIG.	HS-05
DATE STARTED	10/22/07	GROUND ELEV.	333	LOGGED BY	SJD
DATE FINISHED	10/22/07	GW DEPTH (FT)		DRIVE WT.	140 lbs.
DRILLER	Martini	DROP	30 in.		
TYPE OF DRILL RIG	6" HSA				

DEPTH (Feet)	ELEV	SAMPLE TYPE	BLOWS	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
						6" Asphalt Concrete over 6" Base				
					SM	ARTIFICIAL FILL, ENGINEERED (afe): SILTY SAND, some gravel, orangish brown, slightly moist, dense				
	330	B				@ 3 ft. - pieces of concrete				
5		R	64		ML	TERRACE DEPOSITS (Qt): SANDY SILT, sand is fine to medium-grained, slightly mottled, orangish brown and tan, slightly moist, hard	8.5	103	37	
	325	R	59		SM	@ 7.5 ft. - SILTY SAND, very fine-grained, orangish brown, slightly moist, dense	8.6	104	39	
10		R	76			@ 10 ft. - slightly mottled, orangish brown, slightly moist, very dense	13.9	100	57	
	320									
15		R	68			@ 15 ft. - less silt, light orangish brown, slightly moist, very dense	4.4	104	20	
	315									
20		S	10,14,17			@ 20 ft. - coarse-grained sand at tip, very moist				HY
						TOTAL DEPTH 21.5 FEET NO GROUNDWATER ENCOUNTERED				

SAMPLE TYPES:
- [R] RING (DRIVE) SAMPLE
- [S] SPT (SPLIT SPOON) SAMPLE
- [B] BULK SAMPLE
- [T] TUBE SAMPLE

▼ GROUNDWATER
▶ SEEPAGE

PACIFIC SOILS ENGINEERING, INC.

PLATE B-5

GEOTECHNICAL BORING LOG

PROJECT NO.	500690	PROJECT NAME	Brea Plaza	BORING DESIG.	HS-07
DATE STARTED	10/23/07	GROUND ELEV.	331	LOGGED BY	CED
DATE FINISHED	10/23/07	GW DEPTH (FT)	21	DRIVE WT.	140 lbs.
DRILLER	Martini	DROP	30 in.		
TYPE OF DRILL RIG	6" HSA				

DEPTH (Feet)	ELEV	SAMPLE TYPE	BLOWS	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
						6.5" Asphalt over 3" Base				
	330	B			SC	TERRACE DEPOSITS (Qt): CLAYEY SAND, fine to medium-grained with layers of coarse-grained, trace fine gravel, orange-brown, moist, dense, white carbonate blotches				EI HY
5		R	36				7.3	118	48	CON HY
	325	R	71		SM	@ 7.5 ft. - SILTY SAND, fine-grained, trace clay, orange-brown, slightly moist to moist, dense	12.4	107	60	
10		R	79				10.6	115	63	
	320				ML	@ 10 ft. - fine-grained, grades to a CLAYEY SILT, orange brown with gray mottling, dry to moist, dense to very stiff, considerable white carbonates developed in silts, some hardened nodules				
15		R	75		SM	@ 15 ft. - SILTY SAND, fine-grained, light orange brown to orange brown, moist, dense	7.2	108	36	
	315									
20		S	14,17,18			▼				
	310				SP	@ 21 ft. - GRAVELLY SAND, fine to coarse-grained, trace clay, medium brown, moist				
25		S	5,7,10		CL	@ 25 ft. - SANDY CLAY, sand is fine-grained, trace fine gravel, light brown, moist to very moist, stiff to very stiff				
	305									
30		S	9,7,10		ML	@ 30 ft. - CLAYEY SILT, light brown, moist to very moist, stiff				HY
	300					TOTAL DEPTH 31.5 FEET GROUNDWATER ENCOUNTERED AT 20.8 FEET				

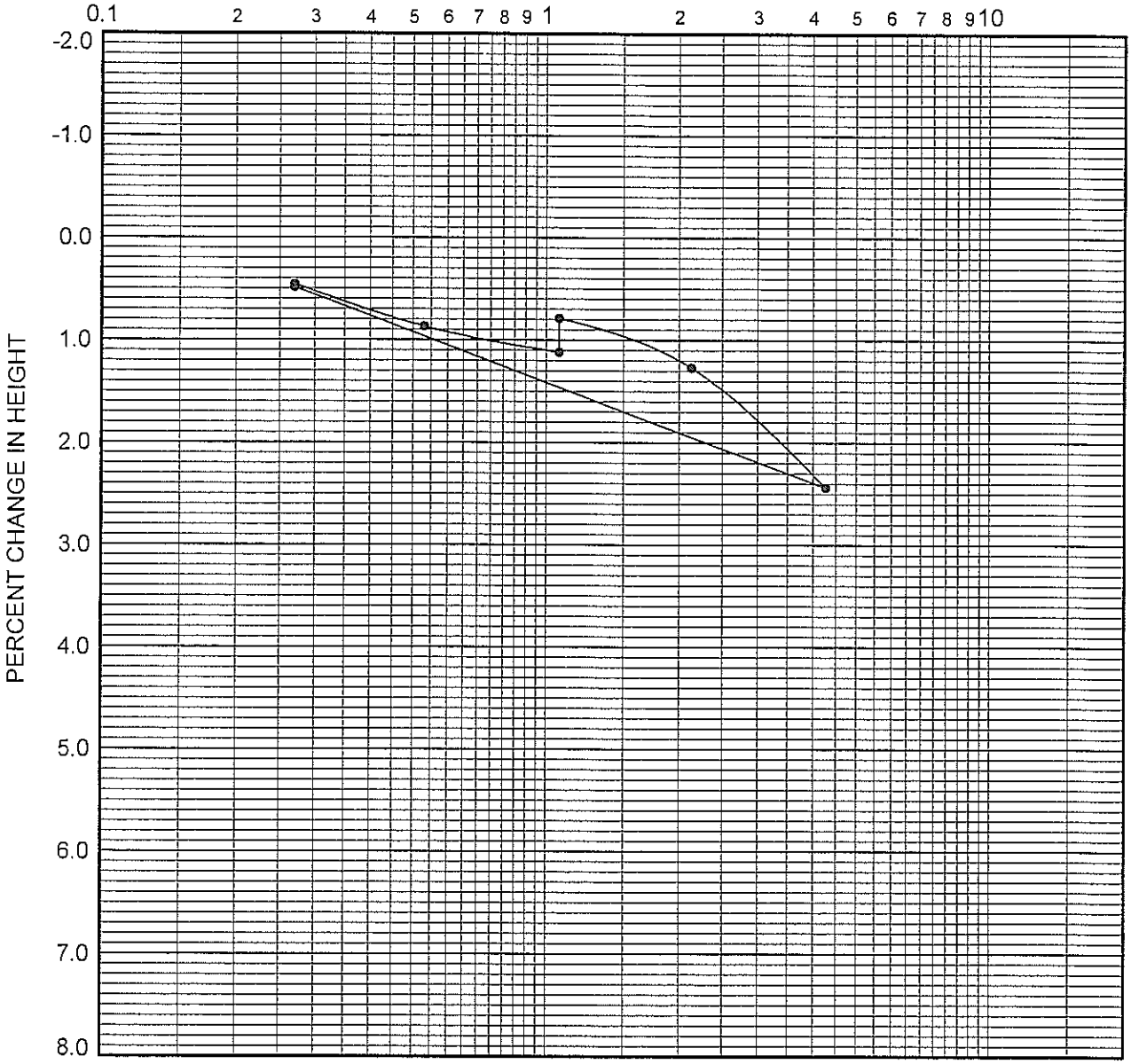
SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

▼ GROUNDWATER
SEEPAGE

PACIFIC SOILS ENGINEERING, INC.

PLATE B-7

COMPRESSIVE STRESS IN TSF



boring	depth (ft.)	dry density (pcf)	in situ moist. (%)	in situ satur. (%)	-200 sieve (%)	group symbol	typical names
HS-01	15.0	109	18.6	95	70	CL	Artificial Fill, Engineered (afe): Sandy Clay

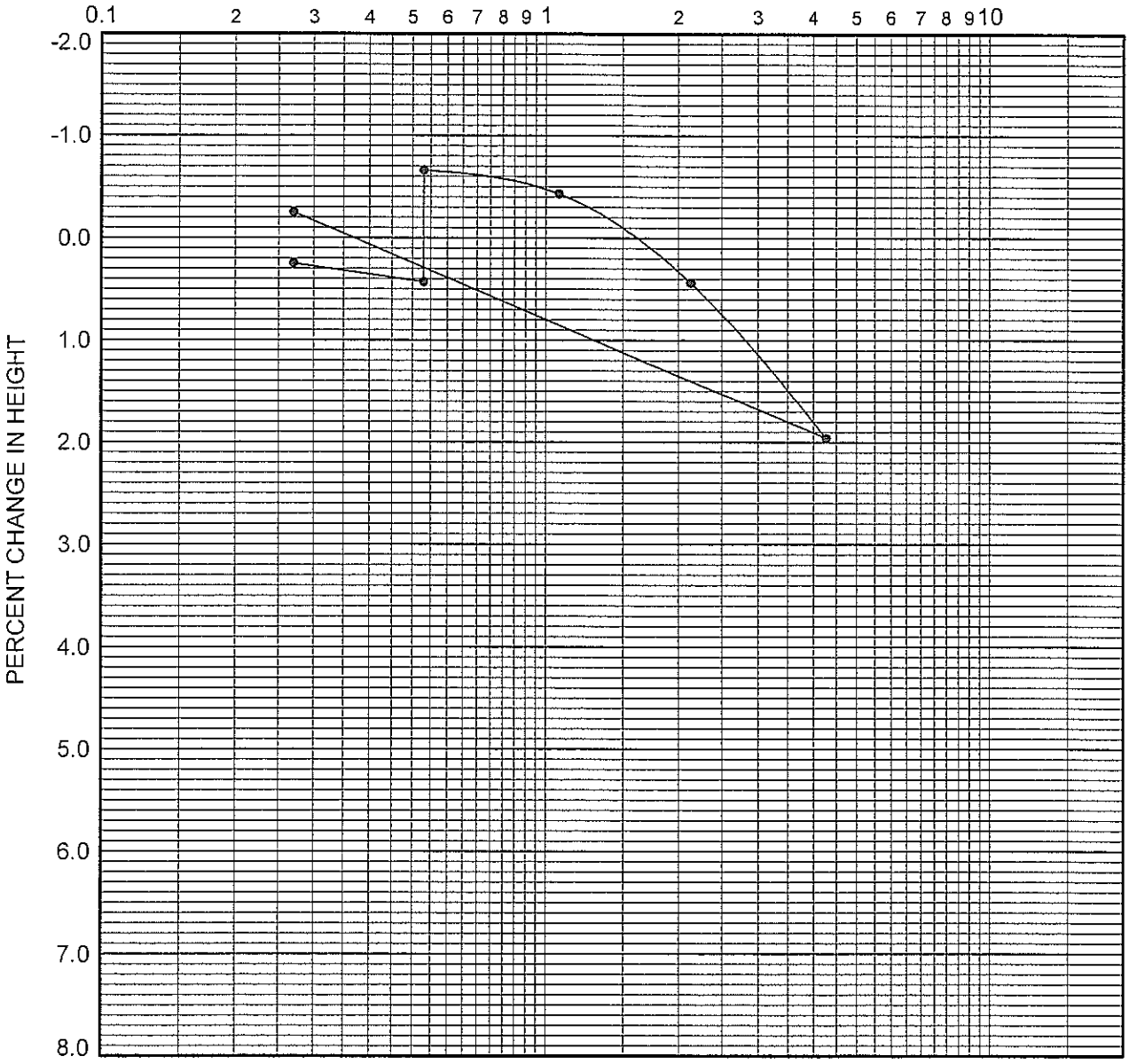
REMARKS: WATER ADDED AT 1.07 TSF

CONSOLIDATION CURVE

PACIFIC SOILS ENGINEERING, INC.

W.O. 500690 PLATE C-1

COMPRESSIVE STRESS IN TSF



boring	depth (ft.)	dry density (pcf)	in situ moist. (%)	in situ satur. (%)	-200 sieve (%)	group symbol	typical names
HS-03	10.0	115	15.6	95	69	CL	Terrace Deposits (Qt): Sandy Clay

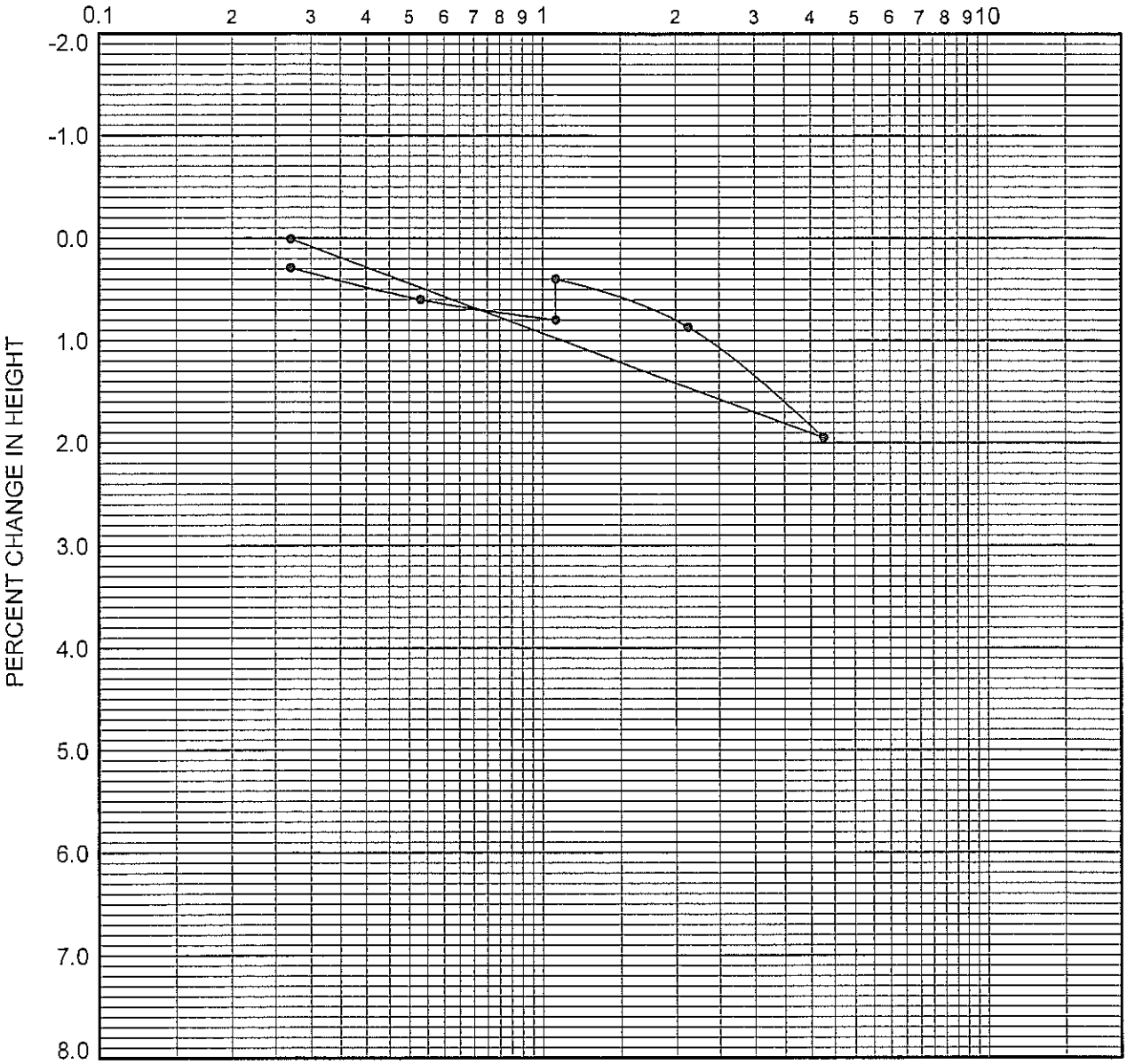
REMARKS: WATER ADDED AT 0.53 TSF

CONSOLIDATION CURVE

PACIFIC SOILS ENGINEERING, INC.

W.O. 500690 PLATE C-2

COMPRESSIVE STRESS IN TSF



boring	depth (ft.)	dry density (pcf)	in situ moist. (%)	in situ satur. (%)	-200 sieve (%)	group symbol	typical names
HS-06	15.0	111	17.5	93	57	CL	Artificial Fill, Engineered (afe): Sandy Clay

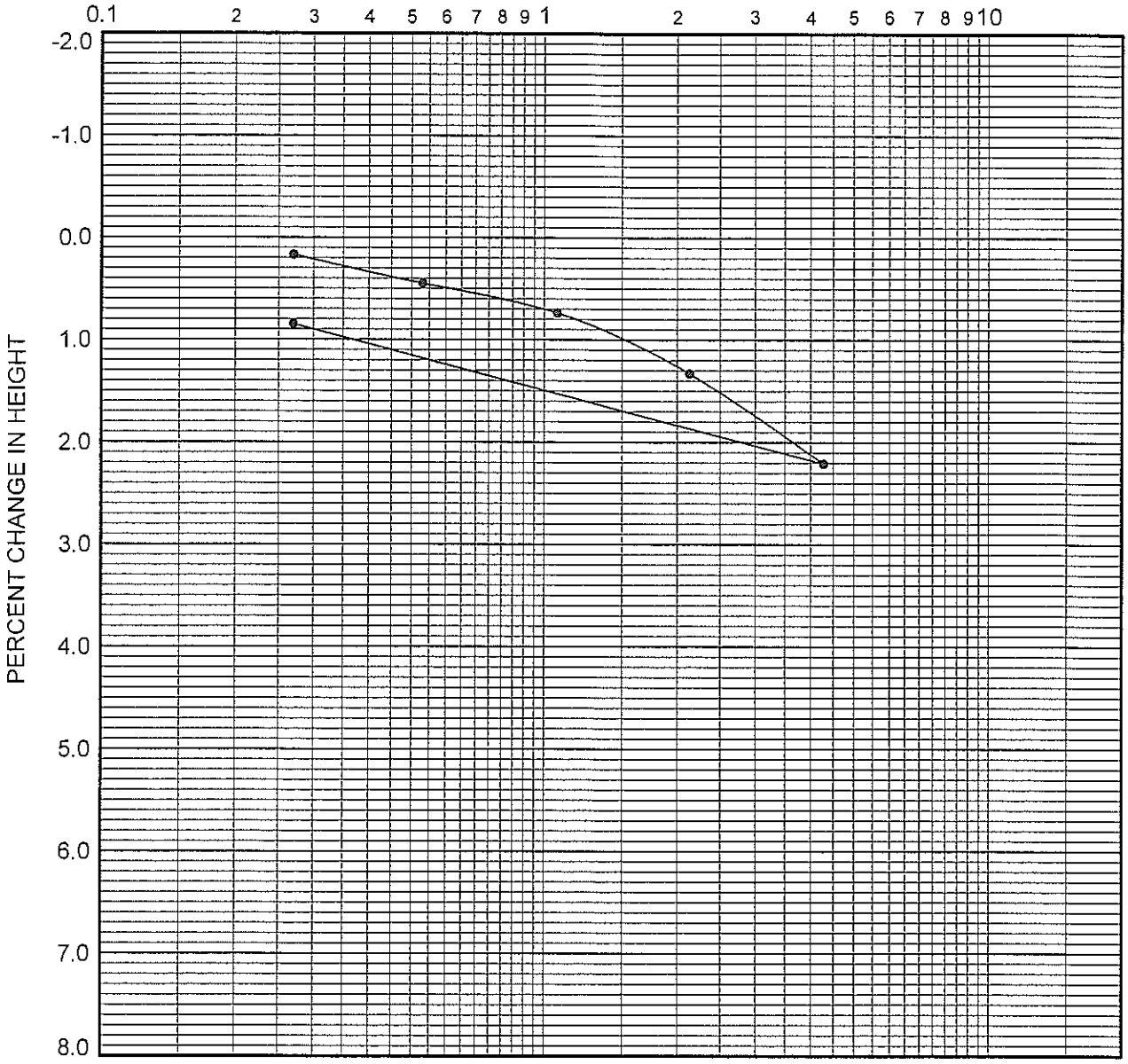
REMARKS: WATER ADDED AT 1.07 TSF

CONSOLIDATION CURVE

PACIFIC SOILS ENGINEERING, INC.

W.O. 500690 PLATE C-3

COMPRESSIVE STRESS IN TSF



boring	depth (ft.)	dry density (pcf)	in situ moist. (%)	in situ satur. (%)	-200 sieve (%)	group symbol	typical names
HS-07	5.0	118	7.3	48	25	SC	Terrace Deposits (Qt): Clayey Sand

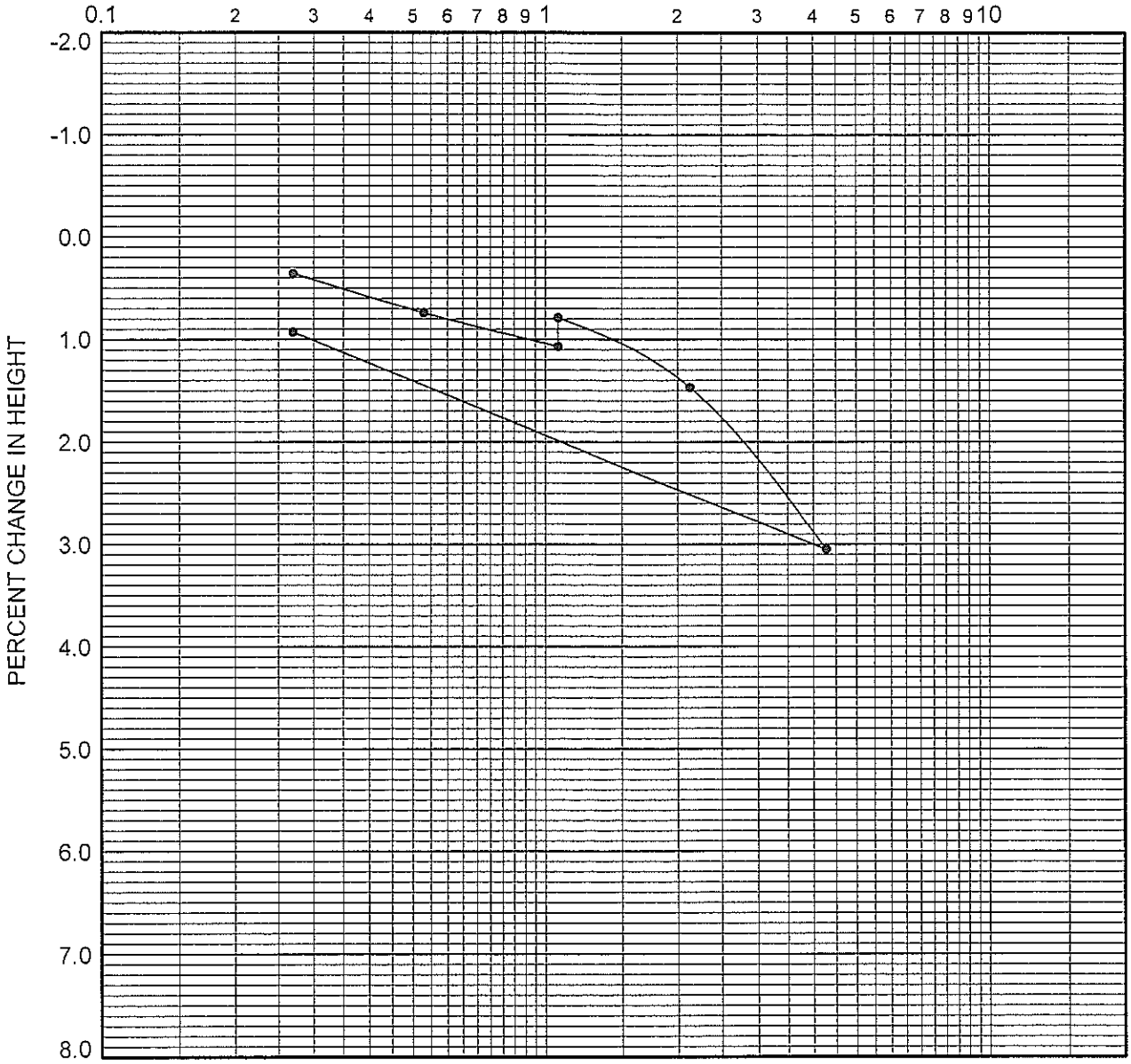
REMARKS: WATER ADDED AT 1.07 TSF

CONSOLIDATION CURVE

PACIFIC SOILS ENGINEERING, INC.

W.O. 500690 PLATE C-4

COMPRESSIVE STRESS IN TSF



boring	depth (ft.)	dry density (pcf)	in situ moist. (%)	in situ satur. (%)	-200 sieve (%)	group symbol	typical names
HS-08	10.0	116	14.3	89	45	SC	Terrace Deposits (Qt): Clayey Sand

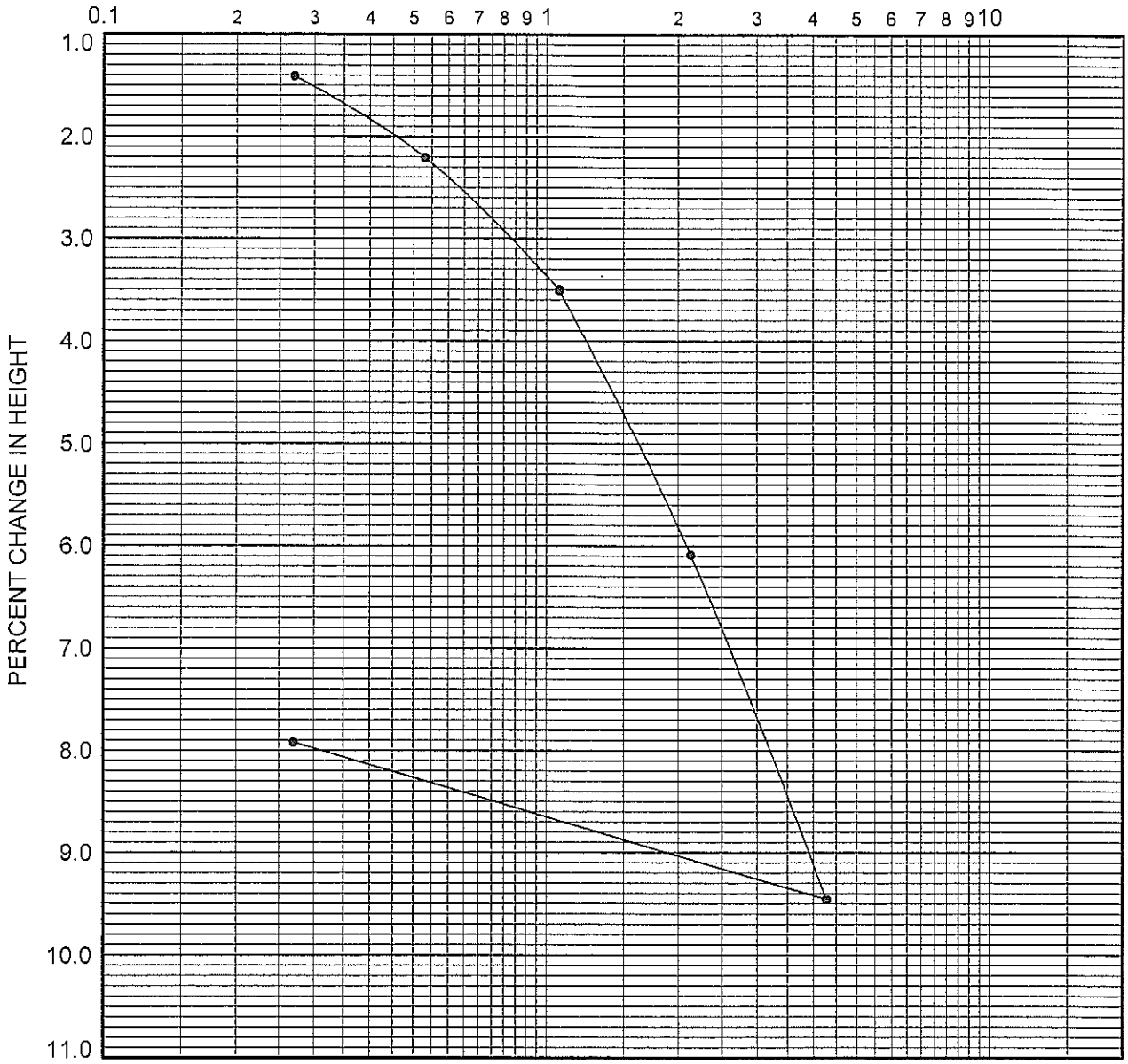
REMARKS: WATER ADDED AT 1.07 TSF

CONSOLIDATION CURVE

PACIFIC SOILS ENGINEERING, INC.

W.O. 500690 PLATE C-5

COMPRESSIVE STRESS IN TSF



boring	depth (ft.)	dry density (pcf)	in situ moist. (%)	in situ satur. (%)	-200 sieve (%)	group symbol	typical names
HS-09	10.0	94	24.1	85	77	ML	Alluvium (Qal): Clayey Silt

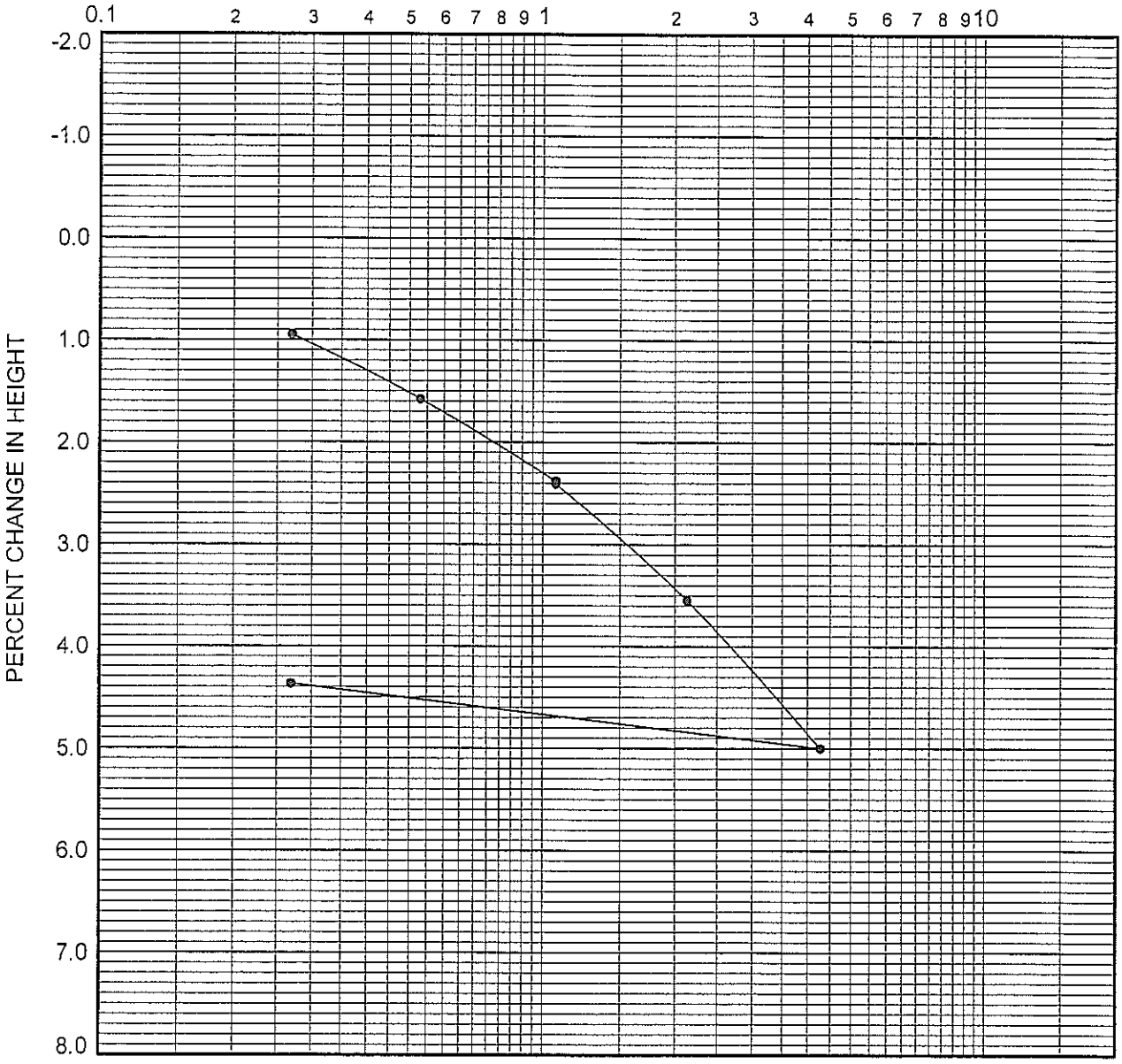
REMARKS: WATER ADDED AT 1.07 TSF

CONSOLIDATION CURVE

PACIFIC SOILS ENGINEERING, INC.

W.O. 500690 PLATE C-6

COMPRESSIVE STRESS IN TSF



boring	depth (ft.)	dry density (pcf)	in situ moist. (%)	in situ satur. (%)	-200 sieve (%)	group symbol	typical names
HS-09	15.0	110	17.9	94	30	SC	Alluvium (Qal): Clayey Sand

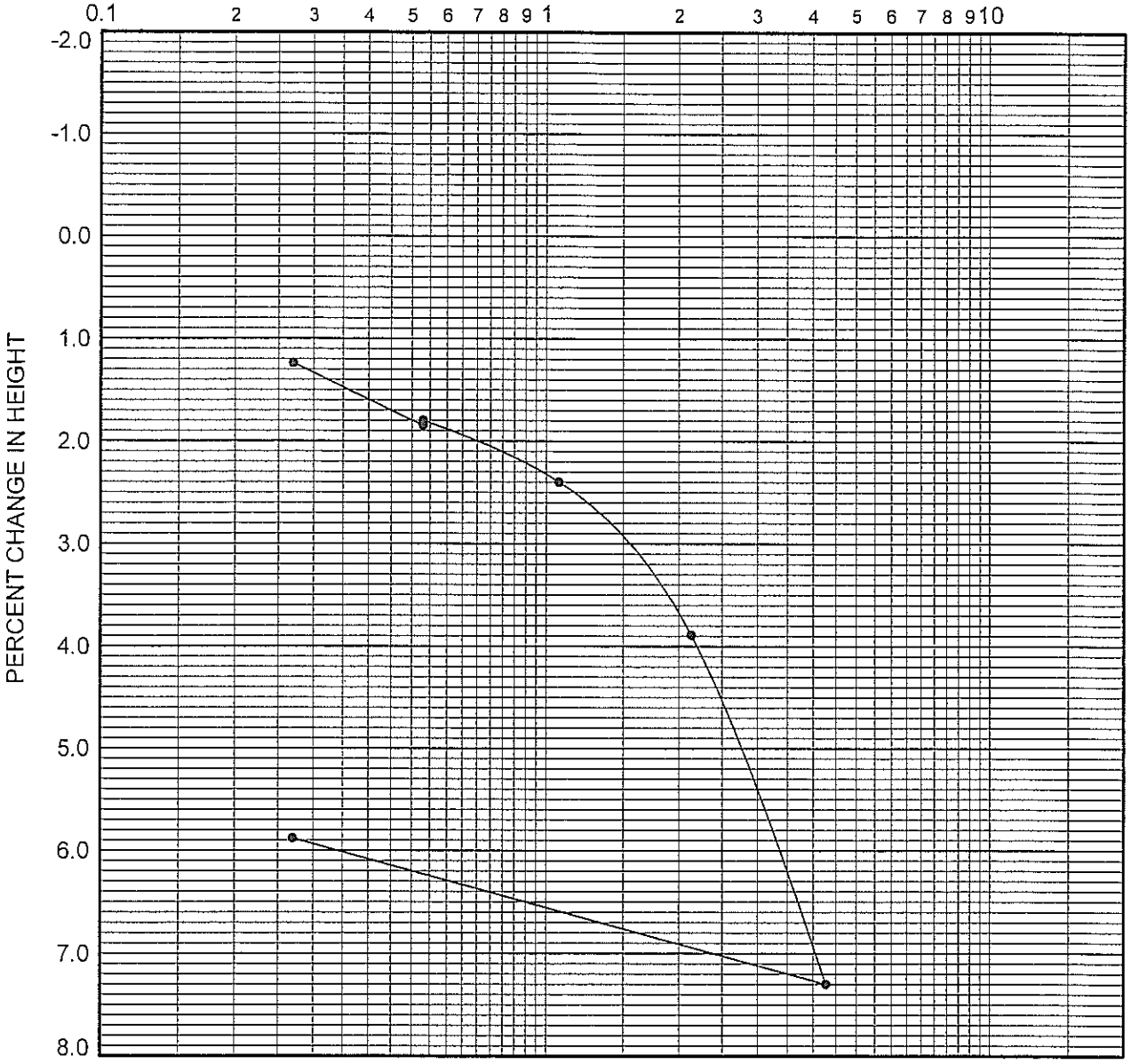
REMARKS: WATER ADDED AT 1.07 TSF

CONSOLIDATION CURVE

PACIFIC SOILS ENGINEERING, INC.

W.O. 500690 PLATE C-7

COMPRESSIVE STRESS IN TSF



boring	depth (ft.)	dry density (pcf)	in situ moist. (%)	in situ satur. (%)	-200 sieve (%)	group symbol	typical names
HS-10	7.5	102	21.1	91	73	CL	Alluvium (Qal): Clay

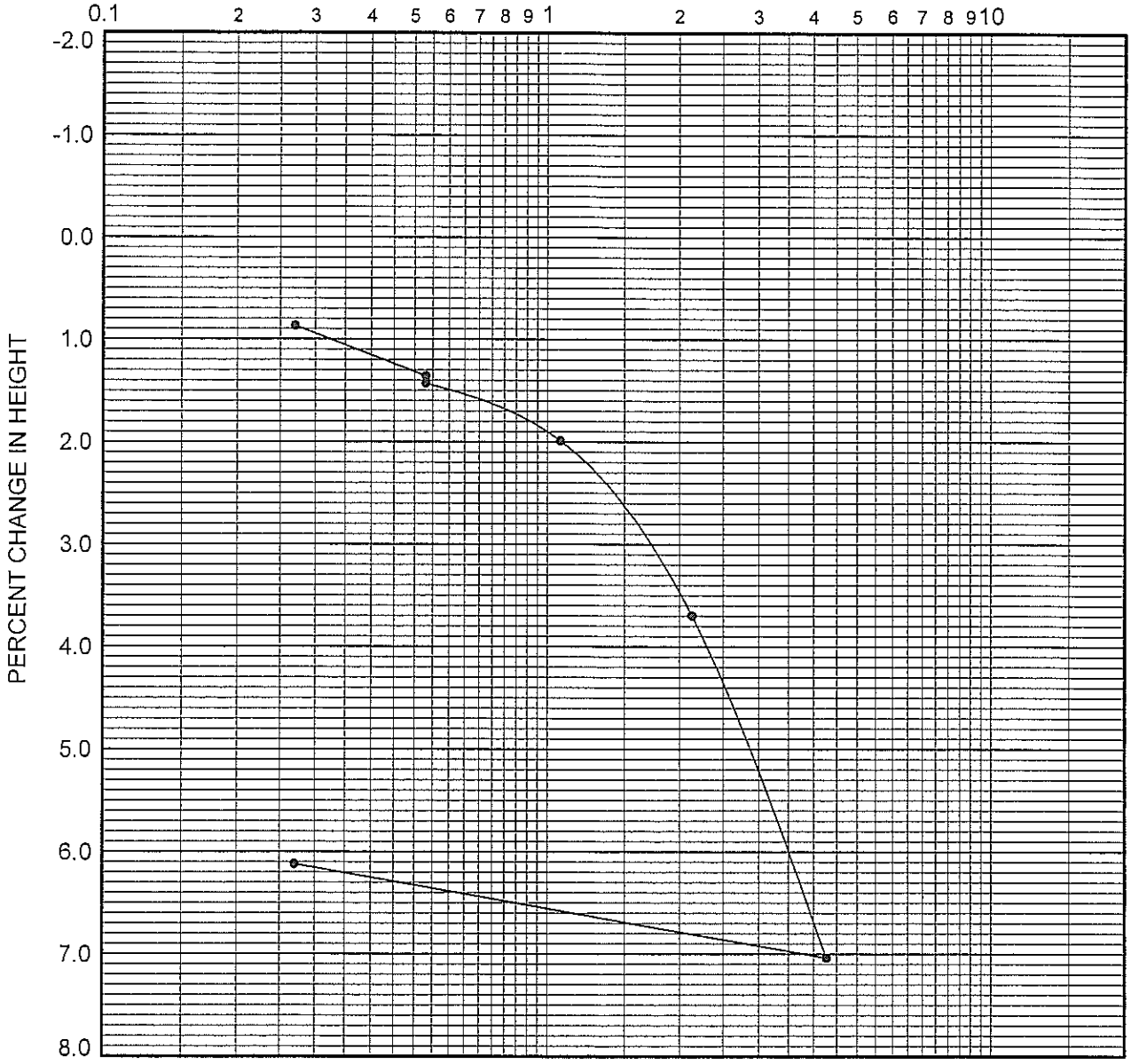
REMARKS: WATER ADDED AT 0.53 TSF

CONSOLIDATION CURVE

PACIFIC SOILS ENGINEERING, INC.

W.O. 500690 PLATE C-8

COMPRESSIVE STRESS IN TSF



boring	depth (ft.)	dry density (pcf)	in situ moist. (%)	in situ satur. (%)	-200 sieve (%)	group symbol	typical names
HS-11	10.0		15.3		50	CL-ML	Alluvium (Qal): Clayey Silt

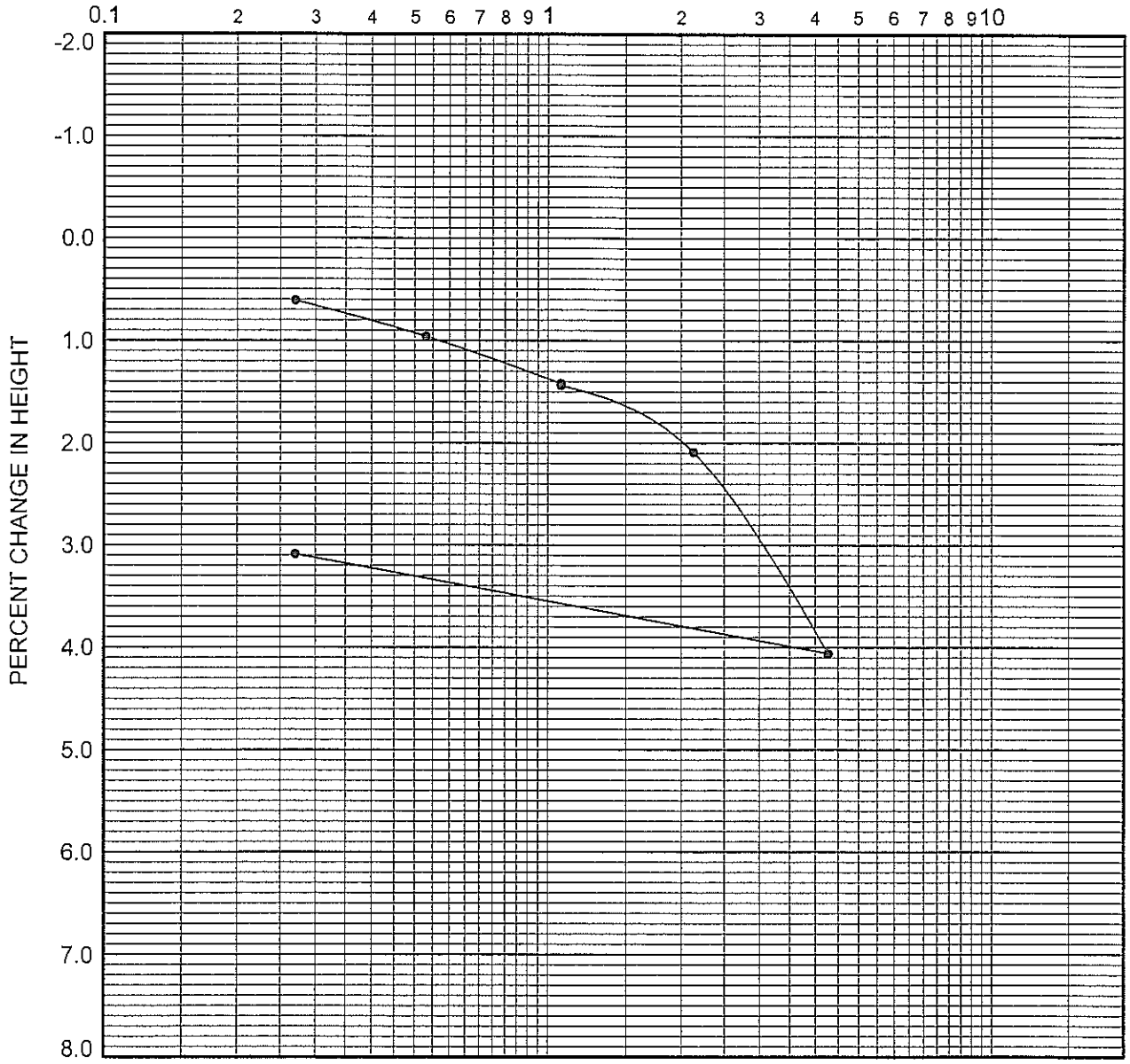
REMARKS: WATER ADDED AT 0.53 TSF

CONSOLIDATION CURVE

PACIFIC SOILS ENGINEERING, INC.

W.O. 500690 PLATE C-9

COMPRESSIVE STRESS IN TSF



boring	depth (ft.)	dry density (pcf)	in situ moist. (%)	in situ satur. (%)	-200 sieve (%)	group symbol	typical names
HS-12	15.0	110	18.4	96	63	CL-ML	Alluvium (Qal): Silty Clay

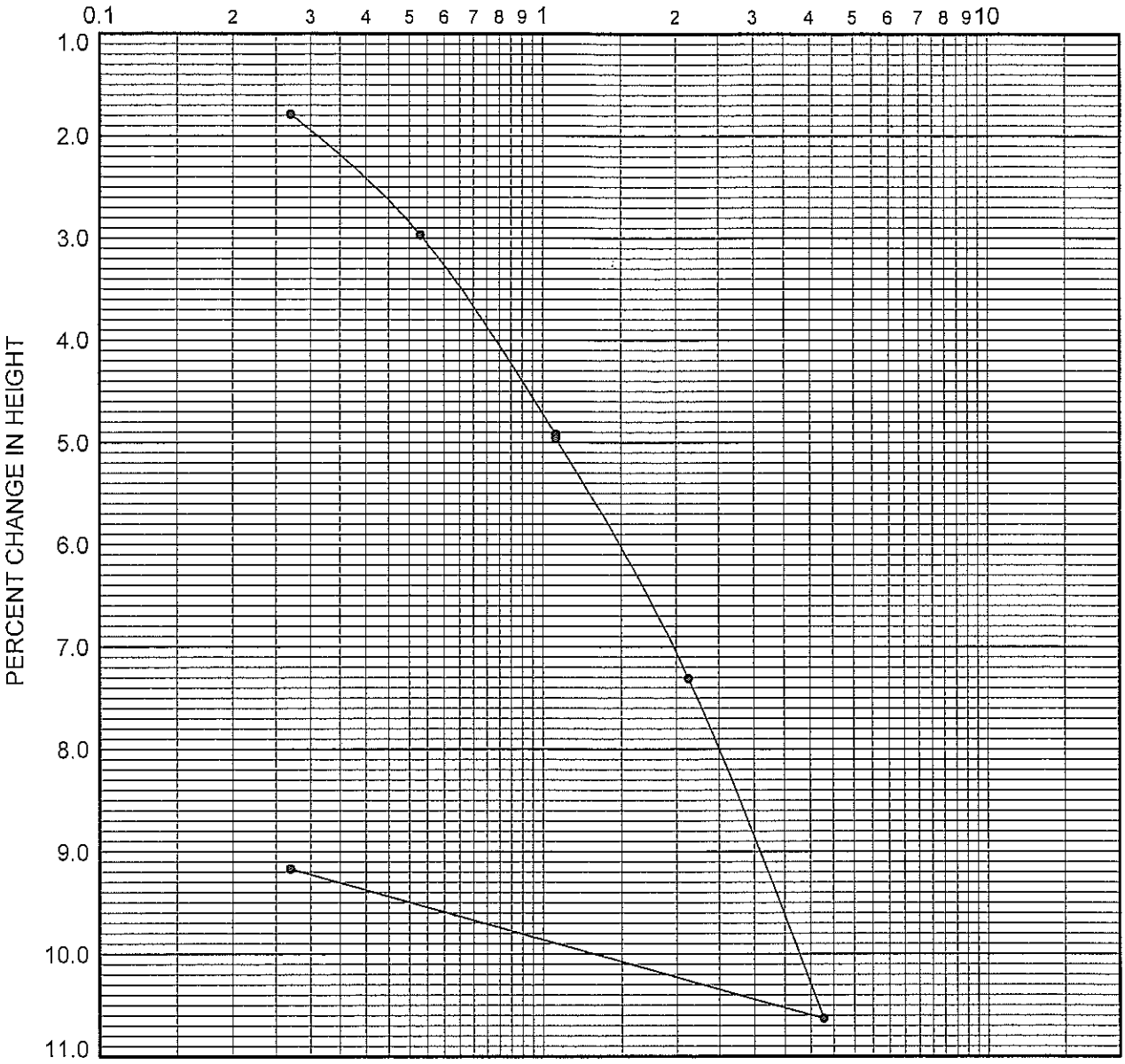
REMARKS: WATER ADDED AT 1.07 TSF

CONSOLIDATION CURVE

PACIFIC SOILS ENGINEERING, INC.

W.O. 500690 PLATE C-10

COMPRESSIVE STRESS IN TSF



boring	depth (ft.)	dry density (pcf)	in situ moist. (%)	in situ satur. (%)	-200 sieve (%)	group symbol	typical names
HS-13	7.5	98	26.1	101	72	CL-ML	Alluvium (Qal): Silty Clay

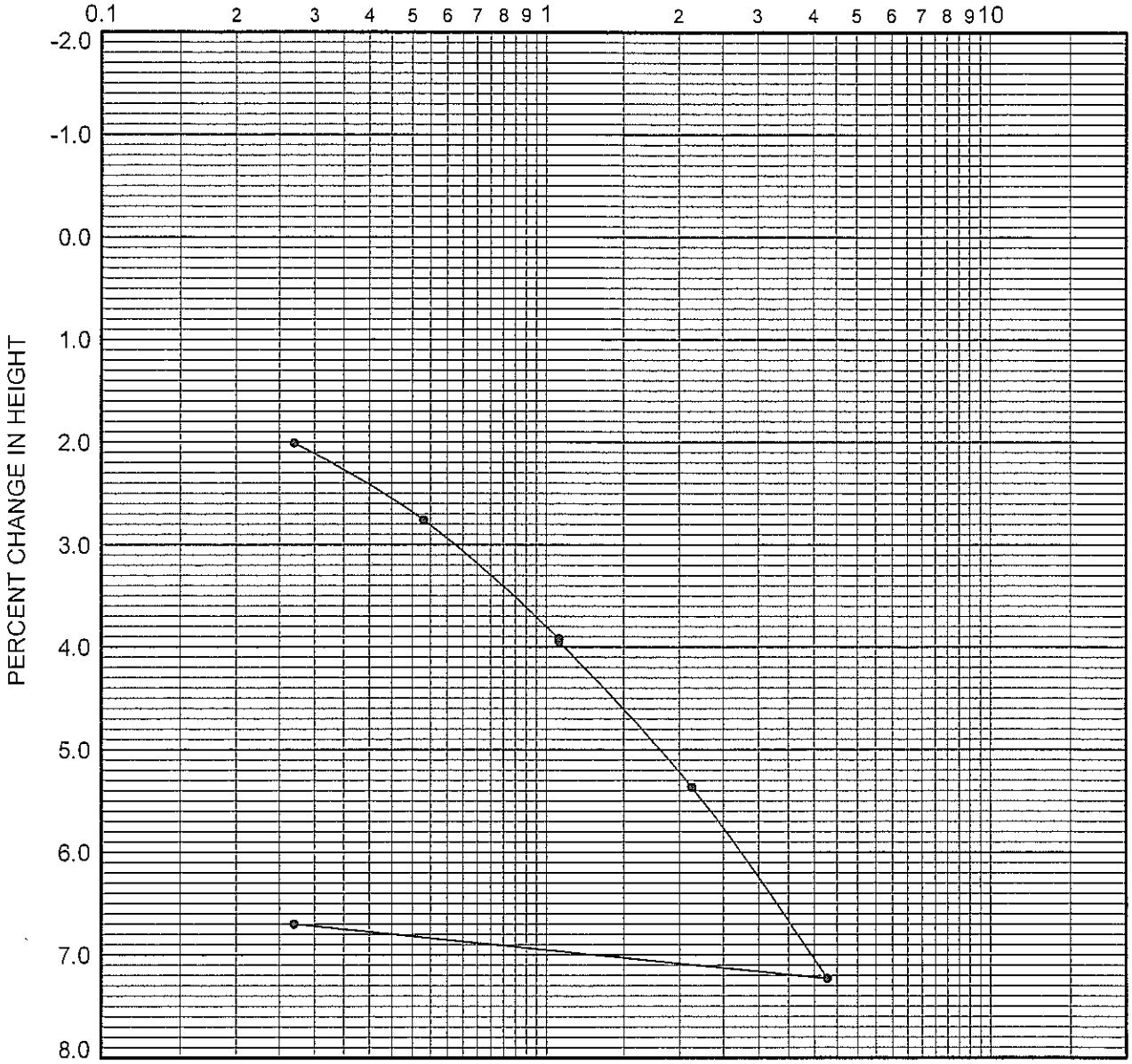
REMARKS: WATER ADDED AT 1.07 TSF

CONSOLIDATION CURVE

PACIFIC SOILS ENGINEERING, INC.

W.O. 500690 PLATE C-11

COMPRESSIVE STRESS IN TSF



boring	depth (ft.)	dry density (pcf)	in situ moist. (%)	in situ satur. (%)	-200 sieve (%)	group symbol	typical names
HS-13	15.0	110	18.1	96	34	SM	Alluvium (Qal): Silty Sand

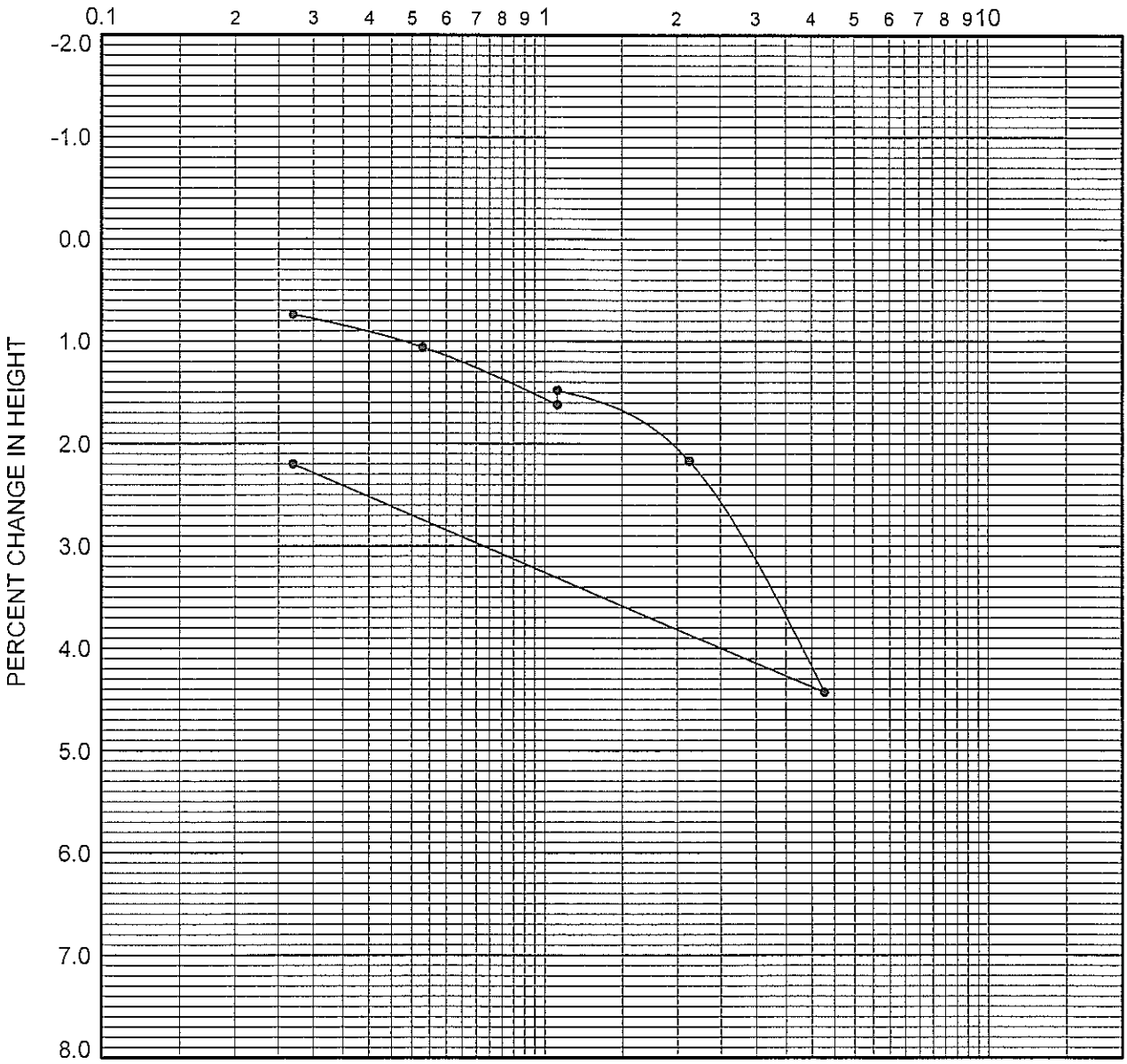
REMARKS: WATER ADDED AT 1.07 TSF

CONSOLIDATION CURVE

PACIFIC SOILS ENGINEERING, INC.

W.O. 500690 PLATE C-12

COMPRESSIVE STRESS IN TSF



boring	depth (ft.)	dry density (pcf)	in situ moist. (%)	in situ satur. (%)	-200 sieve (%)	group symbol	typical names
HS-13	20.0	96	28.0	103	83	ML	Terrace Deposits (Qt): Clayey Silt

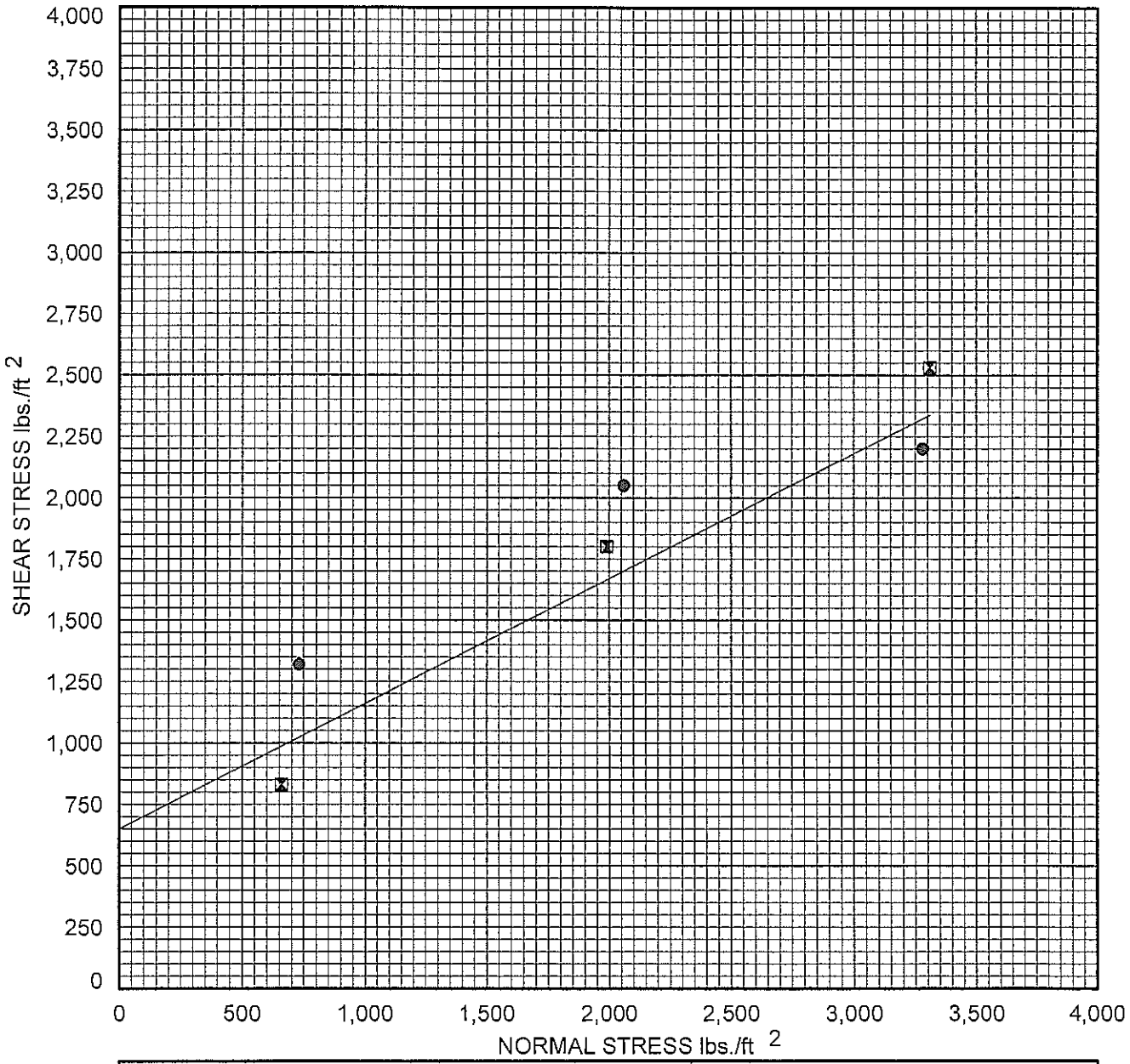
REMARKS: WATER ADDED AT 1.07 TSF

CONSOLIDATION CURVE

PACIFIC SOILS ENGINEERING, INC.

W.O. 500690 PLATE C-13

DIRECT SHEAR TEST
Undisturbed



TYPICAL NAME: Engineered Fill- Sandy Clay	COHESION 650 psf.
GROUP SYMBOL: CL	FRICTION ANGLE 27 degrees

symbol	boring	depth	symbol	boring	depth	symbol	boring	depth	symbol	boring	depth
⊛	HS-06	7.5	⊗			⧫			✳		
⊠	HS-08	5.0	⊕			◇			◘		
▲			□			×			◙		
★			⊜			⊠			▤		
✕			⊛			⊡			▥		
✿			☆								
○			⊠								
△			⊡								

PACIFIC SOILS ENGINEERING, INC.

W.O. 500690 PLATE C-14

SUMMARY — BORING NO. 3

DATE DRILLED: June 20, 1975

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

ELEVATION: 326.7'

DEPTH IN FEET	SAMPLES	SYMBOL					DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.
0			dry	firm	black	CLAY cracked				
	1	CL/CH	moist	stiff		adobe		1.6		
				very stiff						
					dark gray brown	SILTY CLAY				
5	2					sandy		11		
					gray brown					
						SANDY CLAY				
	3	CL						11		
10					brown & gray streaks					
	4							9		
				very dense	brown	CLAYEY SAND				
15	5	SC						14		
						No ground water encountered				
20										
25										

BREA PLAZA
Imperial Highway and Associated Road, Brea, California
for Brea Associates

DRAWING NO. 4

CONVERSE, DAVIS AND ASSOCIATES *Consulting Engineers and Geologists*

PROJ. NO. A-75-587-A

SUMMARY — BORING NO. 4

DATE DRILLED: June 19, 1975

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

ELEVATION: 337.5

DEPTH IN FEET	SAMPLES	SYMBOL						DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.
0			dry	firm	black	CLAY	jointed,				
			moist	stiff	gray & black brown	adobe	cracked				
	1	CL/CH						4	14.7	103	3.24
					brown						
5	2	CL & ML		& very stiff		SILTY CLAY	+ alt. merg. stks. sandy silt	6	16.5	102	1.46
	3	ML		very stiff & medium hard streaks		SANDY SILT with some clay + freq. fine 1" calcarious streaks, slightly cemented		17	11.9	113	4.39
10	4	& SM		& very dense	& light brown		+ alt. stks. silty sand	14	11.4	111	2.67
		SM		very dense	light brown	SILTY SAND					
15	5	& SP			& light gray		+ merging streaks sand, fine	16	10.4	106	2.51
		& ML		& hard stks.			+ occ. fine 3" stks. silt w/ cem. calc. stks.				
	6	SP/SM		very dense	light brown	SAND, fine		16	6.9	99	2.14
20						No ground water encountered					
25											

BREA PLAZA
Imperial Highway and Associated Road, Brea, Califorina
for Brea Associates

DRAWING NO 5

CONVERSE, DAVIS AND ASSOCIATES — *Consulting Engineers and Geologists* — PROJ. NO A-75-587-A

SUMMARY — BORING NO. 5

DATE DRILLED: June 19, 1975

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

ELEVATION: 335.7'

DEPTH IN FEET	SAMPLES	SYMBOL					DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.
0			dry	stiff	black gray	SILTY CLAY				
	1	CL	slightly moist	very stiff	black brown		6			.46* .50* 1.35*
			moist		brown	sandy				
5	2	& SM		& very dense		+ alt. merg. stks. silty sand	9			
		SM & SP/SM		very dense	& light brown	+ alt. merg. stks. SILTY SAND & SAND, fine				
					light brown	SAND, fine & stks. fine to med. + occ. pea gravel to ½"				
10	3	SP/SM					13			
		& SM			& brown	+ alt. stks. silty sand				
	4	SM ML				alt. merg. stks. SILTY SAND SANDY, SILT & SILT w/ trace clay	14			
15						No ground water encountered				
20										
25										

* Sample saturated and drained before shearing at ½, 1, and 2 ksf.

BREA PLAZA
Imperial Highway and Associated Road, Brea, California
for Brea Associates

DRAWING NO. 6

CONVERSE, DAVIS AND ASSOCIATES — *Consulting Engineers and Geologists* — PROJ. NO. A-75-587-A

SUMMARY — BORING NO. 6

DATE DRILLED: June 19, 1975

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

ELEVATION: 329.0'

DEPTH IN FEET	SAMPLES	SYMBOL						DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.
0	1	CL CL/CH	dry moist	firm stiff	black gray dark brown brown	CLAY adobe	porous		8		
		CL		very stiff		SILTY CLAY, SILTY SAND,	& gravelly + occ. cobbles to 6"		9		
5	2	SM & SP SW		very dense	& light gray brown		+ alt. stks. sand, fine + sand, fine to coarse w/ occ. pea gr. to 1"				
	3								13		
10	4	ML & SM		very stiff & dense	light brown	SILT	+ alt. stks. sandy silt & silty sand		8		
							+ stks. sand, fine to coarse				
15	5	ML & SM & CL		very stiff & very dense	gray brown & light brown & red brown	SILT with trace clay + alt. very fine 1" stks. sandy silt & silty sand	+ occ. fine stks. calc. silt & freq. cemented fine 3" concretions		14		
							+ alt. stks. clayey silt & silty clay				
20	6	ML ML/CL CL		very stiff					11		
		& SP/SM SM		& very dense	& light gray & light brown	+ stks. sand, fine to silty sand					
25	7								18		

(continued)

BREA PLAZA
Imperial Highway and Associated Road, Brea, California
for Brea Associates

DRAWING NO. 7

CONVERSE, DAVIS AND ASSOCIATES *Consulting Engineers and Geologists* PROJ. NO. A-75-587-A

APPENDIX F

SOUTHERN CALIFORNIA GEOTECHNICAL, INC.'S RESULTS OF INFILTRATION TESTING, PROPOSED BREA PLAZA MIXED USE DEVELOPMENT, NWC IMPERIAL HIGHWAY AT ASSOCIATED ROAD, BREA, CALIFORNIA, DATED JULY 30, 2020

July 30, 2020

BOSC Realty Advisors
888 W. Big Beaver Road, Suite 200
Troy, Michigan 48084

Attention: Mr. Waad J. Nadhir

Project No.: **20G168-2**

Subject: **Results of Infiltration Testing**
Proposed Brea Plaza Mixed Use Development
NWC Imperial Highway at Associated Road
Brea, California

Reference: Geotechnical Feasibility Study, Proposed Brea Plaza Mixed Use Development, NWC Imperial Highway at Associated Road, Brea, California, prepared by Southern California Geotechnical, SCG Project No. 20G168-1, dated July 30, 2020.

Mr. Nadhir:

In accordance with your request, we have conducted infiltration testing at the subject site. We are pleased to present this report summarizing the results of the infiltration testing and our design recommendations.

Scope of Services

The scope of services performed for this project was in general accordance with Proposal No. 20P269, dated June 29, 2020. The scope of services included visual site reconnaissance, subsurface exploration, field and laboratory testing, and engineering analysis to determine the infiltration rates of the onsite soils. The infiltration testing was performed in general accordance with the guidelines published by Orange County: Technical Guidance Document for the Preparation of Conceptual/Preliminary and/or Project Water Quality Management Plans (WQMPs), Appendix VII. These guidelines are dated December 20, 2013.

Site and Project Description

Brea Plaza Center is located at the northwest corner of Imperial Highway and Associated Road, in Brea, California. The overall site is bounded to the north by existing single-family residences, to the west by the 57 freeway, to the south by Imperial Highway, and to the east by Associated Road. The general location of the site is illustrated on the Site Location Map, enclosed as Plate 1 in Appendix A of this report.

Brea Plaza is a retail shopping center, approximately 15 acres in size. The specific subject site is a roughly L-shaped area, 2.7± acres in size, located in the western region of Brea Plaza, adjacent to the 57 Freeway. The subject site is presently developed with a Buca de Beppo restaurant, a Custom Comfort Mattress store, a movie theater, and a multi-tenant retail building. The remainder of the subject site is covered by asphaltic concrete (AC) pavements

that are used for automobile and truck parking and drive lanes. Limited areas of the subject site are paved with Portland cement concrete (PCC) pavements. Concrete flatwork and landscaped planters are located throughout the existing development. The remaining areas of the Brea Plaza Center are developed with similar retail and restaurant buildings and AC pavements.

Topographic information for the site was obtained from a site plan provided by Architects Orange. The site topography slopes from the northwest corner towards the southeast. The elevation at the subject site generally ranges from 336± feet mean sea level (msl) in the northern region of the subject site to 329± feet msl in the southern region.

Proposed Development

A preliminary site plan was provided to our office by the client. The site will be developed with several new structures including a hotel, residential apartments, a restaurant, a self-storage building and an office building. The hotel will be located in the southwestern region of the site, will have a footprint of 15,000 to 20,000± ft² and will be 6 stories in height. The restaurant will be incorporated into the first story of the hotel. The apartment building will be located in the northern region of the site, and will have a footprint of 45,000± ft². This building will be a total of 7 stories in height, with the lower two levels consisting of a parking structure. The self-storage facility will be incorporated into the residential building. Two areas of new offices will be constructed over portions of the existing multi-tenant retail building and the Custom Comfort Mattress store. The office building will be 3 stories in height, with a footprint of 8,000± ft². The existing movie theater and Buco de Beppo restaurant will be demolished as part of the redevelopment. The buildings will be surrounded by asphaltic concrete or Portland cement concrete pavements for automobile parking and drive lanes. The proposed development is also expected to include some areas of concrete flatwork and landscape planters.

Previous Studies

Southern California Geotechnical, Inc. (SCG) was provided with a copy of a previous study conducted for the overall site by Pacific Soils Engineering (PSE). This document was prepared for storm drain improvements that have since been constructed in the eastern region of the Brea Plaza site. The report also included a summary of data collected during previous investigations at the site. A summary of the relevant information pertaining to the subject site from this document is presented below:

> Preliminary Geotechnical Investigation, Proposed Storm Drain Improvements for the Loftus Diversion Channel and the Brea Plaza Shopping Center, Northwest Corner of Imperial Highway and Associated Road, City of Brea, California, Prepared by Pacific Soils Engineering, Inc., dated March 26, 2008, Work Order 500690.

The overall subsurface exploration for this project consisted of thirteen (13) borings and ten (10) cone penetration tests. Boring Nos. HS-03, HS-04, HS-05, and HS-07, as well as CPT Nos. CPT-1, CPT-3, and CPT-4 were within the area of the specific subject site and will be the focus of this summary. The borings were advanced to depths of up to 21½ to 31½± feet below the existing site grades. Engineered fill soils were reportedly encountered beneath the pavements at several of the boring locations. It should be noted that PSE did not provide any documentation to confirm that the existing fill soils were monitored and tested during

placement. The fill soils extended to depths of up to 2 to 10± feet below grade at these boring locations, and generally consisted of medium dense to dense medium dense to dense clayey sand, silty sand and sandy clay. Beneath the fill materials, all of the borings encountered terrace deposits, extending to at least the maximum depth explored of 31± feet. The terrace deposits generally consisted of stiff to hard sandy clay, dense to very dense sandy silt, silty sand, and clayey sand. Occasional layers of gravelly sand and clayey silt were encountered. The results of expansion index testing performed for this report identified low to highly expansive soils at the boring locations. Ground water was encountered at most borings at depths between 10 and 30± feet. The report also notes that layers of perched groundwater were encountered during the investigation.

In Appendix D of this report, a previous report within the subject site was reviewed and summarized:

> Geotechnical Investigation, Proposed Shopping Center, Imperial Highway at Orange Freeway, Brea, California, Prepared by Converse Davis Dixon Associates, dated July 21, 1975, Project No. A-75-587-A.

The exploration for this report consisted of 12 borings advanced to depths of 3 to 30± feet below the site grades. The borings were advanced with a truck-mounted, rotary drilling machine equipped with a 16 to 20-inch diameter drilling bucket. Boring Nos. CD BH-3 through CD BH-5 are located within the subject site. Native alluvial soils were encountered at the ground surface of these 3 borings. The near surface alluvium within the upper 6½± feet generally consisted of stiff to very stiff clay and silty clay. Deeper alluvial soils, extending to at least 20± feet below ground surface, generally consisted of medium dense to very dense silty sand, sandy silt and silt. Occasional layers of very stiff/very dense sandy clay and clayey sand were encountered. Swell tests were conducted on Boring Nos. CD BH-3 and CD BH-5, results showed a 9.7 and 7.7 percent swell, respectively. No groundwater was encountered during the drilling of the relevant borings.

Concurrent Study

Southern California Geotechnical, Inc. (SCG) concurrently conducted a geotechnical investigation at the subject site. As part of this study, four (4) borings were advanced to depths of 25 to 50± feet below existing site grades. Asphaltic concrete pavements were encountered at the ground surface of all boring locations and generally consist of 3 to 8± inches of Asphaltic concrete underlain by 5 to 7± inches of crushed aggregate base. Artificial fill soils were encountered beneath the pavements at Boring Nos. B-2 through B-4, extending to depths of 5½ to 6½± feet below the existing site grades. The artificial fill soils generally consist of medium dense to very dense silty fine sand with trace clay nodules and clayey fine sand, as well as stiff to hard silty clay and fine sandy clay. The fill soils possess a disturbed and mottled appearance with occasional artificial debris content (including fragments of wood, brick and asphaltic concrete) resulting in their classification as artificial fill. Additional soils classified as possible fill were encountered beneath the pavement of Boring No. B-1 and beneath the fill of Boring No. B-4, extending to depths of 5½ to 8½± feet below ground surface. These soils possess similar characteristics to the fill soils, but lack any obvious indicators of fill such as brick or asphaltic concrete fragments. Native terrace deposits were encountered beneath the fill and/or possible fill soils at all of the boring locations, extending to at least the maximum depth

explored of 50± feet below ground surface. The near surface terrace deposits within the upper 5½ to 22± feet generally consist of medium dense to very dense fine sand, silty fine sand and occasionally fine sandy silt. Terrace deposits extending deeper than 22± feet generally consist of very stiff to hard silty clay and fine sandy clay, as well as medium dense fine sand. Occasional layers of medium dense to dense clayey silt and silty fine sand were encountered. Trace to some calcareous nodules were observed in some of the terrace deposits. Boring No. B-1 encountered a fine to coarse sand layer at depths of 17 to 25± feet.

Free water was encountered during the drilling of all boring locations, at depths of 22½ to 23½± feet. A delayed groundwater level reading was taken at Boring No. B-2, 3± hours after the completion of the boring. At this boring location, water was present at a depth of 22½± feet below ground surface during the final measurement. Based on the moisture contents of the recovered soil samples and the delayed water measurements taken within the open boreholes, the static groundwater table is considered to have been present at depths of 22½± feet below the existing site grades at the time of the subsurface investigation.

Subsurface Exploration

Scope of Exploration

The subsurface exploration conducted for the infiltration testing consisted of two (2) infiltration test borings, advanced to depths of 10± feet below the existing site grades. The infiltration borings were advanced using a truck-mounted drill rig, equipped with 8-inch diameter hollow stem augers. The borings were logged during drilling by a member of our staff. The approximate locations of the infiltration test borings (identified as I-1 and I-2) are indicated on the Boring and Infiltration Test Location Plan, enclosed as Plate 2 of this report.

Upon the completion of the infiltration borings, the bottom of each test boring was covered with 2± inches of clean ¾-inch gravel. A sufficient length of 3-inch-diameter perforated PVC casing was then placed into each test hole so that the PVC casing extended from the bottom of the test hole to the ground surface. Clean ¾-inch gravel was then installed in the annulus surrounding the PVC casing.

Geotechnical Conditions

Asphaltic concrete (AC) pavements were encountered at the ground surface at both borings, consisting of 3 to 4± inches of AC underlain by 4 to 6± inches of aggregate base. Artificial fill soils were encountered beneath the AC pavements at both boring locations, extending to depths of 8 to 10± feet below existing site grades. The artificial fill soils consist of medium dense/stiff clayey fine sand, silty fine sand, and silty clay. These soils possess a disturbed and mottled appearance, resulting in their classification as artificial fill. At Infiltration Test No. I-2, terrace deposits were encountered at depths of 8 to 10± feet below existing site grades. The terrace deposits consist of hard fine sandy clay with little silt, trace amounts of medium to coarse sand, and little calcareous veining/nodules. The Boring Logs, which give detailed illustrations of the conditions encountered at the boring locations are included with this report.

Free water was encountered during the drilling of the boring locations performed during the concurrent study (Boring Nos. B-1 through B-4), at a depth of 23½± feet. A delayed

groundwater level reading was taken at Boring No. B-2, 3± hours after the completion of the boring. At this boring location, water was present at a depth of 22½± feet below ground surface during the final measurement. Based on the moisture contents of the recovered soil samples and the delayed water measurements taken within the open boreholes, the static groundwater table is considered to have been present at a depth of 22½± feet below the existing site grades at the time of the subsurface investigation.

As part of our research, we reviewed readily available groundwater data in order to determine regional groundwater depths. Recent water level data was obtained from the California State Water Resources Control Board, GeoTracker, website, http://geotracker.waterboards.ca.gov/. The nearest monitoring well on record is located approximately 475 feet southeast of the site. Water level readings within this monitoring well indicate a high groundwater level of 18± feet below the ground surface, in December 2011.

To confirm soil conditions beneath the infiltration test depths (10± feet), SCG reviewed the nearby boring logs (HS-3 and CD BH-3) from the previous studies conducted at the subject site. At Boring No. HS-3, the soils from depths of 10 to 20± feet consisted of stiff sandy clay terrace deposits. Groundwater was encountered at a depth of 26± feet below ground surface at the time of drilling. At Boring No. CD BH-3 the soils from depths of 10 to 16± feet (maximum depth explored) consisted of very stiff sandy clay and very dense clayey sand. No groundwater was encountered during drilling.

Infiltration Testing

As previously mentioned, the infiltration testing was performed in general accordance with the Orange County guidelines: Technical Guidance Document for the Preparation of Conceptual/Preliminary and/or Project Water Quality Management Plans (WOMPs), Appendix VII.

Pre-soaking

In accordance with the county infiltration standards, both of the infiltration test borings were pre-soaked prior to the infiltration testing. The pre-soaking process consisted of filling the test borings by inverting a full 5-gallon bottle of clear water supported over each hole so that the water level reaches a level of at least 5 times the hole's radius above the gravel at the bottom of each hole. The pre-soaking was completed after all of the water had percolated through each test hole or after 15 hours since initiating the pre-soak.

Infiltration Testing

Following the pre-soaking process of the infiltration test borings, SCG performed the infiltration testing. Each test hole was filled with water to a depth of at least 5 times the hole's radius above the gravel at the bottom of each test hole, and less than or equal to the water level used during the pre-soaking process. In accordance with the Orange County guidelines, since "other soils" were encountered at the bottom of both of the infiltration borings, readings were taken at 30-minute intervals for a total of 6 hours. After each reading, the borings were refilled to the correct water level above the gravel at the bottom of each test hole. The water level readings

are presented on the spreadsheets enclosed with this report. The infiltration rates for each of the timed intervals are also tabulated on the spreadsheets.

The infiltration rates from the test are tabulated in inches per hour. In accordance with the typically accepted practice, it is recommended that the most conservative reading from the latter part of the infiltration tests be used as the design infiltration rate. The rates are summarized below:

Infiltration Test No.	Depth (feet)	Soil Description	Infiltration Rate (inches/hour)
I-1	10	Brown Silty Clay, little fine Sand, trace medium Sand	0.03
I-2	10	Brown fine Sandy Clay, little Silt, trace medium to coarse Sand	0.36

Laboratory Testing

Moisture Content

The moisture contents for the recovered soil samples were determined in accordance with ASTM D-2216 and are expressed as a percentage of the dry weight. These test results are presented on the Boring Logs.

Grain Size Analysis

The grain size distribution of selected soils collected from the bottom of each infiltration test boring have been determined using a range of wire mesh screens. These tests were performed in general accordance with ASTM D-422 and/or ASTM D-1140. The weight of the portion of the sample retained on each screen is recorded and the percentage finer or coarser of the total weight is calculated. The results of these tests are presented on Plates C-1 and C-2 of this report.

Design Recommendations

Two (2) infiltration tests were performed at the subject site. The infiltration rates at these locations range from 0.03 to 0.36 inches per hour. The major factors affecting the lack of infiltration at these borings is the presence of medium stiff to hard clayey soils at the test depths. **Although an infiltration rate of 0.36 inches per hour was calculated for Infiltration Test No. I-2, negligible infiltration was measured at Infiltration Test Nos. I-1. Therefore, infiltration is not considered feasible for this site, due to the test results and the type of soils encountered at the boring locations.**

General Comments

This report has been prepared as an instrument of service for use by the client in order to aid in the evaluation of this property and to assist the architects and engineers in the design and preparation of the project plans and specifications. This report may be provided to the

contractor(s) and other design consultants to disclose information relative to the project. However, this report is not intended to be utilized as a specification in and of itself, without appropriate interpretation by the project architect, structural engineer, and/or civil engineer. The design of the infiltration system is the responsibility of the civil engineer. The role of the geotechnical engineer is limited to determination of infiltration rate only. By using the design infiltration rates contained herein, the civil engineer agrees to indemnify, defend, and hold harmless the geotechnical engineer for all aspects of the design and performance of the infiltration system. The reproduction and distribution of this report must be authorized by the client and Southern California Geotechnical, Inc. Furthermore, any reliance on this report by an unauthorized third party is at such party's sole risk, and we accept no responsibility for damage or loss which may occur. The analysis of this site was based on a subsurface profile interpolated from limited discrete soil samples. While the materials encountered in the project area are considered to be representative of the total area, some variations should be expected between trench locations and testing depths. If the conditions encountered during construction vary significantly from those detailed herein, we should be contacted immediately to determine if the conditions alter the recommendations contained herein.

This report has been based on assumed or provided characteristics of the proposed development. It is recommended that the owner, client, architect, structural engineer, and civil engineer carefully review these assumptions to ensure that they are consistent with the characteristics of the proposed development. If discrepancies exist, they should be brought to our attention to verify that they do not affect the conclusions and recommendations contained herein. We also recommend that the project plans and specifications be submitted to our office for review to verify that our recommendations have been correctly interpreted. The analysis, conclusions, and recommendations contained within this report have been promulgated in accordance with generally accepted professional geotechnical engineering practice. No other warranty is implied or expressed.

Closure

We sincerely appreciate the opportunity to be of service on this project. We look forward to providing additional consulting services during the course of the project. If we may be of further assistance in any manner, please contact our office.

Respectfully Submitted,

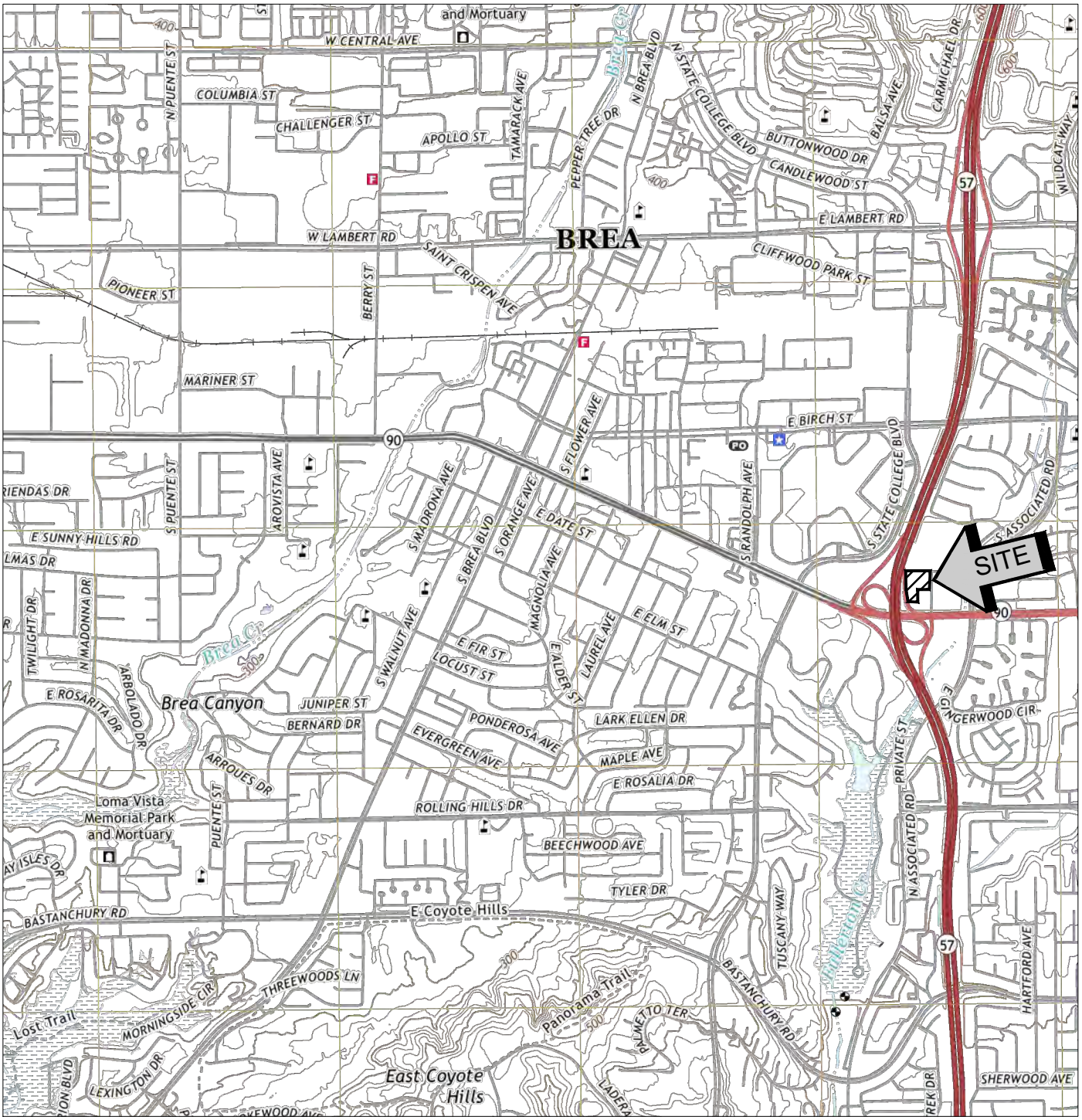
SOUTHERN CALIFORNIA GEOTECHNICAL, INC.

Jamie Hayward
Staff Geologist

Gregory K. Mitchell, GE 2364
Principal Engineer

Distribution: (1) Addressee

Enclosures: Plate 1 - Site Location Map
Plate 2 – Boring and Infiltration Test Location Plan
Boring Log Legend and Logs (4 pages)
Infiltration Test Results Spreadsheets (2 pages)
Grain Size Distribution Graphs (2 pages)



SOURCE: USGS TOPOGRAPHIC MAP OF THE LA HABRA QUADRANGLE, ORANGE COUNTY, CALIFORNIA, 2018

SITE LOCATION MAP

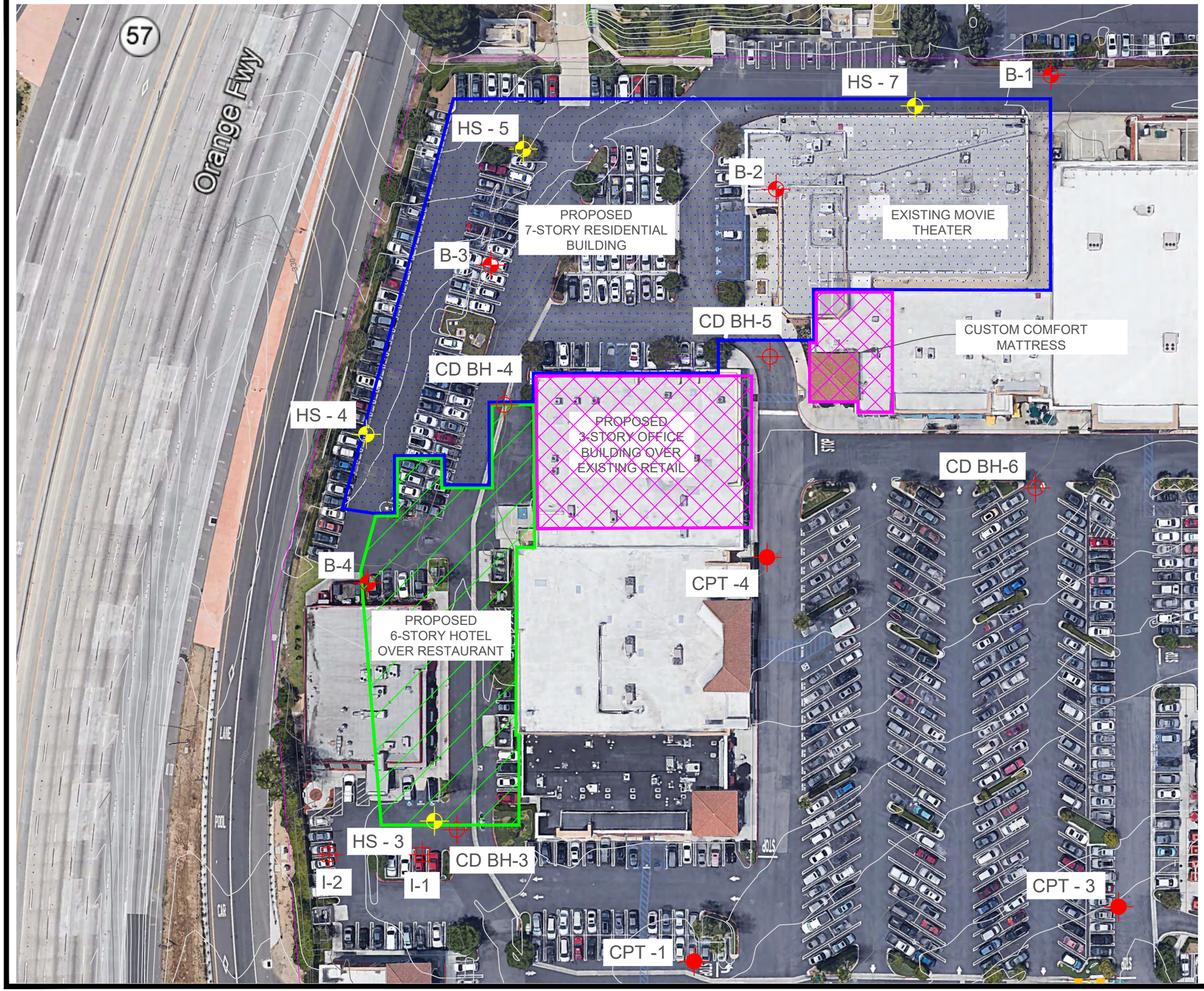
PROPOSED BREA PLAZA MIXED USE

BREA, CALIFORNIA

SCALE: 1" = 2000'	
DRAWN: JAH CHKD: DN	
SCG PROJECT 20G168-2	
PLATE 1	

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



NORTH
SoCalGeo

GEOTECHNICAL LEGEND

- **APPROXIMATE BORING LOCATION**
- **APPROXIMATE 6-INCH DIAMETER BORING LOCATION (PACIFIC SOILS ENGINEERING)**
- **APPROXIMATE CPT LOCATION (PACIFIC SOILS ENGINEERING)**
- **APPROXIMATE 16 TO 24-INCH DIAMETER BORING LOCATION (CONVERSE, DAVIS, DIXON ASSOCIATES, 1975)**
- **PROPOSED 3-STORY OFFICE BUILDING OVER EXISTING RETAIL**
- **PROPOSED 6-STORY HOTEL OVER RESTAURANT**
- **PROPOSED 7-STORY RESIDENTIAL BUILDING**
- **APPROXIMATE INFILTRATION TEST LOCATION**

NOTE: CONCEPTUAL SITE PLAN PROVIDED BY ARCHITECTS ORANGE.

BORING AND INFILTRATION TEST LOCATION PLAN

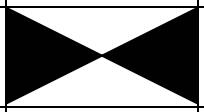
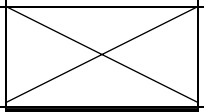
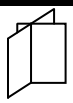
PROPOSED BREA PLAZA MIXED USE

BREA, CALIFORNIA

SCALE: 1" = 60'	
DRAWN: JAH CHKD: GKM	
SCG PROJECT 20G168-2	
PLATE 2	

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL

BORING LOG LEGEND

SAMPLE TYPE	GRAPHICAL SYMBOL	SAMPLE DESCRIPTION
AUGER		SAMPLE COLLECTED FROM AUGER CUTTINGS, NO FIELD MEASUREMENT OF SOIL STRENGTH. (DISTURBED)
CORE		ROCK CORE SAMPLE: TYPICALLY TAKEN WITH A DIAMOND-TIPPED CORE BARREL. TYPICALLY USED ONLY IN HIGHLY CONSOLIDATED BEDROCK.
GRAB		SOIL SAMPLE TAKEN WITH NO SPECIALIZED EQUIPMENT, SUCH AS FROM A STOCKPILE OR THE GROUND SURFACE. (DISTURBED)
CS		CALIFORNIA SAMPLER: 2-1/2 INCH I.D. SPLIT BARREL SAMPLER, LINED WITH 1-INCH HIGH BRASS RINGS. DRIVEN WITH SPT HAMMER. (RELATIVELY UNDISTURBED)
NSR		NO RECOVERY: THE SAMPLING ATTEMPT DID NOT RESULT IN RECOVERY OF ANY SIGNIFICANT SOIL OR ROCK MATERIAL.
SPT		STANDARD PENETRATION TEST: SAMPLER IS A 1.4 INCH INSIDE DIAMETER SPLIT BARREL, DRIVEN 18 INCHES WITH THE SPT HAMMER. (DISTURBED)
SH		SHELBY TUBE: TAKEN WITH A THIN WALL SAMPLE TUBE, PUSHED INTO THE SOIL AND THEN EXTRACTED. (UNDISTURBED)
VANE		VANE SHEAR TEST: SOIL STRENGTH OBTAINED USING A 4 BLADED SHEAR DEVICE. TYPICALLY USED IN SOFT CLAYS-NO SAMPLE RECOVERED.

COLUMN DESCRIPTIONS

DEPTH: Distance in feet below the ground surface.

SAMPLE: Sample Type as depicted above.

BLOW COUNT: Number of blows required to advance the sampler 12 inches using a 140 lb hammer with a 30-inch drop. 50/3" indicates penetration refusal (>50 blows) at 3 inches. WH indicates that the weight of the hammer was sufficient to push the sampler 6 inches or more.

POCKET PEN.: Approximate shear strength of a cohesive soil sample as measured by pocket penetrometer.

GRAPHIC LOG: Graphic Soil Symbol as depicted on the following page.

DRY DENSITY: Dry density of an undisturbed or relatively undisturbed sample in lbs/ft^3.

MOISTURE CONTENT: Moisture content of a soil sample, expressed as a percentage of the dry weight.

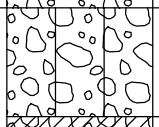
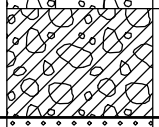
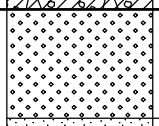
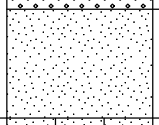
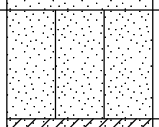
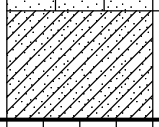
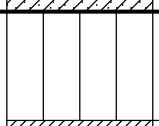
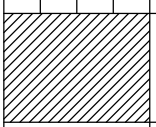
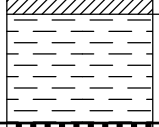
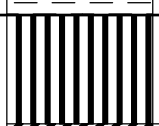
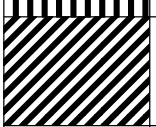
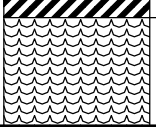
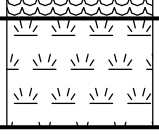
LIQUID LIMIT: The moisture content above which a soil behaves as a liquid.

PLASTIC LIMIT: The moisture content above which a soil behaves as a plastic.

PASSING #200 SIEVE: The percentage of the sample finer than the #200 standard sieve.

UNCONFINED SHEAR: The shear strength of a cohesive soil sample, as measured in the unconfined state.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-1

JOB NO.: 20G168-2
PROJECT: Proposed Brea Plaza Mixed Use
LOCATION: Brea, California

DRILLING DATE: 7/9/20
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jamie Hayward

WATER DEPTH: Dry
CAVE DEPTH: ---
READING TAKEN: ---

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 328.5 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					3± inches Asphaltic Concrete, 4± inches Aggregate Base							
					FILL: Brown Clayey fine Sand, trace fine root fibers, medium dense-moist to very moist		17					
					FILL: Brown Silty fine Sand, little Clay, trace Calcareous nodules, medium dense-very moist		21					
5					FILL: Brown Silty Clay, little fine Sand, trace medium Sand, trace Calcareous nodules, medium stiff-moist to very moist		26					
		4			@ 8½ feet, organic staining, soft		18					
10					Boring Terminated at 10 feet							

TBL 20G168-2.GPJ SOCALGEO.GDT 7/30/20

TEST BORING LOG

PLATE B-1

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-2

JOB NO.: 20G168-2
PROJECT: Proposed Brea Plaza Mixed Use
LOCATION: Brea, California

DRILLING DATE: 7/9/20
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jamie Hayward

WATER DEPTH: Dry
CAVE DEPTH: ---
READING TAKEN: ---

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 329.5 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					4± inches Asphaltic Concrete, 6± inches Aggregate Base							
					FILL: Brown Clayey fine Sand, slightly mottled, medium stiff-very moist		24					
					FILL: Brown Silty Clay, little fine Sand, trace fine root fibers, stiff-moist to very moist		20					
5					@ 6 feet, trace Calcareous nodules		21					
		68/4"			TERRACE DEPOSITS: Brown fine Sandy Clay, little Silt, trace medium to coarse Sand, little Calcareous veining/nodules, hard-damp to moist		10					
10					Boring Terminated at 10 feet							

TBL 20G168-2.GPJ SOCALGEO.GDT 7/30/20

TEST BORING LOG **PLATE B-2**

INFILTRATION CALCULATIONS

Project Name	Proposed Brea Plaza Mixed Use
Project Location	Brea, CA
Project Number	20G168-2
Engineer	Jamie Hayward

Test Hole Radius	8	(in)
Test Depth	10.3	(ft)

Infiltration Test Hole	I-1

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)
P1	Initial	8:00 AM	30.0	8.15	-0.02	2.16	-0.06
	Final	8:30 AM		8.13			
P2	Initial	8:31 AM	30.0	8.13	0.02	2.16	0.06
	Final	9:01 AM		8.15			
1	Initial	9:01 AM	30.0	8.15	-0.01	2.16	-0.03
	Final	9:31 AM		8.14			
2	Initial	9:32 AM	30.0	8.14	0.00	2.16	0.00
	Final	10:02 AM		8.14			
3	Initial	10:02 AM	30.0	8.14	0.01	2.16	0.03
	Final	10:32 AM		8.15			
4	Initial	10:33 AM	30.0	8.15	0.00	2.15	0.00
	Final	11:03 AM		8.15			
5	Initial	11:04 AM	30.0	8.15	0.00	2.15	0.00
	Final	11:34 AM		8.15			
6	Initial	11:35 AM	30.0	8.15	0.01	2.15	0.03
	Final	12:05 PM		8.16			
7	Initial	12:05 PM	30.0	8.15	0.01	2.15	0.03
	Final	12:35 PM		8.16			
8	Initial	12:35 PM	30.0	8.15	0.01	2.15	0.03
	Final	1:05 PM		8.16			

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where: Q = Infiltration Rate (in inches per hour)
ΔH = Change in Height (Water Level) over the time interval
r = Test Hole (Borehole) Radius
Δt = Time Interval
H_{avg} = Average Head Height over the time interval

INFILTRATION CALCULATIONS

Project Name	Proposed Brea Plaza Mixed Use
Project Location	Brea, CA
Project Number	20G168-2
Engineer	Jamie Hayward

Test Hole Radius	8	(in)
Test Depth	10.2	(ft)

Infiltration Test Hole	I-2

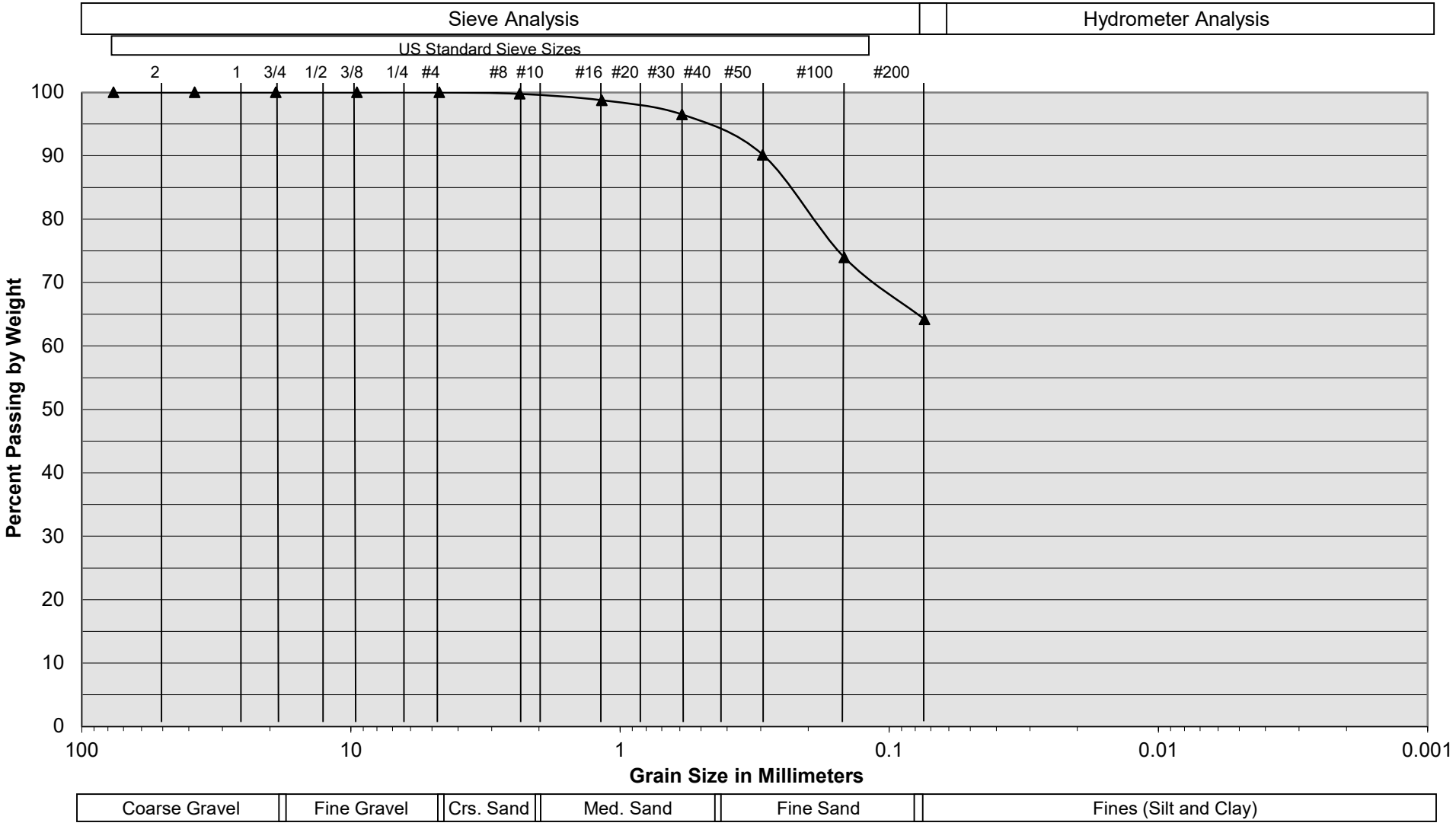
Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)
P1	Initial	8:08 AM	30.0	8.00	0.07	2.15	0.23
	Final	8:38 AM		8.07			
P2	Initial	8:39 AM	30.0	7.97	0.13	2.15	0.42
	Final	9:09 AM		8.10			
1	Initial	9:10 AM	30.0	8.00	0.12	2.12	0.39
	Final	9:40 AM		8.12			
2	Initial	9:41 AM	30.0	7.99	0.11	2.14	0.36
	Final	10:11 AM		8.10			
3	Initial	10:12 AM	30.0	7.98	0.11	2.15	0.36
	Final	10:42 AM		8.09			
4	Initial	10:43 AM	30.0	7.90	0.07	2.25	0.22
	Final	11:13 AM		7.97			
5	Initial	11:14 AM	30.0	7.97	0.11	2.16	0.35
	Final	11:44 AM		8.08			
6	Initial	11:45 AM	30.0	8.00	0.11	2.13	0.36
	Final	12:15 PM		8.11			
7	Initial	12:15 PM	30.0	7.99	0.12	2.13	0.39
	Final	12:45 PM		8.11			
8	Initial	12:46 PM	30.0	8.00	0.11	2.13	0.36
	Final	1:16 PM		8.11			

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where: Q = Infiltration Rate (in inches per hour)
ΔH = Change in Height (Water Level) over the time interval
r = Test Hole (Borehole) Radius
Δt = Time Interval
H_{avg} = Average Head Height over the time interval

Grain Size Distribution

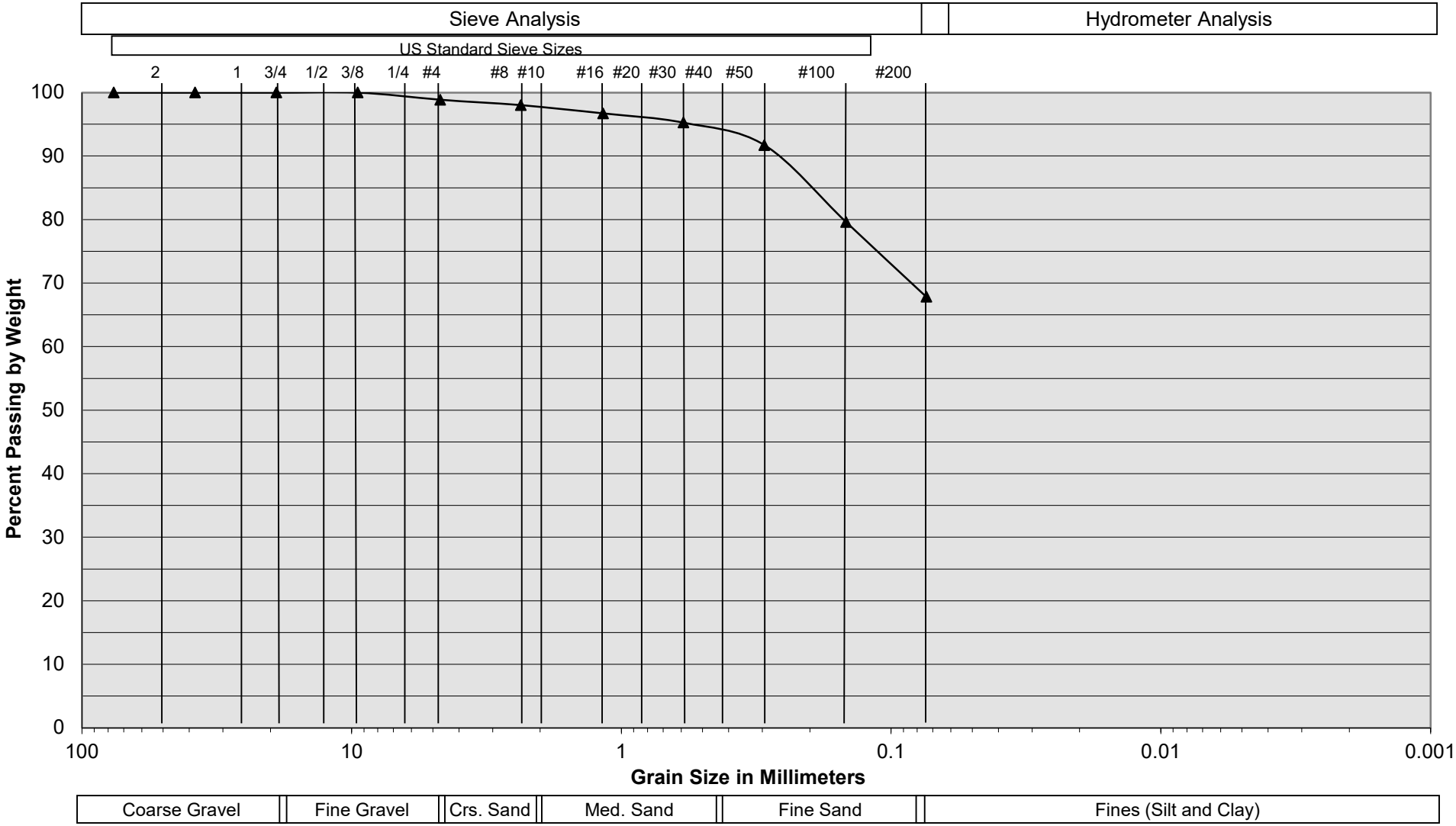


Sample Description	I-1 @ 8½ feet
Soil Classification	Brown Silty Clay, little fine Sand, trace medium Sand

Propsed Brea Plaza Mixed Use
Brea, California
Project No. 20G168-2
PLATE C- 1

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Grain Size Distribution



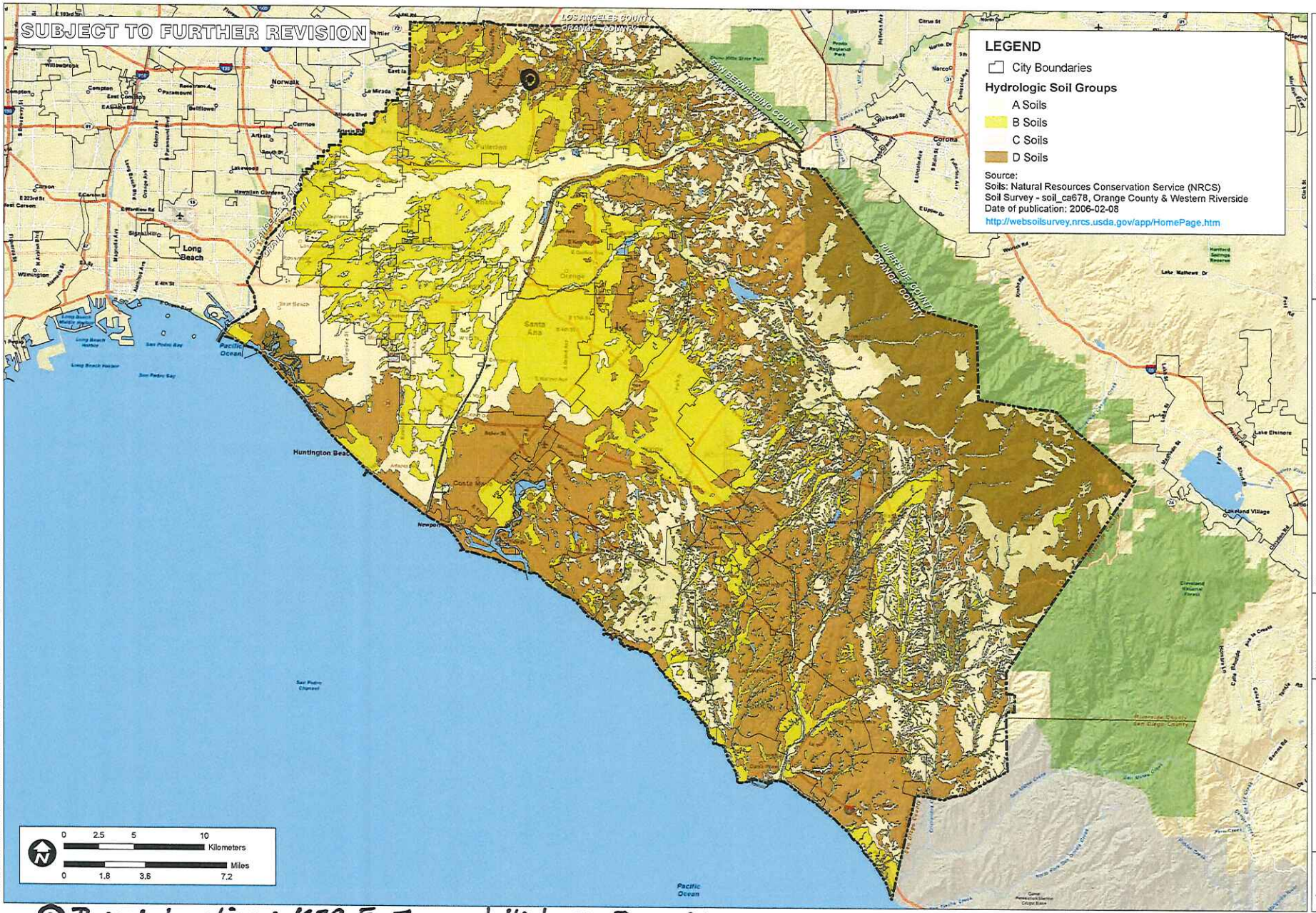
Sample Description	I-2 @ 8½ feet
Soil Classification	Brown fine Sandy Clay, little Silt, trace medium to coarse Sand

Propsed Brea Plaza Mixed Use
Brea, California
Project No. 20G168-2
PLATE C- 2

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

APPENDIX G

NRCS HYDROLOGIC SOILS GROUPS MAP FOR ORANGE COUNTY



TITLE: NRCS HYDROLOGIC SOILS GROUPS

JOB: ORANGE COUNTY INFILTRATION STUDY — ORANGE CO. CA

SCALE	1" = 1.8 miles
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	02/09/11
JOB NO.	9526.E

PACE Advanced Water Engineering

FIGURE XVI-2a

P:\9526EW-GIS\Mxds\Report\Infiltrationfeasability_20110215\9526E_FigureXVI-2a_HydroSoils_20110215.mxd

Project Location: 1639 E. Imperial Highway, Brea, CA

APPENDIX H

OPERATION AND MAINTENANCE (O&M) PLAN

OPERATION AND MAINTENANCE (O&M) PLAN

Water Quality Management Plan
for

BREA PLAZA MIXED-USE PROJECT

1639 E. Imperial Highway

Brea, CA 92821

Appendix H, Operation and Maintenance Plan
Note: OWNER = BPI Brea LLC

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Non-Structural Source Control BMPs			
Y	N1. Education for Property Owners, Tenants and Occupants Educational materials shall be reviewed and made available on-site prior to commencement of operation of the Brea Plaza Redevelopment Project. Refer to Appendices A and B of the Project WQMP for a list of applicable educational materials and BMP Fact Sheets. For developments with POA and residential projects of more than fifty (50) dwelling units, project conditions of approval will require that the POA periodically provide environmental awareness education materials, made available by the municipalities, to all of its members. Among other things, these materials will describe the use of chemicals (including household type) that should be limited to the property, with no discharge of wastes via hosing or other direct discharge to gutters, catch basins and storm drains. Educational materials available from the County of Orange can be downloaded here: http://www.ocwatersheds.com/PublicEd/resources/default.aspx	Frequency: Upon occupancy, and annually thereafter	BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Y	N2. Activity Restrictions The owner shall include in any employee training manual, lease, and/or CCRs the on-site activity restrictions, including but not limited to: (1) No hosing down of any paved surface where the water would flow directly to the street, gutter or storm drain; (2) No car washing outside of established community car wash areas (if any); and (3) No disposal of wash water in the street, gutter or storm drain—all wash water must be disposed of in a mop sink or an area with a floor drain.	Frequency: Continuous	BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com
Y	N3. Common Area Landscape Management Ongoing maintenance must be consistent with the City's adopted water conservation ordinance, plus fertilizer and pesticide usage consistent with the "County Management Guidelines for Use of Fertilizers and Pesticides." Landscaping irrigation systems shall be adjusted and properly maintained to prevent over spray runoffs. Green waste shall not be blown or swept into, or disposed of, in the street, gutter, public right-of-way, or storm drain catch basins or inlets. Leaf blowers, if used, shall be used to move green waste into piles so they can be swept and picked up and disposed of in green waste recycling containers.	Frequency: Weekly	BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Y	N4. BMP Maintenance Owner shall be responsible for implementation of each non-structural BMP and regularly scheduled cleaning of all BMP structural facilities. Records of inspections and BMP maintenance shall be maintained by the owner and shall be available for review upon request.	Frequency: Continuous	BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com
N	N5. Title 22 CCR Compliance		
N	N6. Local Water Quality Permit Compliance		
N	N7. Spill Contingency Plan		
N	N8. Underground Storage Tank Compliance		
N	N9. Hazardous Materials Disclosure Compliance		
N	N10. Uniform Fire Code Implementation		

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Y	N11. Common Area Litter Control The Owner shall provide an adequate number of trash receptacles on site. Litter patrol, emptying of trash receptacles, violation investigation, reporting and other litter control activities shall be performed in conjunction with maintenance activities.	Frequency: Weekly	BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com
Y	N12. Employee Training The Owner shall prepare a training manual(s) for existing and future employees. The manual should include information on non-point source pollution and how to use proper Best Management Practices (BMPs) to minimize runoff pollutants. Training shall be provided upon hire and at regular intervals thereafter.	Frequency: Upon hire, and annually thereafter	BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Y	N13. Housekeeping of Loading Docks Keep all fluids indoors. Clean up spills immediately and keep spills from entering storm drain system. Cleanup procedures should minimize or eliminate the use of water. If wash water is used, it must be disposed of in an approved manner and not discharged to the storm drain system. If there are no other alternatives, discharge of non-stormwater flow to the sanitary sewer must be at an acceptable discharge point such as a cleanout, oil/water separator, grease interceptor, or industrial sewer connection. All sewer discharges shall be in accordance with the Orange County Sanitation District's Wastewater Discharge Regulations and/or Washwater Disposal Guidelines. Area shall be inspected weekly for proper containment and shall be swept weekly.	Frequency: Continuous	BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com
Y	N14. Common Area Catch Basin Inspection The catch basins will be inspected, cleaned and maintained on an annual basis, in the early fall prior to the start of the rainy season, and before and after all major storms.	Frequency: Annually, and before and after all major storms	BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Y	N15. Street Sweeping Private Streets and Parking Lots The Owner or his agent must sweep all drive aisles and parking areas regularly (minimum monthly), and prior to the storm season (no later than October 1st each year). Sweeping shall be done with a vacuum-type sweeper. Under no circumstances are outdoor areas/lots to be rinsed or washed with water unless said rinse/wash water is collected and disposed of properly (i.e. into the sewer).	Frequency: Monthly	BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Structural Source Control BMPs			
Y	S1. Provide Storm Drain System Stenciling and Signage Storm drain stencils are highly visible source control messages, typically placed directly adjacent to storm drain inlets. The stencils contain a brief statement that prohibits the dumping of improper materials into the municipal storm drain system. Graphical icons, either illustrating anti-dumping symbols or images of receiving water fauna, are effective supplements to the anti-dumping message. Stencils and signs alert the public to the destination of pollutants discharged into stormwater. The following requirements should be included in the project design and shown on the project plans: 1. Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language (such as: "NO DUMPING-DRAINS TO OCEAN") and/or graphical icons to discourage illegal dumping. 2. Post signs and prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area. 3. Maintain legibility of stencils and signs. See CASQA Stormwater Handbook BMP Fact Sheet SD-13 for additional information. Storm drain stencils shall be inspected for legibility, at a minimum, once prior to the storm season, and no later than October 1st of each year. Those signs determined to be illegible will be re-stenciled as soon as possible.	Frequency: Annually	BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
N	S2. Design Outdoor Hazardous Material Storage Areas to Reduce Pollutant Introduction		
N	S3. Design Trash Enclosures to Reduce Pollutant Introduction		

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Y	S4. Use Efficient Irrigation Systems & Landscape Design Projects shall design the timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the municipal storm drain system. The following methods to reduce excessive irrigation runoff shall be considered, and incorporated on common areas of development and other areas where determined applicable and feasible by the Permittee: 1. Employing rain shutoff devices to prevent irrigation after precipitation. 2. Designing irrigation systems to each landscape area's specific water requirements. 3. Using flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines. 4. Implementing landscape plan consistent with County Water Conservation Resolution or city equivalent, which may include provision of water sensors, programmable irrigation times (for short cycles), etc. 5. The timing and application methods of irrigation water shall be designed to minimize the runoff of excess irrigation water into the municipal storm drain system. 6. Employing other comparable, equally effective, methods to reduce irrigation water runoff. 7. Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider other design features, such as:	Frequency: Continuous	BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Y	S4. Use Efficient Irrigation Systems & Landscape Design (cont'd) • Use mulches (such as wood chips or shredded wood products) in planter areas without ground cover to minimize sediment in runoff. • Install appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant material where possible and/or as recommended by the landscape architect. • Leave a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible. • Choose plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth. Irrigation practices shall comply with local and statewide ordinances related to irrigation efficiency.	Frequency: Continuous	BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com
N	S5. Protect Slopes and Channels		

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Y	S6. Loading Dock Areas Loading /unloading dock areas shall include the following: 1. Cover loading dock areas, or design drainage to preclude run-on and runoff, unless the material loaded and unloaded at the docks does not have potential to contribute to stormwater pollution, and this use is ensured for the life of the facility. 2. Direct connections to the municipal storm drain system from below grade loading docks (truck wells) or similar structures are prohibited. Stormwater can be discharged through a permitted connection to the storm drain system with a treatment control BMP applicable to the use. 3. Other comparable and equally effective features that prevent unpermitted discharges to the municipal storm drain system. 4. Housekeeping of loading docks shall be consistent with N13.	Frequency: Continuous	BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com
N	S7. Maintenance Bays and Docks		
N	S8. Vehicle Wash Areas		
N	S9. Outdoor Processing Areas		

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
N	S10. Equipment Wash Areas		
N	S11. Fueling Areas		
N	S12. Hillside Landscaping		
N	S13. Wash Water Controls for Food Preparation Areas		
N	S14. Community Car Wash Racks		

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Low Impact Development BMPs			
Y	Treatment Control BMP #1 Proprietary Catch Basin Insert Filters (Kristar FloGard +Plus Insert Filters or Approved Equivalent) Twice a year, prior to and after the rainy season, and after major storm events, the catch basin insert filters shall be visually inspected for damage, have all sediment and debris removed, and the filter medium pouches shall be replaced if necessary. The owner may conduct this maintenance himself, or may enter into a service contract for the maintenance of the insert filters as detailed in the Kristar FloGard +Plus Specs/Maintenance Requirements brochure, a copy of which is attached hereto.	Frequency: Every Six Months (Approximately April 1st and October 1st) and Immediately After Major Storm Events	BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Y	Biotreatment BMP # 1 Modular Wetlands System (BIO-7: Proprietary Biotreatment) The Modular Wetlands System is to be maintained monthly as part of routine landscape maintenance activities, and shall be visually inspected monthly and immediately after major storm events to remove collected litter and foreign debris from the screening device. Every 12 to 24 months, the following maintenance should be performed: remove sediment from the Separation Chamber, replace the Cartridge Filter Media, and replace the Drain Down Filter Media. Additional/detailed maintenance instructions for the Modular Wetlands System are contained in the "Maintenance Guidelines for Modular Wetlands System," a copy of which is attached hereto.	Frequency: Screening Device Maintenance: Monthly And Immediately After Major Storm Events Separation Chamber, Cartridge Filter Media, and Drain Down Filter Media Maintenance: Every 12 to 24 Months	BPI Brea LLC (Owner) 417 S. Associated Road, Suite 313 Brea, CA 92821 Contact: Waad Nadhir wnadhir@bosc.com

Required Permits

No permits are required for the implementation, operation, and maintenance of the BMPs described in this plan.

Recordkeeping

All records must be maintained for at least five (5) years and must be made available for review upon request.

APPENDIX I

RECORD OF BMP IMPLEMENTATION, MAINTENANCE AND INSPECTION

RECORD OF BMP IMPLEMENTATION, MAINTENANCE AND INSPECTION

Today's Date: _____

Name of Person Performing Activity (Printed): _____

Signature: _____

BMP Name (As Shown in O&M Plan)	Brief Description of Implementation, Maintenance, and Inspection Activity Performed

APPENDIX J

INSPECTION REPORT FOR MODULAR WETLANDS SYSTEM;

CLEANING AND MAINTENANCE REPORT FOR MODULAR WETLANDS SYSTEM

Inspection Report
Modular Wetlands System

Project Name _____

Project Address _____ (city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ____/____/____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Inspection Checklist

Modular Wetland System Type (Curb, Grate or UG Vault): _____ Size (22', 14' or etc.): _____

Structural Integrity:	**Yes**	**No**	**Comments**
Damage to pre-treatment access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Damage to discharge chamber access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Does the MWS unit show signs of structural deterioration (cracks in the wall, damage to frame)?			
Is the inlet/outlet pipe or drain down pipe damaged or otherwise not functioning properly?			
Working Condition:			
Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit?			
Is there standing water in inappropriate areas after a dry period?			
Is the filter insert (if applicable) at capacity and/or is there an accumulation of debris/trash on the shelf system?			
Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe, bypass or cartridge filter? If yes, specify which one in the comments section. Note depth of accumulation in in pre-treatment chamber.			Depth:
Does the cartridge filter media need replacement in pre-treatment chamber and/or discharge chamber?			Chamber:
Any signs of improper functioning in the discharge chamber? Note issues in comments section.			
Other Inspection Items:			
Is there an accumulation of sediment/trash/debris in the wetland media (if applicable)?			
Is it evident that the plants are alive and healthy (if applicable)? Please note Plant Information below.			
Is there a septic or foul odor coming from inside the system?			

Waste:	**Yes**	**No**
Sediment / Silt / Clay		
Trash / Bags / Bottles		
Green Waste / Leaves / Foliage		

Recommended Maintenance	
No Cleaning Needed	
Schedule Maintenance as Planned	
Needs Immediate Maintenance	

Plant Information	
Damage to Plants	
Plant Replacement	
Plant Trimming	

Additional Notes: _____

2972 San Luis Rey Road, Oceanside, CA 92058 P (760) 433-7640 F (760) 433-3176

Cleaning and Maintenance Report
Modular Wetlands System

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ____/____/____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Site Map #	GPS Coordinates of Insert	Manufacturer / Description / Sizing	Trash Accumulation	Foliage Accumulation	Sediment Accumulation	Total Debris Accumulation	Condition of Media 25/50/75/100 (will be changed @ 75%)	Operational Per Manufactures' Specifications (If not, why?)
	Lat: Long:	MWS Catch Basins						
		MWS Sedimentation Basin						
		Media Filter Condition						
		Plant Condition						
		Drain Down Media Condition						
		Discharge Chamber Condition						
		Drain Down Pipe Condition						
		Inlet and Outlet Pipe Condition						

Comments:

2972 San Luis Rey Road, Oceanside, CA 92058 P. 760.433.7640 F. 760.433.3176

APPENDIX K

NOTICE OF TRANSFER OF RESPONSIBILITY FOR WQMP

NOTICE OF TRANSFER OF RESPONSIBILITY

WATER QUALITY MANAGEMENT PLAN

BREA PLAZA MIXED-USE PROJECT

1639 E. Imperial Highway
Brea, CA 92821

Submission of this Notice of Transfer of Responsibility constitutes notice to the City of Brea that responsibility for the Water Quality Management Plan ("WQMP") for the subject property identified below, and implementation of that plan, is being transferred from the Previous Owner (and its agent) of the site (or a portion thereof) to the New Owner, as further described below.

I. Previous Owner/ Previous Responsible Party Information

Company/ Individual Name:		Contact Person:	
Street Address:		Title:	
City:	State:	ZIP:	Phone:

II. Information About Site Transferred

Name of Project (if applicable):	
Title of WQMP Applicable to site:	
Street Address of Site (if applicable):	
Planning Area (PA) and/ or Tract Number(s) for Site:	Lot Numbers (if Site is a portion of a tract):
Date WQMP Prepared (and revised if applicable):	

III. New Owner/ New Responsible Party Information

Company/ Individual Name:		Contact Person:	
Street Address:		Title:	
City:	State:	ZIP:	Phone:

IV. Ownership Transfer Information

General Description of Site Transferred to New Owner:	General Description of Portion of Project/ Parcel Subject to WQMP Retained by Owner (if any):

Lot/ Tract Numbers of Site Transferred to New Owner:
Remaining Lot/ Tract Numbers Subject to WQMP Still Held by Owner (if any):
Date of Ownership Transfer:

Note: When the Previous Owner is transferring a Site that is a portion of a larger project/ parcel addressed by the WQMP, as opposed to the entire project/parcel addressed by the WQMP, the General Description of the Site transferred and the remainder of the project/ parcel not transferred shall be set forth as maps attached to this notice. These maps shall show those portions of a project/ parcel addressed by the WQMP that are transferred to the New Owner (the Transferred Site), those portions retained by the Previous Owner, and those portions previously transferred by Previous Owner. Those portions retained by Previous Owner shall be labeled as "Previously Transferred".

V. Purpose of Notice of Transfer

The purposes of this Notice of Transfer of Responsibility are: 1) to track transfer of responsibility for implementation and amendment of the WQMP when property subject to the WQMP is transferred from the Previous Owner to the New Owner, and 2) to facilitate notification to a transferee of property subject to a WQMP that such New Owner is now the Responsible Party of record for the WQMP for those portions of the site that it owns.

VI. Certifications

A. Previous Owner

I hereby certify that _____is no longer the owner of the Transferred Site as described in Section II above. I have provided the New Owner with a copy of the WQMP applicable to the Transferred Site that the New Owner is acquiring from the Previous Owner.

Printed Name of Previous Owner Representative:	Title:
Signature:	Date:

B. New Owner

I hereby certify that _____is the owner of the Transferred Site, as described in Section II above, that I have been provided a copy of the WQMP, and that I have been informed and understand the New Owner's responsibilities related to the WQMP, its implementation, and Best Management Practices associated with it. I understand that by signing this notice, the New Owner is accepting all ongoing responsibilities for implementation and amendment of the WQMP for the Transferred Site, which the New Owner has acquired from the Previous Owner.

Printed Name of New Owner Representative:	Title:
Signature:	Date:

APPENDIX L

WINTR-55 PROGRAM HYDROLOGIC ANALYSIS REPORTS FOR THE BREA PLAZA MIXED-USE PROJECT

WinTR-55 Current Data Description

--- Identification Data ---

User: 487-4 WQMP
Project: Brea Plaza Mixed-Use
SubTitle: Existing
State: California
County: Orange
Filename: S:\487-4 BREA PLAZA PHASE 2\WQMP\WinTR-55 Existing Condition.w55

Date: 6/22/2021
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
A1		Outlet	2.2	97	0.1

Total area: 2.20 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
2.05	.0	.0	.0	.0	.0	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type I
Dimensionless Unit Hydrograph: <standard>

Brea Plaza Mixed-Use
Existing
Orange County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
2.05	.0	.0	.0	.0	.0	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type I
Dimensionless Unit Hydrograph: <standard>

Brea Plaza Mixed-Use
Existing
Orange County, California

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 2-Yr (cfs)
SUBAREAS	
A1	2.94
REACHES	
OUTLET	2.94

Brea Plaza Mixed-Use
Existing
Orange County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)
SUBAREAS		
A1	2.94	9.92
REACHES		
OUTLET	2.94	

Brea Plaza Mixed-Use
Existing
Orange County, California

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
A1	2.20	0.100	97	Outlet	

Total Area: 2.20 (ac)

Brea Plaza Mixed-Use
Existing
Orange County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
A1							
SHEET	88	0.0350	0.011				0.018
SHALLOW	348	0.0050	0.025				0.067
							0.0850
					Time of Concentration		0.1

(rounded up to 0.1 by Program)

Brea Plaza Mixed-Use
Existing
Orange County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
A1	Open space; grass cover > 75% (good)	D	.166	80
	Paved parking lots, roofs, driveways	D	2.035	98
	Total Area / Weighted Curve Number		2.2	97

```
WinTR-20 Printed Page File      Beginning of Input Data List
TR20.inp

WinTR-20: Version 1.10                  0         0         0.05
Brea Plaza Mixed-Use
Existing

SUB-AREA:
         A1        Outlet               .00344    97.       .1

STREAM REACH:

STORM ANALYSIS:
         2-Yr                           2.05      Type I    2

STRUCTURE RATING:


GLOBAL OUTPUT:
         2         0.05                 YYYYN     YYYYNN
```

WinTR-20 Printed Page File End of Input Data List

Brea Plaza Mixed-Use
Existing

Name of printed page file:
TR20.out

Existing 2-yr Runoff volume =
1.690 inches x 2.20 acres x 43,560 sq-ft/ac x
1 ft/12 inches = 13,496 cu-ft

STORM 2-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
A1	0.003		1.690		9.92	2.94	855.15

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
4.454	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.498	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.543	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.587	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.631	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.675	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.719	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.764	0.05	0.05	0.05	0.06	0.06	0.06	0.06
4.808	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.852	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.896	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.941	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.985	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.029	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.073	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.117	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.162	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.206	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.250	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.294	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.338	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.383	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.427	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.471	0.06	0.06	0.06	0.07	0.07	0.07	0.07
5.515	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.559	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.604	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.648	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.692	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.736	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.781	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.825	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.869	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.913	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.957	0.07	0.07	0.07	0.07	0.07	0.07	0.07

6.002	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.046	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.090	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.134	0.07	0.07	0.08	0.08	0.08	0.08	0.08
6.178	0.08	0.08	0.08	0.08	0.08	0.08	0.08

Brea Plaza Mixed-Use
Existing

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.223	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.267	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.311	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.355	0.08	0.08	0.08	0.08	0.09	0.09	0.09
6.399	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.444	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.488	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.532	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.576	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.621	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.665	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.709	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.753	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.797	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.842	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.886	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.930	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.974	0.11	0.11	0.11	0.11	0.11	0.11	0.11
7.018	0.11	0.11	0.11	0.11	0.11	0.11	0.12
7.063	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.107	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.151	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.195	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.239	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.284	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.328	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.372	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.416	0.12	0.12	0.12	0.12	0.12	0.12	0.13
7.461	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.505	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.549	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.593	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.637	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.682	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.726	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.770	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.814	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.858	0.13	0.13	0.13	0.13	0.13	0.13	0.14
7.903	0.14	0.14	0.14	0.14	0.14	0.14	0.14
7.947	0.14	0.14	0.14	0.14	0.14	0.14	0.14
7.991	0.14	0.14	0.14	0.14	0.14	0.14	0.14
8.035	0.14	0.14	0.14	0.14	0.14	0.14	0.14
8.079	0.14	0.14	0.14	0.14	0.14	0.15	0.15
8.124	0.15	0.15	0.15	0.15	0.15	0.15	0.15
8.168	0.15	0.15	0.16	0.16	0.16	0.16	0.16
8.212	0.16	0.16	0.16	0.16	0.16	0.16	0.17
8.256	0.17	0.17	0.17	0.17	0.17	0.17	0.17
8.301	0.17	0.18	0.18	0.18	0.18	0.18	0.18
8.345	0.18	0.18	0.18	0.18	0.19	0.19	0.19
8.389	0.19	0.19	0.19	0.19	0.19	0.19	0.19
8.433	0.20	0.20	0.20	0.20	0.20	0.20	0.20

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

Brea Plaza Mixed-Use
Existing

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.477	0.20	0.21	0.21	0.21	0.21	0.21	0.21
8.522	0.21	0.21	0.21	0.21	0.21	0.22	0.22
8.566	0.22	0.22	0.22	0.22	0.22	0.22	0.22
8.610	0.23	0.23	0.23	0.23	0.23	0.23	0.23
8.654	0.23	0.23	0.24	0.24	0.24	0.24	0.24
8.698	0.24	0.24	0.24	0.24	0.24	0.24	0.25
8.743	0.25	0.25	0.25	0.25	0.25	0.25	0.25
8.787	0.26	0.26	0.26	0.26	0.26	0.26	0.26
8.831	0.26	0.26	0.26	0.26	0.27	0.27	0.27
8.875	0.27	0.27	0.27	0.27	0.27	0.27	0.28
8.919	0.28	0.28	0.28	0.28	0.28	0.28	0.28
8.964	0.28	0.29	0.29	0.29	0.29	0.29	0.29
9.008	0.29	0.29	0.29	0.29	0.30	0.30	0.30
9.052	0.30	0.30	0.30	0.31	0.31	0.31	0.31
9.096	0.31	0.31	0.31	0.32	0.32	0.32	0.32
9.141	0.32	0.32	0.33	0.33	0.33	0.33	0.34
9.185	0.34	0.34	0.34	0.34	0.34	0.35	0.35
9.229	0.35	0.35	0.35	0.36	0.36	0.36	0.36
9.273	0.37	0.37	0.37	0.37	0.37	0.37	0.38
9.317	0.38	0.38	0.38	0.38	0.38	0.39	0.39
9.362	0.39	0.40	0.40	0.40	0.40	0.40	0.41
9.406	0.41	0.41	0.41	0.41	0.41	0.42	0.42
9.450	0.42	0.42	0.43	0.43	0.43	0.43	0.43
9.494	0.44	0.44	0.44	0.44	0.45	0.45	0.46
9.538	0.47	0.49	0.50	0.52	0.53	0.55	0.56
9.583	0.58	0.59	0.60	0.61	0.62	0.63	0.64
9.627	0.65	0.67	0.70	0.72	0.75	0.78	0.82
9.671	0.85	0.87	0.90	0.92	0.94	0.96	0.98
9.715	1.00	1.02	1.05	1.08	1.13	1.18	1.23
9.759	1.28	1.34	1.39	1.44	1.49	1.53	1.56

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

9.804	1.59	1.62	1.66	1.70	1.76	1.83	1.92
9.848	2.03	2.13	2.25	2.36	2.46	2.56	2.65
9.892	2.73	2.80	2.85	2.90	2.93	2.94	2.94
9.936	2.92	2.89	2.84	2.79	2.73	2.67	2.61
9.981	2.55	2.50	2.46	2.42	2.39	2.35	2.31
10.025	2.26	2.19	2.11	2.01	1.89	1.78	1.66
10.069	1.54	1.44	1.33	1.24	1.16	1.10	1.04
10.113	1.00	0.96	0.92	0.89	0.86	0.84	0.82
10.157	0.79	0.78	0.76	0.75	0.73	0.72	0.71
10.202	0.71	0.70	0.69	0.69	0.68	0.67	0.67
10.246	0.66	0.65	0.65	0.64	0.63	0.62	0.62
10.290	0.61	0.61	0.61	0.60	0.60	0.60	0.59
10.334	0.59	0.58	0.58	0.57	0.56	0.56	0.55
10.378	0.55	0.54	0.54	0.53	0.53	0.53	0.52
10.423	0.52	0.52	0.51	0.50	0.50	0.49	0.49
10.467	0.48	0.47	0.47	0.46	0.46	0.45	0.45
10.511	0.45	0.45	0.44	0.44	0.44	0.43	0.43
10.555	0.42	0.42	0.41	0.41	0.41	0.40	0.40
10.599	0.40	0.40	0.39	0.39	0.39	0.39	0.39
10.644	0.39	0.38	0.38	0.38	0.38	0.38	0.38
10.688	0.37	0.37	0.37	0.37	0.37	0.37	0.37

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
10.732	0.37	0.37	0.36	0.36	0.36	0.36	0.36
10.776	0.36	0.36	0.35	0.35	0.35	0.35	0.35
10.821	0.35	0.35	0.35	0.35	0.35	0.34	0.34
10.865	0.34	0.34	0.34	0.34	0.34	0.33	0.33
10.909	0.33	0.33	0.33	0.33	0.33	0.33	0.33
10.953	0.33	0.32	0.32	0.32	0.32	0.32	0.32
10.997	0.32	0.31	0.31	0.31	0.31	0.31	0.31

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

11.042	0.31	0.31	0.31	0.31	0.31	0.30	0.30
11.086	0.30	0.30	0.30	0.30	0.30	0.30	0.30
11.130	0.30	0.30	0.30	0.30	0.30	0.30	0.30
11.174	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.218	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.263	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.307	0.29	0.29	0.29	0.28	0.28	0.28	0.28
11.351	0.28	0.28	0.28	0.28	0.28	0.28	0.28
11.395	0.28	0.28	0.28	0.28	0.28	0.28	0.28
11.439	0.28	0.28	0.28	0.28	0.27	0.27	0.27
11.484	0.27	0.27	0.27	0.27	0.27	0.27	0.27
11.528	0.27	0.27	0.27	0.27	0.27	0.27	0.27
11.572	0.27	0.27	0.27	0.27	0.27	0.27	0.26
11.616	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.661	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.705	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.749	0.26	0.26	0.25	0.25	0.25	0.25	0.25
11.793	0.25	0.25	0.25	0.25	0.25	0.25	0.25
11.837	0.25	0.25	0.25	0.25	0.25	0.25	0.25
11.882	0.25	0.25	0.25	0.24	0.24	0.24	0.24
11.926	0.24	0.24	0.24	0.24	0.24	0.24	0.24
11.970	0.24	0.24	0.24	0.24	0.24	0.24	0.24
12.014	0.24	0.24	0.24	0.24	0.24	0.24	0.24
12.058	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.103	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.147	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.191	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.235	0.23	0.23	0.23	0.23	0.22	0.22	0.22
12.279	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.324	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.368	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.412	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.456	0.22	0.22	0.22	0.22	0.22	0.21	0.21
12.501	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.545	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.589	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.633	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.677	0.21	0.21	0.21	0.21	0.21	0.21	0.21

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

12.722	0.21	0.21	0.20	0.20	0.20	0.20	0.20
12.766	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.810	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.854	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.898	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.943	0.20	0.20	0.19	0.19	0.19	0.19	0.19

Brea Plaza Mixed-Use
Existing

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.987	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.031	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.075	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.119	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.164	0.19	0.19	0.19	0.18	0.18	0.18	0.18
13.208	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.252	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.296	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.341	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.385	0.18	0.18	0.18	0.18	0.18	0.17	0.17
13.429	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.473	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.517	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.562	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.606	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.650	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.694	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.738	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.783	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.827	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.871	0.15	0.15	0.15	0.15	0.15	0.15	0.15
13.915	0.15	0.15	0.15	0.15	0.15	0.15	0.15

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

13.959	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.004	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.048	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.092	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.136	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.181	0.15	0.14	0.14	0.14	0.14	0.14	0.14
14.225	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.269	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.313	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.357	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.402	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.446	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.490	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.534	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.578	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.623	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.667	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.711	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.755	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.799	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.844	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.888	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.932	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.976	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.021	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.065	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.109	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.153	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.197	0.14	0.14	0.14	0.14	0.14	0.14	0.14

Line
Start Time ---------- Flow Values @ time increment of 0.006 hr ----------

(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

15.242	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.286	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.330	0.14	0.14	0.14	0.13	0.13	0.13	0.13
15.374	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.418	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.463	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.507	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.551	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.595	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.639	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.684	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.728	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.772	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.816	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.861	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.905	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.949	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.993	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.037	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.082	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.126	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.170	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.214	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.258	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.303	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.347	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.391	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.435	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.479	0.13	0.13	0.13	0.12	0.12	0.12	0.12
16.524	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.568	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.612	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.656	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.701	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.745	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.789	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.833	0.12	0.12	0.12	0.12	0.12	0.12	0.12

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

16.877	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.922	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.966	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.010	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.054	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.098	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.143	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.187	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.231	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.275	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.319	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.364	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.408	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.452	0.12	0.12	0.12	0.12	0.12	0.12	0.12

Brea Plaza Mixed-Use
Existing

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
17.496	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.541	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.585	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.629	0.12	0.12	0.12	0.12	0.11	0.11	0.11
17.673	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.717	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.762	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.806	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.850	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.894	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.938	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.983	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.027	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.071	0.11	0.11	0.11	0.11	0.11	0.11	0.11

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

18.115	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.159	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.204	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.248	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.292	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.336	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.381	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.425	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.469	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.513	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.557	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.602	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.646	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.690	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.734	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.778	0.11	0.10	0.10	0.10	0.10	0.10	0.10
18.823	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.867	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.911	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.955	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.999	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.044	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.088	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.132	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.176	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.221	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.265	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.309	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.353	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.397	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.442	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.486	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.530	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.574	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.618	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.663	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.707	0.10	0.10	0.10	0.10	0.10	0.10	0.10

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

Brea Plaza Mixed-Use
Existing

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
19.751	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.795	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.839	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.884	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.928	0.09	0.09	0.09	0.09	0.09	0.09	0.09
19.972	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.016	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.061	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.105	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.149	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.193	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.237	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.282	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.326	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.370	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.414	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.458	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.503	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.547	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.591	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.635	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.679	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.724	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.768	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.812	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.856	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.901	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.945	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.989	0.09	0.09	0.09	0.09	0.09	0.09	0.09

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

21.033	0.09	0.09	0.09	0.09	0.08	0.08	0.08
21.077	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.122	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.166	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.210	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.254	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.298	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.343	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.387	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.431	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.475	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.519	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.564	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.608	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.652	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.696	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.741	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.785	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.829	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.873	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.917	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.962	0.08	0.08	0.08	0.08	0.08	0.08	0.08

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
22.006	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.050	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.094	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.138	0.08	0.08	0.08	0.08	0.08	0.08	0.07
22.183	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.227	0.07	0.07	0.07	0.07	0.07	0.07	0.07

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

22.271	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.315	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.359	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.404	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.448	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.492	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.536	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.581	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.625	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.669	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.713	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.757	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.802	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.846	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.890	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.934	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.978	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.023	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.067	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.111	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.155	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.199	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.244	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.288	0.07	0.07	0.06	0.06	0.06	0.06	0.06
23.332	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.376	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.421	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.465	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.509	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.553	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.597	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.642	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.686	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.730	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.774	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.818	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.863	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.907	0.06	0.06	0.06	0.06	0.06	0.06	0.06

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

23.951	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.995	0.06	0.06	0.06	0.06	0.06	0.06	0.05
24.039	0.05						

Brea Plaza Mixed-Use
Existing

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.003		1.690		9.92	2.94	855.15

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.454	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.498	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.543	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.587	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.631	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.675	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.719	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.764	0.05	0.05	0.05	0.06	0.06	0.06	0.06
4.808	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.852	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.896	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.941	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.985	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.029	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.073	0.06	0.06	0.06	0.06	0.06	0.06	0.06

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

5.117	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.162	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.206	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.250	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.294	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.338	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.383	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.427	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.471	0.06	0.06	0.06	0.07	0.07	0.07	0.07
5.515	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.559	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.604	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.648	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.692	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.736	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.781	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.825	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.869	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.913	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.957	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.002	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.046	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.090	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.134	0.07	0.07	0.08	0.08	0.08	0.08	0.08
6.178	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.223	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.267	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.311	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.355	0.08	0.08	0.08	0.08	0.09	0.09	0.09
6.399	0.09	0.09	0.09	0.09	0.09	0.09	0.09

Brea Plaza Mixed-Use
Existing

Line
Start Time ---------- Flow Values @ time increment of 0.006 hr ----------

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.444	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.488	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.532	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.576	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.621	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.665	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.709	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.753	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.797	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.842	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.886	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.930	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.974	0.11	0.11	0.11	0.11	0.11	0.11	0.11
7.018	0.11	0.11	0.11	0.11	0.11	0.11	0.12
7.063	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.107	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.151	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.195	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.239	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.284	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.328	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.372	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.416	0.12	0.12	0.12	0.12	0.12	0.12	0.13
7.461	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.505	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.549	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.593	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.637	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.682	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.726	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.770	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.814	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.858	0.13	0.13	0.13	0.13	0.13	0.13	0.14
7.903	0.14	0.14	0.14	0.14	0.14	0.14	0.14
7.947	0.14	0.14	0.14	0.14	0.14	0.14	0.14
7.991	0.14	0.14	0.14	0.14	0.14	0.14	0.14

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

8.035	0.14	0.14	0.14	0.14	0.14	0.14	0.14
8.079	0.14	0.14	0.14	0.14	0.14	0.15	0.15
8.124	0.15	0.15	0.15	0.15	0.15	0.15	0.15
8.168	0.15	0.15	0.16	0.16	0.16	0.16	0.16
8.212	0.16	0.16	0.16	0.16	0.16	0.16	0.17
8.256	0.17	0.17	0.17	0.17	0.17	0.17	0.17
8.301	0.17	0.18	0.18	0.18	0.18	0.18	0.18
8.345	0.18	0.18	0.18	0.18	0.19	0.19	0.19
8.389	0.19	0.19	0.19	0.19	0.19	0.19	0.19
8.433	0.20	0.20	0.20	0.20	0.20	0.20	0.20
8.477	0.20	0.21	0.21	0.21	0.21	0.21	0.21
8.522	0.21	0.21	0.21	0.21	0.21	0.22	0.22
8.566	0.22	0.22	0.22	0.22	0.22	0.22	0.22
8.610	0.23	0.23	0.23	0.23	0.23	0.23	0.23
8.654	0.23	0.23	0.24	0.24	0.24	0.24	0.24

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.698	0.24	0.24	0.24	0.24	0.24	0.24	0.25
8.743	0.25	0.25	0.25	0.25	0.25	0.25	0.25
8.787	0.26	0.26	0.26	0.26	0.26	0.26	0.26
8.831	0.26	0.26	0.26	0.26	0.27	0.27	0.27
8.875	0.27	0.27	0.27	0.27	0.27	0.27	0.28
8.919	0.28	0.28	0.28	0.28	0.28	0.28	0.28
8.964	0.28	0.29	0.29	0.29	0.29	0.29	0.29
9.008	0.29	0.29	0.29	0.29	0.30	0.30	0.30
9.052	0.30	0.30	0.30	0.31	0.31	0.31	0.31
9.096	0.31	0.31	0.31	0.32	0.32	0.32	0.32
9.141	0.32	0.32	0.33	0.33	0.33	0.33	0.34
9.185	0.34	0.34	0.34	0.34	0.34	0.35	0.35
9.229	0.35	0.35	0.35	0.36	0.36	0.36	0.36

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

9.273	0.37	0.37	0.37	0.37	0.37	0.37	0.38
9.317	0.38	0.38	0.38	0.38	0.38	0.39	0.39
9.362	0.39	0.40	0.40	0.40	0.40	0.40	0.41
9.406	0.41	0.41	0.41	0.41	0.41	0.42	0.42
9.450	0.42	0.42	0.43	0.43	0.43	0.43	0.43
9.494	0.44	0.44	0.44	0.44	0.45	0.45	0.46
9.538	0.47	0.49	0.50	0.52	0.53	0.55	0.56
9.583	0.58	0.59	0.60	0.61	0.62	0.63	0.64
9.627	0.65	0.67	0.70	0.72	0.75	0.78	0.82
9.671	0.85	0.87	0.90	0.92	0.94	0.96	0.98
9.715	1.00	1.02	1.05	1.08	1.13	1.18	1.23
9.759	1.28	1.34	1.39	1.44	1.49	1.53	1.56
9.804	1.59	1.62	1.66	1.70	1.76	1.83	1.92
9.848	2.03	2.13	2.25	2.36	2.46	2.56	2.65
9.892	2.73	2.80	2.85	2.90	2.93	2.94	2.94
9.936	2.92	2.89	2.84	2.79	2.73	2.67	2.61
9.981	2.55	2.50	2.46	2.42	2.39	2.35	2.31
10.025	2.26	2.19	2.11	2.01	1.89	1.78	1.66
10.069	1.54	1.44	1.33	1.24	1.16	1.10	1.04
10.113	1.00	0.96	0.92	0.89	0.86	0.84	0.82
10.157	0.79	0.78	0.76	0.75	0.73	0.72	0.71
10.202	0.71	0.70	0.69	0.69	0.68	0.67	0.67
10.246	0.66	0.65	0.65	0.64	0.63	0.62	0.62
10.290	0.61	0.61	0.61	0.60	0.60	0.60	0.59
10.334	0.59	0.58	0.58	0.57	0.56	0.56	0.55
10.378	0.55	0.54	0.54	0.53	0.53	0.53	0.52
10.423	0.52	0.52	0.51	0.50	0.50	0.49	0.49
10.467	0.48	0.47	0.47	0.46	0.46	0.45	0.45
10.511	0.45	0.45	0.44	0.44	0.44	0.43	0.43
10.555	0.42	0.42	0.41	0.41	0.41	0.40	0.40
10.599	0.40	0.40	0.39	0.39	0.39	0.39	0.39
10.644	0.39	0.38	0.38	0.38	0.38	0.38	0.38
10.688	0.37	0.37	0.37	0.37	0.37	0.37	0.37
10.732	0.37	0.37	0.36	0.36	0.36	0.36	0.36
10.776	0.36	0.36	0.35	0.35	0.35	0.35	0.35
10.821	0.35	0.35	0.35	0.35	0.35	0.34	0.34
10.865	0.34	0.34	0.34	0.34	0.34	0.33	0.33
10.909	0.33	0.33	0.33	0.33	0.33	0.33	0.33

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

Brea Plaza Mixed-Use
Existing

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.953	0.33	0.32	0.32	0.32	0.32	0.32	0.32
10.997	0.32	0.31	0.31	0.31	0.31	0.31	0.31
11.042	0.31	0.31	0.31	0.31	0.31	0.30	0.30
11.086	0.30	0.30	0.30	0.30	0.30	0.30	0.30
11.130	0.30	0.30	0.30	0.30	0.30	0.30	0.30
11.174	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.218	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.263	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.307	0.29	0.29	0.29	0.28	0.28	0.28	0.28
11.351	0.28	0.28	0.28	0.28	0.28	0.28	0.28
11.395	0.28	0.28	0.28	0.28	0.28	0.28	0.28
11.439	0.28	0.28	0.28	0.28	0.27	0.27	0.27
11.484	0.27	0.27	0.27	0.27	0.27	0.27	0.27
11.528	0.27	0.27	0.27	0.27	0.27	0.27	0.27
11.572	0.27	0.27	0.27	0.27	0.27	0.27	0.26
11.616	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.661	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.705	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.749	0.26	0.26	0.25	0.25	0.25	0.25	0.25
11.793	0.25	0.25	0.25	0.25	0.25	0.25	0.25
11.837	0.25	0.25	0.25	0.25	0.25	0.25	0.25
11.882	0.25	0.25	0.25	0.24	0.24	0.24	0.24
11.926	0.24	0.24	0.24	0.24	0.24	0.24	0.24
11.970	0.24	0.24	0.24	0.24	0.24	0.24	0.24
12.014	0.24	0.24	0.24	0.24	0.24	0.24	0.24
12.058	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.103	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.147	0.23	0.23	0.23	0.23	0.23	0.23	0.23

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

12.191	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.235	0.23	0.23	0.23	0.23	0.22	0.22	0.22
12.279	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.324	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.368	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.412	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.456	0.22	0.22	0.22	0.22	0.22	0.21	0.21
12.501	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.545	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.589	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.633	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.677	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.722	0.21	0.21	0.20	0.20	0.20	0.20	0.20
12.766	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.810	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.854	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.898	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.943	0.20	0.20	0.19	0.19	0.19	0.19	0.19
12.987	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.031	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.075	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.119	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.164	0.19	0.19	0.19	0.18	0.18	0.18	0.18

Brea Plaza Mixed-Use
Existing

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
13.208	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.252	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.296	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.341	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.385	0.18	0.18	0.18	0.18	0.18	0.17	0.17

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

13.429	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.473	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.517	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.562	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.606	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.650	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.694	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.738	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.783	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.827	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.871	0.15	0.15	0.15	0.15	0.15	0.15	0.15
13.915	0.15	0.15	0.15	0.15	0.15	0.15	0.15
13.959	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.004	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.048	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.092	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.136	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.181	0.15	0.14	0.14	0.14	0.14	0.14	0.14
14.225	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.269	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.313	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.357	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.402	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.446	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.490	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.534	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.578	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.623	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.667	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.711	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.755	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.799	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.844	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.888	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.932	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.976	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.021	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.065	0.14	0.14	0.14	0.14	0.14	0.14	0.14

STORM 2-Yr

SUB-AREA:

A1	Outlet	.00344	97.	.1	

STREAM REACH:

15.109	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.153	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.197	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.242	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.286	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.330	0.14	0.14	0.14	0.13	0.13	0.13	0.13
15.374	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.418	0.13	0.13	0.13	0.13	0.13	0.13	0.13

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
15.463	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.507	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.551	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.595	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.639	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.684	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.728	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.772	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.816	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.861	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.905	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.949	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.993	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.037	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.082	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.126	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.170	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.214	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.258	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.303	0.13	0.13	0.13	0.13	0.13	0.13	0.13

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

16.347	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.391	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.435	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.479	0.13	0.13	0.13	0.12	0.12	0.12	0.12
16.524	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.568	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.612	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.656	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.701	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.745	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.789	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.833	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.877	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.922	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.966	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.010	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.054	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.098	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.143	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.187	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.231	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.275	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.319	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.364	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.408	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.452	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.496	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.541	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.585	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.629	0.12	0.12	0.12	0.12	0.11	0.11	0.11
17.673	0.11	0.11	0.11	0.11	0.11	0.11	0.11

Line

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
17.717	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.762	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.806	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.850	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.894	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.938	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.983	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.027	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.071	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.115	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.159	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.204	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.248	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.292	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.336	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.381	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.425	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.469	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.513	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.557	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.602	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.646	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.690	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.734	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.778	0.11	0.10	0.10	0.10	0.10	0.10	0.10
18.823	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.867	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.911	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.955	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.999	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.044	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.088	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.132	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.176	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.221	0.10	0.10	0.10	0.10	0.10	0.10	0.10

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

19.265	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.309	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.353	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.397	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.442	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.486	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.530	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.574	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.618	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.663	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.707	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.751	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.795	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.839	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.884	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.928	0.09	0.09	0.09	0.09	0.09	0.09	0.09

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
19.972	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.016	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.061	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.105	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.149	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.193	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.237	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.282	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.326	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.370	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.414	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.458	0.09	0.09	0.09	0.09	0.09	0.09	0.09

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

20.503	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.547	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.591	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.635	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.679	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.724	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.768	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.812	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.856	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.901	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.945	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.989	0.09	0.09	0.09	0.09	0.09	0.09	0.09
21.033	0.09	0.09	0.09	0.09	0.08	0.08	0.08
21.077	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.122	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.166	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.210	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.254	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.298	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.343	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.387	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.431	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.475	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.519	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.564	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.608	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.652	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.696	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.741	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.785	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.829	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.873	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.917	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.962	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.006	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.050	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.094	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.138	0.08	0.08	0.08	0.08	0.08	0.08	0.07

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:
22.183 0.07 0.07 0.07 0.07 0.07 0.07 0.07

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
22.227	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.271	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.315	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.359	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.404	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.448	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.492	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.536	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.581	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.625	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.669	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.713	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.757	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.802	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.846	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.890	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.934	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.978	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.023	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.067	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.111	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.155	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.199	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.244	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.288	0.07	0.07	0.06	0.06	0.06	0.06	0.06
23.332	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.376	0.06	0.06	0.06	0.06	0.06	0.06	0.06

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

23.421	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.465	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.509	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.553	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.597	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.642	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.686	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.730	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.774	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.818	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.863	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.907	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.951	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.995	0.06	0.06	0.06	0.06	0.06	0.06	0.05
24.039	0.05						

Brea Plaza Mixed-Use
Existing

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	Peak Flow by Storm 2-Yr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)
A1	0.003		2.94				
OUTLET	0.003		2.94				

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:

	A1	Outlet	.00344	97.	.1

STREAM REACH:

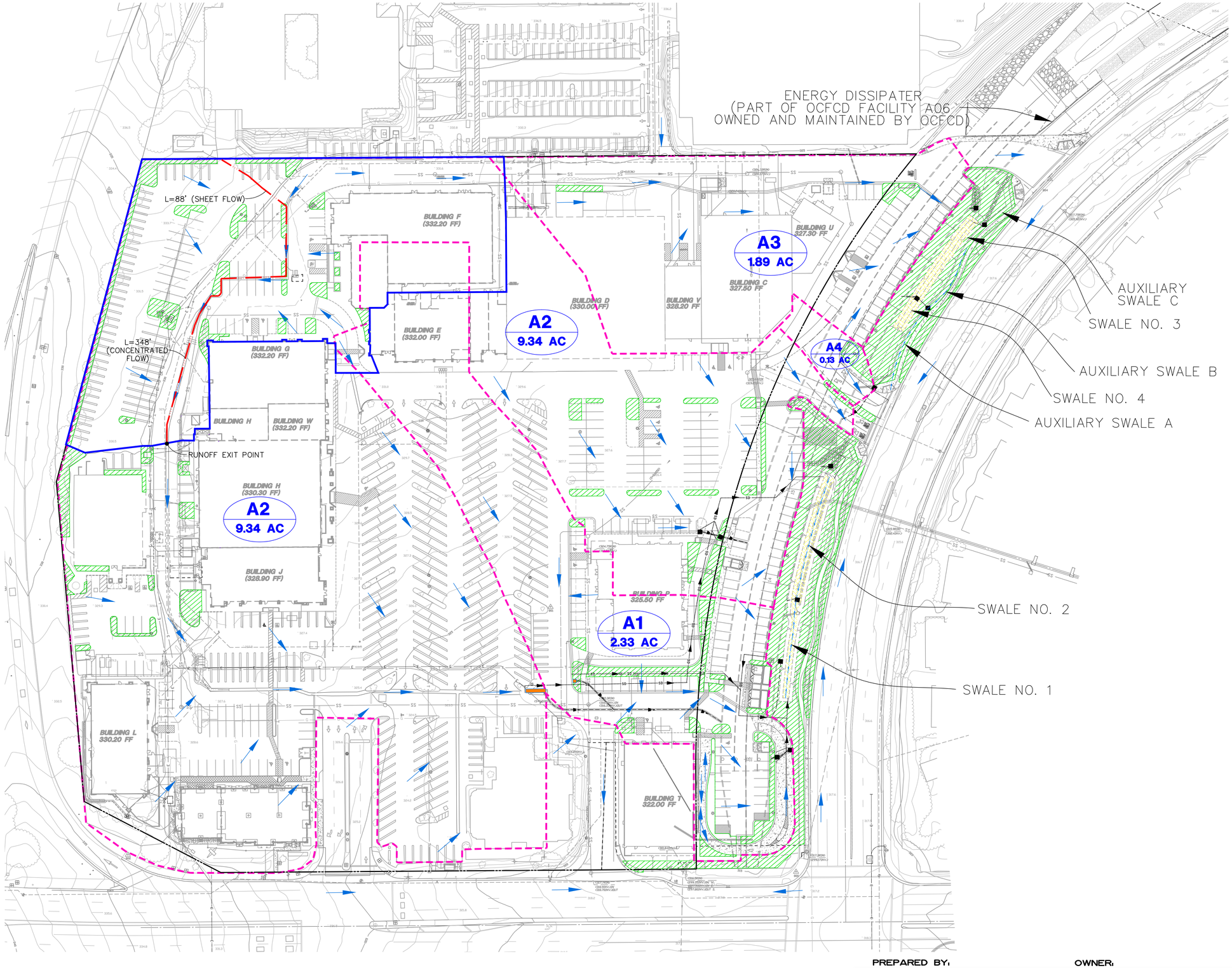
WinTR-20 Printed Page File TR20.inp Beginning of Input Data List

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Existing

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:



PROJECT DATA:

EXISTING SITE DRAINAGE AREAS (TOTAL): 13.69 AC (596,336 SF)

PROPOSED PROJECT AREA: 2.20 AC (95,864 SF)
EXISTING IMPERVIOUS AREA: 92.5% (88,630 SF)
EXISTING PERVIOUS AREA: 7.5% (7,234 SF)

CURRENT USE: COMMERCIAL

WATERSHED:
SAN GABRIEL–COYOTE CREEK WATERSHED

LEGEND — STRUCTURAL / TREATMENT BMPS

- LANDSCAPE AREA EFFICIENT IRRIGATION
  LANDSCAPE AREA RUNOFF–MINIMIZING DESIGN
- CATCH BASIN / STORM DRAIN INLET
- FLOW PATTERN
- EXISTING DRAINAGE AREAS **A1**
- PROPOSED PROJECT AREA
- VEGETATED SWALE
- SD — LOW FLOW STORM DRAIN
- HIGH FLOW STORM DRAIN
- FLOW PATH

NORTH

CA

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

PREPARED BY:

CA ENGINEERING, INC.
Planning • Engineering • Surveying
13821 NEWPORT AVE., STE 110
TUSTIN, CA 92780
949-724-9480 949-724-9484 FAX

OWNER:

BPI Brea LLC
417 S. Associated Rd, Suite 313
Brea, CA 92821
CONTACT: WAAD J. NADHIR
TELEPHONE: (248) 792-5071

CITY OF BREA
WATER QUALITY MANAGEMENT PLAN
EXISTING WQMP DRAINAGE AREAS
BREA PLAZA
IMPERIAL HIGHWAY

SHEET 1 OF 1

S:\457-4 BREA PLAZA PHASE 2\WQMP\457-4 WQMP Site Plan.dwg Last Modified: 22 Jun 2021 – 3:03pm
Plotted on: 23 Jun 2021 – 5:32am by cward

WinTR-55 Current Data Description

--- Identification Data ---

User: 487-4 WQMP
Project: Brea Plaza Mixed-Use
SubTitle: Proposed
State: California
County: Orange
Filename: \\CA-SVR1\Shared\487-4 BREA PLAZA PHASE 2\WQMP\WinTR-55 Proposed Condition.w55

Date: 6/23/2021
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
A1		Outlet	2.2	97	0.1

Total area: 2.20 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
2.05	.0	.0	.0	.0	.0	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type I
Dimensionless Unit Hydrograph: <standard>

Brea Plaza Mixed-Use
Proposed
Orange County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
2.05	.0	.0	.0	.0	.0	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type I
Dimensionless Unit Hydrograph: <standard>

Brea Plaza Mixed-Use
Proposed
Orange County, California

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 2-Yr (cfs)
SUBAREAS	
A1	2.94
REACHES	
OUTLET	2.94

Brea Plaza Mixed-Use
Proposed
Orange County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)
SUBAREAS		
A1	2.94	9.92
REACHES		
OUTLET	2.94	

Brea Plaza Mixed-Use
Proposed
Orange County, California

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
A1	2.20	0.100	97	Outlet	

Total Area: 2.20 (ac)

Brea Plaza Mixed-Use
Proposed
Orange County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
A1							
SHEET	28	0.0200	0.011				0.009
SHALLOW	283	0.0050	0.025				0.055
CHANNEL	333	0.0398	0.013	0.09	1.05	4.405	0.021
CHANNEL	46	0.0033	0.013	3.14	6.28	4.259	0.003
					Time of Concentration		0.1

0.0880
(rounded up to 0.1 by Program)

Brea Plaza Mixed-Use
Proposed
Orange County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
A1	Open space; grass cover > 75% (good)	D	.079	80
	Paved parking lots, roofs, driveways	D	2.121	98
	Total Area / Weighted Curve Number		2.2	97

WinTR-20 Printed Page File Beginning of Input Data List
TR20.inp

WinTR-20: Version 1.10 0 0 0.05
Brea Plaza Mixed-Use
Proposed

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

STORM ANALYSIS:
2-Yr 2.05 Type I 2

STRUCTURE RATING:

GLOBAL OUTPUT:
2 0.05 YYYYN YYYYNN

WinTR-20 Printed Page File End of Input Data List

Brea Plaza Mixed-Use
Proposed

Name of printed page file:
TR20.out

Proposed 2-yr Runoff volume =
1.690 inches x 2.20 acres x 43,560 sq-ft/ac x
1 ft/12 inches = 13,496 cu-ft

STORM 2-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
A1	0.003		1.690		9.92	2.94	855.15

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
4.454	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.498	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.543	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.587	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.631	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.675	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.719	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.764	0.05	0.05	0.05	0.06	0.06	0.06	0.06
4.808	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.852	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.896	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.941	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.985	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.029	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.073	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.117	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.162	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.206	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.250	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.294	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.338	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.383	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.427	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.471	0.06	0.06	0.06	0.07	0.07	0.07	0.07
5.515	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.559	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.604	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.648	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.692	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.736	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.781	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.825	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.869	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.913	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.957	0.07	0.07	0.07	0.07	0.07	0.07	0.07

6.002	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.046	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.090	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.134	0.07	0.07	0.08	0.08	0.08	0.08	0.08
6.178	0.08	0.08	0.08	0.08	0.08	0.08	0.08

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.223	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.267	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.311	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.355	0.08	0.08	0.08	0.08	0.09	0.09	0.09
6.399	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.444	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.488	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.532	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.576	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.621	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.665	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.709	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.753	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.797	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.842	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.886	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.930	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.974	0.11	0.11	0.11	0.11	0.11	0.11	0.11
7.018	0.11	0.11	0.11	0.11	0.11	0.11	0.12
7.063	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.107	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.151	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.195	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.239	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.284	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.328	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.372	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.416	0.12	0.12	0.12	0.12	0.12	0.12	0.13
7.461	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.505	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.549	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.593	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.637	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.682	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.726	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.770	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.814	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.858	0.13	0.13	0.13	0.13	0.13	0.13	0.14
7.903	0.14	0.14	0.14	0.14	0.14	0.14	0.14
7.947	0.14	0.14	0.14	0.14	0.14	0.14	0.14
7.991	0.14	0.14	0.14	0.14	0.14	0.14	0.14
8.035	0.14	0.14	0.14	0.14	0.14	0.14	0.14
8.079	0.14	0.14	0.14	0.14	0.14	0.15	0.15
8.124	0.15	0.15	0.15	0.15	0.15	0.15	0.15
8.168	0.15	0.15	0.16	0.16	0.16	0.16	0.16
8.212	0.16	0.16	0.16	0.16	0.16	0.16	0.17
8.256	0.17	0.17	0.17	0.17	0.17	0.17	0.17
8.301	0.17	0.18	0.18	0.18	0.18	0.18	0.18
8.345	0.18	0.18	0.18	0.18	0.19	0.19	0.19
8.389	0.19	0.19	0.19	0.19	0.19	0.19	0.19
8.433	0.20	0.20	0.20	0.20	0.20	0.20	0.20

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.477	0.20	0.21	0.21	0.21	0.21	0.21	0.21
8.522	0.21	0.21	0.21	0.21	0.21	0.22	0.22
8.566	0.22	0.22	0.22	0.22	0.22	0.22	0.22
8.610	0.23	0.23	0.23	0.23	0.23	0.23	0.23
8.654	0.23	0.23	0.24	0.24	0.24	0.24	0.24
8.698	0.24	0.24	0.24	0.24	0.24	0.24	0.25
8.743	0.25	0.25	0.25	0.25	0.25	0.25	0.25
8.787	0.26	0.26	0.26	0.26	0.26	0.26	0.26
8.831	0.26	0.26	0.26	0.26	0.27	0.27	0.27
8.875	0.27	0.27	0.27	0.27	0.27	0.27	0.28
8.919	0.28	0.28	0.28	0.28	0.28	0.28	0.28
8.964	0.28	0.29	0.29	0.29	0.29	0.29	0.29
9.008	0.29	0.29	0.29	0.29	0.30	0.30	0.30
9.052	0.30	0.30	0.30	0.31	0.31	0.31	0.31
9.096	0.31	0.31	0.31	0.32	0.32	0.32	0.32
9.141	0.32	0.32	0.33	0.33	0.33	0.33	0.34
9.185	0.34	0.34	0.34	0.34	0.34	0.35	0.35
9.229	0.35	0.35	0.35	0.36	0.36	0.36	0.36
9.273	0.37	0.37	0.37	0.37	0.37	0.37	0.38
9.317	0.38	0.38	0.38	0.38	0.38	0.39	0.39
9.362	0.39	0.40	0.40	0.40	0.40	0.40	0.41
9.406	0.41	0.41	0.41	0.41	0.41	0.42	0.42
9.450	0.42	0.42	0.43	0.43	0.43	0.43	0.43
9.494	0.44	0.44	0.44	0.44	0.45	0.45	0.46
9.538	0.47	0.49	0.50	0.52	0.53	0.55	0.56
9.583	0.58	0.59	0.60	0.61	0.62	0.63	0.64
9.627	0.65	0.67	0.70	0.72	0.75	0.78	0.82
9.671	0.85	0.87	0.90	0.92	0.94	0.96	0.98
9.715	1.00	1.02	1.05	1.08	1.13	1.18	1.23
9.759	1.28	1.34	1.39	1.44	1.49	1.53	1.56

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

9.804	1.59	1.62	1.66	1.70	1.76	1.83	1.92
9.848	2.03	2.13	2.25	2.36	2.46	2.56	2.65
9.892	2.73	2.80	2.85	2.90	2.93	2.94	2.94
9.936	2.92	2.89	2.84	2.79	2.73	2.67	2.61
9.981	2.55	2.50	2.46	2.42	2.39	2.35	2.31
10.025	2.26	2.19	2.11	2.01	1.89	1.78	1.66
10.069	1.54	1.44	1.33	1.24	1.16	1.10	1.04
10.113	1.00	0.96	0.92	0.89	0.86	0.84	0.82
10.157	0.79	0.78	0.76	0.75	0.73	0.72	0.71
10.202	0.71	0.70	0.69	0.69	0.68	0.67	0.67
10.246	0.66	0.65	0.65	0.64	0.63	0.62	0.62
10.290	0.61	0.61	0.61	0.60	0.60	0.60	0.59
10.334	0.59	0.58	0.58	0.57	0.56	0.56	0.55
10.378	0.55	0.54	0.54	0.53	0.53	0.53	0.52
10.423	0.52	0.52	0.51	0.50	0.50	0.49	0.49
10.467	0.48	0.47	0.47	0.46	0.46	0.45	0.45
10.511	0.45	0.45	0.44	0.44	0.44	0.43	0.43
10.555	0.42	0.42	0.41	0.41	0.41	0.40	0.40
10.599	0.40	0.40	0.39	0.39	0.39	0.39	0.39
10.644	0.39	0.38	0.38	0.38	0.38	0.38	0.38
10.688	0.37	0.37	0.37	0.37	0.37	0.37	0.37

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
10.732	0.37	0.37	0.36	0.36	0.36	0.36	0.36
10.776	0.36	0.36	0.35	0.35	0.35	0.35	0.35
10.821	0.35	0.35	0.35	0.35	0.35	0.34	0.34
10.865	0.34	0.34	0.34	0.34	0.34	0.33	0.33
10.909	0.33	0.33	0.33	0.33	0.33	0.33	0.33
10.953	0.33	0.32	0.32	0.32	0.32	0.32	0.32
10.997	0.32	0.31	0.31	0.31	0.31	0.31	0.31

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

11.042	0.31	0.31	0.31	0.31	0.31	0.30	0.30
11.086	0.30	0.30	0.30	0.30	0.30	0.30	0.30
11.130	0.30	0.30	0.30	0.30	0.30	0.30	0.30
11.174	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.218	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.263	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.307	0.29	0.29	0.29	0.28	0.28	0.28	0.28
11.351	0.28	0.28	0.28	0.28	0.28	0.28	0.28
11.395	0.28	0.28	0.28	0.28	0.28	0.28	0.28
11.439	0.28	0.28	0.28	0.28	0.27	0.27	0.27
11.484	0.27	0.27	0.27	0.27	0.27	0.27	0.27
11.528	0.27	0.27	0.27	0.27	0.27	0.27	0.27
11.572	0.27	0.27	0.27	0.27	0.27	0.27	0.26
11.616	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.661	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.705	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.749	0.26	0.26	0.25	0.25	0.25	0.25	0.25
11.793	0.25	0.25	0.25	0.25	0.25	0.25	0.25
11.837	0.25	0.25	0.25	0.25	0.25	0.25	0.25
11.882	0.25	0.25	0.25	0.24	0.24	0.24	0.24
11.926	0.24	0.24	0.24	0.24	0.24	0.24	0.24
11.970	0.24	0.24	0.24	0.24	0.24	0.24	0.24
12.014	0.24	0.24	0.24	0.24	0.24	0.24	0.24
12.058	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.103	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.147	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.191	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.235	0.23	0.23	0.23	0.23	0.22	0.22	0.22
12.279	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.324	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.368	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.412	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.456	0.22	0.22	0.22	0.22	0.22	0.21	0.21
12.501	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.545	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.589	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.633	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.677	0.21	0.21	0.21	0.21	0.21	0.21	0.21

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

12.722	0.21	0.21	0.20	0.20	0.20	0.20	0.20
12.766	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.810	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.854	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.898	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.943	0.20	0.20	0.19	0.19	0.19	0.19	0.19

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.987	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.031	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.075	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.119	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.164	0.19	0.19	0.19	0.18	0.18	0.18	0.18
13.208	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.252	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.296	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.341	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.385	0.18	0.18	0.18	0.18	0.18	0.17	0.17
13.429	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.473	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.517	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.562	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.606	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.650	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.694	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.738	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.783	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.827	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.871	0.15	0.15	0.15	0.15	0.15	0.15	0.15
13.915	0.15	0.15	0.15	0.15	0.15	0.15	0.15

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

13.959	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.004	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.048	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.092	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.136	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.181	0.15	0.14	0.14	0.14	0.14	0.14	0.14
14.225	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.269	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.313	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.357	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.402	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.446	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.490	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.534	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.578	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.623	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.667	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.711	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.755	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.799	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.844	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.888	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.932	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.976	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.021	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.065	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.109	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.153	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.197	0.14	0.14	0.14	0.14	0.14	0.14	0.14

Line
Start Time ------------ Flow Values @ time increment of 0.006 hr ------------
(hr) (cfs) (cfs) (cfs) (cfs) (cfs) (cfs) (cfs)

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

15.242	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.286	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.330	0.14	0.14	0.14	0.13	0.13	0.13	0.13
15.374	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.418	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.463	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.507	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.551	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.595	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.639	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.684	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.728	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.772	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.816	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.861	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.905	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.949	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.993	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.037	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.082	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.126	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.170	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.214	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.258	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.303	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.347	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.391	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.435	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.479	0.13	0.13	0.13	0.12	0.12	0.12	0.12
16.524	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.568	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.612	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.656	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.701	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.745	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.789	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.833	0.12	0.12	0.12	0.12	0.12	0.12	0.12

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

16.877	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.922	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.966	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.010	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.054	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.098	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.143	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.187	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.231	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.275	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.319	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.364	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.408	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.452	0.12	0.12	0.12	0.12	0.12	0.12	0.12

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
17.496	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.541	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.585	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.629	0.12	0.12	0.12	0.12	0.11	0.11	0.11
17.673	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.717	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.762	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.806	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.850	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.894	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.938	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.983	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.027	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.071	0.11	0.11	0.11	0.11	0.11	0.11	0.11

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

18.115	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.159	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.204	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.248	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.292	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.336	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.381	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.425	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.469	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.513	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.557	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.602	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.646	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.690	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.734	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.778	0.11	0.10	0.10	0.10	0.10	0.10	0.10
18.823	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.867	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.911	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.955	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.999	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.044	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.088	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.132	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.176	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.221	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.265	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.309	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.353	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.397	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.442	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.486	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.530	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.574	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.618	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.663	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.707	0.10	0.10	0.10	0.10	0.10	0.10	0.10

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
19.751	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.795	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.839	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.884	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.928	0.09	0.09	0.09	0.09	0.09	0.09	0.09
19.972	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.016	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.061	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.105	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.149	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.193	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.237	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.282	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.326	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.370	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.414	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.458	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.503	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.547	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.591	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.635	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.679	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.724	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.768	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.812	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.856	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.901	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.945	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.989	0.09	0.09	0.09	0.09	0.09	0.09	0.09

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

21.033	0.09	0.09	0.09	0.09	0.08	0.08	0.08
21.077	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.122	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.166	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.210	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.254	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.298	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.343	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.387	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.431	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.475	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.519	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.564	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.608	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.652	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.696	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.741	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.785	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.829	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.873	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.917	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.962	0.08	0.08	0.08	0.08	0.08	0.08	0.08

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
22.006	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.050	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.094	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.138	0.08	0.08	0.08	0.08	0.08	0.08	0.07
22.183	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.227	0.07	0.07	0.07	0.07	0.07	0.07	0.07

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

22.271	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.315	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.359	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.404	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.448	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.492	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.536	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.581	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.625	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.669	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.713	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.757	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.802	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.846	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.890	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.934	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.978	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.023	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.067	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.111	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.155	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.199	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.244	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.288	0.07	0.07	0.06	0.06	0.06	0.06	0.06
23.332	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.376	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.421	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.465	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.509	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.553	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.597	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.642	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.686	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.730	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.774	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.818	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.863	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.907	0.06	0.06	0.06	0.06	0.06	0.06	0.06

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

23.951	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.995	0.06	0.06	0.06	0.06	0.06	0.06	0.05
24.039	0.05						

Brea Plaza Mixed-Use
Proposed

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.003		1.690		9.92	2.94	855.15

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.454	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.498	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.543	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.587	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.631	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.675	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.719	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4.764	0.05	0.05	0.05	0.06	0.06	0.06	0.06
4.808	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.852	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.896	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.941	0.06	0.06	0.06	0.06	0.06	0.06	0.06
4.985	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.029	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.073	0.06	0.06	0.06	0.06	0.06	0.06	0.06

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

5.117	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.162	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.206	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.250	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.294	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.338	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.383	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.427	0.06	0.06	0.06	0.06	0.06	0.06	0.06
5.471	0.06	0.06	0.06	0.07	0.07	0.07	0.07
5.515	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.559	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.604	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.648	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.692	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.736	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.781	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.825	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.869	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.913	0.07	0.07	0.07	0.07	0.07	0.07	0.07
5.957	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.002	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.046	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.090	0.07	0.07	0.07	0.07	0.07	0.07	0.07
6.134	0.07	0.07	0.08	0.08	0.08	0.08	0.08
6.178	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.223	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.267	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.311	0.08	0.08	0.08	0.08	0.08	0.08	0.08
6.355	0.08	0.08	0.08	0.08	0.09	0.09	0.09
6.399	0.09	0.09	0.09	0.09	0.09	0.09	0.09

Line
Start Time ---------- Flow Values @ time increment of 0.006 hr ----------

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.444	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.488	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.532	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.576	0.09	0.09	0.09	0.09	0.09	0.09	0.09
6.621	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.665	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.709	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.753	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.797	0.10	0.10	0.10	0.10	0.10	0.10	0.10
6.842	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.886	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.930	0.11	0.11	0.11	0.11	0.11	0.11	0.11
6.974	0.11	0.11	0.11	0.11	0.11	0.11	0.11
7.018	0.11	0.11	0.11	0.11	0.11	0.11	0.12
7.063	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.107	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.151	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.195	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.239	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.284	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.328	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.372	0.12	0.12	0.12	0.12	0.12	0.12	0.12
7.416	0.12	0.12	0.12	0.12	0.12	0.12	0.13
7.461	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.505	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.549	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.593	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.637	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.682	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.726	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.770	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.814	0.13	0.13	0.13	0.13	0.13	0.13	0.13
7.858	0.13	0.13	0.13	0.13	0.13	0.13	0.14
7.903	0.14	0.14	0.14	0.14	0.14	0.14	0.14
7.947	0.14	0.14	0.14	0.14	0.14	0.14	0.14
7.991	0.14	0.14	0.14	0.14	0.14	0.14	0.14

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

8.035	0.14	0.14	0.14	0.14	0.14	0.14	0.14
8.079	0.14	0.14	0.14	0.14	0.14	0.15	0.15
8.124	0.15	0.15	0.15	0.15	0.15	0.15	0.15
8.168	0.15	0.15	0.16	0.16	0.16	0.16	0.16
8.212	0.16	0.16	0.16	0.16	0.16	0.16	0.17
8.256	0.17	0.17	0.17	0.17	0.17	0.17	0.17
8.301	0.17	0.18	0.18	0.18	0.18	0.18	0.18
8.345	0.18	0.18	0.18	0.18	0.19	0.19	0.19
8.389	0.19	0.19	0.19	0.19	0.19	0.19	0.19
8.433	0.20	0.20	0.20	0.20	0.20	0.20	0.20
8.477	0.20	0.21	0.21	0.21	0.21	0.21	0.21
8.522	0.21	0.21	0.21	0.21	0.21	0.22	0.22
8.566	0.22	0.22	0.22	0.22	0.22	0.22	0.22
8.610	0.23	0.23	0.23	0.23	0.23	0.23	0.23
8.654	0.23	0.23	0.24	0.24	0.24	0.24	0.24

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.698	0.24	0.24	0.24	0.24	0.24	0.24	0.25
8.743	0.25	0.25	0.25	0.25	0.25	0.25	0.25
8.787	0.26	0.26	0.26	0.26	0.26	0.26	0.26
8.831	0.26	0.26	0.26	0.26	0.27	0.27	0.27
8.875	0.27	0.27	0.27	0.27	0.27	0.27	0.28
8.919	0.28	0.28	0.28	0.28	0.28	0.28	0.28
8.964	0.28	0.29	0.29	0.29	0.29	0.29	0.29
9.008	0.29	0.29	0.29	0.29	0.30	0.30	0.30
9.052	0.30	0.30	0.30	0.31	0.31	0.31	0.31
9.096	0.31	0.31	0.31	0.32	0.32	0.32	0.32
9.141	0.32	0.32	0.33	0.33	0.33	0.33	0.34
9.185	0.34	0.34	0.34	0.34	0.34	0.35	0.35
9.229	0.35	0.35	0.35	0.36	0.36	0.36	0.36

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

9.273	0.37	0.37	0.37	0.37	0.37	0.37	0.38
9.317	0.38	0.38	0.38	0.38	0.38	0.39	0.39
9.362	0.39	0.40	0.40	0.40	0.40	0.40	0.41
9.406	0.41	0.41	0.41	0.41	0.41	0.42	0.42
9.450	0.42	0.42	0.43	0.43	0.43	0.43	0.43
9.494	0.44	0.44	0.44	0.44	0.45	0.45	0.46
9.538	0.47	0.49	0.50	0.52	0.53	0.55	0.56
9.583	0.58	0.59	0.60	0.61	0.62	0.63	0.64
9.627	0.65	0.67	0.70	0.72	0.75	0.78	0.82
9.671	0.85	0.87	0.90	0.92	0.94	0.96	0.98
9.715	1.00	1.02	1.05	1.08	1.13	1.18	1.23
9.759	1.28	1.34	1.39	1.44	1.49	1.53	1.56
9.804	1.59	1.62	1.66	1.70	1.76	1.83	1.92
9.848	2.03	2.13	2.25	2.36	2.46	2.56	2.65
9.892	2.73	2.80	2.85	2.90	2.93	2.94	2.94
9.936	2.92	2.89	2.84	2.79	2.73	2.67	2.61
9.981	2.55	2.50	2.46	2.42	2.39	2.35	2.31
10.025	2.26	2.19	2.11	2.01	1.89	1.78	1.66
10.069	1.54	1.44	1.33	1.24	1.16	1.10	1.04
10.113	1.00	0.96	0.92	0.89	0.86	0.84	0.82
10.157	0.79	0.78	0.76	0.75	0.73	0.72	0.71
10.202	0.71	0.70	0.69	0.69	0.68	0.67	0.67
10.246	0.66	0.65	0.65	0.64	0.63	0.62	0.62
10.290	0.61	0.61	0.61	0.60	0.60	0.60	0.59
10.334	0.59	0.58	0.58	0.57	0.56	0.56	0.55
10.378	0.55	0.54	0.54	0.53	0.53	0.53	0.52
10.423	0.52	0.52	0.51	0.50	0.50	0.49	0.49
10.467	0.48	0.47	0.47	0.46	0.46	0.45	0.45
10.511	0.45	0.45	0.44	0.44	0.44	0.43	0.43
10.555	0.42	0.42	0.41	0.41	0.41	0.40	0.40
10.599	0.40	0.40	0.39	0.39	0.39	0.39	0.39
10.644	0.39	0.38	0.38	0.38	0.38	0.38	0.38
10.688	0.37	0.37	0.37	0.37	0.37	0.37	0.37
10.732	0.37	0.37	0.36	0.36	0.36	0.36	0.36
10.776	0.36	0.36	0.35	0.35	0.35	0.35	0.35
10.821	0.35	0.35	0.35	0.35	0.35	0.34	0.34
10.865	0.34	0.34	0.34	0.34	0.34	0.33	0.33
10.909	0.33	0.33	0.33	0.33	0.33	0.33	0.33

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.953	0.33	0.32	0.32	0.32	0.32	0.32	0.32
10.997	0.32	0.31	0.31	0.31	0.31	0.31	0.31
11.042	0.31	0.31	0.31	0.31	0.31	0.30	0.30
11.086	0.30	0.30	0.30	0.30	0.30	0.30	0.30
11.130	0.30	0.30	0.30	0.30	0.30	0.30	0.30
11.174	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.218	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.263	0.29	0.29	0.29	0.29	0.29	0.29	0.29
11.307	0.29	0.29	0.29	0.28	0.28	0.28	0.28
11.351	0.28	0.28	0.28	0.28	0.28	0.28	0.28
11.395	0.28	0.28	0.28	0.28	0.28	0.28	0.28
11.439	0.28	0.28	0.28	0.28	0.27	0.27	0.27
11.484	0.27	0.27	0.27	0.27	0.27	0.27	0.27
11.528	0.27	0.27	0.27	0.27	0.27	0.27	0.27
11.572	0.27	0.27	0.27	0.27	0.27	0.27	0.26
11.616	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.661	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.705	0.26	0.26	0.26	0.26	0.26	0.26	0.26
11.749	0.26	0.26	0.25	0.25	0.25	0.25	0.25
11.793	0.25	0.25	0.25	0.25	0.25	0.25	0.25
11.837	0.25	0.25	0.25	0.25	0.25	0.25	0.25
11.882	0.25	0.25	0.25	0.24	0.24	0.24	0.24
11.926	0.24	0.24	0.24	0.24	0.24	0.24	0.24
11.970	0.24	0.24	0.24	0.24	0.24	0.24	0.24
12.014	0.24	0.24	0.24	0.24	0.24	0.24	0.24
12.058	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.103	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.147	0.23	0.23	0.23	0.23	0.23	0.23	0.23

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

12.191	0.23	0.23	0.23	0.23	0.23	0.23	0.23
12.235	0.23	0.23	0.23	0.23	0.22	0.22	0.22
12.279	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.324	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.368	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.412	0.22	0.22	0.22	0.22	0.22	0.22	0.22
12.456	0.22	0.22	0.22	0.22	0.22	0.21	0.21
12.501	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.545	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.589	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.633	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.677	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12.722	0.21	0.21	0.20	0.20	0.20	0.20	0.20
12.766	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.810	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.854	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.898	0.20	0.20	0.20	0.20	0.20	0.20	0.20
12.943	0.20	0.20	0.19	0.19	0.19	0.19	0.19
12.987	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.031	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.075	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.119	0.19	0.19	0.19	0.19	0.19	0.19	0.19
13.164	0.19	0.19	0.19	0.18	0.18	0.18	0.18

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
13.208	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.252	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.296	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.341	0.18	0.18	0.18	0.18	0.18	0.18	0.18
13.385	0.18	0.18	0.18	0.18	0.18	0.17	0.17

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

13.429	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.473	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.517	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.562	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.606	0.17	0.17	0.17	0.17	0.17	0.17	0.17
13.650	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.694	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.738	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.783	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.827	0.16	0.16	0.16	0.16	0.16	0.16	0.16
13.871	0.15	0.15	0.15	0.15	0.15	0.15	0.15
13.915	0.15	0.15	0.15	0.15	0.15	0.15	0.15
13.959	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.004	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.048	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.092	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.136	0.15	0.15	0.15	0.15	0.15	0.15	0.15
14.181	0.15	0.14	0.14	0.14	0.14	0.14	0.14
14.225	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.269	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.313	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.357	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.402	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.446	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.490	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.534	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.578	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.623	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.667	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.711	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.755	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.799	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.844	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.888	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.932	0.14	0.14	0.14	0.14	0.14	0.14	0.14
14.976	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.021	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.065	0.14	0.14	0.14	0.14	0.14	0.14	0.14

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

15.109	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.153	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.197	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.242	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.286	0.14	0.14	0.14	0.14	0.14	0.14	0.14
15.330	0.14	0.14	0.14	0.13	0.13	0.13	0.13
15.374	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.418	0.13	0.13	0.13	0.13	0.13	0.13	0.13

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
15.463	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.507	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.551	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.595	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.639	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.684	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.728	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.772	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.816	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.861	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.905	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.949	0.13	0.13	0.13	0.13	0.13	0.13	0.13
15.993	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.037	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.082	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.126	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.170	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.214	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.258	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.303	0.13	0.13	0.13	0.13	0.13	0.13	0.13

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

16.347	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.391	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.435	0.13	0.13	0.13	0.13	0.13	0.13	0.13
16.479	0.13	0.13	0.13	0.12	0.12	0.12	0.12
16.524	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.568	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.612	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.656	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.701	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.745	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.789	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.833	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.877	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.922	0.12	0.12	0.12	0.12	0.12	0.12	0.12
16.966	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.010	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.054	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.098	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.143	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.187	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.231	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.275	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.319	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.364	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.408	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.452	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.496	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.541	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.585	0.12	0.12	0.12	0.12	0.12	0.12	0.12
17.629	0.12	0.12	0.12	0.12	0.11	0.11	0.11
17.673	0.11	0.11	0.11	0.11	0.11	0.11	0.11

Line

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:

A1	Outlet	.00344	97.	.1	

STREAM REACH:

Start Time	Flow Values @ time increment of 0.006 hr						
(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
17.717	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.762	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.806	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.850	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.894	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.938	0.11	0.11	0.11	0.11	0.11	0.11	0.11
17.983	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.027	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.071	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.115	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.159	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.204	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.248	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.292	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.336	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.381	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.425	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.469	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.513	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.557	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.602	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.646	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.690	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.734	0.11	0.11	0.11	0.11	0.11	0.11	0.11
18.778	0.11	0.10	0.10	0.10	0.10	0.10	0.10
18.823	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.867	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.911	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.955	0.10	0.10	0.10	0.10	0.10	0.10	0.10
18.999	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.044	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.088	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.132	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.176	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.221	0.10	0.10	0.10	0.10	0.10	0.10	0.10

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

19.265	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.309	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.353	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.397	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.442	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.486	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.530	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.574	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.618	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.663	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.707	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.751	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.795	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.839	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.884	0.10	0.10	0.10	0.10	0.10	0.10	0.10
19.928	0.09	0.09	0.09	0.09	0.09	0.09	0.09

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
19.972	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.016	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.061	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.105	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.149	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.193	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.237	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.282	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.326	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.370	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.414	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.458	0.09	0.09	0.09	0.09	0.09	0.09	0.09

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

20.503	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.547	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.591	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.635	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.679	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.724	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.768	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.812	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.856	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.901	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.945	0.09	0.09	0.09	0.09	0.09	0.09	0.09
20.989	0.09	0.09	0.09	0.09	0.09	0.09	0.09
21.033	0.09	0.09	0.09	0.09	0.08	0.08	0.08
21.077	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.122	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.166	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.210	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.254	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.298	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.343	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.387	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.431	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.475	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.519	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.564	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.608	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.652	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.696	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.741	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.785	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.829	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.873	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.917	0.08	0.08	0.08	0.08	0.08	0.08	0.08
21.962	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.006	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.050	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.094	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22.138	0.08	0.08	0.08	0.08	0.08	0.08	0.07

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:
22.183 0.07 0.07 0.07 0.07 0.07 0.07 0.07

Brea Plaza Mixed-Use
Proposed

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
22.227	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.271	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.315	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.359	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.404	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.448	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.492	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.536	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.581	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.625	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.669	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.713	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.757	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.802	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.846	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.890	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.934	0.07	0.07	0.07	0.07	0.07	0.07	0.07
22.978	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.023	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.067	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.111	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.155	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.199	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.244	0.07	0.07	0.07	0.07	0.07	0.07	0.07
23.288	0.07	0.07	0.06	0.06	0.06	0.06	0.06
23.332	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.376	0.06	0.06	0.06	0.06	0.06	0.06	0.06

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

23.421	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.465	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.509	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.553	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.597	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.642	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.686	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.730	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.774	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.818	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.863	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.907	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.951	0.06	0.06	0.06	0.06	0.06	0.06	0.06
23.995	0.06	0.06	0.06	0.06	0.06	0.06	0.05
24.039	0.05						

Brea Plaza Mixed-Use
Proposed

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	Peak Flow by Storm 2-Yr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)
A1	0.003		2.94				
OUTLET	0.003		2.94				

WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed
STORM 2-Yr

SUB-AREA:
A1 Outlet .00344 97. .1

STREAM REACH:

WinTR-20 Printed Page File Beginning of Input Data List
TR20.inp

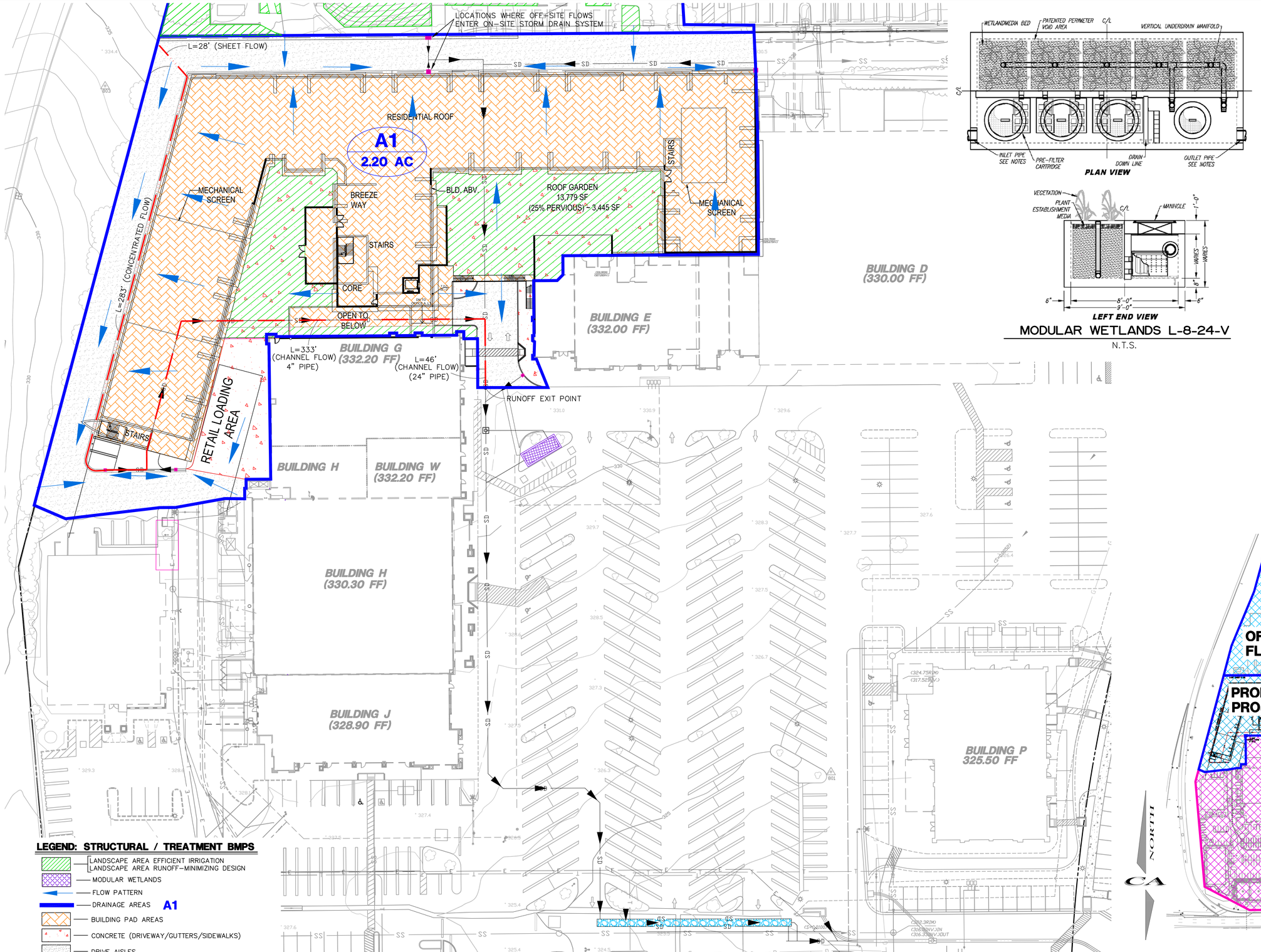
WinTR-20: Version 1.10 0 0 0.05
Plaza Mixed-Use (continued)
Proposed

STORM 2-Yr

SUB-AREA:

	A1	Outlet	.00344	97.	.1

STREAM REACH:



PLAN VIEW

LEFT END VIEW

MODULAR WETLANDS L-8-24-V

N.T.S.

PROJECT DATA:

TOTAL SITE AREA: 13.7 AC
PROPOSED PROJECT AREA: 2.20 AC (95,864 SF)

BUILDING FOOTPRINT (LESS PERVIOUS ROOFTOP AREAS): 62,316 SF
DRIVE AISLES: 22,020 SF
CONCRETE WALKWAY & LOADING AREA: 8,083 SF

3,445 SF LANDSCAPING/POOL AREA PROVIDED
(3.6% PERVIOUS AREA)

CURRENT USE: COMMERCIAL
PROPOSED USE: COMMERCIAL/RESIDENTIAL

WATERSHED:
SAN GABRIEL-COYOTE CREEK WATERSHED

WATER QUALITY CALCULATIONS
AREA 1 : MODULAR WETLANDS UNIT SIZING

AREA 1 – 95,864 SF / 2.20 AC (96.4% IMPERVIOUS)
DESIGN FLOWRATE (Qd) = C * DI * DA * 43,560 / (12in x 3600sec)
RUNOFF COEFFICIENT (C) = 0.75 * Imp% + 0.15 = 0.75 * 0.964 + 0.15 = 0.87
DI = DESIGN INTENSITY (in/hr) = 0.26 in/hr
DA = DRAINAGE AREA: 2.20 AC
DESIGN FLOWRATE (Qd) = 0.87 * 0.26in/hr * 2.20 AC * 43,560 / (12in x 3600sec)
= 0.502 cfs

OFF-SITE

AREA 2 – 110,204 SF / 2.53 AC (71.9% IMPERVIOUS)
DESIGN FLOWRATE (Qd) = C * DI * DA * 43,560 / (12in x 3600sec)
RUNOFF COEFFICIENT (C) = 0.75 * Imp% + 0.15 = 0.75 * 0.719 + 0.15 = 0.69
DI = DESIGN INTENSITY (in/hr) = 0.26 in/hr
DA = DRAINAGE AREA: 2.53 AC
DESIGN FLOWRATE (Qd) = 0.69 * 0.26in/hr * 2.53 AC * 43,560 / (12in x 3600sec)
= 0.458 cfs

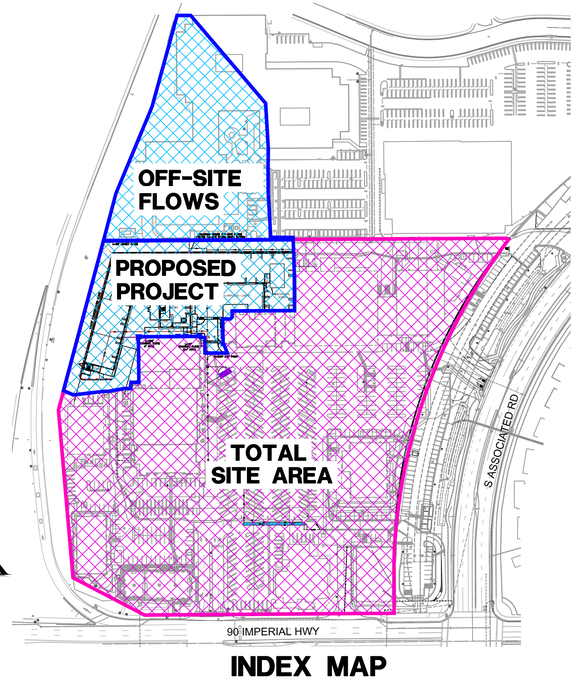
OFF-SITE TO BE TREATED: 50%*0.458=0.229
TOTAL TO BE TREATED: 0.502+0.229=0.731

MODULAR WETLANDS SELECTED SIZING : MWS-L-8-24 (8' x 24' BOX)
HIGH CAPACITY MODEL – 3.6

TREATMENT FLOW RATE (Qf) = 0.734 cfs
TREATMENT FLOW RATE (Qf) > DESIGN FLOWRATE (Qd)
0.734 cfs > 0.731 cfs

CERTIFICATION NOTE:

SELF-CERTIFICATIONS FROM A STATE LICENSED PROFESSIONAL ENGINEER OR THIRD-PARTY CERTIFICATIONS ARE REQUIRED OF ALL BMP'S CONSTRUCTED ON THIS PLAN OR FINAL CERTIFICATE OF OCCUPANCY WILL NOT BE GRANTED FROM THE CITY.



INDEX MAP

SCALE: 1"=150'

LEGEND: STRUCTURAL / TREATMENT BMPS

- LANDSCAPE AREA EFFICIENT IRRIGATION / LANDSCAPE AREA RUNOFF-MINIMIZING DESIGN
- MODULAR WETLANDS
- FLOW PATTERN
- DRAINAGE AREAS A1
- BUILDING PAD AREAS
- CONCRETE (DRIVEWAY/GUTTERS/SIDEWALKS)
- DRIVE AISLES
- STORAGE PIPE
- PROPRIETARY CATCH BASIN INSERT FILTERS
- SD — STORM DRAIN
- FLOW PATH

LID BMP LOCATION (MWS UNIT)

BMP#1 (LAT: 33.9123139° / LONG: -117.8818472°)

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

PREPARED BY:

CA ENGINEERING, INC.
Planning • Engineering • Surveying
13821 NEWPORT AVE., STE 110
TUSTIN, CA 92780
949-724-9480 949-724-9484 FAX

OWNER:

BPI Brea LLC
417 S. Associated Rd, Suite 313
Brea, CA 92821
CONTACT: WAAD J. NADHIR
TELEPHONE: (248) 792-5071

WATER QUALITY MANAGEMENT PLAN
BMP EXHIBIT (SITE PLAN)
BREA PLAZA
1639 E. IMPERIAL HIGHWAY, BREA, CA

SHEET 1 OF 1

S:\457-4 BREA PLAZA (PHASE 2)\WQMP\457-4 WQMP Site Plan.dwg Last Modified: 27 Jul 2021 - 5:59pm
Plotted on: 27 Jul 2021 - 6:04pm by tconnell

APPENDIX M

APPROVED WATER QUALITY MANAGEMENT PLAN FOR BREA PLAZA, DATED JANUARY 17, 2011

2008-01230-01

Water Quality Management Plan

(WQMP)

for

RECEIVED
FEB 08 2011
COUNTY PROPERTY PERMITS

BREA PLAZA

Phases 1 & 2

PARCEL MAP BOOK 105/17-19

NORTHWEST CORNER OF IMPERIAL HIGHWAY AND ASSOCIATED ROAD, CITY OF BREA, COUNTY OF ORANGE, CALIFORNIA

CITY OF BREA
PUBLIC WORKS DEPT.
WQMP
APPROVED
RE-SUBMIT
SIGNATURE
2/3/11

Prepared for

BOSC EQUITIES
413 S. Associated Road
Brea, CA 92821
(714) 990-5715

Prepared by

Pardue, Cornwell & Associates, Inc.
18551 Von Karman Avenue, Suite 140
Irvine, CA 92612
(949) 724-9480

Prepared: January 11, 2010
Revised: January 18, 2010
Amended: January 17, 2011

62

File: PD 09-01
Prepared by: Fred Cornwell
Checked by: Fred Cornwell
Assessor's Parcel Number:
319-102-25
319-102-32

Recording Requested by the City of Brea
And when recorded mail to:
CITY OF BREA
DEVELOPMENT SERVICES
1 CIVIC CENTER CIRCLE
BREA, CA 92821

Recorded in Official Records, Orange County
Tom Daly, Clerk-Recorder
12.00
2010000052349 12:14 pm 02/02/10
62 413 A12 3
0.00 0.00 0.00 0.00 6.00 0.00 0.00 0.00

THIS SPACE FOR RECORDER'S USE

AGREEMENT OF WATER QUALITY MANAGEMENT PLAN

OWNER: **CALIFORNIA BREA PARTNERS, LP**

PROPERTY ADDRESS: **825 EAST IMPERIAL HIGHWAY AND 1647 ASSOCIATED ROAD, BREA, CA**

3P
1 CC

THIS AGREEMENT is made and entered into in BREA, California, this 2nd day of FEB, 2010, by and between CALIFORNIA BREA PARTNERS, LP, herein after referred to as "Owner" and the City of Brea ("City"), a municipal corporation.

RECITALS

WHEREAS, the undersigned is the owner of certain real property located in the City of Brea, County of Orange, State of California legally described as Parcels 1-13 inclusive, as per map recorded in book 105, pages 17, 18 and 19 of Parcel map, records of Orange County, in the City of Brea, CA and hereto referred to as (the "Real Property").

WHEREAS, the undersigned is seeking certain permits and approvals from the City for the development of the Real Property as follows: Precise Grading and Building Permit (the "Approvals")

WHEREAS, in consideration of the City granting Approvals, I the undersigned, agree to and accept the terms and conditions of the Water Quality Management Plan (the "Plan") approved by the City's Engineering Department on _____, and bind the Real Property with the provisions of the Plan, which is on file with the City of Brea's Engineering Division, File No. PD 09-01.

WHEREAS, in consideration of the City granting the Approvals, the undersigned has agreed to and accepts the terms and conditions of the Plan as it relates to the Real Property and agrees that the Real Property shall be bound by and subject to the Plan.

NOW, THEREFORE, it is hereby agreed by the undersigned as follows:

1. The undersigned hereby agrees to the terms and conditions of the Plan, the previsions of which re incorporated by reference as though set out herein in full, and agrees that the Real Property shall be bound by and subject to the terms and conditions of the Plan.
2. The undersigned agrees to conduct the necessary routine maintenance of any structural devices designed into or installed as part of the storm water drainage system on the Real Property to reduce pollutants in storm water runoff to the maximum extent practicable through the lifetime of the development which is the subject of Approvals.
3. The undersigned agrees to hold the City, its officials, officers, employees, volunteers, and agents free and harmless from and any all claims, demands, causes of action, costs, expenses, liability, loss, damage, or injury, in law or equity, to property or persons, arising from the imposition of the Plan by the City.
4. The agreements contained herein and the terms and conditions of the Plan are covenants intended to run with the land and shall burden the Real Property and shall be binding upon future owners of all or any portion of the Real Property. Upon a transfer of the Real Property, the transferor (including the undersigned) shall be relieved of any obligations under this Memorandum or the Plan arising from and after the effective date of the transfer.
5. The provisions of this Memorandum are intended to constitute equitable servitudes which shall encumber the Real Property and be binding upon future owners of the Real Property or any portion thereof.
6. The provisions of the Memorandum may be enforced by the City, which, among other remedies, shall have the remedy of injunctive relief and other equitable remedies.
7. This Memorandum shall not be amended, modified or terminated without the prior written consent of the city, which consent, to be effective, shall be contained in a document executed by the City and recorded against the Real Property.

Owner's Signature

Owner's Address:
CALIFORNIA BREA PARTNERS, L.P
413 S. Associated Road
Brea, CA 92821

Waad J. Wadhi
Owner's Printed Name

CEO
Owner's Title/ Position

NOTARIES ON FOLLOWING PAGE

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

State of California

County of ORANGE }

On FEBRUARY 03, 2010 **before me, Luz M. Renteria, a notary public,**

personally appeared WAAD J. NADHIR

who proved to me on the basis of satisfactory evidence to be the person (s) whose name (s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity (ies), and that by his/her/their signature (s) on the instrument the person (s), or the entity upon behalf of which the person (s) acted, executed the instrument.

LUZ M. RENTERIA
COMM...1811609
NOTARY PUBLIC-CALIFORNIA
ORANGE COUNTY
My Term Exp. Aug. 29, 2012

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature of Notary Public

---------- *OPTIONAL* ----------

DESCRIPTION OF THE ATTACHED DOCUMENT	CAPACITY CLAIMED BY THE SIGNER
AGREEMENT OF WATER (Title or description of attached document) QUALITY MANAGEMENT PLAN (Title or description of attached document continued) Number of pages 2 Document Date 2/03/10 (Additional information)	☒ Idividual (s) ☐ Corporate Officer (Title) ☐ Partner (s) ☐ Attorney - in – Fact ☐ Trustee (s) ☐ Other

COUNTY CLERK-RECORDER
ORANGE COUNTY STATE OF CALIFORNIA

I CERTIFY THAT IF THIS SEAL IS AFFIXED IN PURPLE INK THIS IS A TRUE AND CORRECT COPY OF THE PERMANENT RECORD FILED OR RECORDED IN THIS OFFICE.

DATE _____ FEE _____

OWNER'S CERTIFICATION

Water Quality Management Plan
for
Brea Plaza
Parcel Map Book 105/17-19

This Water Quality Management Plan (WQMP) for the Brea Plaza commercial redevelopment has been prepared for Bosc Equities by Pardue, Cornwell & Associates, Inc.. This WQMP is intended to comply with the requirements of the City of Brea Municipal Code (Chapter 13.32), requiring preparation of a project-specific WQMP.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Orange County Drainage Area Management Plan (DAMP), and the intent of the stormwater and urban runoff NPDES Permit and Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the incorporated Cities of Orange County under the jurisdiction of the San Diego Regional Water Quality Control Board. A copy of this WQMP will be maintained at the project site or project office.

This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party having responsibility for implementing portions of this WQMP. At least one copy of the approved and certified copy of this WQMP shall be available on the subject property in perpetuity. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the WQMP.

Owner's Signature _____ Date 11/21/2011

Owner's Printed Name: Waad J. Wadhi

Owner's Title/Position: President

Bosc Equities
Company

417 S. Associated Road
Company Address

Brea, CA 92821
Company Address

(714) 990-5715
Telephone No.

Table of Contents

I. Discretionary Permit Number(s), Water Quality Condition Number(s) and Conditions 1
II. Project Description 2
III. Site Description 4
IV. Best Management Practices 7
IV.1 Site Design BMPs 7
IV.2 Source Control BMPs 9
IV.2.1 Routine Non-Structural BMPs 9
IV.2.2 Routine Structural BMPs 12
IV.3 Treatment Control BMPs 14
V. Implementation, Maintenance and Inspection Responsibility for BMPs (O&M Plan) 19
VI. Location Map, Site Plan, and BMP Details 20
VII. Educational Materials 21

List of Tables

Table 1. Site Design BMPs 7
Table 2. Routine Non-Structural BMPs 9
Table 3. Routine Structural BMPs 12
Table 4. Treatment Control BMPs 14

Appendix

A. City of Brea Project Specific WQMP Summary Report
B. Conditions of Approval, Planning Commission Resolution PC 09-29 dated 12/8/09
C. Additional Permits & Certifications

I. Discretionary Permit Number(s), Water Quality Condition Number(s) and Conditions

The applicant shall prepare and provide a WQMP incorporating both construction and post construction pollution prevention controls for the entire site, prior to the issuance of a grading/demolition permit and subject to review and approval of the City Engineer.

There are currently three other permits being held by Bosc Equities regarding this project. They are as follows:

- 401 Certification for the California Regional Water Quality Control Board, dated August 8, 2008 for the Loftus Channel
    - 401 Certification, Condition No. 3: "California Brea Partners, LP must implement a water quality monitoring program for the purpose of evaluating the performance of the Baffle Filters® as analyzed in the Anti-degradation Analysis performed for the proposed project. The water quality monitoring program must compliment the monitoring being performed by permittees under Order No. R8-2002-0010, NPDES Permit No. CAS618030, commonly known as the Orange County Municipal Storm Water Permit. A draft monitoring plan must be provided to the Executive Officer for approval by October 7, 2008. The monitoring plan must be fully implemented upon approval."
    - 401 Certification, Condition No. 4: "In the event that the proposed Baffle Filters® do not achieve reductions for pollutants of concern identified in the Anti-degradation Analysis that are equivalent to the natural pollutant attenuation function of the filled channel, California Brea Partners, LP must implement additional best management practices to replace the natural pollutant attenuation function of the filled Loftus Channel. California Brea Partners, LP may at any time update the natural pollutant attenuation rates in the Anti-degradation Analysis using the best available scientific information."
    - 401 Certification, Condition No. 5: "The applicant must comply with the requirements of the Clean Water Act section 404 permit."
- California Department of Fish & Game Permit No. 1600-2008-0029-R5 for the Loftus Channel
- U.S. Army Corps. Of Engineers Permit No. SPL-2008-00232-JPL for the Loftus Channel

The City of Brea has also prepared Condition of Approval for this project, dated December 8, 2009

Conditions of Approval information:

- Resolution No. PC-09-29
- Precise Development No. PD 09-01
- Conditional Use Permit No. CUP 09-14
- Adopting Mitigated Negative Declaration No. 08-01 II.

Note: Conditions of Approval are attached as Appendix "B" & Additional Permits are attached as Appendix "C".

II. Project Description

Bosc Equities proposes the redevelopment of portions of the existing "Brea Plaza" Shopping Center. The site consists of approximately 13.72 acres along Associated Road, and is located at the northwest intersection of Imperial Highway and Associated Road, in the City of Brea. A Location Map is provided under Section VI as Exhibit "A" of this WQMP.

Proposed redevelopment to the existing site includes the removal of existing improvements (including building structures, parking lot, landscaping, wet and dry utilities and bridge crossing) for the construction of six (6) new building structures, parking lots, landscaping and storm drain improvements, wet and dry utilities, curb, sidewalk and gutter, access drives and other retail commercial site related improvements.

The project also proposes to convert the portion of Orange County Flood Control District (OCFCD) facility A06 Loftus Channel located east of Brea Plaza, which currently consists of an open channel facility with revetted side slopes and an earthen bottom, to a covered box culvert to allow for additional parking for Brea Plaza. Channel improvements will include the construction of a 55-foot wide, four (4) cell reinforced concrete box culvert in place of the existing open channel. The improvements will extend north approximately 900± lineal feet from Imperial Highway. This portion of the redevelopment consists of approximately 2.0 acres and will also include landscaping, sidewalks, vegetated swales, storm drains, catch basins and related improvements, and other utilities. A Site Map is provided under Section VI as Exhibit "B" of this WQMP.

North East Area: demolition and reconstruction of portions of the existing buildings, parking, and drive aisles. South East Area: demolition and reconstruction of the existing building, parking, and drive aisles. Westerly Area: demolition and reconstruction of the existing buildings, parking, and drive aisles. Anticipated uses include SIC Division G – Retail Trade and 5812 – Eating Places (restaurants).

Paved areas of the site include the parking aisles, drives, parking lot, curb, sidewalk and gutter improvements, entrances, and building pad areas. Total roof and paved areas will consist of approximately 90% of the site. The locations of these areas are depicted in the WQMP Site Plan (Section VI).

Parking for the site will be provided via the existing shopping center parking lot and proposed parking lots within the redevelopment areas, as depicted in the WQMP Site Plan. A total of 757 parking spaces will be provided within project area. Total project parking spaces shall be consistent with the City of Brea parking regulations, standards and requirements.

Landscape areas include landscaping adjacent to proposed buildings, landscaping within the parking areas and walkways, and the project's four (4) proposed vegetated treatment swales. Total landscaping will consist of approximately 1.4 acres, or 10% of the redeveloped site. Landscaping may be planted with preferably native, drought-tolerant landscaping per the approved landscaping plan, irrigated with installed efficient irrigation improvements. All proposed landscaping will be maintained by the Owner.

Restaurants and food-preparation areas will not employ garbage disposals and will discourage the disposal of food wastes to the sanitary sewer system. The restaurant will have a grease interceptor to help minimize the effects of Food, Oils and Grease (FOG) on the sanitary sewer. Final location of the grease interceptor will be determined as tenants are identified. Food Preparation areas will additionally follow BMP guidelines specified in IC-22 - Eating and Drinking Establishments.

Outdoor activities for the project include commuting, working, materials delivery, loading and unloading, walking, eating and other activities characteristic of retail/commercial and business developments.

There is no outdoor storage of materials permitted onsite. Each tenant shall be required to store all materials within the tenant's private use areas, located inside the building structures. Material delivery, loading and unloading areas will be located as shown in the WQMP Site Plan. No designated loading docks are proposed within the scope of proposed improvements.

Normal commercial facility related trash can be expected to be produced daily by each tenant. Such trash will be disposed of by the responsible personnel to the trash enclosures provided, to be removed by the local private waste management company on a weekly basis, or as needed, for proper disposal to a central trash disposal facility offsite. All trash enclosures shall be enclosed and protected from storm water run-on. The enclosure pad shall be designed in a sump condition to prevent the discharge of any liquids from the enclosure. Additionally, runoff from the enclosure area is prohibited from entering the storm drain system.

The anticipated storm water or urban runoff pollutants reasonably expected to be associated with this project are:

1. *Bacteria and viruses.* Anticipated sources include animal excrement (found in areas where pets are often walked), sanitary sewer overflow, and trash container handling areas.
2. *Metals.* Potential sources of trace metals (copper, lead, cadmium, chromium, nickel and zinc) include motor vehicles, re-roofing and hardscape/construction materials, and chemicals.
3. *Organic Compounds.* These compounds can be expected to be derived from automotive fluids, pesticides, and fertilizers.
4. *Trash and Debris.* These sources include common litter, biodegradable organic matter such as leaves, grass cuttings and food wastes from landscaped areas and homeowners.
5. *Oxygen-Demanding Substances.* Potential sources include biodegradable organic materials and various chemicals and food wastes, which deplete dissolved oxygen levels in water courses.
6. *Oil and Grease.* Potential sources of oil and grease include motor vehicles.

The potential storm water or urban runoff pollutants reasonably expected to be associated with this project are:

1. *Nutrients.* Nutrients, including nitrogen, phosphorous, and other compounds can be anticipated to be generated by or found in organic litter, fertilizers, food waste, sewage and sediment.
2. *Pesticides.* Potential source includes project landscaping areas.
3. *Sediment.* Potential source includes project landscaping areas.

III. Site Description

This project site consists of the various areas of the Brea Plaza Shopping Center, located just at the northwest intersection of Imperial Highway and Associated Road, in the City of Brea, California. The approximately 13.72-acre site is designated by the City of Brea for General Commercial (GC) use. The site is bound to the north by a commercial office center and low density residential housing beyond; to the east by Associated Road and low density residential developments; to the south by Imperial Highway (SR-90) and City of Fullerton beyond; and to the west by the remaining portions of Brea Plaza Shopping Center and State Route 57 (SR-57) beyond. Access to the site is currently obtained via SR-90 to the south and Associated Road to the east. The project site is shown on the Location Map as Exhibit A.

The southern portion of the existing redevelopment site is occupied by two (2) building structures (a bank and a retail shop) and parking areas. The remainder of the site includes more parking areas, miscellaneous landscaping, a paved entrance at the eastern site limit and existing Loftus Channel. There are no natural or open areas within the site.

Geologically, the site is located within the Peninsular Ranges Geomorphic Province. The province is characterized by northwest trending valleys and mountains that, in part, owe their existence to regional northwest trending geologic structures. The site resides at the southeastern end of the Los Angeles basin, which is bound to the east by the Puente Hills and on the south by San Joaquin Hills, and is within a broad alluvial plain that is underlain by recent alluvium from Carbon Canyon that has been deposited on Quaternary Terrace deposits. Soils beneath the site include artificial fill, alluvium and quaternary terrace deposits. Onsite soil is generally categorized as HSG Soil Type “D”, which consists chiefly of clays, have high runoff and swelling potential, very slow infiltration and water transmission rates (<0.2”/hr). This is consistent with the findings of the site’s preliminary geotechnical investigation.[1]

The existing site has a runoff coefficient of 0.83 and approximately 90% impervious surface (does not include Loftus Channel). Runoff from the northern portion of the site is conveyed as sheet flow to existing gutters prior to discharging easterly to the Loftus Diversion Channel. Runoff from the central portion of the site is conveyed southerly and easterly as sheet flow to existing gutters prior to discharging to an existing catch basin and conveyed east to the Loftus Channel. Runoff from the southern portion of the site is conveyed easterly and southerly as sheet to an existing catch basin and discharged to the Loftus Channel. The project site also receives some run-on from areas of the shopping center located west of the proposed site.

In the developed condition, the site runoff coefficient will remain unchanged at approximately 0.83 and approximately 90% impervious surface. Runoff from the northern portion of the site will be conveyed to proposed catch basins in the northeastern portion of the site prior to discharging to the Loftus Channel. First flush runoff will be conveyed to proposed catch basins at the north end of the project that contain Kristar FloGard+PLUS insert filers. Low flow runoff will be conveyed via a low flow storm drain line to proposed vegetated swales (Swale Nos. 3 & 4) located just west of Associated Road.Bio Clean.

All runoff from the central portion of the site located west of Associated Road entrance will be conveyed southerly to a proposed catch basin located in the southern portion of the site prior to discharging to the Loftus Channel. Runoff from Associated Road entrance will be conveyed easterly to catch basins. First flush runoff will go through the onsite private catch basins that have Kristar FloGard+PLUS insert filters installed and low flow runoff will be conveyed to a vegetated swale (Swale No. 2) and then to an inlet with a Katchall insert for treatment prior to discharging to Loftus Channel.

[1] Pacific Soils Engineering, Inc (PSE, Inc.). February 18, 2008. “Preliminary Geotechnical Investigation – Proposed Storm Drain Improvements for the Loftus Diversion Channel and the Brea Shopping Center”.

Runoff from the remaining portion of the site (southern areas) will be conveyed easterly and northerly to proposed catch basins prior to discharging to the Loftus Channel. Water quality flows will be diverted and conveyed to a vegetated swale (Swale No. 1) for treatment prior to discharging offsite.

The project site does not contain any Areas of Special Biological Significance (ASBS) as identified by the State Water Resource Control Board (http://www.swrcb.ca.gov/water_issues/programs/ocean/asbs.shtml) or Environmentally Sensitive Areas (ESAs) as identified in by the County of Orange Watershed & Coastal Resources Division.

Improvements to existing Loftus Diversion Channel (Orange County Flood Control District Facility No. A06) will also require issuance of a permit by the U.S. Army Corps of Engineers ("ACOE"), pursuant to Section 404 of the federal Clean Water Act, since a portion of the channel bottom meets the criteria of a non-wetland Water of the U.S. A Streambed Alteration Agreement with the California Department of Fish and Game (CDFG) is required, due to removal of disturbed riparian vegetation in the channel area. County, ACOE and CDFG approvals have been met and copies of each permit and certification are attached in Appendix "C"

Watershed Area

This project is located within the jurisdiction of the Santa Ana Regional Water Quality Control Board (RWQCB – Region 8) and the San Gabriel River/Coyote Creek Watershed (Watershed "A"). The project discharges to Loftus Diversion Channel (Orange County Flood Control District Facility No. A06) and is tributary to Fullerton Creek (OCFCD Facility No. A03).

The Loftus Diversion Channel is an engineered OCFCD open channel facility, with revetted side slopes and an earthen bottom. The channel reach begins roughly 0.5 miles east of Kraemer Boulevard, between Birch Street and Imperial Highway. It runs westerly through the Birch Hills Golf Course prior to traveling southwesterly as it crosses beneath Associated Road. The channel then parallels Associated Road until it crosses beneath Imperial Highway, where it discharges to a debris basin between Imperial Highway and SR-57. The channel continues southwesterly and crosses beneath SR-57 and drains into the United States Army Corps of Engineers (USACOE) Fullerton Creek Reservoir at Craig Regional Park. Any overflow from this area is discharged to Fullerton Creek, located approximately 0.5 miles southwest of the park. Runoff is then conveyed approximately 10 miles in a westerly (southwesterly) direction to Coyote Creek (OCFCD Facility No. A01). Coyote Creek confluences with San Gabriel River approximately six (6) miles to the south prior to discharging to the Pacific Ocean (approximately 4 miles south of confluence).

Although the proposed project does not discharge directly into an impaired water body, runoff from the site is tributary to Coyote Creek and San Gabriel River, which are both considered impaired under Section 303(d) of the Clean Water Act. Coyote Creek is currently listed as impaired for Coliform Bacteria, Dissolved Copper, Diazinon, Lead, pH, Toxicity and Zinc. San Gabriel River downstream of the project site is currently listed as impaired for Copper and Coliform Bacteria, with established Total Maximum Daily Load (TMDL) requirements for Metals and Selenium.

Based on the project's expected pollutants concern and receiving water body impairments, the project's primary pollutants of concern are bacteria and metals. Other pollutants of concern for the site include organic compounds, trash and debris, oxygen demanding substances, oil and grease, nutrients, pesticides and sediment.

Hydrologic Conditions of Concern

Hydrologic conditions of concern for any development such as the proposed project, may include potential water quality degradation; increased runoff volume and velocity; reduced infiltration; increased flow frequency, duration and peaks; and faster time to reach peak flow resulting from development.

Runoff from the project site will discharge to Loftus Diversion Channel located west of Associated Road. As part of this project, the portion of the channel north of Imperial Highway and adjacent to the site will be fully improved to ensure that it is capable of accepting all upstream flow, in addition to any flow increase from the proposed parking lot areas, landscaping and other improvements to be constructed over the channel.

With the proposed improvements to the channel, project development would not cause any hydrologic conditions of concern. All discharge shall be in full compliance with Co-Permittee requirements for connections and discharges to the MS4 (including both quality and quantity requirements) and the discharge would not significantly impact stream habitat in proximate Receiving Waters.

IV. Best Management Practices

BMPs are structural devices, procedures, rules or methods which, when implemented and followed, should reduce and/or eliminate the specific source of pollution of which the BMP is targeted. This section, describes in the following how each of these BMPs will be implemented for the proposed project. For those routine BMPs that are not applicable to this project, an explanation is included as to why that is the case. All BMPs indicated in this WQMP should be maintained in good and effective condition.

All improvements within the project site will be private improvements, to be owned and maintained by Bosc Equities. The contact person for the site is Mr. Marc Harris, Bosc Equities, 413 S. Associated Road, Brea, CA 92821, (714) 990-5715.

By means of lease agreements, the owner shall establish requirements for (a) community common areas in the project and (b) implementation of community pollution prevention on BMPs, including community awareness programs.

Routine Source Control BMPs are required to be incorporated in all new development redevelopment projects unless not applicable. In the tables provided, all BMPs to be incorporated in the project are indicated. For those designated as not applicable, a brief reason why is stated. All source control BMPs shall be maintained by the Owner.

All source control BMPs listed for specific land use/type of project in the following Countywide Water Quality Management Plan tables have been discussed and considered for utilization to the extent that they are appropriate for the site and project. For a BMP listed in the table following not used for the project, this section of the WQMP has explained why this source control BMP is not appropriate for the project.

IV.1 Site Design BMPs

The following table shows site design BMPs that are included in this project. A brief description of each BMP also follows:

TABLE 1. SITE DESIGN BMPS

Technique	Included?		If no, state justification.
	Yes	No	
Minimize Directly Connected Impervious Areas (DCIAs) (C-Factor Reduction)	X		
Create Reduced or "Zero Discharge" Areas (Runoff Volume Reduction)[1]		X	Site consists of Type "D" soils, which would create saturation and other drainage issues.
Minimize Impervious Area/Maximize Permeability (C-Factor Reduction)[2]	X		
Conserve Natural Areas (C-Factor Reduction)		X	No existing natural areas located within site.

1 Detention and retention areas incorporated into landscape design provide areas for retaining and detaining stormwater flows, resulting in lower runoff rates and reductions in volume due to limited infiltration and evaporation. Such Site Design BMPs may reduce the size of Treatment Control BMPs.

2 The "C Factor" is a representation of the ability of a surface to produce runoff. Surfaces that produce higher volumes of runoff are represented by higher C Factors. By incorporating more pervious, lower C Factor surfaces into a development, lower volumes of runoff will be produced. Lower volumes and rates of runoff translate directly to lowering treatment requirements.

Minimize Directly Connected Impervious Areas

The project has been designed to include the following concepts to reduce the amount of directly connected impervious areas and reduce the project's C-factor:

1. Drain rooftops to adjacent landscaping prior to discharging to the storm drain system.
2. Drain sidewalks to adjacent landscaping.
3. Use of vegetated swales to convey low flow runoff as well as the first flush runoff.
4. Incorporate landscaping throughout the site to reduce directly connected impervious areas.

Create Reduced or "Zero Discharge" Areas

Since onsite soil consists entirely of HSG Group "D" soils with very poor infiltration rates, the project does not propose the use of zero discharge areas, such as infiltration, bioretention and rain garden areas. Employment of these BMPs in unsuitable soils may lead to standing water and saturation of soil and other drainage related problems.

Minimize Impervious Area/Maximize Permeability

The following concepts have been incorporated into project designs to minimize impervious area and maximize pervious areas:

1. Use of minimum parking aisle widths while still remaining in compliance with City of Brea Fire Services Department.
2. Maximize canopy interception of rain by providing native and/or drought tolerant tree species within parking lot areas and landscaping areas (eastern portion of site).
3. Construct sidewalks and walkways to minimum width, as required the ADA and County requirements.
4. Minimize the use of decorative concrete within the common areas of the site by minimizing the use of hardscape and paved landscaping edges/borders, allowing runoff to be filtered through landscape areas prior to entering the storm drain system.

Conserve Natural Areas

Since the existing site is currently a shopping center, there are no natural areas. All existing landscaping will be removed and replaced with new landscaping.

IV.2 Source Control BMPs

The following tables show source control BMPs (routine non-structural and routine structural) included in this project and those that were not included.

IV.2.1 Routine Non-Structural BMPs

TABLE 2. ROUTINE NON-STRUCTURAL BMPS

BMP No.	Name	Check One		If not applicable, state brief reason.
		Included	Not Applicable	
N1	Education for Property Owners, Tenants and Occupants	X		
N2	Activity Restriction	X		
N3	Common Area Landscape Management	X		
N4	BMP Maintenance	X		
N5	Title 22 CCR Compliance		X	Applies to commercial/industrial projects that use or generate hazardous materials.
N6	Local Water Quality Permit Compliance		X	The City does not issue water quality permits.
N7	Spill Contingency Plan		X	Applies to commercial/industrial projects that use or generate hazardous materials.
N8	Underground Storage Tank Compliance		X	None proposed.
N9	Hazardous Materials Disclosure Compliance		X	No storage or use of hazardous materials requiring disclosure.
N10	Uniform Fire Code Implementation		X	Site does not store, use or generate materials regulated under UFC.
N11	Common Area Litter Control	X		
N12	Employee Training	X		
N13	Housekeeping of Loading Docks		X	No loading docks proposed for site.
N14	Common Area Catch Basin Inspection	X		
N15	Street Sweeping Private Streets and Parking Lots	X		
N17**	Retail Gasoline Outlets		X	No gasoline stations proposed.

** There is no BMP with the designation N16.

1. Tenant Education (N1)

The Site Owner will insure that all tenants will be given a copy of the lease agreement, which will contain a section outlining the environmental awareness education materials. The POA shall establish requirements for the implementation of a community awareness program that informs tenants of the impacts of dumping oil, paints, solvents or other potentially harmful chemicals into the storm drain; and the impacts of littering. Environmental awareness education materials, including, but not limited to those included in Section VII of this WQMP, shall be provided to all tenants after acceptance of lease terms and periodically thereafter.

2. Activity Restrictions (N2)

Within the lease agreements to be prepared, language shall be included to identify surface water quality protection required by the Owner and tenants. These may include distribution of environmental awareness materials to tenants, restrictions on onsite vehicle maintenance, vehicle washings and litter control. Surface water quality activities shall also be conducted in conformance with the Water Quality Management Plan as it relates to the handling and disposal of contaminants.

3. Common Area Landscape Management (N3)

Management programs will be designed and established by the Owner, which will maintain all common areas within the project site. These programs will include how to mitigate the potential dangers of fertilizer and pesticide usage. Ongoing maintenance will be consistent with the County Water Conservation Resolution (Ordinance. No. 3802) and the State of California Model Water-Efficient Landscape Ordinance. Fertilizer and Pesticide usage shall be consistent with County Management Guidelines for use of Fertilizers and Pesticides.

4. BMP Maintenance (N4)

The Owner shall be responsible for implementation of each applicable non-structural, structural and treatment BMP as well as scheduling inspection and maintenance cleaning of all applicable structural BMP facilities. The Owner shall be responsible for inspection and maintenance activities in landscape areas (see Section VI, Site Plan). Debris and other water pollutants will be controlled, contained and disposed of in a proper manner by the apartment management. Section V refers.

5. Common Area Litter Control (N11)

The Owner shall be required to maintain weekly sweeping and trash pick-up within the project areas and landscape areas. This will be achieved through the use of site maintenance staff or a maintenance contractor. Trash areas and receptacles will be inspected daily to make sure lids are closed, that surrounding areas are trash-free and that full receptacles are regularly emptied. Pursuant to Section V, responsibility shall include the emptying of trash receptacles, noting of disposal violations by tenants, and reporting such violations to the Owner for investigation.

6. Employee Training (N12)

Post construction, an employee training/education program will be established as it would apply to future employees, contractors of the Owner and tenants, to inform and train employees engaged in maintenance activities regarding the impact of dumping oil, paints, solvents or other potentially harmful chemicals into storm drain; the proper use of fertilizers and pesticides in landscaping maintenance practices; and the impacts of littering and improper water disposal.

7. Common Area Catch Basin Inspection (N14)

Post construction, the project's onsite storm drain system and catch basins will be maintained by the Owner. These activities will be done on a regular basis, and prior to the storm season, no later than October 1st of each year.

8. Street Sweeping Private Streets and Parking Lots (N15)

The Owner shall be responsible for ensuring that all parking aisles, lots and access ways are vacuum swept on a weekly basis. This procedure may be intensified around October 1st of each year prior to the "first flush" storm if needed.

9. Building Maintenance (IC-3)

As part of the project's ongoing maintenance program, the Owner's maintenance personnel shall properly collect and dispose of water when washing buildings, rooftops and other large objects. Work areas shall be prepared before conducting building maintenance and all materials generated and used shall be properly disposed.

10. Outdoor Loading and Unloading of Materials (IC-10)

The project does not include a "dock area" as typically found at commercial or industrial sites. Loading of materials will be conducted from the proposed parking lot in the shopping center. This area shall be kept clean at all times, and inspected daily for trash, litter and debris. All spills will be cleaned up immediately. Sweeping shall be preferred to wash down. In the event wash water is used for the loading/delivery area, all water shall be contained and not discharged into the storm drain system, but disposed of properly.

11. Parking and Storage Area Maintenance (IC-15)

All project parking areas shall be vacuum swept on a weekly basis and as necessary. All wash water shall be properly contained, collected and disposed. Parking lot shall be kept in a clean and orderly state. Use of absorbent materials to clean up vehicle related spills and leaks shall be disposed of properly. Inspections of the parking lot shall be conducted on a weekly basis, at minimum, by the Owner's site maintenance personnel.

IV.2.2 Routine Structural BMPs

Structural BMPs shall be installed initially by the contractor through the construction and development of the project. For instance, landscaping and irrigation systems shall be designed by licensed landscape architects and installed by qualified contractors to City standards and specifications. Structural BMPs used for this project are summarized in the Operation and Maintenance Plan, located in Section V.

TABLE 3. ROUTINE STRUCTURAL BMPS

Name	Check One		If not applicable, state brief reason
	Included	Not Applicable	
Provide storm drain system stenciling and signage	X		
Design and construct outdoor material storage areas to reduce pollution introduction		X	No outdoor storage of materials permitted onsite.
Design and construct trash and waste storage areas to reduce pollution introduction	X		
Use efficient irrigation systems & landscape design	X		
Protect slopes and channels and provide energy dissipation	X		
Incorporate requirements applicable to individual project features	X		
a. Dock areas		X	No designated loading dock areas proposed.
b. Maintenance bays		X	No maintenance bays proposed.
c. Vehicle wash areas		X	No vehicle wash areas proposed.
d. Outdoor processing areas		X	No outdoor processing of materials allowed onsite.
e. Equipment wash areas		X	No equipment wash areas proposed for shopping center.
f. Fueling areas		X	No fueling areas proposed.
g. Hillside landscaping		X	Project site is flat.
h. Wash water control for food preparation areas	X		
i. Community car wash racks		X	Project is not residential.

1. Common Area Runoff – Site Design and Landscape Planning (SD-10)

As a part of the design of all common area landscape areas, similar planting material with similar water requirements will be used in order to reduce excess irrigation runoff and promote surface filtration. Additionally, such vegetation will consist of native drought-tolerant species and/or approved non-invasive vegetation, as directed by the project's landscape architect. Such common areas will be maintained by the Owner through its landscape maintenance contractor.

2. Common Area Efficient Irrigation (SD-12)

As a part of the design of all common area landscape irrigation, implementation of the Orange County Water Conservation Resolution (Ord. No. 3802) including, but not limited to, such provisions as water sensors, programmable irrigation times (for short cycles), etc., will be used. Such common areas will be maintained by the Owner's landscape maintenance contractor.

3. Storm Drain System Signs (SD-13)

As a part of the final civil engineering drawings, it will be required by the Developer to stencil on all of the project's catch basins, where applicable in paved areas, the words, "No Dumping - Drains to Ocean." This will be done in a location that can be clearly seen by all and will be routinely inspected and re-stenciled, as necessary for legibility.

4. Slope Protection and Energy Dissipation

Energy dissipation shall be provided as part of improvements to the Loftus Diversion Channel. These devices include the construction of rip-rap. Upon completion, responsibilities pertaining to the improved channel will be turned over to the County of Orange (OCFCD).

5. Trash Storage Areas (SD-32, IC-21)

All trash enclosures shall be paved with an impervious surface, with area enclosed to prevent offsite transport of trash, storm water run-on and discharge of nuisance runoff. The dumpster shall be leak proof and covered at all times. Connection of any drainage system within the enclosure areas to the storm drain is prohibited. Drainage from trash areas may be connected to the sanitary sewer with proper authorization. Trash will be removed on a weekly basis or as required. In addition, these areas will be inspected on a daily basis for debris and overfill.

6. Wash Water controls for Food Preparation Areas (IC-22)

Restaurants and food-preparation areas will not employ garbage disposals and will discourage the disposal of food wastes to the sanitary sewer system. The restaurant in Building A-2 will have a grease interceptor to help minimize the effects of Food, Oils and Grease (FOG) on the sanitary sewer. Food Preparation areas will additionally follow BMP guidelines specified in IC-22 Eating and Drinking Establishments.

IV.3 Treatment Control BMPs

This project is designated as a Priority Project. Therefore, treatment control BMPs are required to remove pollutants typically associated with urban runoff. The following table shows treatment BMPs that are included in this project. A brief description of each BMP also follows. For BMPs not selected for use onsite, a brief explanation has been provided at the end of this section

TABLE 4. TREATMENT CONTROL BMPS

Name	Included?		If not applicable, state brief reason
	Yes	No	
Vegetated (Grass) Strips		X	Swales, Kristar and Bio Clean outlet filter proposed to treat project runoff.
Vegetated (Grass) Swales	X		
Dry Detention Basin		X	Considered but not employed due to size constraints.
Wet Detention Basin		X	Considered but not incorporated due to size constraints and potential vector issues.
Constructed Wetland		X	Considered but not incorporated due to size constraints and potential vector issues.
Detention Basin/Sand Filter		X	Considered but not employed due to size constraints.
Porous Pavement Detention		X	Site contains Type “D” soils which aren’t recommended for porous pavement.
Porous Landscape Detention		X	Potential for saturation of foundations due to soil type.
Infiltration Basin		X	Project soil type not suitable for infiltration BMPs.
Infiltration Trench		X	Project soil type not suitable for infiltration BMPs.
Media Filter		X	Swales. Kristar and Bio Clean outlet filter proposed to treat project runoff.
Proprietary Control Measures	X		.

Treatment Train: Vegetated Swale (TC-30) with Bio Clean Drain Inserts and Kristar FloGard+PLUS

First Flush runoff will be conveyed easterly to one of the Kristar FloGard+PLUS insert filters. The low flow runoff from the project site will be conveyed easterly to one of four proposed vegetated swales located in the eastern portion of the site. Runoff will be conveyed to the swales via low flow pipes or parkway culverts. The locations of the Kristar Insert filters and swales are provided in the WQMP Water Quality Exhibit.

The insert filters are to be installed per the instructions given by Kristar (located as an attachment). The Kristar FloGard+PLUS insert filters are used to capture sediment, debris, trash & oil or grease from first flush runoff. The devices can retain sediment and floatables under extreme weather conditions and are designed to fit most industry standard drainage inlets.

The swales will be constructed in accordance with the design requirements of CASQA TC-30 to ensure that the swale is functional and effective in treating first flush and low flow runoff. The vegetated swale system will treat runoff through the filtering characteristic of the vegetation on the surface of the swale as well some infiltration. The swales will be capable of trapping particulate pollutants (suspended solids and trace metals), promote infiltration and reduce the flow velocity of storm water runoff. A minimum hydraulic residence time of 10 minutes for the analyzed flow rate (SQDF) is required by design guidelines through the vegetated swale.

Based on preliminary designs, the SQDF and other design information for each swale have been determined and are provided in the following table:

Swale Designation	Drainage Area (Ac)	SQDF (cfs)	Length (ft)	Bottom Width (ft)	Side Slopes (ft)
1	2.33	0.39	84	7	4
2	9.34	1.55	156	8.5	4 (L) & 2 (R)
3	1.89	0.31	102	5	4
4	0.13	0.02	36	5	4

The project will also incorporate three auxiliary swales in the northerly portion of the project adjacent to Swale No. 3. These swales are not designed to the water quality requirements of TC-30 or the County DAMP, however drain to inlets with Bio Clean inserts prior to discharging to either Swale Nos. 3 or 4 or to the Loftus Channel.

Bacteria, as a pollutant of concern, will be addressed through the use of Bio Clean basin inserts, at the swale's outlets to Loftus Channel (OCFCD A06). Test results claim that their antimicrobial filtration products produce a "reduction of 99.4% of all bacteria, viruses, algae, mold, mildew and yeast colonies upon contact; with unobstructed flow-rates of > 180 GPM per square foot." For further product information see the published data provided in Section V.

BMP Selection Determination

Many factors were taken into consideration in selecting the proposed BMPs. These include anticipated pollutants, existing and proposed site conditions (such as grade constraints), feasibility of employment (feasibility of routing runoff to proposed BMP), ease of integrating the BMP into the overall land plan, visual aesthetics, public safety, ease of maintenance, as well as overall treatment effectiveness. BMP selection for the project primarily focused on the use of natural systems, such as swales

BMPs requiring large footprints that are not easily integrated into the site design, such as basins (dry and infiltration basins), ponds and wetlands, were considered but not employed due to type of redevelopment (commercial shopping center), the large footprint required and their potential as breeding areas for vectors. These BMPs would be more suited for low density residential developments.

Other BMPs, such as porous pavement, porous landscape areas and infiltration BMPs, were considered but not employed due to project soil type (Type "D", consisting mainly of clay soils, with infiltration rate < 0.2"/hr). Although pollutant removal through cation exchange is beneficial from clay particles, soils with more than 30% clay composition is generally not recommended for infiltration BMPs. The slow infiltration rate of these soils creates great potential for saturating underlying soil and structural foundations. Additionally, the expansion potential of wet clay is also a cause of concern when employing infiltration BMPs. Based on the findings from the site's preliminary geotechnical investigation conducted by Pacific Soils Engineering, Inc., infiltration BMPs were not proposed.

Based on aforementioned constraints, vegetated swales have been determined to be the most feasible treatment alternative.

TC30 VEGETATED SWALE

VEGETATED SWALE CALCULATIONS

Vegetated Swale TC-30

Design Considerations

- Tributary Area
- Area Required
- Slope
- Water Availability

Description

Vegetated swales are open, shallow channels with vegetation covering the side slopes and bottom that collect and slowly convey runoff flow to downstream discharge points. They are designed to treat runoff through filtering by the vegetation in the channel, filtering through a subsoil matrix, and/or infiltration into the underlying soils. Swales can be natural or manmade. They trap particulate pollutants (suspended solids and trace metals), promote infiltration, and reduce the flow velocity of stormwater runoff. Vegetated swales can serve as part of a stormwater drainage system and can replace curbs, gutters and storm sewer systems.

Targeted Constituents

✓	Sediment	▲
✓	Nutrients	●
✓	Trash	●
✓	Metals	▲
✓	Bacteria	●
✓	Oil and Grease	▲
✓	Organics	▲

Legend *(Removal Effectiveness)*

● Low ■ High

▲ Medium

California Experience

Caltrans constructed and monitored six vegetated swales in southern California. These swales were generally effective in reducing the volume and mass of pollutants in runoff. Even in the areas where the annual rainfall was only about 10 inches/yr, the vegetation did not require additional irrigation. One factor that strongly affected performance was the presence of large numbers of gophers at most of the sites. The gophers created earthen mounds, destroyed vegetation, and generally reduced the effectiveness of the controls for TSS reduction.

Advantages

- If properly designed, vegetated, and operated, swales can serve as an aesthetic, potentially inexpensive urban development or roadway drainage conveyance measure with significant collateral water quality benefits.

CASQA California Stormwater Quality Association

- Roadside ditches should be regarded as significant potential swale/buffer strip sites and should be utilized for this purpose whenever possible.

Limitations

- Can be difficult to avoid channelization.
- May not be appropriate for industrial sites or locations where spills may occur
- Grassed swales cannot treat a very large drainage area. Large areas may be divided and treated using multiple swales.
- A thick vegetative cover is needed for these practices to function properly.
- They are impractical in areas with steep topography.
- They are not effective and may even erode when flow velocities are high, if the grass cover is not properly maintained.
- In some places, their use is restricted by law: many local municipalities require curb and gutter systems in residential areas.
- Swales are mores susceptible to failure if not properly maintained than other treatment BMPs.

Design and Sizing Guidelines

- Flow rate based design determined by local requirements or sized so that 85% of the annual runoff volume is discharged at less than the design rainfall intensity.
- Swale should be designed so that the water level does not exceed 2/3rds the height of the grass or 4 inches, which ever is less, at the design treatment rate.
- Longitudinal slopes should not exceed 2.5%
- Trapezoidal channels are normally recommended but other configurations, such as parabolic, can also provide substantial water quality improvement and may be easier to mow than designs with sharp breaks in slope.
- Swales constructed in cut are preferred, or in fill areas that are far enough from an adjacent slope to minimize the potential for gopher damage. Do not use side slopes constructed of fill, which are prone to structural damage by gophers and other burrowing animals.
- A diverse selection of low growing, plants that thrive under the specific site, climatic, and watering conditions should be specified. Vegetation whose growing season corresponds to the wet season are preferred. Drought tolerant vegetation should be considered especially for swales that are not part of a regularly irrigated landscaped area.
- The width of the swale should be determined using Manning's Equation using a value of 0.25 for Manning's n.

Construction/Inspection Considerations

- Include directions in the specifications for use of appropriate fertilizer and soil amendments based on soil properties determined through testing and compared to the needs of the vegetation requirements.
- Install swales at the time of the year when there is a reasonable chance of successful establishment without irrigation; however, it is recognized that rainfall in a given year may not be sufficient and temporary irrigation may be used.
- If sod tiles must be used, they should be placed so that there are no gaps between the tiles; stagger the ends of the tiles to prevent the formation of channels along the swale or strip.
- Use a roller on the sod to ensure that no air pockets form between the sod and the soil.
- Where seeds are used, erosion controls will be necessary to protect seeds for at least 75 days after the first rainfall of the season.

Performance

The literature suggests that vegetated swales represent a practical and potentially effective technique for controlling urban runoff quality. While limited quantitative performance data exists for vegetated swales, it is known that check dams, slight slopes, permeable soils, dense grass cover, increased contact time, and small storm events all contribute to successful pollutant removal by the swale system. Factors decreasing the effectiveness of swales include compacted soils, short runoff contact time, large storm events, frozen ground, short grass heights, steep slopes, and high runoff velocities and discharge rates.

Conventional vegetated swale designs have achieved mixed results in removing particulate pollutants. A study performed by the Nationwide Urban Runoff Program (NURP) monitored three grass swales in the Washington, D.C., area and found no significant improvement in urban runoff quality for the pollutants analyzed. However, the weak performance of these swales was attributed to the high flow velocities in the swales, soil compaction, steep slopes, and short grass height.

Another project in Durham, NC, monitored the performance of a carefully designed artificial swale that received runoff from a commercial parking lot. The project tracked 11 storms and concluded that particulate concentrations of heavy metals (Cu, Pb, Zn, and Cd) were reduced by approximately 50 percent. However, the swale proved largely ineffective for removing soluble nutrients.

The effectiveness of vegetated swales can be enhanced by adding check dams at approximately 17 meter (50 foot) increments along their length (See Figure 1). These dams maximize the retention time within the swale, decrease flow velocities, and promote particulate settling. Finally, the incorporation of vegetated filter strips parallel to the top of the channel banks can help to treat sheet flows entering the swale.

Only 9 studies have been conducted on all grassed channels designed for water quality (Table 1). The data suggest relatively high removal rates for some pollutants, but negative removals for some bacteria, and fair performance for phosphorus.

Table 1 Grassed swale pollutant removal efficiency data							
	Removal Efficiencies (% Removal)						
Study	TSS	TP	TN	NO_3	Metals	Bacteria	Type
Caltrans 2002	77	8	67	66	83-90	-33	dry swales
Goldberg 1993	67.8	4.5	-	31.4	42–62	-100	grassed channel
Seattle Metro and Washington Department of Ecology 1992	60	45	-	-25	2–16	-25	grassed channel
Seattle Metro and Washington Department of Ecology, 1992	83	29	-	-25	46–73	-25	grassed channel
Wang et al., 1981	80	-	-	-	70–80	-	dry swale
Dorman et al., 1989	98	18	-	45	37–81	-	dry swale
Harper, 1988	87	83	84	80	88–90	-	dry swale
Kercher et al., 1983	99	99	99	99	99	-	dry swale
Harper, 1988.	81	17	40	52	37–69	-	wet swale
Koon, 1995	67	39	-	9	-35 to 6	-	wet swale

While it is difficult to distinguish between different designs based on the small amount of available data, grassed channels generally have poorer removal rates than wet and dry swales, although some swales appear to export soluble phosphorus (Harper, 1988; Koon, 1995). It is not clear why swales export bacteria. One explanation is that bacteria thrive in the warm swale soils.

Siting Criteria

The suitability of a swale at a site will depend on land use, size of the area serviced, soil type, slope, imperviousness of the contributing watershed, and dimensions and slope of the swale system (Schueler et al., 1992). In general, swales can be used to serve areas of less than 10 acres, with slopes no greater than 5 %. Use of natural topographic lows is encouraged and natural drainage courses should be regarded as significant local resources to be kept in use (Young et al., 1996).

Selection Criteria (NCTCOG, 1993)

- Comparable performance to wet basins
- Limited to treating a few acres
- Availability of water during dry periods to maintain vegetation
- Sufficient available land area

Research in the Austin area indicates that vegetated controls are effective at removing pollutants even when dormant. Therefore, irrigation is not required to maintain growth during dry periods, but may be necessary only to prevent the vegetation from dying.

The topography of the site should permit the design of a channel with appropriate slope and cross-sectional area. Site topography may also dictate a need for additional structural controls. Recommendations for longitudinal slopes range between 2 and 6 percent. Flatter slopes can be used, if sufficient to provide adequate conveyance. Steep slopes increase flow velocity, decrease detention time, and may require energy dissipating and grade check. Steep slopes also can be managed using a series of check dams to terrace the swale and reduce the slope to within acceptable limits. The use of check dams with swales also promotes infiltration.

Additional Design Guidelines

Most of the design guidelines adopted for swale design specify a minimum hydraulic residence time of 9 minutes. This criterion is based on the results of a single study conducted in Seattle, Washington (Seattle Metro and Washington Department of Ecology, 1992), and is not well supported. Analysis of the data collected in that study indicates that pollutant removal at a residence time of 5 minutes was not significantly different, although there is more variability in that data. Therefore, additional research in the design criteria for swales is needed. Substantial pollutant removal has also been observed for vegetated controls designed solely for conveyance (Barrett et al, 1998); consequently, some flexibility in the design is warranted.

Many design guidelines recommend that grass be frequently mowed to maintain dense coverage near the ground surface. Recent research (Colwell et al., 2000) has shown mowing frequency or grass height has little or no effect on pollutant removal.

Summary of Design Recommendations

1) The swale should have a length that provides a minimum hydraulic residence time of at least 10 minutes. The maximum bottom width should not exceed 10 feet unless a dividing berm is provided. The depth of flow should not exceed 2/3rds the height of the grass at the peak of the water quality design storm intensity. The channel slope should not exceed 2.5%.

2) A design grass height of 6 inches is recommended.

3) Regardless of the recommended detention time, the swale should be not less than 100 feet in length.

4) The width of the swale should be determined using Manning's Equation, at the peak of the design storm, using a Manning's n of 0.25.

5) The swale can be sized as both a treatment facility for the design storm and as a conveyance system to pass the peak hydraulic flows of the 100-year storm if it is located "on-line." The side slopes should be no steeper than 3:1 (H:V).

6) Roadside ditches should be regarded as significant potential swale/buffer strip sites and should be utilized for this purpose whenever possible. If flow is to be introduced through curb cuts, place pavement slightly above the elevation of the vegetated areas. Curb cuts should be at least 12 inches wide to prevent clogging.

7) Swales must be vegetated in order to provide adequate treatment of runoff. It is important to maximize water contact with vegetation and the soil surface. For general purposes, select fine, close-growing, water-resistant grasses. If possible, divert runoff (other than necessary irrigation) during the period of vegetation

establishment. Where runoff diversion is not possible, cover graded and seeded areas with suitable erosion control materials.

Maintenance

The useful life of a vegetated swale system is directly proportional to its maintenance frequency. If properly designed and regularly maintained, vegetated swales can last indefinitely. The maintenance objectives for vegetated swale systems include keeping up the hydraulic and removal efficiency of the channel and maintaining a dense, healthy grass cover.

Maintenance activities should include periodic mowing (with grass never cut shorter than the design flow depth), weed control, watering during drought conditions, reseeding of bare areas, and clearing of debris and blockages. Cuttings should be removed from the channel and disposed in a local composting facility. Accumulated sediment should also be removed manually to avoid concentrated flows in the swale. The application of fertilizers and pesticides should be minimal.

Another aspect of a good maintenance plan is repairing damaged areas within a channel. For example, if the channel develops ruts or holes, it should be repaired utilizing a suitable soil that is properly tamped and seeded. The grass cover should be thick; if it is not, reseed as necessary. Any standing water removed during the maintenance operation must be disposed to a sanitary sewer at an approved discharge location. Residuals (e.g., silt, grass cuttings) must be disposed in accordance with local or State requirements. Maintenance of grassed swales mostly involves maintenance of the grass or wetland plant cover. Typical maintenance activities are summarized below:

- Inspect swales at least twice annually for erosion, damage to vegetation, and sediment and debris accumulation preferably at the end of the wet season to schedule summer maintenance and before major fall runoff to be sure the swale is ready for winter. However, additional inspection after periods of heavy runoff is desirable. The swale should be checked for debris and litter, and areas of sediment accumulation.
- Grass height and mowing frequency may not have a large impact on pollutant removal. Consequently, mowing may only be necessary once or twice a year for safety or aesthetics or to suppress weeds and woody vegetation.
- Trash tends to accumulate in swale areas, particularly along highways. The need for litter removal is determined through periodic inspection, but litter should always be removed prior to mowing.
- Sediment accumulating near culverts and in channels should be removed when it builds up to 75 mm (3 in.) at any spot, or covers vegetation.
- Regularly inspect swales for pools of standing water. Swales can become a nuisance due to mosquito breeding in standing water if obstructions develop (e.g. debris accumulation, invasive vegetation) and/or if proper drainage slopes are not implemented and maintained.

Cost

Construction Cost

Little data is available to estimate the difference in cost between various swale designs. One study (SWRPC, 1991) estimated the construction cost of grassed channels at approximately $0.25 per ft². This price does not include design costs or contingencies. Brown and Schueler (1997) estimate these costs at approximately 32 percent of construction costs for most stormwater management practices. For swales, however, these costs would probably be significantly higher since the construction costs are so low compared with other practices. A more realistic estimate would be a total cost of approximately $0.50 per ft², which compares favorably with other stormwater management practices.

Table 2 Swale Cost Estimate (SEWRPC, 1991)

Component	Unit	Extent	Unit Cost			Total Cost		
			Low	Moderate	High	Low	Moderate	High
Mobilization / Demobilization-Light	Swale	1	$107	$274	$441	$107	$274	$441
Site Preparation								
Clearing[b]	Acre	0.5	$2,200	$3,800	$5,400	$1,100	$1,900	$2,700
Grubbing[c]	Acre	0.25	$3,800	$5,200	$6,600	$950	$1,300	$1,650
General Excavation[d]	Yd[3]	372	$2.10	$3.70	$5.30	$781	$1,376	$1,972
Level and Till[e]	Yd[2]	1,210	$0.20	$0.35	$0.50	$242	$424	$605
Sites Development								
Salvaged Topsoil Seed, and Mulch[f]	Yd[2]	1,210	$0.40	$1.00	$1.60	$484	$1,210	$1,936
Sod[g]	Yd[2]	1,210	$1.20	$2.40	$3.60	$1,452	$2,904	$4,356
Subtotal	--	--	--	--	--	$5,116	$9,388	$13,660
Contingencies	Swale	1	25%	25%	25%	$1,279	$2,347	$3,415
Total	--	--	--	--	--	$6,395	$11,735	$17,075

Source: (SEWRPC, 1991)

Note: Mobilization/demobilization refers to the organization and planning involved in establishing a vegetative swale.

[a] Swale has a bottom width of 1.0 foot, a top width of 10 feet with 1:3 side slopes, and a 1,000-foot length.

[b] Area cleared = (top width + 10 feet) x swale length.

[c] Area grubbed = (top width x swale length).

[d] Volume excavated = (0.67 x top width x swale depth) x swale length (parabolic cross-section).

[e] Area tilled = $\left(\text{top width} + \frac{8(\text{swale depth}^2)}{3(\text{top width})}\right)$ x swale length (parabolic cross-section).

[f] Area seeded = area cleared x 0.5.

[g] Area sodded = area cleared x 0.5.

Table 3 Estimated Maintenance Costs (SEWRPC, 1991)

Component	Unit Cost	Swale Size (Depth and Top Width)		Comment
		1.5 Foot Depth, One-Foot Bottom Width, 10-Foot Top Width	3-Foot Depth, 3-Foot Bottom Width, 21-Foot Top Width	
Lawn Mowing	$0.85 / 1,000 ft²/ mowing	$0.14 / linear foot	$0.21 / linear foot	Lawn maintenance area=(top width + 10 feet) x length. Mow eight times per year
General Lawn Care	$9.00 / 1,000 ft²/ year	$0.18 / linear foot	$0.28 / linear foot	Lawn maintenance area = (top width + 10 feet) x length
Swale Debris and Utter Removal	$0.10 / linear foot / year	$0.10 / linear foot	$0.10 / linear foot	–
Grass Reseeding with Mulch and Fertilizer	$0.30 / yd²	$0.01 / linear foot	$0.01 / linear foot	Area revegetated equals 1% of lawn maintenance area per year
Program Administration and Swale Inspection	$0.15 / linear foot / year, plus $25 / inspection	$0.15 / linear foot	$0.15 / linear foot	Inspect four times per year
Total	--	**$0.58 / linear foot**	**$ 0.75 / linear foot**	–

Maintenance Cost

Caltrans (2002) estimated the expected annual maintenance cost for a swale with a tributary area of approximately 2 ha at approximately $2,700. Since almost all maintenance consists of mowing, the cost is fundamentally a function of the mowing frequency. Unit costs developed by SEWRPC are shown in Table 3. In many cases vegetated channels would be used to convey runoff and would require periodic mowing as well, so there may be little additional cost for the water quality component. Since essentially all the activities are related to vegetation management, no special training is required for maintenance personnel.

References and Sources of Additional Information

Barrett, Michael E., Walsh, Patrick M., Malina, Joseph F., Jr., Charbeneau, Randall J, 1998, "Performance of vegetative controls for treating highway runoff," *ASCE Journal of Environmental Engineering*, Vol. 124, No. 11, pp. 1121-1128.

Brown, W., and T. Schueler. 1997. *The Economics of Stormwater BMPs in the Mid-Atlantic Region*. Prepared for the Chesapeake Research Consortium, Edgewater, MD, by the Center for Watershed Protection, Ellicott City, MD.

Center for Watershed Protection (CWP). 1996. *Design of Stormwater Filtering Systems*. Prepared for the Chesapeake Research Consortium, Solomons, MD, and USEPA Region V, Chicago, IL, by the Center for Watershed Protection, Ellicott City, MD.

Colwell, Shanti R., Horner, Richard R., and Booth, Derek B., 2000. *Characterization of Performance Predictors and Evaluation of Mowing Practices in Biofiltration Swales*. Report to King County Land And Water Resources Division and others by Center for Urban Water Resources Management, Department of Civil and Environmental Engineering, University of Washington, Seattle, WA

Dorman, M.E., J. Hartigan, R.F. Steg, and T. Quasebarth. 1989. *Retention, Detention and Overland Flow for Pollutant Removal From Highway Stormwater Runoff. Vol. 1*. FHWA/RD 89/202. Federal Highway Administration, Washington, DC.

Goldberg. 1993. *Dayton Avenue Swale Biofiltration Study*. Seattle Engineering Department, Seattle, WA.

Harper, H. 1988. *Effects of Stormwater Management Systems on Groundwater Quality*. Prepared for Florida Department of Environmental Regulation, Tallahassee, FL, by Environmental Research and Design, Inc., Orlando, FL.

Kercher, W.C., J.C. Landon, and R. Massarelli. 1983. Grassy swales prove cost-effective for water pollution control. *Public Works*, 16: 53–55.

Koon, J. 1995. *Evaluation of Water Quality Ponds and Swales in the Issaquah/East Lake Sammamish Basins*. King County Surface Water Management, Seattle, WA, and Washington Department of Ecology, Olympia, WA.

Metzger, M. E., D. F. Messer, C. L. Beitia, C. M. Myers, and V. L. Kramer. 2002. The Dark Side Of Stormwater Runoff Management: Disease Vectors Associated With Structural BMPs. Stormwater 3(2): 24-39.Oakland, P.H. 1983. An evaluation of stormwater pollutant removal

through grassed swale treatment. In *Proceedings of the International Symposium of Urban Hydrology, Hydraulics and Sediment Control, Lexington, KY.* pp. 173–182.

Occoquan Watershed Monitoring Laboratory. 1983. Final Report: *Metropolitan Washington Urban Runoff Project.* Prepared for the Metropolitan Washington Council of Governments, Washington, DC, by the Occoquan Watershed Monitoring Laboratory, Manassas, VA.

Pitt, R., and J. McLean. 1986. *Toronto Area Watershed Management Strategy Study: Humber River Pilot Watershed Project.* Ontario Ministry of Environment, Toronto, ON.

Schueler, T. 1997. Comparative Pollutant Removal Capability of Urban BMPs: A reanalysis. *Watershed Protection Techniques* 2(2):379–383.

Seattle Metro and Washington Department of Ecology. 1992. *Biofiltration Swale Performance: Recommendations and Design Considerations.* Publication No. 657. Water Pollution Control Department, Seattle, WA.

Southeastern Wisconsin Regional Planning Commission (SWRPC). 1991. *Costs of Urban Nonpoint Source Water Pollution Control Measures.* Technical report no. 31. Southeastern Wisconsin Regional Planning Commission, Waukesha, WI.

U.S. EPA, 1999, Stormwater Fact Sheet: Vegetated Swales, Report # 832-F-99-006 http://www.epa.gov/owm/mtb/vegswale.pdf, Office of Water, Washington DC.

Wang, T., D. Spyridakis, B. Mar, and R. Horner. 1981. *Transport, Deposition and Control of Heavy Metals in Highway Runoff.* FHWA-WA-RD-39-10. University of Washington, Department of Civil Engineering, Seattle, WA.

Washington State Department of Transportation, 1995, *Highway Runoff Manual,* Washington State Department of Transportation, Olympia, Washington.

Welborn, C., and J. Veenhuis. 1987. *Effects of Runoff Controls on the Quantity and Quality of Urban Runoff in Two Locations in Austin, TX.* USGS Water Resources Investigations Report No. 87-4004. U.S. Geological Survey, Reston, VA.

Yousef, Y., M. Wanielista, H. Harper, D. Pearce, and R. Tolbert. 1985. *Best Management Practices: Removal of Highway Contaminants By Roadside Swales.* University of Central Florida and Florida Department of Transportation, Orlando, FL.

Yu, S., S. Barnes, and V. Gerde. 1993. *Testing of Best Management Practices for Controlling Highway Runoff.* FHWA/VA-93-R16. Virginia Transportation Research Council, Charlottesville, VA.

Information Resources

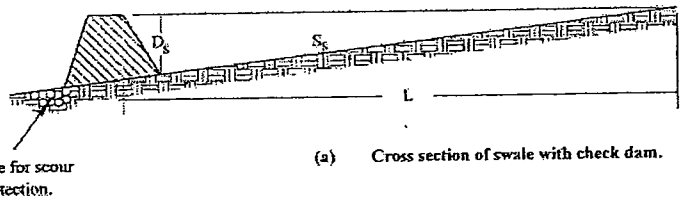
Maryland Department of the Environment (MDE). 2000. *Maryland Stormwater Design Manual.* www.mde.state.md.us/environment/wma/stormwatermanual. Accessed May 22, 2001.

Reeves, E. 1994. Performance and Condition of Biofilters in the Pacific Northwest. *Watershed Protection Techniques* 1(3):117–119.

Seattle Metro and Washington Department of Ecology. 1992. *Biofiltration Swale Performance. Recommendations and Design Considerations*. Publication No. 657. Seattle Metro and Washington Department of Ecology, Olympia, WA.

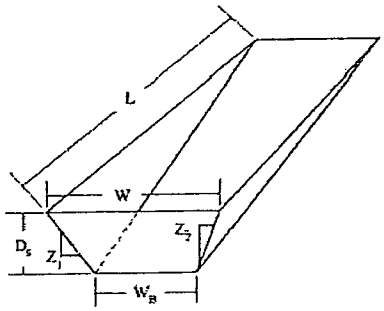
USEPA 1993. *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*. EPA-840-B-92-002. U.S. Environmental Protection Agency, Office of Water. Washington, DC.

Watershed Management Institute (WMI). 1997. *Operation, Maintenance, and Management of Stormwater Management Systems*. Prepared for U.S. Environmental Protection Agency, Office of Water. Washington, DC, by the Watershed Management Institute, Ingleside, MD.



Provide for scour protection.

(a) Cross section of swale with check dam.



(b) Dimensional view of swale impoundment area.

Notation:

L = Length of swale impoundment area per check dam (ft)
D_B = Depth of check dam (ft)
S_S = Bottom slpe of swale (ft/ft)
W = Top width of check dam (ft)
W_B = Bottom width of check dam (ft)
$Z_{1&2}$ = Ratio of horizontal to vertical change in swale side slope (ft/ft)

BEST MANAGEMENT PRACTICE DESIGN

BREA PLAZA - Vegetated Swale #1

RUNOFF COEFICIENT

FROM ATTACMENT A - ORANGE COUNTY STORMWATER PROGRAM GUIDELINES:

COMPOSITE RUNOFF COEFFICIENT - TABLE A-1

SITE IMPERVIOUS RATIO = 90.0%

THEREFORE, C_{BMP} = **0.830**

FLOW BASED DESIGN

Qp,sqdf= C*I*A

WHERE	"C"=	0.830
	"I" =	0.2
	"A"=	2.33

THEREFORE: **Qp,sqdf=** **0.39**

RESIDENCE TIME

T=L/V(60)

WHERE	"V"**=Velocity	0.140	ft/s
	"L"=Swale Length	84	ft
	Residence Time=	10.0	minutes

10 min. residence time required

** Please see attached Flow Master Calculations

SWALE1
Worksheet for Trapezoidal Channel

Project Description	
Project File	s:\487-1 brea plaza\wqmp\bioswale.fm2
Worksheet	SWALE 1
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.250	
Channel Slope	0.003000	ft/ft
Left Side Slope	4.000000	H : V
Right Side Slope	4.000000	H : V
Bottom Width	7.00	ft
Discharge	0.39	cfs

Results		
Depth	0.33	ft
Flow Area	2.77	ft^2
Wetted Perimeter	9.74	ft
Top Width	9.66	ft
Critical Depth	0.05	ft
Critical Slope	2.579254	ft/ft
Velocity	0.14	ft/s
Velocity Head	0.31e-3	ft
Specific Energy	0.33	ft
Froude Number	0.05	
Flow is subcritical.		

BEST MANAGEMENT PRACTICE DESIGN

BREA PLAZA - Vegetated Swale #2

RUNOFF COEFICIENT

FROM ATTACMENT A - ORANGE COUNTY STORMWATER PROGRAM GUIDELINES:

COMPOSITE RUNOFF COEFFICIENT - TABLE A-1

SITE IMPERVIOUS RATIO = 90.0%

THEREFORE, C_{BMP} = **0.830**

FLOW BASED DESIGN

Qp,sqdf= C*I*A

WHERE	"C"=	0.830
	"I" =	0.2
	"A"=	9.34

THEREFORE: **Qp,sqdf=** **1.55**

RESIDENCE TIME

T=L/V(60)

WHERE	"V"**=Velocity	0.250	ft/s
	"L"=Swale Length	156	ft
	Residence Time=	10.4	minutes

10 min. residence time required

** Please see attached Flow Master Calculations

SWALE 2
Worksheet for Trapezoidal Channel

Project Description	
Project File	s:\487-1 brea plaza\wqmp\bioswale.fm2
Worksheet	SWALE 2
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.250	
Channel Slope	0.009000	ft/ft
Left Side Slope	4.000000	H : V
Right Side Slope	2.000000	H : V
Bottom Width	8.50	ft
Discharge	0.78	cfs

Results		
Depth	0.33	ft
Flow Area	3.12	ft²
Wetted Perimeter	10.59	ft
Top Width	10.47	ft
Critical Depth	0.06	ft
Critical Slope	2.307972	ft/ft
Velocity	0.25	ft/s
Velocity Head	0.97e-3	ft
Specific Energy	0.33	ft
Froude Number	0.08	
Flow is subcritical.		

BEST MANAGEMENT PRACTICE DESIGN

BREA PLAZA - Vegetated Swale #3

RUNOFF COEFICIENT

FROM ATTACMENT A - ORANGE COUNTY STORMWATER PROGRAM GUIDELINES:

COMPOSITE RUNOFF COEFFICIENT - TABLE A-1

SITE IMPERVIOUS RATIO = 90.0%

THEREFORE, C_{BMP} = **0.830**

FLOW BASED DESIGN

Qp,sqdf= C*I*A

WHERE	"C"=	0.830
	"I" =	0.2
	"A"=	1.89

THEREFORE: **Qp,sqdf=** **0.31**

RESIDENCE TIME

T=L/V(60)

WHERE	"V"**=Velocity	0.170	ft/s
	"L"=Swale Length	102	ft
	Residence Time=	10.0	minutes

10 min. residence time required

** Please see attached Flow Master Calculations

SWALE 3
Worksheet for Trapezoidal Channel

Project Description	
Project File	s:\487-1 brea plaza\wqmp\bioswale.fm2
Worksheet	SWALE 3
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.250	
Channel Slope	0.005000	ft/ft
Left Side Slope	4.000000	H : V
Right Side Slope	4.000000	H : V
Bottom Width	5.00	ft
Discharge	0.31	cfs

Results		
Depth	0.30	ft
Flow Area	1.86	ft²
Wetted Perimeter	7.48	ft
Top Width	7.40	ft
Critical Depth	0.05	ft
Critical Slope	2.533426	ft/ft
Velocity	0.17	ft/s
Velocity Head	0.43e-3	ft
Specific Energy	0.30	ft
Froude Number	0.06	
Flow is subcritical.		

BEST MANAGEMENT PRACTICE DESIGN

BREA PLAZA - Vegetated Swale #4

RUNOFF COEFICIENT

FROM ATTACMENT A - ORANGE COUNTY STORMWATER PROGRAM GUIDELINES:

COMPOSITE RUNOFF COEFFICIENT - TABLE A-1

SITE IMPERVIOUS RATIO = 90.0%

THEREFORE, C_{BMP} = **0.830**

FLOW BASED DESIGN

Qp,sqdf= C*I*A

WHERE	"C"=	0.830
	"I" =	0.2
	"A"=	0.13

THEREFORE: **Qp,sqdf=** **0.02**

RESIDENCE TIME

T=L/V(60)

WHERE	"V"**=Velocity	0.060	ft/s
	"L"=Swale Length	36	ft
	Residence Time=	10.0	minutes

10 min. residence time required

** Please see attached Flow Master Calculations

SWALE 4
Worksheet for Trapezoidal Channel

Project Description	
Project File	s:\487-1 brea plaza\wqmp\bioswale.fm2
Worksheet	SWALE 4
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.250	
Channel Slope	0.005000	ft/ft
Left Side Slope	4.000000	H : V
Right Side Slope	4.000000	H : V
Bottom Width	5.00	ft
Discharge	0.02	cfs

Results		
Depth	0.06	ft
Flow Area	0.32	ft^2
Wetted Perimeter	5.50	ft
Top Width	5.49	ft
Critical Depth	0.01	ft
Critical Slope	4.584252	ft/ft
Velocity	0.06	ft/s
Velocity Head	0.61e-4	ft
Specific Energy	0.06	ft
Froude Number	0.05	
Flow is subcritical.		

MP-52 DRAIN INSERTS

&

BIO CLEAN ANTIMICROBIAL TREATMENT BMP INFORMATION

&

KRISTAR FLOGARD+PLUS INSERT FILTERS

Drain Insert

MP-52

General Description

Drain inserts are manufactured filters or fabric placed in a drop inlet to remove sediment and debris. There are a multitude of inserts of various shapes and configurations, typically falling into one of three different groups: socks, boxes, and trays. The sock consists of a fabric, usually constructed of polypropylene. The fabric may be attached to a frame or the grate of the inlet holds the sock. Socks are meant for vertical (drop) inlets. Boxes are constructed of plastic or wire mesh. Typically a polypropylene "bag" is placed in the wire mesh box. The bag takes the form of the box. Most box products are one box; that is, the setting area and filtration through media occur in the same box. Some products consist of one or more trays or mesh grates. The trays may hold different types of media. Filtration media vary by manufacturer. Types include polypropylene, porous polymer, treated cellulose, and activated carbon.

Inspection/Maintenance Considerations

Washout problems increase with rain intensity. Susceptibility of accumulated sediments to be re-suspended at low flow rates, can be corrected with an energy dissipater between gate and treatment areas.

Inspection Activities	Suggested Frequency
■ Inspect for sediment buildup and proper functioning.	At the beginning of the wet season and after significant storms
■ Verify that stormwater enters the unit and does not leak around the perimeter.	After construction.
Maintenance Activities	**Suggested Frequency**
■ Remove sediment as needed.	At the beginning of the wet season and as necessary

Maintenance Concerns, Objectives, and Goals

■ Sediment Removal

Targeted Constituents

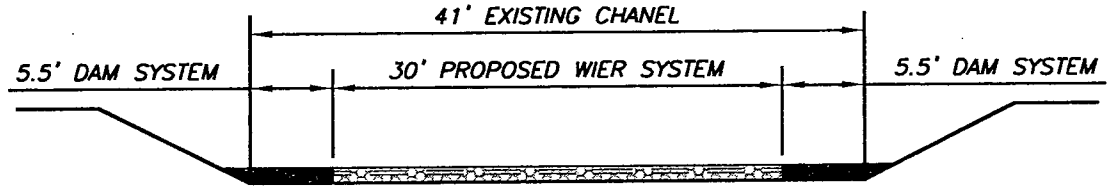
- ✓ Sediment
- ✓ Nutrients
- ✓ Trash
- ✓ Metals
- Bacteria
- ✓ Oil and Grease
- ✓ Organics

Removal Effectiveness

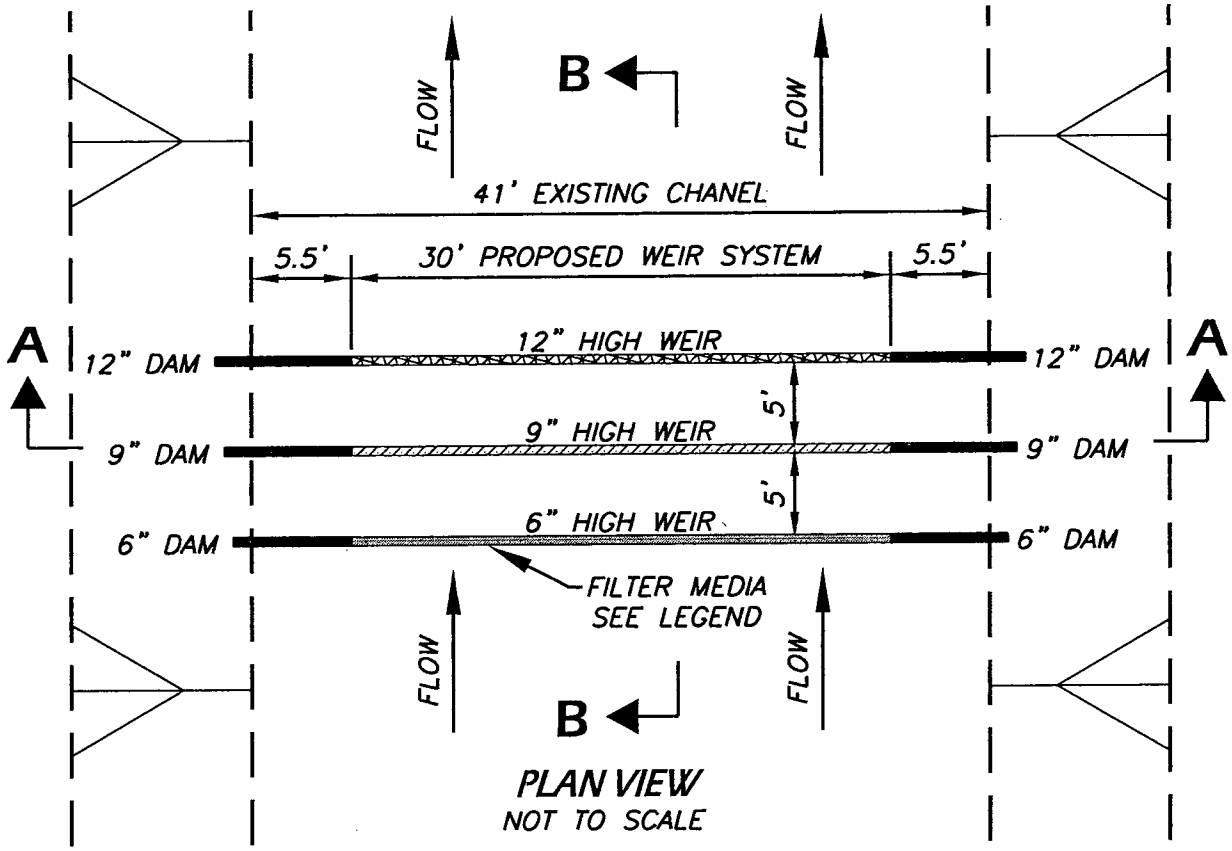
See New Development and Redevelopment Handbook-Section 5.

CASQA California Stormwater Quality Association

BREA PLAZA FILTERATION
DAM CONCEPT



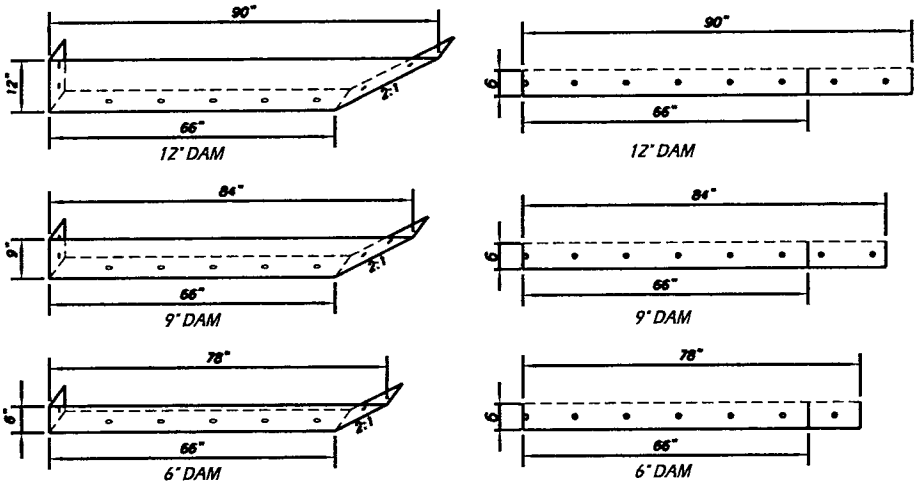
SECTION A-A
NOT TO SCALE



PLAN VIEW
NOT TO SCALE

LEGEND

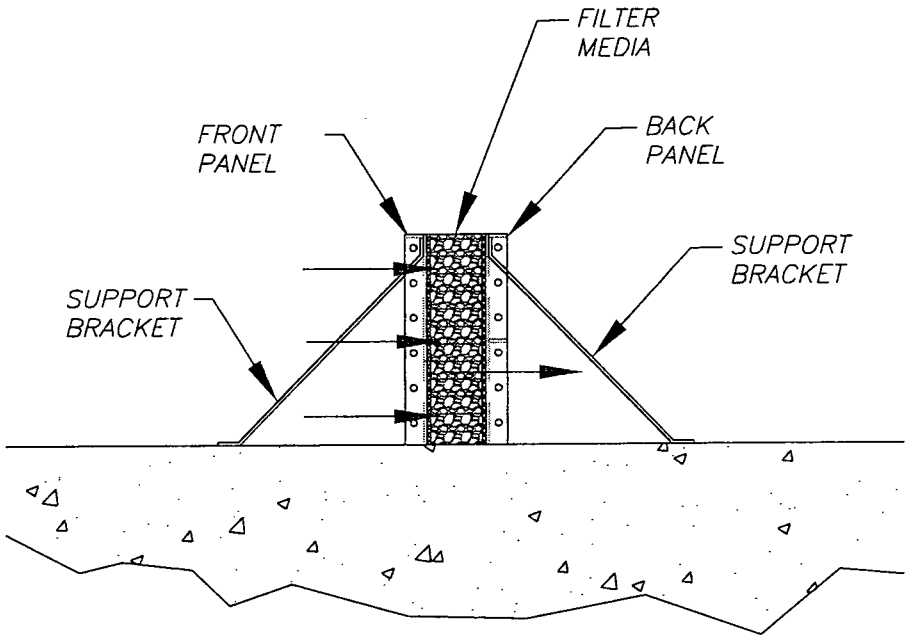
WEIR HEIGHT	FILTER MEDIA TYPE
6" WEIR	PERLITE
9" WEIR	ACTIVATED CARBON
12" WEIR	BioMediaGREEN
DAM SYSTEM	



FRONT VIEW
NOT TO SCALE

TOP VIEW
NOT TO SCALE

BIO CLEAN
ENVIRONMENTAL SERVICES, INC.


FILTER
MEDIA
FRONT
PANEL
BACK
PANEL
SUPPORT
BRACKET
SUPPORT
BRACKET

BIO CLEAN®
ENVIRONMENTAL SERVICES, INC.

Subject: Brea Channel Filtration Project – Weir Wall Filtration Devices

Objective: Provide "Or Equal" Submittal for Approved Device.

To Whom It May Concern:

In October 2010 our company was contacted by the client regarding the design and construction of the Weir Wall Filtration Devices. The client provided the information on the originally designed screen systems and asked if we could provide a similar system.

Our design team with over 25 years experience reviewed the documents (originally drafted by Katchall Filtration Systems, LLC). The information and design concept provided was conceptual in nature and neglected to contain the appropriate amount of detail for effective design. Several details were left out of the concepts which are necessary for appropriate operation and installation.

Based upon the information provided and a site visit we designed a comparable system that exceeds all the specifications of the Katchall System. It was found the materials and construction method recommended by Katchall lacked the structural integrity to properly function inside a channel. The Bio Clean Weir Wall Filtration Device meets all the specifications of the approved device plus improves upon many factors that were not addressed in the original design.

The following pages show the original Katchall information and concept drawings. Following this information is the specification and drawings we are providing. The verbiage and illustration provided by us shall prove that the design we are recommending exceeds the original design approved. Overall, the design we are providing the customer will exceed in performance and functionality that which was originally proposed.

The Bio Clean Weir Wall Filtration Devices have been installed by the Chula Vista School District, the County of San Diego and the City of Los Angeles.

The system provided by Bio Clean Environmental overcomes the following issues with the original design:

- Standing water created by a 2" channel mounted to the based. The filter media on our system extends to the floor and therefore does not create ponding.
- Enhanced 45 degree support brackets to deal with loading during high flows.

If you have any questions regarding this information please feel free to contact us directly.

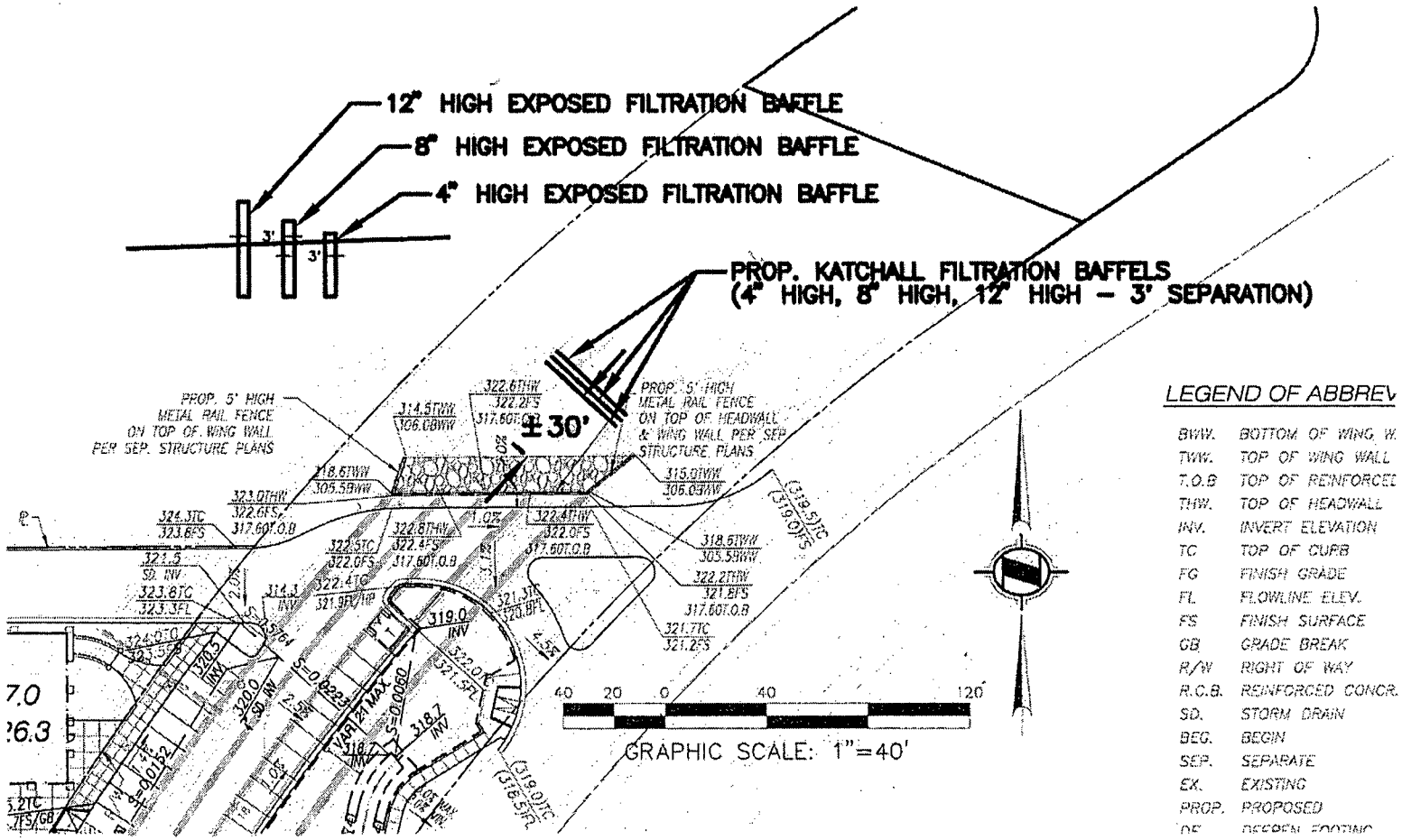
Thank you for taking the time to review this information.

Sincerely,

Zachariha J Kent, CISEC

Stormwater Engineer

Bio Clean Environmental



LEGEND OF ABBREV

BWW.	BOTTOM OF WING W.
TWW.	TOP OF WING WALL
T.O.B	TOP OF REINFORCED
THW.	TOP OF HEADWALL
INV.	INVERT ELEVATION
TC	TOP OF CURB
FG	FINISH GRADE
FL	FLOWLINE ELEV.
FS	FINISH SURFACE
GB	GRADE BREAK
R/W	RIGHT OF WAY
R.C.B.	REINFORCED CONCR.
SD.	STORM DRAIN
BEG.	BEGIN
SEP.	SEPARATE
EX.	EXISTING
PROP.	PROPOSED
DF	DEEPEN FOOTING

Original Katchall Design – see following pages

P O Box 869 Oceanside CA 92049
(760) 433-7640 • Fax (760) 433-3176
www.BioCleanEnvironmental.net

ANTIMICROBIAL FILTRATION WEIRS

2-INCH U-CHANNEL ACROSS ENTIRE WIDTH OF DRAINAGE CULVERT (BOTTOM)
2-inch U-Channel (vertical supports) placed every 4' – 2" for additional support during heavy-flow events

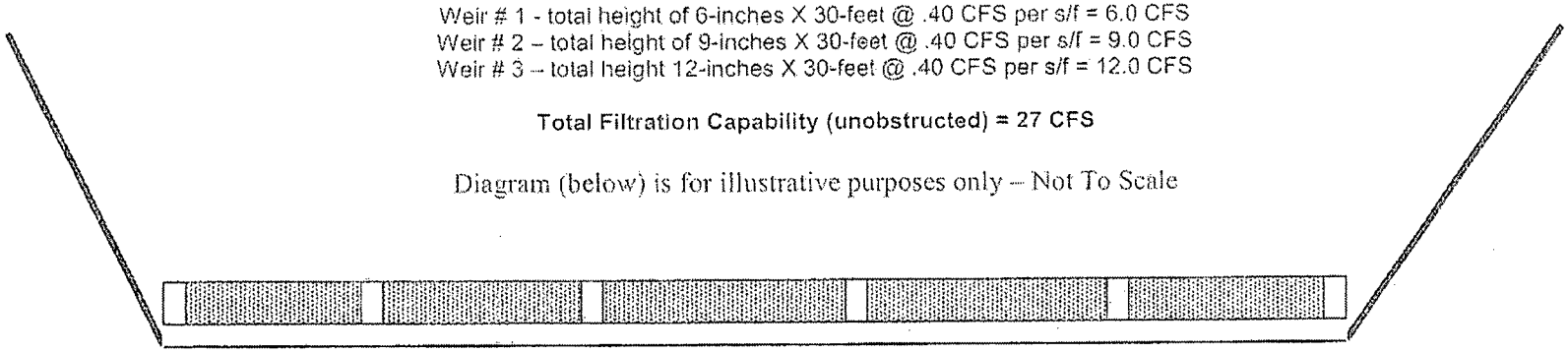
4-FOOT (REMOVABLE) SECTIONS OF ANTIMICROBIAL FILTRATION MEDIA
Media is "Pillow-Cased" around a supporting structure of 1 ½" reinforced open fiberglass grating and secured within U-Channels

SECTIONS – FLOW RATES

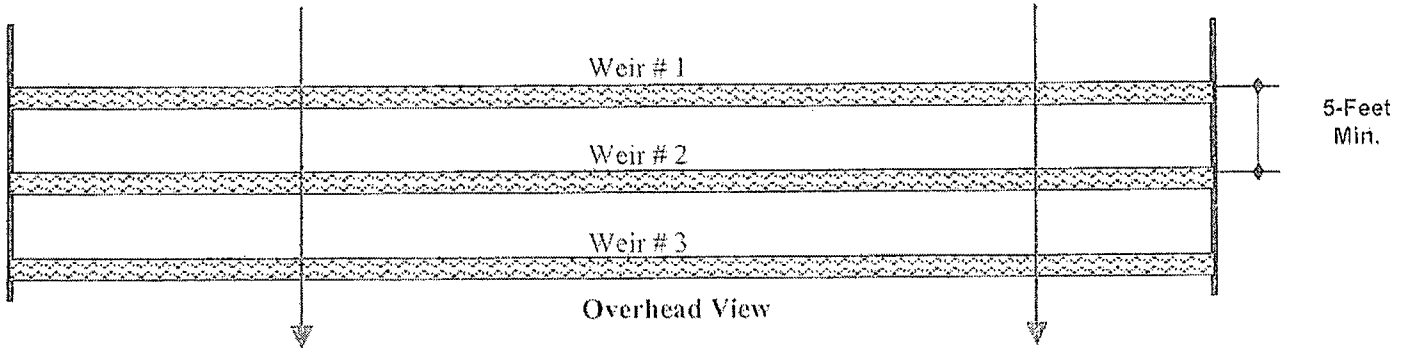
Weir # 1 - total height of 6-inches X 30-feet @ .40 CFS per s/f = 6.0 CFS
Weir # 2 – total height of 9-inches X 30-feet @ .40 CFS per s/f = 9.0 CFS
Weir # 3 – total height 12-inches X 30-feet @ .40 CFS per s/f = 12.0 CFS

Total Filtration Capability (unobstructed) = 27 CFS

Diagram (below) is for illustrative purposes only – Not To Scale



Cross Section



Overhead View

Approximation of Initial Cost

Factoring not less than three (3) filtration weir walls (see specifications previous page) we anticipate the initial costs (manufacturing, delivery and installation) not to exceed a total of:

Fourteen Thousand Five Hundred Dollars and 00 Cents ($14,500.00)

Unobstructed flow-rates will be in excess of 27.0 CFS and will have the following pollutant removal efficiencies

- 95% of all Fine Particulates larger than 50-microns
- 97% of all Oils and Greases
- 50% of all Nitrates, Phosphates and Phosphorus
- 55% of all Heavy Metals associated with particulate retentions
- 99.99% all Single-Cell Microorganisms with less than 1-second contact time required

MIXED MEDIA AVAILABILITY

1st Weir Wall to be replaced with a combination of media containing Perlite and Anthracite
2nd Weir Wall to be replaced with a combination of media containing Zeolite and Activated Carbons
3rd Weir Wall to remain media containing the proprietary antimicrobial agent

Difference in cost – Two Thousand Five Hundred Dollars and 00 Cents ($2,500.00)

Two sets of U-Channels were used – once as the "primary filters" and one as a "secondary filter"

The 2nd set of Channels and Filters were used to capture any materials that may become dislodged when removing and cleaning the primary filters

Once the primary filters were cleaned, repaired or replaced, the 2nd set was removed and stored for future use.

2nd set can also be used as "instant" replacements should the primary filters become fouled with excessive hydrocarbons.

ANTICIPATED MAINTENANCE PARAMETERS

(BREA CHANNEL - . WIER WALL FILTRATION DEVICES)

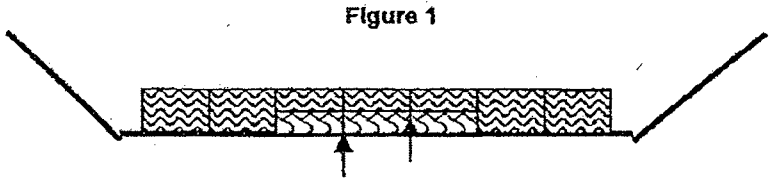
Whereas there is no specific data available, pertaining to the anticipated daily pollutant-loading factors, we have to take a "best-estimate" approach in regards to maintenance procedures and duration between cleaning / replacement of filtration medias.

As we understand it, the drainage channel will be subject to consistent flows (of approximately 1 CFS) with intermittent flows discharging as much as 20 CFS during peak hours (10 – 12 hours), during the larger 2/24 and 10/24 events.

The channel is currently proposed to be 30-foot in width; with three (3) rows of filtration media placed in graduated height weir wall sections. Each weir wall features removable filtration sections proposed to be appx 4-foot in width / each.

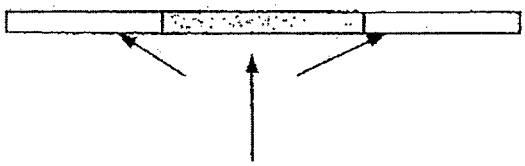
Daily discharges (1CFS) will tend to gravitate towards the middle of the channel, and flow through a limited number of the filtration sections, at a minimal depth of less than 1-inch - see **Figure 1**.

Figure 1



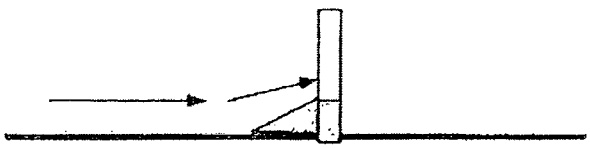
As each filter section removes displaced fine particulates and organic materials, additional discharges will seek the course of least resistance, gravitating to areas where obstructions have yet to occur. **See Figure 2.**

Figure 2



As deposits create obstructions along the entire (bottom) width of the filtration media, discharges will again seek the course of least resistance and flow over the previous obstructions, until new (unobstructed) filtration media is reached. **See Figure 3**

Figure 3



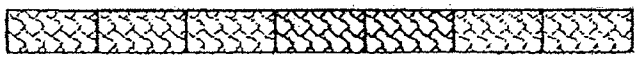
Placing the filtration devices in a vertical plane provide a much larger surface area for water penetration to occur, and thereby actually extend the usable service life of the media, prior to cleaning and or replacement. It has been our experience that filtration media (placed in a horizontal configuration, i.e. curb inlets, catch basins), tend to become obstructed much quicker as there is no additional "free" media surface area for the discharges to flow onto.

The design concept is radically simple in that as each section becomes partially obstructed it can be removed and cleaned, leaving the other (non-obstructed) sections in-place, providing pollutant removal during maintenance procedures.

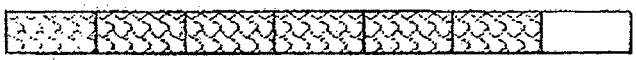
Additionally, filtration media replacement cost is considerably less than may be originally anticipated as each obstructed section can be replaced by an un-obstructed section, cleaned and placed back into an exterior position. **See Figure 4**

Figure 4

Before Replacement



After Cleaning / Replacement



With three (3) rows of graduating height weir walls, (filtration medias) utilizing mixed medias, we anticipate that the following maintenance procedures would need to occur:

- **First Row – Sediment / Oils & Greases**
  - Dry Weather
    - Once every two (2) months
    - Visually inspect, clean and replace / rearrange filter sections
  - Wet Weather
    - Once every one (1) month
    - Visually inspect, clean and replace / rearrange filter sections
  - Annually
    - Replace Filtration Media
- **Second Row – Heavy Metals / Odors and some Bacteria**
  - Dry Weather
    - Once every two (2) months
    - Visually inspect, clean and replace / rearrange filter sections
  - Wet Weather
    - Once every one (1) month
    - Visually inspect, clean and replace / rearrange filter sections
  - Annually
    - Replace Filtration Media
- **Third Row – Pathogen**
  - Dry Weather
    - Once every two (2) months
    - Visually inspect, clean and replace / rearrange filter sections
  - Wet Weather
    - Once every one (1) month
    - Visually inspect, clean and replace / rearrange filter sections
  - Annually
    - Replace Filtration Media

Again, with no specific data available and whereas the filtration media will be subjected to 24/7 conditions, we suggest that the channel filters be visually observed for the first 30 – 60 days to determine the actual maintenance needs for this project.

We suggest that water quality testing needs to occur not less than once every three (3) months and used as an additional basis for determining the maintenance needs, based upon degradation of water quality via obstructions of the filtration medias.

Annual Cost Projections

Utilizing the anticipated maintenance procedures, as outlined previously, we anticipate the following:

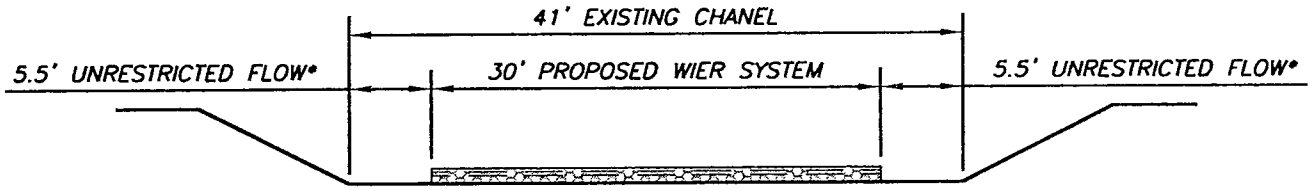
- **Dry Season**
  - **Occurring twice (2X)**
  - Visually inspect all three (3) filtration weir walls
  - Remove, clean, rearrange as required
- **Wet Season**
  - **Occurring three (3X)**
  - Visually inspect all three (3) filtration weir walls
  - Remove clean, rearrange as required
- Annual Media Replacements
  - First Row
    - 60 square feet
    - Non-treated fabric
  - Second Row
    - 120 square feet
    - Zeolite – Perlite – Granulated Activated Carbon
  - Third Row
    - 150 square feet
    - Antimicrobial treated fabric / Granular activated carbon

It should be understood that these are *projections only* and that the actual field conditions will determine the true annual maintenance needs and their associated cost.

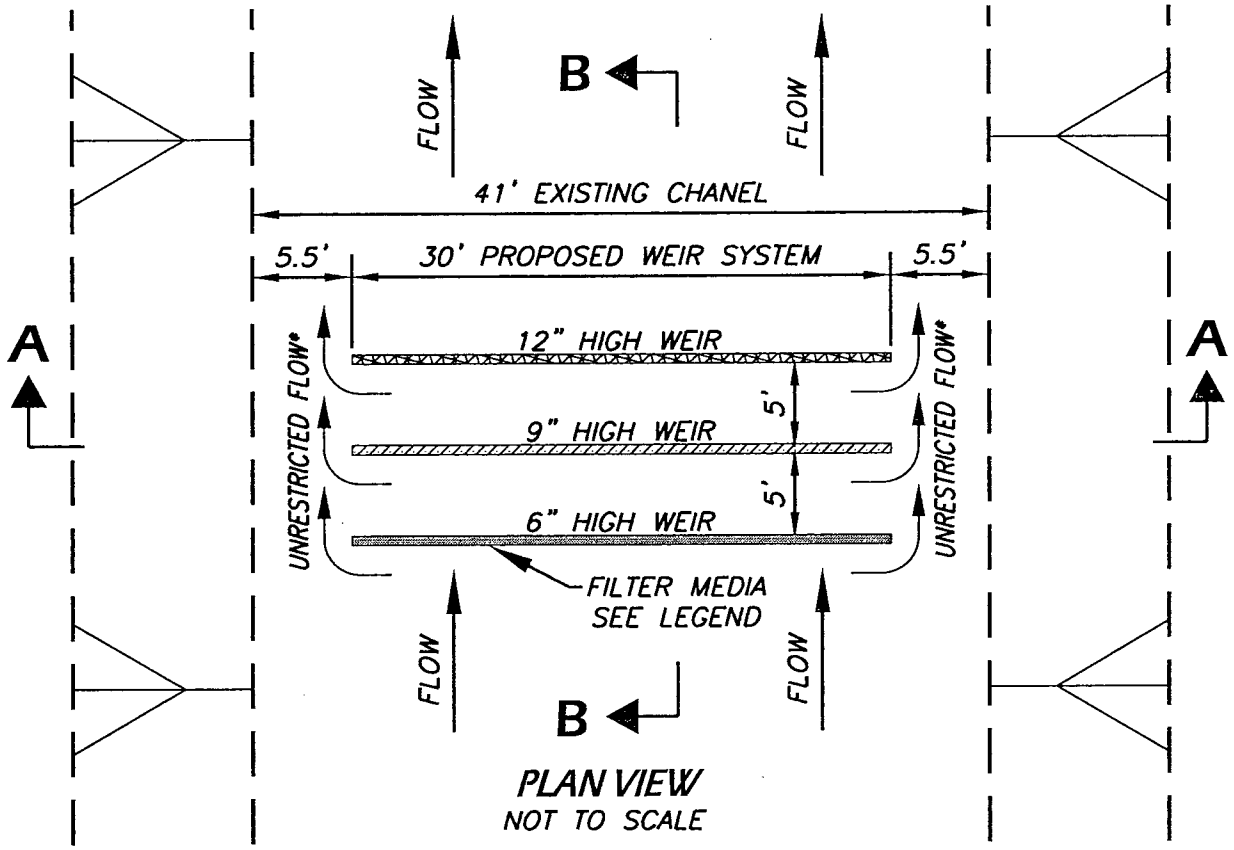
Recommended Bio Clean Design – see following pages

P O Box 869 Oceanside CA 92049
(760) 433-7640 • Fax (760) 433-3176
www.BioCleanEnvironmental.net

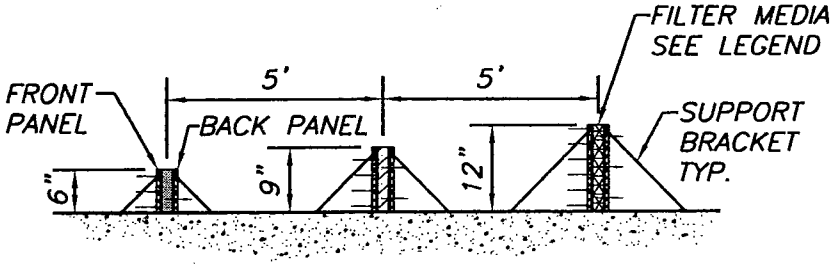
BREA PLAZA FILTERATION
WEIR CONCEPT



SECTION A-A
NOT TO SCALE



PLAN VIEW
NOT TO SCALE



SECTION B-B
NOT TO SCALE

LEGEND

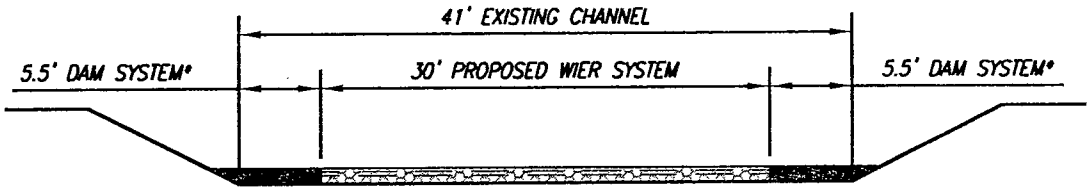
WEIR HEIGHT	FILTER MEDIA TYPE
6" WEIR	PERLITE
9" WEIR	ACTIVATED CARBON
12" WEIR	BioMediaGREEN

* WATER WILL BYPASS FILTER WEIRS ON SIDES IN THE UNRESTRICTED FLOW AREAS UNLESS A DAM SYSTEM IS RETROFITTED. CONTRACTOR AGREES TO RELEASE BIOCLEAN OF ALL LIABILITY AND ACCEPT DESIGN AS-IS.

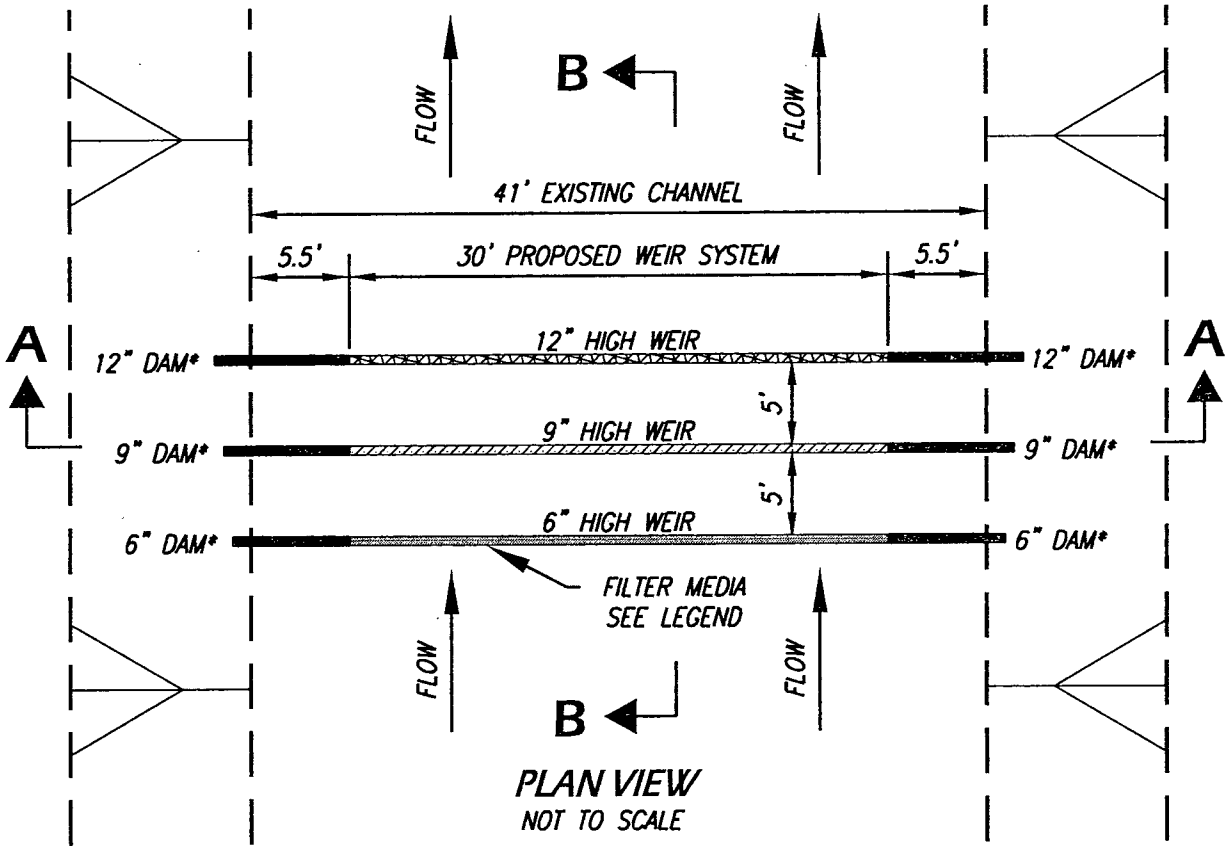
CONTRACTOR SIGNATURE _____ DATE _____

BIO CLEAN
ENVIRONMENTAL SERVICES, INC.

BREA PLAZA FILTRATION
DAM CONCEPT



SECTION A-A
NOT TO SCALE

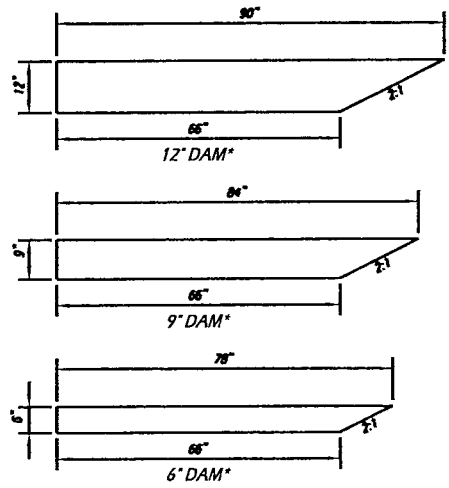


PLAN VIEW
NOT TO SCALE

LEGEND

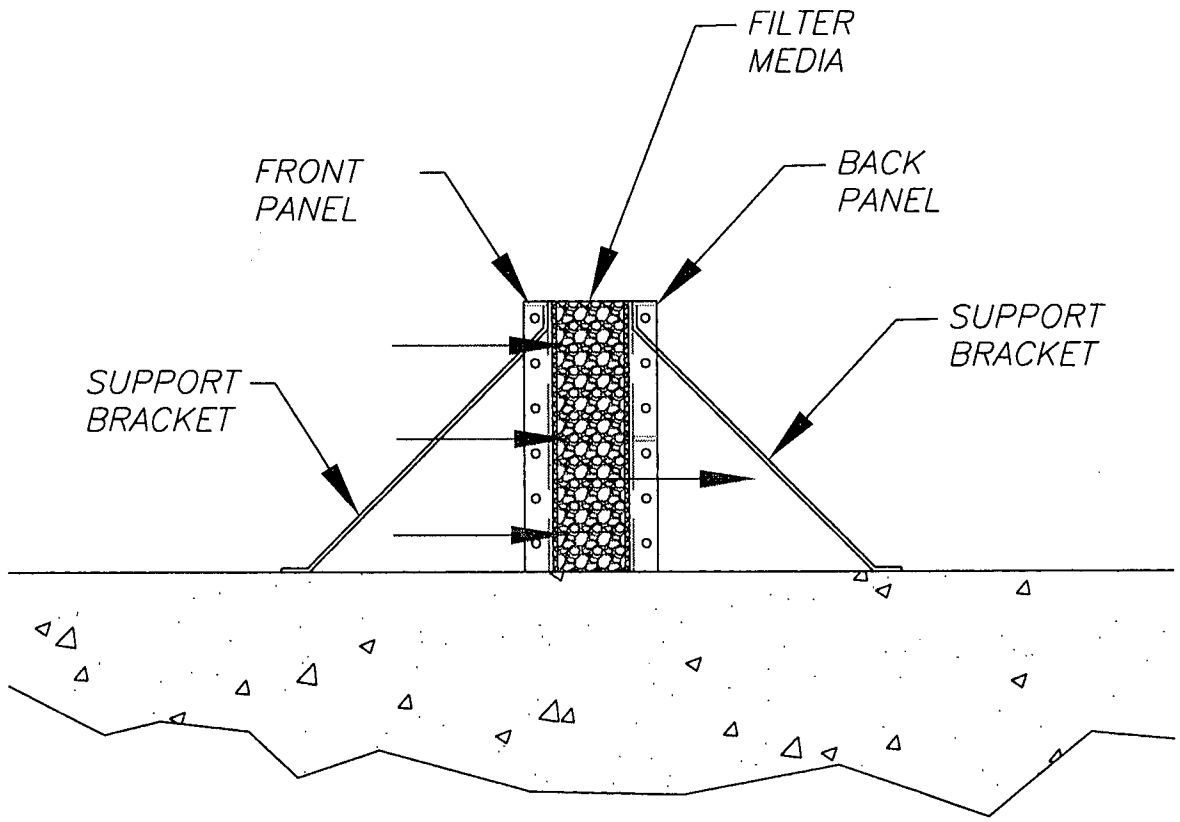
WEIR HEIGHT	FILTER MEDIA TYPE
6" WEIR	PERLITE
9" WEIR	ACTIVATED CARBON
12" WEIR	BioMediaGREEN
WOODEN DAM SYSTEM *	

* WOODEN DAM SYSTEM TO BE BUILT IN FIELD BY CONTRACTOR



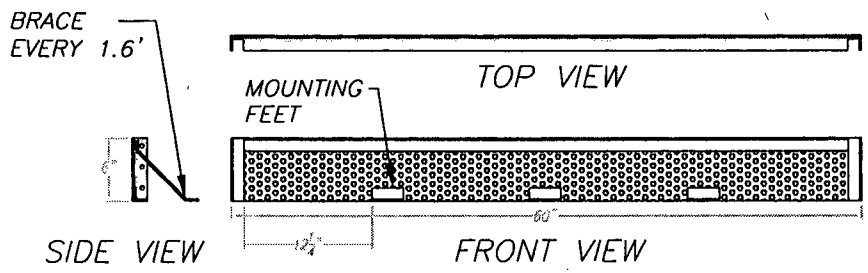
FRONT VIEW
NOT TO SCALE

BIO CLEAN
ENVIRONMENTAL SERVICES, INC.

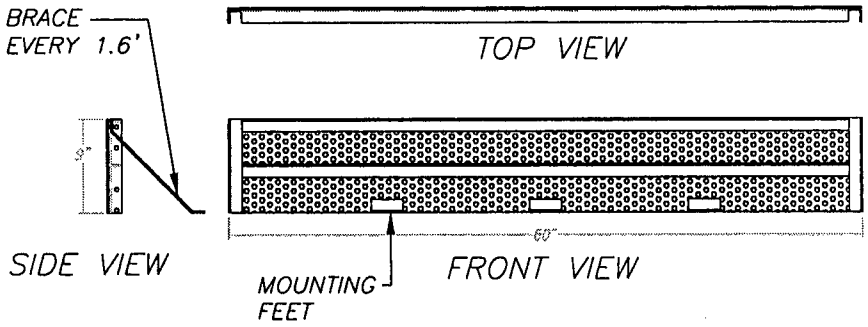

FILTER
MEDIA
FRONT
PANEL
BACK
PANEL
SUPPORT
BRACKET
SUPPORT
BRACKET

BIO CLEAN WATER POLISHING UNIT
BREA PLAZA

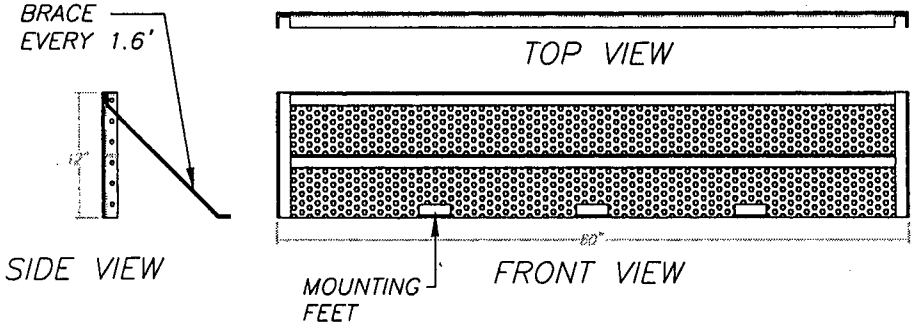
QUANTITY 12



QUANTITY 12

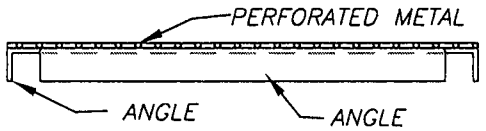


QUANTITY 12



NOTES:

1. ALL ANGLES TO BE $1\frac{1}{4}$" X $1\frac{1}{4}$" X $\frac{3}{16}$" THK.
2. ALL SCREENS TO BE PERFORATED METAL, 16 GUAGE WITH $\frac{3}{16}$" DIA. HOLES ON $\frac{1}{4}$" CENTER STAGGERED.
3. ALL METERIAL TO BE 316 / 316L STAINLESS STEEL.



Email: info@biocleanenvironmental.net

BIO CLEAN ENVIRONMENTAL
OCEANSIDE, CA.
TEL. 760-433-7640

MODEL NO.	
DATE:	SCALE:
DRAFTER: N.R.B.	UNITS =INCHES

PROJECT: BIO CLEAN ENVIRONMENTAL

REVISIONS:	DATE:
REVISIONS:	DATE:
REVISIONS:	DATE:
REVISIONS:	DATE:

Bio Clean – Weir Wall Filtration Devices Specifications

Materials:

The Bio Clean Weir Wall Filtration Screens are made entirely of 316 Stainless Steel.

- The supporting frame is 1.25" x 1.25' x .1875" angle metal.
- All braces are 1.25" x .1875" flat bar.
- Screens are perforated 16 guage with .1875 diameter holes on .5" centers staggered.
- All hardware with stainless steel. Redheads will be used to mount the screens to the channels and are installed for easy removal.
- Each section of screen is 5' wide. Each weir incorporates two of the these screens mirroring each other and are spaced 3" apart to create void space for the media packs.

Filter Media:

The Bio Clean Weir Filtration Screens will incorporate a series of media booms housing various media for each of the three weirs.

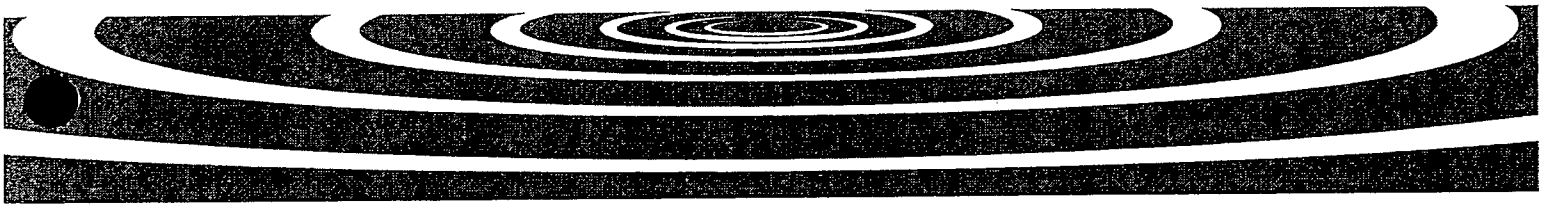
- Weir # 1 – total height of 6" by 30' long incorporates perlite filtration media to remove TSS and other particulates. Specified flow rate as approved is .4 cfs per square foot media surface area which equals a total flow rate of 6 cfs (this information comes from original approval).
- Weir # 2 – total height of 9" by 30' long incorporates activated charcoal filtration media to remove particulate and dissolved pollutants including metals, organic compounds, hydrocarbons, metals and bacteria. Specified flow rate as approved is .4 cfs per square foot media surface area which equals a total flow rate of 9 cfs (this information comes from original approval).
- Weir # 3 – total height of 12" by 30' long incorporates a proprietary media containing a proprietary antimicrobial agent to remove bacteria. Specified flow rate as approved is .4 cfs per square foot media surface area which equals a total flow rate of 12 cfs (this information comes from original approval).

P O Box 869 Oceanside CA 92049
(760) 433-7640 • Fax (760) 433-3176
www.BioCleanEnvironmental.net

Maintenance:

The maintenance procedures and intervals are the same as the screen system originally called out and therefore those procedures can be used and can apply to this system.

P O Box 869 Oceanside CA 92049
(760) 433-7640 • Fax (760) 433-3176
www.BioCleanEnvironmental.net



Modular Wetland Systems, Inc. BioMediaGREEN Performance Testing

Prepared for

Modular Wetland Systems, Inc.

August 2007

Prepared By

Waves Environmental

P.O. Box 462290
Escondido, CA 92046-2290
Phone: 760-743-6720
www.wavesenv.com

Testing Laboratory

D-Tek Analytical Laboratories, Inc.

9020 Kenamar Drive, Suite 205
San Diego, CA 92121
Phone: 858-566-4542

Table of Contents

SECTION	PAGE
Scope of Work	3
Description of Testing Apparatus	3
Test Set Up	3
Testing Procedure	4
Results	5
Summary	9
Appendix A	10
Appendix B	12

Reference: Pollutant Removal Testing

BioMediaGREEN Stormwater Filtration Media.

Waves Environmental is pleased to submit this report to Modular Wetland Systems, Inc. This report includes the laboratory analysis and photo documentation of testing procedures. The conclusions and recommendations are not part of this report since they are not part of the scope of work with Waves Environmental.

Scope of Work

Waves Environmental measured the percentage removal of various pollutants and TSS (Total Suspended Solids) retained/captured by BioMediaGREEN stormwater filtration media. The laboratory testing was accomplished by a specially designed flume to control flow and head through the filtration media. The dimensions of the media were 2.0 ft. wide by 0.5 ft. high and 0.25 ft. thick for a treatment surface area of approximately 1.00 sq. ft. The pollutants consisted of dissolved metals, dissolved nutrients, TSS, oil & grease, and TPH (Total Petroleum Hydrocarbons) and were provided by D-Tek Analytical Laboratories in a pre-mixed batch. This pre-mixed batch was mixed into a larger quantity of water to obtain a solution of contaminated water. A Sil-Co-Sil 106 Ground Silica was used to represent a fine TSS. Numerous grab samples were taken from the influent and effluent ends of the test unit. Grab samples were taken to the lab for analysis. A summary of the resulting data is presented in the report.

Description of Testing Apparatus

The flume was placed on an adjustable platform to allow for an appropriate amount of head, simulating conditions found in the field. A 2.0 ft. wide slab of BioMediaGREEN was placed inside the flume. A 500 gallon water truck was used to discharge the contaminated water through a 2" valve into the flume at a rate of 70 to 90 gpm. Flow through the media was anticipated to be between 2 and 5 gpm once a maximum head of 0.5 ft. was reached.

Test Set Up

The test was designed to simulate the pollution that occurs during a rainfall event to measure the effectiveness of BioMediaGREEN. Michael Alberson a CPESC, CPSWQ and REA from Waves Environmental performed the testing, measurements, and pollutant sampling. A specially designed flume was constructed and lined with rubber to provide a clean and uncontaminated surface to perform the testing.

The contaminated water was created by mixing a concentrated solution of the pre-mixed batch with 500 gallons of water. The pre-mix batch was put together by Mr. Alberson and D-Tek laboratories and contained the following pollutants, Nitrate or TKN, Oil & Grease, Ortho Phosphorus, Total Phosphorus, TSS, Cadmium, Copper, Lead, Nickel, Silver,

Zinc, and Mercury. This solution was added to the 500 gallon water tank and agitated with a mixer for a period of 15 minutes before and throughout the test period. Once mixed thoroughly a grab sample was taken form the tank influent (log -07-2698, 07-3828). These samples provided the influent levels of the polluted water to be compared with seven tests of effluent levels after treatment through the filtration media.

Testing Procedure

A flow meter and control valve regulated the flow between 2 to 5 gpm. Each test was conducted for approximately 1.25 minutes. Three grab samples of effluent water were used to get an average sample concentration. The sampling procedure of the effluent water is as follows: The contaminated water was allowed to flow through the filter for 30 seconds then one third of the effluent (treated) water was collected and poured into the sampling bottle. The second and third samples of treated water were taken after one minute and 1.5 minutes, respectively, and added to the sampling bottle.

It was observed that the visible hydrocarbons (a rainbow sheen floating on the surface) were present in the influent (before the BioMediaGREEN) and were not visible after leaving the backside (effluent), which indicated that the hydrocarbons were being absorbed by the media. The water collected in the downstream of the filter media was surprisingly clear and turbidity readings where very low.

As part of the initial sample of the influent readings where taken for pH, NTU and temperature. This initial information is as follows: time of testing started at 11:41 AM, wind was between 0.0-0.9 mph, temperature 79.4 degrees F, Barometric pressure 1011.0 hPa, starting pH = 8.73 and NTU= 39.1, altitude = 60 feet MSL.

Results

BioMediaGREEN Day 1

Run	Pollutant	Influent (mg/L)	Effluent (mg/L)	Percent Reduction
1 -	Nitrate-N	5.43	5.38	0.92%
	Oil & Grease	360	11	96.94%
	Total Phosphorus			n/d – effluent sample contaminated
	TSS	73	17	76.71%
	Cadmium	0.584	0.48	17.81%
	Copper	0.951	0.34	64.25%
	Lead	0.201	0.015	92.54%
	Nickel	0.642	0.599	6.70%
	Silver	0.04	0.01	75.00%
	Zinc	1.33	0.93	30.08%
	Mercury	0.009	0.002	77.78%
2 -	Nitrate-N	4.87	5.15	-5.75%
	Oil & Grease	67	1	98.51%
	Total Phosphorus	3.81	0.46	87.93%
	TSS	52	15	71.15%
	Cadmium	0.503	0.01	98.01%
	Copper	0.906	0.009	99.01%
	Lead	0.192	0.005	97.40%
	Nickel	0.582	0.196	66.32%
	Silver	0.04	0.01	75.00%
	Zinc	1.32	0.05	96.21%
	Mercury	0.006	0.002	66.67%
3 -	Nitrate-N	4.87	5.43	-11.50%
	Oil & Grease	67	1	98.51%
	Total Phosphorus	3.81	0.39	89.76%
	TSS	52	13	75.00%
	Cadmium	0.503	0.006	98.81%
	Copper	0.906	0.005	99.45%
	Lead	0.192	0.005	97.40%
	Nickel	0.582	0.18	69.07%
	Silver	0.04	0.01	75.00%
	Zinc	1.32	0.05	96.21%
	Mercury	0.006	0.002	66.67%

n/d = non determinable

BioMediaGREEN Day 2

Run	Pollutant	Influent (mg/L)	Effluent (mg/L)	Percent Reduction
4-	TKN	10.4	8.29	20.29%
	Oil & Grease	13	7	46.15%
	Ortho Phosphorus	3.98	3.13	21.3%
	Total Phosphorus	1.37	.68	50.3%
	TSS	100	3	97.00%
	Cadmium	0.302	0.192	36.42%
	Copper	0.354	0.115	67.51%
	Lead	0.492	0.008	98.37%
	Nickel	0.52	0.46	11.54%
	Zinc	0.4	0.06	85.00%
	TPH	1.4	0	100.00%
5-	TKN	10.4	8.64	16.92%
	Oil & Grease	13	3	76.92%
	Ortho Phosphorus	3.98	2.15	45.9%
	Total Phosphorus	1.37	.75	45.2%
	TSS	100	5	95.00%
	Cadmium	0.302	0.193	36.09%
	Copper	0.354	0.119	66.38%
	Lead	0.492	0.007	98.58%
	Nickel	0.52	0.48	7.69%
	Zinc	0.4	0.06	85.00%
	TPH	1.4	0	100.00%
6-	TKN	10.4	10.9	-4.81%
	Oil & Grease	13	7	46.15%
	Ortho Phosphorus	3.98	2.2	44.7%
	Total Phosphorus	1.37	.72	47.4%
	TSS	100	1	99.00%
	Cadmium	0.302	0.206	31.79%
	Copper	0.354	0.13	63.28%
	Lead	0.492	0.005	98.98%
	Nickel	0.52	0.5	3.85%
	Zinc	0.4	0.05	87.50%
	TPH	1.4	0	100.00%
7-	TKN	10.4	10.1	2.88%
	Oil & Grease	13	10	23.08%
	Ortho Phosphorus	3.98	2.11	46.9%
	Total Phosphorus	1.37	.69	49.6%
	TSS	100	6	94.00%

	Cadmium	0.302	0.203	**32.78%**
	Copper	0.354	0.11	**68.93%**
	Lead	0.492	0.005	**98.98%**
	Nickel	0.52	0.53	**-1.92%**
	Zinc	0.4	0.05	**87.50%**
	TPH	1.4	0	**100.00%**
8-	TKN	10.4	7.4	**28.85%**
	Oil & Grease	13	12	**7.69%**
	Ortho Phosphorus	3.98	2.04	**48.7%**
	Total Phosphorus	1.37	.7	**48.9%**
	TSS	100	2	**98.00%**
	Cadmium	0.302	0.193	**36.09%**
	Copper	0.354	0.117	**66.95%**
	Lead	0.492	0.005	**98.98%**
	Nickel	0.52	0.47	**9.62%**
	Zinc	0.4	0.05	**87.50%**
	TPH	1.4	0	**100.00%**

Summary of Results

Summary

	Pollutant	Influent (mg/L)	Effluent (mg/L)	Percent Reduction
	TKN	10.4	9.07	**12.7%**
	Oil & Grease	69.8	6.5	**90.7%**
	Ortho Phosphorus	3.98	2.33	**41.6%**
	Total Phosphorus	2.07	.63	**69.7%**
	TSS	84.63	12.4	**85.4%**
	Cadmium	0.39	0.19	**52.2%**
	Copper	0.57	0.12	**79.2%**
	Lead	0.38	0.01	**98.2%**
	Nickel	0.55	0.43	**22.5%**
	Zinc	0.75	0.16	**78.2%**
	TPH	1.4	0	**100.00%**

Summary

A total of eight runs where performed to provide verifiable removal efficiencies. After four 1.25 minute runs through the BioMediaGREEN stormwater filter media the effluent concentrations coming out of the system where analyzed and compared to influent concentrations. An influent concentration was sampled at the influent end of the system, prior to entering the systems filter processes. The BioMediaGREEN filter media demonstrated substantial reductions in the concentrations of various pollutants. Following is a summary of the effluent concentrations and resulting removal efficiencies.

There was an average effluent concentration of 6.5 mg/L for oil and grease, 0 mg/l for TPH (total petroleum hydrocarbons), resulting in an average removal efficiency of 90.7% and 100% respectively.

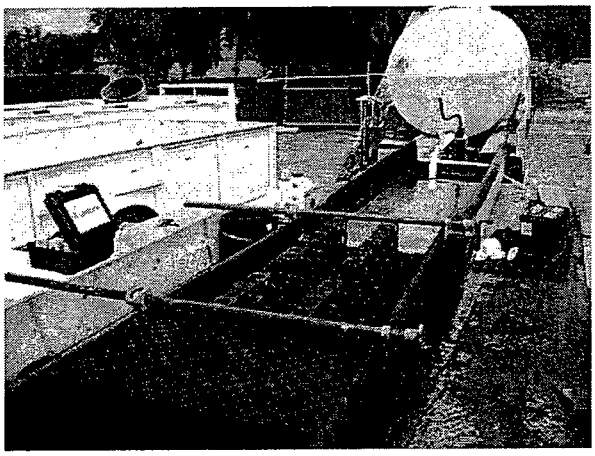
There was an average effluent concentration of 12.4 mg/L for TSS (mean particle size of 19 microns), .32 NTU for turbidity, resulting in an average removal efficiency of 85.4% and 99.1% respectively.

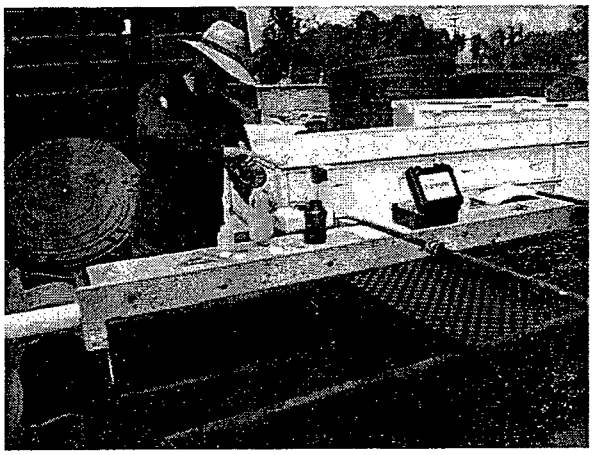
Removal of dissolved heavy metals varied. Copper, Lead, and Zinc are seen as big three in terms of adverse affects on water quality. There was an average effluent concentration of .12 mg/L for Copper, less than .01 mg/L for Lead, and .16 mg/L for Zinc resulting in an average removal efficiency of 79.2%, 98.2%, and 78.2% respectively.

Removal of nutrients varied among test runs. There was an average effluent concentration of .63 mg/L for Total Phosphorus and 9.07 mg/L for total kjeldahl nitrogen resulting in an average removal efficiency of 69.7% and 12.7% respectively.

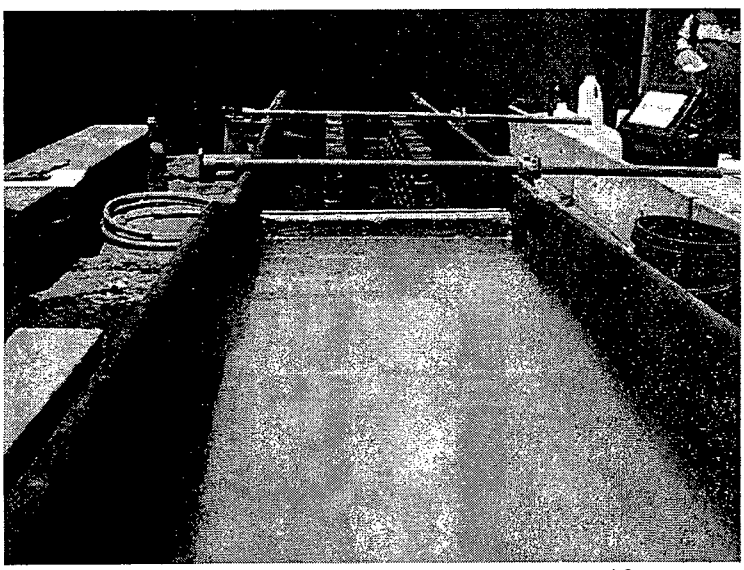
Appendix A

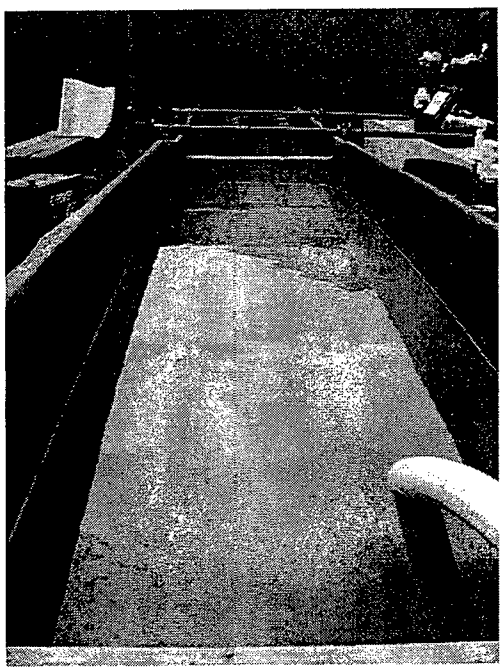
Testing Photos



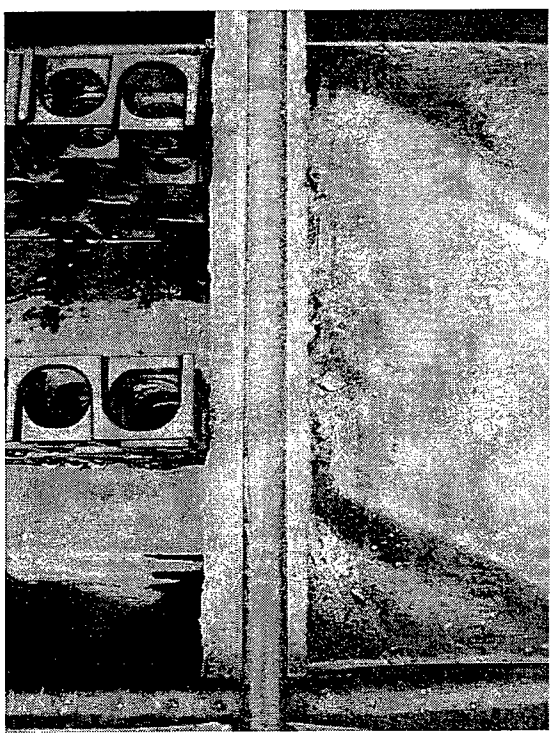


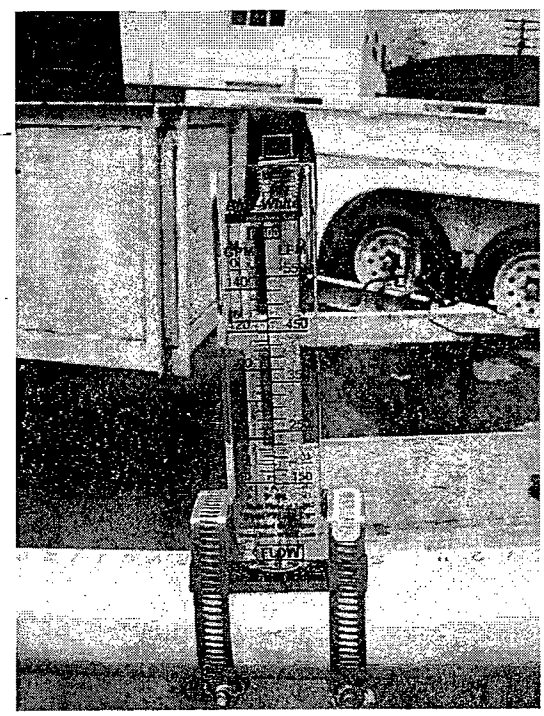
Test Set Up





Collection Tank/Sampling Point





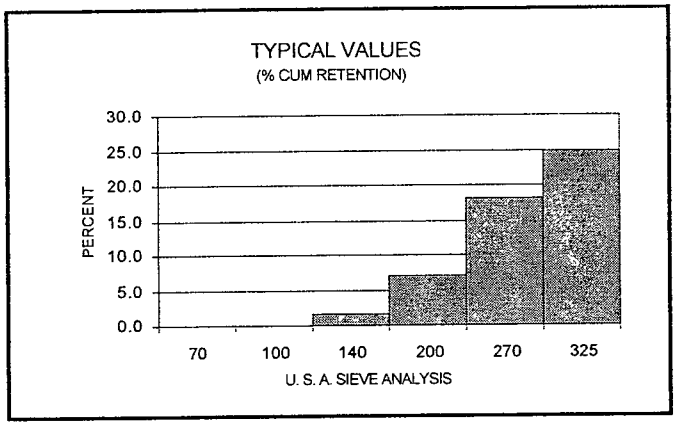
Flow Valve

Before/After Comparison

Appendix B

U.S. SILICA®
Sands of Time

PRODUCT DATA



SIL-CO-SIL® 106

GROUND SILICA

PLANT: OTTAWA, ILLINOIS

USA STD SIEVE SIZE		TYPICAL VALUES		
		% RETAINED		% PASSING
MESH	MICRONS	INDIVIDUAL	CUMULATIVE	CUMULATIVE
70	212	0.0	0.0	100.0
100	150	0.1	0.1	99.9
140	106	1.4	1.5	98.5
200	75	5.5	7.0	93.0
270	53	11.0	18.0	82.0
325	45	7.0	25.0	75.0

TYPICAL PHYSICAL PROPERTIES

HARDNESS (Mohs) **7**
MELTING POINT (Degrees F) **3100**
MINERAL ..... **QUARTZ**
pH **7**

REFLECTANCE (%) **79.5**
YELLOWNESS INDEX **4**
SPECIFIC GRAVITY 2.65

TYPICAL CHEMICAL ANALYSIS, %

SiO_2 (Silicon Dioxide) **99.8**
Fe_2O_3 (Iron Oxide) **0.035**
Al_2O_3 (Aluminum Oxide) **0.05**
TiO_2 (Titanium Dioxide) **0.02**
CaO (Calcium Oxide) **0.01**

MgO (Magnesium Oxide) ..... **<0.01**
Na_2O (Sodium Oxide) ..... **<0.01**
K_2O (Potassium Oxide) **0.02**
LOI (Loss On Ignition) **0.1**

December 15, 1997

DISCLAIMER: The information set forth in this Product Data Sheet represents typical properties of the product described; the information and the typical values are not specifications. U.S. Silica Company makes no representation or warranty concerning the Products, expressed or implied, by this Product Data Sheet.

WARNING: The product contains crystalline silica - quartz, which can cause silicosis (an occupational lung disease) and lung cancer. **For detailed information on the potential health effect of crystalline silica - quartz, see the U.S. Silica Company Material Safety Data Sheet.**

U.S. Silica Company **P.O. Box 187, Berkeley Springs, WV 25411-0187** **(304) 258-2500**

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Date Sampled: 06/10/07
Date Received: 06/11/07
Date Reported: 06/26/07

Attn: Michael Alberson

Project ID: Michael Alberson
Log Numbers: 07-3828 through 07-3833
Sample IDs: 610-1 Batch through 610-6 Run 5

The following are attached:

* Analytical Report
* Quality Control Report
* Chain-of-Custody

Testing was conducted using EPA or equivalent methods approved by the State of California Department of Health Services. All applicable QC met the required acceptance criteria.

Thank you for choosing D-TEK to serve your analytical needs!

Reviewed and approved:

Ellen Atienza
Operations Manager

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Attn: Michael Alberson

Date Reported: 06/26/07
Date Sampled: 06/10/07
Date Received: 06/11/07
Sample Type: WATER

Project ID: Michael Alberson

Log Number: 07-3828
Sample ID: 610-1 Batch

Influent
Concentrations

ANALYTICAL RESULTS

Analysis	Results	Units	Method	Analyst/Date
Conductivity	1,080	umhos/cm	EPA 120.1	RR 06/11/07
TKN	10.4	mg/L	SM4500NH3C	OJ 06/14/07
Oil & Grease	13.0	mg/L	EPA 1664	RR 06/11/07
pH	8.65	----	SM 4500-H+ B	RR 06/11/07
TSS	100	mg/L	SM2540D	RR 06/12/07
Turbidity	36.0	NTU	EPA180.1	OJ 06/11/07
Cadmium	0.302	mg/L	SM3113B	JV 06/15/07
Copper	0.354	mg/L	SM3113B	JV 06/15/07
Lead	0.492	mg/L	SM3113B	JV 06/12/07
Nickel	0.52	mg/L	SM3120B	JV 06/15/07
Silver	< 0.01	mg/L	SM3120B	JV 06/15/07
Zinc	0.40	mg/L	SM3120B	JV 06/15/07
Mercury	< 0.002	mg/L	3112B/245.1	JV 06/19/07

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Run 4

Date Reported: 06/26/07
Date Sampled: 06/10/07
Date Received: 06/11/07
Sample Type: WATER

Attn: Michael Alberson

Project ID: Michael Alberson

Log Number: 07-3829
Sample ID: 610-2 Run 1

ANALYTICAL RESULTS

Analysis	Results	Units	Method	Analyst/Date
Conductivity	1,070	umhos/cm	EPA 120.1	RR 06/11/07
TKN	8.29	mg/L	SM4500NH3C	OJ 06/14/07
Oil & Grease	7.0	mg/L	EPA 1664	RR 06/11/07
pH	8.65	----	SM 4500-H+ B	RR 06/11/07
TSS	3	mg/L	SM2540D	RR 06/12/07
Turbidity	0.2	NTU	EPA180.1	OJ 06/11/07
Cadmium	0.192	mg/L	SM3113B	JV 06/15/07
Copper	0.115	mg/L	SM3113B	JV 06/15/07
Lead	0.008	mg/L	SM3113B	JV 06/12/07
Nickel	0.46	mg/L	SM3120B	JV 06/15/07
Silver	< 0.01	mg/L	SM3120B	JV 06/15/07
Zinc	0.06	mg/L	SM3120B	JV 06/15/07
Mercury	< 0.002	mg/L	3112B/245.1	JV 06/19/07

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Run 5

Date Reported: 06/26/07
Date Sampled: 06/10/07
Date Received: 06/11/07
Sample Type: WATER

Attn: Michael Alberson

Project ID: Michael Alberson

Log Number: 07-3830
Sample ID: 610-3 Run 2

ANALYTICAL RESULTS

Analysis	Results	Units	Method	Analyst/Date
Conductivity	1,070	umhos/cm	EPA 120.1	RR 06/11/07
TKN	8.64	mg/L	SM4500NH3C	OJ 06/14/07
Oil & Grease	3.0	mg/L	EPA 1664	RR 06/11/07
pH	8.70	----	SM 4500-H+ B	RR 06/11/07
TSS	5	mg/L	SM2540D	RR 06/12/07
Turbidity	0.5	NTU	EPA180.1	OJ 06/11/07
Cadmium	0.193	mg/L	SM3113B	JV 06/15/07
Copper	0.119	mg/L	SM3113B	JV 06/15/07
Lead	0.007	mg/L	SM3113B	JV 06/12/07
Nickel	0.48	mg/L	SM3120B	JV 06/15/07
Silver	< 0.01	mg/L	SM3120B	JV 06/15/07
Zinc	0.06	mg/L	SM3120B	JV 06/15/07
Mercury	< 0.002	mg/L	3112B/245.1	JV 06/19/07

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Run 6

Date Reported: 06/26/07
Date Sampled: 06/10/07
Date Received: 06/11/07
Sample Type: WATER

Attn: Michael Alberson

Project ID: Michael Alberson

Log Number: 07-3831
Sample ID: 610-4 Run 3

ANALYTICAL RESULTS

Analysis	Results	Units	Method	Analyst/Date
Conductivity	1,080	umhos/cm	EPA 120.1	RR 06/11/07
TKN	10.9	mg/L	SM4500NH3C	OJ 06/14/07
Oil & Grease	7.0	mg/L	EPA 1664	RR 06/11/07
pH	8.69	----	SM 4500-H+ B	RR 06/11/07
TSS	1	mg/L	SM2540D	RR 06/12/07
Turbidity	0.2	NTU	EPA180.1	OJ 06/11/07
Cadmium	0.206	mg/L	SM3113B	JV 06/15/07
Copper	0.130	mg/L	SM3113B	JV 06/15/07
Lead	< 0.005	mg/L	SM3113B	JV 06/12/07
Nickel	0.50	mg/L	SM3120B	JV 06/15/07
Silver	< 0.01	mg/L	SM3120B	JV 06/15/07
Zinc	0.05	mg/L	SM3120B	JV 06/15/07
Mercury	< 0.002	mg/L	3112B/245.1	JV 06/19/07

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Attn: Michael Alberson

Date Reported: 06/26/07
Date Sampled: 06/10/07
Date Received: 06/11/07
Sample Type: WATER

Run 7

Project ID: Michael Alberson

Log Number: 07-3832
Sample ID: 610-5 Run 4

ANALYTICAL RESULTS

Analysis	Results	Units	Method	Analyst/Date
Conductivity	1,080	umhos/cm	EPA 120.1	RR 06/11/07
TKN	10.1	mg/L	SM4500NH3C	OJ 06/14/07
Oil & Grease	10.0	mg/L	EPA 1664	RR 06/11/07
pH	8.69	----	SM 4500-H+ B	RR 06/11/07
TSS	6	mg/L	SM2540D	RR 06/12/07
Turbidity	0.5	NTU	EPA180.1	OJ 06/11/07
Cadmium	0.203	mg/L	SM3113B	JV 06/15/07
Copper	0.110	mg/L	SM3113B	JV 06/15/07
Lead	< 0.005	mg/L	SM3113B	JV 06/12/07
Nickel	0.53	mg/L	SM3120B	JV 06/15/07
Silver	< 0.01	mg/L	SM3120B	JV 06/15/07
Zinc	0.05	mg/L	SM3120B	JV 06/15/07
Mercury	< 0.002	mg/L	3112B/245.1	JV 06/19/07

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Attn: Michael Alberson

Run 8

Date Reported: 06/26/07
Date Sampled: 06/10/07
Date Received: 06/11/07
Sample Type: WATER

Project ID: Michael Alberson

Log Number: 07-3833
Sample ID: 610-6 Run 5

ANALYTICAL RESULTS

Analysis	Results	Units	Method	Analyst/Date
Conductivity	1,080	umhos/cm	EPA 120.1	RR 06/11/07
TKN	7.40	mg/L	SM4500NH3C	OJ 06/14/07
Oil & Grease	12.0	mg/L	EPA 1664	RR 06/11/07
pH	8.69	----	SM 4500-H+ B	RR 06/11/07
TSS	2	mg/L	SM2540D	RR 06/12/07
Turbidity	0.2	NTU	EPA180.1	OJ 06/11/07
Cadmium	0.193	mg/L	SM3113B	JV 06/15/07
Copper	0.117	mg/L	SM3113B	JV 06/15/07
Lead	< 0.005	mg/L	SM3113B	JV 06/12/07
Nickel	0.47	mg/L	SM3120B	JV 06/15/07
Silver	< 0.01	mg/L	SM3120B	JV 06/15/07
Zinc	0.05	mg/L	SM3120B	JV 06/15/07
Mercury	< 0.002	mg/L	3112B/245.1	JV 06/19/07

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

QUALITY CONTROL DATA REPORT

Report Date: 06/26/07

Log Numbers: 07-3828 through 07-3833

* LCS - Laboratory Control Sample. The LCS is a blank spiked with a known amount of method analyte(s) obtained from independent standards and is carried through all sample preparation and analytical procedures. Recoveries are calculated in order to evaluate method accuracy.

* Spike - The spike is an actual sample spiked with a known amount of method analyte(s) and is carried through all sample preparation and analytical procedures. Recoveries are calculated in order to evaluate potential matrix interferences.

* RPD = Rel % Difference = ((Result 1 - Result 2) / Average Result) X 100% The RPD provides a measure of method precision by comparing analytical results of 2 duplicate samples.

* % Recovery = ((Spike Sample Result - Sample Result) / Spike Conc) X 100% The result of the unspiked sample is treated as zero if it is less than established reporting limits.

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

QUALITY CONTROL DATA REPORT
Method(s): Inorganics

Report Date: 06/26/07

Log Numbers: 07-3828 through 07-3833

No target analytes were detected in the Method Blanks.

Analysis	Method	LCS % Recovery	Spike % Recovery	Duplicate RPD
Conductivity	EPA 120.1	100		
TKN	SM4500NH3C	100	83	1
Oil & Grease	EPA 1664	115		
Turbidity	EPA180.1	100		
	EPA180.1	100		
Cadmium	SM3113B	100	107	4
Copper	SM3113B	103	102	5
Lead	SM3113B	100	105	0
Nickel	SM3120B	99	108	5
Silver	SM3120B	94	103	9
Zinc	SM3120B	100	107	5
Mercury	3112B/245.1	100	102	2

D-TEK Analytical Laboratories, Inc.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

BIO CLEAN
2972 San Luis Rey Road
Oceanside, CA 92054

Attn: Michael Alberson

Date of Report:	**6/26/07**
Sampling Date:	**6/10/07**
Date Sample Received:	**6/11/07**
Date Extracted:	**6/17/07**
Date Analyzed:	**June 22, 2007**
Analyzed By:	**EA**
Sample Type:	**Water**
Project Name:	**N/A**

ANALYSES RESULTS

		Analysis:	**TPH**
		Method:	**EPA 8015B**
Log #	**Sample ID:**	**Units:**	**mg/l**
07-3828	610- 1 Batch		1.4
07-3829	610- 2 Run 1		ND
07-3830	610- 3 Run 2		ND
07-3831	610- 4 Run 3		ND
07-3832	610- 5 Run 4		ND
07-3833	610- 6 Run 5		ND

* ND = none detected

TPH - Total Petroleum Hydrocarbons
DHS - Recommended Procedure From Leaking Underground Fuel Tank Field Manual, May 1989
Total Petroleum Hydrocarbon analysis resulting in hydrocarbons of the range C4-C44. Sample quantitated against motor oil.

D-TEK Analytical Laboratories, Inc.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

QUALITY CONTROL DATA REPORT

Date:	**6/26/07**
Attn:	**Michael Alberson**
Date Analyzed:	**June 22, 2007**
Analysis Method:	**EPA 8015 B**
Sample Log #:	**07-3828 to 07-3833**

METHOD BLANK

No target analytes were detected in the method blank.

LABORATORY CONTROL SAMPLE

Compound	% Recovery	Dup % Recovery	%RPD
TPH-Motor oil	88		
TPH-Diesel	100	101	1
TPH-Gasoline	94		

QUALITY CONTROL TERMINOLOGY

- LCS - LABORATORY CONTROL SAMPLE. Reported as % recovery of an independent standard carried through all sample preparation procedures to verify method performance. Acceptable range is 80% - 120% . Any out-of-control QC data is clearly indicated.
- Spike- environmental sample is matrix spiked with method compounds and % recovery of concentration spiked into sample is calculated. Reported as % recovery. Acceptable range for "Normal Matrix Sample" is 75% 125% . Any out-of-control QC data is clearly indicated.

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Date Sampled: 06/10/07
Date Received: 06/11/07
Date Reported: 07/23/07

Attn: Michael Alberson

Project ID: Michael Alberson
Log Numbers: 07-4651 through 07-4656
Sample IDs: #610-1 Batch (07-3828) through #610-6 Run 5 (07-3833)

The following are attached:

* Analytical Report
* Quality Control Report
* Chain-of-Custody

TP 0-P

Testing was conducted using EPA or equivalent methods approved by the State of California Department of Health Services. All applicable QC met the required acceptance criteria.

Thank you for choosing D-TEK to serve your analytical needs!

Reviewed and approved:

Ellen Atienza
Operations Manager

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Attn: Michael Alberson

Influent
Concentration

Date Reported: 07/23/07
Date Sampled: 06/10/07
Date Received: 06/11/07
Sample Type: WATER

Project ID: Michael Alberson

Log Number: 07-4651
Sample ID: #610-1 Batch (07-3828)

ANALYTICAL RESULTS

Analysis	Results	Units	Method	Analyst/Date
o-Phosphate	3.98	mg/L	SM4500PE	OJ 07/16/07
Total Phosphorus	1.37	mg/L	4500PB5E	OJ 07/16/07

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Date Reported: 07/23/07
Date Sampled: 06/10/07
Date Received: 06/11/07
Sample Type: WATER

Attn: Michael Alberson

Run 4

Project ID: Michael Alberson

Log Number: 07-4652
Sample ID: #610-2 Run 1 (07-3829)

ANALYTICAL RESULTS

Analysis	Results	Units	Method	Analyst/Date
o-Phosphate	2.13	mg/L	SM4500PE	OJ 07/16/07
Total Phosphorus	0.68	mg/L	4500PB5E	OJ 07/16/07

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Attn: Michael Alberson

Run 5

Date Reported: 07/23/07
Date Sampled: 06/10/07
Date Received: 06/11/07
Sample Type: WATER

Project ID: Michael Alberson

Log Number: 07-4653
Sample ID: #610-3 Run 2 (07-3830)

ANALYTICAL RESULTS

Analysis	Results	Units	Method	Analyst/Date
o-Phosphate	2.15	mg/L	SM4500PE	OJ 07/16/07
Total Phosphorus	0.75	mg/L	4500PB5E	OJ 07/16/07

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Run 6

Date Reported: 07/23/07
Date Sampled: 06/10/07
Date Received: 06/11/07
Sample Type: WATER

Attn: Michael Alberson

Project ID: Michael Alberson

Log Number: 07-4654
Sample ID: #610-4 Run 3 (07-3831)

ANALYTICAL RESULTS

Analysis	Results	Units	Method	Analyst/Date
o-Phosphate	2.20	mg/L	SM4500PE	OJ 07/16/07
Total Phosphorus	0.72	mg/L	4500PB5E	OJ 07/16/07

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Attn: Michael Alberson

Run 7

Date Reported: 07/23/07
Date Sampled: 06/10/07
Date Received: 06/11/07
Sample Type: WATER

Project ID: Michael Alberson

Log Number: 07-4655
Sample ID: #610-5 Run 4 (07-3832)

ANALYTICAL RESULTS

Analysis	Results	Units	Method	Analyst/Date
o-Phosphate	2.11	mg/L	SM4500PE	OJ 07/16/07
Total Phosphorus	0.69	mg/L	4500PB5E	OJ 07/16/07

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Attn: Michael Alberson

Date Reported: 07/23/07
Date Sampled: 06/10/07
Date Received: 06/11/07
Sample Type: WATER

Run 8

Project ID: Michael Alberson

Log Number: 07-4656
Sample ID: #610-6 Run 5 (07-3833)

ANALYTICAL RESULTS

Analysis	Results	Units	Method	Analyst/Date
o-Phosphate	2.04	mg/L	SM4500PE	OJ 07/16/07
Total Phosphorus	0.70	mg/L	4500PB5E	OJ 07/16/07

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

QUALITY CONTROL DATA REPORT

Report Date: 07/23/07

Log Numbers: 07-4651 through 07-4656

* LCS - Laboratory Control Sample. The LCS is a blank spiked with a known amount of method analyte(s) obtained from independent standards and is carried through all sample preparation and analytical procedures. Recoveries are calculated in order to evaluate method accuracy.

* Spike - The spike is an actual sample spiked with a known amount of method analyte(s) and is carried through all sample preparation and analytical procedures. Recoveries are calculated in order to evaluate potential matrix interferences.

* RPD = Rel % Difference = ((Result 1 - Result 2) / Average Result) X 100% The RPD provides a measure of method precision by comparing analytical results of 2 duplicate samples.

* % Recovery = ((Spike Sample Result - Sample Result) / Spike Conc) X 100% The result of the unspiked sample is treated as zero if it is less than established reporting limits.

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

QUALITY CONTROL DATA REPORT
Method(s): Inorganics

Report Date: 07/23/07

Log Numbers: 07-4651 through 07-4656

No target analytes were detected in the Method Blanks.

Analysis	Method	LCS % Recovery	Spike % Recovery	Duplicate RPD
o-Phosphate	SM4500PE	98	105	1
Total Phosphorus	4500PB5E	94	85	0

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean

Oceanside, CA 92029

Attn: Michael Alberson

Influent
Day #1

Date Reported: 05/10/07
Date Sampled: 04/25/07
Date Received: 04/25/07
Sample Type: WATER

Project ID: N/A

Influent
Concentrations

Log Number: 07-2698
Sample ID: Std #1-001 Mixture

ANALYTICAL RESULTS

Analysis	Results	Units	Method	Analyst/Date
Nitrate-N	5.43	mg/L	SM4500NO3E	RR 04/25/07
Oil & Grease	360	mg/L	EPA 1664	RR 04/27/07
pH	7.07	----	SM 4500-H+ B	RR 04/25/07
Total Phosphorus	5.12	mg/L	4500PB5E	OJ 04/30/07
TSS	73	mg/L	SM2540D	RR 04/26/07
Cadmium	0.584	mg/L	SM3113B	JV 05/04/07
Copper	0.951	mg/L	SM3113B	JV 05/03/07
Lead	0.201	mg/L	SM3113B	JV 04/30/07
Nickel	0.642	mg/L	SM3120B	JV 05/02/07
Silver	0.04	mg/L	SM3120B	JV 05/01/07
Zinc	1.33	mg/L	SM3120B	JV 05/02/07
Mercury	0.009	mg/L	3112B/245.1	JV 05/07/07

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Attn: Michael Alberson

Date Reported: 05/10/07
Date Sampled: 04/25/07
Date Received: 04/25/07
Sample Type: WATER

Project ID: N/A

1-day one

Log Number: 07-2704
Sample ID: Special 007 Run Run 1

ANALYTICAL RESULTS

Analysis	Results	Units	Method	Analyst/Date
Nitrate-N	5.38	mg/L	SM4500NO3E	RR 04/25/07
Oil & Grease	11.0	mg/L	EPA 1664	RR 04/27/07
pH	7.21	----	SM 4500-H+ B	RR 04/25/07
Total Phosphorus	5.20	mg/L	4500PBSE	OJ 04/30/07
TSS	17	mg/L	SM2540D	RR 04/26/07
Cadmium	0.480	mg/L	SM3113B	JV 05/04/07
Copper	0.340	mg/L	SM3113B	JV 05/03/07
Lead	0.015	mg/L	SM3113B	JV 04/30/07
Nickel	0.599	mg/L	SM3120B	JV 05/02/07
Silver	< 0.01	mg/L	SM3120B	JV 05/01/07
Zinc	0.93	mg/L	SM3120B	JV 05/02/07
Mercury	< 0.002	mg/L	3112B/245.1	JV 05/07/07

INFLUENT Day 2

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Attn: Michael Alberson

Date Reported: 05/10/07
Date Sampled: 04/26/07
Date Received: 04/26/07
Sample Type: WATER

Influent Concentrations

Project ID: N/A

Log Number: 07-2735
Sample ID: Std #2-Batch 2 - Influent

ANALYTICAL RESULTS

Analysis	Results	Units	Method	Analyst/Date
Conductivity	945	umhos/cm	EPA 120.1	RR 04/26/07
Nitrate-N	4.87	mg/L	SM4500NO3E	RR 04/26/07
Oil & Grease	67.0	mg/L	EPA 1664	RR 04/27/07
pH	7.13	----	SM 4500-H+ B	RR 04/26/07
Total Phosphorus	3.81	mg/L	4500PB5E	OJ 04/30/07
TSS	52	mg/L	SM2540D	RR 04/27/07
Cadmium	0.503	mg/L	SM3113B	JV 05/04/07
Copper	0.906	mg/L	SM3113B	JV 05/03/07
Lead	0.192	mg/L	SM3113B	JV 04/30/07
Nickel	0.582	mg/L	SM3120B	JV 05/02/07
Silver	0.04	mg/L	SM3120B	JV 05/01/07
Zinc	1.32	mg/L	SM3120B	JV 05/02/07
Mercury	0.006	mg/L	3112B/245.1	JV 05/07/07

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Attn: Michael Alberson

Date Reported: 05/10/07
Date Sampled: 04/26/07
Date Received: 04/26/07
Sample Type: WATER

Project ID: N/A

Log Number: 07-2738
Sample ID: D010-Run Run 2

ANALYTICAL RESULTS

Analysis	Results	Units	Method	Analyst/Date
Conductivity	994	umhos/cm	EPA 120.1	RR 04/26/07
Nitrate-N	5.15	mg/L	SM4500NO3E	RR 04/26/07
Oil & Grease	1.0	mg/L	EPA 1664	RR 04/27/07
pH	9.49	----	SM 4500-H+ B	RR 04/26/07
Total Phosphorus	0.46	mg/L	4500PB5E	OJ 04/30/07
TSS	15	mg/L	SM2540D	RR 04/27/07
Cadmium	0.010	mg/L	SM3113B	JV 05/04/07
Copper	0.009	mg/L	SM3113B	JV 05/03/07
Lead	< 0.005	mg/L	SM3113B	JV 04/30/07
Nickel	0.196	mg/L	SM3120B	JV 05/02/07
Silver	< 0.01	mg/L	SM3120B	JV 05/01/07
Zinc	< 0.05	mg/L	SM3120B	JV 05/02/07
Mercury	< 0.002	mg/L	3112B/245.1	JV 05/07/07

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

Bio Clean
2972 San Luis Rey Road
Oceanside, CA 92054

Attn: Michael Alberson

Date Reported: 05/10/07
Date Sampled: 04/26/07
Date Received: 04/26/07
Sample Type: WATER

Project ID: N/A

Log Number: 07-2739
Sample ID: 011-Run ; Run 3

ANALYTICAL RESULTS

Analysis	Results	Units	Method	Analyst/Date
Conductivity	996	umhos/cm	EPA 120.1	RR 04/26/07
Nitrate-N	5.43	mg/L	SM4500NO3E	RR 04/26/07
Oil & Grease	< 1.0	mg/L	EPA 1664	RR 04/27/07
pH	9.53	----	SM 4500-H+ B	RR 04/26/07
Total Phosphorus	0.39	mg/L	4500PB5E	OJ 04/30/07
TSS	13	mg/L	SM2540D	RR 04/27/07
Cadmium	0.006	mg/L	SM3113B	JV 05/04/07
Copper	0.005	mg/L	SM3113B	JV 05/03/07
Lead	< 0.005	mg/L	SM3113B	JV 04/30/07
Nickel	0.180	mg/L	SM3120B	JV 05/02/07
Silver	< 0.01	mg/L	SM3120B	JV 05/01/07
Zinc	< 0.05	mg/L	SM3120B	JV 05/02/07
Mercury	< 0.002	mg/L	3112B/245.1	JV 05/07/07

D-TEK ANALYTICAL LABORATORIES, INC.
9020 Kenamar Drive, Suite 205
San Diego, CA 92121
(858) 566-4540 FAX (858) 566-4542

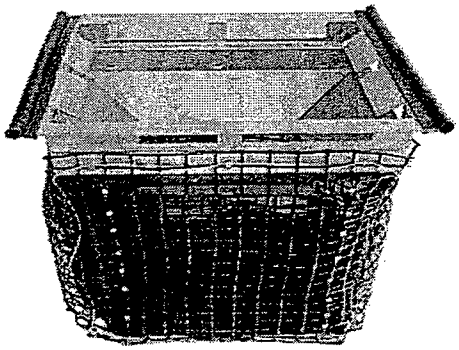
QUALITY CONTROL DATA REPORT
Method(s): Inorganics

Report Date: 05/10/07

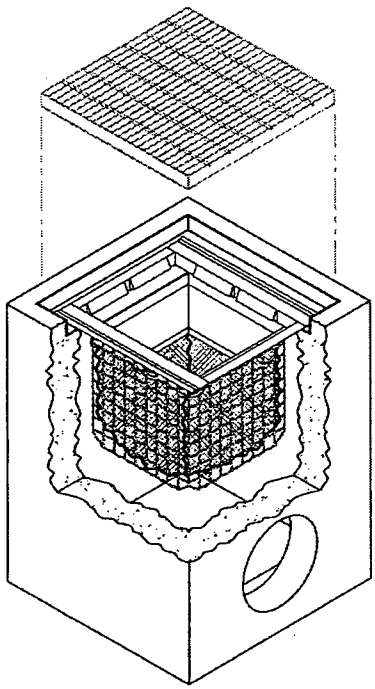
Log Numbers: 07-2735 through 07-2740

No target analytes were detected in the Method Blanks.

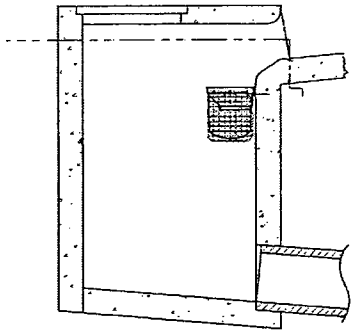
Analysis	Method	LCS % Recovery	Spike % Recovery	Duplicate RPD
Conductivity	EPA 120.1	99		
Nitrate-N	SM4500NO3E	99	105	2
Oil & Grease	EPA 1664	92		
Total Phosphorus	4500PB5E	88	91	0
Cadmium	SM3113B	100	99	1
Copper	SM3113B	98	102	4
Lead	SM3113B	92	90	5
Nickel	SM3120B	100	99	2
Silver	SM3120B	94	93	3
Zinc	SM3120B	104	96	1
Mercury	3112B/245.1	106	96	2



Flat grated inlet



Curb inlet



FloGard+PLUS® / Product Specifications

The FloGard+PLUS® is a multipurpose catch basin insert designed to capture sediment, debris, trash & oils/grease from low (first flush) flows.

A (dual) high-flow bypass allows flows to bypass the device while retaining sediment and larger floatables (debris & trash) AND allows sustained maximum design flows under extreme weather conditions.

FloGard+PLUS® inserts are available in sizes to fit most industry-standard drainage inlets (...flat grated, combination, curb and round inlets).

FloGard+PLUS® catch basin inserts are recommended for areas subject to silt and debris as well as low-to-moderate levels of petroleum hydrocarbon (oils and grease). Examples of such areas are vehicle parking lots, aircraft ramps, truck and bus storage yards, corporation yards, subdivision streets and public streets.

GENERAL SPECIFICATIONS FOR MAINTENANCE OF *FLO-GARD+PLUS*® CATCH BASIN INSERT FILTERS

SCOPE:

Federal, State and Local Clean Water Act regulations and those of insurance carriers require that stormwater filtration systems be maintained and serviced on a recurring basis. The intent of the regulations is to ensure that the systems, on a continuing basis, efficiently remove pollutants from stormwater runoff thereby preventing pollution of the nation's water resources. These specifications apply to the FloGard+Plus® Catch Basin Insert Filter.

RECOMMENDED FREQUENCY OF SERVICE:

Drainage Protection Systems (DPS) recommends that installed Flo-Gard+Plus® Catch Basin Insert Filters be serviced on a recurring basis. Ultimately, the frequency depends on the amount of runoff, pollutant loading and interference from debris (leaves, vegetation, cans, paper, etc.); however, it is recommended that each installation be serviced a minimum of three times per year, with a change of filter medium once per year. DPS technicians are available to do an on-site evaluation, upon request.

RECOMMENDED TIMING OF SERVICE:

DPS guidelines for the timing of service are as follows:

1. For areas with a definite rainy season: Prior to, during and following the rainy season.
2. For areas subject to year-round rainfall: On a recurring basis (at least three times per year).
3. For areas with winter snow and summer rain: Prior to and just after the snow season and during the summer rain season.
4. For installed devices not subject to the elements (washracks, parking garages, etc.): On a recurring basis (no less than three times per years).

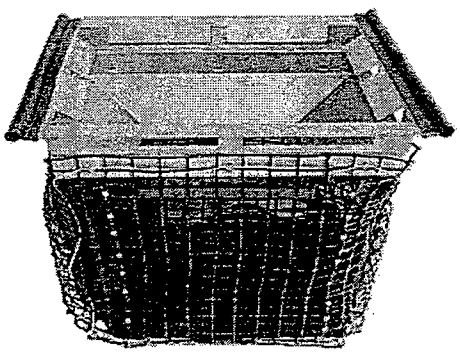
SERVICE PROCEDURES:

1. The catch basin grate shall be removed and set to one side. The catch basin shall be visually inspected for defects and possible illegal dumping. If illegal dumping has occurred, the proper authorities and property owner representative shall be notified as soon as practicable.
2. Using an industrial vacuum, the collected materials shall be removed from the liner. (Note: DPS uses a truck-mounted vacuum for servicing Flo-Gard+Plus® catch basin inserts.)
3. When all of the collected materials have been removed, the filter medium pouches shall be removed by unsnapping the tether from the D-ring and set to one side. The filter liner, gaskets, stainless steel frame and mounting brackets, etc. shall be inspected for continued serviceability. Minor damage or defects found shall be corrected on-the-spot and a notation made on the Maintenance Record. More extensive deficiencies that affect the efficiency of the filter (torn liner, etc.), if approved by the customer representative, will be corrected and an invoice submitted to the representative along with the Maintenance Record.
4. The filter medium pouches shall be inspected for defects and continued serviceability and replaced as necessary and the pouch tethers re-attached to the liner's D-ring. See below.
5. The grate shall be replaced.

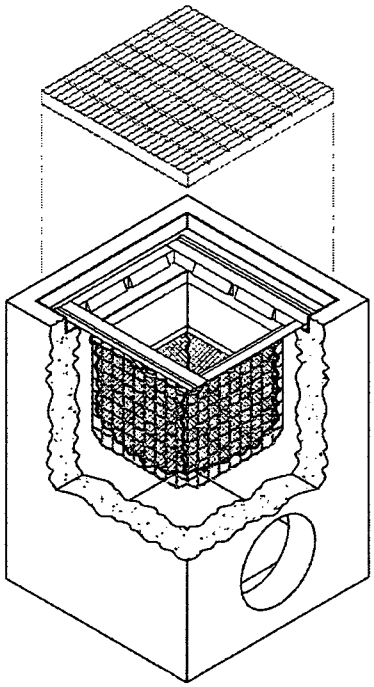
REPLACEMENT AND DISPOSAL OF EXPOSED FILTER MEDIUM AND COLLECTED DEBRIS

The frequency of filter medium pouch exchange will be in accordance with the existing DPS-Customer Maintenance Contract. DPS recommends that the medium be changed at least once per year. During the appropriate service, or if so determined by the service technician during a non-scheduled service, the filter medium pouches will be replaced with new pouches. Once the exposed pouches and debris have been removed, DPS has possession and must dispose of it in accordance with local, state and federal agency requirements.

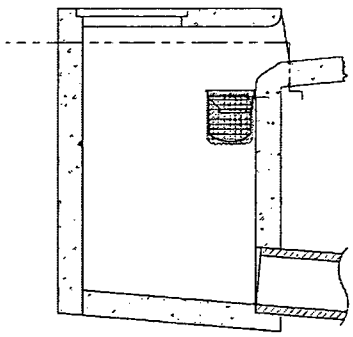
DPS also has the capability of servicing all manner of catch basin inserts and catch basins without inserts, underground oil/water separators, stormwater interceptors and other such devices. All DPS personnel are highly qualified technicians and are confined space trained and certified. Call us at (888) 950-8826 for further information and assistance.



Flat grated inlet



Curb inlet



FloGard+PLUS™ / Installation Guide

FloGard+PLUS™ Catch Basin Insert Filters are designed for installation in flat grated catch basins, combination (grated and curb opening) catch basins and curb opening catch basins.

They may be "Frame" mounted or "Wall" mounted depending on the type of catch basin.

Key elements of installation of the various devices and mounting methods are:

Frame Mount Insert Filter (for standard or irregular-dimensioned flat grated inlets):

- Remove the inlet grate and clean and remove any collected debris and trash from the catch basin.

- Clean off the grate bearing ledge and lower the filter assembly onto the ledge.

- Insure that the two floatable adsorbent pouches are tethered to the D-rings in the bottom corners of the assembly.

- Replace the inlet grate.

BOARD OF
BUILDING AND SAFETY
COMMISSIONERS

JAVIER NUÑEZ
PRESIDENT

MARSHA L. BROWN
VICE-PRESIDENT

VAN AMBATIELOS

PEDRO BIRBA

ELENORE A. WILLIAMS

CITY OF LOS ANGELES
CALIFORNIA

ANTONIO R. VILLARAIGOSA
MAYOR

DEPARTMENT OF
BUILDING AND SAFETY
2319 DORRIS PLACE
LOS ANGELES, CA 90031

ANDREW A. ADELMAN, P.E.
GENERAL MANAGER

RAYMOND CHAN
EXECUTIVE OFFICER

February 14, 2008

Jonathan McDonald
Kristar Enterprises, Inc.
1219 Briggs Av.
Santa Rosa, CA 95401

RESEARCH REPORT: RR 5591
EFFECTIVE DATE: 01/01/08
EXPIRATION DATE: 01/01/09
Telephone: 800-899-8819

GENERAL APPROVAL - Renewal - "FloGard" Series Catch Basin Insert Filters manufactured by Kristar Enterprises, Inc. See attachment for list of approved model number.

DETAILS

Flo Gard Plus is a catch basin insert designed to treat rainwater runoff. These filters include a stainless steel frame, and geotextile fabric liner encapsulating an adsorbent which may be replaced. They are designed to collect particulate, debris, metals and petroleum hydrocarbons from stormwater runoff with a built-in flow bypass.

The approval is subject to the following conditions:

1. This product may be installed in a storm water treatment system outside of a building (commercial or a residential) structure.

2. The storm water treatment system shall be sized in accordance with the manufacturer's recommendations, Table -1 shown of Page 3, Table-2 of Page 4, and Chapter 11 and Appendix D, of Los Angeles Plumbing Code (LAPC), 2008 Edition.

3. Storm water drainage piping plans shall be submitted to Mechanical Plan Check and permit shall be obtained prior to installation of this product.

4. This product shall be maintained periodically per manufacturer's printed instructions.

5. The storm water systems shall be accessible for inspection and maintenance purposes.

6. A permit from Watershed Protection Division (Phone #: 213-482-7066), Department of Public Works, shall be required for each installation.

7. Each storm water quality device shall be permanently identified with the name "Kristar Enterprises," and appropriate model number.

DISCUSSION

LADBS G-5 (Rev. 7/06)

AN EQUAL EMPLOYMENT OPPORTUNITY - AFFIRMATIVE ACTION EMPLOYER

File and reports were examined by the Mechanical Testing Laboratory. The materials are equivalent to that prescribed by the Los Angeles Municipal Code (LAMC) in quality, strength, effectiveness, durability and safety.

For this General Approval to be valid on any individual construction project in the City of Los Angeles, an engineer or inspector of the Department of Building and Safety must make a determination that all conditions of the General Approval required to provide equivalency have been met in the case of each construction project under consideration.

This approval is granted under Sections 94.101.3, 94.301.1, 94.301.2, 94.307.0, 94.1101.1 and 94.1101.3 of LAPC, 2008 Edition.

Approved by:

Thomas Liu, Director
Mechanical Testing Laboratory
Engineering Bureau

Prepared By: Jason Tran
Mechanical Testing Laboratory

A. Table-1: FloGard+Plus®

Model Number	Filtered Flow Capacity (cubic feet per second)	Bypass Flow Capacity (cubic feet per second)
FGP-12F	0.14	0.8
FGP-1530F	0.33	1.7
FGP-16F	0.23	1.2
FGP-18F	0.23	1.2
FGP1820F	0.24	1.2
FGP-1824F	0.24	1.2
FGP-1836F	0.33	1.2
FGP-1836FGO	0.33	1.7
FGP-1836W	0.33	1.7
FGP-1836WE	0.33	1.7
FGP-2024F	0.29	1.5
FGP-21F	0.31	1.5
FGP-2142F	0.46	2.1
FGP-2148F	0.52	2.3
FGP-24F	0.31	1.5
FGP-24DF	0.31	1.5
FGP-24W	0.31	1.5
FGP-2430F	0.36	1.7
FGP-2436F	0.41	1.9
FGP-2436FGO	0.41	1.9
FGP-2436W	0.41	1.9
FGP-2436WE	0.41	1.9
FGP-2448F	0.52	2.3
FGP-28F	0.37	1.7
FGP-28W	0.37	1.7
FGP-2840F	0.46	2.1

FGP-30F	0.38	1.5
FGP-36F	0.66	3.3
FGP-36W	0.66	3.3
FGP-36WE	0.66	3.3
FGP-3648F	0.82	3.8
FGP-3648W	0.82	3.8
FGP-3648WE	0.82	3.8
FGP-48F	1.04	4.7

B. Table-2: FloGard®

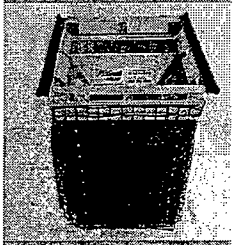
Model Number	Filtered Flow Capacity (cubic feet per second)	Bypass Flow Capacity (cubic feet per second)
FF-12D	0.11	0.3
FF-V64D	0.11	0.3
FF-16D	0.16	0.7
FF-1624D	0.23	1.1
FF-18D	0.19	0.9
FF-1824D	0.23	1.1
FF-1836SD	0.35	1.8
FF-1836DGO	0.35	1.8
FF-1848DGO	0.43	2.4
FF-21D	0.25	1.2
FF-24D	0.30	1.5
FF-24DGO	0.30	1.5
FF-2430D	0.34	1.8
FF-30D	0.39	2.1
FF-36D	0.48	2.7
FF-FB24	0.05	0.4

KRISTAR ENTERPRISES, INC.

Performance Summary

Tech Bulletin
KS-FGPWWC-082205-C

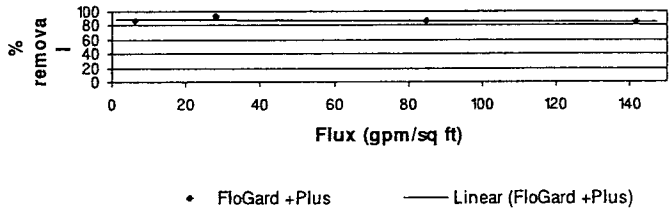
Kristar FloGard +PLUS® Catch Basin Insert Filter



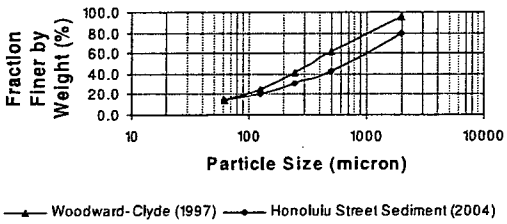
See product specifications for standard model details

Independent field tests conducted in Hawaii and New Zealand on FloGard +PLUS® Catch Basin Insert Filters to determine TSS removal efficiency. Results were extrapolated to a typical street deposited sediment particle size. Removal efficiencies were plotted and reflect effective TSS removal over the typical range of operating flow rates. Results are shown below as a function of unit internal surface area.

FloGard +Plus®
TSS Removal
Typical Urban Runoff Distribution*
***extrapolated from available field test data**



Street Deposited Sediment
Typical Particle Size Distribution
from urban runoff TSS survey data



Units are sized to fit most common styles of drainage inlet grate frames or inlet widths. Rated filtered flow capacities for each model typically exceed the required "first flush" treatment flow rate, and account for reduction in capacity as the unit accumulates suspended pollutants. Rated bypass capacity for each model also typically exceeds the inlet capacity of the catch basin.

Kristar's FloGard +PLUS® Catch Basin Insert Filter is an efficient inlet prefilter designed to remove suspended sediment and floatable trash and hydrocarbons from stormwater runoff in new or retrofit applications. It is ideally suited for removal of primary pollutants from paved surfaces in commercial and residential areas, or may form part of a treatment train. The device features a unique dual-bypass design, durable components, flexible installation options and easy maintenance access.

FloGard +PLUS® Test Results Summary

Testing Agency	% TSS Removal	% Oil & Grease Removal
UCLA	80*	70-80
U of Auckland Tonkin & Taylor Ltd (for City of Auckland)	95** 78-86***	
U of Hawaii (for City of Honolulu)	80***	

*Sand larger than ~575 µm
**Sand distribution ~100-1000 µm
***Local street sweep material (distribution consistent with NURP)

Kristar Enterprises
1219 Bruce Avenue
Santa Rosa, CA
95401

(800) 579-8819

www.kristar.com

V. Implementation, Maintenance and Inspection Responsibility for BMPs (O&M Plan)

The property owner, California Brea Partners, L.P. will be responsible for common area maintenance. BOSC Equities is the general partner and manager responsible for day to day oversight on behalf of owner. The contact person for Bosc Equities is Mr. Marc Harris, 413 S. Associated Road, Brea, CA 92821; phone number (714) 990-5715. Mr. Harris shall be responsible for the management of the project site plus implementation and maintenance of the BMPs required by this WQMP.

Maintenance and inspection activities for the identified BMPs will be performed as indicated on the enclosed BMP Operation and Maintenance Plan (O&M). The Owner shall be responsible for all maintenance and inspection responsibilities for private common landscaped areas, private drives, parking areas, parking aisles, curbs and gutters, catch basins and storm drain system, and maintaining all applicable project related source control BMPs and treatment BMPs (vegetated swales).

Funding for long-term BMP Maintenance will be through fees collected in the form of lease and rental revenues; a portion of which shall be used to provide for long-term BMP maintenance of the site.

In addition, the **Owner shall retain all maintenance records for a period of five years after the recorded inspection date for the lifetime of the project. The records shall be made readily available for review by government agencies.**

The Owner shall also be required to submit an Annual Compliance Certification to the City of Brea based upon inspection and maintenance of all BMPs recommended and detailed in the Operation and Maintenance Plan contained within this WQMP. Annual self-compliance certification shall be based upon a review of the site inspection and maintenance reports conducted at the frequency recommended in the O&M Plan completed since the last annual self-compliance certification and a visual inspection of the entire site. The Certification submitted to the City will include copies of all inspection and maintenance records from the previous year. Annual compliance certification shall be completed and submitted to the City by July 1st of each year. The completed certificate should be sent to:

The City of Brea
Attention: NPDES Coordinator/City Engineer
1 Civic Center Circle
Brea, CA 92821

A copy of the Annual Certificate of Compliance is located at the end of this section.

Operations and Maintenance (O&M) Plan
Water Quality Management Plan

For

BREA PLAZA
NORTHWEST CORNER OF IMPERIAL HIGHWAY
AND ASSOCIATED ROAD
BREA, CA

The property owner, California Brea Partners, L.P. will be responsible for common area maintenance. BOSC Equities is the general partner and manager responsible for day to day oversight on behalf of owner.

Table 5, Operations and Maintenance Plan, Brea Plaza

BMP	Responsible Party	Maintenance Activity	Inspection/Maintenance Frequency*
Source Control BMPs (Structural and Non-Structural)			
N1. Education for Property Owners, Tenants and Occupants	The owner and owner's agent	The owner will insure that all tenants will be given a copy of the lease agreement, which will contain a section outlining the environmental awareness education materials. The owner shall establish requirements for the implementation of a community awareness program that informs tenants of the impacts of dumping oil, paints, solvents or other potentially harmful chemicals into the storm drain; the proper use and management of fertilizers, pesticides and herbicides in home landscaping and gardening practices; the impacts of littering and improper watering. Environmental awareness education materials, including, but not limited to those included in Section VII of this WQMP, shall be made readily available to all tenants at the signing of lease and periodically thereafter by management.	Educational information will be provided by the Owner to the Tenant at approval and signing of the lease; Annually thereafter. Other agencies providing services to businesses (The City of Brea, Metropolitan Water District, and the County of Orange) will continuously provide educational materials to residents as brochures and through the internet. See these websites for further information: http://www.ci.brea.ca.us/article.cfm?id=635 http://www.mwdoc.com/ http://www.ocwatersheds.com/PublicEducation/pe_introduction.asp
N2. Activity Restriction	The owner and owner's agent	Within the lease agreement to be prepared by the owner, language shall be included to identify surface water quality protection required by tenants. These may include restrictions on onsite vehicle maintenance, vehicle washings and stringent litter control. Surface water quality activities shall also be conducted in conformance with the Water Quality Management Plan and City of Brea Municipal Code, Ch. 13.32 Storm Water Drainage, as it relates to the handling and disposal of contaminants.	Daily.

Table 5, Operations and Maintenance Plan, "Brea Plaza"

BMP	Responsible Party	Maintenance Activity	Inspection/Maintenance Frequency*
N3. Common Area Landscape Management (IC-7)	The owner and owner's agent	Landscape management programs will be designed by the Owner, which will be responsible for maintaining all common areas within the site. These programs will include how to mitigate the potential dangers of fertilizer and pesticide usage. Ongoing maintenance will be consistent with the City of Brea's Water Conserving Landscape Ordinance, as referenced in the City's Municipal Code (Chapter 20.52), and the State of California Model Water-Efficient Landscape Ordinance. Native, drought tolerant plant material shall be employed wherever feasible.	Monthly during regular maintenance, manage landscaping in accordance with the Ongoing maintenance will be consistent with the City of Brea Water Conserving Landscape ordinance and the State of California Model Water-Efficient Landscape Ordinance.
N4. BMP Maintenance	The owner and owner's agent	Site management shall be responsible for implementation of each applicable non-structural, structural and treatment BMP as well as scheduling inspection and maintenance cleaning of all applicable structural BMP facilities. Site management shall be responsible for inspection and maintenance activities in landscape areas (see Section VI, Exhibit A). Debris and other water pollutants will be controlled, contained and disposed of in a proper manner by staff or the maintenance contractor. Section V refers.	Per these tables.

Table 5, Operations and Maintenance Plan, "Brea Plaza"

BMP	Responsible Party	Maintenance Activity	Inspection/Maintenance Frequency*
N11. Common Area Litter Control	The owner and owner's agent	The owner's assigned site maintenance staff shall be required to maintain weekly sweeping and trash pick-up within the project areas and landscape areas. This will be achieved through the use of a maintenance contractor or site staff. Trash areas and receptacles will be inspected daily to make sure lids are closed, that surrounding areas are trash-free and that full receptacles are regularly emptied. Pursuant to Section V, responsibility shall include the emptying of trash receptacles, noting of disposal violations by tenants, and reporting such violations to management for investigation.	Daily inspection and weekly grooming and clean-up.
N12. Employee Training	The owner and owner's agent	An employee training/education program will be established as it would apply to all employees and contractors of the site to inform and train employees engaged in maintenance activities regarding the impact of improper disposal of sediments, wastes, chemicals and other potential pollutants; the proper use of fertilizers and pesticides in landscaping maintenance practices; and the impacts of littering and improper water disposal.	Upon first hire and annually thereafter for employees and volunteers, to include the educational materials contained in the approved Water Quality Management Plan.
N14. Common Area Catch Basin Inspection	The owner and owner's agent	All private common area onsite catch basins and area drains, inlets and storm drain facilities will be inspected, cleaned and maintained on a monthly basis in conjunction with landscape maintenance, as necessary and at a minimum prior to the storm season, no later than October 1st of each year.	Once a month to clean debris, silt and trash accumulated at area drains and inlets. October 1ST of each year, prior to "first flush" storm.

Table 5, Operations and Maintenance Plan, "Brea Plaza"

BMP	Responsible Party	Maintenance Activity	Inspection/Maintenance Frequency*
N15. Street Sweeping Private Streets and Parking Lots (IC-15)	The owner and owner's agent	The owner's site maintenance staff shall be responsible for ensuring that all streets and any common parking areas vacuum swept on a weekly basis. This procedure may be intensified around October 1st of each year prior to the "first flush" storm if needed.	Sweep once per week and as needed.
Provide Storm Drain System Stenciling and Signage (SD-13)	The owner and owner's agent	Stencil "No Dumping – Drains to Ocean" on all catch basins in paved areas where visibility is high.	Re-stencil every six months or as needed
Design and Construct Trash and Waste Storage Areas to Reduce Pollutant Introduction (SD-32)	The owner and owner's agent	Trash area will be designed with enclosures to prevent storm water runoff from the storage area. Drainage from adjacent areas will be diverted around trash storage area to avoid run-on. Trash will be removed on a regular basis or as required. In addition, these areas will be checked on a daily basis for debris and overfill.	All trash and waste areas shall inspected daily and emptied weekly.
Use Efficient Irrigation Systems & Landscape Design (SD-10, SD-12)	The owner and owner's agent	As a part of the design of all landscape areas, similar planting material with similar water requirements will be used in order to reduce excess irrigation runoff and promote infiltration. Such landscaped areas will be maintained by the owner/operator. As a part of the design of all area landscape irrigation, implementation of the City of Brea Water Conserving Landscape ordinance and Water Management Program ordinance, including, but not limited to, such provisions as water sensors, programmable irrigation times (for short cycles), etc., will be used. Such common areas will be maintained by the owner/operator.	Inspected once a week, in conjunction with maintenance operations. Verify that runoff minimizing landscape design continues to function by checking that water sensors are functioning properly, that irrigation heads are adjusted properly to eliminate overspray to hardscape areas, and to verify that irrigation timing and cycle lengths are adjusted in accordance with water demands, given time of year, weather and day or night time temperatures.

Table 5, Operations and Maintenance Plan, "Brea Plaza"

BMP	Responsible Party	Maintenance Activity	Inspection/Maintenance Frequency*
Building Maintenance (IC-3)	The owner and owner's agent	Properly collect and dispose of wash water from building washings, sidewalk washings and other power-washing activities. Properly prepare work areas so as to prevent the discharge of wash water to storm drain system.	Continuous with cleaning activities. Any washing will be conducted on an as-needed basis with dry methods preferred.
Outdoor Loading and Unloading of Materials (IC-10)	The owner and owner's agent	Keep loading area clean at all times with good housekeeping practices, inspect for trash, litter, debris and spills. Remove and discard of properly as necessary. Sweeping of area preferred over washdown. If washdown is used, all water shall be contained and not discharged to the storm drain system.	Inspect area daily. Clean up spills immediately. Clean as needed and at minimum, once per week with routine parking lot sweeping.
Wash water control for food preparation areas (IC-22)	The owner and owner's agent	Restaurants and food-preparation areas will not employ garbage disposals and will discourage the disposal of food wastes to the sanitary sewer system. The onsite restaurant will have a grease interceptor to help minimize the effects of Food, Oils and Grease (FOG) on the sanitary sewer. Food Preparation areas will additionally follow BMP guidelines specified in IC-22 Eating and Drinking Establishments.	Food preparation areas will be maintained continuously with the operation of the restaurant. The grease interceptor will inspected daily for leaks and volume levels that would require maintenance or removal to an approved, offsite grease recycling facility)

Table 5, Operations and Maintenance Plan, "Brea Plaza"

BMP	Responsible Party	Maintenance Activity	Inspection/Maintenance Frequency*
Treatment Control BMPs			
Vegetated Swales (TC-30)	The owner and owner's agent	Periodic mowing to keep grass height at approximately 6", weed control, watering, reseeding bare areas, clearing of debris and blockages. Inspect at least twice per year for signs of erosion, damage, debris and sediment accumulation. Additional inspections after periods of heavy runoff recommended. Inspect periodically for pools of standing water.	Inspect swales at least twice annually for erosion, damage to vegetation, and sediment and debris accumulation preferably at the end of the wet season to schedule summer maintenance and before major fall runoff to be sure the swale is ready for winter. However, additional inspection after periods of heavy runoff is desirable. The swale should be checked for debris and litter, and areas of sediment accumulation on a monthly basis. Maintenance will be on an as-needed basis and in conjunction with weekly landscape maintenance. Sediment accumulating near culverts and in channel should be manually removed when it builds up to 75 mm (3 in.) at any spot, or covers vegetation.

Table 5, Operations and Maintenance Plan, "Brea Plaza"

BMP	Responsible Party	Maintenance Activity	Inspection/Maintenance Frequency*
Bio Clean Basin Weir System	The owner and owner's agent	Filters will be visually inspected for debris blockage and wear and replaced or rearranged as necessary.	First Row – Sediment/Oils & Greases Dry Weather: Once every 2 months Wet Weather: Once every month Annually: Replace filter media Second Row – Heavy Metals/ Odors & Some Bacteria Dry Weather: Once every 2 months Wet Weather: Once every month Annually: Replace filter media Third Row – Pathogen Dry Weather: Once every 2 months Wet Weather: Once every month Annually: Replace filter media Trash & debris found in the filter will be disposed of in the trash. Sediments must be collected by use of a vactor truck which vacuums the sediments out of the drop inlets and other drainage structures. The sediments are then transported daily to designated sites. Registered transporters are used to ship any hazardous sediments from the sites to authorized hazardous wasted disposal facilities under standard California Uniform Hazardous Waste Manifests. The filter replacements will be disposed of by the manufacturer, per their cost estimate for annual inspections.

Table 5, Operations and Maintenance Plan, "Brea Plaza"

BMP	Responsible Party	Maintenance Activity	Inspection/Maintenance Frequency*
Kristar FloGard+PLUS Insert Filters	The owner and owner's agent	1. The catch basin grate shall be removed and set to one side. The catch basin shall be visually inspected for defects and possible illegal dumping. If illegal dumping has occurred, the proper authorities and property owner representative shall be notified as soon as practicable. 2. Using an industrial vacuum, the collected materials shall be removed from the liner. (Note: DPS uses a truck-mounted vacuum for servicing Flo-Gard+Plus® catch basin inserts.) 3. When all of the collected materials have been removed, the filter medium pouches shall be removed by unsnapping the tether from the D-ring and set to one side. The filter liner, gaskets, stainless steel frame and mounting brackets, etc. shall be inspected for continued serviceability. Minor damage or defects found shall be corrected on-the-spot and a notation made on the Maintenance Record. More extensive deficiencies that affect the efficiency of the filter (torn liner, etc.), if approved by the customer representative, will be corrected and an invoice submitted to the representative along with the Maintenance Record. 4. The filter medium pouches shall be inspected for defects and continued serviceability and replaced as necessary and the pouch tethers re-attached to the liner's D-ring. 5. The grate shall be replaced.	Drainage Protection Systems (DPS) recommends that installed Flo-Gard+Plus® Catch Basin Insert Filters be serviced on a recurring basis. Ultimately, the frequency depends on the amount of runoff, pollutant loading and interference from debris (leaves, vegetation, cans, paper, etc.); however, it is recommended that each installation be serviced a minimum of three times per year, with a change of filter medium once per year. DPS technicians are available to do an on-site evaluation, upon request. DPS guidelines for the timing of service are as follows: 1. For areas with a definite rainy season: Prior to, during and following the rainy season. 2. For areas subject to year-round rainfall: On a recurring basis (at least three times per year). 3. For areas with winter snow and summer rain: Prior to and just after the snow season and during the summer rain season. 4. For installed devices not subject to the elements (washracks, parking garages, etc.): On a recurring basis (no less than three times per years). The frequency of filter medium pouch exchange will be in accordance with the existing DPS-Customer Maintenance Contract. DPS recommends that the medium be changed at least once per year. During the appropriate service, or if so determined by the service technician during a non-scheduled service, the filter medium pouches will be replaced with new pouches. Once the exposed pouches and debris have been removed, DPS has possession and must dispose of it in accordance with local, state and federal agency requirements. Sediments must be collected by use of a vactor truck which vacuums the sediments out of the drop inlets and other drainage structures. The sediments are then transported daily to designated sites. Registered transporters are used to ship any hazardous sediments from the sites to authorized hazardous wasted disposal facilities under standard California Uniform Hazardous Waste Manifests. Structural integrity of broken or otherwise damaged inserts shall be repaired/replaced by Drainage Protection Systems (DPS) at (800) 579-8819 for the life of the project

Forms to Record BMP Implementation, Maintenance, and Inspection

The form that will be used to record implementation, maintenance, and inspection of BMPs is attached. (Make copies of the following master form as necessary)

Recordkeeping

All records must be maintained for at least five (5) years and must be made available for review upon request.

Annual Compliance Certification

The form that will be used to certify implementation, maintenance, and inspection of BMPs is attached following the Record Form. (Make copies of the following master form as necessary). Annual self-compliance certification shall be completed and submitted to the City by July 1 of each year. The completed certificate should be sent to the City of Brea.

The City of Brea
Attention: NPDES Coordinator/City Engineer
1 Civic Center Circle
Brea, CA 92821

RECORD OF BMP IMPLEMENTATION, MAINTENANCE, AND INSPECTION

Today's Date: _____

Name of Person Performing Activity (Printed): _____

Signature: _____

BMP Name (As Shown in Table 5)	Brief Description of Implementation, Maintenance, and Inspection Activity Performed

ANNUAL CERTIFICATE OF COMPLIANCE

Project: Brea Plaza Year: _____

CERTIFICATION: I certify that the above named project has complied with the inspection and maintenance frequencies specified for the onsite Best Management Practices (BMPs) detailed in the Operation and Maintenance Plan and the Water Quality Management Plan for the project. The project includes these routine source control BMPs:

X	N1. Education for Property Owners	X	Provide Storm Drain System Stenciling and Signage
X	N2. Activity Restriction		Outdoor Material Storage Areas
X	N3. Common Area Landscape Management	X	Use Efficient Irrigation Systems & Landscape Design
X	N4. BMP Maintenance	X	Protect Slopes and Channels and Provide Energy Dissipation
	N5. Title 22 CCR Compliance		Loading Docks
X	N7. Spill Contingency Plan		Maintenance Bays
	N8. Underground Storage Tank Compliance		Vehicle Wash Areas
	N9. Hazardous Materials Disclosure Compliance		Outdoor Processing Areas
	N10. Uniform Fire Code Implementation		Equipment Wash Areas
X	N11. Common Area Litter Control		Fueling Areas
X	N12. Employee Training		Hillside Landscaping
	N13. Housekeeping of Loading Docks	X	Wash Water Controls for Food Preparation Areas
X	N14. Catch Basin (Area Drain, Inlet) Inspection		Community Car Wash Racks
X	N15. Street Sweeping Public Streets and Parking Lots		
	N17. Retail Gasoline Outlets		

The Owner has also upheld the recommended inspection and maintenance schedule for the project's treatment BMPs:

LIST BMPs Vegetated Swales, Katchall Drain Inserts

This facility is in compliance with the requirements of the City of Brea, the Regional Water Quality Control Board and the National Pollution Discharge Elimination System. Copies of site inspection and maintenance reports are on file at main Facility offices.

Facility Owner/Director: _____

Printed name: Date:_____

_____

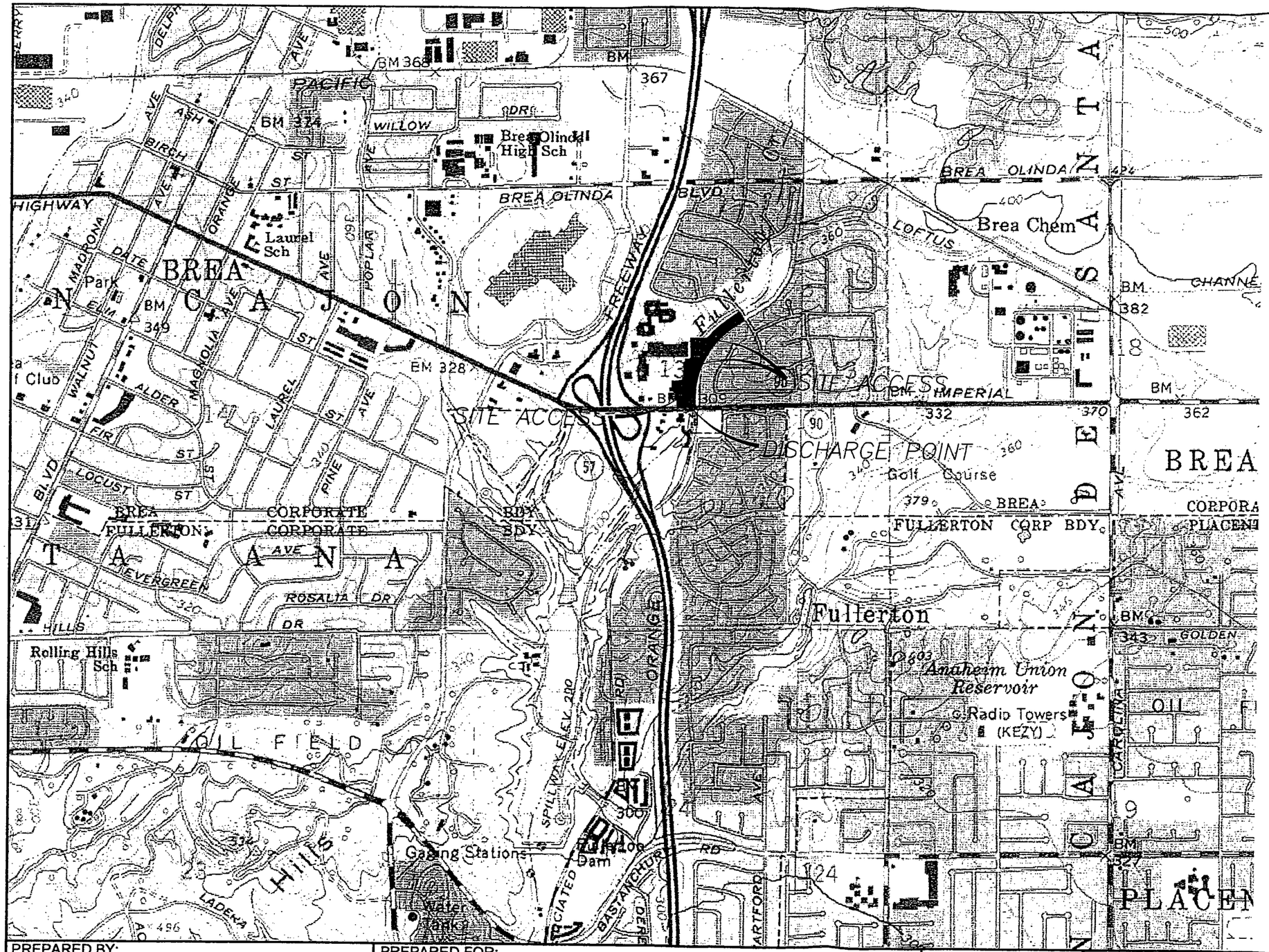
I certify under penalty of law that this document and any attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

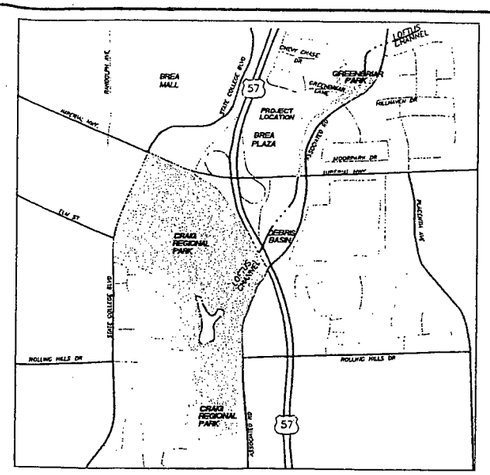
Facility Owner/Director: _____

Printed name: Date:_____

_____

VI. Location Map, Site Plan, and BMP Details





VICINITY MAP
NOT TO SCALE

LEGEND

PROJECT AREA

SCALE: 1" = 1200'

PREPARED BY:
PCA ENGINEERING
PARDUE, CORNWELL & ASSOCIATES, INC.
Planning • Engineering • Surveying

CORPORATE OFFICE
18551 VON KARMAN SUITE 140
IRVINE, CA 92612
949-724-9480 949-724-9484 FAX

COACHELLA VALLEY OFFICE
74-040 EL PASEO, SUITE C
PALM DESERT, CA 92260
760-309-2383 760-779-0673 FAX

PREPARED FOR:
BOSC EQUITIES
413 S. ASSOCIATED ROAD
BREA, CA 92821
(714) 990-5715

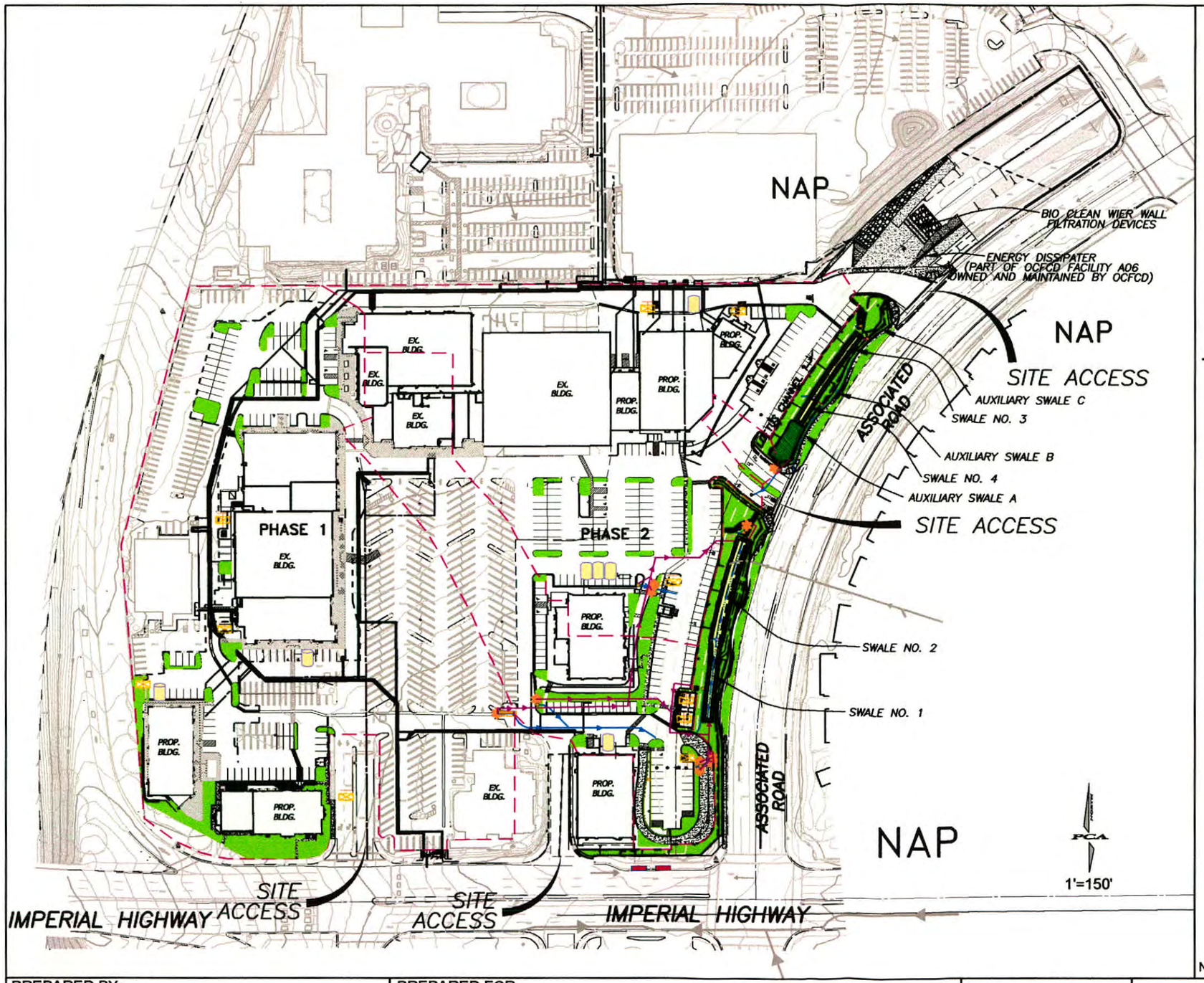
DATE PREPARED:
03/07/08

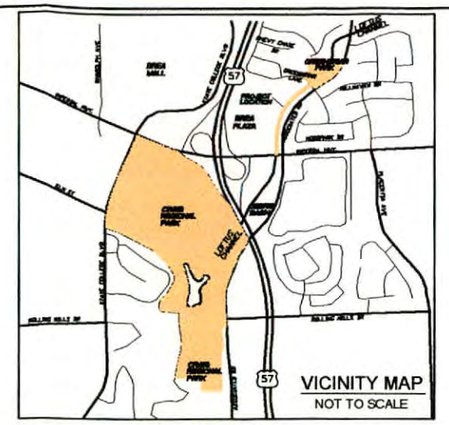
W.O. # 3210-4X

"BREA PLAZA" REDEVELOPMENT
PARCEL MAP BOOK 105/17-19
CITY OF BREA, CALIFORNIA

WQMP
EXHIBIT A
LOCATION MAP

F:\3210\Engineering\SLWQ\WQMP Location Map.dwg 3/12/08





LEGEND

- PROJECT BOUNDARY
- NAP — NOT A PART
- DIRECTION OF SURFACE FLOW (ONSITE)
- DIRECTION OF SURFACE FLOW (OFFSITE)
- PROPOSED TRIBUTARY AREAS
- PROPOSED STORM DRAIN & FLOW DIRECTION (PRIVATE)
- PROPOSED LOW FLOW STORM DRAIN (PRIVATE)
- EXISTING STORM DRAIN & FLOW DIRECTION
- LANDSCAPE AREAS (PRIVATE) WITH BMP's: SD-10 SITE DESIGN/LANDSCAPE PLANNING SD-12 EFFICIENT IRRIGATION
- RECREATIONAL LANDSCAPE AREAS (PRIVATE) WITH BMP's SD-10 SITE DESIGN/LANDSCAPE PLANNING SD-12 EFFICIENT IRRIGATION
- LANDSCAPE SLOPES (PRIVATE) WITH BMP's: SD-10 SITE DESIGN/LANDSCAPE PLANNING SD-12 EFFICIENT IRRIGATION
- CATCH BASIN (PRIVATE) WITH BMPS: SD-13 CATCH BASIN STENCILING
- CATCH BASIN (PRIVATE) WITH BMPS: SD-13 CATCH BASIN STENCILING MP-52 DRAIN INSERTS (KRISTAR) FOR PRETREATMENT
- INLET WITH KRISTAR INSERTS (MP-52)
- WATER QUALITY INLETS (PRIVATE)
- CATCH BASIN (EXISTING)
- TC-30 VEGETATED SWALE (PRIVATE)
- GREASE CONTAINMENT & RECYCLING TANK FOR RESTAURANTS. FINAL LOCATION - TBD
- SD-32, IC-21 TRASH ENCLOSURE (PRIVATE)

NOTE: ALL "PRIVATE" IMPROVEMENTS SHALL BE MAINTAINED BY OWNER

PREPARED BY:
PCA ENGINEERING
PARDUE, CORNWELL & ASSOCIATES, INC.
Planning • Engineering • Surveying
CORPORATE OFFICE
18581 VON KARMAN SUITE 140
IRVINE, CA 92612
949-724-9480 949-724-9484 FAX
COACHELLA VALLEY OFFICE
74-040 EL PASEO, SUITE C
PALM DESERT, CA 92260
760-309-2383 760-779-0673 FAX

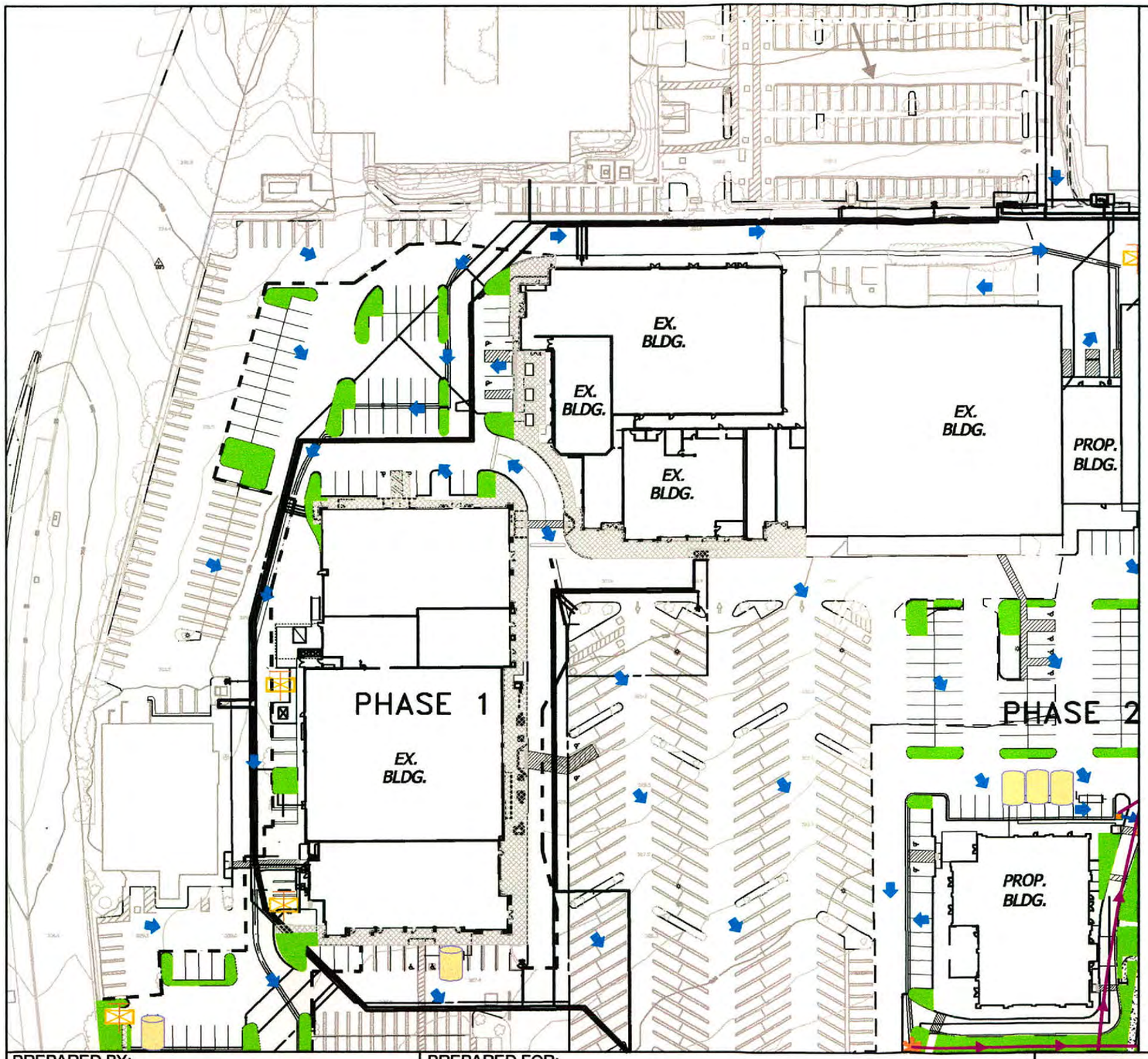
PREPARED FOR:
BOSC EQUITIES
413 S. ASSOCIATED ROAD
BREA, CA 92821
(714) 990-5715

DATE REVISED:
1/20/11

W.O. # 487-1

"BREA PLAZA" REDEVELOPMENT
PARCEL MAP BOOK 105/17-19
CITY OF BREA, CALIFORNIA

WQMP
EXHIBIT B
SITE MAP
SHEET 1 OF 5



LEGEND

- PROJECT BOUNDARY
- NAP — NOT A PART
- DIRECTION OF SURFACE FLOW (ONSITE)
- DIRECTION OF SURFACE FLOW (OFFSITE)
- PROPOSED STORM DRAIN (PRIVATE)
- PROPOSED LOW FLOW STORM DRAIN (PRIVATE)
- EXISTING STORM DRAIN
- LANDSCAPE AREAS (PRIVATE) WITH BMP's:
  SD-10 SITE DESIGN/LANDSCAPE PLANNING
  SD-12 EFFICIENT IRRIGATION
- RECREATIONAL LANDSCAPE AREAS (PRIVATE) WITH BMP's
  SD-10 SITE DESIGN/LANDSCAPE PLANNING
  SD-12 EFFICIENT IRRIGATION
- LANDSCAPE SLOPES (PRIVATE) WITH BMP's:
  SD-10 SITE DESIGN/LANDSCAPE PLANNING
  SD-12 EFFICIENT IRRIGATION
- CATCH BASIN (PRIVATE) WITH BMPS:
  SD-13 CATCH BASIN STENCILING
- CATCH BASIN (PRIVATE) WITH BMPS:
  SD-13 CATCH BASIN STENCILING
  MP-52 DRAIN INSERTS (KRISTAR) FOR PRETREATMENT
- INLET WITH KRISTAR INSERTS (MP-52)
- WATER QUALITY INLETS (PRIVATE)
- CATCH BASIN (EXISTING)
- TC-30 VEGETATED SWALE (PRIVATE)
- GREASE CONTAINMENT & RECYCLING TANK FOR RESTAURANTS. FINAL LOCATION - TBD
- SD-32, IC-21 TRASH ENCLOSURE (PRIVATE)

NOTE: ALL "PRIVATE" IMPROVEMENTS SHALL BE MAINTAINED BY OWNER

PCA
1'=80'

PREPARED BY:
PCA ENGINEERING
PARDUE, CORNWELL & ASSOCIATES, INC.
Planning • Engineering • Surveying
CORPORATE OFFICE
18551 VON KARMAN SUITE 140
IRVINE, CA 92612
949-724-9480 949-724-9484 FAX
COACHELLA VALLEY OFFICE
74-040 EL PASEO, SUITE C
PALM DESERT, CA 92260
760-309-2383 760-779-0673 FAX

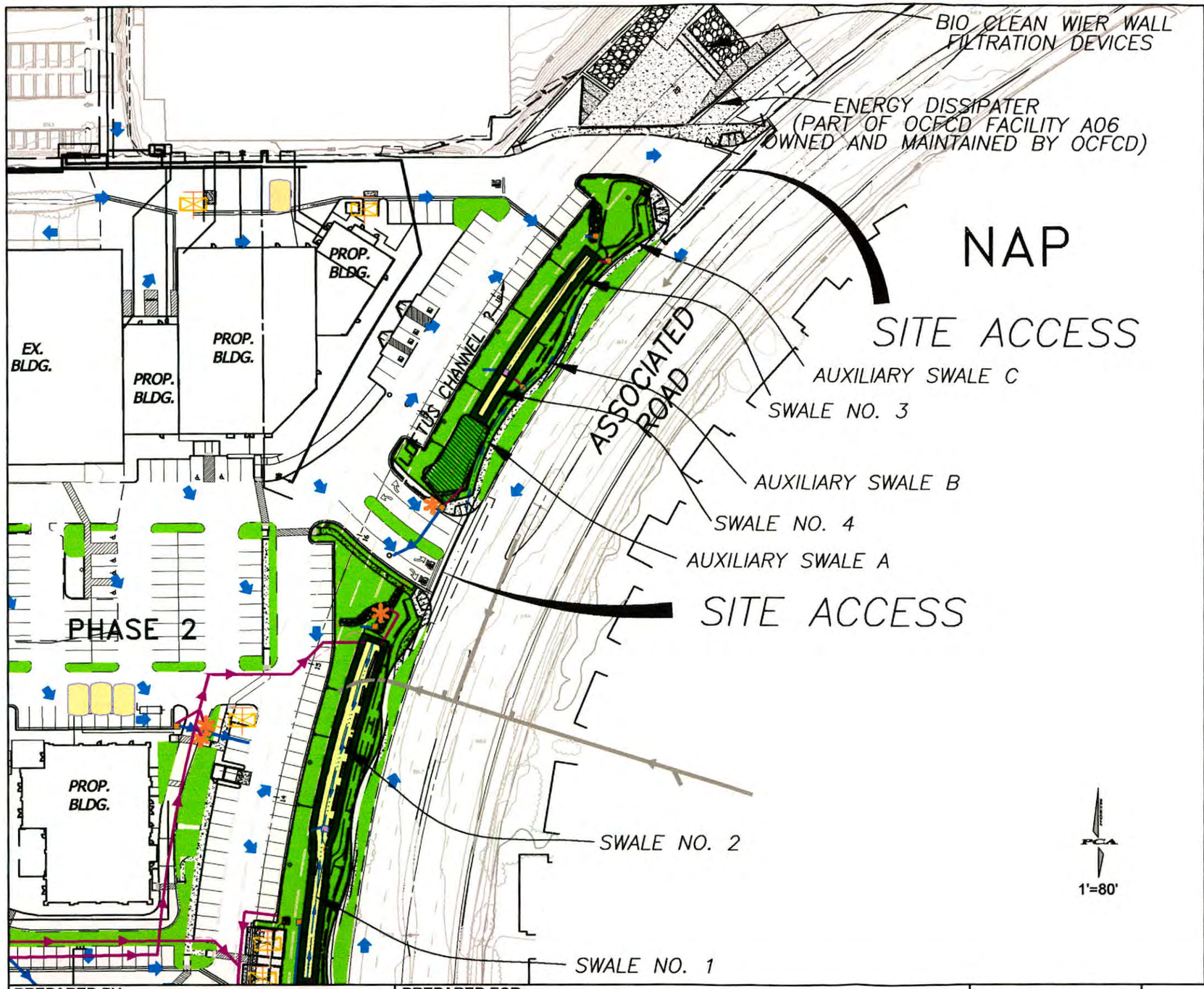
PREPARED FOR:
BOSC EQUITIES
413 S. ASSOCIATED ROAD
BREA, CA 92821
(714) 990-5715

DATE REVISED:
1/20/11

W.O. # 487-1

"BREA PLAZA" REDEVELOPMENT
PARCEL MAP BOOK 105/17-19
CITY OF BREA, CALIFORNIA

WQMP
EXHIBIT B
SITE MAP
SHEET 2 OF 5



LEGEND

- PROJECT BOUNDARY
- NAP — NOT A PART
- DIRECTION OF SURFACE FLOW (ONSITE)
- DIRECTION OF SURFACE FLOW (OFFSITE)
- PROPOSED STORM DRAIN & FLOW DIRECTION (PRIVATE)
- PROPOSED LOW FLOW STORM DRAIN (PRIVATE)
- EXISTING STORM DRAIN & FLOW DIRECTION
- LANDSCAPE AREAS (PRIVATE) WITH BMP's: SD-10 SITE DESIGN/LANDSCAPE PLANNING SD-12 EFFICIENT IRRIGATION
- RECREATIONAL LANDSCAPE AREAS (PRIVATE) WITH BMP's SD-10 SITE DESIGN/LANDSCAPE PLANNING SD-12 EFFICIENT IRRIGATION
- LANDSCAPE SLOPES (PRIVATE) WITH BMP's: SD-10 SITE DESIGN/LANDSCAPE PLANNING SD-12 EFFICIENT IRRIGATION
- CATCH BASIN (PRIVATE) WITH BMPS: SD-13 CATCH BASIN STENCILING
- CATCH BASIN (PRIVATE) WITH BMPS: SD-13 CATCH BASIN STENCILING MP-52 DRAIN INSERTS (KRISTAR) FOR PRETREATMENT
- INLET WITH KRISTAR INSERTS (MP-52)
- WATER QUALITY INLETS (PRIVATE)
- CATCH BASIN (EXISTING)
- TC-30 VEGETATED SWALE (PRIVATE)
- GREASE CONTAINMENT & RECYCLING TANK FOR RESTAURANTS. FINAL LOCATION - TBD
- SD-32, IC-21 TRASH ENCLOSURE (PRIVATE)

NOTE: ALL "PRIVATE" IMPROVEMENTS SHALL BE MAINTAINED BY OWNER

PREPARED BY:
PCA ENGINEERING
PARDUE, CORNWELL & ASSOCIATES, INC.
Planning • Engineering • Surveying
CORPORATE OFFICE
18551 VON KARMAN SUITE 140
IRVINE, CA 92612
949-724-9480 949-724-9484 FAX
COACHELLA VALLEY OFFICE
74-040 EL PASEO, SUITE C
PALM DESERT, CA 92260
760-309-2383 760-779-0673 FAX

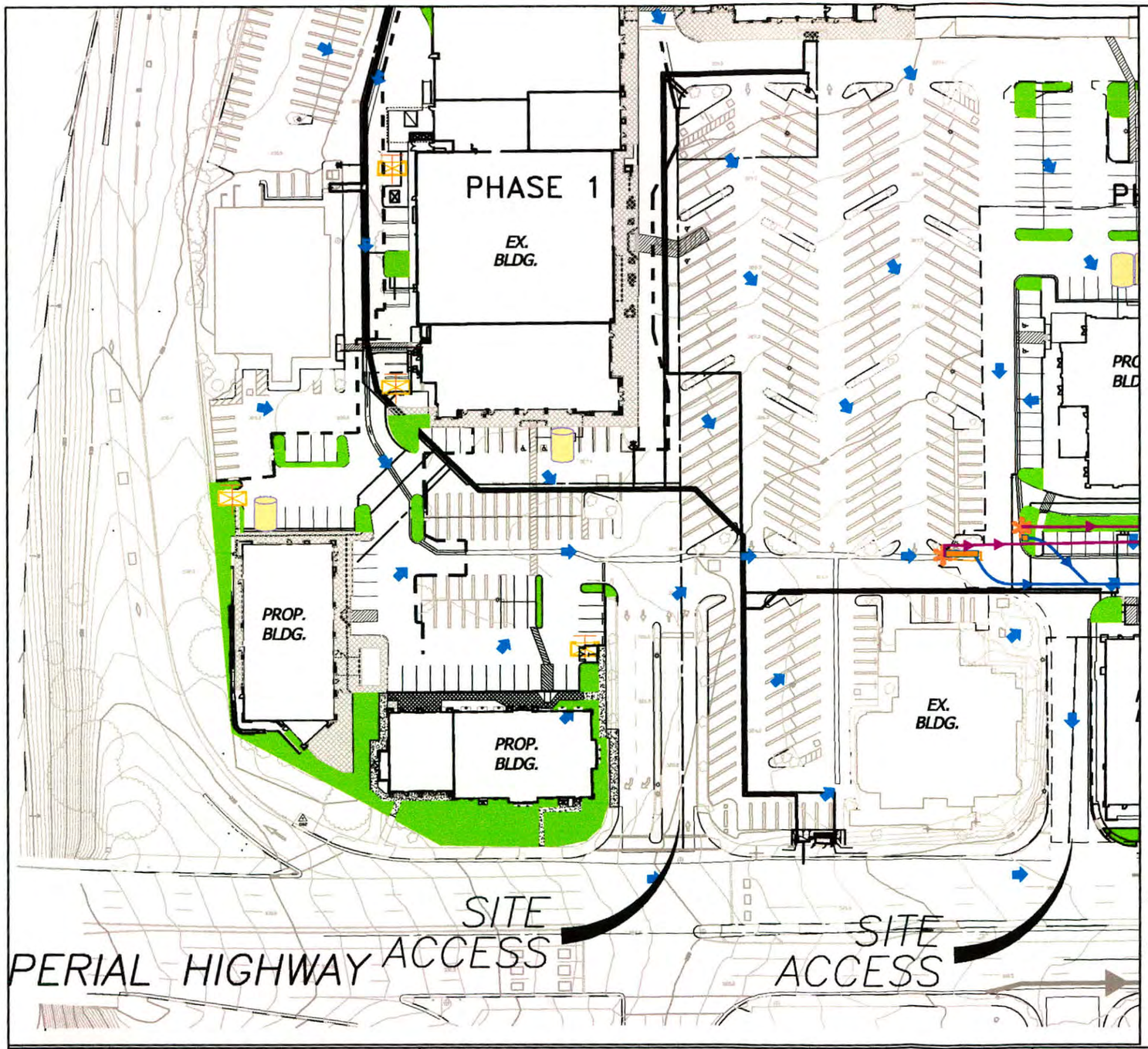
PREPARED FOR:
BOSC EQUITIES
413 S. ASSOCIATED ROAD
BREA, CA 92821
(714) 990-5715

DATE REVISED:
1/20/11

W.O. # 487-1

"BREA PLAZA" REDEVELOPMENT
PARCEL MAP BOOK 105/17-19
CITY OF BREA, CALIFORNIA

WQMP
EXHIBIT B
SITE MAP
SHEET 3 OF 5



1'=80'

LEGEND

- PROJECT BOUNDARY
- NAP — NOT A PART
- DIRECTION OF SURFACE FLOW (ONSITE)
- DIRECTION OF SURFACE FLOW (OFFSITE)
- PROPOSED STORM DRAIN & FLOW DIRECTION (PRIVATE)
- PROPOSED LOW FLOW STORM DRAIN (PRIVATE)
- EXISTING STORM DRAIN & FLOW DIRECTION
- LANDSCAPE AREAS (PRIVATE) WITH BMP's:
  SD-10 SITE DESIGN/LANDSCAPE PLANNING
  SD-12 EFFICIENT IRRIGATION
- RECREATIONAL LANDSCAPE AREAS (PRIVATE) WITH BMP's
  SD-10 SITE DESIGN/LANDSCAPE PLANNING
  SD-12 EFFICIENT IRRIGATION
- LANDSCAPE SLOPES (PRIVATE) WITH BMP's:
  SD-10 SITE DESIGN/LANDSCAPE PLANNING
  SD-12 EFFICIENT IRRIGATION
- CATCH BASIN (PRIVATE) WITH BMPS:
  SD-13 CATCH BASIN STENCILING
- CATCH BASIN (PRIVATE) WITH BMPS:
  SD-13 CATCH BASIN STENCILING
  MP-52 DRAIN INSERTS (KRISTAR) FOR PRETREATMENT
- INLET WITH KRISTAR INSERTS (MP-52)
- WATER QUALITY INLETS (PRIVATE)
- CATCH BASIN (EXISTING)
- TC-30 VEGETATED SWALE (PRIVATE)
- GREASE CONTAINMENT & RECYCLING TANK FOR RESTAURANTS. FINAL LOCATION - TBD
- SD-32, IC-21 TRASH ENCLOSURE (PRIVATE)

NOTE: ALL "PRIVATE" IMPROVEMENTS SHALL BE MAINTAINED BY OWNER

PREPARED BY:
PCA ENGINEERING
PARDUE, CORNWELL & ASSOCIATES, INC.
Planning • Engineering • Surveying
CORPORATE OFFICE
18551 VON KARMAN SUITE 140
IRVINE, CA 92612
949-724-9480 949-724-9484 FAX
COACHELLA VALLEY OFFICE
74-040 EL PASEO, SUITE C
PALM DESERT, CA 92260
760-309-2383 760-779-0673 FAX

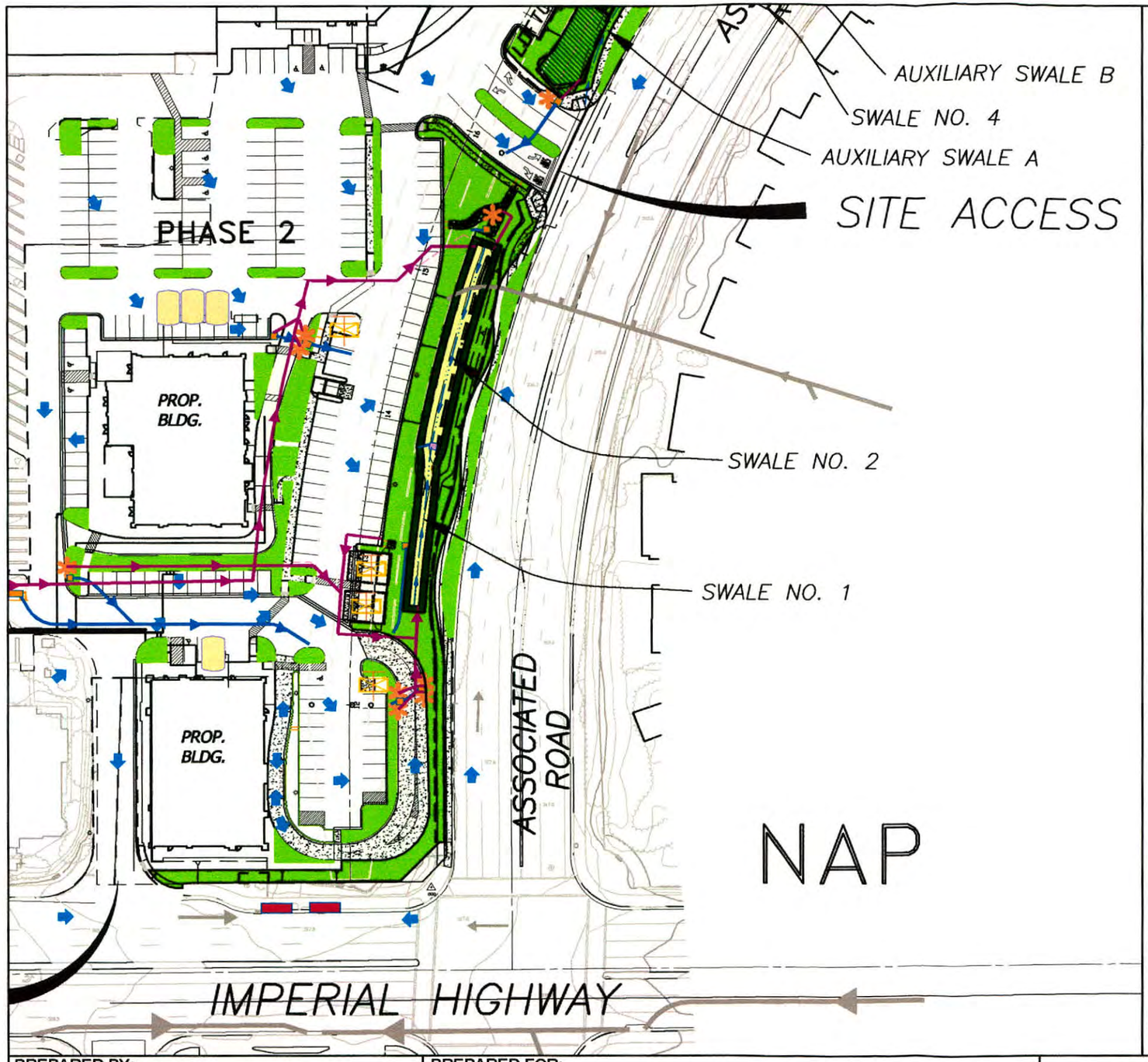
PREPARED FOR:
BOSC EQUITIES
413 S. ASSOCIATED ROAD
BREA, CA 92821
(714) 990-5715

DATE REVISED:
1/20/11

W.O. # 487-1

"BREA PLAZA" REDEVELOPMENT
PARCEL MAP BOOK 105/17-19
CITY OF BREA, CALIFORNIA

WQMP
EXHIBIT B
SITE MAP
SHEET 4 OF 5



LEGEND

- PROJECT BOUNDARY
- NAP — NOT A PART
- DIRECTION OF SURFACE FLOW (ONSITE)
- DIRECTION OF SURFACE FLOW (OFFSITE)
- PROPOSED STORM DRAIN & FLOW DIRECTION (PRIVATE)
- PROPOSED LOW FLOW STORM DRAIN (PRIVATE)
- EXISTING STORM DRAIN & FLOW DIRECTION
- LANDSCAPE AREAS (PRIVATE) WITH BMP's: SD-10 SITE DESIGN/LANDSCAPE PLANNING SD-12 EFFICIENT IRRIGATION
- RECREATIONAL LANDSCAPE AREAS (PRIVATE) WITH BMP's SD-10 SITE DESIGN/LANDSCAPE PLANNING SD-12 EFFICIENT IRRIGATION
- LANDSCAPE SLOPES (PRIVATE) WITH BMP's: SD-10 SITE DESIGN/LANDSCAPE PLANNING SD-12 EFFICIENT IRRIGATION
- CATCH BASIN (PRIVATE) WITH BMPS: SD-13 CATCH BASIN STENCILING
- CATCH BASIN (PRIVATE) WITH BMPS: SD-13 CATCH BASIN STENCILING MP-52 DRAIN INSERTS (KRISTAR) FOR PRETREATMENT
- INLET WITH KRISTAR INSERTS (MP-52)
- WATER QUALITY INLETS (PRIVATE)
- CATCH BASIN (EXISTING)
- TC-30 VEGETATED SWALE (PRIVATE)
- GREASE CONTAINMENT & RECYCLING TANK FOR RESTAURANTS. FINAL LOCATION - TBD
- SD-32, IC-21 TRASH ENCLOSURE (PRIVATE)

1'=80'

NOTE: ALL "PRIVATE" IMPROVEMENTS SHALL BE MAINTAINED BY OWNER

PREPARED BY:
PCA ENGINEERING
PARDUE, CORNWELL & ASSOCIATES, INC.
Planning • Engineering • Surveying
CORPORATE OFFICE
18551 VON KARMAN SUITE 140
IRVINE, CA 92612
949-724-9480 949-724-9484 FAX
COACHELLA VALLEY OFFICE
74-040 EL PASEO, SUITE C
PALM DESERT, CA 92260
760-309-2383 760-779-0673 FAX

PREPARED FOR:
BOSC EQUITIES
413 S. ASSOCIATED ROAD
BREA, CA 92821
(714) 990-5715

DATE REVISED:
1/20/11

W.O. # 487-1

"BREA PLAZA" REDEVELOPMENT
PARCEL MAP BOOK 105/17-19
CITY OF BREA, CALIFORNIA

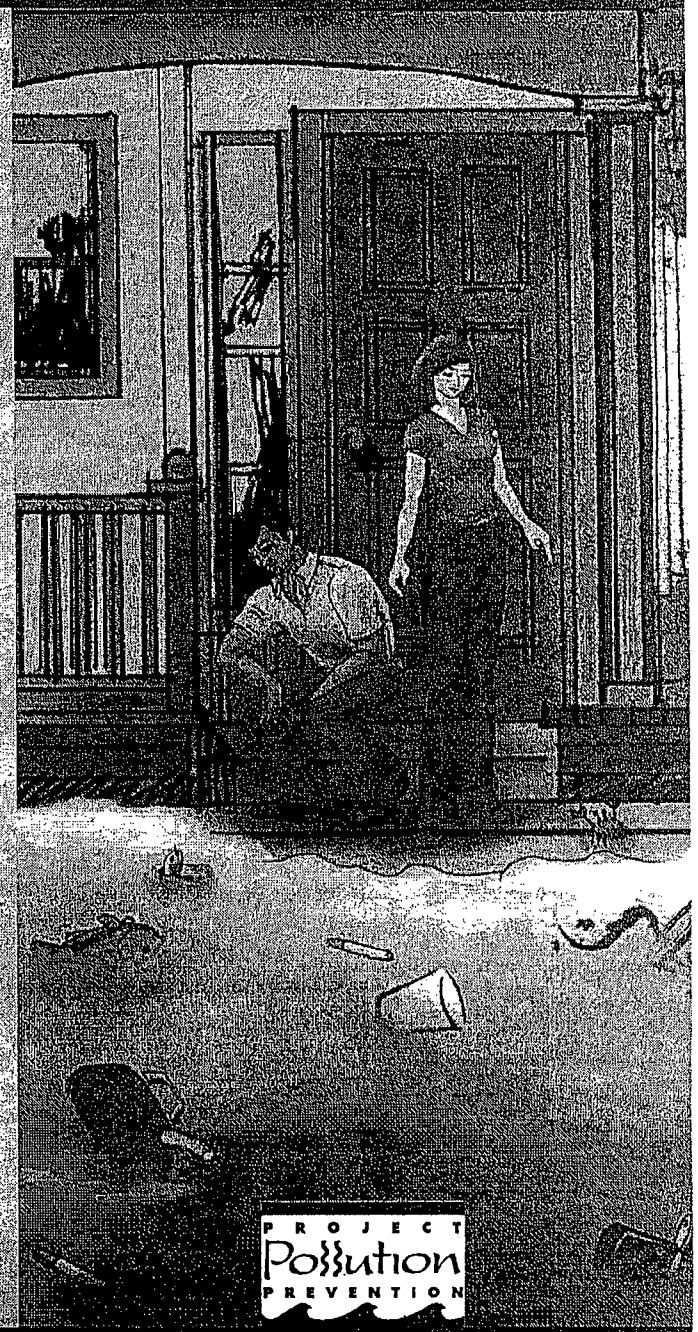
WQMP
EXHIBIT B
SITE MAP
SHEET 5 OF 5

VII. Educational Materials

1. THE OCEAN BEGINS AT YOUR FRONT DOOR
2. KEEPING PEST CONTROL PRODUCTS OUT OF CREEKS, RIVERS AND THE OCEAN
3. TIPS FOR LANDSCAPE AND GARDENING
4. HELP PREVENT OCEAN POLLUTION: A GUIDE FOR FOOD SERVICE FACILITES
5. HELP PREVENT OCEAN POLLUTION: PROPER MANAGEMENT GUIDELINES FOR YOUR BUSINESS
6. TIPS FOR USING PAINT
7. APPLICABLE FACT SHEETS
    - IC3 BUILDING MAINTENANCE
    - IC10 OUTDOOR LOADING/UNLOADING OF MATERIAL
    - IC15 PARKING AND STORAGE AREA MAINTENANCE
    - IC21 WASTE HANDLING AND DISPOSAL
    - IC22 EATING AND DRINKING ESTABLISHMENTS

1. THE OCEAN BEGINS AT YOUR FRONT DOOR

The Ocean Begins at Your Front Door



For More Information

California Environmental Protection Agency
www.calepa.ca.gov

- **Air Resources Board**
  www.arb.ca.gov
- **Department of Pesticide Regulation**
  www.cdpr.ca.gov
- **Department of Toxic Substances Control**
  www.dtsc.ca.gov
- **Integrated Waste Management Board**
  www.ciwmb.ca.gov
- **Office of Environmental Health Hazard Assessment**
  www.oehha.ca.gov
- **State Water Resources Control Board**
  www.waterboards.ca.gov

Earth 911 - community-specific environmental information
1-800-cleanup or visit www.1800cleanup.org

Health Care Agency's Ocean and Bay Water Closure and Posting Hotline
714-433-6400 or visit www.ocbeachinfo.com

Integrated Waste Management/Dept. of Orange County - information on household hazardous waste collection centers, recycling centers and solid waste collection
714-834-6752 or visit www.oclandfills.com

O.C. Agriculture Commissioner
714-447-7100 or visit www.ocagcomm.com

Stormwater Best Management Practice Handbook
Visit www.cabmphandbooks.com

UC Master Gardener Hotline
714-708-1646 or visit www.uccemg.org

The Orange County Stormwater Program has created and moderates an electronic mailing list to facilitate communications, take questions and exchange ideas among its users about issues and topics related to stormwater and urban runoff and the implementation of program elements. To join the list, please send an email to ocstormwaterinfo-join@lyris.ocwatersheds.com

Orange County Stormwater Program

Aliso Viejo	(949) 425-2535
Anaheim Public Works Operations	(714) 765-6860
Brea Engineering	(714) 990-7666
Buena Park Public Works	(714) 562-3655
Costa Mesa Public Services	(714) 754-5323
Cypress Public Works	(714) 229-6740
Dana Point Public Works	(949) 248-3584
Fountain Valley Public Works	(714) 593-4441
Fullerton Engineering Dept.	(714) 738-6853
Garden Grove Public Works	(714) 741-5956
Huntington Beach Public Works	(714) 536-5431
Irvine Public Works	(949) 724-6315
La Habra Public Services	(562) 905-9792
La Palma Public Works	(714) 690-3310
Laguna Beach Water Quality	(949) 497-0378
Laguna Hills Public Service	(949) 707-2650
Laguna Niguel Public Works	(949) 362-4337
Laguna Woods Public Works	(949) 639-0500
Lake Forest Public Works	(949) 461-3480
Los Alamitos Community Dev.	(562) 431-3538
Mission Viejo Public Works	(949) 470-3056
Newport Beach, Code & Water Quality Enforcement	(949) 644-3215
Orange Public Works	(714) 532-6480
Placentia Public Works	(714) 993-8245
Rancho Santa Margarita	(949) 635-1800
San Clemente Environmental Programs	(949) 361-6143
San Juan Capistrano Engineering	(949) 234-4413
Santa Ana Public Works	(714) 647-3380
Seal Beach Engineering	(562) 431-2527 x317
Stanton Public Works	(714) 379-9222 x204
Tustin Public Works Engineering	(714) 573-3150
Villa Park Engineering	(714) 998-1500
Westminster Public Works Engineering	(714) 898-3311 x416
Yorba Linda Engineering	(714) 961-7138
Orange County Stormwater Program	(714) 567-6363

Orange County 24-Hour
Water Pollution Problem Reporting Hotline
(714) 567-6363

Online Water Pollution Problem Reporting Form
www.ocwatersheds.com

PROJECT Pollution PREVENTION

Printed on Recycled Paper

Even if you live miles from the Pacific Ocean, you may be unknowingly polluting it.

Did You Know?

- Most people believe that the largest source of water pollution in urban areas comes from specific sources such as factories and sewage treatment plants. In fact the largest source of water pollution comes from city streets, neighborhoods, construction sites, and parking lots. This type of pollution is sometimes called "non-point source" pollution.
- There are two types of non-point source pollution: stormwater and urban runoff pollution.
- Stormwater runoff refers to runoff resulting from rainfall. It is very noticeable during heavy rainstorms when large volumes of water drain off the urban landscape picking up pollutants along the way.
- Urban runoff can happen anytime of the year when excessive water use from irrigation, vehicle washing and other sources carries trash, lawn clippings and other urban pollutants into storm drains.

Where Does It Go?

- Anything we use outside homes, vehicles and businesses – like motor oil, paint, pesticides, fertilizers, and cleaners – can be blown or washed into the storm drains.
- A little water from a garden hose or rain can also send materials into the storm drains.
- Storm drains are separate from our sanitary sewer systems; unlike water in sanitary sewers (from sinks or toilets) water in the storm drains is not treated before entering our waterways.

Sources of Non-Point Source Pollution

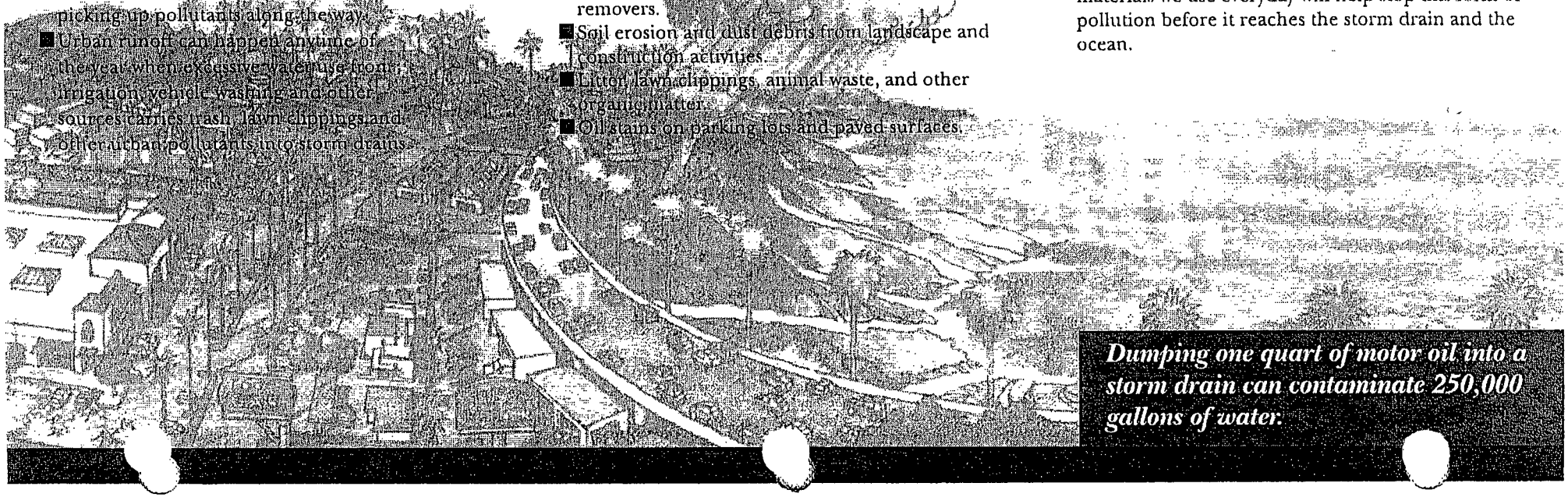
- Automotive leaks and spills.
- Improper disposal of used oil and other engine fluids.
- Metals found in vehicle exhaust, weathered paint, rust, metal plating, and tires.
- Pesticides and fertilizers from lawns, gardens and farms.
- Improper disposal of cleaners, paint and paint removers.
- Soil erosion and dust debris from landscape and construction activities.
- Litter, lawn clippings, animal waste, and other organic matter.
- Oil stains on parking lots and paved surfaces.

The Effect on the Ocean

Non-point source pollution can have a serious impact on water quality in Orange County. Pollutants from the storm drain system can harm marine life as well as coastal and wetland habitats. They can also degrade recreation areas such as beaches, harbors and bays.

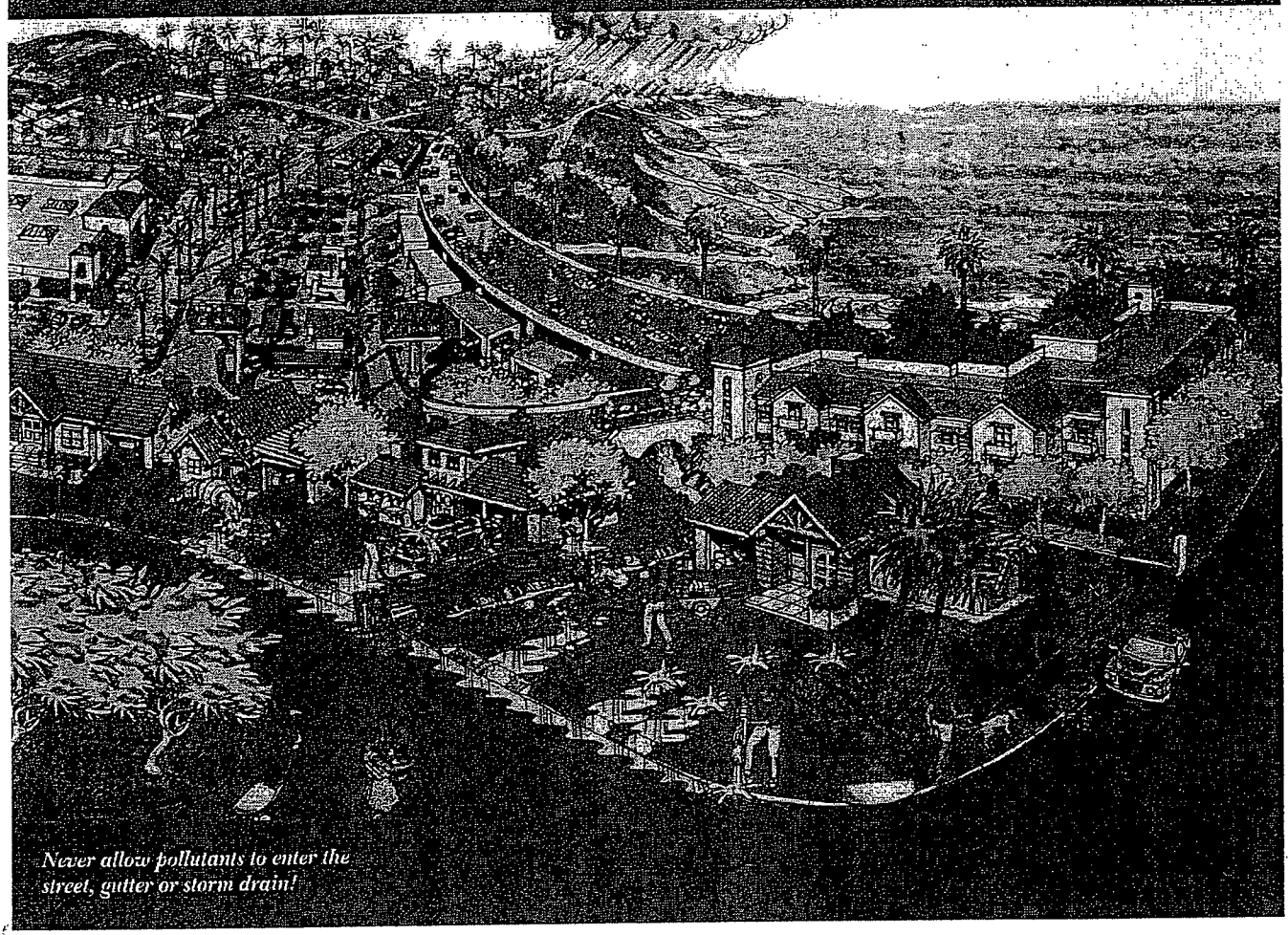
Stormwater quality management programs have been developed by the Orange County Stormwater Program under National Pollutant Discharge Elimination System (NPDES) permits. The program educates and encourages the public to protect water quality, monitor runoff in the storm drain system, manage NPDES permit process for municipalities, investigate illegal disposals, and maintain storm drains.

The support of Orange County residents, businesses and industries is needed to improve water quality and reduce the threat of stormwater and urban runoff pollution. Proper use and disposal of materials we use everyday will help stop this form of pollution before it reaches the storm drain and the ocean.



Dumping one quart of motor oil into a storm drain can contaminate 250,000 gallons of water.

The Ocean Begins at Your Front Door



Never allow pollutants to enter the street, gutter or storm drain!

Follow these simple steps to help reduce water pollution:

Household Activities

- Do not rinse spills with water. Use dry cleanup methods such as applying cat litter or another absorbent material, sweep and dispose of in trash. Take items such as used or excess batteries, oven cleaners, automotive fluids, painting products, and cathode ray tubes, like TVs and computer monitors, to a Household Hazardous Waste collection center.
- For a household hazardous waste collection center near you call (714) 834-6752 or visit www.oclandfills.com.
- Do not hose down your driveway, sidewalk or patio to the street, gutter or storm drain. Sweep up debris and dispose of in trash.

Automotive

- Take your vehicle to a commercial car wash whenever possible. If you wash your vehicle at home, choose soaps, cleaners, or detergents labeled non-toxic, phosphate free or biodegradable. Vegetable and citrus-based products are typically safest for the environment.
- Do not allow washwater from vehicle washing into the street, gutter or storm drain. Excess washwater should be disposed of in the sanitary sewer (through a sink or toilet) or onto an absorbent surface like your lawn.
- Monitor vehicle for leaks and place a pan under leaks. Keep your vehicles well maintained to stop and prevent leaks.
- Never pour oil or antifreeze in the street, gutter or storm drain. Recycle these substances at a service station, a waste oil collection center or used oil recycling center. For the nearest Used Oil Collection Center call 1-800-CLEANUP or visit www.1800cleanup.org.

Pool Maintenance

- Pool and spa water must be dechlorinated and be free of excess acid, alkali or color to be allowed in the street, gutter or storm drain.
- Whenever possible, drain dechlorinated pool and spa water directly into the sanitary sewer but only when it is not raining.
- Some cities may have ordinances that do not allow pool water to be disposed into the storm drain. Check with your city.

Landscape and Gardening

- Do not over-water. Water your lawn and garden by hand to control the amount of water you use or set irrigation systems to reflect seasonal water needs. If water flows off your yard onto your driveway or sidewalk, your system is over-watering. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead dispose of waste by composting, hauling it to a permitted landfill, or as green waste through your city's recycling program.
- Follow directions on pesticides and fertilizer, (measure, do not estimate amounts) and do not use if rain is predicted with 48 hours.
- Take unwanted pesticides to a Household Hazardous Waste Collection Center to be recycled. For locations and hours of Household Hazardous Waste Collection Centers call 714-834-6752 or visit www.oclandfills.com.

Trash

- Place trash and litter that cannot be recycled in securely covered trash cans.
- Whenever possible, buy recycled products.
- Remember: Reduce, Reuse, Recycle

Pet Care

- Always pick up after your pet. Flush waste down the toilet or dispose in the trash. Pet waste, if left outdoors, can wash into the street, gutter or storm drain.
- If possible, bathe your pets indoors. If you must bathe your pet outside, wash it on your lawn or another absorbent/permeable surface to keep the washwater from entering the street, gutter or storm drain.
- Follow directions for use of pet care products and dispose of any unused products at a Household Hazardous Waste Collection Center.

Common Pollutants

Home Maintenance
- Detergents, cleaners and solvents
- Oil and latex paint
- Swimming pool chemicals
- Outdoor trash and litter

Lawn and Garden
- Pet and animal waste
- Pesticides
- Clippings, leaves and soil
- Fertilizer

Automobile
- Oil and grease
- Radiator fluids and antifreeze
- Cleaning chemicals
- Brake pad dust

2. KEEPING PEST CONTROL PRODUCTS OUT OF CREEKS, RIVERS AND THE OCEAN

HOMEOWNER TIPS
PROTECTING WATER

Before Buying Pest Control Products

- Identify the pest.
- Decide if pest control products are the best control measure or if there are alternatives available.
- Are integrated pest management guidelines available for this pest?
- Read the product label:
  - Is the pest listed on the label?
  - Is it the best product for the pest?

Before Mixing Your Sprayer

- Read the label carefully.
- Buy only enough pesticide to treat the area affected by the pest.
- Check the weather and don't apply if it's windy or about to rain.
- Measure the area you're treating.
- Calculate how much spray to mix.
- Wear long sleeve shirt, long pants, shoes and any other protective equipment listed on the label and follow all the label precautions.
- Be prepared for spills and know how to clean them up.

When You're Ready To Spray

- Mix and load spray in an area where any spilled pesticide will not be able to drain or be washed away into storm drains, ditches, streams, ponds or other bodies of water.
- Mix sprayer on grass, not the sidewalk or driveway.
- Mix only as much as needed.

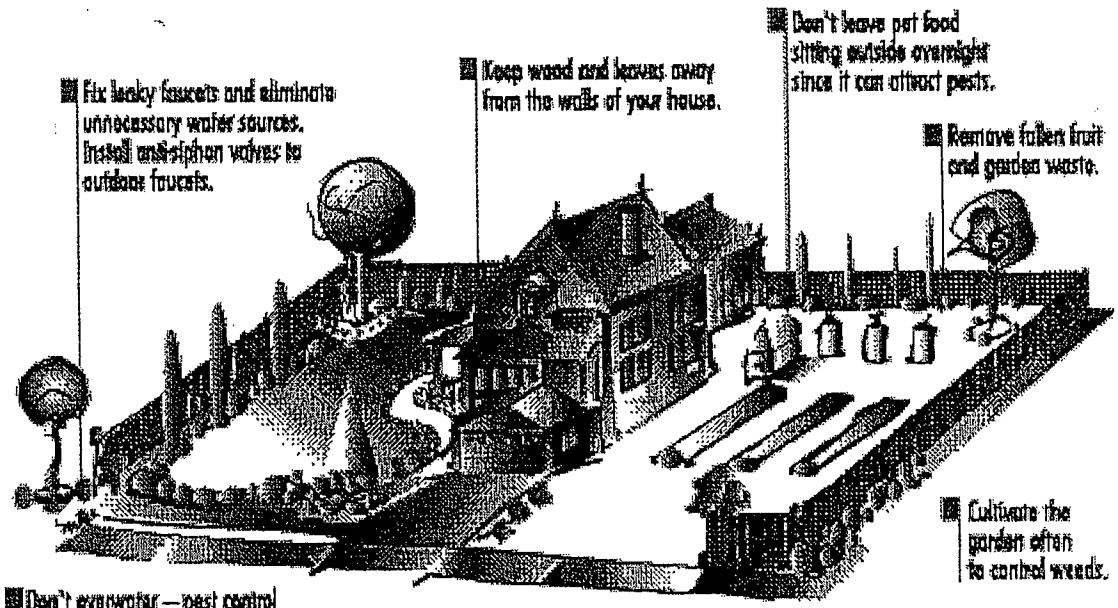
When You're Spraying

- AVOID spraying in or near storm drains, ditches, streams, and ponds!
- Leave an untreated strip around these areas to protect the water.

When You're done

- Never dump leftovers down any drain; Save for a future application.
- Triple-rinse sprayer and apply rinsewater to treated area.
- Take any old or unwanted pesticides to a Household Hazardous Waste Collection Center (714) 834-6752.

Using Pest Control Products. It's Your Responsibility To Do It Right!



IPM... Outsmarting Pests While Protecting Water

With Integrated Pest Management (IPM), homeowners use common sense and nature to make it difficult for pests to survive. IPM techniques include cultural practices (such as mulching to prevent weeds), encouraging natural enemies (good bugs), and judicious use of pest control products.

- First, identify your pest problem. To find the best solution, you need to pin down the problem. Consult gardening books, your county cooperative extension office or your local nursery.
- Decide how much pest control is necessary. If you can live with some pest damage, you can avoid intensive pest control product treatments.
- Choose an effective option. Try various types of controls first: washing bugs off plants, pruning diseased parts of plants. If you need to use pest control products, choose one that targets the problem and poses the least hazard.
- Finally, it's easier to prevent pests than to control them.

Think ahead.

This brochure is being distributed in order to reduce the impacts of pesticides on water quality. It was produced with support from the Orange County Storm Water Program, the Coalition for Urban/Rural Environmental Stewardship (CURES) and a 319(h) grant from the State Water Resources Control Board.

Orange County Storm Water Program Participants:

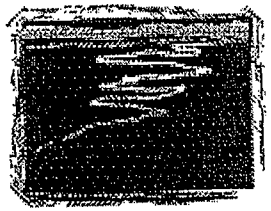
Anaheim Public Works/Engineering ..... (714) 765-5176
Brea Engineering ..... (714) 990-7666
Buena Park Public Works ..... (714) 562-3655
Costa Mesa Public Services ..... (714) 754-5248
Cypress Engineering ..... (714) 229-6752
Dana Point Public Works ..... (949) 248-3562
Fountain Valley Public Works ..... (714) 593-4400 x347
Fullerton Engineering Dept ..... (714) 738-6853
Garden Grove Development Services ..... (714) 741-5554
Huntington Beach Public Works ..... (714) 536-5432
Irvine Public Works ..... (949)724-6515
La Habra Public Services ..... (562) 905-9792
La Palma Public Works ..... (714) 523-1140 x102
Laguna Beach Municipal Services ..... (949) 497-0711
Laguna Hills Engineering ..... (949) 707-2600
Laguna Niguel Public Works ..... (949) 362-4337
Lake Forest Public Works ..... (949) 461-3480
Los Alamitos Community Dev ..... (562) 431-3538 x301
Mission Viejo Public Works ..... (949) 470-3095
Newport Beach Public works ..... (949) 644-3311
Orange Public Works ..... (714) 744-5551
Placentia Engineering ..... (714) 993-8131
San Clemente Engineering ..... (949) 361-6100
San Juan Capistrano Engineering ..... (949) 493-1171
Santa Ana Public Works ..... (714) 647-3380
Seal Beach Engineering ..... (562) 431-2527 x318
Stanton Public Works ..... (714) 379-9222 x204
Tustin Public Works Engineering ..... (714) 573-3150
Villa Park Engineering ..... (714) 998-1500
Westminster Public Works Eng. ..... (714) 898-3311 x215
Yorba Linda Engineering ..... (714) 961-7170 x174
O.C. Storm Water Program ..... (714) 567-6363
24 Hour Water Pollution Hotline ..... (714) 567-6363 or ashbyk@pfrd.co.orange.ca.us
Chemical and Hazardous Material Spill Emergencies 911

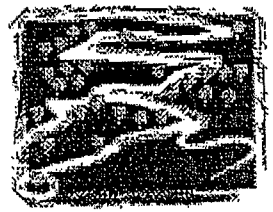
Other Important Phone Numbers:

For Additional Brochures ..... (714) 567-6363
UC Masters & Coop Extension ..... (714) 708-1646
ucmastergardeners@yahoo.com
O.C. Household Hazardous Waste Information ..... (714) 834-6752 or www.oc.ca.gov/IWMD
Information on agriculture chemicals, pesticides and possible alternatives, O.C. Agriculture Commissioner ..... (714) 447-7115

Original graphics developed with support from:
Coalition For Urban/Rural Environmental Stewardship (CURES)
Western Crop Protection Association (WCPA)
Responsible [illegible]y for a Sound Environment (RISE)

Keeping Pest Control Products Out of Creeks, Rivers and The Ocean





HOMEOWNER TIPS

PROTECTING WATER

3. TIPS FOR LANDSCAPE AND GARDENING

Clean beaches and healthy creeks, rivers, bays, and ocean are important to Orange County. However, many common activities can lead to water pollution if you're not careful. Fertilizers, pesticides and other chemicals that are left on yards or driveways can be blown or washed into the storm drains that flow to the ocean. Overwatering lawns can also send materials into the storm drains. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never pour gardening products into the ocean, so don't let them enter the storm drains. Follow these easy tips to help prevent water pollution.

For more information, please call the Orange County Stormwater Program at (714) 567-6363 or visit www.ocwatersheds.com.

To report a spill, call the Orange County 24-Hour Water Pollution Reporting Hotline at (714) 567-6363.

For emergencies, dial 911.

The tips contained in this brochure provide useful information to help prevent water pollution while landscaping or gardening. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

Help Prevent Ocean Pollution:

Tips for Landscape & Gardening

The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Tips for Landscape and Gardening

Never allow gardening products or polluted water to enter the street or storm drain.

General Landscaping Tips

- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.
- Plant native vegetation to reduce the amount of water, fertilizer, herbicides, and pesticides needed.

- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.

Garden & Lawn Maintenance

- Do not over-water. Use irrigation practices such as drip irrigation, soaker hoses or micro spray systems. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drains. Instead dispose of waste by composting, hauling it to a permitted landfill, or as green waste through your city's recycling program.

- Use slow-release fertilizers to minimize leaching and use organic fertilizers.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.

- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains. Dispose of empty containers in the trash.
- When available, use non-toxic alternatives to traditional pesticides and use pesticides specifically designed to control the pest you are targeting. For more information, check www.ipm.ucdavis.edu.
- If fertilizer is spilled, sweep up the spill before applying irrigation water. If the spill is liquid, apply an absorbent material like cat litter and then sweep and dispose in the trash.
- Take unwanted pesticides to a Household Hazardous Waste Collection Center to be recycled. Locations are provided below.

Household Hazardous Waste Collection Centers

Anaheim: 1071 N. Blue Gum St.
Huntington Beach: 17121 Nichols St.
Irvine: 6411 Oak Canyon
San Juan Capistrano: 32250 La Pata Ave.

For more information, call (714) 834-6752 or visit www.ocwatersheds.com

4. HELP PREVENT OCEAN POLLUTION: A GUIDE FOR FOOD SERVICE FACILITES

Grease blockage in sewer pipe

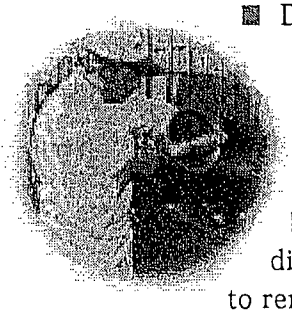
Photo Courtesy of the Monterey Regional Water Pollution Control Agency.

Prevent Fats, Oils, and Grease from Blocking the Sewers

Fats, oils, and grease (FOG) can cause sewer line blockages which can make sewage overflow into your facility and into storm drains that lead to the ocean. To stop the substances from building up in sewer lines, prevent them from entering your drains.

Practices in the Kitchen

- Collect waste cooking oil and grease in portable containers with lids. Transfer into drums or barrels for recycling.



- Do not pour oil or grease down any drain. Recycle or use absorbent materials and dispose of waste in the trash.
- Dry-wipe pots, pans, dishware, and work areas to remove all visible grease before washing. Dispose of waste in the trash.
- Use drain screens to capture food waste and dispose of properly into the trash.
- Train employees about proper grease disposal and post "NO GREASE" signs near all sinks or drains.

Illustrations courtesy of the City of Los Angeles

Maintenance of Grease Traps and Interceptors

- Reduce solids going to the grease trap or interceptor.
- Inspect and clean grease traps frequently to ensure proper operation.
- Have a licensed company inspect and pump out grease interceptors regularly to ensure proper operation.
- Keep maintenance records on-site for reference and regulatory review.

For more information, call the Orange County Stormwater Program at (714) 567-6363 or visit www.ocwatersheds.com.

Report sewage spills and discharges that are not contained to your site to the Orange County 24-Hour Water Pollution Reporting Hotline at (714) 567-6363.

For emergencies call 911.

CALIFORNIA Restaurant ASSOCIATION

Help Prevent Ocean Pollution:

A Guide for Food Service Facilities

The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Pollution Prevention

A clean ocean and healthy creeks, rivers, bays and beaches are important to Orange County. However, allowing debris from your business to enter the gutter and storm drains can lead to water pollution. Storm drains carry rainwater from our streets, and should never contain wash water, trash, grease or other materials. Unlike substances that enter the sanitary sewers (from sinks and toilets), substances that enter the storm drains do not receive treatment before entering our waterways. In addition, blocked sewer lines can cause raw sewage to back up into kitchens, bathrooms, city streets, storm drains, and our waterways.

USE GREASE INTERCEPTORS TO CAPTURE FATS, OILS AND GREASE (FOG).

This brochure will explain steps your food establishment can take to help preserve water quality by keeping debris out of storm drains and by preventing fats, oils, and grease from blocking sewer lines.

Cleaning Spills and Equipment

- **Never hose a spill into a gutter, street or storm drain!**
- Before mopping a wet kitchen spill, absorb it with towels, cat litter or other absorbent materials.
- Sweep up dry spills immediately and dispose of the material in the trash.

ABSORB WET SPILLS WITH CAT LITTER OR TOWELS; DISCARD IN THE TRASH.

- Scrape grease and food waste from floor mats and filters before cleaning. Dispose of scrapings in trash.
- After scraping, clean floor mats, filters, and garbage cans in a mop sink or a designated, curbed area connected to the sanitary sewer. Consider using a cleaning service for these activities.

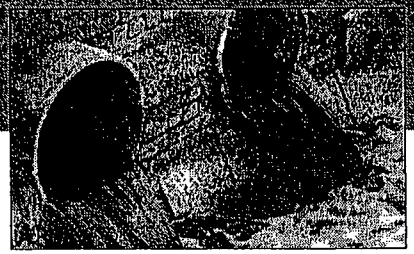
Dumpster/Grease Bin Area Cleaning

- Keep the area around the dumpster clear of trash and other debris. Do not overfill the dumpster.
- Cover dumpsters to block insects, animals, rainwater and wind.

- Sweep or vacuum up trash and throw it away.
- Absorb wet spills with cat litter, towels or similar materials. Discard in the trash.
- **Do not rinse your dumpster area!** Doing so can cause grease and trash to enter the storm drains.
- Have leaky dumpsters replaced.

USE JANITORIAL MOP SINKS FOR CLEANING MOPS, TOWELS AND FLOOR MATS.

5. HELP PREVENT OCEAN POLLUTION: PROPER MANAGEMENT GUIDELINES FOR YOUR BUSINESS



Preventing water pollution at your commercial/industrial site

A clean ocean and healthy creeks, rivers, bays and beaches are important to Orange County. However, many landscape and building maintenance activities can lead to water pollution if you're not careful. Paint, chemicals, plant clippings and other materials can be blown or washed into storm drains that flow to the ocean. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains and streets is not treated before entering our waterways.

You would never pour soap or fertilizers into the ocean, so why would you let them enter the storm drains? Follow the easy tips in this brochure to help prevent water pollution.

Some types of industrial facilities are required to obtain coverage under the State General Industrial Permit. For more information visit www.swrcb.ca.gov/stormwater/industrial.html.

For more information, please call the Orange County Stormwater Program at (714) 567-6363 or visit www.ocwatersheds.com.

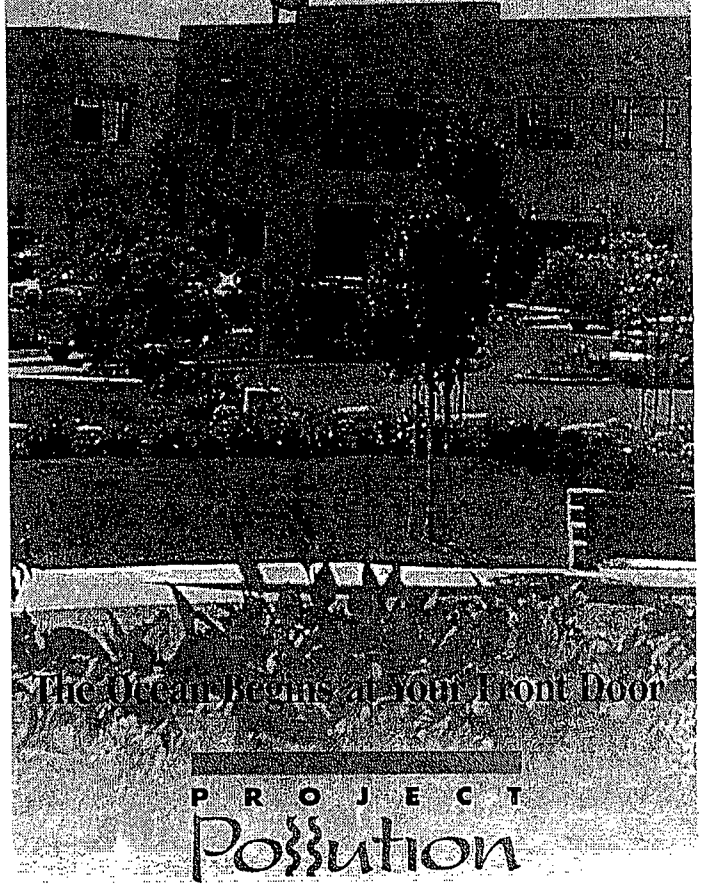
To report a spill, call the Orange County 24-Hour Water Pollution Reporting Hotline (714) 567-6363.

For emergencies dial 911.

RECYCLE USED OIL

Help Prevent Ocean Pollution

Proper Maintenance Practices for Your Business



The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Storm Drain Awareness and Maintenance Practices

Landscape Maintenance

- Compost grass clippings, leaves, sticks and other vegetation, or dispose at a permitted landfill or in green waste containers. Do not dispose of these materials in streets, waterways or storm drains.
- Irrigate slowly and inspect the system for leaks, overspraying and runoff. Adjust automatic timers to avoid over-watering.
- Follow label directions for the use and disposal of fertilizers, herbicides and pesticides.
- Do not apply pesticides, herbicides or fertilizers if rain is expected within 48 hours or if wind speeds are above 5 mph.
- Do not spray pesticides within 100 feet of waterways.
- Fertilizers should be worked into the soil rather than dumped onto the surface.
- If fertilizer is spilled on the pavement or sidewalk, sweep it up immediately and place it back in the container.

Building Maintenance

- Never allow wash water, sweepings or sediment to enter the storm drain.
- Sweep up dry spills and use cat litter, towels or similar materials to absorb wet spills. Dispose in the trash.
- If you must wash your building, sidewalk or parking lot, you **must** contain the water. Collect the water with a shop vac, and contact your city or sanitation agency for proper disposal information. Do not let water enter the street or storm drains.
- Use drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of materials in the trash.
- Use a ground cloth or oversized tub for mixing paint and cleaning tools.
- Use a damp mop or broom to clean floors.
- Cover dumpsters to block insects, animals, rainwater and sand. Keep the area around the dumpster clear of trash and debris. Do not overfill the dumpster.
- Call your trash hauler to replace leaking dumpsters.
- Do not dump any toxic substance or liquid waste on the pavement, the ground, or toward a storm drain. Even materials that seem harmless — like latex paint or biodegradable cleaners — can damage the environment.

NEVER DISPOSE OF ANYTHING IN THE STORM DRAIN.

- Recycle paints, solvents, lumber and other materials.
- Store materials indoors or under cover and away from storm drains.
- Use chemicals that can be recycled. For more information about recycling and collection centers, visit www.oclandfills.com.
- Properly label materials. Familiarize employees with Material Safety Data Sheets.

6. TIPS FOR USING PAINT

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities such as painting can lead to water pollution if you're not careful. Paint must be used, stored and disposed of properly to ensure that it does not enter the street, gutter or storm drain. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never dump paint into the ocean, so don't let it enter the storm drains. Follow these easy tips to help prevent water pollution.

For more information,
please call the
Orange County Stormwater Program
at (714) 567-6363
or visit
www.ocwatersheds.com

To report a spill,
call the
Orange County 24-Hour
Water Pollution Problem
Reporting Hotline
at (714) 567-6363.

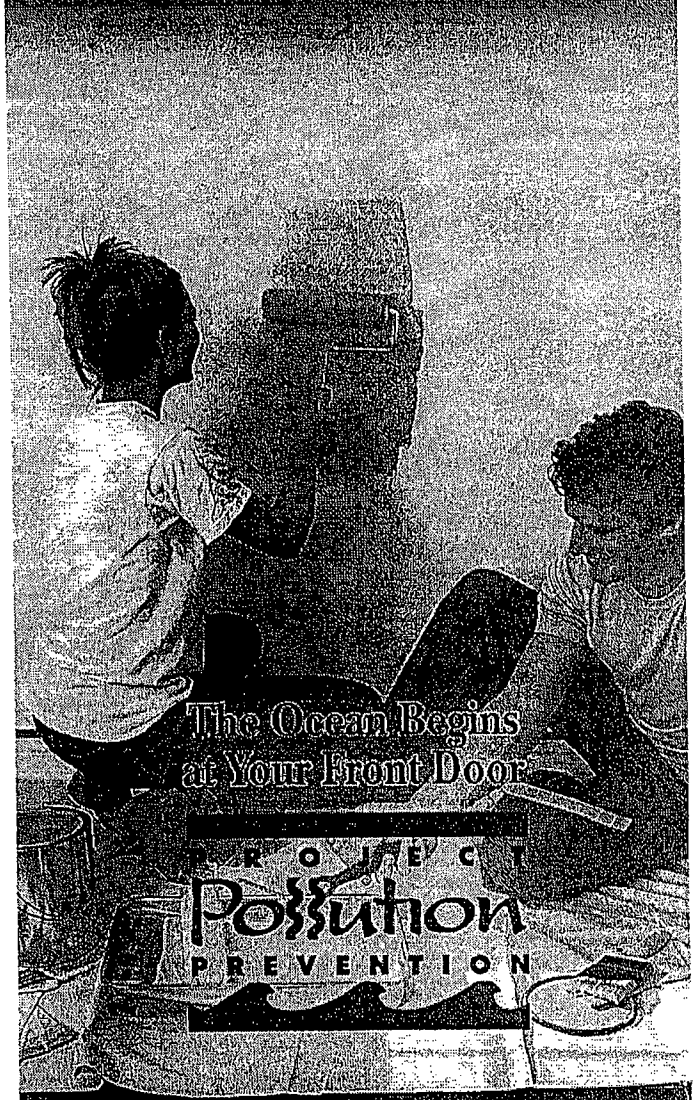
For emergencies, dial 911.

The tips contained in this brochure provide useful information to help prevent water pollution while using, storing and disposing of paint. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

Printed on Recycled Paper

Help Prevent Ocean Pollution:

Tips for Projects Using Paint



Tips for Projects Using Paint

Paint can cause significant damage to our environment. Whether you hire a contractor or do it yourself, it is important to follow these simple tips when purchasing, using, cleaning, storing and disposing of paint.

Purchasing Paint

- Measure the room or object to be painted, then buy only the amount needed.
- Whenever possible, use water-based paint since it usually does not require hazardous solvents such as paint thinner for cleanup.

Painting

- Use only one brush or roller per color of paint to reduce the amount of water needed for cleaning.
- Place open paint containers or trays on a stable surface and in a position that is unlikely to spill.
- Always use a tarp under the area or object being painted to collect paint drips and contain spills.

Cleaning

- Never clean brushes or rinse paint containers in the street, gutter or storm drain.
- For oil-based products, use as much of the paint on the brushes as possible. Clean brushes with thinner. To reuse thinner, pour it through a fine filter (e.g. nylon, metal gauze or filter paper) to remove solids such as leftover traces of paint.
- For water-based products, use as much of the paint on the brushes as possible, then rinse in the sink.
- Collect all paint chips and dust. Chips and dust from marine paints or paints containing lead, mercury or tributyl tin are hazardous waste. Sweep up and dispose of at a Household Hazardous Waste Collection Center (HHWCC).

Storing Paint

- Store paint in a dry location away from the elements.
- Store leftover water-based paint, oil-based paint and solvents separately in original or clearly marked containers.
- Avoid storing paint cans directly on cement floors. The bottom of the can will rust much faster on cement.
- Place the lid on firmly and store the paint can upside-down to prevent air from entering. This will keep the paint usable longer. Oil-based paint is usable for up to 15 years. Water-based paint remains usable for up to 10 years.

Alternatives to Disposal

- Use excess paint to apply another coat, for touch-ups, or to paint a closet, garage, basement or attic.
- Give extra paint to friends or family. Extra paint can also be donated to a local theatre group, low-income housing program or school.
- Take extra paint to an exchange program such as the **"Stop & Swap"** that allows you to drop off or pick up partially used home care products free of charge. **"Stop & Swap"** programs are available at most HHWCCs.
- For HHWCC locations and hours, call **(714) 834-6752** or visit **www.oclandfills.com**.

Disposing of Paint

- Never put wet paint in the trash.

For water-based paint:

- If possible, brush the leftover paint on cardboard or newspaper. Otherwise, allow the paint to dry in the can with the lid off in a well-ventilated area protected from the elements, children and pets. Stirring the paint every few days will speed up the drying.
- Large quantities of extra paint should be taken to a HHWCC.
- Once dried, paint and painted surfaces may be disposed of in the trash. When setting a dried paint can out for trash collection, leave the lid off so the collector will see that the paint has dried.

For oil-based paint:

- Oil-based paint is a household hazardous waste. All leftover paint should be taken to a HHWCC.

Aerosol paint:

- Dispose of aerosol paint cans at a HHWCC.

Spills

- Never hose down pavement or other impermeable surfaces where paint has spilled.
- Clean up spills immediately by using an absorbent material such as cat litter. Cat litter used to clean water-based paint spills can be disposed of in the trash. When cleaning oil-based paint spills with cat litter, it must be taken to a HHWCC.
- Immediately report spills that have entered the street, gutter or storm drain to the County's 24-Hour Water Pollution Problem Reporting Hotline at (714) 567-6363 or visit **www.ocwatersheds.com** to fill out an incident reporting form.

PROJECT Pollution PREVENTION

7. APPLICABLE FACT SHEETS

- IC3 BUILDING MAINTENANCE
- IC10 OUTDOOR LOADING/UNLOADING OF MATERIAL
- IC15 PARKING AND STORAGE AREA MAINTENANCE
- IC21 WASTE HANDLING AND DISPOSAL
- IC22 EATING AND DRINKING ESTABLISHMENTS

IC3. BUILDING MAINTENANCE

Best Management Practices (BMPs)

A BMP is a technique, measure or structural control that is used for a given set of conditions to improve the quality of the stormwater runoff in a cost effective manner[1]. The minimum required BMPs for this activity are outlined in the box to the right. Implementation of pollution prevention/good housekeeping measures may reduce or eliminate the need to implement other more costly or complicated procedures. Proper employee training is key to the success of BMP implementation.

MINIMUM BEST MANAGEMENT PRACTICES

Pollution Prevention/Good Housekeeping

- Properly collect and dispose of water when pressure washing buildings, rooftops, and other large objects.
- Properly prepare work area before conducting building maintenance.
- Properly clean and dispose of equipment and wastes used and generated during building maintenance.
- Store toxic material under cover when not in use and during precipitation events.

Stencil storm drains

Training

- Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
- Provide on-going employee training in pollution prevention.

The BMPs outlined in this fact sheet target the following pollutants:

Targeted Constituents	
Sediment	x
Nutrients	x
Floatable Materials	
Metals	x
Bacteria	x
Oil & Grease	
Organics & Toxicants	
Pesticides	
Oxygen Demanding	

Provided below are specific procedures associated with each of the minimum BMPs along with procedures for additional BMPs that should be considered if this activity takes place at a facility located near a sensitive waterbody. In order to meet the requirements for medium and high priority facilities, the owners/operators must select, install and maintain appropriate BMPs on site. Since the selection of the appropriate BMPs is a site-specific process, the types and numbers of additional BMPs will vary for each facility.

1. **Properly collect and dispose of water when pressure washing buildings, rooftops, and other large objects.**
    - If pressure washing where the surrounding area is paved, use a water collection device that enables collection of wash water and associated solids. Use a sump pump, wet vacuum or similarly effective device to collect the runoff and loose materials. Dispose of the collected runoff and solids properly.
    - If pressure washing on a landscaped area (with or without soap), runoff must be dispersed as sheet flow as much as possible, rather than as a concentrated stream. The wash runoff must remain on the landscaping and not drain to pavement.
2. **Properly prepare work area before conducting building maintenance.**
    - Use ground or drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of collected material daily.
    - Use a ground cloth or oversized tub for activities such as paint mixing and tool cleaning.
3. **Properly clean and dispose of equipment and wastes used and generated during building maintenance.**

[1] EPA " *Preliminary Data Summary of Urban Stormwater Best Management Practices*"

- Clean paint brushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain. Brushes and tools covered with non-water-based paints, finishes, or other materials must be cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal.
- Properly dispose of wash water, sweepings, and sediments.
- Properly store equipment, chemicals, and wastes.
- Do not dump any toxic substance or liquid waste on the pavement, the ground, or toward a storm drain.

OPTIONAL:

- Recycle residual paints, solvents, lumber, and other materials to the maximum extent practicable

4. **Employ soil erosion and stabilization techniques when exposing large areas of soil.**
    - Confine excavated materials to pervious surfaces away from storm drain inlets, sidewalks, pavement, and ditches. Material must be covered if rain is expected.
    - Use chemical stabilization or geosynthetics to stabilize bare ground surfaces.
5. **Store toxic material under cover when not in use and during precipitation events.**
6. **Properly dispose of fluids from air conditioning, cooling tower, and condensate drains.**
7. **Regularly inspect air emission control equipment under AQMD permit.**
8. **Switch to non-toxic chemicals for maintenance when possible.**
    - If cleaning agents are used, select biodegradable products whenever feasible
    - Consider using a waterless and non-toxic chemical cleaning method for graffiti removal (e.g. gels or spray compounds).
9. **Use chemicals that can be recycled.**
    - Buy recycled products to the maximum extent practicable

Training

1. **Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.**
2. **Train employees on proper spill containment and cleanup.**
    - Establish training that provides employees with the proper tools and knowledge to immediately begin cleaning up a spill.
    - Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
    - BMP IC17 discusses Spill Prevention and Control in detail.
3. **Establish a regular training schedule, train all new employees, and conduct annual refresher training.**
4. **Use a training log or similar method to document training.**

Stencil storm drains

Storm drain system signs act as highly visible source controls that are typically stenciled directly adjacent to storm drain inlets. Stencils should read "No Dumping Drains to Ocean".

References

California Storm Water Best Management Practice Handbook. Industrial and Commercial. 2003. www.cabmphandbooks.com

California Storm Water Best Management Practice Handbooks. Industrial/Commercial Best Management Practice Handbook. Prepared by Camp Dresser& McKee, Larry Walker Associates, Uribe and Associates, Resources Planning Associates for Stormwater Quality Task Force. March 1993.

King County Stormwater Pollution Control Manual. Best Management Practices for Businesses. King County Surface Water Management. July 1995. On-line: http://dnr.metrokc.gov/wlr/dss/spcm.htm

Stormwater Management Manual for Western Washington. Volume IV Source Control BMPs. Prepared by Washington State Department of Ecdogy Water Quality Program. Publication No. 99-14. August 2001.

For additional information contact:

County of Orange
Watershed & Coastal Resources
Stormwater Program
(714)567-6363
or visit our website at:
www.ocwatersheds.com

IC10. OUTDOOR LOADING/UNLOADING OF MATERIALS

Best Management Practices (BMPs)

A BMP is a technique, measure or structural control that is used for a given set of conditions to improve the quality of the stormwater runoff in a cost effective manner[1]. The minimum required BMPs for this activity are outlined in the box to the right. Implementation of pollution prevention/good housekeeping measures may reduce or eliminate the need to implement other more costly or complicated procedures. Proper employee training is key to the success of BMP implementation.

MINIMUM BEST MANAGEMENT PRACTICES

Pollution Prevention/Good Housekeeping

- Park vehicles and conduct loading/unloading only in designated loading/unloading areas so that spills or leaks can be contained.
- Clean loading/unloading areas regularly to remove potential sources of pollutants.
- Reduce exposure of materials to rain.
- Use drip pans underneath hose and pipe connections and other leak-prone spots during liquid transfer operations, and when making and breaking connections.
- Inspect equipment regularly.
- If possible, conduct loading and unloading in dry weather.

Stencil storm drains

Training

- Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
- Provide on-going employee training in pollution prevention.

The BMPs outlined in this fact sheet target the following pollutants:

Targeted Constituents	
Sediment	x
Nutrients	x
Floatable Materials	
Metals	x
Bacteria	
Oil & Grease	x
Organics & Toxicants	x
Pesticides	x
Oxygen Demanding	

Provided below are specific procedures associated with each of the minimum BMPs along with procedures for additional BMPs that should be considered if this activity takes place at a facility located near a sensitive waterbody. In order to meet the requirements for medium and high priority facilities, the owners/operators must select, install and maintain appropriate BMPs on site. Since the selection of the appropriate BMPs is a site-specific process, the types and numbers of additional BMPs will vary for each facility.

1. **Properly design loading/unloading areas to prevent storm water runon, runoff of spills, etc.**
   - Grade and/or berm the area to prevent runon.
   - Position roof downspouts to direct stormwater away from the area.
   - Grade and/or berm the loading/unloading area to a drain that is connected to a dead-end.
   - The area where truck transfers take place should be paved. If the liquid is reactive with the asphalt, Portland cement should be used to pave the area.
   - Avoid placing loading/unloading areas near storm drains.
2. **Park vehicles and conduct loading/unloading only in designated loading/unloading areas so that spills or leaks can be contained.**
3. **Clean loading/unloading areas regularly to remove potential sources of pollutants.** This includes outside areas that are regularly covered by containers or other materials.
4. **Reduce exposure of materials to rain.**
   - Cover the loading/unloading areas.
   - If a cover is unfeasible, use overhangs, or seals or door skirts to enclose areas.
5. **Use drip pans underneath hose and pipe connections and other leak-prone spots during liquid transfer operations, and when making and breaking connections.**

---

[1] EPA " *Preliminary Data Summary of Urban Stormwater Best Management Practices"*

6. Inspect equipment regularly
    - Designate a responsible party to check under delivery vehicles for leaking fluids, spilled materials, debris, or other foreign materials.
    - Check loading/unloading equipment regularly for leaks.
7. If possible, conduct loading and unloading in dry weather.

Training

1. Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
2. Train employees on proper spill containment and cleanup.
    - Establish training that provides employees with the proper tools and knowledge to immediately begin cleaning up a spill.
    - Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
    - BMP IC17 discusses Spill Prevention and Control in detail.
3. Train employees on the proper techniques used during liquid transfers to avoid leaks and spills.
4. Train forklift operators on the proper loading and unloading procedures.
5. Establish a regular training schedule, train all new employees, and conduct annual refresher training.
6. Use a training log or similar method to document training.

Stencil storm drains

Storm drain system signs act as highly visible source controls that are typically stenciled directly adjacent to storm drain inlets. Stencils should read "No Dumping Drains to Ocean".

References

California Storm Water Best Management Practice Handbook. Industrial and Commercial. 2003. www.cabmphandbooks.com

California Storm Water Best Management Practice Handbooks. Industrial/Commercial Best Management Practice Handbook. Prepared by Camp Dresser& McKee, Larry Walker Associates, Uribe and Associates, Resources Planning Associates for Stormwater Quality Task Force. March 1993.

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

Stormwater Management Manual for Western Washington. Volume IV Source Control BMPs. Prepared by Washington State Department of Ecology Water Quality Program. Publication No. 99-14. August 2001.

For additional information contact:

County of Orange
Watershed & Coastal Resources
Stormwater Program
(714)567-6363
or visit our website at:
www.ocwatersheds.com

IC15. PARKING AND STORAGE AREA MAINTENANCE

Best Management Practices (BMPs)

A BMP is a technique, measure or structural control that is used for a given set of conditions to improve the quality of the stormwater runoff in a cost effective manner[1]. The minimum required BMPs for this activity are outlined in the box to the right. Implementation of pollution prevention/good housekeeping measures may reduce or eliminate the need to implement other more costly or complicated procedures. Proper employee training is key to the success of BMP implementation.

MINIMUM BEST MANAGEMENT PRACTICES

Pollution Prevention/Good Housekeeping

- Conduct regular cleaning.
- Properly collect and dispose of wash water.
- Keep the parking and storage areas clean and orderly.
- Use absorbent materials and properly dispose of them when cleaning heavy oily deposits.
- When conducting surface repair work cover materials and clean paintbrushes and tools appropriately.

Stencil storm drains

Training

- Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
- Provide on-going employee training in pollution prevention.

The BMPs outlined in this fact sheet target the following pollutants:

Targeted Constituents	
Sediment	x
Nutrients	x
Floatable Materials	x
Metals	x
Bacteria	x
Oil & Grease	x
Organics & Toxicants	x
Pesticides	x
Oxygen Demanding	x

Provided below are specific procedures associated with each of the minimum BMPs along with procedures for additional BMPs that should be considered if this activity takes place at a facility located near a sensitive waterbody. In order to meet the requirements for medium and high priority facilities, the owners/operators must select, install and maintain appropriate BMPs on site. Since the selection of the appropriate BMPs is a site-specific process, the types and numbers of additional BMPs will vary for each facility.

1. **Conduct regular cleaning.**
   - Sweeping or vacuuming the parking facility is encouraged over other methods.
   - Sweep all parking lots at least once before the onset of the wet season.
   - Establish frequency of sweeping based on usage and field observations of waste accumulation.
2. **Properly collect and dispose of wash water.**
   - Block the storm drain or contain runoff.
   - Wash water should be collected and pumped to the sanitary sewer or discharged to a pervious surface, do not allow wash water to enter storm drains. DO NOT discharge wash water to sanitary sewer until contacting the local sewer authority to find out if pretreatment is required.
   - Dispose of parking lot sweeping debris and dirt at a landfill.
3. **Consider use of source treatment BMPs to treat runoff.**
   - Allow sheet runoff to flow into biofilters (vegetated strip and swale) and/or infiltration devices.
   - Utilize sand filters or oleophilic collectors for oily waste in low quantities.
4. **Keep the parking and storage areas clean and orderly.**

[1] EPA " *Preliminary Data Summary of Urban Stormwater Best Management Practices*"

- Clean out and cover litter receptacles frequently to prevent spillage.
- Remove debris in a timely fashion.

OPTIONAL:

- Post "No Littering" signs.

5. **When cleaning heavy oily deposits:**
   - If possible, clean oily spots with absorbent materials.
   - Do not allow discharges to the storm drain.
   - Appropriately dispose of spilled materials and absorbents.
6. **When conducting surface repair work:**
   - Pre-heat, transfer or load hot bituminous material away from storm drain inlets.
   - Conduct surface repair work during dry weather to prevent contamination from contacting stormwater runoff.
   - Cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and clean any debris for proper disposal.
   - To avoid runoff, use only as much water as necessary for dust control.
   - Use drip pans or absorbent material to catch drips from paving equipment that is not in use. Dispose of collected material and absorbents properly.
7. **Conduct inspections on a regular basis.**
   - Designate personnel to conduct inspections of the parking facilities and stormwater conveyance systems associated with them.
   - Inspect cleaning equipment/sweepers for leaks on a regular basis.
8. **Keep accurate maintenance logs to evaluate materials removed/stored and improvements made.**
9. **Arrange rooftop drains to prevent drainage directly onto paved surfaces.**

Training

1. **Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.**
2. **Train employees on proper spill containment and cleanup.**
   - Establish training that provides employees with the proper tools and knowledge to immediately begin cleaning up a spill.
   - Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
   - BMP IC17 discusses Spill Prevention and Control in detail.
3. **Provide regular training to field employees and/or contractors regarding cleaning of paved areas and proper operation of equipment.**
4. **Establish a regular training schedule, train all new employees, and conduct annual refresher training.**
5. **Use a training log or similar method to document training.**

Stencil storm drains

Storm drain system signs act as highly visible source controls that are typically stenciled directly adjacent to storm drain inlets. Stencils should read "No Dumping Drains to Ocean".

References

California Storm Water Best Management Practice Handbook. Industrial and Commercial. 2003. www.cabmphandbooks.com

California Storm Water Best Management Practice Handbooks. Industrial/Commercial Best Management Practice Handbook. Prepared by Camp Dresser& McKee, Larry Walker Associates, Uribe and Associates, Resources Planning Associates for Stormwater Quality Task Force. March 1993.

King County Stormwater Pollution Control Manual. Best Management Practices for Businesses. King County Surface Water Management. July 1995. On-line: http://dnr.metrokc.gov/wlr/dss/spcm.htm

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

Stormwater Management Manual for Western Washington. Volume IV Source Control BMPs. Prepared by Washington State Department of Ecology Water Quality Program. Publication No. 99-14. August 2001.

For additional information contact:

County of Orange
Watershed & Coastal Resources
Stormwater Program
(714)567-6363
or visit our website at:
www.ocwatersheds.com

IC21. WASTE HANDLING AND DISPOSAL

Best Management Practices (BMPs)

A BMP is a technique, measure or structural control that is used for a given set of conditions to improve the quality of the stormwater runoff in a cost effective manner[1]. The minimum required BMPs for this activity are outlined in the box to the right. Implementation of pollution prevention/good housekeeping measures may reduce or eliminate the need to implement other more costly or complicated procedures. Proper employee training is key to the success of BMP implementation.

MINIMUM BEST MANAGEMENT PRACTICES

Pollution Prevention/Good Housekeeping

- Prevent waste materials from coming in direct contact with wind or rain. .
- Keep waste collection areas clean.
- Secure solid waste containers when not in use.
- Regularly inspect, repair, and/or replace waste containers.
- Use all of a product before disposing of the container.
- Label and store hazardous wastes according to hazardous waste regulations.

Stencil storm drains

Training

- Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
- Provide on-going employee training in pollution prevention.

The BMPs outlined in this fact sheet target the following pollutants:

Targeted Constituents	
Sediment	x
Nutrients	x
Floatable Materials	x
Metals	x
Bacteria	x
Oil & Grease	x
Organics & Toxicants	x
Pesticides	x
Oxygen Demanding	x

Provided below are specific procedures associated with each of the minimum BMPs along with procedures for additional BMPs that should be considered if this activity takes place at a facility located near a sensitive waterbody. In order to meet the requirements for medium and high priority facilities, the owners/operators must select, install and maintain appropriate BMPs on site. Since the selection of the appropriate BMPs is a site-specific process, the types and numbers of additional BMPs will vary for each facility.

1. **Prevent waste materials from coming in direct contact with wind or rain.**
   - Cover the waste management area with a permanent roof.
   - If this is not feasible, cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropylene, or hypalon.
   - Cover dumpsters to prevent rain from washing out waste materials.
2. **Design waste handling and disposal area to prevent stormwater runon.**
   - Enclose the waste handling and disposal area or build a berm around it.
   - Position roof downspouts to direct stormwater away from waste handling and disposal area.
3. **Design waste handling and disposal area to contain spills.**
   - Place dumpsters or other waste receptacles on an impervious surface.
   - Construct a berm around the area to contain spills.
   - Install drains connected to the public sewer or the facility's process wastewater system within these contained areas. **DO NOT** discharge to a public sewer until contacting the local sewer authority to find out if pretreatment is required.

[1] EPA " *Preliminary Data Summary of Urban Stormwater Best Management Practices*"

4. Keep waste collection areas clean.
    - When cleaning around waste handling and disposal areas use dry methods when possible (e.g. sweeping, use of absorbents).
    - If water must be used, collect water and discharge to the sewer if permitted to do so. DO NOT discharge to a public sewer until contacting the local sewer authority to find out if pretreatment is required. If discharge to the sanitary sewer is not allowed, pump water to a tank and dispose of properly.
    - Post "No Littering" signs.
5. Secure solid waste containers when not in use.
6. Regularly inspect, repair, and/or replace waste containers.
7. Do not fill waste containers with washout water or any other liquid.
8. Use all of a product before disposing of the container.
9. Segregate wastes by type and label and date wastes.
    - Do not mix wastes; this can cause chemical reactions, make recycling impossible, and complicate disposal.
    - Ensure that only appropriate solid wastes are added to solid waste containers.
    - Certain wastes such as hazardous wastes, appliances, fluorescent lamps, pesticides, etc. may not be disposed of in solid waste containers.
10. Label and store hazardous wastes according to hazardous waste regulations.
    - Consult your local hazardous waste agency or Fire Department for details.
    - Obtain a hazardous waste generator license or permit if necessary.
12. Minimize waste.
    - Recycle materials whenever possible.
    - Modify processes or equipment to increase efficiency.
    - Identify and promote use of non-hazardous alternatives.
    - Reduction in the amount of waste generated can be accomplished using many different types of source controls such as:
        - Production planning and sequencing
        - Process or equipment modification
        - Raw material substitution or elimination
        - Loss prevention and housekeeping
        - Waste segregation and separation
        - Close loop recycling
    - Establish a material tracking system to increase awareness about material usage. This may reduce spills and minimize contamination, thus reducing the amount of waste produced.

Training

1. Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
2. Train employees in proper waste handling and disposal.
3. Train employees on proper spill containment and cleanup.
    - Establish training that provides employees with the proper tools and knowledge to immediately begin cleaning up a spill.
    - Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
    - BMP IC17 discusses Spill Prevention and Control in detail.

4. Establish a regular training schedule, train all new employees, and conduct annual refresher training.
5. Use a training log or similar method to document training.

Stencil storm drains

Storm drain system signs act as highly visible source controls that are typically stenciled directly adjacent to storm drain inlets. Stencils should read "No Dumping Drains to Ocean".

References

California Storm Water Best Management Practice Handbook. Industrial and Commercial. 2003. www.cabmphandbooks.com

California Storm Water Best Management Practice Handbooks. Industrial/Commercial Best Management Practice Handbook. Prepared by Camp Dresser& McKee, Larry Walker Associates, Uribe and Associates, Resources Planning Associates for Stormwater Quality Task Force. March 1993.

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

For additional information contact:

County of Orange
Watershed & Coastal Resources
Stormwater Program
(714)567-6363
or visit our website at:
www.ocwatersheds.com

IC22. EATING AND DRINKING ESTABLISHMENTS

Best Management Practices (BMPs)

A BMP is a technique, measure or structural control that is used for a given set of conditions to improve the quality of the stormwater runoff in a cost effective manner[1]. The minimum required BMPs for this activity are outlined in the box to the right. Implementation of pollution prevention/good housekeeping measures may reduce or eliminate the need to implement other more costly or complicated procedures. Proper employee training is key to the success of BMP implementation.

MINIMUM BEST MANAGEMENT PRACTICES

Pollution Prevention/Good Housekeeping

- Use dry cleaning methods instead of water
- Clean equipment (floor mats, grease filters, grills, garbage cans, etc.) indoors or in a covered outdoor wash area that is plumbed to the sanitary sewer or in an area that will contain the wash water.
- Recycle and/or properly dispose of grease and oil.
- Block the storm drain when hosing or steam/pressure washing outside dumpster areas, sidewalks, and common areas.

Stencil storm drains

Training

- Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
- Provide on-going employee training in pollution prevention.

The BMPs outlined in this fact sheet target the following pollutants:

Targeted Constituents	
Sediment	
Nutrients	x
Floatable Materials	x
Metals	
Bacteria	x
Oil & Grease	x
Organics & Toxicants	x
Pesticides	x
Oxygen Demanding	x

Provided below are specific procedures associated with each of the minimum BMPs along with procedures for additional BMPs that should be considered if this activity takes place at a facility located near a sensitive waterbody. In order to meet the requirements for medium and high priority facilities, the owners/operators must select, install and maintain appropriate BMPs on site. Since the selection of the appropriate BMPs is a site-specific process, the types and numbers of additional BMPs will vary for each facility.

1. **Practice good housekeeping.**
   - Conduct regular sweeping or vacuuming of outdoor areas: Dry sweep pavement areas including "drive-thru" areas, parking lots, sidewalks, outdoor eating areas and dumpster storage areas frequently.
   - Keep outside areas free of trash & debris.
   - Do not hose out dumpsters or fill them with liquid waste.
   - Regularly inspect, repair, and/or replace dumpsters.
2. **Clean equipment (floor mats, grease filters, grills, garbage cans, etc.) indoors or in a covered outdoor wash area that is plumbed to the sanitary sewer.**
   - Clean equipment in a mop sink if possible (never in a food preparation sink). If there is no mop sink, dedicate an indoor cleaning area where a drain is plumbed to the sanitary sewer.
   - Dispose mop water from cleaning floors in a mop sink, toilet or other drain that is plumbed to the sanitary sewer.
   - Do not pour wash water outside or into a street, gutter, or storm drain.
   - Dispose of all wastewater containing oil and grease in a grease trap or interceptor.

[1] EPA " *Preliminary Data Summary of Urban Stormwater Best Management Practices"*

3. **Recycle and/or properly dispose of grease and oil.** Collect and dispose of concentrated waste oil and grease and disposed of by a certified waste grease hauler. NEVER pour grease or oil into a sink, floor drain, storm drain or dumpster.
4. **Block storm drain(s) when cleaning (hosing or steam/pressure washing) outside dumpster areas, sidewalks, and common areas with hot water, soap, or other cleaning agent.** Collect water/waste and discharge to the sanitary sewer (with approval of the local sanitation district).

Training

1. **Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.**
2. **Train employees on proper spill containment and cleanup.**
    - Establish training that provides employees with the proper tools and knowledge to immediately begin cleaning up a spill.
    - Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
    - BMP IC17 discusses Spill Prevention and Control in detail.
3. **Establish a regular training schedule, train all new employees, and conduct annual refresher training.**
4. **Use a training log or similar method to document training.**

Stencil storm drains

Storm drain system signs act as highly visible source controls that are typically stenciled directly adjacent to storm drain inlets. Stencils should read "No Dumping Drains to Ocean".

References

California Storm Water Best Management Practice Handbook. Industrial and Commercial. 2003. www.cabmphandbooks.com

Carlsbad Jurisdictional Urban Runoff Management Plan. Best Management Practices for Restaurants. City of Carlsbad. February 2002. On-line: http://www.ci.carlsbad.ca.us/cserv/jurmp.html

Orange County Stormwater Program. 2001. Water Quality Guidelines for Exterior Restaurant Cleaning Operations. Brochure. June.

Orange County Stormwater Program. Good Cleaning Practices Food & Restaurant Industry. Poster. Courtesy of the City and County of LA.

For additional information contact:

County of Orange
Watershed & Coastal Resources
Stormwater Program
(714)567-6363
or visit our website at:
www.ocwatersheds.com

ATTACHMENTS

APPENDIX A

CITY OF BREA PROJECT SPECIFIC WQMP

SUMMARY REPORT

City of Brea

Comment [ca1]:

Project Specific WQMP Summary Report

INSTRUCTION: Project applicant, please fill out and check all that apply.

Project Name: **Brea Plaza Redevelopment**	Address: **413 Associated Road Brea, CA 92821**
APNs: **(Channel North) 319-102-28** **(Channel South) 319-102-31** **(Building "T") 319-102-32** **(Building "U" pad) 319-102-25**	X Coordinate:
New Development or Redevelopment:	Y Coordinate:
Type: **Redevelopment**	Project Size (Acres): **13.72 acres**
Watershed: **San Gabriel River/Coyote Creek**	Construction Completion Date:

☐ Preliminary Plan Check Status: _____

☒ Final Plan Check Status: _____ Date Approved: 2/2/10

Non-Structural Source Control BMP's:				**Site Design BMP's:**	
N1 Owner, Tenant, Occupant Education	☒	N10 Uniform Fire Code	☒	Minimize Impervious Area	☒
N2 Activity Restrictions	☒	N11 Common Area Litter Control	☒	Minimize DCIAs	☒
N3 Common Area Landscape Mgmt	☒	N12 Employee Training	☒	Create Reduced or Zero Discharge Areas	☐
N4 BMP Maintenance	☒	N13 Loading Dock Good Housekeeping	☐	Conserve Natural Areas	☐
N5 Title 22 CCR Compliance	☐	N14 Common Area Catch Basin Inspection	☐		

N6 Local Water Quality Permit	☐	N15 Street Sweeping Private Streets & Parking Lots	☐
N7 Spill Contingency Plan	☐	N16 Retail Gasoline Outlets	☐
N8 Underground Storage Tank	☐		
N9 Hazardous Materials Disclosure	☐		

Structural Source Control BMP's:

- [x] Storm Drain System Stenciling/Signage
- [ ] Outdoor Material Storage Areas
- [x] Trash Storage Areas
- [x] Efficient Irrigation Systems & Landscape Design
- [x] Protect Slopes & Channels
- [ ] Loading Dock Areas
- [ ] Maintenance Bays
- [ ] Vehicle Wash Areas
- [ ] Outdoor Process Areas
- [ ] Equipment Wash Areas
- [ ] Fueling Areas
- [ ] Hillside Landscaping
- [x] Wash Water Controls for Food Prep Areas
- [ ] Community Car Wash Racks

Selected Treatment BMP's:		Description:	Count:
Biofilters (Vegetated (grass) strips and swales)	☒	4 swales	4
Detention Basins	☐		
Infiltration Basins	☐		
Wetponds or Wetlands	☐		
Porous Pavement/Landscape Detention	☐		
Media Filter	☐		
Proprietary Control Measures	☒	Katchalls inlet/outlet inserts & Kristar FloGard+PLUS inserts	2 12
Regional or Watershed BMPs	☐		

Owner Information:

Owner Name	Contact Name:	Phone:	Owner Address:	Comments:	Entry Date:
California Brea Partners, L.P. with **BOSC Equities** as the General Managing Partner	Marc Harris	(714)990-5715	413 Associated Road Brea, CA 92821	http://www.bosc.com/	01/11/10

APPENDIX B

CONDITIONS OF APPROVAL,

RESOLUTION NO. PC –09-29 RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF BREA APPROVING PRECISE DEVELOPMENT NO. PD 09-01, CONDITIONAL USE PERMIT NO. CUP 09-14, AND ADOPTING MITIGATED NEGATIVE DECLARATION NO. ND 08-01.

ADOPTED AND APPROVED, DECEMBER 8, 2009

City of Brea

December 9, 2009

Architects Orange
144 N. Orange St.
Orange, CA 92866

RE: **APPROVAL:** Meeting Date: December 9, 2009
REQUEST: Precise Development No. PD 09-01, Conditional Use Permit No. 09-14, and addendum to Mitigated Negative Declaration No. ND 08-01
ADDRESS: NWC Imperial Highway and Associated Road

Dear Applicant:

Your application for the above-referenced matter was considered on the above date. The Planning Commission has approved the request subject to conditions of Resolution No. PC 09-29, a copy of which is enclosed for your file.

Please review the Resolution of Approval. If you have any questions, please contact us immediately.

As a reminder, there is a period of ten (10) days in which the Planning Commission's decision may be appealed to the City Council. During that time, no permits or action shall be taken. All work must be accomplished within the time frame(s) as stated in the resolution.

If we may be of further assistance, please do not hesitate to contact us at (714) 990-7674.

Sincerely,

David M. Crabtree, AICP
City Planner

Letter to Applicant

Enclosure:
Resolution of Approval

City Council **John Beauman** *Mayor* **Ron Garcia** *Mayor Pro Tem* **Roy Moore** *Councilmember* **Don Schweitzer** *Councilmember* **Marty Simonoff** *Councilmember*

RESOLUTION NO. PC 09-29

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF BREA APPROVING PRECISE DEVELOPMENT NO. PD 09-01, CONDITIONAL USE PERMIT NO. CUP 09-14, AND ADOPTING ADDENDUM TO MITIGATED NEGATIVE DECLARATION NO. ND 08-01, SUBJECT TO CONDITIONS AS SET FORTH HEREIN, AS AMENDED

A. RECITALS.

(i) **WHEREAS,** the Planning Commission of the City of Brea has heretofore held a duly noticed public hearing, as required by law, on Precise Development No. PD 09-01, Conditional Use Permit No. CUP 09-14, and Addendum to Mitigated Negative Declaration No. ND 08-01, a request to expand the existing Brea Plaza retail center with the construction of five new buildings, two new drive-through food uses, the demolition of three structures, and the construction of an improved parking lot over the Loftus Channel, and a new sign program in the C-G (PD), General Commercial (Precise Development) zone.

(ii) **WHEREAS,** the project proponent is: Architects Orange, 144 North Orange Street, Orange, CA 92866.

(iii) **WHEREAS,** the subject property is generally located at the northwest corner of Imperial Highway and Associated Road, in the City of Brea, and legally described as a parcels 1 through 13 of Parcel Map 9-76, as recorded in Book 205, pages 17 through 19 of Parcel Maps, as shown in the latest rolls of the County of Orange Tax Assessor.

(iv) **WHEREAS,** the property is zoned General Commercial/Precise Development (C-G/PD) and designated as General Commercial in the General Plan land use element.

(v) **WHEREAS,** all legal prerequisites to the adoption of this Resolution have occurred.

B. RESOLUTION.

NOW, THEREFORE, BE IT FOUND, DETERMINED, AND RESOLVED, by the Planning Commission of the City of Brea, as follows:

1. In all respects as set forth in Recitals, Part A, of this Resolution.

2. The applications for the location set forth are authorized by Section 20.236, Section 20.260, Section 18.204, and Section 20.408.030, of the Brea Zoning Ordinance, as amended.

3. The Planning Commission further finds, as follows:

a. Finding: The site is adequate in size and shape to accommodate the proposal.

Fact: As proposed, the project will meet all development standards of the General Commercial zone including building height, setbacks, allowable lot coverage, and parking.

b. Finding: The site relates to streets and highways which are properly designed to carry the type and quantity of traffic generated by the proposed development.

Fact: The site is located on Imperial Highway and adjacent to State Route 57 Freeway. The Addendum to Mitigated Negative Declaration No. ND 08-01 found that no significant traffic impacts are expected as a result of the proposed project.

c. Finding: The proposed project, with conditions as imposed, is desirable for the development of the community and furthers the various elements of the General Plan.

Fact: Brea Plaza currently consists of major tenant retail buildings, restaurants, and various outpads. The proposed project will construct three additional buildings, box in the Loftus Channel and construct a parking lot and bio-swale over the top of the reconstructed channel. Three existing buildings will be demolished. The addition of the parking will increase the parking ratio of the site and the boxing in of the Loftus Channel and surface improvements will provide an aesthetic improvement for the east side of the shopping center. The bio-swale will prove beneficial by filtering storm water before it enters the Flood Channel.

d. Finding: That the use(s) applied for at the location set forth in the application is properly one(s) for which a Conditional Use Permit is authorized by this title.

Fact: The Conditional Use Permit will allow for a drive-through food use in a General Commercial Zone. Additionally, the Conditional Use Permit is required to replace the master sign program for the shopping center.

e. Finding: That with the conditions stated in the permit, the uses will not adversely affect the public, health, safety, or general welfare.

Fact: The Conditional Use Permit will allow for a drive-through food use in a General Commercial Zone. The Conditional Use Permit will bring the aesthetic improvements to the streetscape along Associated Road and

establishment of new businesses within the site. The proposed construction within the Loftus channel has been properly engineered and designed so no flooding impacts will occur.

4. The Planning Commission hereby finds that the Addendum to Mitigated Negative Declaration No. ND 08-01 has been prepared in compliance with the California Environmental Quality Act of 1970, as amended, and the Guidelines promulgated thereunder, and further, this Commission has reviewed and considered the information contained in the Addendum to Mitigated Negative Declaration No. ND 08-01 with respect to the project identified in this Resolution. The Planning Commission hereby specifically finds and determines that, based upon the findings set forth below, and changes and alterations which have been incorporated into and conditioned upon the proposed project, no significant adverse environmental effects will occur. The Planning Commission hereby finds that facts supporting the above specified findings are contained in the Addendum to Mitigated Negative Declaration, the staff report and exhibits, and the information provided to this Commission during the public hearing conducted with respect to the project and the Addendum to Mitigated Negative Declaration.

5. Precise Development No. PD 09-01 and Conditional Use Permit No. CUP 09-14 are hereby approved, subject to conditions as set forth herein:

a) Development shall occur in substantial conformance with the plans within Exhibit "A" and "B" to the staff report, the exhibits displayed at the public hearing, the information presented to the Planning Commission on file in the Planning Division, the conditions contained herein, and all applicable City regulations.

b) The applicant shall provide a digital copy of the conceptual plan set to the Planning Division.

c) All mitigation measures contained in the Mitigation Monitoring Program of the Mitigated Negative Declaration No. ND 08-01 shall be implemented to the satisfaction of the City Planner, City Engineer, and the Building and Safety Manager.

d) The applicant shall submit a Construction Phasing Plan prior to issuance of the grading permit. Said Plan shall entail the construction traffic circulation plan, fencing, staging/storage, and parking. The Construction Phasing Plan shall be subject to the review and approval of the City Engineer, Building and Safety Manager, Fire Marshal, and City Planner.

e) The existing reciprocal parking agreement with the adjacent property to the north shall be maintained. The applicant shall provide a parking management plan, consistent with the Kimley-Horn parking analysis dated November 16, 2009, for the review and approval of the City Planner prior to the occupancy of the first expansion building (new construction). Said plan shall specifically address and provide strategies for issues including, but not limited to, employees parking, any tenant assigned parking, any time-limited parking, as well as a process for a contingency parking plan should any future parking impacts from any individual or cumulative tenants(s) create a need for site parking modifications. Said contingency plan shall provide a remedy for any Brea Plaza parking impacts to nearby residential neighbors, should they ever occur. A copy of the parking management plan shall be provided to all tenants and shall include a mandate for compliance.

f) The applicant shall work in good faith with the City to provide City of Brea identification signage/improvements near the main Imperial Highway project entrance and visible to vehicles exiting the north bound Route 57 freeway at Imperial Highway. A design and schedule for implementation shall be submitted for the review and approval of the City Planner prior to the final tenant occupancy for the final project phase, as identified in the required phasing plans. Goals for identification shall include providing a design integral to the shopping center, effecting a pleasing streetscape, and providing a welcoming statement to the City of Brea to the motorist exiting the 57 freeway.

g) Trail improvements shall be provided along Associated Road consistent with the routing of the Master Plan of Trails in the General Plan. At minimum, said improvements shall include one hard surface (e.g. concrete) trail tread and one decomposed granite, or acceptable alternate material, trail tread. Final trail alignment details shall be provided for the review and approval of the Community Services Director.

h) The applicant shall dedicate an easement for the sidewalk and trail on the west side of Associated Road from Imperial Highway to the northern property line to allow for future extension to the north of the site.

i) Final sidewalk and trails designs along Associated Road shall be subject to the review and approval on the City Engineer prior to the issuance of a grading permit.

j) Final drive-thru design for Building "P" shall be subject to the review and approval on the City Engineer prior to the issuance of a grading permit.

k) Final drive aisle width northeast of Building "G" shall be subject to the review and approval by the City Engineer prior to the issuance of a grading permit.

l) The applicant shall provide loading areas for Buildings "P" and "L."

m) All trash storage and related equipment shall be fully screened from public view. Such screening shall be architecturally compatible with the main building, subject to the review and approval of the City Planner.

n) The drive thru service lanes for Building T are located within the City's sublease area and shall be for the exclusive use of the tenant occupying said Building T. Details for menu boards, overhead clearance signage, and other similar improvements for the drive thru service lanes for both Buildings P and T shall be subject to the review and approval of the City Planner prior to occupancy.

o) All signage shall be consistent with the revised sign criteria for Brea Plaza, dated December 8, 2009. Signs shall be comprised of individual channel elements with no exposed wiring or raceways, subject to the review and approval of the City Planner. No cabinet signs shall be allowed.

p) The applicant shall provide a detailed final landscaping and full coverage irrigation plan. Said landscaping and irrigation plan shall be reviewed and approved by the City Planner prior to the issuance of any building permits.

q) Final landscaping plans shall incorporate the City designated street tree Pyrus Callleryany "Redspire" for Imperial Highway. A minimum of 50% of trees shall consist of 36" and 48" box trees to enhance the landscaping mix. Approved landscaping and irrigation shall be installed prior to a Certificate of Occupancy being issued for any building. All landscaping and irrigation shall comply with the provisions of the City's Water Conserving Landscape Ordinance No. 932.

r) Final grading and drainage plans shall be submitted for the review and approval of the City Engineer and City Planner prior to the issuance of grading permits.

s) The applicant shall provide an erosion control plan, incorporating measures contained in the SWPPP prior to issuance of a grading/demolition permit, subject to the review and approval of the City Engineer.

t) The applicant shall prepare and provide a WQMP incorporating both construction and post construction pollution prevention controls for the entire site, prior to the issuance of a grading/demolition permit and subject to the review and approval of the City Engineer.

u) All on-site utilities shall be located underground, subject to the review and approval of the City Engineer.

v) All off-site improvements shall be submitted to the Engineering Division for review and approval prior to the issuance of building permits.

w) The applicant shall obtain applicable permits and approval from the City Engineer for the removal and installation of new driveway aprons.

x) The applicant shall be required to suspend excavation and grading, and notify the Engineering Division, if unusual soil odors, soil staining, color or soil texture, or other characteristics indicate that isolated soil contamination or buried containers are found during grading.

y) These conditions shall be listed in their entirety on the title sheet of the final construction plans.

z) The applicant shall pay a Notice of Determination Posting fee (check made for $50.00 payable to the County of Orange) to the Planning Division within three (3) business days of this approval.

6. The Secretary of this Commission shall certify to the adoption of this Resolution.

ADOPTED AND APPROVED this 8th day of December, 2009.

_____
Chairman, Planning Commission

I, David Crabtree, Secretary to the Planning Commission of the City of Brea, do hereby certify that the foregoing Resolution was introduced at a regular meeting of the Planning Commission of the City of Brea held on the 8th day of December, 2009, and was finally passed at a regular meeting of the Planning Commission of the City of Brea, held on the 8th day of December, 2009, by the following votes:

AYES:	COMMISSIONERS:	Clough, Koos, Fox, Grosse, Prenovost
NOES:	COMMISSIONERS:	None
ABSENT:	COMMISSIONERS:	None
ABSTAIN:	COMMISSIONERS:	None

ATTEST: _____
Secretary, Planning Commission

APPENDIX C

ADDITIONAL PERMITS & CERTIFICATIONS

California Natural Resources Agency
DEPARTMENT OF FISH AND GAME
South Coast Region
4949 Viewridge Avenue
San Diego, California 92123
(858) 467-4201
www.dfg.ca.gov

ARNOLD SCHWARZENEGGER, Governor

November 18, 2009

Mr. Marc Harris
California Brea Partners, L.P.
719 Griswold Street, Suite 280
Detroit, Michigan 48226

Subject: Extension of Lake or Streambed Alteration Agreement
Notification No. 1600-2008-0029-R5
Loftus Channel Improvements

Dear Mr. Harris:

The Department of Fish and Game ("Department") received your request to extend Lake or Streambed Alteration Agreement ("Agreement") and extension fee, for the above referenced agreement. The Department hereby grants your request to extend the Agreement from December 31, 2009, to December 31, 2012. All other conditions in the original Agreement remain in effect.

Copies of the original Agreement and this letter must be readily available at project worksites and must be presented when requested by a Department representative or other agency with inspection authority.

If you have any questions regarding this matter, please contact me at (858) 467-4207 or kfisher@dfg.ca.gov.

Sincerely,

Kelly Fisher

Ms. Kelly Fisher
Environmental Scientist

FOR DEPARTMENT USE ONLY				
Date Received	Fee Enclosed	Approved?	Date Approved	Expiration Date
11/10/09	$200.00	☑ Yes ☐ No	11/18/09 KF	12/31/12

KELLY FISHER

STATE OF CALIFORNIA

DEPARTMENT OF FISH AND GAME

REQUEST TO EXTEND

LAKE OR STREAMBED ALTERATION AGREEMENT

Complete EACH field and attach additional pages if necessary. Please refer to the fee schedule and submit the correct fee with extension request.

1. APPLICANT REQUESTING EXTENSION

If the applicant is a business, agency, or utility, please include the name of the applicant's representative, who should be an employee of the applicant.

Name	California Brea Partners, L.P.		
Business/Agency			
Street Address	719 Griswold Street, Suite 280		
City, State, Zip	Detroit, MI 48226		
Telephone	(313) 963-3678	Fax	(313) 442-9919
Email	mharris@bosc.com or wnadhir@bosc.com		

2. PROJECT INFORMATION

Agreement number	1600-2008-0029-R5
Original expiration date	12/31/09
New expiration date requested	12/31/12

Specify: 1) the work that has been completed; 2) the work that needs to be completed; and 3) the amount of time needed to complete the work.

1) No work completed to date.

2) Entire scope as set forth in "Project Description" of the Agreement.

3) Three (3) years is requested due to the uncertainty within the national economy, and the difficulty this presents in obtaining financing for the Project, and completing the work.

☐ Continued on additional page(s)

REQUEST TO EXTEND LAKE OR STREAMBED ALTERATION AGREEMENT

2. PROJECT INFORMATION, continued.

Specify the reason(s) for the extension request
The overall declining state of both the US economy, and that of California, and specifically the collapse of the banking and financing markets, resulted in a prolonged period in all of 2008, and most of 2009 where there was a complete cessation of lending activities for construction projects. The financing we had originally arranged for this work was cancelled, and we have faced extreme hardships in identifying alternative sources of financing. At present, we are in pursuing several different options, and are in discussions with several entities which have expressed an interest in providing the necessary capital for completing this important work; however, no agreements have been entered into and finalized as of this date. We are aggressively pursuing such opportunities, and are fully resolved to complete this project; however cannot state with certainty when we will be able to commence Project activities. The extra time requested for an extension (3 years) will therefore accomodate any unforseen prolonged weakness in the economy, and hopefully provide sufficient time for a recovery of the economy and a resumption of lending for these types of projects. ☐ Continued on additional page(s)

Note: The Department may not process this extension request until the extension fee has been received.

3. SIGNATURE

I hereby certify that to the best of my knowledge the information in this extension request ("request") is true and correct and that I am authorized to sign this request as, or on behalf of, the applicant. I understand that if any information in this request is found to be untrue or incorrect, the Department may suspend processing this request. I understand also that if any information in this request is found to be untrue or incorrect, I and/or the applicant may be subject to civil or criminal prosecution.

Marc Harris — Signature of Applicant or Applicant's Authorized Representative

Oct. 29, 2009 — Date

MARC HARRIS — Print Name

Note: If approved, a copy of this form must be available at the work site with the original agreement.

Marc Harris
Senior Vice President
of Development
mharris@bosc.com
www.bosc.com

BOSC EQUITIES

California Office:
413 S. Associated Road
Brea, CA 92821
714.990.5715 (Main)
714.642.1021 (Mobile)
714.990.5754 (Fax)

Headquarters:
719 Griswold, Suite 530
Detroit, Michigan 48226
313.237.7783 (Main)

Ingallinera, Brian

From: James Palda [jpalda@SteadfastCcompanies.com]
Sent: Monday, January 31, 2011 10:51 AM
To: Ingallinera, Brian
Cc: Fred Cornwell
Subject: FW: Loftus Channel - Agreement 1600-2008-0029-R5

Follow Up Flag: Follow up
Due By: Monday, January 31, 2011 2:00 PM
Flag Status: Flagged

Brian,
See below. If this is the last item, please let me know when you've signed the WQMP and we'll get it picked up.

Thank you,

James Palda
Vice President
Steadfast Commercial Properties
New Address Below
18100 Von Karman, Suite 500
Irvine, CA 92612
(949)623-7709 Phone
(949)777-8209 Fax

NOTICE OF CONFIDENTIALITY: The information contained in this communication and any attachments hereto are intended solely for the use of the individual or entity to whom it is addressed and others authorized to receive it. It may contain confidential or legally privileged information. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution or taking any action in reliance on the contents of this information is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately and then delete this communication and any attachments.

-----Original Message-----
From: Russell Barabe [mailto:RBarabe@dfg.ca.gov]
Sent: Monday, January 31, 2011 10:47 AM
To: James Palda
Subject: RE: Loftus Channel - Agreement 1600-2008-0029-R5

Mr. James Palda,

The Department of Fish and Game accepts the proposed minor change to the original Streambed Alteration Agreement (SAA) No. 1600-2008-0029-R5. The original SAA notes the use of "Katchall Baffle Filters" in the project description. Katchall Baffle will be replaced with Bio Clean.

Thank you.

Russell Barabe
Environmental Scientist
CA Department of Fish and Game
4949 Viewridge Ave, SD, CA 92123

858-467-2717

Pursuant to the Governor's Executive Order S-12-10, I am required to take three furlough days per month.

>>> James Palda <jpalda@SteadfastCcompanies.com> 1/27/2011 1:42 PM >>>
Padmini, Thank you.

Russell,

Attached is our existing agreement. We've changed the bio filter manufacturer to a group called Bio Clean. On page 3 of the agreement it says "Katchall Filters". I need that revised to Bio Clean. It's the same type of filter device, just a different manufacturer. This revision has been approved by Adam Fisher of Regional Water Quality Control Board and City of Brea.

If you need any additional information, please let me know. Email approval will suffice.

Thank you,

James Palda
Vice President
Steadfast Commercial Properties
New Address Below
18100 Von Karman, Suite 500
Irvine, CA 92612
(949)623-7709 Phone
(949)777-8209 Fax

NOTICE OF CONFIDENTIALITY: The information contained in this communication and any attachments hereto are intended solely for the use of the individual or entity to whom it is addressed and others authorized to receive it. It may contain confidential or legally privileged information. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution or taking any action in reliance on the contents of this information is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately and then delete this communication and any attachments.

-----Original Message-----
From: Padmini Elayath [mailto:PElayath@dfg.ca.gov]
Sent: Wednesday, January 26, 2011 4:55 PM
To: James Palda
Subject: Re: Loftus Channel - Agreement 1600-2008-0029-R5

Mr. Palda

Sorry for not returning your call/email earlier. I was out of the office yesterday. I have forwarded your request to amend the agreement to the Environmental Scientist, Russell Barabe, who handles the area now. He will be contacting you. He can be reached at 858 467 2717 or via email at rbarabe@dfg.ca.gov.

Please email me if you have any other questions.

Thank you.

>>> James Palda <jpalda@SteadfastCcompanies.com> 1/25/2011 5:22 PM >>>
T need to change two words on page 3 of 9 on the agreement to read BioClean instead of atchall Baffle filters. The city of Brea and WGRCB have approved the change for the WQMP, however won't sign off until you can approve (via email correspondence is fine).

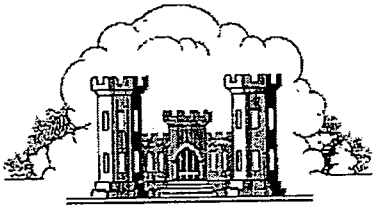
Please review and call me at your earliest convenience.

Thank you,

James Palda
Vice President
Steadfast Commercial Properties
New Address Below
18100 Von Karman, Suite 500
Irvine, CA 92612
(949)623-7709 Phone
(949)777-8209 Fax

NOTICE OF CONFIDENTIALITY: The information contained in this communication and any attachments hereto are intended solely for the use of the individual or entity to whom it is addressed and others authorized to receive it. It may contain confidential or legally privileged information. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution or taking any action in reliance on the contents of this information is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately and then delete this communication and any attachments.

From: KMBS_751_3E@SteadfastCompanies.com [mailto:KMBS_751_3E@SteadfastCompanies.com]
Sent: Tuesday, January 25, 2011 6:17 PM
To: James Palda
Subject: Message from KMBT_751



LOS ANGELES DISTRICT
U.S. ARMY CORPS OF ENGINEERS

DEPARTMENT OF THE ARMY PERMIT

Permittee: Bosc Equities, LLC; Waad Nadhir

Permit Number: SPL-2008-00232-JPL

Issuing Office: Los Angeles District

Note: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: To permanently discharge fill onto 0.628 acre of waters of the U.S., in association with the Orange County Loftus Channel Improvement project as shown on the attached drawings.

Specifically, you are authorized to place an approximately 780 linear foot segment of the Brea Loftus channel into an underground box culvert, permanently impacting 0.628 acre of jurisdictional wetlands in order to install additional parking places, a water quality bio swale, a new greenbelt walkway, and upgraded access points as part of the commercial development improvement project.

Project Location: The proposed Orange County Loftus Channel Improvement project site consists of approximately 0.628 acre of jurisdictional waters of the U.S. and is located directly adjacent to the western side of Associated Road and is bound to the south by Imperial Highway (Highway 90) and is bordered to the west by Brea Plaza shopping center within the City of Brea, Orange County, California. The project site begins approximately 780 feet upstream from the northwest corner of Imperial Highway and Associated Road. The coordinates for the approximate center of the project site are lat: 33.7027141351463, lon: -117.760914143404.

Permit Conditions:

General Conditions:

1. The time limit for completing the authorized activity ends on February 6, 2012. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification from this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished with the terms and conditions of your permit.

Special Conditions:

1. Prior to initiating construction in waters of the U.S., and to mitigate for impacts to 0.628 acre of wetland waters of the U.S., the Permittee shall provide documentation verifying purchase of 1.92 credits for the restoration/establishment of jurisdictional wetland or riparian streambed from the San Gabriel Mountains Regional Conservancy (SGMRC) in-lieu fee program (ILFP). The Permittee shall not initiate work in waters of the U.S. prior to receiving written confirmation (by letter or e-mail) from the Corps as to compliance with this special condition. The permittee retains responsibility for providing the compensatory mitigation until the number and resource type of credits described above have been secured from a sponsor and the district engineer has received documentation that confirms that the sponsor has accepted the responsibility for providing the required compensatory mitigation. This documentation may consist of a letter or form signed by the sponsor, with the permit number and a statement indicating the number and resource type of credits that have been secured from the sponsor.

2. Prior to initiating construction in waters of the U.S., the Permittee shall submit to the Corps a complete set of final detailed grading/construction plans showing all work and structures in waters of the U.S. All plan sheets shall be signed, dated, and submitted on paper no larger than 11x17 inches. No work in waters of the U.S. is authorized until the Permittee receives, in writing (by letter or e-mail), Corps approval of the final detailed grading/construction plans. The Permittee shall ensure that the project is built in accordance with the Corps-approved plans.

3. The Permittee shall clearly mark the limits of the workspace with flagging or similar means to ensure mechanized equipment does not enter preserved waters of the U.S. and riparian wetland/habitat areas. Adverse impacts to waters of the U.S. beyond the Corps-approved construction footprint are not authorized. Such impacts could result in permit suspension and revocation, administrative, civil or criminal penalties, and/or substantial, additional, compensatory mitigation requirements.

4. Within 45 calendar days of completion of authorized work in waters of the U.S., the Permittee shall submit to the Corps a post-project implementation memo indicating the date authorized impacts to waters of the U.S. ceased.

5. This Corps permit does not authorize you to take any threatened or endangered species, or adversely modify its designated critical habitat. In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (ESA) (e.g. ESA Section 10 permit, or a Biological Opinion (BO) under ESA Section 7, with "incidental take" provisions with which you must comply).

6. Pursuant to 36 C.F.R. section 800.13, in the event of any discoveries during construction of either human remains, archeological deposits, or any other type of historic property, the Permittee shall notify the Corps Archeology Staff within 24 hours (Steve Dibble at 213-452-3849 or John Killeen at 213-452-3861). The Permittee shall immediately suspend all work in any area(s) where potential cultural resources are discovered. The Permittee shall not resume construction in the area surrounding the potential cultural resources until the Corps re-authorizes project construction, per 36 C.F.R. section 800.13.

Further Information:

1. Congressional Authorities. You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the River and Harbor Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data. The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measure ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give you favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

PERMITTEE

DATE 2/9/09

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Mark Durham
Chief, South Coast Branch
Regulatory Division

DATE 9 Feb. 2009

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

TRANSFEREE

DATE

LOS ANGELES DISTRICT
U.S. ARMY CORPS OF ENGINEERS

NOTIFICATION OF COMMENCEMENT OF WORK FOR DEPARTMENT OF THE ARMY PERMIT

Permit Number: SPL-2008-00232-JPL
Name of Permittee: Bosc Equities, LLC; Waad Nadhir
Date of Issuance: February 6, 2009

Date work in waters of the U.S. will commence: _____
Estimated construction period (in weeks): _____
Name & phone of contractor (if any): _____

Please note that your permitted activity is subject to a compliance inspection by an Army Corps of Engineers representative. If you fail to comply with this permit you may be subject to permit suspension, modification, or revocation.

I hereby certify that I, and the contractor (if applicable), have read and agree to comply with the terms and conditions of the above referenced permit.

_____ _____
Signature of Permittee Date

At least ten (10) days prior to the commencement of the activity authorized by this permit, sign this certification and return it using any ONE of the following three (3) methods:

(1) E-MAIL a statement including all the above information to: Jason.P.Lambert@usace.army.mil
OR
(2) FAX this certification, after signing, to: (213) 452-4196
OR
(3) MAIL to the following address:

U.S. Army Corps of Engineers
Regulatory Division
ATTN: CESPL-RG-SPL-2008-00232-JPL
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
P.O BOX 532711
LOS ANGELES, CALIFORNIA 90053-2325

LOS ANGELES DISTRICT
U.S. ARMY CORPS OF ENGINEERS

NOTIFICATION OF COMPLETION OF WORK AND CERTIFICATION OF COMPLIANCE WITH DEPARTMENT OF THE ARMY PERMIT

Permit Number: SPL-2008-00232-JPL
Name of Permittee: Bosc Equities, LLC; Waad Nadhir
Date of Issuance: February 6, 2009

Date work in waters of the U.S. completed: _____
Construction period (in weeks): _____
Name & phone of contractor (if any): _____

Please note that your permitted activity is subject to a compliance inspection by an Army Corps of Engineers representative. If you fail to comply with this permit you may be subject to permit suspension, modification, or revocation.

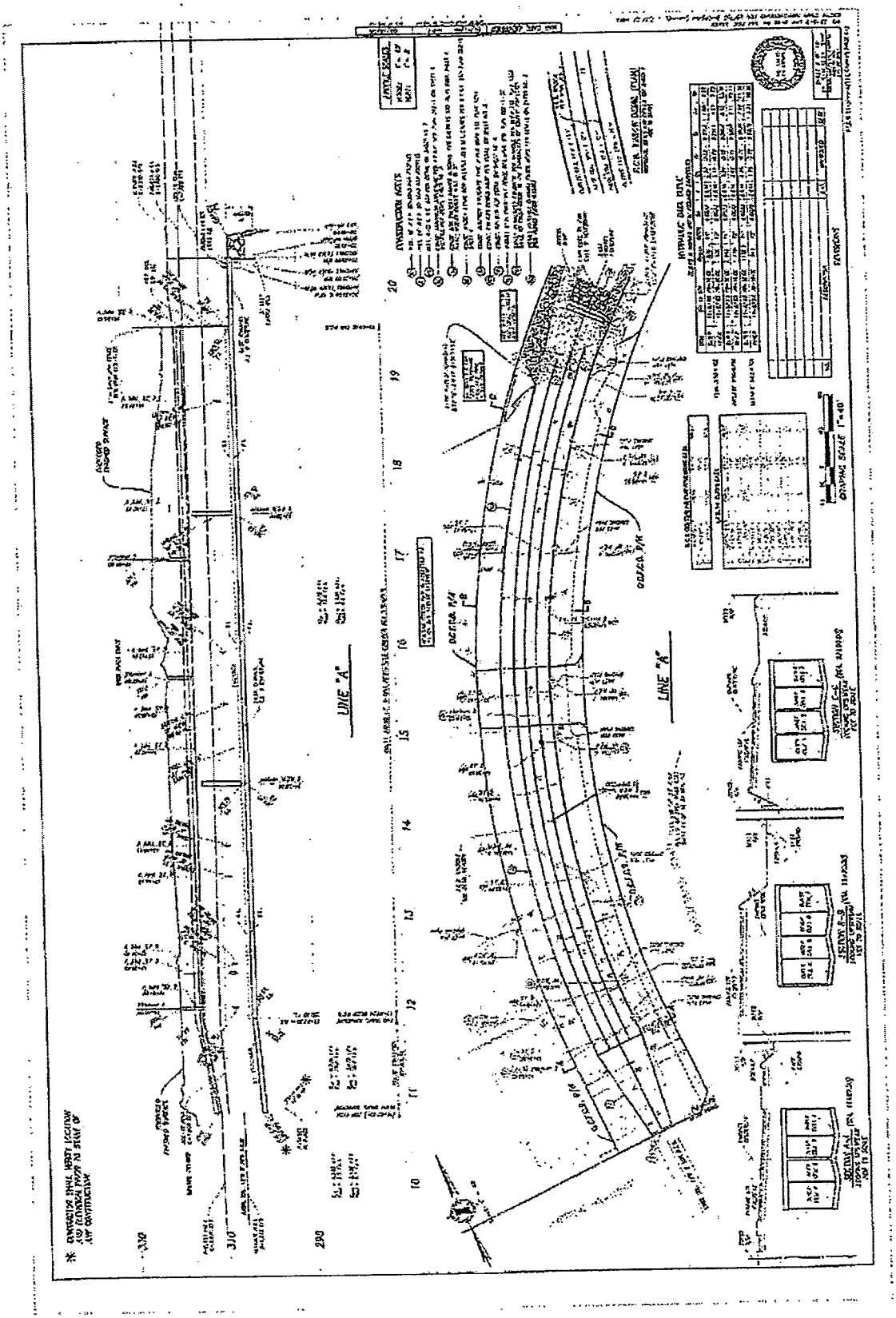
I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of said permit.

_____ _____
Signature of Permittee Date

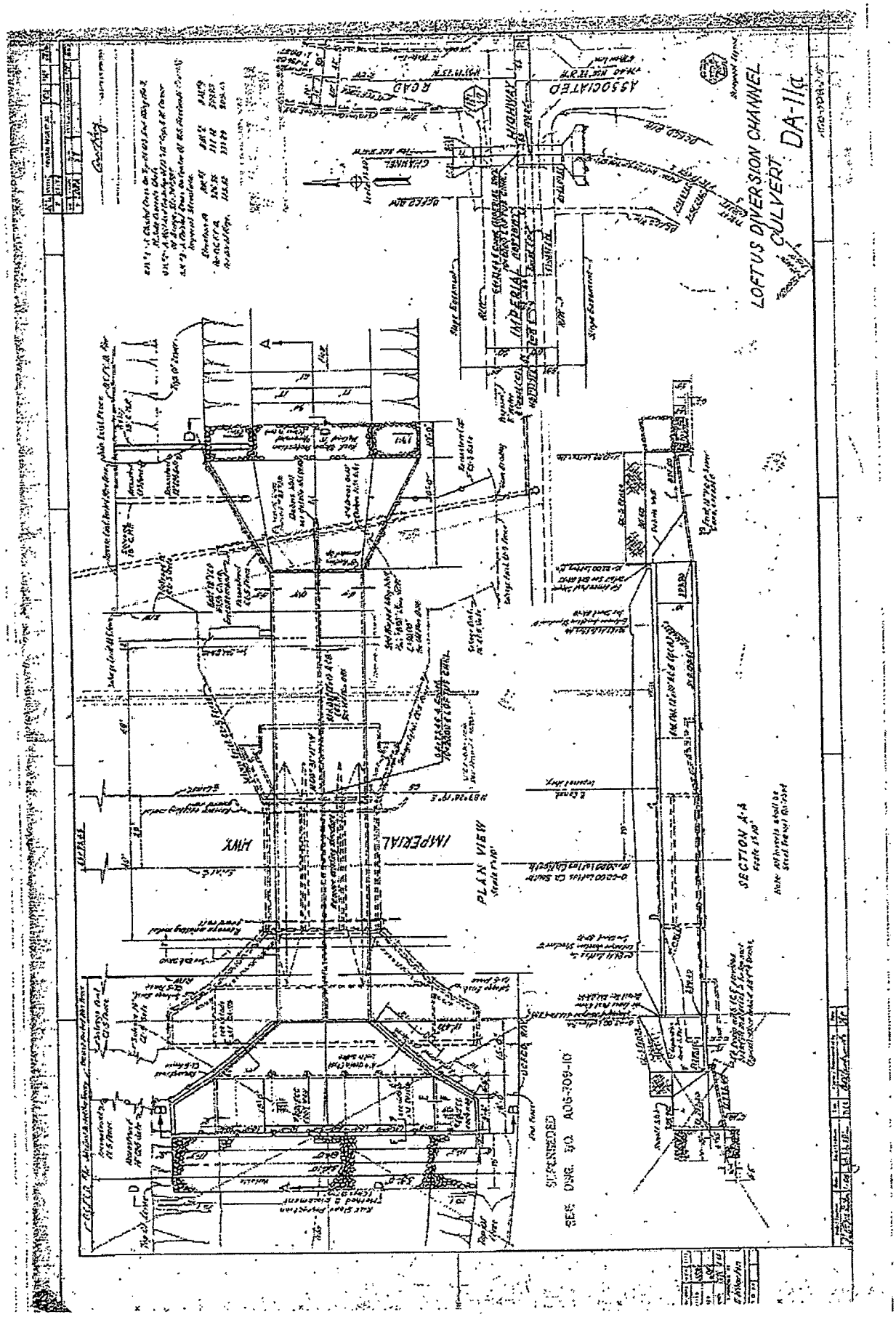
Upon completion of the activity authorized by this permit, sign this certification and return it using any ONE of the following three (3) methods:

(1) E-MAIL a statement including all the above information to: Jason.P.Lambert@usace.army.mil
OR
(2) FAX this certification, after signing, to: (213) 452-4196
OR
(3) MAIL to the following address:

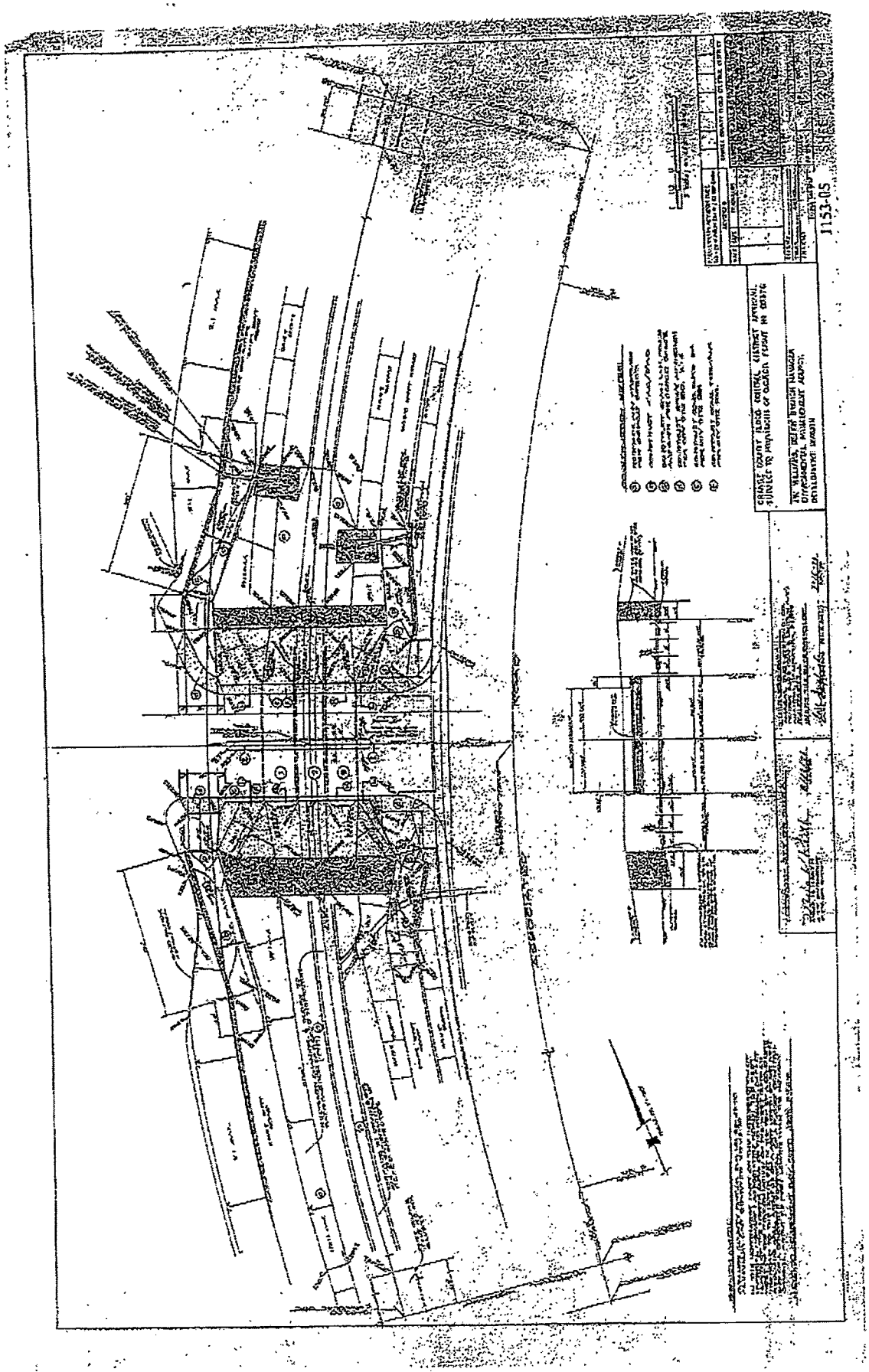
U.S. Army Corps of Engineers
Regulatory Division
ATTN: CESPL-RG-SPL-2008-00232-JPL
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
P.O BOX 532711
LOS ANGELES, CALIFORNIA 90053-2325


LINE "A"
LINE "A"

TRACT
SUPERSEDED
STA.68+16.13 TO STA.81+50.71
SEE ADS-104-D
PACIFIC ELECTRIC RAILWAY
LOFTUS DIVERSION CHANNEL
PLAN & PROFILE
STA. 10+20 TO STA. 88+80.13
PREPARED BY
HARRISON & WOOLLEY
CONSULTING ENGINEERS
ADS-704-E-1


LOFTUS DIVERSION CHANNEL
CULVERT
DA-11d
ASSOCIATED
ROAD
IMPERIAL
HWY
PLAN VIEW
SECTION A-A
SEE DWG. NO. A06-709-10

Fm. 80-43



DEPARTMENT OF FISH AND GAME
South Coast Region
4949 Viewridge Avenue
San Diego, CA 92123
(858) 467-4201

September 12, 2008

Mr.Waad Nadhir
California Brea Partners, L.P.
Brea Shopping Center Suite 413
413 South Associated Road
Brea, CA 92821

Dear Mr. Nadhir:

Enclosed is Streambed Alteration Agreement # **1600-2008-0029-R5** that authorizes work on the Orange County Loftus Channel Improvements project impacting Loftus Diversion Channel, a tributary to San Gabriel River in Orange County. This action is authorized under Section 1602 of the Fish and Game Code and has been approved by the California Department of Fish and Game. Pursuant to the requirements of the California Environmental Quality Act (CEQA), the Department filed a Notice of Determination (NOD) on the project on September 12, 2008. Under CEQA regulations, the project has a 30-day statute of limitations on court challenges of the Department's approval.

The Department believes that the project fully meets the requirements of the Fish and Game Code and CEQA. However, if court challenges on the NOD are received during the 30-day period, then an additional review or even modification of the project may be required. If no comments are received during the 30-day period, then any subsequent comments need not be responded to. This information is provided to you so that if you choose to undertake the project prior to the close of the 30-day period, you do so with the knowledge that additional actions may be required based on the results of any court challenges that are filed during that period.

Please contact Naeem Siddiqui at (562) 493-6897 if you have any questions regarding the Streambed Alteration Agreement.

Sincerely,

for Helen Birss
Environmental Program Manager

Enclosure
cc: Naeem Siddiqui

Revised 11/05

CALIFORNIA DEPARTMENT OF FISH AND GAME
South Coast Region
4949 Viewridge Avenue
San Diego, California 92123

Notification No.1600-2008-0029-R5

AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION

THIS AGREEMENT, entered into between the State of California, Department of Fish and Game, hereinafter called the Department, and the lessee, California Brea Partners, L.P., at 719 Griswold Street, Suite 530, Detroit, MI 48226, Phone: 313-237-8901, (P.O.C. Jon Petke, 714-556-5200), hereinafter called the Applicant, is as follows:

WHEREAS, pursuant to Section 1602 of the California Fish and Game Code, the Applicant, on the 22nd day of January, 2008, notified the Department that he intend to divert or obstruct the natural flow of, or change the bed, channel, or bank of, or use material from the streambed(s) of the following water(s): Loftus Diversion Channel, tributary to San Gabriel River, Orange County, California, Section 13, Township 3S, Range 10W; USGS Map La Habra 7.5; and

WHEREAS, the Department has determined that such operations may substantially adversely affect those existing fish and wildlife resources within the vicinity of the site, specifically identified as follows: Amphibians: Pacific treefrog (*Hyla regilla*); Reptiles: side-blotched lizard (*Uta stansburiana*), and western fence lizard (*Sceloporus occidentalis*); Birds: American crow (*Corvus brachyrhynchos*), Say's phoebe (*Sayornis saya*), yellow-rumped warbler (*Dendroica coronata*), mourning dove (*Zenaida macroura*), house finch (*Carpodacus mexicanus*), snowy egret (*Egretta thula*), and great egret (*Ardea albus*); Mammals: house mouse (*Mus musculus*); Riparian vegetation which provides habitat for those species; and all other aquatic and wildlife resources in the area.

THEREFORE, the Department hereby proposes measures to protect fish and wildlife resources during the Operator's work. The Applicant hereby agrees to accept the following measures/conditions as part of the proposed work.

If the Applicant's work changes from that stated in the notification specified above, this Agreement is no longer valid and a new notification shall be submitted to the Department. Failure to comply with the provisions of this Agreement and with other pertinent code sections, including but not limited to Fish and Game Code Sections 5650, 5652, 5937, and 5948, may result in prosecution.

Nothing in this Agreement authorizes the Applicant to trespass on any land or property, nor does it relieve the Operator of responsibility for compliance with applicable Federal, State, or local laws or ordinances. A consummated Agreement does not constitute Department's endorsement of the proposed operation, or assure the Department's concurrence with permits required from other agencies.

This Agreement becomes effective the date of the Department's signature and terminates December 31, 2009, for project activities only. This Agreement shall remain in effect for that time necessary to satisfy the terms/conditions of this Agreement.

Pursuant to Section 1600 *et seq.*, the Applicant may request one extension of the Agreement; the Operator shall request the extension of this Agreement prior to its termination.

The one extension may be granted for up to five years from the date of termination of the Agreement and is subject to Departmental approval. The extension request and fees shall be submitted to the Department's South Coast Region office at the above address, Attn: Streambed. If the Operator fails to request the extension prior to the Agreement's termination, then the Operator shall submit a new notification with fees and required information to the Department. Any construction/impacts conducted under an expired Agreement are a violation of Fish and Game Code Section 1600 *et seq*. For complete information see Fish and Game Code Section 1600 *et seq*.

All provisions of this Agreement remain in force throughout the term of the Agreement. Any provisions of the Agreement may be amended or the Agreement may be terminated at any time provided such amendment and/or termination is agreed to in writing by both parties. Mutually approved amendments become part of the original Agreement and are subject to all previously negotiated provisions.

It is understood that the Department has entered into this Streambed Alteration Agreement for purposes of establishing protective provisions for fish and wildlife. The decision to proceed with the project is the sole responsibility of the Applicant, and is not required by this Agreement. It is further agreed that all liability and/or incurred cost related to or arising from the Operator's project and the implementation of the fish and wildlife protective conditions of this Agreement, remain the sole responsibility of the Applicant. The Applicant agrees to hold harmless the State of California and the Department against any related claim made by any party or parties for personal injury or any other damages.

The Department reserves the right to suspend or cancel this Agreement under one or more of, but not limited to, the following circumstances:

a. the Department determines that the information provided by the Applicant in support of the Notification/Agreement is incomplete or inaccurate;
b. the Department obtains new information that was not known to it in preparing the terms and conditions of the Agreement;
c. the project or project activities as described in the Notification/Agreement change; and
d. the conditions affecting fish and wildlife resources change or the Department determines that project activities will result in a substantial adverse effect on the environment.

Before any suspension or cancellation of the Agreement, the Department will notify the Applicant in writing of the circumstances which the Department believes warrant suspension or cancellation. The Operator will have seven (7) working days from the date of receipt of this notification to respond in writing to the circumstances described in the Department's notification. Upon receipt of the Department's notification, the Operator shall cease all project activities which the Department specified in its notification. The Applicant shall not continue the specified activities until that time when the Department notifies the Operator in writing that methods and/or measures have been identified, agreed upon, and implemented to adequately address the reasons for which the Department suspended or cancelled this Agreement.

The Department reserves the right to enter the project site at any time to ensure compliance with terms/conditions of this Agreement.

Project Location

The agreed work includes activities associated with Project description below. The Orange County Loftus Channel project area is located at Brea Plaza, 413 S. Associated Road and bound to the west by the existing Brea Plaza and parking lot, to the south by Imperial Highway, to the east by Associated Road, and to the north by existing commercial/office uses and the northern extension of the Loftus Channel, a tributary to the San Gabriel River in the City of Brea, Orange County.

Project Description

The Applicant proposes to alter the streambed and banks through the implementation of the proposed project. The total project area within the ephemeral Loftus Channel creek property is approximately 2 acres. The project proposes to replace 740 linear feet of the existing open portions of the Loftus diversion channel with a 55 foot wide, enclosed four celled reinforced concrete box culvert. The area above the improved culvert will be used to provide additional parking areas for the Brea Plaza Shopping Center, landscaping, sidewalks, and related improvements. Implementation of the project (expansion of Brea Plaza parking and landscaping) will result in direct impacts to one (1) impact area along a 740-foot length and average width of 38.4 feet, from top of slope to top of slope of the existing Loftus Channel. A jurisdictional delineation performed for the project finds 1.28 acres of permanent jurisdictional impacts for the Department. Significant water quality benefits are planned to offset the minor temporary construction impacts of the project primarily as a result of the first flush basins integrated into the project design. The first flush basins will provide water quality clean up to not only the run-off from the small ±2-acre County property itself, but especially the upstream 13-acre accumulation of urban watershed, which flows unfiltered today from asphalt parking spaces, rooftops and other pollution gathering areas into the existing channel in several different unfiltered inlet points. The green grass bio swale provides a stable water quality solution and a more permanent vegetation and biological solution. All existing inlets, which flow into Loftus Channel, will be designed and constructed to flow through the green grass-lined bio swale for water quality filtration prior to low flow entry into Loftus Channel. The Katchall Baffle Filters will be constructed upstream of the new boxed channel to mitigate for water quality impacts.

CONDITIONS

The following provisions constitute the limit of activities agreed to and resolved by this Agreement. The signing of this Agreement does not imply that the Applicant is precluded from doing other activities at the site. However, activities subject to Fish and Game Code Section 1600 *et seq.* and not specifically agreed to and resolved by this Agreement shall require separate notification.

General

1. If the Applicant or any of the individuals mentioned below violate any of the terms or conditions of this Agreement, all work shall terminate immediately and shall not proceed until the Department and Operator determine what actions are necessary to address the violations.

2. The agreed work includes activities associated with project location and project description

described above. Specific work areas and mitigation measures are described on/in the plans and documents submitted by the Operator (1602 Notification Application received on January 22, 2008, Map/photos and Impact area chart, and shall be implemented as proposed unless directed differently by this agreement

3. The Applicant shall provide a copy of this Agreement to all contractors, subcontractors, and the Operator's project supervisors. Copies of the Agreement shall be readily available at work sites at all times during periods of active work and must be presented to any Department personnel, or personnel from another agency upon demand.

4. The Applicant shall notify the Department, in writing, at least five (5) days prior to initiation of project activities and at least five (5) days prior to completion of project activities. Notification shall be sent to the Department at the South Coast Region office, Attn: Streambed, SAA#1600-2008-0029-R5.

Impacts

5. The Applicant shall not impact more than 1.28 acre of earthen flood control channel, consisting of ruderal weed and reed vegetation of which all are permanent impacts.

Mitigation

6. The Applicant shall mitigate 1.28 acre of permanent impacts to the stream channel at compensation to impact ratio of 1.5:1 ratio, by providing adequate funding to the San Gabriel Mountains Conservancy for the creation, restoration and enhancement of a minimum of 1.92 acre riparian habitat at a Department approved location. The money shall be used only for the creation, restoration and enhancement of riparian habitat. The location and activities of the riparian habitat creation, restoration and enhancement shall be approved by the Department prior to commencing project activities. Proof of payment of fees shall be submitted to the Department prior to commencing project activities. Project mitigation shall consist of creation of a minimum of 1.0 acre riparian habitat, and the remainder of the mitigation obligation of 0.92 acre shall consist of any combination of riparian habitat creation, restoration, and enhancement, as approved by the Department.

7. All temporary disturbed portions of the stream channel or banks shall be restored.

8. No later than 180 days of signing this Agreement, the Applicant shall submit to the Department for review and written approval, a mitigation plan designed to meet the identified objectives described in Condition No. 6 of this Agreement. The plan shall identify and describe the creation, restoration and enhancement of 1.92 acre of riparian habitat (1.5:1 ratio for permanent impacts). The mitigation plan should be prepared by persons with expertise in southern California ecosystems and native plant restoration. The plan should include at minimum: (a) the location of the mitigation site; (b) the plant species to be used; (c) a schematic depicting the mitigation area; (d) grading activities and plans (if any); (e) time of year that the planting will occur; (f) a description of the irrigation methodology; (g) measures to control exotic vegetation on site; (h) success criteria; (i) a detailed monitoring program; and (j) contingency measures should the success criteria not be met. Revegetation shall use only native species. Project activities may commence upon, but not before, written Department approval of the Operator's Draft Mitigation Plan. The location of the mitigation site shall avoid

the conversion of other native habitats (e.g coastal sage scrub) to riparian/wetland habitat, and shall identify sites with appropriate soil water availability.

9. An annual report shall be submitted to the Department by Jan. 1 of each year for 5 years after planting. This report shall include the success of the creation, restoration and/or enhancement effort, and the method used to assess these parameters shall also be included. Photos from designated photo stations shall be included.

Fish and Wildlife Protection

10. The Applicant shall not remove vegetation within the stream from March 1st to July 15th to avoid impacts to breeding/nesting birds. However, work may occur during this time if a qualified biologist conducts a minimum of three days of surveys for nesting birds within seven days prior to the vegetation removal, and at least one survey must be within three days prior to the vegetation removal, to ensure no nesting birds shall be impacted by the project. These surveys shall include the areas within 200 feet of the edge of the proposed impact areas, if possible (as adjacent property access allows). Documentation of findings, including a negative finding must be submitted to the Department for review and concurrence. If active nests are observed, the operator shall provide a buffer zone of at least 100 feet (300 feet for raptors) until the young have fledged, are no longer being fed by the parents, have left the nest, and will no longer be impacted by the project.

Be advised, migratory nongame native bird species are protected by international treaty under the Federal Migratory Bird Treaty Act (MBTA) of 1918(50 C.F.R. Section 10.13). Sections 3503, 3503.5 and 3513 of the California Fish and Game Code prohibit take of all birds and their active nests including raptors and other migratory nongame birds (as listed under the Federal MBTA).

11. No direct or indirect impacts shall occur to any threatened or endangered species, as a result of implementing the project or the project's activities. If any threatened or endangered species could be impacted by the work proposed, U.S. Fish and Wildlife Service (USFWS) protocol surveys shall be conducted prior to implementing the project, or the project's mitigation activities. If necessary, the Operator shall obtain the required state and federal threatened and endangered species permits. If there is no USFWS survey protocol for a particular listed species, the Department shall be consulted to determine appropriate survey procedures. The Department shall be provided copies of survey reports prior to project implementation, and prior to the implementation of mitigation activities. This agreement does not authorize the take of any federal or state threatened or endangered species.

12. The work area, as represented in plans, shall be identified to all workers. Native vegetation shall not be removed or intentionally damaged beyond the designated limits.

13. The removal of soil and vegetation, other than non-native vegetation from the Jurisdictional areas is prohibited, except where provided for within this agreement, without prior written approval from the Department.

14. The Applicant shall remove non-native vegetation from the work area and shall dispose of it in a legal manner; in all cases it shall be placed in a manner which prevents its

reestablishment in the Waters of the State, and in such a manner so that it does not negatively effect other sensitive native habitat communities. If the Operator determines that the treated non-native vegetation should be left in place, the Operator shall provide the Department a written (letter, fax, E-mail) description of where and why the treated vegetation should not be removed. If the Operator does not receive a written (letter, fax, E-mail) positive response from the Department, the treated exotic vegetation shall be removed.

15. No herbicides shall be used on native vegetation.

16. All herbicide use conditions for mixing, application and clean-up shall conform with all applicable federal, State, and local regulations, nothing in this Agreement represents a pesticide use recommendation that allows for an actions that conflict with pesticide use regulations.

17. Any application of herbicide shall be done by a licensed applicator in accordance with the applicable, federal, state, local laws, and County Park procedures and/or guidelines. No herbicides shall be used where Threatened or Endangered species occur. No herbicides shall be used when wind velocities are above 5 miles per hour.

18. No vehicles shall be operated within the stream except as described as follows: Vehicles may be used to carry equipment and transport cut vegetation; all vehicles shall use existing roads for access to the sites; small soft rubber-tired ATV's may be used where existing road access is not available, provided that such ATV's can access the central channel without entering wetland areas or damaging native vegetation. *Native vegetation shall NOT be impacted by any vehicle use.*

19. Herbicide mixing sites shall only be located in areas devoid of vegetation, and where there is no potential of a spill reaching a vegetated area or a stream, for example avoid mixing at a storm water-inlet.

20. Any herbicide used where there is the possibility that the herbicide could come into direct contact with water shall be approved for use in an aquatic environment (e.g. Rodeo). Great care shall be taken to avoid contact with any native vegetation, and it shall only be applied on calm days to prevent airborne transfer of the herbicide.

Equipment and Access

21. No equipment shall be operated in ponded or flowing areas. When work in a flowing stream is unavoidable, the entire flow shall be diverted around the work area by a barrier, temporary culvert, new channel, or other means approved by the Department. Construction of the barrier and/or the new channel shall normally begin in the downstream area and continue in an upstream direction, and the flow shall be diverted only when construction of the diversion is completed. Channel bank or barrier construction shall be adequate to prevent seepage into or from the work area. Channel banks or barriers shall not be made of earth or other substances subject to erosion unless first enclosed by sheet piling, rock rip-rap, or other protective material. The enclosure and the supportive material shall be removed when the work is completed and removal shall normally proceed from downstream in an upstream direction.

22. Staging/storage areas for equipment and materials shall be located outside of the stream.

23. No equipment maintenance shall be done within or near any stream channel where petroleum products or other pollutants from the equipment may enter these areas under any flow.

24. Vehicles shall not be driven or equipment operated in water covered portions of a stream or lake, or where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed.

Pollution, Sedimentation and Litter

25. Precautions to minimize turbidity/siltation shall be taken into account during project planning and shall be installed prior to construction. Silt curtains, and floating debris booms will be used during pile installation to reduce turbidity. Precautions may also include placement of silt fencing, straw bales, sand bags, and/or the construction of silt catchment basins, so that silt or other deleterious materials are not allowed to pass to Waters of the State. The method used to prevent siltation shall be monitored and cleaned/repaired weekly. The placement of any structure or materials in the Waters for this purpose, not included in the original project description, or Department approved water pollution/water diversion plan shall be coordinated with the Department. Coordination shall include the negotiation of additional Agreement provisions.

26. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, construction waste, cement or concrete or washings thereof, asphalt, paint, oil or other petroleum products or any other substances which could be hazardous to aquatic life, or other organic or earthen material from any logging, construction, or other associated project related activity shall be allowed to contaminate the soil and/or enter into or placed where it may be washed by rainfall or runoff into, waters of the State. Any of these materials, placed within or where they may enter a stream or lake, by the Operator or any party working under contract, or with the permission of the Operator, shall be removed immediately. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any waters.

27. The Operator shall comply with all litter and pollution laws. All contractors, subcontractors and employees shall also obey these laws and it shall be the responsibility of the operator to insure compliance.

28. The Operator shall mark/sign/stencil all storm drains warning that dumping is illegal and all storm drains drain to creeks/rivers or ocean.

29. Any equipment or vehicles driven and/or operated within or adjacent to the stream/lake shall be checked and maintained daily, to prevent leaks of materials that if introduced to water could be deleterious to aquatic life.

30. Stationary equipment such as motors, pumps, generators, and welders, located within or adjacent to the stream/lake shall be positioned over drip pans. Stationary heavy equipment shall have suitable containment to handle a catastrophic spill/leak. Clean up equipment such as extra boom, absorbent pads, skimmers, shall be on site prior to the start of dredging.

31. No equipment maintenance shall be done within or near any stream channel or lake margin where petroleum products or other pollutants from the equipment may enter these areas under any flow.

32. Raw cement/concrete or washings thereof, asphalt, paint, construction waste, or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, resulting from project related activities, shall be prevented from contaminating the soil and/or entering the waters of the state. Any of these materials, placed within or where they may enter a stream or lake, by the Operator or any party working under contract, or with the permission of the Operator, shall be removed immediately.

33. Upon Department determination that turbidity/siltation levels resulting from project related activities constitute a threat to aquatic life, activities associated with the turbidity/siltation, shall be halted until effective Department approved control devices are installed, or abatement procedures are initiated.

34. Water containing mud, silt, or other pollutants from equipment washing or other activities, shall not be allowed to enter a lake or flowing stream or placed in locations that may be subjected to high storm flows.

35. Cement and concrete shall not be poured within 150 feet of a stream during the rainy season. The Operator shall monitor the 7-day forecast; cement or concrete materials may be poured only if a 7-day clear window is predicted. Cement shall not be poured in or near a flowing stream, to reduce the potential for significant adverse impacts to the stream, water, or biota.

Maintenance:

36. Except as otherwise permitted in this Agreement, the removal of soil, native vegetation, and vegetative debris from the jurisdictional area is prohibited. The Operator shall remove all human generated debris, such as lawn and farm cuttings, garbage and trash. The Operator shall remove washed out culverts, and other construction materials, that the Operator places within, or where they may enter the stream.

37. The clean-up of all spills shall begin immediately upon observation of the spill. The Department shall be notified immediately by the Operator of any spills and shall be consulted regarding clean-up procedures.

38. Any and all garbage/debris found within the stream channel shall be removed and legally disposed of by the Operator.

CONCURRENCE

California Brea Partners, L.P.

Marc Harris 8/29/08
(signature) (date)

MARC HARRIS Sr. VP Development
Name title

CALIFORNIA DEPT. OF FISH AND GAME

12 Sep 08
(signature) (date)

For

Helen Birss, Environmental Program Manager

Prepared by: Naeem Siddiqui, Environmental Scientist

Ingallinera, Brian

From: James Palda [jpalda@SteadfastCcompanies.com]
Sent: Monday, January 10, 2011 3:25 PM
To: Ingallinera, Brian
Subject: FW: FW: Brea Plaza - Filtration Weirs

James Palda

Vice President

Steadfast Commercial Properties

New Address Below

18100 Von Karman, Suite 500

Irvine, CA 92612

(949)623-7709 Phone

(949)777-8209 Fax

NOTICE OF CONFIDENTIALITY: The information contained in this communication and any attachments hereto are intended solely for the use of the individual or entity to whom it is addressed and others authorized to receive it. It may contain confidential or legally privileged information. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution or taking any action in reliance on the contents of this information is strictly prohibited. and may be unlawful. If you have received this communication in error, please notify the sender immediately and then delete this communication and any attachments.

From: Adam Fischer [mailto:afischer@waterboards.ca.gov]
Sent: Wednesday, December 15, 2010 10:34 AM
To: James Palda
Subject: Re: FW: Brea Plaza - Filtration Weirs

Thank you. After reviewing the submitted information and talking with you today, Board staff is approving the Bio Clean weirs as a substitute for the Katchall weirs proposed for Loftus Channel at Brea Plaza. Please be reminded that a monitoring plan is required to validate the weirs' expected performance. --Adam

Adam Fischer
Environmental Scientist
Region 8 Water Quality Control Board
3737 Main Street Suite 500

Riverside CA 92501
(951) 320-6363>>> James Palda <jpalda@SteadfastCcompanies.com> 12/14/2010 4:12 PM >>>

Adam,

See attached response from BioClean. After your review, please contact me with any questions. My goal is that RWQMCB will accept this system in lieu of the Katchall system that is currently on plan. Upon your approval, we will modify the County plan, plus the City WQMP to reflect the change.

Thank you,

James Palda

Vice President

Steadfast Commercial Properties

New Address Below

18100 Von Karman, Suite 500

Irvine, CA 92612

'949)623-7709 Phone

(949)777-8209 Fax

NOTICE OF CONFIDENTIALITY: The information contained in this communication and any attachments hereto are intended solely for the use of the individual or entity to whom it is addressed and others authorized to receive it. It may contain confidential or legally privileged information. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution or taking any action in reliance on the contents of this information is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately and then delete this communication and any attachments.

From: Zach Kent [mailto:zkent@biocleanenvironmental.net]
Sent: Tuesday, December 14, 2010 3:46 PM
To: James Palda
Subject: RE: Brea Plaza - Filtration Weirs

Hello James,

Below are responses to the questions.

1) The assumption that the low-flow volumes will tend to the center of the channel are questionable. Since the channel is constructed, it would make sense to field-verify this assumption now and document that it is the case. You should understand that even if the central tendency exists today, it may not continue over the long term. In the event that

flow tends to one side due to settling of the channel or deposition, the operator will need to adaptively manage by moving the weirs, change maintenance procedures, or taking other corrective action.

Based upon our field visit the bottom of the channel is relatively flat. The grading does appear to convey very low flows o the right side. The variation in elevation from right to left side is approximately 2 inches. See pictures. When weirs are added it will slow the water down and raise the HGL on the influent side of the weir. At the point when the HGL (say 2 or 3 inches) overcomes the slight slope to the right the water will start to distribute evenly across the 30' face of the weir. In summary, the slight slope of the channel to the right is insignificant with HGLs greater than 2 inches. What will be created is a ponding affect.

From the perspective of deposition of sediments and debris the slight slope to the right will cause accumulation of these pollutants to be more prominent on that side. Once again, since the slope is so slight we do not anticipate it to be a significant concern to the function of the weirs. We do recommend the observation of the weirs operation over the first few months to asses if corrective action need to be taken even though it is not anticipated. If large amounts of accumulation take place on the right side we simply recommend a more frequent removal of the blocked sediments and debris. Our weirs are designed to handle large weight and hydraulic loads so the accumulation of sediments behind the weirs is not a structural issue.

2) I'd like some assurance that you're carefully considering the logistics of meeting OC Flood's request to remove the weirs ahead of forecast storms. It's important that the procedure be as practical as possible so that it isn't an unrealistic burden and the request can be readily met. Please describe the procedure for accessing the channel, removing the weirs, transporting them out of the channel, storing them, and re-installing them. If your consideration of the procedure results in any changes to the mounting system or the weirs' configuration, please describe the changes.

Our design team assessed the design of the original Katchall Filter Weirs and found a great lack of detail with the drawings that appeared to be done in Microsoft Word. Some of the materials were called out as grated fiberglass and metal vertical supports had no signs of material running perpendicular to the weirs which would give the weirs strength and rigidity. Our design team concluded that the original design mayencounter issues with the hydrostatic pressure or substantial accumulation of sediment. The original design has a weak point at the base, a focal point where the weir could break under heavy loading or flow conditions. We also noticed it called for a 30' channel for each weir that did not appear to be removable. If it were to be removed it would be difficult to do so given the length.

To overcome the inconsistencies and lack of detail of the original design we made necessary changes and based our design upon a current setup we have been using. First, we should mention that the Bio Clean weirs are fabricated from 100% 304 stainless steel L metal and perforated stainless steel screen. The weirs have been fabricated in 5' sectionsfor easy removal and replacement. The weirs will be attached with stainless steel red heads for strength and easy removal and replacement. This method is much easier than the original Katchall design. One of the most important thing we did with the design is incorporate 45 degree bracing on both sides of the weirs. Without this bracing the weirs would not be able to deal with worst case scenario of the weirs being submerged during higher flows. While it is still the intention to remove the screens during rain events, as a stormwater company with over 10 years experience in the industry, we design our devices to deal with worst case scenario. Weirs without bracing during high flows would have all the weight put on the bolts that fasten the main weir to the bottom of the channel. With no bracing those bolts could easily shear off.

In summary, the weir system we designed is easier to install, to remove, is more durable and are designed to deal with high flow rate and loading conditions which should be assumed with any device installed in a large drainage channel. See attached pictures of how the weir is constructed.

3) What performance warranties is the manufacturer providing?

As a experienced stormwater filtration company we will not make non-realistic claims similar to those listed in the Katchall approval regarding pollutant removal performance and flow rate per square foot surface area of media. Based upon our experience it's apparent that the numbers don't make sense. Just a few thing to point out:

- A flow rate of .4 cfs (179 gpm) per square foot surface area is not realistic (realistic flow rate for media is 2-50 gpm given the minimal head available).

- It's not logical to add all the total flow rates of each weir to get a total treatment flow rate of 27 cfs since the weirs are in series and are different heights.
- Claims made such as "50% removal of all nitrates, phosphates and phosphorus" has little validity considering those pollutants are very different and require different types of filtration to accomplish and therefore removal rates would vary.
- The anti-microbial fabric used by Katchall is manufactured by X-TEX out of Washington. They no longer even manufacture the anti-microbial fabric. The 99% removal efficiency with 1 second contact time is no supported by the manufacture.

What we will provide is third party independent testing, see attached performance report of the filtration media we are using in the last weir called BioMediaGREEN. The two prior weirs will use perlite and activated charcoal as pre-treatment for the last weir. These BioMediaGREEN filter weirs have been approved by the San Diego Regional Board and are now being used by the City of Los Angeles to pre-treat infiltration facilities. Without know the precise concentrations and form of each pollutant in the channel performance guarantees cannot be made. We doubt that Katchall can make such claims either.

The BioMediaGREEN filter weirs have been tested and proven in the field. The media was tested in the same horizontal configurations that these weirs are being installed. Given the tested flow rate at 3 gpm per square foot with minimal head and the third weir having 150 square foot surface area a treatment flow rate of 1 CFS is realistic.

While our intentions are not to discredit the Katchall technology, we feel it is our responsibility as a company to point out the truths about design and performance and be realistic about what can be expected of filtration weirs being installed in large drainage culverts. That being said we know the system we designed for this project will provide the best structural solution, is easy to remove and will provide excellent and realistic performance claims. The design proposed will offer several advantages over the original design to ensure this project is a success.

Let me know if you need anything else.

Sincerely,

Zach J Kent, CISEC
Stormwater Engineer
zkent@biocleanenvironmental.com
zach@modularwetlands.com

Bio Clean Environmental Services, Inc.
Modular Wetland Systems, Inc.
P.O Box 869, Oceanside, CA 92049
Phone: 760.433.7640
Fax: 760.433.3176
www.biocleanenvironmental.com
www.modularwetlands.com
><((((>`·..·`·..><((((>
·`·..><((((>`·..·`·..><((((>

From: James Palda [mailto:jpalda@SteadfastCcompanies.com]
Sent: Monday, December 13, 2010 1:31 PM
To: Zach Kent
Subject: FW: Brea Plaza - Filtration Weirs

Can you please answer Adams questions/clarifications below?

James Palda

Vice President

Steadfast Commercial Properties

New Address Below

18100 Von Karman, Suite 500

Irvine, CA 92612

(949)623-7709 Phone

(949)777-8209 Fax

NOTICE OF CONFIDENTIALITY: The information contained in this communication and any attachments hereto are intended solely for the use of the individual or entity to whom it is addressed and others authorized to receive it. It may contain confidential or legally privileged information. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution or taking any action in reliance on the contents of this information is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately and then delete this communication and any attachments.

From: Adam Fischer [mailto:afischer@waterboards.ca.gov]
Sent: Monday, December 13, 2010 11:34 AM
To: James Palda
Cc: Patrick Cox
Subject: RE: Brea Plaza - Filtration Weirs

Thank you. I have some comments I'd like for you all to respond to.

1) The assumption that the low-flow volumes will tend to the center of the channel are questionable. Since the channel is constructed, it would make sense to field-verify this assumption now and document that it is the case. You should understand that even if the central tendency exists today, it may not continue over the long term. In the event that flow tends to one side due to settling of the channel or deposition, the operator will need to adaptively manage by moving the wiers, change maintenance procedures, or taking other corrective action.

2) I'd like some assurance that you're carefully considering the logistics of meeting OC Flood's request to remove the weirs ahead of forecast storms. It's important that the procedure be as practical as possible so that it isn't an unrealistic burden and the request can be readily met. Please describe the procedure for accessing the channel, removing the weirs, transporting them out of the channel, storing them, and re-installing them. If your consideration of the procedure results in any changes to the mounting system or the weirs' configuration, please describe the changes.

3) What performance warranties is the manufacturer providing?

>>> James Palda <jpalda@SteadfastCcompanies.com> 12/9/2010 4:27 PM >>>
Adam, per our discussion, attached are the plan check comments we received from Flood Control.

James Palda
Vice President
Steadfast Commercial Properties
New Address Below
18100 Von Karman, Suite 500

Irvine, CA 92612
(949)623-7709 Phone
(949)777-8209 Fax

NOTICE OF CONFIDENTIALITY: The information contained in this communication and any attachments hereto are intended solely for the use of the individual or entity to whom it is addressed and others authorized to receive it. It may contain confidential or legally privileged information. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution or taking any action in reliance on the contents of this information is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately and then delete this communication and any attachments.

From: Adam Fischer [mailto:afischer@waterboards.ca.gov]
Sent: Thursday, December 09, 2010 4:19 PM
To: James Palda
Cc: 'Marc Harris'; Patrick Cox
Subject: Re: Brea Plaza - Filtration Weirs

Thanks James: I'll look this over carefully. In the meantime, please also pass this on to County Flood since they'll have approval authority focused on the hydraulic capacity of the channel. They might want the weirs removed quickly before forecast storms, which may affect the design.

>>> James Palda <jpalda@SteadfastCompanies.com> 12/9/2010 4:12 PM >>>
Adam,

I've been working with Marc on the Brea Plaza redevelopment and the filtration devices. It's my understanding our filtration device needs to be the Katchall System or Equal pursuant to the RWQMCB permit.
We are attempting to modify the existing County plans by replacing words "Katchall System" with regard to our filtration system. Attached is a supporting letter from Bio Clean Environmental and their Bio Clean Environmental Weir Wall Filtration Device which will be at least equal to the Katchall System.

In order for us to complete the project and install the system, we need a letter of approval from RWQMCB. Bio Clean is standing by, ready to install.

Please contact me with any questions.

Thank you,

James Palda
Vice President
Steadfast Commercial Properties
New Address Below
18100 Von Karman, Suite 500
Irvine, CA 92612
(949)623-7709 Phone
(949)777-8209 Fax

NOTICE OF CONFIDENTIALITY: The information contained in this communication and any attachments hereto are intended solely for the use of the individual or entity to whom it is addressed and others authorized to receive it. It may contain confidential or legally privileged information. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution or taking any action in reliance on the contents of this information is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately and then delete this communication and any attachments.

California Regional Water Quality Control Board
Santa Ana Region

3737 Main Street, Suite 500, Riverside, California 92501-3348
Phone (951) 782-4130 • FAX (951) 781-6288 • TDD (951) 782-3221
www.waterboards.ca.gov/santaana

inda S. Adams
Secretary for
Environmental Protection

Arnold Schwarzenegger
Governor

August 8, 2008

California Brea Partners, LP
c/o Bosc Equities
Attention: Waad Nadhir
719 Griswold Street, Suite 530
Detroit, MI 48226

CLEAN WATER ACT SECTION 401 WATER QUALITY STANDARDS CERTIFICATION FOR THE LOFTUS CHANNEL MODIFICATION PROJECT, CITY OF BREA, ORANGE COUNTY (ACOE REFERENCE NO. 200800232 – JPL)

Dear Mr. Nadhir:

On January 22, 2008, we received an application for Clean Water Act Section 401 Water Quality Standards Certification (Certification) for modifications to a reach of the Loftus Channel in the City of Brea. This letter responds to your request for certification that the proposed project, described in your application and summarized below, will comply with State water quality standards outlined in the Water Quality Control Plan for the Santa Ana River Basin (1995) and subsequent Basin Plan amendments:

Project Description:	Modification of a 740-foot long reach of the Loftus Channel. In its current configuration, this channel reach is earth-bottomed with rip-rap banks. The proposed project will place this reach underground within a four-cell, reinforced concrete box. The project will enable the expansion of the Brea Plaza, which will involve the demolition and construction of several retail buildings, the expansion of the parking lot within Orange County Flood Control right-of-way along Loftus Channel, and the construction of a new sidewalk and landscaping along Associated Road. The project is located north of the intersection of Associated Road and Imperial Highway within Section 13 of Township 3 South, Range 10 West, of the U.S. Geological Survey *La Habra, California*, 7.5-minute topographic quadrangle map (33.91158 degrees N/ -117.88053 degrees W).
Receiving water:	Loftus Channel.
Fill area:	0.28 acre of permanent impact to an intermittent stream (800 linear feet).

Dredge/Fill volume: N/A

Federal permit: U.S. Army Corps of Engineers Nationwide Permit No. 14

You have proposed to mitigate water quality impacts as described in your Certification application and subsequent submittals. The proposed mitigation is summarized below:

Onsite Water Quality Standards Mitigation Proposed:

- Pollutants in storm water runoff from the existing and new portions of Brea Plaza will be treated in a bio-swale in the landscaped area along Associated Road. The bio-swale will be maintained by California Brea Partners, LP.
- The lost pollutant attenuation function of Loftus Channel will be replaced by Katchall Baffle Filters® constructed upstream of the new boxed channel. The filters will be maintained by California Brea Partners, LP.
- Additional best management practices ("BMPs") for removing pollutants in storm water runoff from the Brea Plaza will be specified in the project Water Quality Management Plan ("WQMP") and Storm Water Pollution Prevention Plan ("SWPPP").

Offsite Water Quality Standards Mitigation Proposed:

- An in-lieu fee will be paid to the San Gabriel Mountains Regional Conservancy towards the restoration of 2.0 acres of riparian habitat in Lemon Creek, downstream of Bicentennial Park in the City of Walnut[1]. The work will include eradication of invasive plant species and re-vegetation with appropriate native species.

Should the proposed project impact state- or federally-listed endangered species or their habitat, implementation of measures identified in consultation with U.S. Fish and Wildlife Service and the California Department of Fish and Game will ensure those impacts are mitigated to an acceptable level. Appropriate BMPs will be implemented to reduce construction-related impacts to Waters of the State. Since the project is more than one acre, coverage under the State Water Resources Control Board's General Permit for Storm Water Discharges Associated with Construction Activity, Water Quality Order 99-08 DWQ, (General Stormwater Permit) is required, which requires as a condition development and implementation of a SWPPP, to control the discharge of pollutants from the project site.

You have applied for a Nationwide Permit from the U.S. Army Corps of Engineers in compliance with Section 404 of the Clean Water Act. You have applied for a Streambed Alteration Agreement with the Department of Fish and Game. The County of Orange approved a Land Use Entitlement Agreement allowing the lease of County land for the

[1] Oral communication with Ann Croissant of the San Gabriel Mountains Regional Conservancy on July 7, 2008.

expansion of Brea Plaza and facilitating the alteration of Loftus Channel. Pursuant to the California Environmental Quality Act ("CEQA"), the County found that the Land Use Entitlement Agreement was exempt from CEQA pursuant to California Code of Regulations, Title 14, Chapter 3 ("CEQA Guidelines"), sections 15301 and 15332. Subsequently, the City of Brea prepared and adopted a Mitigated Negative Declaration for the demolition of structures at the Brea Plaza, the construction of two new buildings, and the expansion of the parking lot over the Loftus Channel on June 10, 2008.

Pursuant to CEQA Guidelines section 15096, as a responsible agency, the Regional Board is required to consider the Mitigated Negative Declaration prepared by the City of Brea in independently determining whether and how to approve the proposed project. Accordingly, the Regional Board has considered the City's Mitigated Negative Declaration in the issuance of this Certification and finds that changes or alterations have been required, or incorporated into the project, that avoid or mitigate impacts to water quality to a less than significant level.

This 401 Certification is contingent upon the execution of the following conditions:

1) An in-lieu fee payment must be made to the San Gabriel Mountains Regional Conservancy towards the eradication of invasive woody plant species on 2.0 acres of Lemon Creek, City of Walnut, and re-vegetation of the area with appropriate native plants with 5-years of follow-on maintenance. The in-lieu fee payment must include funding for the completion of functional assessment(s) of the mitigation site for the purposes of quantitatively measuring the marginal increase in riparian stream functions. The functional assessment(s) must be completed using published and generally accepted methods (e.g., Collins, J., Stein, E., et al., 2006 California Rapid Assessment Method (CRAM) for Wetlands and Riparian Areas, www.cramwetlands.org). Evidence of the in-lieu fee payment must be provided to the Executive Officer by November 7, 2008. The results of the functional assessments must be provided to the Executive Officer not later than 90-days following their completion.
2) This certification is conditioned upon the construction and operation of all proposed structural treatment controls described above. The structural treatment controls for removing pollutants in storm water runoff from Brea Plaza must be completed and operational prior to the occupancy of any new building. The proposed Baffle Filters® must be in place and operational upon completion of the concrete box channel.
3) California Brea Partners, LP must implement a water quality monitoring program for the purpose of evaluating the performance of the Baffle Filters® as analyzed in the Anti-degradation Analysis performed for the proposed project. The water quality monitoring program must complement the monitoring being performed by permittees under Order No. R8-2002-0010, NPDES Permit No. CAS618030, commonly known as the Orange County Municipal Storm Water Permit. A draft

monitoring plan must be provided to the Executive Officer for approval by October 7, 2008. The monitoring plan must be fully implemented upon approval.

4) In the event that the proposed Baffle Filters® do not achieve reductions for pollutants of concern identified in the Anti-degradation Analysis that are equivalent to the natural pollutant attenuation function of the filled channel, California Brea Partners, LP must implement additional best management practices to replace the natural pollutant attenuation function of the filled Loftus Channel. California Brea Partners, LP may at any time update the natural pollutant attenuation rates in the Anti-degradation Analysis using the best available scientific information.
5) The applicant must comply with the requirements of the Clean Water Act section 404 permit.

Under California Water Code, Section 1058, and Pursuant to 23 CCR §3860, the following shall be included as conditions of all water quality certification actions:

(a) Every certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section §13330 of the Water Code and Article 6 (commencing with Section 3867) of this Chapter.

(b) Certification is not intended and shall not be construed to apply to any activity involving a hydroelectric facility and requiring a FERC license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to Subsection §3855(b) of this Chapter and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

(c) Certification is conditioned upon total payment of any fee required under this Chapter and owed by the applicant.

If the above stated conditions are changed, any of the criteria or conditions as previously described are not met, or new information becomes available that indicates a water quality problem, the Regional Board may require the applicant to submit a report of waste discharge and obtain Waste Discharge Requirements.

In the event of any violation or threatened violation of the conditions of this certification, the holder of any permit or license subject to this certification shall be subject to any remedies, penalties, process or sanctions as provided for under state law. For purposes of section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this certification. Violations of the conditions of this certification may subject the applicant to civil liability pursuant to Water Code section 13350 and/or 13385.

APPENDIX N

WATER QUALITY CONDITIONS OF APPROVAL

(TO BE INCLUDED IN FINAL WQMP)

APPENDIX O

BMP MAINTENANCE SELF-CERTIFICATION FORM FOR THE CITY OF BREA

BMP Maintenance Self-Certification Form for the City of Brea

In addition to routine annual inspections conducted by the City for proper maintenance of post-construction stormwater control measures or Best Management Practices (BMPs) on the property, the City of Brea requires that the party responsible for maintenance of these BMPs receive proper orientation and training on their operations and maintenance. This form is to be completed by the owner representative and shall be made available to the City Authorized Inspector upon request. Should the maintenance provider or facility maintenance representative change at any time, the owner representative shall complete this form with the new responsible party for BMP maintenance.

Property Information	BMP O&M
Project Name: Brea Plaza Mixed-Use Project	**Responsible Party:** (Owner, management company or HOA/POA)
Legal Owner of Record: BPI Brea LLC	**Contact Name:**
Address: 417 S. Associated Road, Suite 313 Brea, CA 92821	**Address:**
Telephone: 714-990-5715	**Telephone:**
Email: wnadhir@bosc.com	**Email:**

As the party responsible for operation and maintenance of the BMPs specified in the approved Water Quality Management Plan (WQMP) for the subject property, I hereby certify under penalty of law that I, or persons under my supervision, are qualified and competent to carry out the inspection and maintenance the BMPs in a manner consistent with the approved WQMP Operation and Maintenance (O&M) Plan.

_____ _____

Maintenance Representative Signature Date

As the owner representative of the **Brea Plaza Mixed-Use Project** for which a Water Quality Management Plan (WQMP) was approved by the City, I hereby certify under penalty of law that all BMPs contained within the approved Project WQMP have been maintained and inspected in accordance with the schedule and frequency outlined in the approved WQMP Operation and Maintenance (O&M) Plan. The maintenance activities and inspections conducted have been

performed by qualified and knowledgeable individuals listed above. To the best of my knowledge, the information submitted is true and accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and citations for violating water quality regulations.

Owner/Representative Signature

Date

APPENDIX P

CITY OF BREA PROJECT SPECIFIC WQMP SUMMARY REPORT

City of Brea

Project Specific WQMP Summary Report

INSTRUCTIONS: Project applicant, please fill out and check all that apply.

Project Name: **Brea Plaza Mixed-Use Project**	Project Address: **1639 E. Imperial Highway** **Brea, CA 92821**
WQMP Application Number (BLD #): **PLN-2020-00034**	APN(s): **APN 319-102-25 & 319-102-32**
Watershed: **San Gabriel-Coyote Creek Watershed**	Project Size (Acres): **2.20**
New Development or Redevelopment: **Redevelopment**	Design Capture Volume (ft^3): **6,253** **Flow Based BMP – Design Flowrate = 0.731 cfs (includes 50% of off-site flows)**
Land Use Type (check one): ☐ Industrial (SIC Code):_____ ☐ Commercial (SIC Code):_____ ☒ Mixed Use ☐ Residential ☐ Municipal (i.e. CIP) ☐ Other (specify): _____	Total BMP Treatment Capacity (ft^3): **Flow Based BMP – Treatment Flowrate = 0.734 cfs**
	Hydromodification (Yes/No): **Yes**
	Owner/Company Name: **BPI Brea LLC**
	Owner Address: **417 S. Associated Road, Suite 313** **Brea, CA 92821**
	Contact Name: **Waad J. Nadhir**
	Contact Phone: **714-990-5715**
	HOA/POA (Yes/No): **No**

STRUCTURAL BMP SUMMARY TABLE

Provide an itemized list of each LID and FCS BMP for each proposed project DMA. Expand this table as needed.

LID BMP Description (i.e. HSC-1, BIO-2, include manufacturer and model number if possible)	**DMA ID** (as noted on BMP Plot Plan)	**DMA Acres**	**DCV** (indicate units)	**BMP Treatment Capacity** (indicate units)	**BMP GPS Coordinates**
1. BIO-7 / Bio Clean Modular Wetlands System Unit (MWS-L-8-24-V High Capacity Model 3.6)	A1	2.20 acres (project area) plus 1.265 acres (50% of off-site area sheet flowing to project area) = 3.465 acres	Flow Based BMP – Design Flowrate = 0.731 cfs	Flow Based BMP – Treatment Flowrate = 0.734 cfs	Lat 33.9123139^{o} / Long -117.8818472^{o}
	TOTAL	**3.465 acres**	**0.731 cfs**	**0.734 cfs**	
	Does BMP Capacity Exceed DCV (Y/N)?		**Y**		

FCS Description	**DMA ID**	**Location Description**	**FCS GPS Coordinates**
1. Bio Clean Modular Wetlands System Unit (MWS-L-8-24-V High Cap Model 3.6)	A1	MWS unit includes an FCS BMP. The MWS unit is located just south of the project area.	Lat 33.9123139^{o} / Long -117.8818472^{o}
2. FloGard +PLUS Catch Basin Insert Filter	A1	Grated inlet at middle of northern boundary.	
3. FloGard +PLUS Catch Basin Insert Filter	A1	Grated inlet north of proposed building.	
4. FloGard +PLUS Catch Basin Insert Filter	A1	Grated inlet at NE corner of proposed bldg.	
5. FloGard +PLUS Catch Basin Insert Filter	A1	Grated inlet south of proposed building.	
6. FloGard +PLUS Catch Basin Insert Filter	A1	Grated inlet south of proposed building.	
7. FloGard +PLUS Catch Basin Insert Filter	A1	Grated inlet south of proposed building.	

Non-Structural Source Control BMP's (check all that apply):

- ☒ N1 Owner, Tenant, Occupant Education
- ☒ N2 Activity Restrictions
- ☒ N3 Common Area Landscape Mgmt
- ☒ N4 BMP Maintenance
- ☐ N5 Title 22 CCR Compliance
- ☐ N6 Local Water Quality Permit
- ☐ N7 Spill Contingency Plan
- ☐ N8 Underground Storage Tank
- ☐ N9 Hazardous Materials Disclosure
- ☐ N10 Uniform Fire Code
- ☒ N11 Common Area Litter Control
- ☒ N12 Employee Training
- ☒ N13 Loading Dock Good Housekeeping
- ☒ N14 Common Area Catch Basin Inspection
- ☒ N15 Street Sweeping Private Streets & Parking Lots
- ☐ N16 Retail Gasoline Outlets

Structural Source Control BMP's (check all that apply):

- ☒ S1 Storm Drain System Stenciling/Signage
- ☐ S2 Outdoor Material Storage Areas
- ☐ S3 Trash Storage Areas
- ☒ S4 Efficient Irrigation Systems & Landscape Design
- ☐ S5 Protect Slopes & Channels
- ☒ S6 Loading Dock Areas
- ☐ S7 Maintenance Bays
- ☐ S8 Vehicle Wash Areas
- ☐ S9 Outdoor Process Areas
- ☐ S10 Equipment Wash Areas
- ☐ S11 Fueling Areas
- ☐ S12 Hillside Landscaping
- ☐ S13 Wash Water Controls for Food Prep Areas
- ☐ S14 Community Car Wash Racks

Project WQMP Summary Exhibit

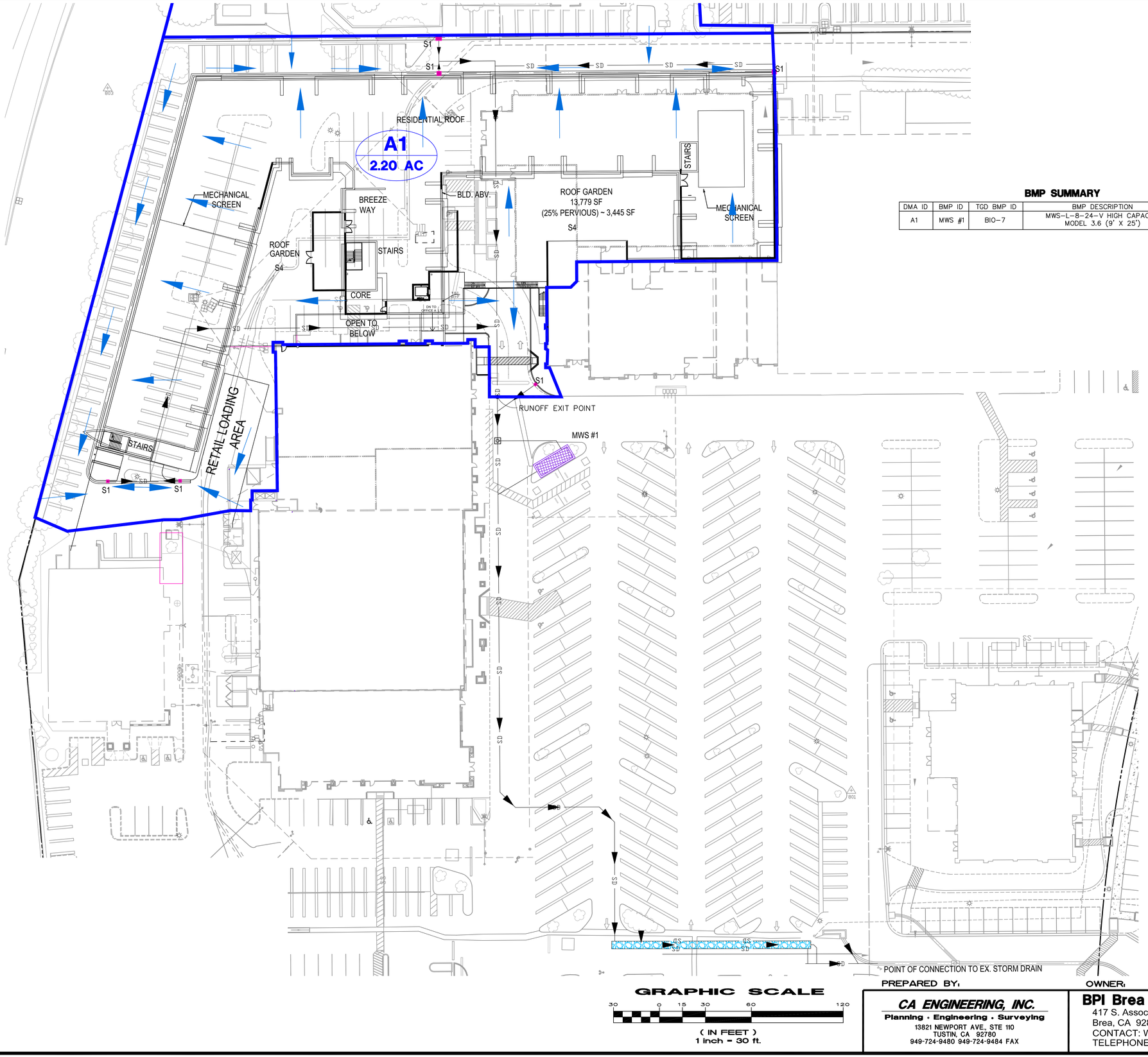
This WQMP Summary Exhibit ("Summary Exhibit") is to ensure there is a consistent and clarified exhibit included as part of the WQMP submittal process. The purpose of this Summary Exhibit is for it to be used by City inspectors to verify that post-construction structural BMPs are implemented correctly at the project site and as described in the approved WQMP. Though similar, the required elements of this Summary Exhibit are separate from the WQMP Plot Plan that is otherwise found in the WQMP report, as it should only include information relevant to the understanding of stormwater BMP operations and maintenance (i.e. no construction notes) and minimize use of topo lines, elevation callouts, etc. The Summary Exhibit shall include the following elements:

- Drainage Management Areas (DMAs) and flow information (i.e. surface flow arrows and pipe flow arrows),
- BMPs (LID and Structural Source Control – i.e. trash enclosures, catch basin stenciling),
- FCS – Full Capture Systems for trash TMDLs,
- Other structural water quality devices (i.e. roof downspout filters),
- All connections between on-site stormwater structures and off-site storm drains,
- And list of structural BMP ID (CASQA-appropriate).

Where applicable, the applicant shall input concise BMP sizing information in tabular form in the Summary Exhibit. This BMP sizing information should include:

- DMA ID,
- BMP ID (i.e. MWS #1, CDS #1, INF #1) and TGD BMP ID (i.e. BIO-1, BIO-7, INF-1, HSC-2),
- BMP description (i.e. dimensions, model number),
- And BMP location coordinates.

Color can be used to highlight the information above but should not be used for other plan details. Details unrelated to stormwater should be turned off/screened back/de-emphasized where possible. If using a hatch for pavement or landscaping, ensure it is also screened back and not distracting from BMPs.



LEGEND

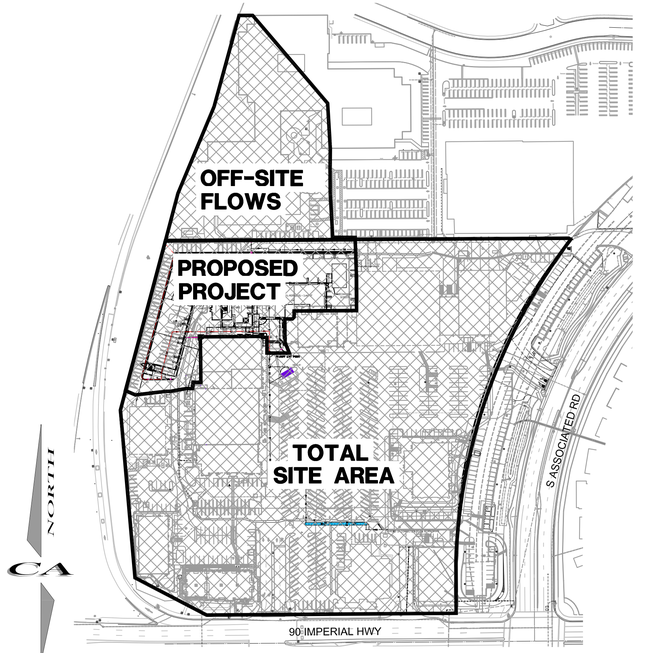
- FLOW PATTERN
- DRAINAGE AREAS **A1**
- SD — PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- MODULAR WETLANDS
- STORAGE PIPE
- PROPRIETARY CATCH BASINS INSERT FILTERS WITH STENCILING **

BMP SUMMARY

DMA ID	BMP ID	TGD BMP ID	BMP DESCRIPTION	BMP LOCATION
A1	MWS #1	BIO-7	MWS-L-8-24-V HIGH CAPACITY MODEL 3.6 (9' X 25')	LAT: 33.9123139° LONG: -117.8818472°

STRUCTURAL SOURCE CONTROL BMPS
S1 – STORM DRAIN STENCILING & SIGNAGE
S4– EFFICIENT IRRIGATION SYSTEMS
**– PROPOSED CATCH BASIN STENCIL

NO DUMPING · THIS DRAINS TO OCEAN ·



INDEX MAP
SCALE: 1"=150'

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

PREPARED BY:
CA ENGINEERING, INC.
Planning • Engineering • Surveying
13821 NEWPORT AVE., STE 110
TUSTIN, CA 92780
949-724-9480 949-724-9484 FAX

OWNER:
BPI Brea LLC
417 S. Associated Rd, Suite 313
Brea, CA 92821
CONTACT: WAAD J. NADHIR
TELEPHONE: (248) 792-5071

WATER QUALITY MANAGEMENT PLAN
SUMMARY EXHIBIT
BREA PLAZA
1639 E. IMPERIAL HIGHWAY, BREA, CA

SHEET 1
OF 1

S:\457-4 BREA PLAZA, PHASE 2\WQMP\457-4 WQMP Site Plan (SUMMARY EXHIBIT).dwg Last Modified: 27 Jul 2021 — 6:08pm
Plotted on: 27 Jul 2021 — 6:22pm by kconnell

Appendix J1 VMT Study

Appendices

This page intentionally left blank.

LINSCOTT LAW & GREENSPAN
engineers

Engineers & Planners
Traffic
Transportation
Parking

Linscott, Law & Greenspan, Engineers
2 Executive Circle
Suite 250
Irvine, CA 92614
949.825.6175 T
949.825.6173 F
www.llgengineers.com

Pasadena
Irvine
San Diego
Woodland Hills

June 17, 2021

Nicole Vermilion, Associate Principal
Placeworks
3 MacArthur Place, Suite 1100
Santa Ana, CA 92707

LLG Reference: 2.19.4157.1

Subject: **Revised Vehicle Miles Traveled (VMT) Screening Assessment for The Brea Plaza Expansion Project**
Brea, California

Dear Ms. Vermilion,

Linscott, Law & Greenspan, Engineers (LLG) is pleased to submit this Revised Vehicle Miles Traveled (VMT) Screening Assessment for the Brea Plaza Expansion Project, hereinafter referred to as the Project. Brea Plaza is an existing retail center addressed at 409-477 S. Associated Road and 1555, 1609, 1623, 1643 E. Imperial Highway that is generally located north of Imperial Highway, west of Associated Road, and east of SR-57 Freeway in the City of Brea, California. ***Figure 1*** presents a Vicinity Map, which illustrates the general location of the proposed Project and the surrounding street system. ***Figure 2*** presents an aerial depiction of the existing site.

The existing Brea Plaza includes 165,329 square-feet (SF) of floor area consisting of mixture of retail/commercial use, service/retail shops, a movie theatre, restaurant/ food uses and fast-food restaurants with drive-through. The proposed Project includes a mixed-use development that consists of 21,355 SF of office space and 189 apartment units. Fifteen (15) of the proposed apartments are considered co-living units, which include five (5) 3-bedroom units and ten (10) four-bedroom units, therefore, to provide a conservative assessment, the co-living unit bedrooms have been counted as individual units for a total apartment count of 229 units. The implementation of the Project would require the demolition of the existing 18,450 SF movie theatre (Brea Plaza 5 Cinemas). ***Figure 3*** presents the proposed project site plan.

Philip M. Linscott, PE (1924-2000)
Jack M. Greenspan, PE (Ret.)
William A. Law, PE (Ret.)
Paul W. Wilkinson, PE
John P. Keating, PE
David S. Shender, PE
John A. Boarman, PE
Clare M. Look-Jaeger, PE
Richard E. Barretto, PE
Keil D. Maberry, PE

An LG2WB Company Founded 1966

LINSCOTT LAW & GREENSPAN engineers

SB743 COMPLIANCE VMT SCREENING ASSESSMENT

The purpose of this Vehicle Miles Traveled (VMT) analysis is to evaluate the Project based on Senate Bill 743 (SB 743) requirements consistent with the *Technical Advisory on Evaluating Transportation Impacts In California Environmental Quality Act* (CEQA), December 2018, prepared by the State of California Governor's Office of Planning and Research (OPR). The OPR Technical Advisory provides project screening criteria and guidance for analysis of VMT assessments under SB 743. With the adopted guidelines, transportation impacts are to be evaluated based on a project's effect on vehicle miles traveled which took effect July 1, 2020, as required in CEQA section 15064.3.

The City of Brea adopted VMT guidelines in October 2020 which are consistent with the OPR Technical Advisory which states projects generating less than 110 daily vehicle trips may be presumed to have a less than significant impact. As outlined in ***Table 1,*** the proposed Project to replace the existing movie theater with apartments and office space is anticipated to result in a net reduction in site generated traffic of approximately 1,680 trips on a typical weekday. Since the construction of the proposed Project will result in a net reduction of daily vehicle trips to and from the site, it can be assumed that vehicle miles traveled would also be reduced and thus the project will have no significant negative impact on the transportation system and no further study is recommended or required.

CONCLUSION

Based on the conduct of a trip generation assessment, the proposed Project is anticipated to generate less than 110 daily vehicle trips. Therefore, in accordance with the City of Brea's Transportation Impact Analysis Guidelines, the proposed Project is exempt from the conduct of any further analysis, and it is assumed that its implementation will not result in any significant CEQA related transportation impacts.

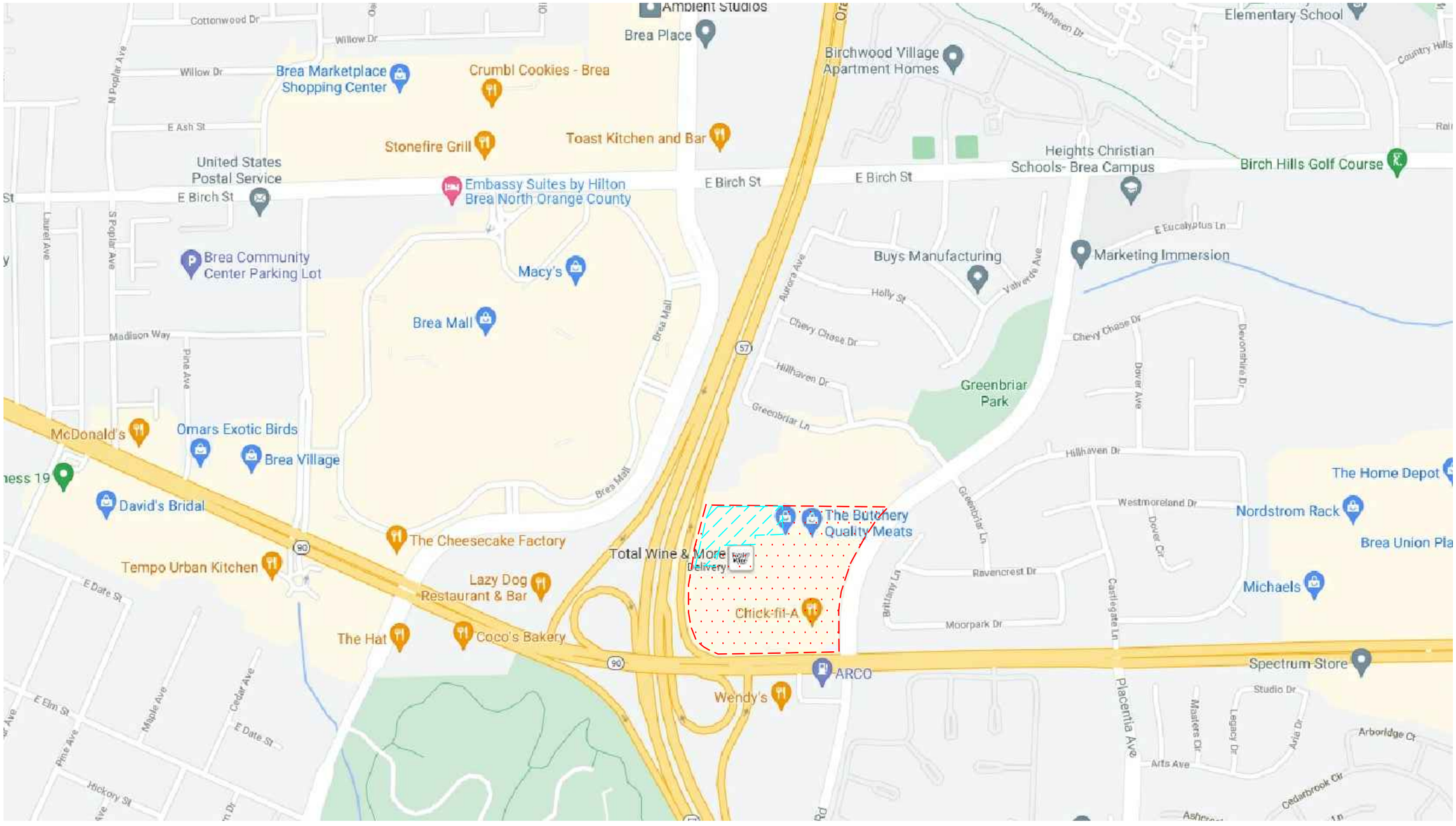
* * * * * * * * * *

We appreciate the opportunity to be of service on this Project. Should you need further assistance, or have any questions regarding this analysis, please call us at (949) 825-6175.

Very truly yours,
Linscott, Law & Greenspan, Engineers

Richard E. Barretto, P.E.
Principal

cc: Shane S. Green, P.E., LLG



n:\4100\2194157 – brea plaza expansion project, brea\dwg\4157 f1-1.dwg LDP 11:49:04 05-12-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

= BREA PLAZA

= PROJECT AREA

FIGURE 1

VICINITY MAP

BREA PLAZA EXPANSION PROJECT, BREA

n:\4100\2194157 – brea plaza expansion project, brea\dwg\4157 f2-1.dwg LDP 13:52:01 03-17-2021 lam

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

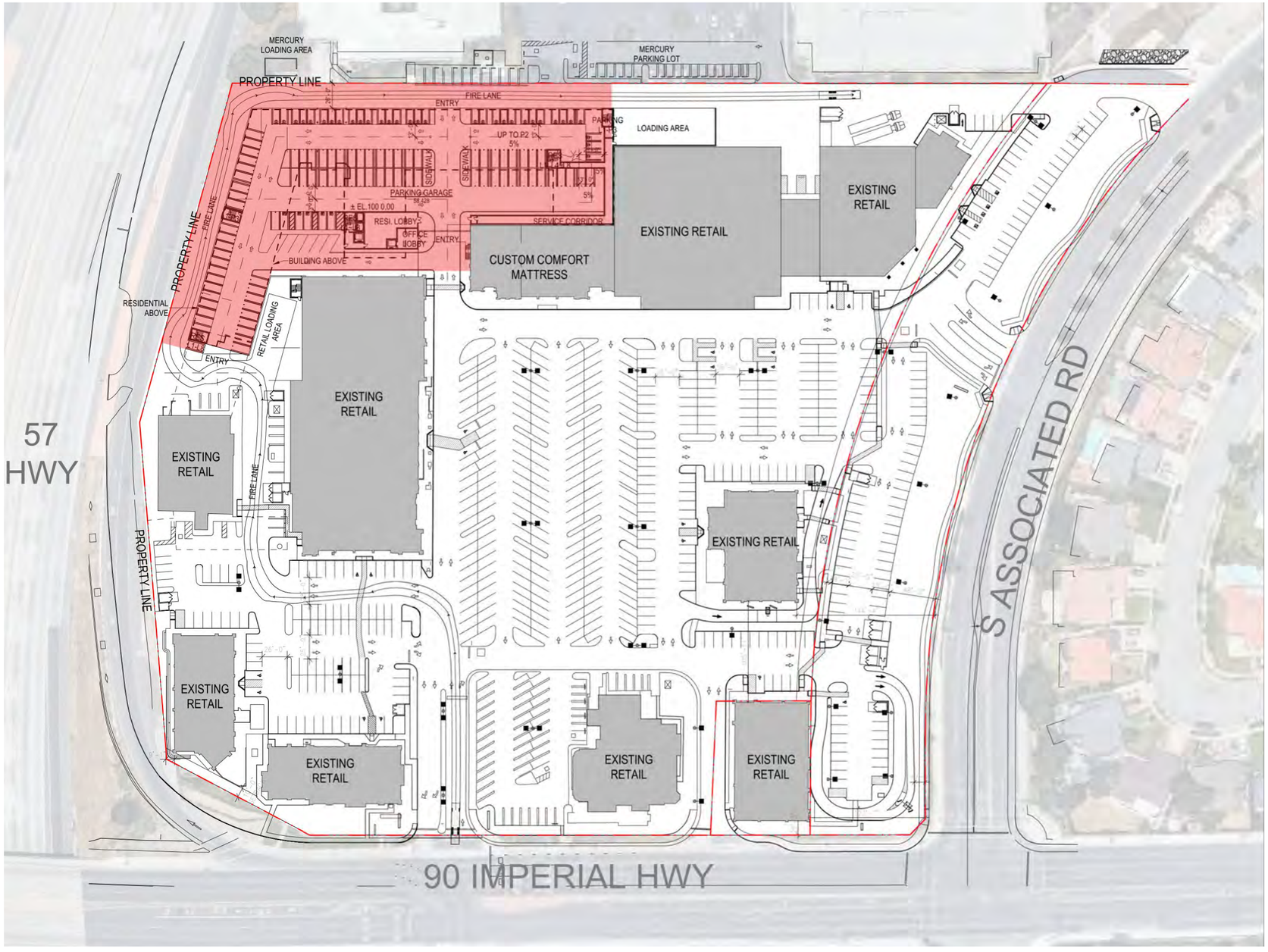
BREA PLAZA

PROJECT AREA

FIGURE 2

EXISTING SITE AERIAL

BREA PLAZA EXPANSION PROJECT, BREA



n:\4100\2194157 – brea plaza expansion project, brea\dwg\4157 f2–2.dwg LDP 11:47:04 03–12–2021 lam

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: ARCHITECTS ORANGE

FIGURE 3

PROPOSED SITE PLAN

BREA PLAZA EXPANSION PROJECT, BREA

TABLE 1

PROJECT TRIP GENERATION FORECAST – ENTIRE BREA PLAZA[1]

Project Description	Weekday							Saturday			
	Daily	AM Peak Hour			PM Peak Hour			Daily	Midday Peak Hour		
	2-Way	Enter	Exit	Total	Enter	Exit	Total	2-Way	Enter	Exit	Total
Trip Generation Rates											
▪ 221: Multifamily Housing (Mid-Rise) (TE/DU)	5.44	26%	74%	0.36	61%	39%	0.44	4.91	49%	51%	0.44
▪ 444: Movie Theater (TE/Seat)	1.76	--	--	--	55%	45%	0.09	2.24	56%	44%	0.46
▪ 710: General Office Building (TE/TSF)	9.74	86%	14%	1.16	16%	84%	1.15	2.21	54%	46%	0.53
▪ 820: Shopping Center (TE/TSF GLA)	Eq.[2]	62%	38%	Eq.[2]	48%	52%	Eq.[2]	Eq.[2]	52%	48%	Eq.[2]
Existing Brea Plaza											
▪ Existing Shopping Center (146,879 SF)	7,808	140	85	225	347	375	722	11,311	403	436	839
Pass-by Reduction[3]	-781	-14	-9	-23	-118	-127	-245	-1,131	-40	-44	-84
Existing Shopping Center Total	**7,027**	**126**	**76**	**202**	**229**	**248**	**477**	**10,180**	**363**	**392**	**755**
▪ Existing Theater (1,100 seats)	1,936	--	--	--	54	45	99	2,464	283	223	506
Existing Brea Plaza Total	**8,963**	**126**	**76**	**202**	**283**	**293**	**576**	**12,644**	**646**	**615**	**1,261**
Proposed Brea Plaza											
▪ Proposed Shopping Center (146,879 SF)	7,808	140	85	225	347	375	722	11,311	403	436	839
Internal Capture[4]	-602	-2	-1	-3	-20	-30	-50	-507	-23	-25	-48
Subtotal	7,206	138	84	222	327	345	672	10,804	380	411	791
Pass-by Reduction[3]	-721	-14	-8	-22	-111	-117	-228	-1,080	-38	-41	-79
Proposed Shopping Center Total	**6,485**	**124**	**76**	**200**	**216**	**228**	**444**	**9,724**	**342**	**370**	**712**
▪ Proposed Residential (229 DU)	1,246	21	61	82	62	39	101	1,124	49	52	101
Internal Capture[4]	-576	0	-2	-2	-29	-18	-47	-508	-23	-24	-47
Proposed Residential Total	**670**	**21**	**59**	**80**	**33**	**21**	**54**	**616**	**26**	**28**	**54**
▪ Proposed Office (21,355 SF)	208	22	3	25	4	21	25	47	6	5	11
Internal Capture[4]	-80	-2	-1	-3	-3	-4	-7	-25	-4	-1	-5
Proposed Office Total	**128**	**20**	**2**	**22**	**1**	**17**	**18**	**22**	**2**	**4**	**6**
Proposed Brea Plaza Total	**7,283**	**165**	**137**	**302**	**250**	**266**	**516**	**10,362**	**370**	**402**	**772**
Net Trip Generation (Proposed Brea Plaza - Existing Brea Plaza)	**-1,680**	**39**	**61**	**100**	**-33**	**-27**	**-60**	**-2,282**	**-276**	**-213**	**-489**

Notes:

- TE/TSF = Trip End per Thousand Square Feet Gross Leasable Area
- TE/DU = Trip End per Dwelling Unit
- TE/Seat = Trip End per Seat

1 Source: *Trip Generation*, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017).

2 Trip Generation rates based on the following equations:
- Weekday Daily: Ln(T) = 0.68Ln(X) + 5.57
- Weekday AM Peak Hour: T = 0.50(X) + 151.78
- Weekday PM Peak Hour: Ln(T) = 0.74Ln(X) + 2.89
- Saturday Daily: Ln(T) = 0.62Ln(X) + 6.24
- Saturday Peak Hour of Generator: Ln(T) = 0.79Ln(X) + 2.79

3 Pass-By Trips are trips made as intermediate stops on the way from an origin to a primary trip destination. Pass-by trips are attracted from traffic passing the site on adjacent streets, which contain direct access to the generator. For this analysis, the following pass-by reduction factors were used (Source: *Trip Generation Handbook,3rd Edition*, ITE 2017):
- 820: Shopping Center: PM Peak Hour – 34%, Daily/AM peak hour/Saturday Daily/Saturday Midday Peak Hour – Assume 10%

4 Consistent with the *Trip Generation Handbook,* published by ITE (2017), Project trip generation was adjusted to account for internal capture between the retail and residential components of the Project. As there are no Saturday internal capture worksheets available, Weekday Daily and Weekday PM peak hour calculations have been applied to Saturday Daily and Saturday Midday peak hour.

Appendix J2 Traffic Circulation Assessment

Appendices

This page intentionally left blank.

LINSCOTT LAW & GREENSPAN engineers

REVISED TRAFFIC CIRCULATION ANALYSIS

BREA PLAZA EXPANSION

Brea, California

July 29, 2021
(Original dated May 24, 2021)

Prepared for:

PLACEWORKS
3 MacArthur Place, Suite 1100
Santa Ana, CA 92707

LLG Ref. 2-19-4157-1

Prepared by:

Shane S. Green, P.E.
Senior Transportation Engineer
and
Megan A. Lam
Transportation Engineer II

Under the Supervision of:

Richard E. Barretto, P.E.
Principal

Linscott, Law & Greenspan, Engineers
2 Executive Circle
Suite 250
Irvine, CA 92614
949.825.6175 T
949.825.6173 F
www.llgengineers.com

TABLE OF CONTENTS

SECTION		PAGE
1.0	**Introduction**	**1**
	1.1 Scope of Work	1
	1.2 Study Area	2
2.0	**Project Description**	**3**
	2.1 Vehicular Site Access and Circulation	3
	2.2 Pedestrian and Bicycle Circulation	4
3.0	**Existing Conditions**	**6**
	3.1 Existing Street System	6
	3.2 Existing Public Transit	6
	3.3 Existing Bikeway Plan	7
	3.4 Existing Traffic Volumes	7
	3.5 Level of Service (LOS) Analysis Methodologies	9
	3.5.1 Intersection Capacity Utilization (ICU) Method of Analysis	9
	3.5.2 Highway Capacity Manual (HCM) Method of Analysis (Signalized Intersections)	9
	3.5.3 Highway Capacity Manual (HCM) Method of Analysis (Unsignalized Intersections)	10
	3.6 Level of Service Criteria	10
	3.7 Existing Level of Service Results	14
	3.7.1 Existing Conditions Intersection Capacity Analysis (ICU Methodology)	14
	3.7.2 Existing Conditions Intersection Capacity Analysis (HCM Methodology)	14
4.0	**Traffic Forecasting Methodology**	**17**
5.0	**Project Traffic Characteristics**	**18**
	5.1 Project Traffic Generation	18
	5.2 Project Traffic Distribution and Assignment	19
6.0	**Future Traffic Conditions**	**21**
	6.1 Ambient Traffic Growth	21
	6.2 Related Projects Traffic Characteristics	21
	6.3 Year 2045 General Plan Buildout Traffic Conditions	24
	6.4 Year 2024 and Year 2045 Traffic Volumes	24
	6.4.1 Year 2024 Traffic Volumes	24
	6.4.2 Year 2045 General Plan Buildout Traffic Volumes	24
7.0	**Traffic Analysis Methodology**	**25**
	7.1 Level of Service Consequences and Thresholds	25
	7.1.1 City of Brea	25
	7.2 Traffic Analysis Scenarios	25
	7.3 City of Brea Nexus Program	26

TABLE OF CONTENTS (CONTINUED)

SECTION	PAGE
8.0 Peak Hour Intersection Capacity Analysis	**27**
8.1 Year 2024 Traffic Conditions - ICU	27
8.1.1 Year 2024 Cumulative Traffic Conditions - ICU	27
8.1.2 Year 2024 Cumulative Plus Project Conditions - ICU	27
8.2 Year 2024 Traffic Conditions - HCM	30
8.2.1 Year 2024 Cumulative Traffic Conditions - HCM	30
8.2.2 Year 2024 Cumulative Plus Project Conditions - HCM	30
8.3 Year 2045 General Plan Buildout Traffic Conditions - ICU	33
8.3.1 Year 2045 General Plan Buildout Traffic Conditions - ICU	33
8.3.2 Year 2045 General Plan Buildout Plus Project Traffic Conditions - ICU	33
8.4 Year 2045 General Plan Buildout Traffic Conditions - HCM	36
8.4.1 Year 2045 General Plan Buildout Traffic Conditions - HCM	36
8.4.2 Year 2045 General Plan Buildout Plus Project Traffic Conditions – HCM	36
9.0 Intersection Vehicle Queueing Evaluation	**39**
9.1 Year 2024 Traffic Conditions	39
9.1.1 Year 2024 Cumulative Traffic Conditions	39
9.1.2 Year 2024 Cumulative Plus Project Traffic Conditions	39
9.2 Year 2045 General Plan Buildout Traffic Conditions	40
9.2.1 Year 2045 General Plan Buildout Traffic Conditions	40
9.2.2 Year 2045 General Plan Buildout Plus Project Traffic Conditions	40
10.0 Intersection Safety Evaluation	**49**
10.1 Imperial Highway Intersection Safety Evaluation	49
10.2 Intersection Safety Enhancements at S. Associated Road and Birch Street	49
11.0 Site Access Evaluation	**54**
11.1 Driveway 3 Traffic Signal Warrant Analysis	54
11.2 Internal Circulation Evaluation	56
12.0 Area-Wide Traffic Improvements	**57**
12.1 Project-Specific Improvements	57
12.2 Year 2024 Cumulative Plus Project Traffic Conditions	57
12.3 Year 2045 General Plan Buildout Plus Project Traffic Conditions	57
12.4 City of Brea Traffic Impact Fees	57
13.0 Congestion Management Program (CMP) Compliance Assessment	**60**
14.0 Summary Of Findings And Conclusions	**61**

APPENDICES

APPENDIX

A. Traffic Study Scope of Work

B. Existing Traffic Count Data

C. Intersection Level of Service Calculation Worksheets – ICU

D. Intersection Level of Service Calculation Worksheets – HCM

E. Year 2045 Modeling Worksheets

F. Intersection Queuing Worksheets

G. Intersection Safety Enhancement Worksheets

H. Traffic Signal Warrant Worksheets

LIST OF FIGURES

SECTION—FIGURE #		FOLLOWING PAGE
1-1	Vicinity Map	2
2-1	Existing Aerial Photograph	4
2-2	Proposed Site Plan	4
3-1	Existing Roadway Conditions and Intersection Controls	6
3-2	OCTA Routes	7
3-3	Transit Stop Locations	7
3-4	City of Brea Bike Plan	7
3-5	Existing AM Peak Hour Traffic Volumes	8
3-6	Existing PM Peak Hour and Daily Traffic Volumes	8
5-1	Project Traffic Distribution Pattern – Existing Retail	20
5-2	Project Traffic Distribution Pattern – Proposed Retail	20
5-3	Project Traffic Distribution Pattern – Residential	20
5-4	Project Traffic Distribution Pattern – Office	20
5-5	AM Peak Hour Project Traffic Volumes	20
5-6	PM Peak Hour and Daily Project Traffic Volumes	20
6-1	Location of Cumulative Projects	21
6-2	AM Peak Hour Cumulative Projects Traffic Volumes	23
6-3	PM Peak Hour and Daily Cumulative Projects Traffic Volumes	23
6-4	Year 2024 Cumulative AM Peak Hour Traffic Volumes	24
6-5	Year 2024 Cumulative PM Peak Hour and Daily Traffic Volumes	24
6-6	Year 2024 Cumulative Plus Project AM Peak Hour Traffic Volumes	24
6-7	Year 2024 Cumulative Plus Project PM Peak Hour Traffic Volumes	24
6-8	Year 2045 General Plan Buildout AM Peak Hour Traffic Volumes	24
6-9	Year 2045 General Plan Buildout PM Peak Hour and Daily Traffic Volumes	24
6-10	Year 2045 General Plan Buildout Plus Project AM Peak Hour Traffic Volumes	24
6-11	Year 2045 General Plan Buildout Plus Project PM Peak Hour Traffic Volumes	24
10-1	Conceptual Improvement Plan – Birch Street at Associated Road	51

LIST OF TABLES

SECTION—TABLE #		PAGE
2-1	Project Development Summary	5
3-1	Level of Service Criteria For Signalized Intersections (ICU Methodology)	11
3-2	Level of Service Criteria For Signalized Intersections (HCM Methodology)	12
3-3	Level of Service Criteria For Unsignalized Intersections (HCM Methodology)	13
3-4	Existing (Year 2021) Peak Hour Intersection Capacity Analysis – ICU	15
3-5	Existing (Year 2021) Peak Hour Intersection Capacity Analysis – HCM	16
5-1	Project Trip Generation Forecast – Entire Brea Plaza	20
6-1	Location and Description of Cumulative Projects	22
6-2	Cumulative Projects Traffic Generation Forecast	23
8-1	Year 2024 Peak Hour Intersection Capacity Analysis – ICU	28-29
8-2	Year 2024 Peak Hour Intersection Capacity Analysis – HCM	31-32
8-3	Year 2045 Peak Hour Intersection Capacity Analysis – ICU	34-35
8-4	Year 2045 Peak Hour Intersection Capacity Analysis – HCM	37-38
9-1	Year 2024 Peak Hour Intersection Queueing Analysis	41-44
9-2	Year 2045 Peak Hour Intersection Queueing Analysis	45-48
10-1	Imperial Highway Accident History	51
10-2	Year 2045 Peak Hour Intersection Capacity Analysis	52
10-3	Year 2045 General Plan Buildout Plus Project Peak Hour Intersection Queueing Analysis	53
11-1	Driveway 3 Traffic Signal Warrant Analysis Summary	55
12-1	City of Brea Traffic Impact Fee Rates	59

REVISED TRAFFIC CIRCULATION ANALYSIS

BREA PLAZA EXPANSION

Brea, California
July 29, 2021 (Original dated May 24, 2021)

1.0 INTRODUCTION

This Traffic Circulation Analysis report addresses the potential traffic and circulation needs associated with Brea Plaza Expansion Project (hereinafter referred to as Project) in the City of Brea. Brea Plaza is an existing retail center addressed at 409-477 S. Associated Road and 1555, 1609, 1623, 1643 E. Imperial Highway that is generally located north of Imperial Highway, west of Associated Road, and east of SR-57 Freeway. The proposed Project consists of the demolition of an existing 18,450 square-foot (SF) movie theater and the construction of a mixed-use development consisting of 21,355 SF office space and 189 apartments.

1.1 Scope of Work

This traffic circulation report documents the findings and recommendations of a traffic analysis conducted by Linscott, Law & Greenspan, Engineers (LLG) to determine the need for potential Project-related circulation improvements. The traffic analysis evaluates the existing operating conditions at nine (9) study intersections within the project vicinity, estimates the trip generation potential of the proposed Project, and forecasts future near-term (Year 2024) and General Plan Buildout (Year 2045) operating conditions without and with the proposed Project. Where necessary, intersection improvements are identified.

This traffic study report satisfies the traffic requirements of the City of Brea and is consistent with the current *Congestion Management Program (CMP) for Orange County.* The approved Scope of Work for this traffic study is included in ***Appendix A*** and was developed in conjunction with City of Brea Public Works Department staff.

The project site has been visited and an inventory of adjacent area roadways and intersections was performed. Existing weekday peak hour traffic count information has been collected at nine (9) study intersections for use in the preparation of intersection Level of Service (LOS) calculations. Information concerning cumulative projects (planned and/or approved) in the vicinity of the proposed Project has been researched at the Cities of Brea, Placentia and Fullerton. Based on our research, there are twelve (12) related projects in the City of Brea and two (2) related projects in the City of Fullerton. The fourteen (14) related projects were considered in the near-term cumulative traffic analysis for this project.

This traffic report analyzes existing and future weekday daily, AM peak hour and PM peak hour LOS traffic conditions for a near-term (Year 2024) and General Plan Buildout (Year 2045) traffic setting upon completion of the proposed Project. Near-term (Year 2024) cumulative daily and peak hour traffic forecasts were projected by incorporating both a one percent (1.0%) annual growth rate and the trip generation potential of fourteen (14) related projects. General Plan Buildout (Year 2045)

daily and peak hour traffic forecasts were projected based on traffic projections prepared by OCTA utilizing the OCTAM 5.0 Year 2045 Model.

1.2 Study Area

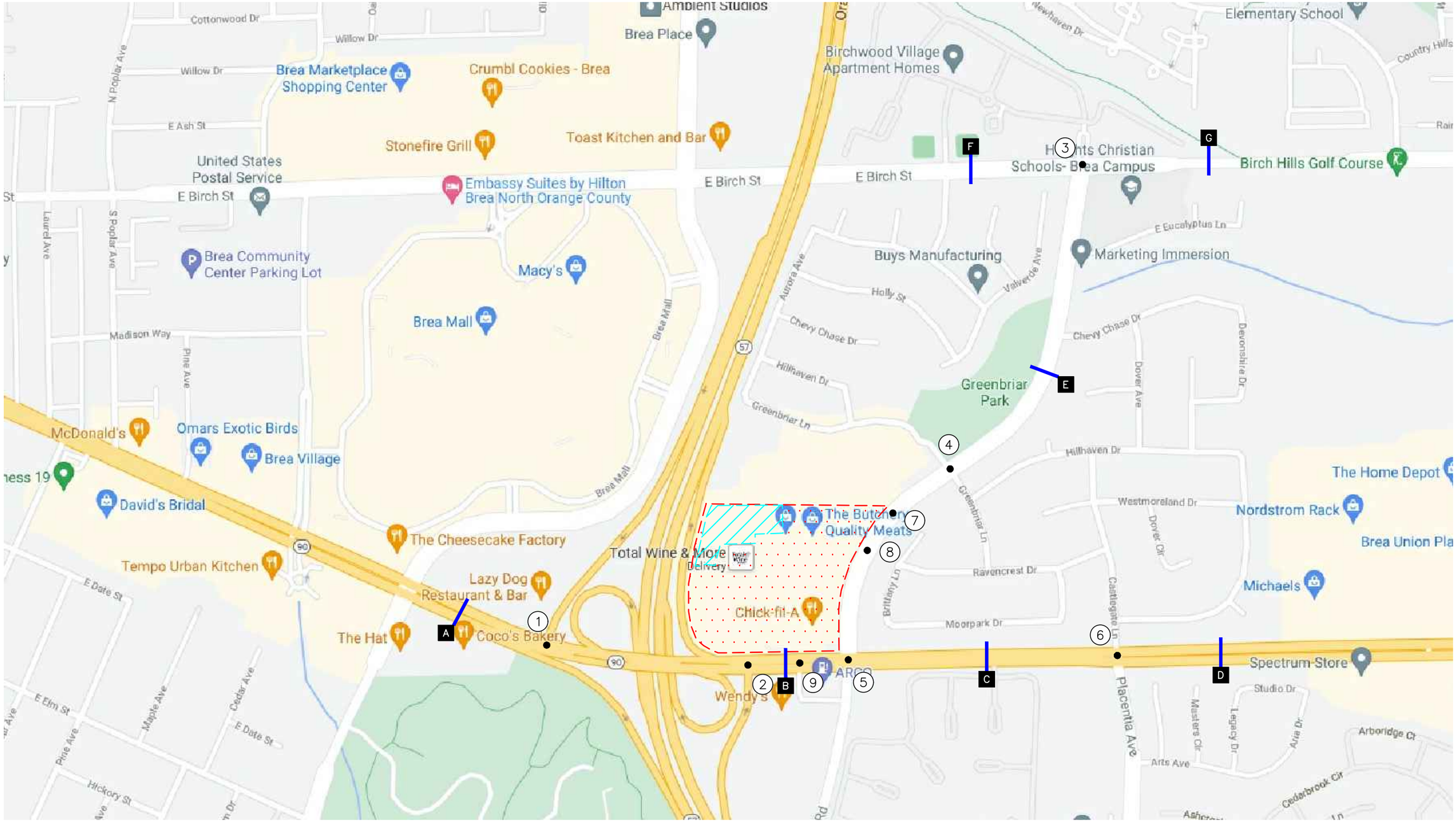
Nine (9) study intersections have been identified for evaluation in collaboration with City of Brea staff. The nine (9) intersections listed below provide regional and local access to the study area and define the extent of this traffic analysis.

Study Intersections – Jurisdiction

1. SR-57 SB Ramps at Imperial Highway (Caltrans)
2. SR-57 NB Ramps/Brea Plaza Driveway 1 at Imperial Highway (Caltrans)
3. S. Associated Road at Birch Street
4. S. Associated Road at Greenbriar Lane
5. S. Associated Road at Imperial Highway (Caltrans)
6. Castlegate Lane/Placentia Avenue at Imperial Highway (Caltrans)
7. S. Associated Road at Brea Plaza Driveway 2
8. S. Associated Road at Brea Plaza Driveway 3
9. Brea Plaza Driveway 4 at Imperial Highway (Caltrans)

Figure 1-1 presents a Vicinity Map, which illustrates the general location of the proposed Project and depicts the study locations and surrounding street system. The Level of Service (LOS) calculations at these study locations were used to evaluate the need for potential Project-related improvements associated with area growth, cumulative projects and the proposed Project. When necessary, this report recommends intersection and/or roadway improvements that may be required to accommodate future traffic volumes and restore/maintain an acceptable Level of Service. Included in this Traffic Circulation Analysis are:

- Existing traffic counts,
- Estimated project traffic generation/distribution/assignment,
- Estimated cumulative project traffic generation/distribution/assignment,
- Weekday AM and PM peak hour capacity analyses for existing conditions,
- Weekday AM and PM peak hour capacity analyses for future near-term (Year 2024) traffic conditions without and with the proposed Project,
- Weekday AM and PM peak hour capacity analyses for General Plan Buildout (Year 2045) traffic conditions without and with the proposed Project,
- Intersection Vehicle Queueing Evaluation,
- Intersection Safety Evaluation,
- Site Access Evaluation, and
- Congestion Management Program Compliance Assessment.



n:\4100\2194157 – brea plaza expansion project, brea\dwg\4157 f1–1.dwg LDP 11:49:04 05–12–2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

(#) = STUDY INTERSECTION

= STUDY ROADWAY SEGMENT

= BREA PLAZA

= PROJECT AREA

FIGURE 1–1

VICINITY MAP

BREA PLAZA EXPANSION PROJECT, BREA

2.0 PROJECT DESCRIPTION

Brea Plaza is an existing retail center addressed at 409-477 S. Associated Road and 1555, 1609, 1623, 1643 E. Imperial Highway that is generally located north of Imperial Highway, west of Associated Road, and east of SR-57 Freeway in the City of Brea, California. ***Figure 2-1*** is an existing aerial photograph of the Project site, and also illustrates the general location of the proposed Project on the northwest corner of the subject property.

Table 2-1 summarizes the proposed Project development. The existing Brea Plaza includes 165,329 square-feet (SF) of floor area consisting of mixture of retail/commercial use, service/retail shops, a movie theatre, restaurant/ food uses and fast-food restaurants with drive-through. Parking for the retail center currently totals 725 on-site spaces with an additional 180 spaces available in an easement with Mercury Insurance during business hours and all spaces after 5:00 PM and on weekends. It is our understanding that the easement with Mercury Insurance will expire upon completion of the proposed Project, therefore, all of the project parking demands will be accommodated on-site.

The proposed Project includes a mixed-use development that consists of 21,355 SF of office space and 189 apartment units. Fifteen (15) of the proposed apartments are considered co-living units, which include five (5) 3-bedroom units and ten (10) four-bedroom units, therefore, to provide a conservative assessment, the co-living unit bedrooms have been counted as individual units for a total apartment count of 229 units.

The proposed Project also includes a 387-space and 10 tandem stall parking structure on the northwest quadrant of the subject property. The implementation of the proposed Project would require the demolition of the existing 18,450 SF movie theatre (Brea Plaza 5 Cinemas) and result in the overall loss of 116 surface parking spaces. ***Figure 2-2*** illustrates the conceptual site plan for the proposed Project prepared by Architects Orange, dated February 10, 2021.

2.1 Vehicular Site Access and Circulation

Vehicular access to Brea Plaza is currently provided via one (1) right-turn only and one (1) full access unsignalized driveways on Associated Road, and a right-turn only driveway on Imperial Highway, and the signalized intersection of Imperial Highway at SR-57 NB Ramps/Brea Plaza. No change in access to Brea Plaza is proposed as a part of the Project. Further, with the exception of the parking and circulation layout on the northwest corner of the site where the proposed Project will be constructed, no changes to the internal circulation and primary parking layout in the center and southern portion of the site will change. To maintain circulation around the entire property, the Project does propose to maintain/construct a "Fire Lane" along the northern and western edge of the Project thereby providing emergency vehicle as well as Project-related traffic the ability to circulate the entire site to access either Associated Road or Imperial Highway.

It should be noted that cross-access between Mercury Insurance and Brea Plaza is currently allowed via the Mercury Insurance easement. Patrons/employees of the Mercury Insurance Building are currently able to park in the existing parking spaces within Brea Plaza located in the north end of the

site. However, the easement will no longer be applicable as part of the proposed Project. Therefore, employees/patrons of Mercury Insurance will be expected to utilize Greenbriar Road to access their site rather than cutting through Brea Plaza. This shift in volumes has been accounted for under Project conditions.

2.2 Pedestrian and Bicycle Circulation

Brea Plaza is surrounded by other commercial and public facilities to the south and west of the site, including Brea Mall, and is also surrounded by existing residential uses to the north and east of the site. The walkability between these uses is facilitated by existing sidewalks, traffic signals at intersections that immediately border the property, and crosswalks.

Review of current conditions indicates that pedestrian connectivity between Brea Plaza and the adjacent uses are provided via the existing sidewalk system. Sidewalks are generally provided throughout the City along with crosswalks at most major intersections, and in particular, sidewalks are provided along Imperial Highway and S. Associated Road bordering the site. Furthermore, crosswalks are provided at each of the study intersections to provide connectivity across the streets that border the site. With the current pedestrian system now in place, access to and from the project site is adequate and will continue to serve the proposed Project. The proposed Project will protect the existing sidewalks, and if necessary, repair or construct new sidewalks along the project frontage per the City's request.

In addition to pedestrian connectivity, an existing Class II bike lane is provided along S. Associated Road, which connects to other nearby bicycle facilities including the existing Class II bike lane on Birch Street as well as the Class I bike trail (The Tracks at Brea Trail). Furthermore, the General Plan identifies an extension of the Class II bike lane along Birch Street, west of State College Boulevard, as well as the installation of a Class II bike lane along State College Boulevard. The proposed Project will continue to support and encourage bike mobility by providing both long-term and short-term bicycle parking spaces on-site to accommodate different types of bicycles (e.g. cargo bike, bike with trailer, etc.)

n:\4100\2194157 – brea plaza expansion project, brea\dwg\4157 f2-1.dwg LDP 13:52:01 03-17-2021 lam

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

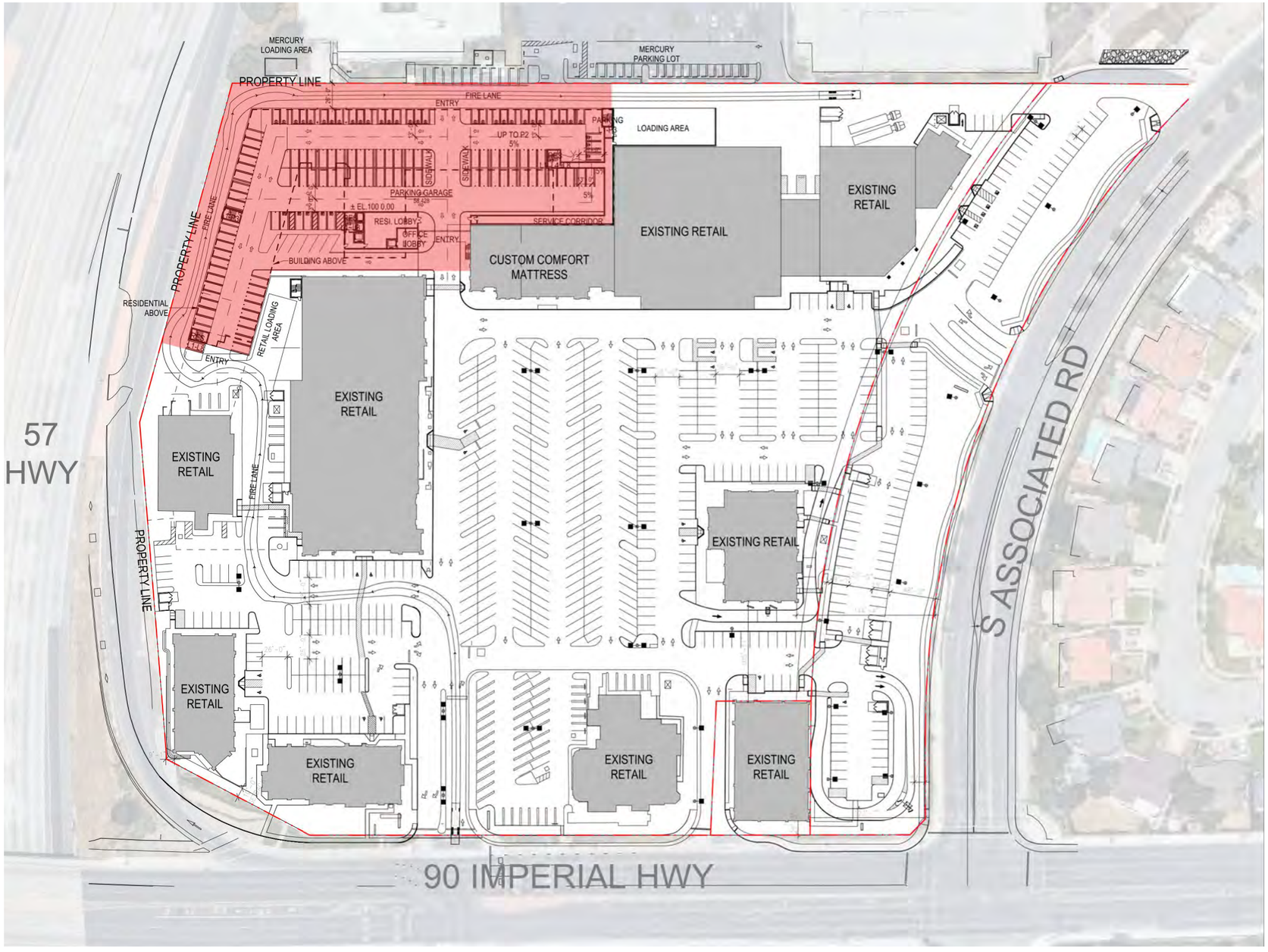
BREA PLAZA

PROJECT AREA

FIGURE 2-1

EXISTING SITE AERIAL

BREA PLAZA EXPANSION PROJECT, BREA



n:\4100\2194157 – brea plaza expansion project, brea\dwg\4157 f2–2.dwg LDP 11:47:04 03–12–2021 lam

SOURCE: ARCHITECTS ORANGE

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

FIGURE 2–2

PROPOSED SITE PLAN

BREA PLAZA EXPANSION PROJECT, BREA

TABLE 2-1

PROJECT DEVELOPMENT SUMMARY[1]

Project Description	(1) Existing Site	(2) Demolition	(3) New Construction	(4) Total Updated Site
Land Use				
▪ Residential Apartments	--	--	229 DU[2]	229 DU[2]
▪ Office	--	--	21,355 SF	21,355 SF
▪ Medical Office	1,596 SF	--	--	1,596 SF
▪ Restaurants	42,649 SF	--	--	42,649 SF
▪ Movie Theater (1,100 seats with 5 screens)	18,450 SF	18,450 SF	--	--
▪ Grocery Store	16,206 SF	--	--	16,206 SF
▪ Retail	68,415 SF	--	--	68,415 SF
▪ Liquor Store	18,013 SF	--	--	18,013 SF
Total Project	**165,329 SF**	**18,450 SF**	**229 DU and 21,355 SF**	**229 DU and 168,234 SF**
Parking				
▪ 3-Level Parking Structure	--		387 spaces and 10 tandem stalls	387 spaces and 10 tandem stalls
▪ Surface Parking	725 spaces[3]	116 spaces	--	609 spaces
Total Parking	**725 spaces**	**116 spaces**	**387 spaces and 10 tandem stalls**	**996 spaces and 10 tandem stalls**

1 Project development summary is based on the proposed project site plan prepared by Architects Orange, dated February 10, 2021.

2 There is a total of 189 apartment units. A portion of the proposed apartments are considered co-living units, which include five (5) 3-bedroom units and ten (10) 4-bedroom units. Therefore, to provide a conservative assessment, the co-living unit bedrooms have been counted as individual units for a total apartment count of 229 units.

3 Currently, there are a total of 725 parking stalls plus an additional 180 spaces during business hours and all surface spaces after 5PM and weekend through an easement with Mercury Insurance. However, the easement with Mercury Insurance will no longer be applicable as part of the proposed Project and all of the project parking demands will be accommodated on-site.

3.0 EXISTING CONDITIONS

3.1 Existing Street System

The principal local network of streets serving the project site includes Birch Street, Imperial Highway, and S. Associated Road. The following discussion provides a brief synopsis of these key area streets. The descriptions are based on an inventory of existing roadway conditions.

Birch Street is a four-lane, divided roadway oriented in the east-west direction. The posted speed limit on Birch Street is 35 miles per hour (mph) west of State College Boulevard, 45 mph between State College Boulevard and S. Associated Road and 50 mph east of S. Associated Road. On-street parking is not permitted along this roadway. Birch Street is designated as a Primary Arterial in the City's Master Plan of Roadways. A traffic signal controls the study intersection of Birch Street at S. Associated Road.

Imperial Highway is a six-lane, divided roadway generally oriented in the east-west direction. The posted speed limit on Imperial Highway is 45 mph west of the SR-57 Freeway and 50 mph east of the SR-57 Freeway. On-street parking is not permitted along this roadway. Imperial Highway is designated as a Smart Street in the City's Master Plan of Roadways. A traffic signal controls the study intersections of Imperial Highway at SR-57 SB Ramps, SR-57 NB Ramps, S. Associated Road, and Castlegate Lane/Placentia Avenue. All signalized intersections along Imperial Highway are owned and operated by Caltrans.

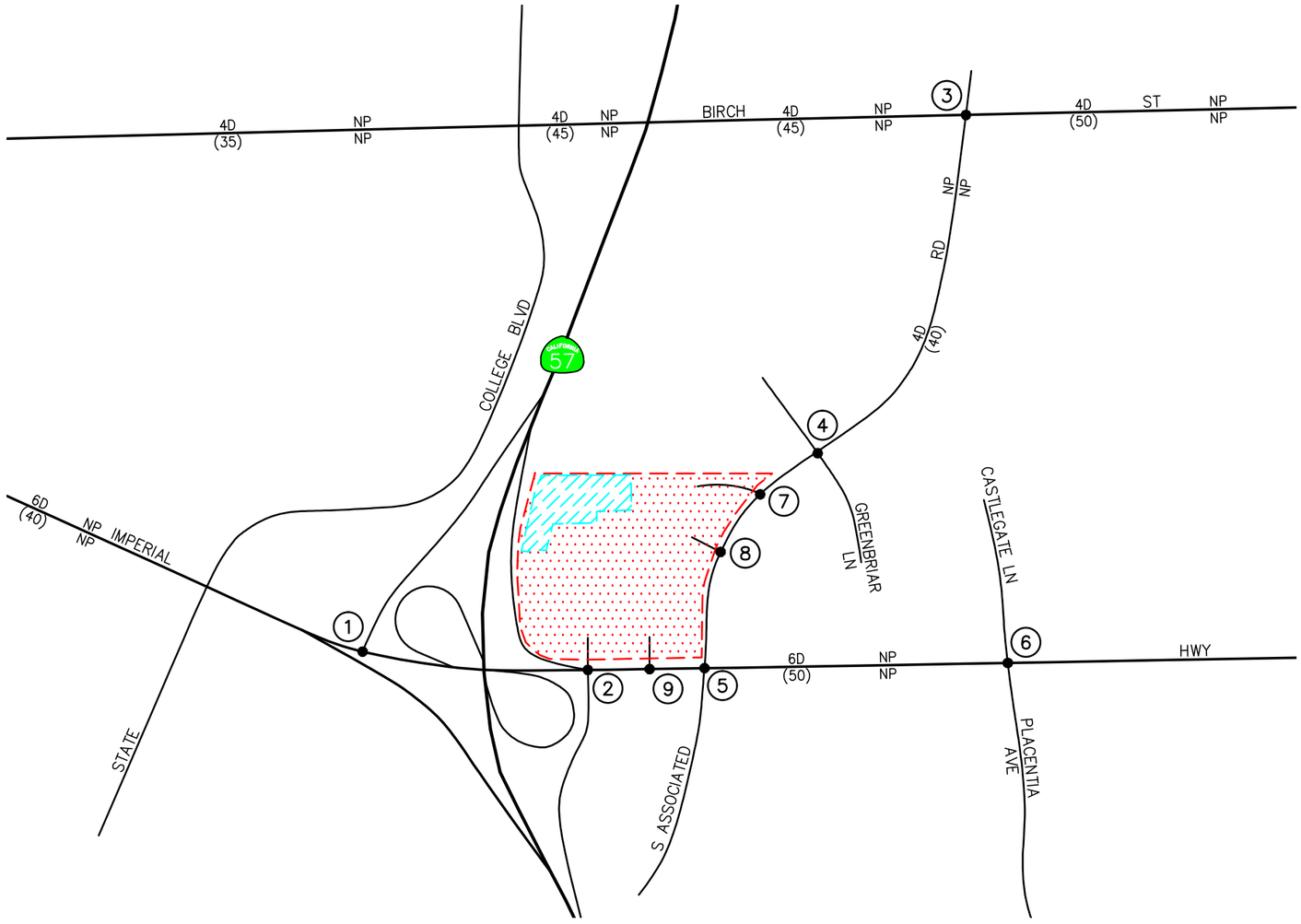
S. Associated Road is a four-lane, divided roadway generally oriented in the north-south direction. The posted speed limit on S. Associated Road is 40mph. On-street parking is not permitted along this roadway. S. Associated Road is designated as a Secondary Arterial in the City's Master Plan of Roadways. Traffic signals control the study intersections of S. Associated Road at Birch Street, Greenbriar Lane and Imperial Highway.

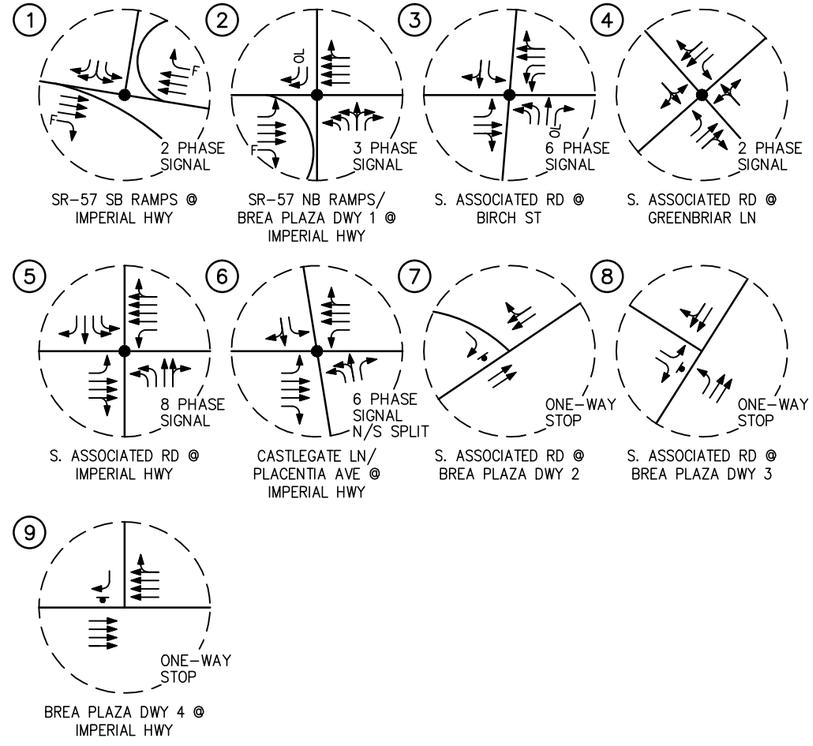
Figure 3-1 presents an inventory of the existing roadway conditions for the arterials and intersections evaluated in this report. This figure identifies the number of travel lanes for key arterials, as well as intersection configurations and controls for the study intersections.

3.2 Existing Public Transit

Public transit bus service is provided in the project area by the Orange County Transportation Authority (OCTA). Four (4) OCTA bus routes operate within the vicinity of the Project site on Birch Street, S. Associated Road, Brea Boulevard, and State College Boulevard, which consist of the following:

- OCTA Route 57 (Brea to Newport Beach): Route 57 is a local bus route serving the Cities of Brea, Fullerton, Anaheim, Orange, Santa Ana, Costa Mesa, and Newport Beach. The major routes of travel include State College Boulevard and Bristol Street. Nearest to the project site are bus stops along State College Boulevard at the intersection of Imperial Highway. Route 57 operates on approximate 15-minute headways during weekdays and weekends.





n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f3-1.dwg LDP 10:45:16 05-13-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION
= APPROACH LANE ASSIGNMENT
● = TRAFFIC SIGNAL, ▼ = STOP SIGN
P = PARKING, NP = NO PARKING
U = UNDIVIDED, D = DIVIDED
2 = NUMBER OF TRAVEL LANES

(XX)= POSTED SPEED LIMIT (MPH)
F = FREE-RIGHT
OL = OVERLAP
= BREA PLAZA
= PROJECT AREA

FIGURE 3-1

EXISTING ROADWAY CONDITIONS AND INTERSECTION CONTROLS

BREA PLAZA EXPANSION PROJECT, BREA

- OCTA Route 129 (La Habra to Anaheim): Route 129 is a community bus route serving the Cities of Anaheim, Placentia, Yorba Linda, Brea, and La Habra. The major routes of travel include La Habra Boulevard, Brea Boulevard, Birch Street, and Kraemer Boulevard. Nearest to the project site are bus stops along Birch Street and S. Associated Road. Route 129 operates on approximate 45-minute headways during weekdays and 60-minute headways on weekends.

- OCTA Route 143 (La Habra to Brea): Route 143 is a community bus route serving the Cities of Fullerton, Brea, and La Habra. The major routes of travel include Whittier Boulevard, Harbor Boulevard, Brea Boulevard, and Birch Street. Nearest to the project site are bus stops on Birch Street at State College Boulevard, and at Brea Mall. Route 143 operates on approximate 75-minute headways during weekdays and 65-minute headways on weekends.

- OCTA Route 153 (Brea to Anaheim): Route 153 is a community bus route serving the Cities of Brea, Placentia, Fullerton, Anaheim, and Orange. The major routes of travel include Placentia Avenue. Nearest to the project site are bus stops on S. Associated Road at Greenbriar Lane and on S. Associated Road at Imperial Highway. Route 153 operates on approximate 60-minute headways during weekdays and weekends.

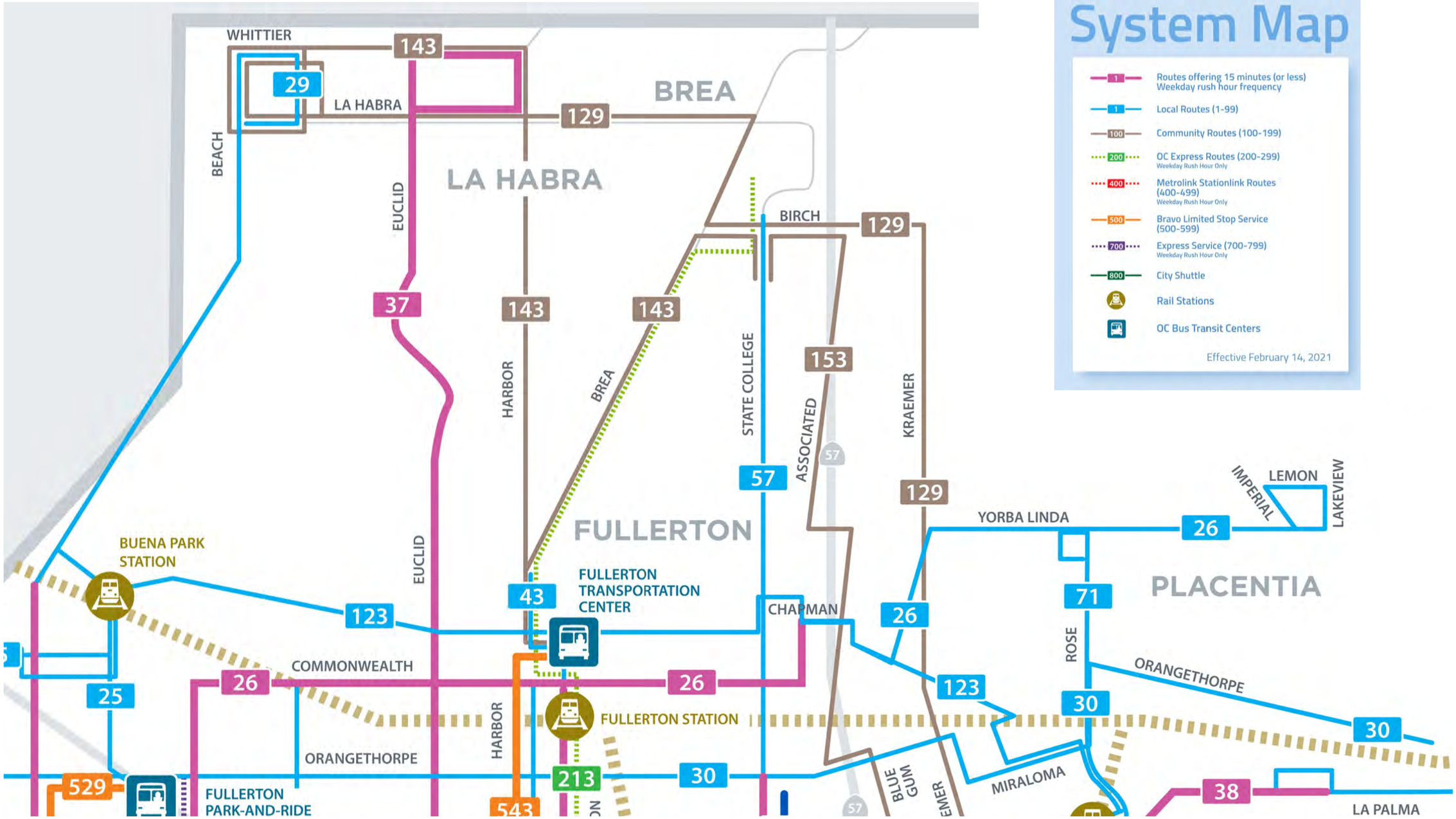
Figure 3-2 graphically illustrates the transit routes of OCTA within the vicinity of the Project site. ***Figure 3-3*** identifies the location of the existing bus stops in proximity to the Project site.

3.3 Existing Bikeway Plan

The City of Brea promotes bicycling as a means of mobility and a way in which to improve the quality of life within its community. The Bikeway Plan recognizes the needs of bicycle users and aims to create a complete and safe bicycle network throughout the City. The City of Brea Bike Plan (existing and proposed) is shown on ***Figure 3-4***. In close proximity to the site are existing Class II bike lanes provided along Birch Street, east of State College Boulevard, and on S. Associated Road, as well as a Class I bike trail (The Tracks at Brea Trail). There are proposed Class II bike lanes along Birch Street, west of State College Boulevard, and on State College Boulevard.

3.4 Existing Traffic Volumes

Due to the Covid-19 virus, the Governor of California has issued a state-wide "stay at home" order which has ultimately resulted in a decrease in traffic. Based on these current conditions, the ability to collect traffic counts to establish baseline conditions that would be reflective of traffic conditions without "stay at home" orders in effect are not possible. As such, to establish "baseline" traffic conditions, pre-Covid-19 (i.e. under normal circumstances without "stay at home" orders in effect), LLG has researched historic data and was able to obtain Year 2018/2019 counts at five (5) of the study locations as summarized below:



System Map

- Routes offering 15 minutes (or less) Weekday rush hour frequency
- Local Routes (1-99)
- Community Routes (100-199)
- OC Express Routes (200-299) Weekday Rush Hour Only
- Metrolink Stationlink Routes (400-499) Weekday Rush Hour Only
- Bravo Limited Stop Service (500-599)
- Express Service (700-799) Weekday Rush Hour Only
- City Shuttle
- Rail Stations
- OC Bus Transit Centers

Effective February 14, 2021

n:\4100\2194157 – brea plaza expansion project, brea\dwg\4157 f3–2.dwg LDP 08:35:07 05–13–2021 aguilar

SOURCE: OCTA

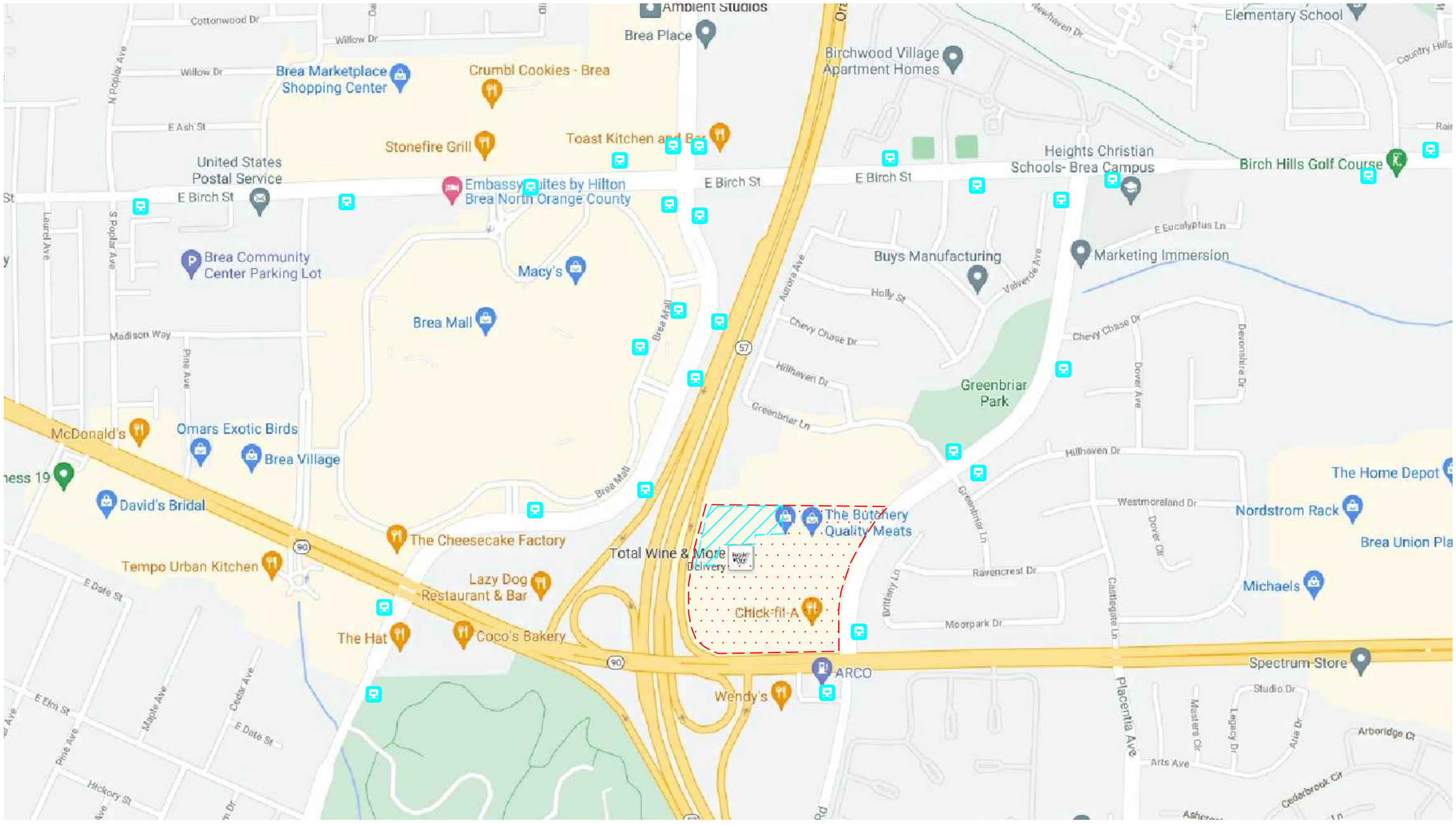
LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

FIGURE 3–2

OCTA ROUTES

BREA PLAZA EXPANSION PROJECT, BREA



n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f3-3.dwg LDP 08:57:56 05-13-2021 cervantes

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

= BREA PLAZA

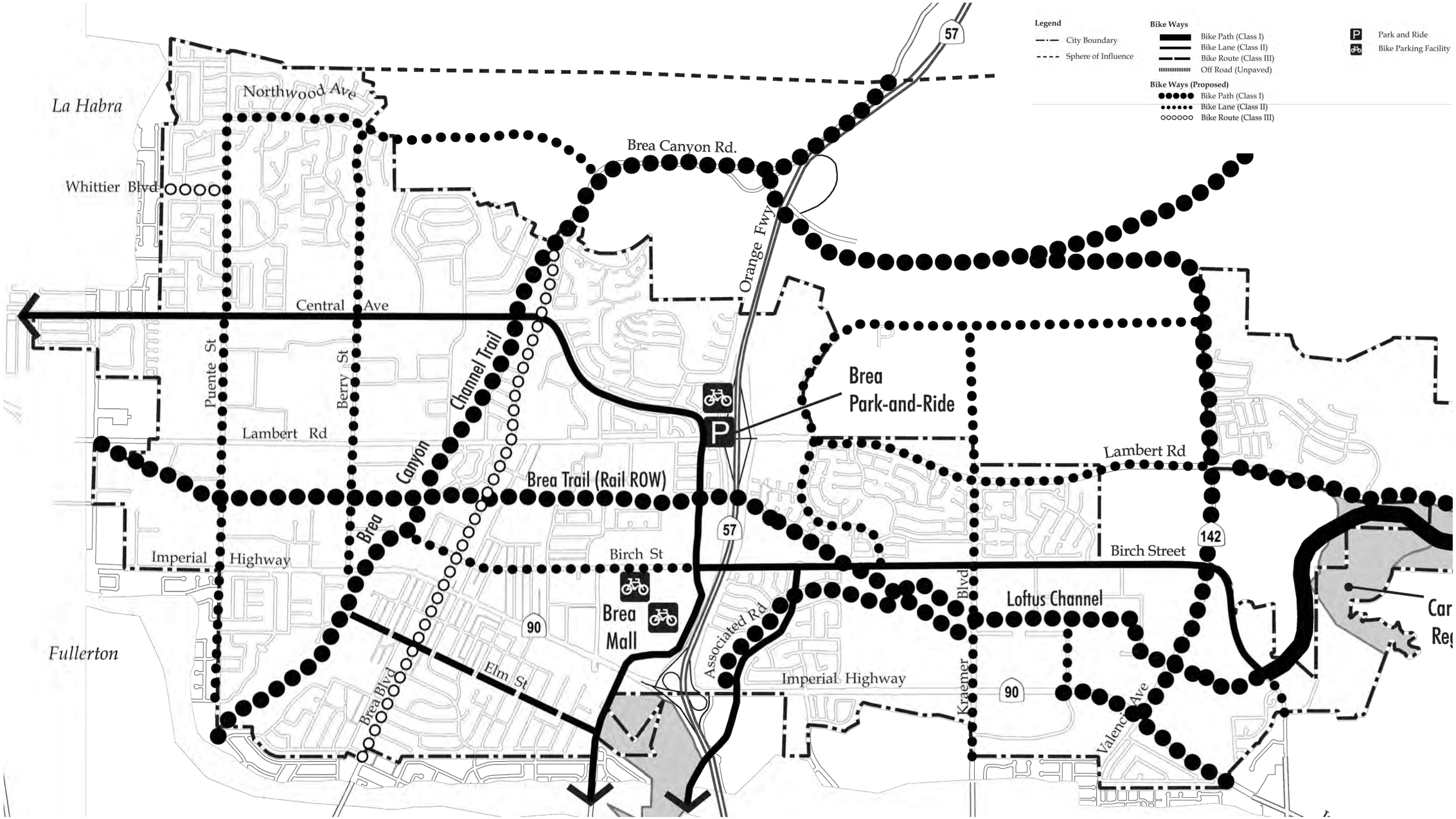
= PROJECT AREA

= TRANSIT STOP

FIGURE 3-3

TRANSIT STOP LOCATIONS

BREA PLAZA EXPANSION PROJECT, BREA



n:\4100\2194157 – brea plaza expansion project, brea\dwg\4157 f3–4.dwg LDP 08:37:07 05–13–2021 aguilar

SOURCE: CITY OF BREA

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

FIGURE 3–4

CITY OF BREA BIKE PLAN

BREA PLAZA EXPANSION PROJECT, BREA

Study Intersection		Historic Traffic Counts Available?	Collected Year 2020 Covid-19 Traffic Counts?
1.	SR-57 SB Ramps at Imperial Highway	Yes	--
2.	SR-57 NB Ramps/Brea Plaza Driveway 1 at Imperial Highway	Yes	--
3.	S. Associated Road at Birch Street	Yes	--
4.	S. Associated Road at Greenbriar Lane	**No**	**Yes**
5.	S. Associated Road at Imperial Highway	Yes	**Yes**
6.	Castlegate Lane/Placentia Avenue at Imperial Highway	Yes	**Yes**
7.	S. Associated Road at Brea Plaza Driveway 2	--	--
8.	S. Associated Road at Brea Plaza Driveway 3	--	--
9.	Brea Plaza Driveway 4 at Imperial Highway	--	--

Given the availability of historic data, the following steps were used to establish Existing Year 2021 pre-Covid-19 baseline traffic conditions:

(1) Historic data is available at five (5) locations for Year 2018/2019.

(2) Given data is not available at one (1) study location (Intersection #4 – not including the existing Brea Plaza driveways), LLG collected Year 2020 Covid-19 traffic counts at the study location, as well as intersections adjacent to the missing intersections, in October 2020 for use in establishing traffic counts/turning movement percentages.

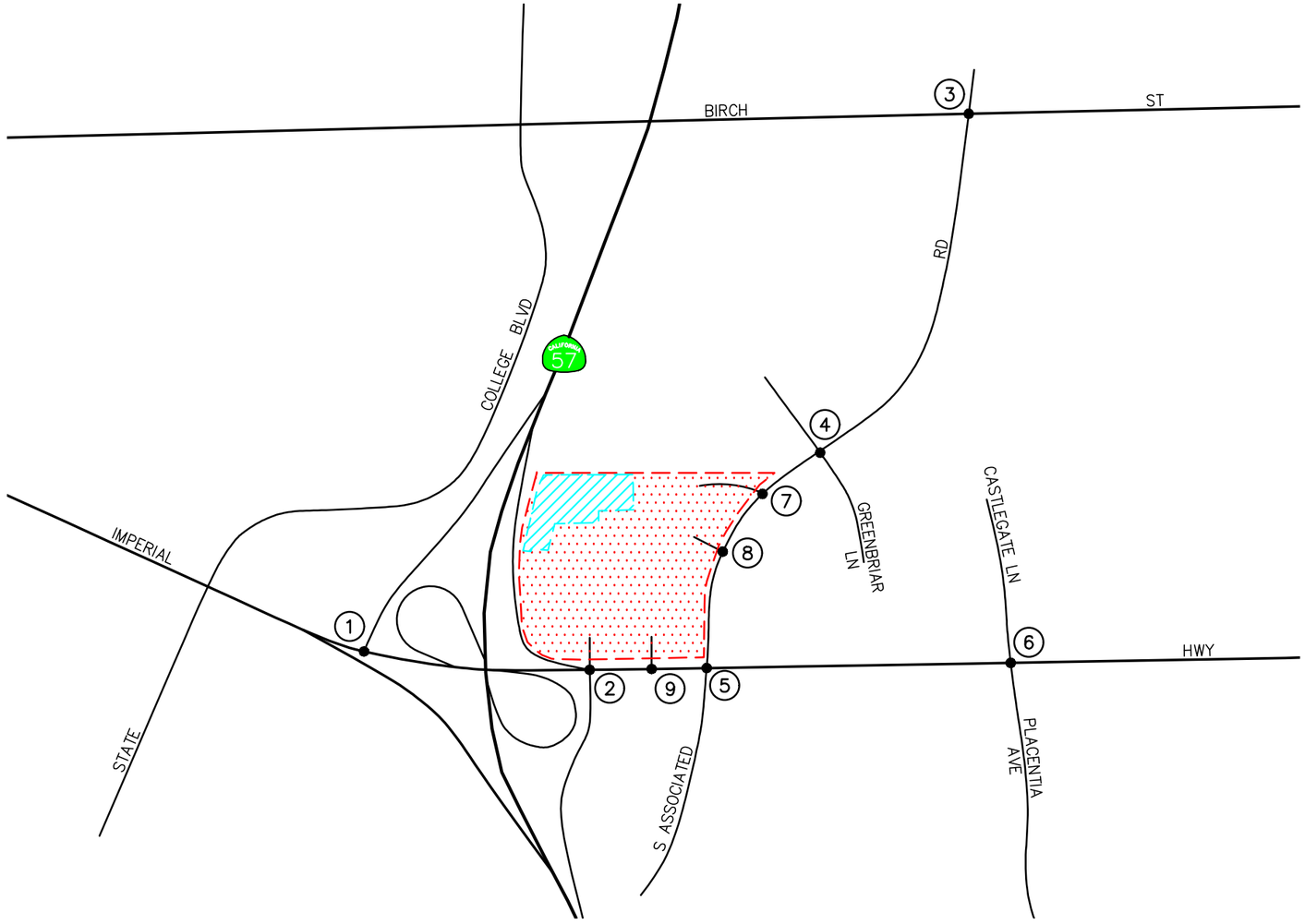
(3) Using information from (1) and (2), compare 2018/2019 to 2020 to establish change in traffic counts due to current COVID-19 environment.

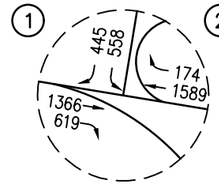
(4) Apply the rate calculated in (3) to 2020 COVID-19 traffic counts and forecast 2018/2019 traffic conditions at the one (1) missing intersection (Intersection #4).

(5) Lastly, apply an annual growth factor of 1% per year to the Year 2018/2019 traffic conditions to establish Year 2021 pre-COVID-19 baseline traffic conditions.

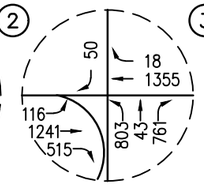
Additionally, the existing ingress and egress volumes for the Brea Plaza driveways (Intersections 2, 7, 8 and 9) were based on forecasted trips for the existing center rather than applying adjustments in place of collecting traffic counts.

Figures 3-5 and ***3-6*** illustrate the existing Year 2021 weekday AM and PM peak hour traffic volumes at the nine (9) study intersections evaluated in this report, respectively. *Figure 3-6* also presents the existing average weekday daily traffic volumes for the seven (7) roadway segments in the vicinity of the proposed Project.

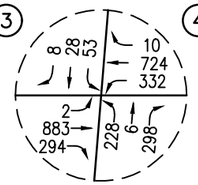




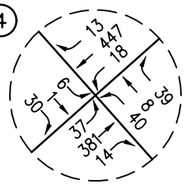
SR-57 SB RAMPS @
IMPERIAL HWY



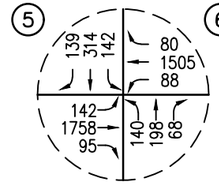
SR-57 NB RAMPS/
BREA PLAZA DWY 1 @
IMPERIAL HWY



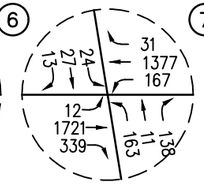
S. ASSOCIATED RD @
BIRCH ST



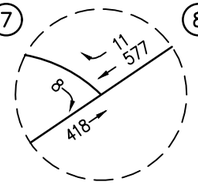
S. ASSOCIATED RD @
GREENBRIAR LN



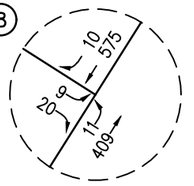
S. ASSOCIATED RD @
IMPERIAL HWY



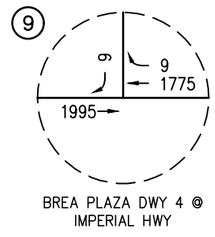
CASTLEGATE LN/
PLACENTIA AVE @
IMPERIAL HWY



S. ASSOCIATED RD @
BREA PLAZA DWY 2



S. ASSOCIATED RD @
BREA PLAZA DWY 3



BREA PLAZA DWY 4 @
IMPERIAL HWY

n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f3-5.dwg LDP 08:37:58 05-13-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

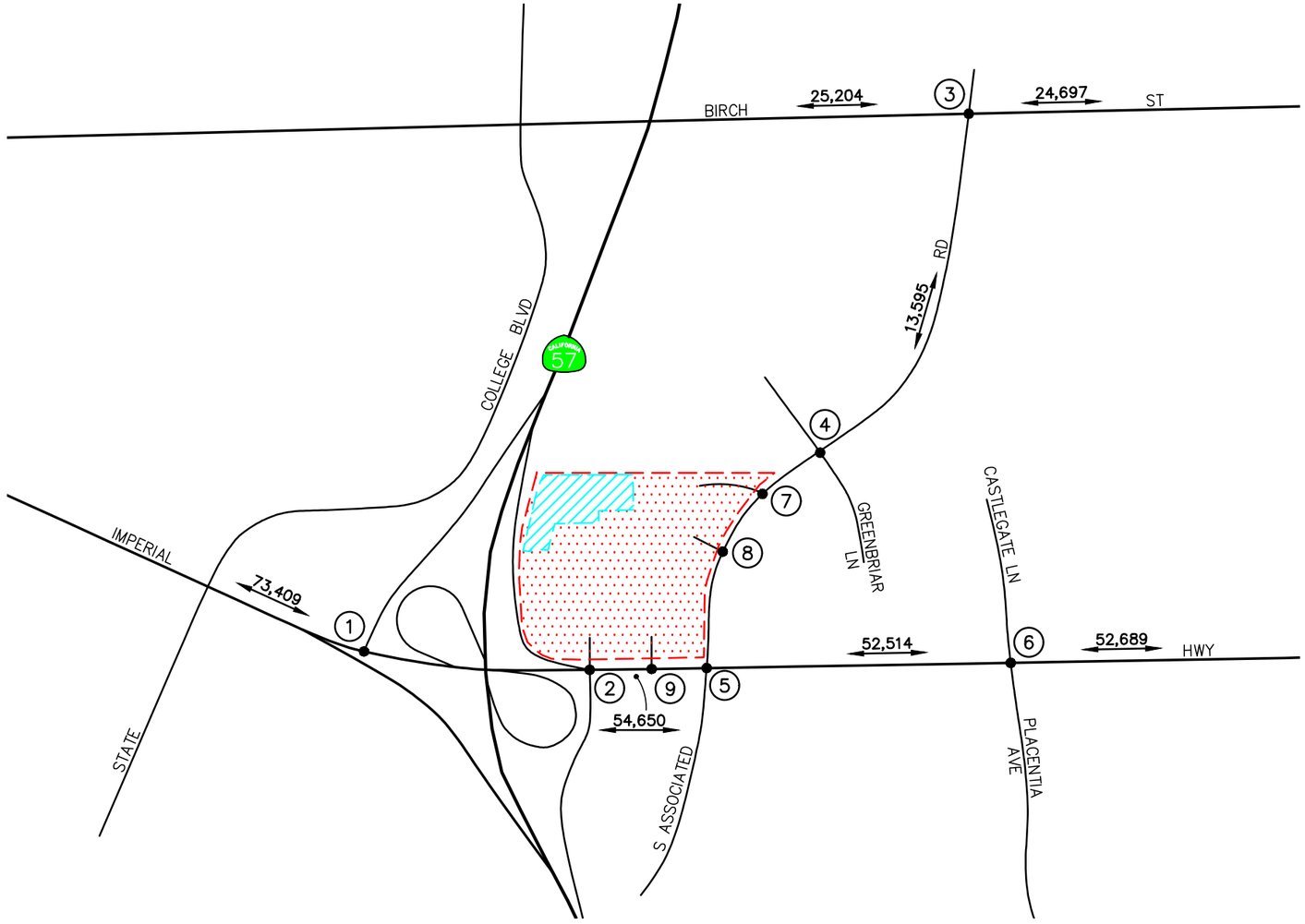
= BREA PLAZA

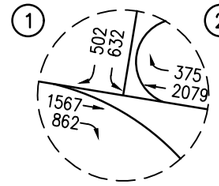
= PROJECT AREA

FIGURE 3-5

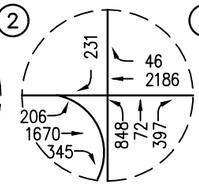
EXISTING AM PEAK HOUR TRAFFIC VOLUMES

BREA PLAZA EXPANSION PROJECT, BREA

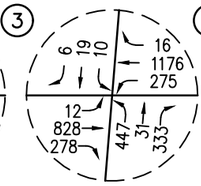




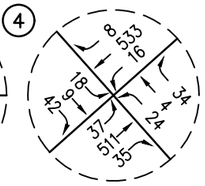
SR-57 SB RAMPS @
IMPERIAL HWY



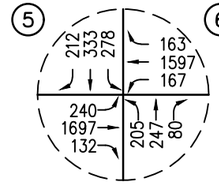
SR-57 NB RAMPS/
BREA PLAZA DWY 1 @
IMPERIAL HWY



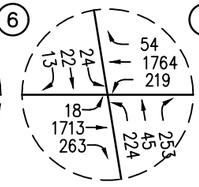
S. ASSOCIATED RD @
BIRCH ST



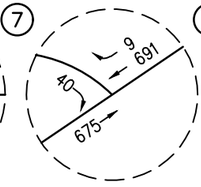
S. ASSOCIATED RD @
GREENBRIAR LN



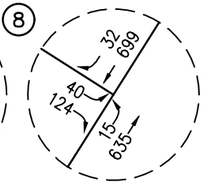
S. ASSOCIATED RD @
IMPERIAL HWY



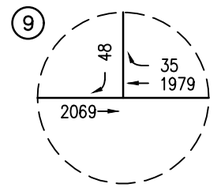
CASTLEGATE LN/
PLACENTIA AVE @
IMPERIAL HWY



S. ASSOCIATED RD @
BREA PLAZA DWY 2



S. ASSOCIATED RD @
BREA PLAZA DWY 3



BREA PLAZA DWY 4 @
IMPERIAL HWY

n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f3-6.dwg LDP 08:40:00 05-13-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION
X,XXX = DAILY TRAFFIC VOLUMES
= BREA PLAZA
= PROJECT AREA

FIGURE 3-6

EXISTING PM PEAK HOUR AND DAILY TRAFFIC VOLUMES

BREA PLAZA EXPANSION PROJECT, BREA

Appendix B contains a summary table for the Year 2021 pre-Covid-19 baseline volume development as well as the detailed peak hour and daily traffic count sheets for the study intersections and roadway segments evaluated in this report.

3.5 Level of Service (LOS) Analysis Methodologies

Existing weekday AM and PM peak hour operating conditions for the study intersections were evaluated using the *Intersection Capacity Utilization* (ICU) methodology for signalized intersections as well as the methodology outlined in the *Highway Capacity Manual*. Per the City's direction, the Intersection Capacity Utilization (ICU) method will be used for the purpose of consistency with the City of Brea General Plan.

3.5.1 *Intersection Capacity Utilization (ICU) Method of Analysis*

Weekday AM and PM peak hour operating conditions for the signalized study intersections were evaluated using the Intersection Capacity Utilization (ICU) method. The ICU technique is intended for signalized intersection analysis and estimates the volume to capacity (V/C) relationship for an intersection based on the individual V/C ratios for key conflicting traffic movements. The ICU numerical value represents the percent signal (green) time, and thus capacity, required by existing and/or future traffic. It should be noted that the ICU methodology assumes uniform traffic distribution per intersection approach lane and optimal signal timing.

Per City of Brea requirements, the ICU calculations use a lane capacity of 1,700 vehicles per hour (vph) for through and all turn lanes. A clearance adjustment factor of 0.05 was added to each Level of Service calculation.

The ICU value translates to a Level of Service (LOS) estimate, which is a relative measure of the intersection performance. The ICU value is the sum of the critical volume to capacity ratios at an intersection; it is not intended to be indicative of the LOS of each of the individual turning movements. The six qualitative categories of Level of Service have been defined along with the corresponding ICU value range and are shown in ***Table 3-1***.

3.5.2 *Highway Capacity Manual (HCM) Method of Analysis (Signalized Intersections)*

Weekday AM and PM peak hour operating conditions for study intersections were evaluated using the methodology outlined in *Chapter 19 of the Highway Capacity Manual 6 (HCM 6)* for signalized intersections.

Based on the HCM operations method of analysis, level of service for signalized intersections and approaches is defined in terms of control delay, which is a measure of the increase in travel time due to traffic signal control, driver discomfort, and fuel consumption. Control delay includes the delay associated with vehicles slowing in advance of an intersection, the time spent stopped on an intersection approach, the time spent as vehicles move up in the queue, and the time needed for vehicles to accelerate to their desired speed. LOS criteria for traffic signals are stated in terms of the control delay in seconds per vehicle. The LOS thresholds established for the automobile mode at a signalized intersection are shown in ***Table 3-2***.

3.5.3 *Highway Capacity Manual (HCM) Method of Analysis (Unsignalized Intersections)*

The HCM unsignalized methodology for stop-controlled intersections was utilized for the analysis of the unsignalized intersections. LOS criteria for unsignalized intersections differ from LOS criteria for signalized intersections as signalized intersections are designed for heavier traffic and therefore a greater delay. Unsignalized intersections are also associated with more uncertainty for users, as delays are less predictable, which can reduce users' delay tolerance.

Two-way stop-controlled intersections are comprised of a major street, which is uncontrolled, and a minor street, which is controlled by stop signs. Level of service for a two-way stop-controlled intersection is determined by the computed or measured control delay. The control delay by movement, by approach, and for the intersection as a whole is estimated by the computed capacity for each movement. LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns. The worst side street approach delay is reported. LOS is not defined for the intersection as a whole or for major-street approaches, as it is assumed that major-street through vehicles experience zero delay. The HCM control delay value range for two-way stop-controlled intersections is shown in ***Table 3-3***.

3.6 Level of Service Criteria

According to City of Brea, LOS D is the minimum acceptable condition that should be maintained during the weekday morning and evening peak commute hours at arterial intersections. LOS E is the minimum acceptable condition that should be maintained during the weekday morning and evening peak commute hours for Orange County CMP designated intersections. Based on the above, the following is the LOS required for each intersection:

LOS "D" Requirements – Study Intersections

3. S. Associated Road at Birch Street
4. S. Associated Road at Greenbriar Lane
5. S. Associated Road at Imperial Highway (Caltrans)
6. Castlegate Lane/Placentia Avenue at Imperial Highway (Caltrans)
7. S. Associated Road at Brea Plaza Driveway 2
8. S. Associated Road at Brea Plaza Driveway 3
9. Brea Plaza Driveway 4 at Imperial Highway (Caltrans)

LOS "E" Requirements – Study Intersections

1. SR-57 SB Ramps at Imperial Highway (Caltrans)
2. SR-57 NB Ramps/Brea Plaza Driveway 1 at Imperial Highway (Caltrans)

TABLE 3-1

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (ICU METHODOLOGY)

Level of Service (LOS)	Intersection Capacity Utilization Value (V/C)	Level of Service Description
A	≤ 0.600	EXCELLENT. No vehicle waits longer than one red light, and no approach phase is fully used.
B	0.601 – 0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 – 0.800	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 – 0.900	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 – 1.000	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.000	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Potentially very long delays with continuously increasing queue lengths.

TABLE 3-2

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (HCM METHODOLOGY)[4]

Control Delay (sec/veh)	Level of Service (LOS)	Level of Service Description
≤ 10	A	This level of service occurs when the v/c ratio is low and either progression is exceptionally favorable or the cycle length is very short.
> 10-20	B	This level generally occurs when the v/c ratio is low and either progression is highly favorable or the cycle length is short.
> 20-35	C	Average traffic delays. These higher delays may result when progression is favorable or the cycle length is moderate. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
> 35-55	D	Long traffic delays. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high *v/c* ratios. Many vehicles stop and individual cycle failures are noticeable.
> 55-80	E	Very long traffic delays. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *v/c* ratios. Individual cycle failures are frequent.
> 80	F	Severe congestion. This level, considered to be unacceptable to most drivers, often occurs with over saturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high *v/c* ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

[4] Source: *Highway Capacity Manual*, Chapter 18: Signalized Intersections.

TABLE 3-3

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM)[5]

Level of Service (LOS)	Highway Capacity Manual Delay Value (sec/veh)	Level of Service Description
A	≤ 10.0	Little or no delay
B	> 10.0 and ≤ 15.0	Short traffic delays
C	> 15.0 and ≤ 25.0	Average traffic delays
D	> 25.0 and ≤ 35.0	Long traffic delays
E	> 35.0 and ≤ 50.0	Very long traffic delays
F	> 50.0	Severe congestion

[5] Source: *Highway Capacity Manual 6th Edition*, Chapter 20 (Two-Way Stop Control).

3.7 Existing Level of Service Results

3.7.1 *Existing Conditions Intersection Capacity Analysis (ICU Methodology)*

Table 3-4 summarizes the existing peak hour service level calculations for the six (6) signalized study intersections evaluated under ICU analysis based on existing traffic volumes and current street geometrics. Review of *Table 3-4* indicates that all of the signalized study intersections currently operate at acceptable service levels during the weekday AM and PM peak hours.

Appendix C presents the ICU LOS calculation worksheets for the study intersections.

3.7.2 *Existing Conditions Intersection Capacity Analysis (HCM Methodology)*

Table 3-5 summarizes the existing peak hour service level calculations for the nine (9) study intersections evaluated under HCM analysis based on existing traffic volumes and current street geometrics. Review of *Table 3-5* indicates that all of the study intersections currently operate at acceptable service levels during the weekday AM and PM peak hours.

Appendix D presents the HCM LOS calculation worksheets for the study intersections.

TABLE 3-4

EXISTING (YEAR 2021) PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

	Study Intersection	Jurisdiction	Minimum Acceptable LOS	Control Type	Time Period	ICU	LOS
1.	SR-57 SB Ramps at Imperial Highway	Brea/ Caltrans	E	2∅ Traffic Signal	AM	0.558	A
					PM	0.680	B
2.	SR-57 NB Ramps/Brea Plaza Driveway 1 at Imperial Highway	Brea/ Caltrans	E	3∅ Traffic Signal	AM	0.557	A
					PM	0.693	B
3.	S. Associated Road at Birch Street	Brea	D	6∅ Traffic Signal	AM	0.603	B
					PM	0.602	B
4.	S. Associated Road at Greenbriar Lane	Brea	D	2∅ Traffic Signal	AM	0.262	A
					PM	0.286	A
5.	S. Associated Road at Imperial Highway	Brea/ Caltrans	D	8∅ Traffic Signal	AM	0.691	B
					PM	0.763	C
6.	Placentia Avenue/Castlegate Lane at Imperial Highway	Brea/ Caltrans	D	6∅ Traffic Signal	AM	0.590	A
					PM	0.684	B
7.	S. Associated Road at Brea Plaza Driveway 2	Brea	D	One -Way Stop	AM	--	--
					PM	--	--
8.	S. Associated Road at Brea Plaza Driveway 3	Brea	D	One -Way Stop	AM	--	--
					PM	--	--
9.	Brea Plaza Driveway 4 at Imperial Highway	Brea/ Caltrans	D	One -Way Stop	AM	--	--
					PM	--	--

Notes:

- ICU = Intersection Capacity Utilization
- LOS = Level of Service, please refer to *Table 3-1* for the LOS definitions
- ∅ = Phase

TABLE 3-5

EXISTING (YEAR 2021) PEAK HOUR INTERSECTION CAPACITY ANALYSIS - HCM

Study Intersection	Jurisdiction	Minimum Acceptable LOS	Control Type	Time Period	Delay (s/v)	LOS
1. SR-57 SB Ramps at Imperial Highway	Brea/ Caltrans	E	2∅ Traffic Signal	AM	14.9	B
				PM	15.3	B
2. SR-57 NB Ramps/Brea Plaza Driveway 1 at Imperial Highway	Brea/ Caltrans	E	3∅ Traffic Signal	AM	22.7	C
				PM	23.3	C
3. S. Associated Road at Birch Street	Brea	D	6∅ Traffic Signal	AM	27.9	C
				PM	27.5	C
4. S. Associated Road at Greenbriar Lane	Brea	D	2∅ Traffic Signal	AM	8.3	A
				PM	6.1	A
5. S. Associated Road at Imperial Highway	Brea/ Caltrans	D	8∅ Traffic Signal	AM	26.7	C
				PM	39.5	D
6. Placentia Avenue/Castlegate Lane at Imperial Highway	Brea/ Caltrans	D	6∅ Traffic Signal	AM	17.7	B
				PM	23.4	C
7. S. Associated Road at Brea Plaza Driveway 2	Brea	D	One -Way Stop	AM	10.3	B
				PM	11.1	B
8. S. Associated Road at Brea Plaza Driveway 3	Brea	D	One -Way Stop	AM	12.5	B
				PM	16.3	C
9. Brea Plaza Driveway 4 at Imperial Highway	Brea/ Caltrans	D	One -Way Stop	AM	21.4	C
				PM	30.9	D

Notes:

- s/v = seconds per vehicle
- LOS = Level of Service, please refer to *Tables 3-2 and 3-3* for the LOS definitions
- ∅ = Phase

4.0 TRAFFIC FORECASTING METHODOLOGY

In order to estimate the traffic characteristics of the proposed Project, a multi-step process has been utilized. The first step is traffic generation, which estimates the total arriving and departing traffic on a peak hour and daily basis. The traffic generation potential is forecast by applying the appropriate vehicle trip generation equations or rates to the project development tabulation.

The second step of the forecasting process is traffic distribution, which identifies the origins and destinations of inbound and outbound project traffic. These origins and destinations are typically based on demographics and existing/expected future travel patterns in the study area.

The third step is traffic assignment, which involves the allocation of project traffic to study area streets and intersections. Traffic assignment is typically based on minimization of travel time, which may or may not involve the shortest route, depending on prevailing operating conditions and travel speeds. Traffic distribution patterns are indicated by general percentage orientation, while traffic assignment allocates specific volume forecasts to individual roadway links and intersection turning movements throughout the study area.

With the forecasting process complete and project traffic assignments developed, the proposed project is isolated by comparing operational (LOS) conditions at selected study intersections using expected future traffic volumes with and without forecast project traffic. The need for site-specific and/or cumulative local area traffic improvements can then be evaluated.

5.0 PROJECT TRAFFIC CHARACTERISTICS

5.1 Project Traffic Generation

Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. The trip generation potential of the proposed Project will be estimated using trip rates contained in the 10th Edition of *Trip Generation,* published by the Institute of Transportation Engineers (ITE), [Washington, D.C., 2017].

Table 5-1 summarizes the trip generation rates used in forecasting the vehicular trips generated by the proposed Project based on the entire Brea Plaza retail center and also presents the proposed project's forecast peak hour and daily traffic volumes. As shown in the upper portion of *Table 5-1,* ITE Land Use 221: Multifamily Housing (Mid-Rise), ITE 444: Movie Theater, ITE 710: General Office Building, and ITE 820: Shopping Center trip rates will be used to forecast the trip generation potential of the proposed Project, as well as the trip generation potential of a fully occupied existing Brea Plaza.

A review of the middle portion of *Table 5-1* indicates that a fully occupied Brea Plaza is forecast to generate approximately 8,963 daily trips, with 202 trips (126 inbound, 76 outbound) produced in the AM peak hour and 576 trips (283 inbound, 293 outbound) produced in the PM peak hour on a "typical" weekday, and 12,644 daily trips with 1,261 trips (646 inbound, 615 outbound) produced in the Midday peak hour on a "typical" Saturday.

A review of the lower portion of *Table 5-1* indicates that the trip generation associated with Brea Plaza upon implementation of the proposed Project is forecast to generate approximately 7,283 daily trips, with 302 trips (165 inbound, 137 outbound) produced in the AM peak hour and 516 trips (250 inbound, 266 outbound) produced in the PM peak hour on a "typical" weekday, and 10,362 daily trips with 772 trips (370 inbound, 402 outbound) produced in the Midday peak hour on a "typical" Saturday.

When the existing Brea Plaza is compared to the retail center with the proposed Project, the implementation of the proposed Project is forecast result in 1,680 *fewer* weekday daily trips, 100 *more* weekday AM peak hour trips, and 60 *fewer* weekday PM peak hour trips, as well as 2,282 *fewer* Saturday daily trips, and 489 *fewer* Saturday midday peak hour trips. As a result of trips documented in *Table 5-1,* which identifies changes to the Saturday daily and peak hour trips, a Saturday analysis is not recommended. Therefore, this traffic analysis will be based on the net AM peak hour and PM peak hour project trips.

5.2 Project Traffic Distribution and Assignment

Figures 5-1 through ***5-4*** presents the project trip distribution for the existing retail land uses, proposed retail land uses, proposed residential, and proposed office, respectively. The project trip distributions have been distributed and assigned to the adjacent street system based on the following considerations:

- location of site access points in relation to the surrounding street system,
- the site's proximity to major traffic carriers and regional access routes,
- physical characteristics of the circulation system such as lane channelization and presence of traffic signals that affect travel patterns,
- presence of traffic congestion in the surrounding vicinity, and
- ingress/egress availability at the project site.

The anticipated weekday AM and PM peak hour project traffic volumes associated with the proposed Project are presented in ***Figures 5-5*** and ***5-6***, respectively. *Figure 5-6* also presents the weekday daily Project traffic volumes. The traffic volume assignments presented in *Figures 5-5* and *5-6* reflect the traffic distribution characteristics shown in *Figures 5-1* through *5-4* and the traffic generation forecast presented in *Table 5-1*.

TABLE 5-1

PROJECT TRIP GENERATION FORECAST – ENTIRE BREA PLAZA[6]

Project Description	Weekday							Saturday			
	Daily	AM Peak Hour			PM Peak Hour			Daily	Midday Peak Hour		
	2-Way	Enter	Exit	Total	Enter	Exit	Total	2-Way	Enter	Exit	Total
Trip Generation Rates											
▪ 221: Multifamily Housing (Mid-Rise) (TE/DU)	5.44	26%	74%	0.36	61%	39%	0.44	4.91	49%	51%	0.44
▪ 444: Movie Theater (TE/Seat)	1.76	--	--	--	55%	45%	0.09	2.24	56%	44%	0.46
▪ 710: General Office Building (TE/TSF)	9.74	86%	14%	1.16	16%	84%	1.15	2.21	54%	46%	0.53
▪ 820: Shopping Center (TE/TSF GLA)	Eq.[7]	62%	38%	Eq.[7]	48%	52%	Eq.[7]	Eq.[7]	52%	48%	Eq.[7]
Existing Brea Plaza											
▪ Existing Shopping Center (146,879 SF)	7,808	140	85	225	347	375	722	11,311	403	436	839
Pass-by Reduction[8]	-781	-14	-9	-23	-118	-127	-245	-1,131	-40	-44	-84
Existing Shopping Center Total	**7,027**	**126**	**76**	**202**	**229**	**248**	**477**	**10,180**	**363**	**392**	**755**
▪ Existing Theater (1,100 seats)	1,936	--	--	--	54	45	99	2,464	283	223	506
Existing Brea Plaza Total	**8,963**	**126**	**76**	**202**	**283**	**293**	**576**	**12,644**	**646**	**615**	**1,261**
Proposed Brea Plaza											
▪ Existing Shopping Center (146,879 SF)	7,808	140	85	225	347	375	722	11,311	403	436	839
Internal Capture[9]	-602	-2	-1	-3	-20	-30	-50	-507	-23	-25	-48
Subtotal	7,206	138	84	222	327	345	672	10,804	380	411	791
Pass-by Reduction[8]	-721	-14	-8	-22	-111	-117	-228	-1,080	-38	-41	-79
Proposed Shopping Center Total	**6,485**	**124**	**76**	**200**	**216**	**228**	**444**	**9,724**	**342**	**370**	**712**
▪ Proposed Residential (229 DU)	1,246	21	61	82	62	39	101	1,124	49	52	101
Internal Capture[9]	-576	0	-2	-2	-29	-18	-47	-508	-23	-24	-47
Proposed Residential Total	**670**	**21**	**59**	**80**	**33**	**21**	**54**	**616**	**26**	**28**	**54**
▪ Proposed Office (21,355 SF)	208	22	3	25	4	21	25	47	6	5	11
Internal Capture[9]	-80	-2	-1	-3	-3	-4	-7	-25	-4	-1	-5
Proposed Office Total	**128**	**20**	**2**	**22**	**1**	**17**	**18**	**22**	**2**	**4**	**6**
Proposed Brea Plaza Total	**7,283**	**165**	**137**	**302**	**250**	**266**	**516**	**10,362**	**370**	**402**	**772**
Net Trip Generation (Proposed Brea Plaza - Existing Brea Plaza)	**-1,680**	**39**	**61**	**100**	**-33**	**-27**	**-60**	**-2,282**	**-276**	**-213**	**-489**

Notes:

- TE/TSF = Trip End per Thousand Square Feet Gross Leasable Area
- TE/DU = Trip End per Dwelling Unit
- TE/Seat = Trip End per Seat

6 Source: *Trip Generation*, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017).

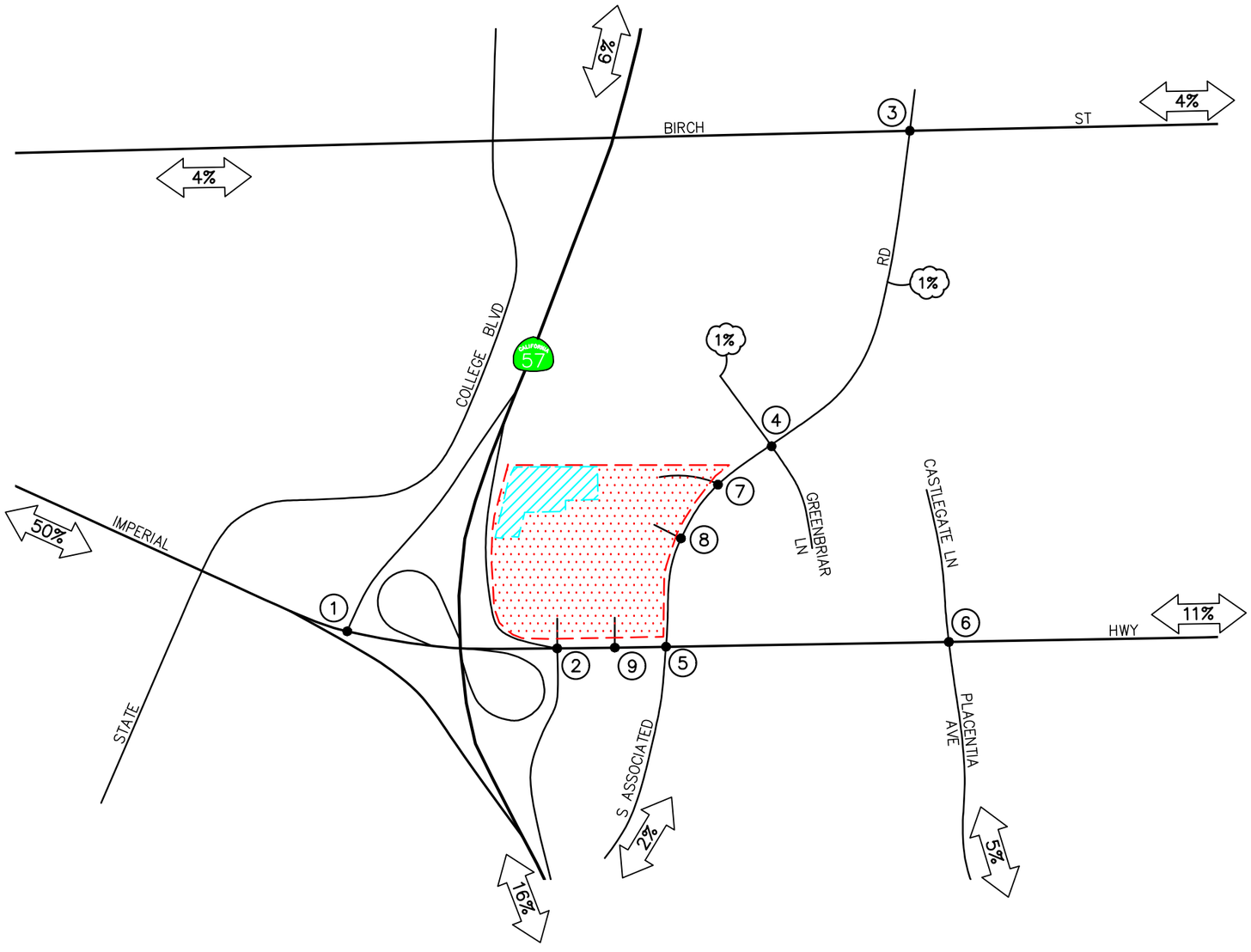
7 Trip Generation rates based on the following equations:

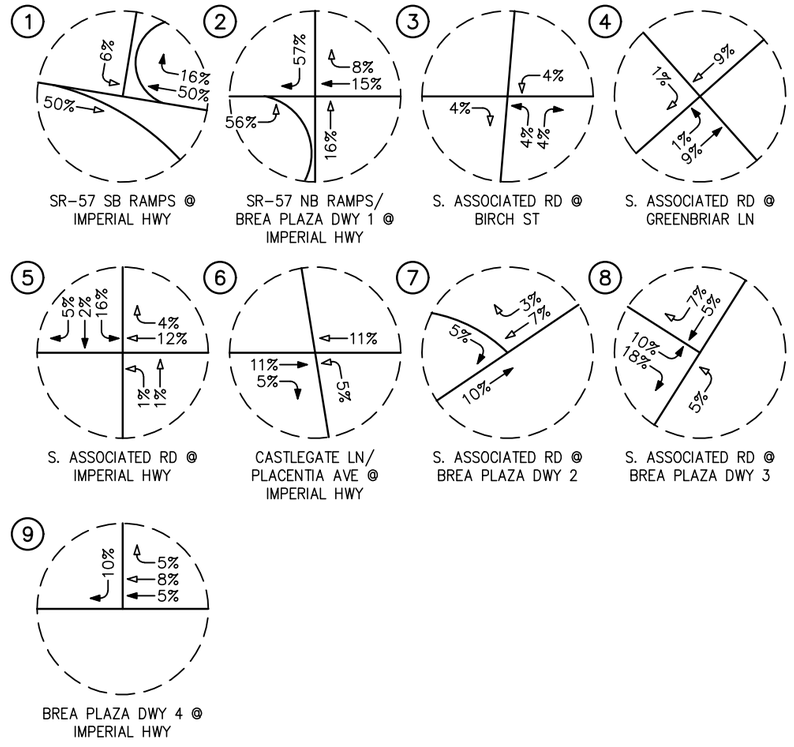
- Weekday Daily: Ln(T) = 0.68Ln(X) + 5.57
- Weekday AM Peak Hour: T = 0.50(X) + 151.78
- Weekday PM Peak Hour: Ln(T) = 0.74Ln(X) + 2.89
- Saturday Daily: Ln(T) = 0.62Ln(X) + 6.24
- Saturday Peak Hour of Generator: Ln(T) = 0.79Ln(X) + 2.79

8 Pass-By Trips are trips made as intermediate stops on the way from an origin to a primary trip destination. Pass-by trips are attracted from traffic passing the site on adjacent streets, which contain direct access to the generator. For this analysis, the following pass-by reduction factors were used (Source: *Trip Generation Handbook,3rd Edition*, ITE 2017):

- 820: Shopping Center: PM Peak Hour – 34%, Daily/AM peak hour/Saturday Daily/Saturday Midday Peak Hour – Assume 10%

9 Consistent with the *Trip Generation Handbook,* published by ITE (2017), Project trip generation was adjusted to account for internal capture between the retail and residential components of the Project. As there are no Saturday internal capture worksheets available, Weekday Daily and Weekday PM peak hour calculations have been applied to Saturday Daily and Saturday Midday peak hour.





n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f5-1.dwg LDP 08:42:18 05-13-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

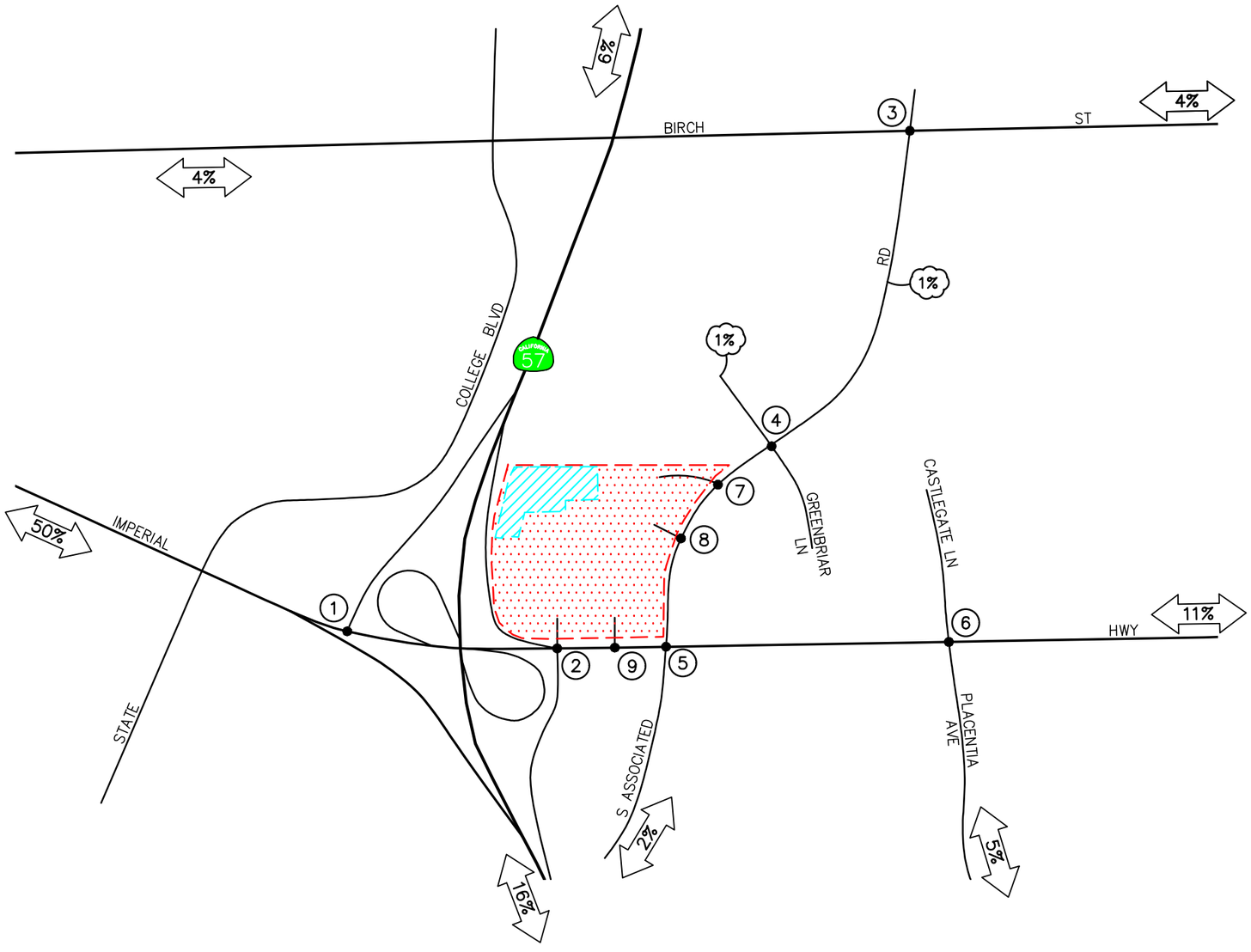
KEY

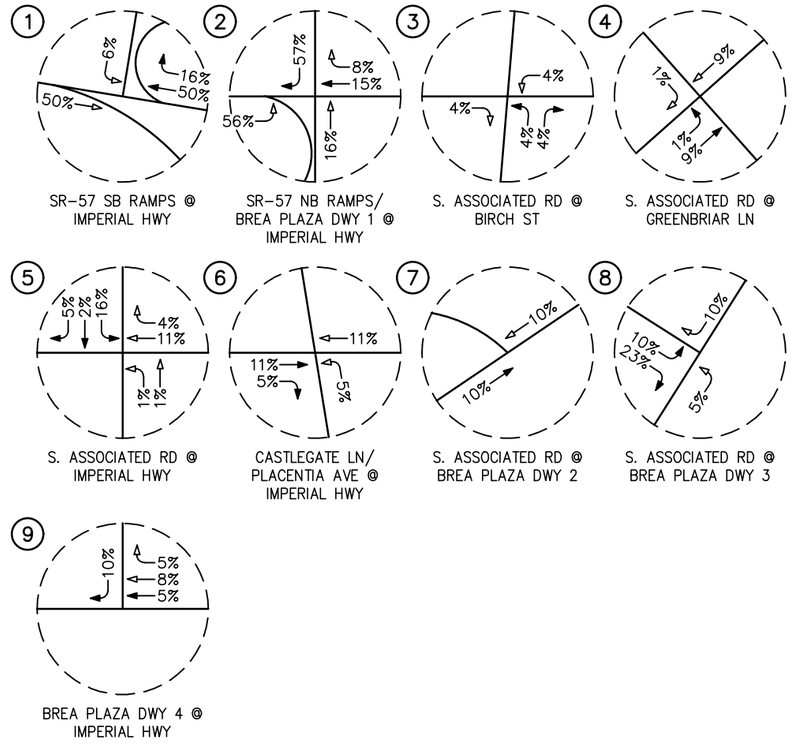
(#) = STUDY INTERSECTION
← = INBOUND PERCENTAGE
← = OUTBOUND PERCENTAGE
= BREA PLAZA
= PROJECT AREA

FIGURE 5-1

PROJECT TRAFFIC DISTRIBUTION PATTERN – EXISTING RETAIL

BREA PLAZA EXPANSION PROJECT, BREA





n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f5-2.dwg LDP 08:43:52 05-13-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

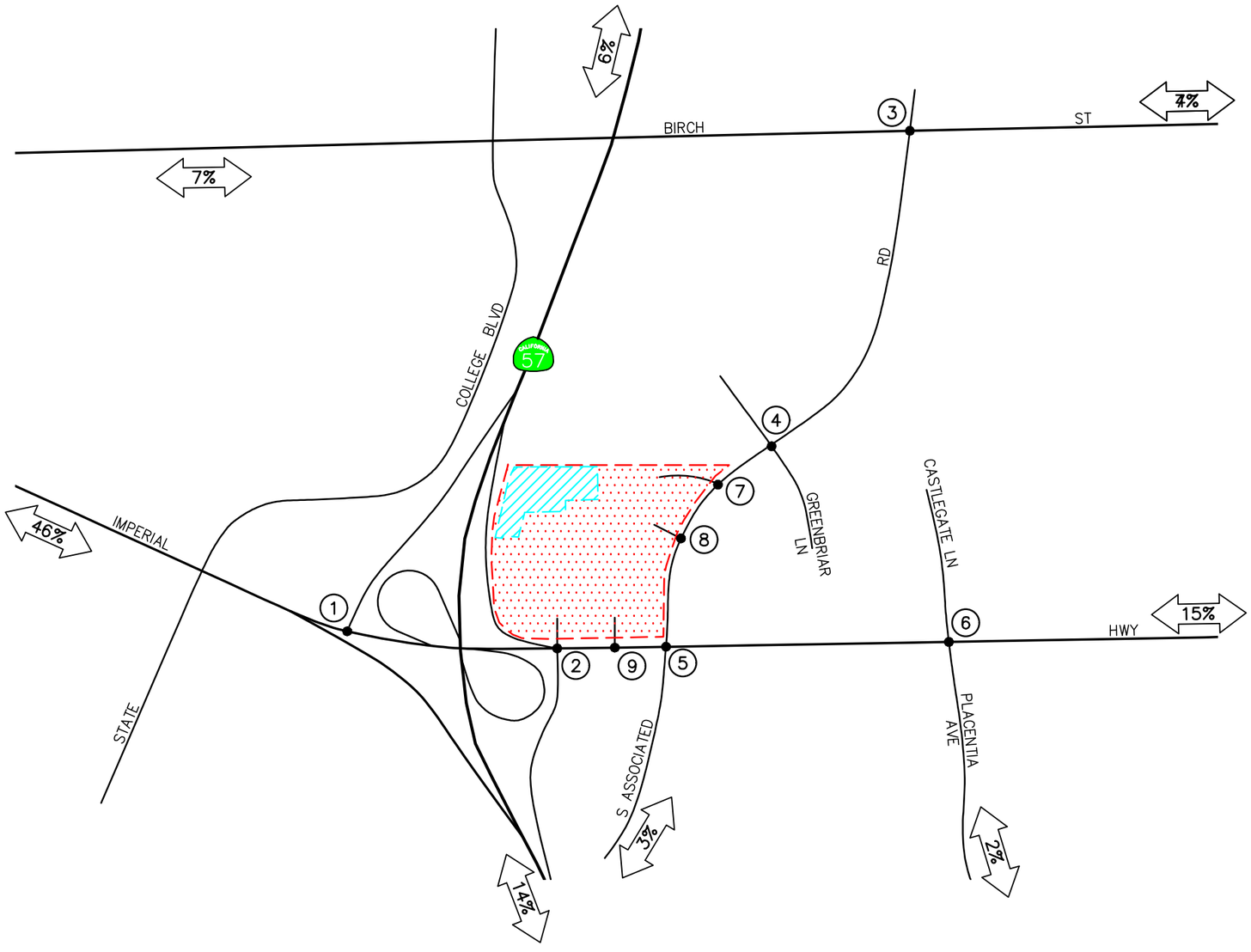
KEY

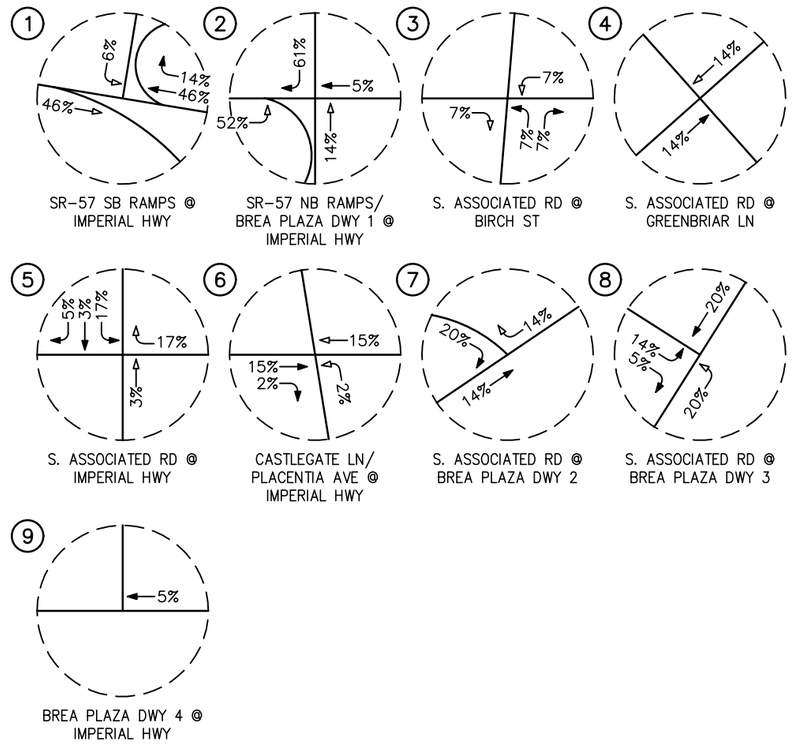
(#) = STUDY INTERSECTION
← = INBOUND PERCENTAGE
← = OUTBOUND PERCENTAGE
= BREA PLAZA
= PROJECT AREA

FIGURE 5-2

PROJECT TRAFFIC DISTRIBUTION PATTERN – PROPOSED RETAIL

BREA PLAZA EXPANSION PROJECT, BREA





n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f5-3.dwg LDP 08:48:13 05-13-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

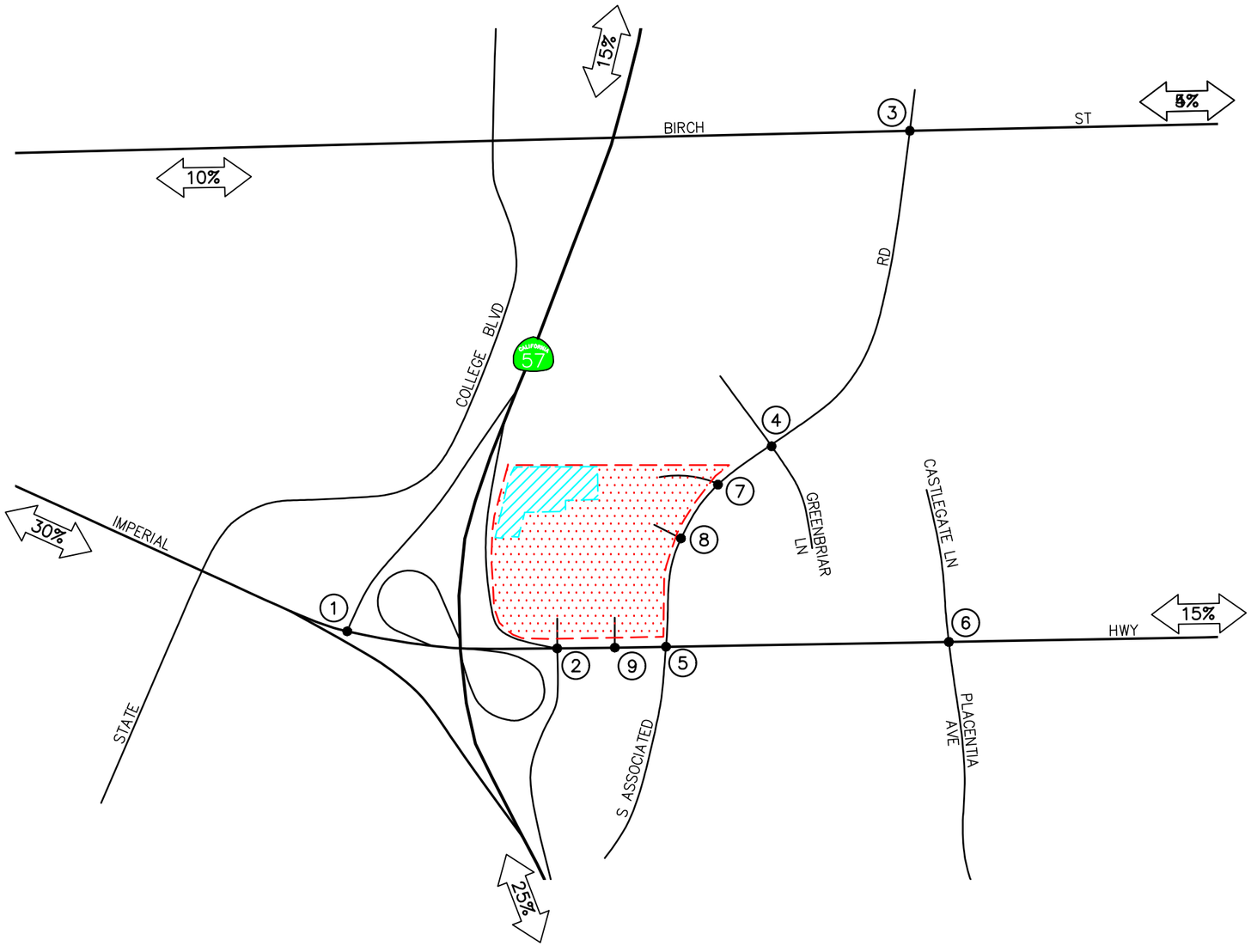
KEY

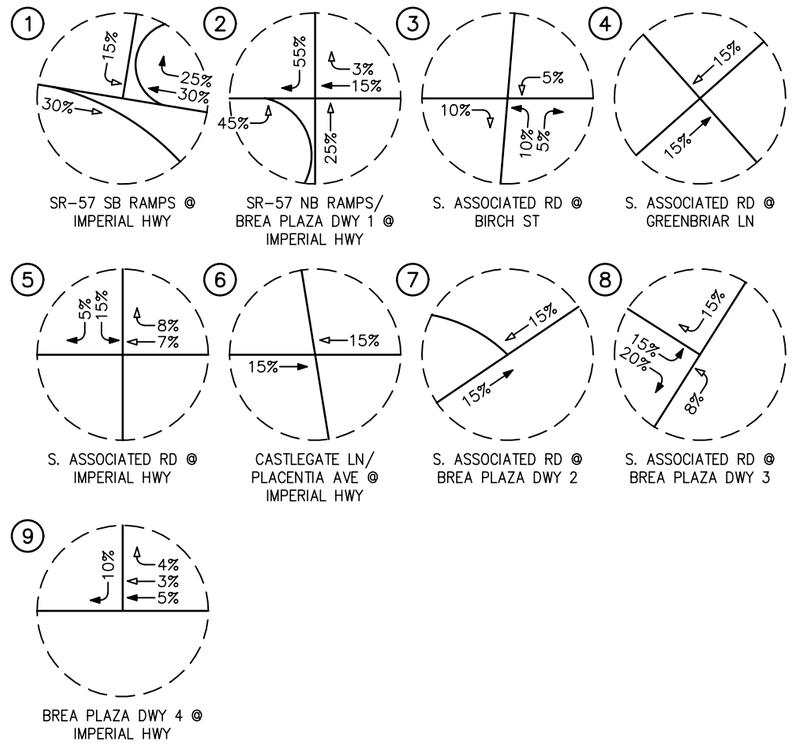
- (#) = STUDY INTERSECTION
- ⟵ = INBOUND PERCENTAGE
- ⟵ = OUTBOUND PERCENTAGE
- = BREA PLAZA
- = PROJECT AREA

FIGURE 5-3

PROJECT TRAFFIC DISTRIBUTION PATTERN – RESIDENTIAL

BREA PLAZA EXPANSION PROJECT, BREA





n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f5-4.dwg LDP 08:50:22 05-13-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

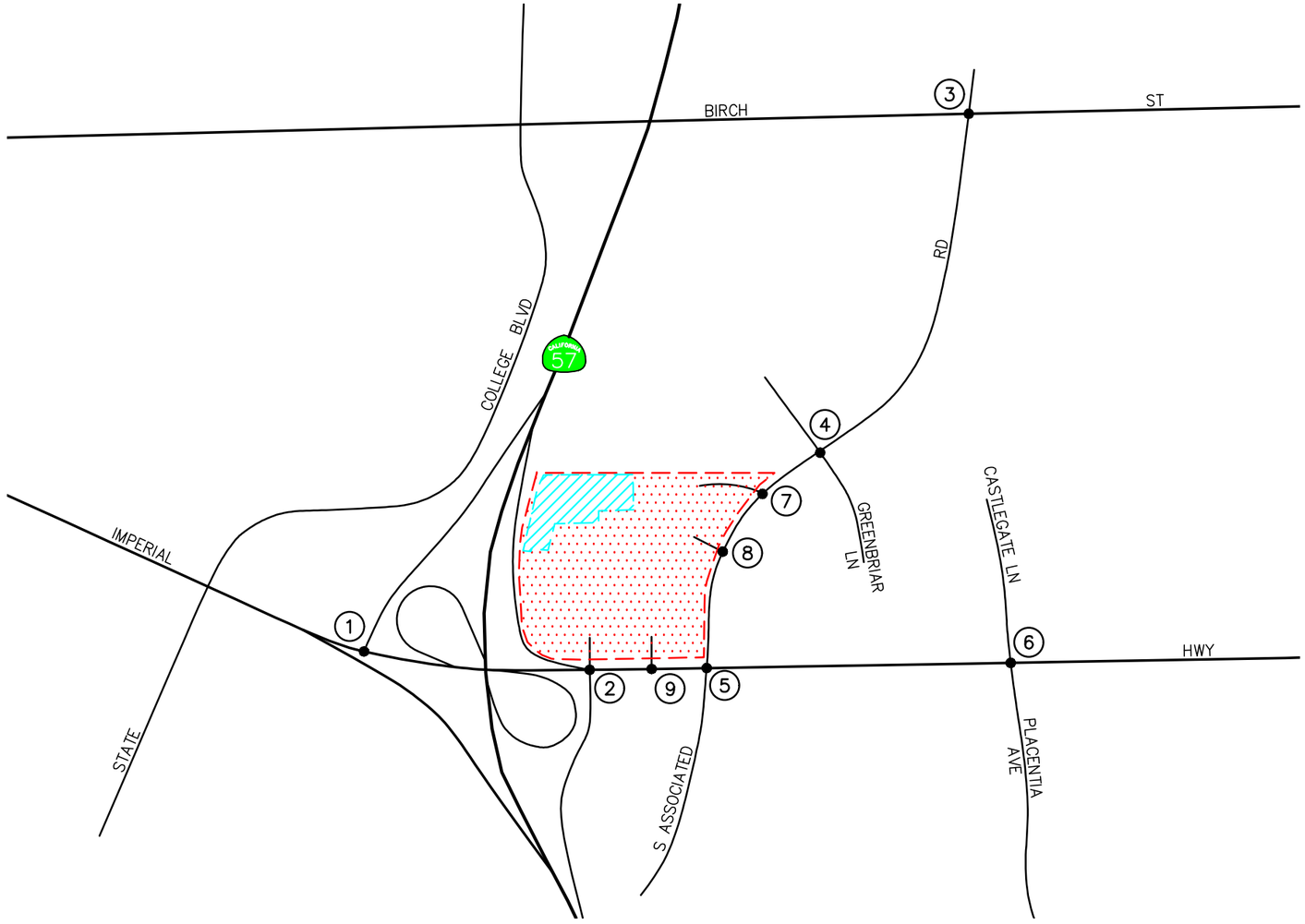
KEY

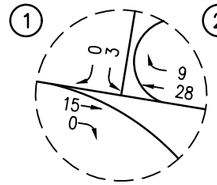
(#) = STUDY INTERSECTION
← = INBOUND PERCENTAGE
← = OUTBOUND PERCENTAGE
= BREA PLAZA
= PROJECT AREA

FIGURE 5-4

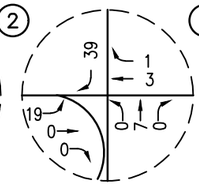
PROJECT TRAFFIC DISTRIBUTION PATTERN – OFFICE

BREA PLAZA EXPANSION PROJECT, BREA

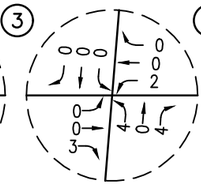




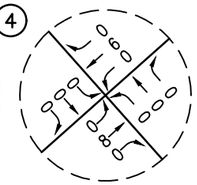
SR-57 SB RAMPS @
IMPERIAL HWY



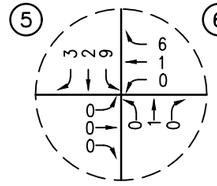
SR-57 NB RAMPS/
BREA PLAZA DWY 1 @
IMPERIAL HWY



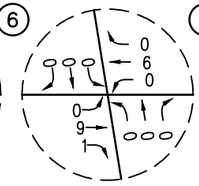
S. ASSOCIATED RD @
BIRCH ST



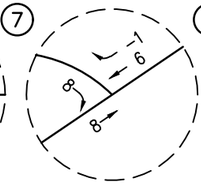
S. ASSOCIATED RD @
GREENBRIAR LN



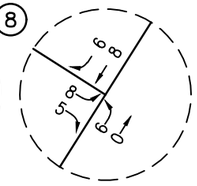
S. ASSOCIATED RD @
IMPERIAL HWY



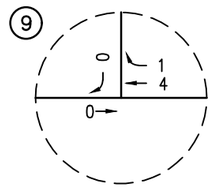
CASTLEGATE LN/
PLACENTIA AVE @
IMPERIAL HWY



S. ASSOCIATED RD @
BREA PLAZA DWY 2



S. ASSOCIATED RD @
BREA PLAZA DWY 3



BREA PLAZA DWY 4 @
IMPERIAL HWY

n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f5-5.dwg LDP 15:28:49 05-12-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

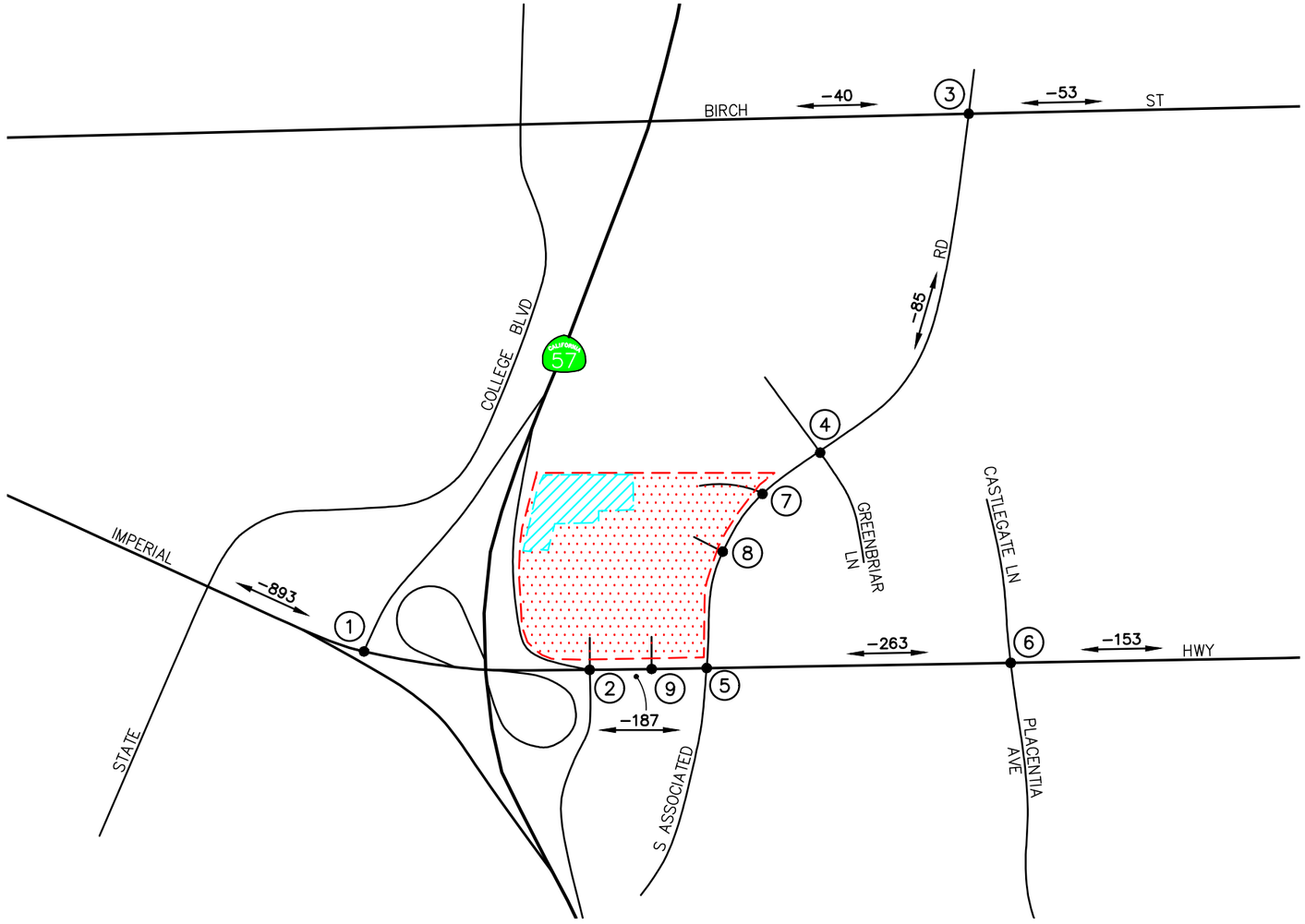
= BREA PLAZA

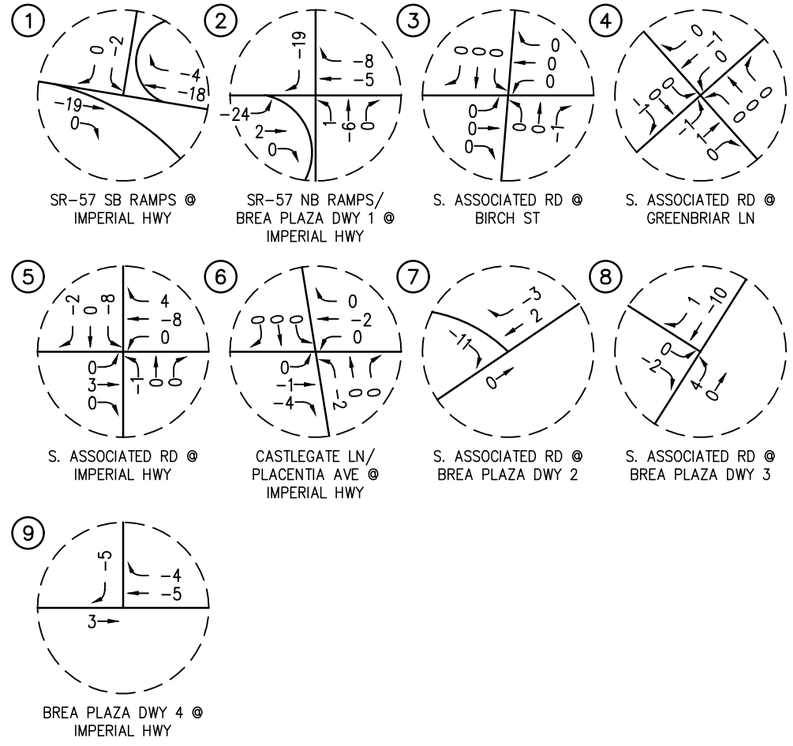
= PROJECT AREA

FIGURE 5-5

AM PEAK HOUR PROJECT TRAFFIC VOLUMES

BREA PLAZA EXPANSION PROJECT, BREA





n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f5-6.dwg LDP 15:31:20 05-12-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION
X,XXX = DAILY TRAFFIC VOLUMES
= BREA PLAZA
= PROJECT AREA

FIGURE 5-6

PM PEAK HOUR PROJECT AND DAILY TRAFFIC VOLUMES

BREA PLAZA EXPANSION PROJECT, BREA

6.0 FUTURE TRAFFIC CONDITIONS

6.1 Ambient Traffic Growth

Horizon year, background traffic growth estimates have been calculated using an ambient traffic growth factor. The ambient traffic growth factor is intended to include unknown and future related projects in the study area, as well as account for regular growth in traffic volumes due to the development of projects outside the study area. The future growth in traffic volumes has been calculated at one percent (1.0%) per year. Applied to the Year 2021 existing traffic volumes, this factor results in a 3.0% growth in existing volumes to the near-term horizon year 2024.

6.2 Related Projects Traffic Characteristics

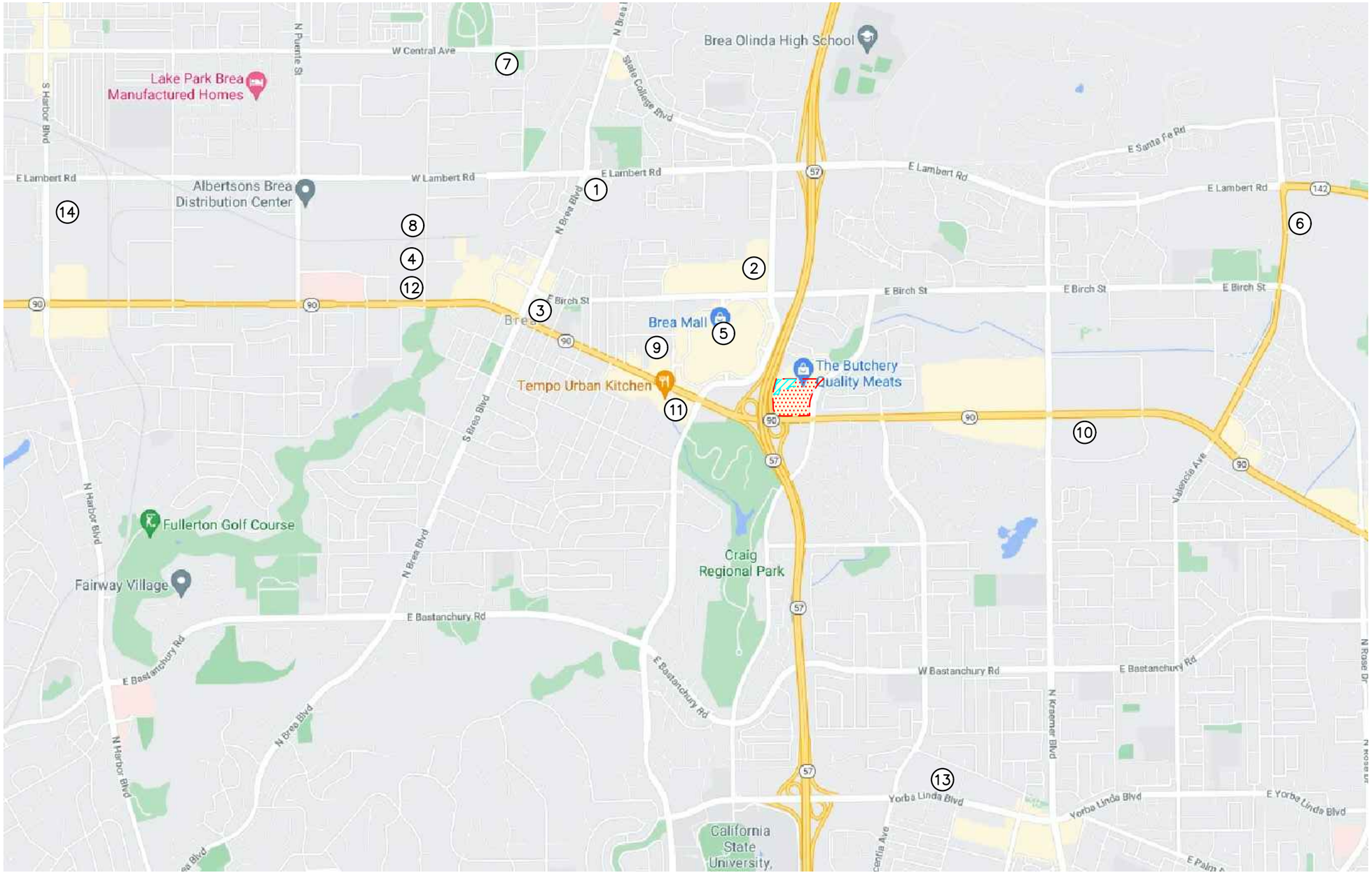
In order to make a realistic estimate of future on-street conditions prior to implementation of the proposed Project, the status of other known development projects (related projects) within the area of the proposed project has been researched at the Cities of Brea, Placentia, and Fullerton. With this information, the proposed Project can be evaluated within the context of the cumulative setting.

Based on our research during the scoping process, there are twelve (12) related projects in the City of Brea and two (2) related projects in the City of Fullerton that are being processed for approval. All of these related projects have been included as part of the cumulative background setting.

Table 6-1 provides a brief description for each of the fourteen (14) related projects. ***Figure 6-1*** graphically illustrates the location of the fourteen (14) related projects. These related projects are expected to generate vehicular traffic, which may affect the operating conditions of the study intersections.

Table 6-2 summarizes the trip generation potential for the fourteen (14) related projects on a weekday daily and peak hour basis. As shown, the related projects are expected to generate 35,920 weekday daily trips, with 2,713 trips (1,312 inbound, 1,401 outbound) anticipated during the AM peak hour and 3,274 trips (1,709 inbound, 1,565 outbound) produced during the PM peak hour.

The weekday AM and PM peak hour traffic volumes associated with thirteen (13) of the fourteen (14) related projects in the Year 2024 are presented in ***Figures 6-2*** and ***6-3***, respectively. *Figure 6-3* also presents the weekday daily related project traffic volumes. It should be noted that the Brea 265 Specific Plan Project has been included as a related project only under Year 2045 background traffic conditions.



KEY

1. CVS
2. BREA PLACE
3. DOWNTOWN HOTEL
4. MERCURY APARTMENTS
5. BREA MALL MIXED-USE PROJECT
6. BREA 265 SPECIFIC PLAN
7. CENTRAL PARK VILLAGE
8. NEW INDUSTRIAL BUILDING
9. ALVERO ASSISTED LIVING
10. EXTRA SPACE SELF STRORAGE
11. BREA IMPERIAL CENTER
12. TRANWESTERN
13. 3105 YORBA LINDA BOULEVARD
14. BECKMAN BUSINESS CENTER

n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f6-1.dwg LDP 14:12:59 05-13-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

(#) = STUDY INTERSECTION

= BREA PLAZA

= PROJECT AREA

FIGURE 6-1

LOCATION OF CUMULATIVE PROJECTS

BREA PLAZA EXPANSION PROJECT, BREA

TABLE 6-1

LOCATION AND DESCRIPTION OF CUMULATIVE PROJECTS[10]

No.	Description	Location/Address	Size
City of Brea			
1.	CVS	390 N. Brea Boulevard	13,000 SF Pharmacy with Drive-Through, 1,700 SF Coffee Shop with Drive-through
2.	Brea Place	State College Boulevard at Birch Street	653 DU Apartments, 5,000 SF Office, 150 Room Hotel[11]
3.	Downtown Hotel	220 S. Brea Boulevard	116 Room Hotel, 4,000 SF High Turnover Sit Down Restaurant
4.	Mercury Apartments	Southwest corner of Berry Street at Mercury Lane	120 DU Apartments
5.	Brea Mall Mixed-Use Project	1065 Brea Mall	Demolish existing 161,990 SF Sears department store and develop 183,615 SF retail space inclusive of a 50,019 SF sporting goods store and a 128,000 SF health club, and a 312 DU apartment building
6.	Brea 265 Specific Plan[12]	South of Lambert Road/Carbon Canyon Road, north of Rose Drive, east of Valencia Avenue and west of Carbon Canyon Regional Park	1,100 residential units, consisting of 606 single-family homes and 494 multi-family residential units.
7.	Central Park Village	340-420 W. Central Avenue	62 DU townhomes and 20 DU apartments[13]
8.	New Industrial Building	201 N. Berry Street	108,125 SF warehouse
9.	Alvero Assisted Living	251 S. Randolph Avenue	80 rooms with 82 beds residential care facility
10.	Extra Space Self Storage	2700 E. Imperial Highway	126,546 self-storage facility
11.	Brea Imperial Center	391 S. State College Boulevard	5,000 SF restaurant, 2,300 SF bagel/coffee shop, 1,600 SF café, 3,867 SF In-N-Out, 28,145 SF retail, and 4,400 SF bank to replace existing land uses which include 4,050 SF food uses, 24,481 SF retail, 4,400 SF bank, 2,325 SF medical office, 10,074 SF health studio spa.
12.	Transwestern	285 S. Berry Street and 711 W. Imperial Highway	132,700 SF warehouse
City of Fullerton			
13.	3105 Yorba Linda Boulevard	3105 Yorba Linda Boulevard	4,840 SF drive-through car wash
14.	Beckman Business Center	4300 North Harbor Boulevard	522,250 SF Warehousing, 166,185 SF General Light Industrial, 105,880 SF Manufacturing, 42,000 SF Office, and 142,350 SF fulfillment center

[10] Source: City of Brea and Fullerton Planning Departments.

[11] The traffic impact analysis conservatively evaluated 790 units as originally planned, which would result in higher traffic volumes in the cumulative scenarios.

[12] Brea 265 Specific Plan Project has been included as a related project as part of Year 2045 General Plan Buildout background traffic conditions.

[13] The project has already built and occupied 206 DU apartments and 83 DU townhomes.

TABLE 6-2

CUMULATIVE PROJECTS TRAFFIC GENERATION FORECAST[14]

Cumulative Project Description	Weekday Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
1. CVS	2,323	62	58	120	62	61	123
2. Brea Place	7,086	130	310	440	325	213	538
3. Downtown Hotel	1,257	47	36	83	46	39	85
4. Mercury Apartments	653	11	32	43	32	21	53
5. Brea Mall Mixed-Use Project[15]	4,140	165	150	315	281	143	424
6. Brea 265 Specific Plan[16,17]	9,337	164	512	676	552	325	877
7. Central Park Village	600	9	29	38	29	17	46
8. New Industrial Building	247	22	5	27	10	22	32
9. Alvero Assisted Living	213	10	6	16	8	13	21
10. Extra Space Self Storage	191	8	5	13	10	12	22
11. Brea Imperial Center	1,315	58	60	118	56	37	93
12. Transwestern	304	25	8	33	10	29	39
13. 3105 Yorba Linda Boulevard	690	18	18	36	35	34	69
14. Beckman Business Center[18]	7,564	583	172	755	253	599	852
Cumulative Projects Total Trip Generation Potential	**35,920**	**1,312**	**1,401**	**2,713**	**1,709**	**1,565**	**3,274**

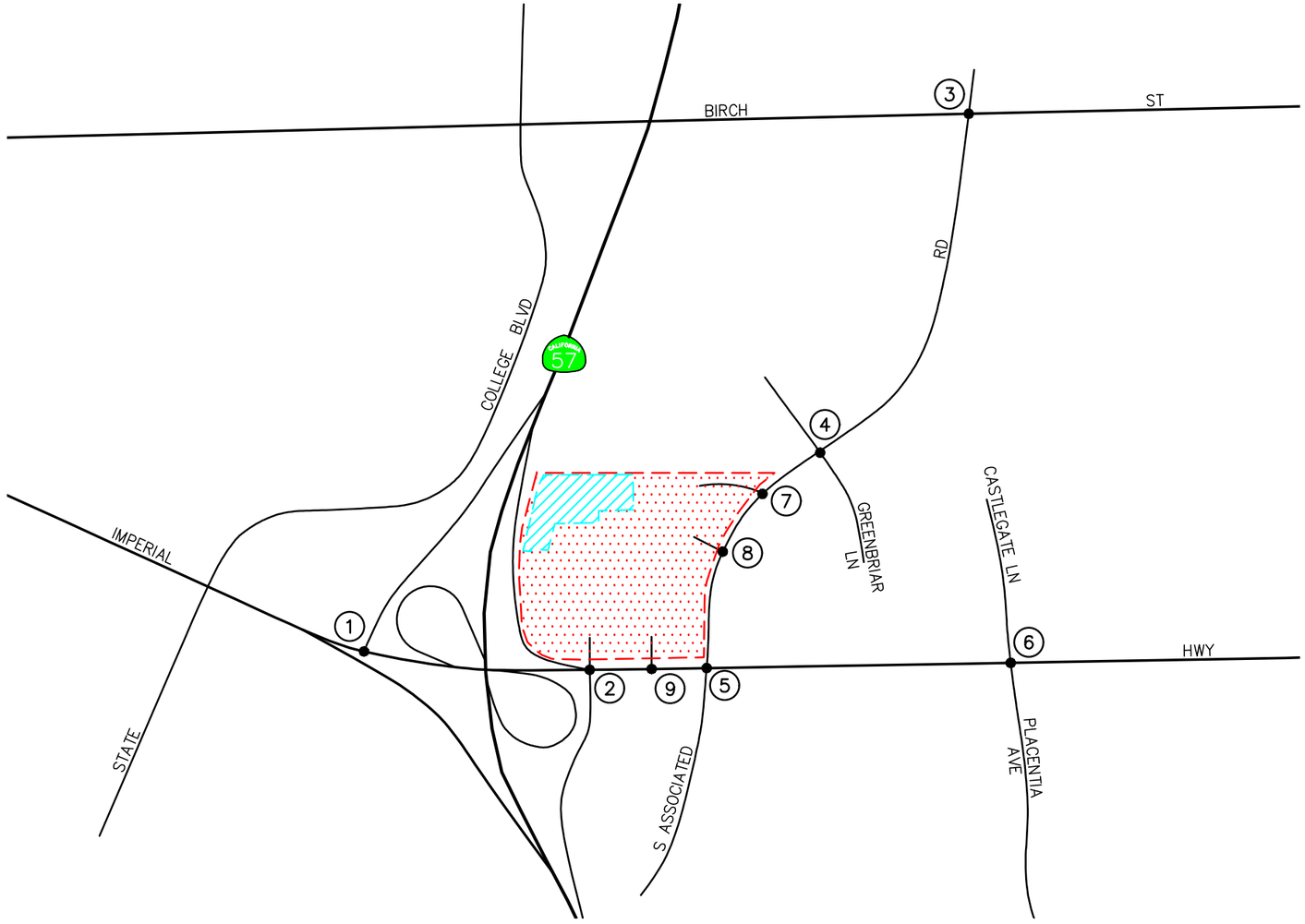
[14] Source: *Trip Generation*, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017).

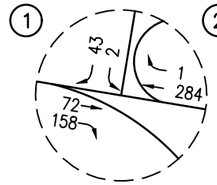
[15] Source: *Brea Mall Mixed-Use Project TIA*, prepared by LLG Engineers, dated January 2020.

[16] Source: *Brea 265 Specific Plan TIA*, prepared by LLG Engineers, dated October 2019.

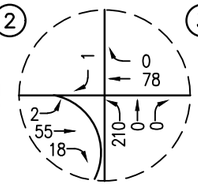
[17] Brea 265 Specific Plan Project has been included as a related project as part of Year 2045 General Plan Buildout background traffic conditions.

[18] Source: *Beckman Business Center Proposed Building 6 Tenant/Land Use Modification TIA Report Addendum,* prepared by LLG Engineers, dated September 2019. Although this development is completely constructed, it was only partially occupied during the time the existing traffic counts were collected. Hence to provide a conservative assessment, all buildings are assumed to be vacant.

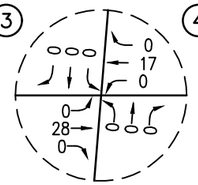




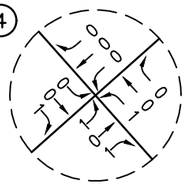
SR-57 SB RAMPS @
IMPERIAL HWY



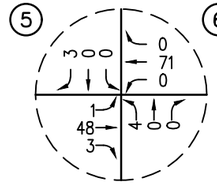
SR-57 NB RAMPS/
BREA PLAZA DWY 1 @
IMPERIAL HWY



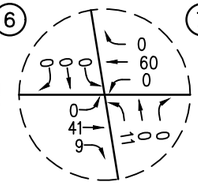
S. ASSOCIATED RD @
BIRCH ST



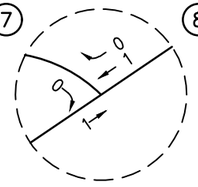
S. ASSOCIATED RD @
GREENBRIAR LN



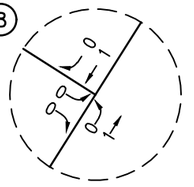
S. ASSOCIATED RD @
IMPERIAL HWY



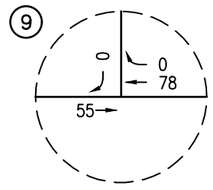
CASTLEGATE LN/
PLACENTIA AVE @
IMPERIAL HWY



S. ASSOCIATED RD @
BREA PLAZA DWY 2



S. ASSOCIATED RD @
BREA PLAZA DWY 3



BREA PLAZA DWY 4 @
IMPERIAL HWY

n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f6-2.dwg LDP 15:33:00 05-12-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

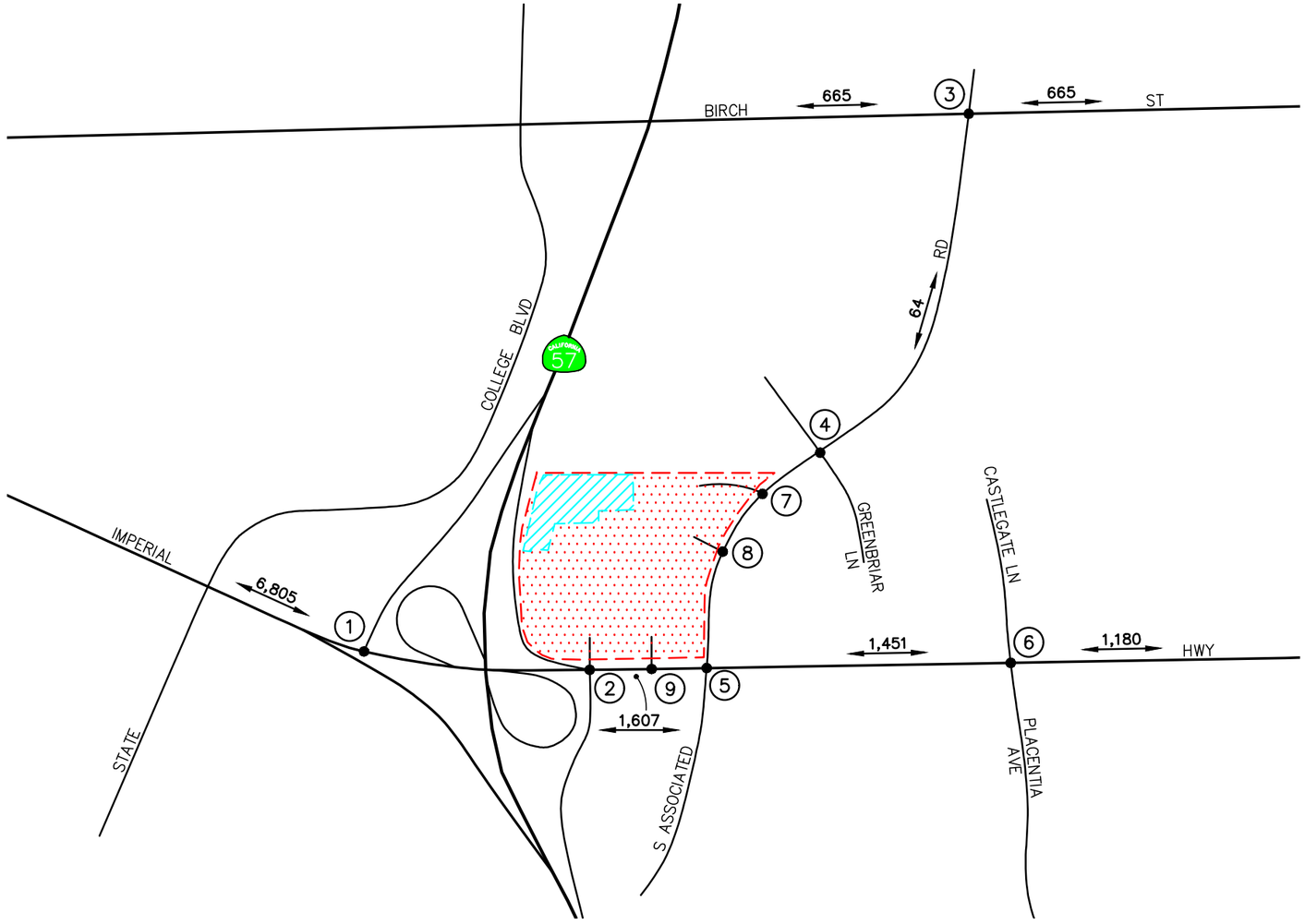
= BREA PLAZA

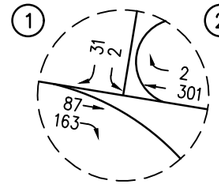
= PROJECT AREA

FIGURE 6-2

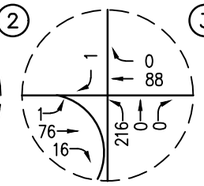
AM PEAK HOUR CUMULATIVE PROJECTS TRAFFIC VOLUMES

BREA PLAZA EXPANSION PROJECT, BREA

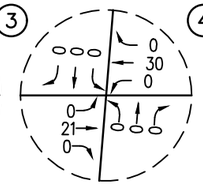




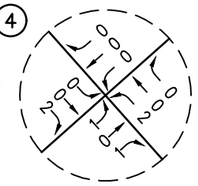
SR-57 SB RAMPS @
IMPERIAL HWY



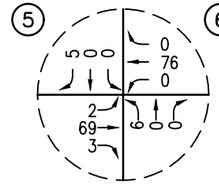
SR-57 NB RAMPS/
BREA PLAZA DWY 1 @
IMPERIAL HWY



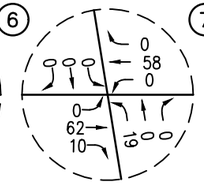
S. ASSOCIATED RD @
BIRCH ST



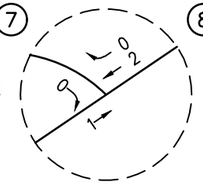
S. ASSOCIATED RD @
GREENBRIAR LN



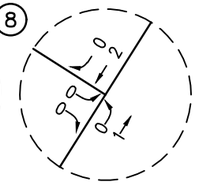
S. ASSOCIATED RD @
IMPERIAL HWY



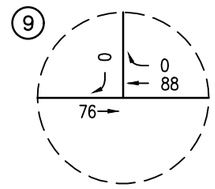
CASTLEGATE LN/
PLACENTIA AVE @
IMPERIAL HWY



S. ASSOCIATED RD @
BREA PLAZA DWY 2



S. ASSOCIATED RD @
BREA PLAZA DWY 3



BREA PLAZA DWY 4 @
IMPERIAL HWY

n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f6-3.dwg LDP 15:34:59 05-12-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION
X,XXX = DAILY TRAFFIC VOLUMES
= BREA PLAZA
= PROJECT AREA

FIGURE 6-3

PM PEAK HOUR AND DAILY CUMULATIVE PROJECTS TRAFFIC VOLUMES

BREA PLAZA EXPANSION PROJECT, BREA

6.3 Year 2045 General Plan Buildout Traffic Conditions

As coordinated with City staff, the Year 2045 General Plan Buildout traffic volume forecasts for this traffic study were developed via the utilization of the OCTAM 5.0 Year 2045 traffic model. Specifically, daily, AM peak period and PM peak period link traffic volumes were provided for the existing base year (i.e. Year 2016) and for the Year 2045. The AM peak period corresponds to a three-hour morning commute period while the PM peak period corresponds to a four-hour afternoon commute period. Using the peak period model runs and the approved peak hour factors (i.e. AM = 0.3566 and PM = 0.2662), the one-hour peak hour link traffic volumes were determined. These future year 2045 link traffic volumes were post-processed based on the relationship of the base year validation model run output to the base year ground traffic counts resulting in anticipated Year 2045 without project daily traffic volumes for the roadway segments and AM peak hour/PM peak hour turning movements for the study intersections.

Appendix E presents the post-processing worksheets.

6.4 Year 2024 and Year 2045 Traffic Volumes

6.4.1 *Year 2024 Traffic Volumes*

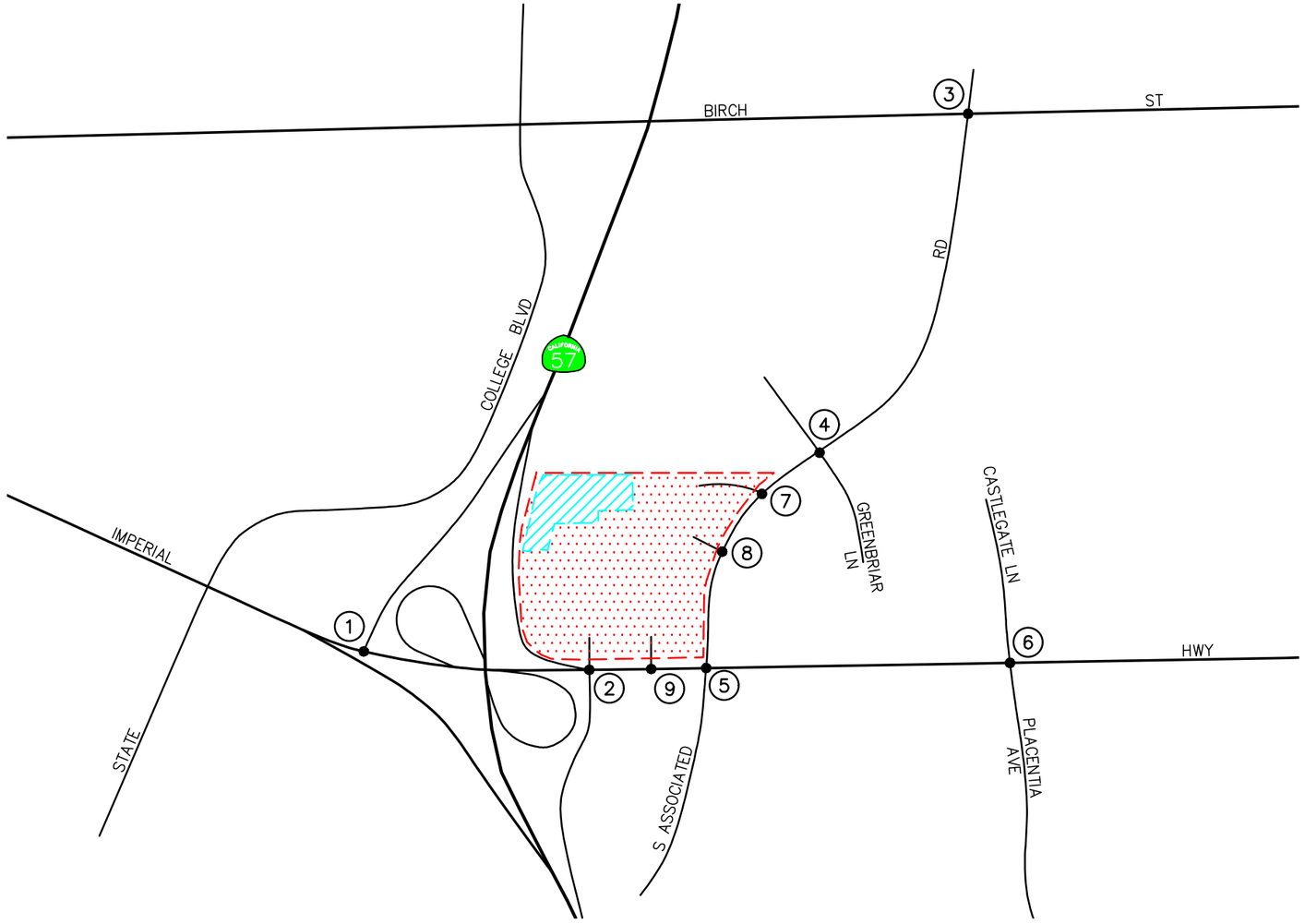
Figures 6-4 and ***6-5*** present the weekday AM and PM peak hour cumulative traffic volumes (existing traffic + ambient growth + related projects) at the nine (9) study intersections for the Year 2024, respectively. *Figure 6-5* also presents the Year 2024 daily cumulative traffic volumes.

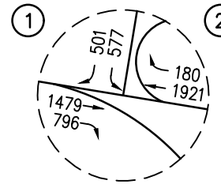
Figures 6-6 and ***6-7*** illustrate the Year 2024 forecast AM and PM peak hour traffic volumes, with the inclusion of the trips generated by the proposed Project, respectively. *Figure 6-7* also presents the Year 2024 daily cumulative plus project traffic volumes.

6.4.2 *Year 2045 General Plan Buildout Traffic Volumes*

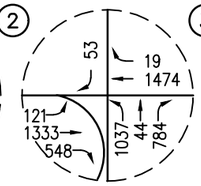
Figures 6-8 and ***6-9*** present the anticipated Year 2045 General Plan Buildout AM and PM peak hour cumulative traffic volumes at the nine (9) study intersections, respectively. *Figure 6-9* also presents the Year 2045 daily cumulative traffic volumes.

Figures 6-10 and ***6-11*** illustrate the anticipated Year 2045 General Plan Buildout forecast AM and PM peak hour traffic volumes, with the inclusion of the trips generated by the proposed Project, respectively. *Figure 6-11* also presents the Year 2045 daily cumulative plus project traffic volumes.

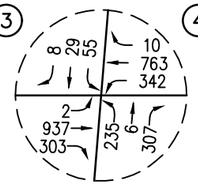




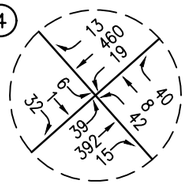
SR-57 SB RAMPS @
IMPERIAL HWY



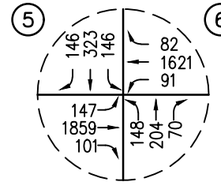
SR-57 NB RAMPS/
BREA PLAZA DWY 1 @
IMPERIAL HWY



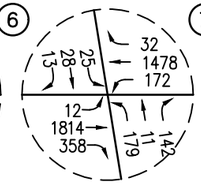
S. ASSOCIATED RD @
BIRCH ST



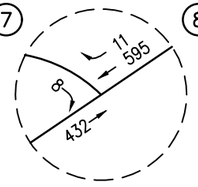
S. ASSOCIATED RD @
GREENBRIAR LN



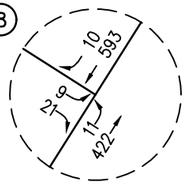
S. ASSOCIATED RD @
IMPERIAL HWY



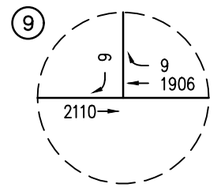
CASTLEGATE LN/
PLACENTIA AVE @
IMPERIAL HWY



S. ASSOCIATED RD @
BREA PLAZA DWY 2



S. ASSOCIATED RD @
BREA PLAZA DWY 3



BREA PLAZA DWY 4 @
IMPERIAL HWY

n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f6-4.dwg LDP 15:36:32 05-12-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

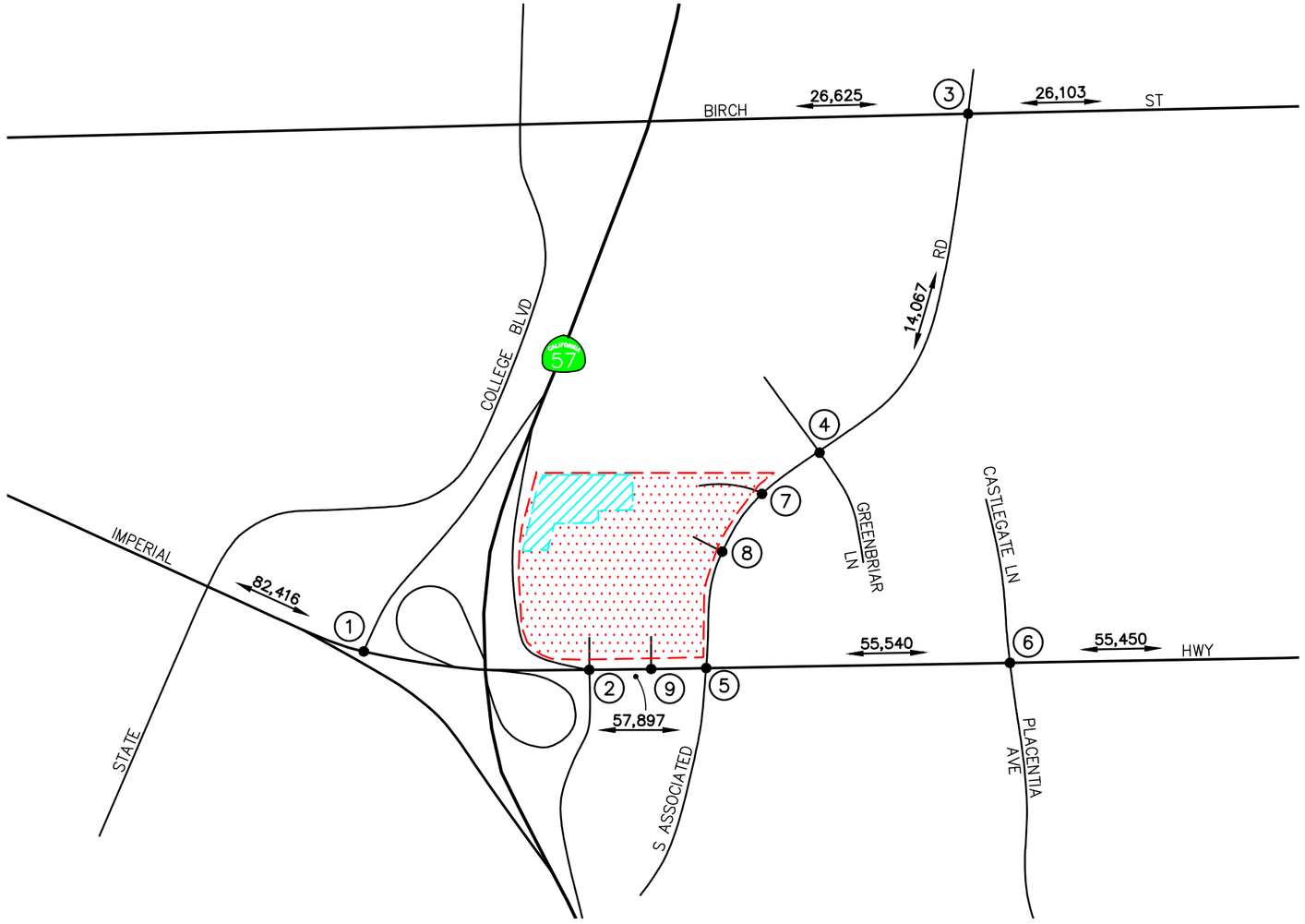
= BREA PLAZA

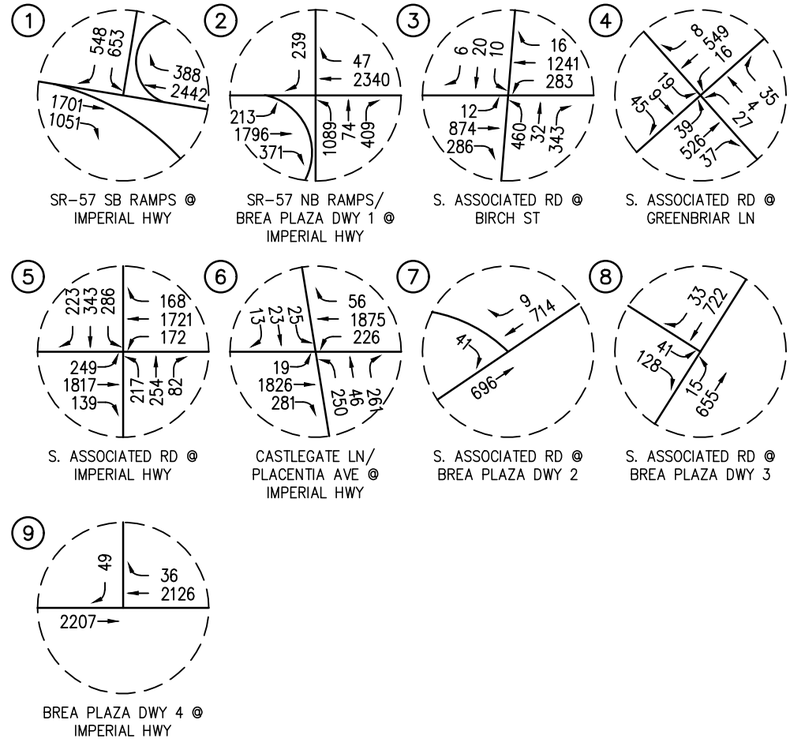
= PROJECT AREA

FIGURE 6-4

YEAR 2024 CUMULATIVE AM PEAK HOUR TRAFFIC VOLUMES

BREA PLAZA EXPANSION PROJECT, BREA





n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f6-5.dwg LDP 15:39:01 05-12-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

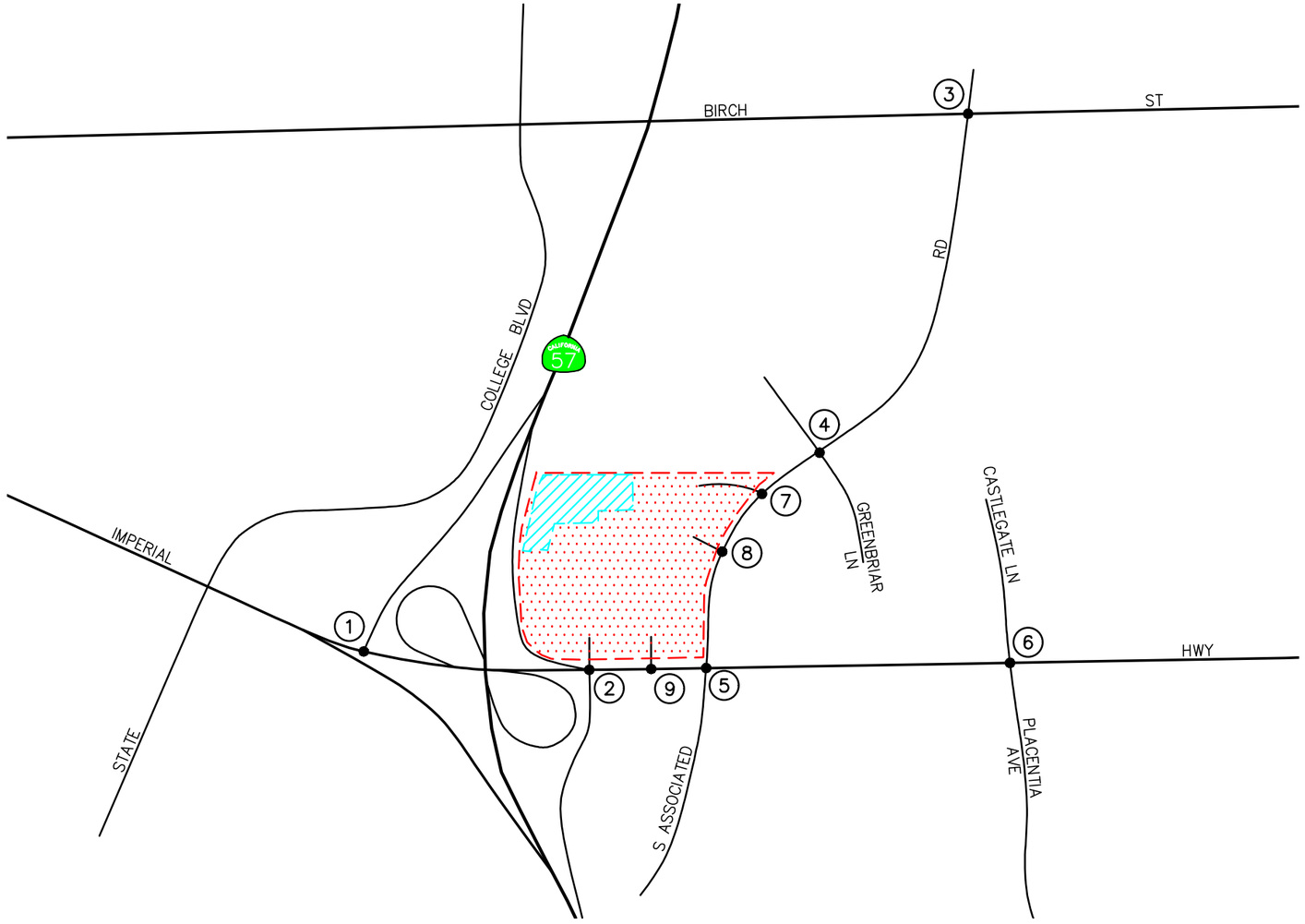
N NO SCALE

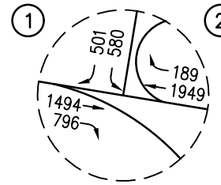
KEY

(#) = STUDY INTERSECTION
X,XXX = DAILY TRAFFIC VOLUMES
= BREA PLAZA
= PROJECT AREA

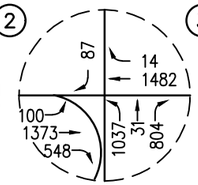
FIGURE 6-5

YEAR 2024 CUMULATIVE PM PEAK HOUR AND DAILY TRAFFIC VOLUMES
BREA PLAZA EXPANSION PROJECT, BREA

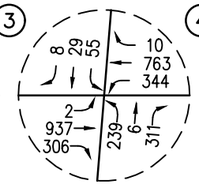




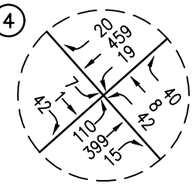
SR-57 SB RAMPS @
IMPERIAL HWY



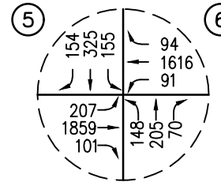
SR-57 NB RAMPS/
BREA PLAZA DWY 1 @
IMPERIAL HWY



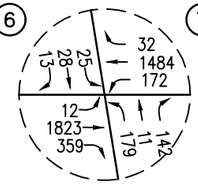
S. ASSOCIATED RD @
BIRCH ST



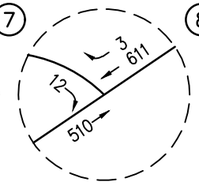
S. ASSOCIATED RD @
GREENBRIAR LN



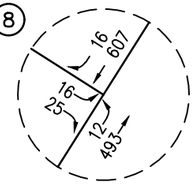
S. ASSOCIATED RD @
IMPERIAL HWY



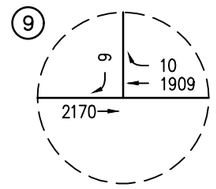
CASTLEGATE LN/
PLACENTIA AVE @
IMPERIAL HWY



S. ASSOCIATED RD @
BREA PLAZA DWY 2



S. ASSOCIATED RD @
BREA PLAZA DWY 3



BREA PLAZA DWY 4 @
IMPERIAL HWY

n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f6-6.dwg LDP 15:40:32 05-12-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

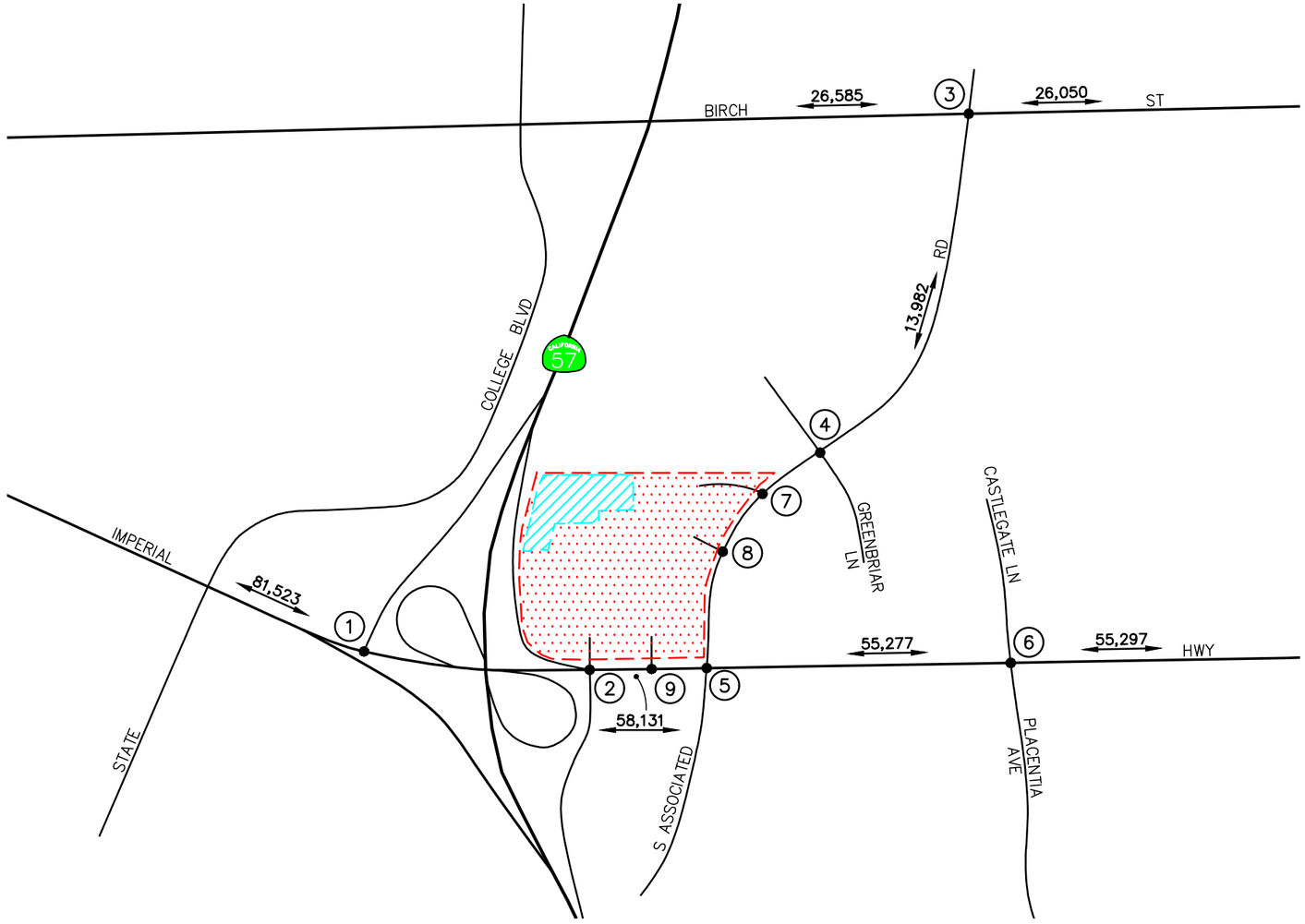
= BREA PLAZA

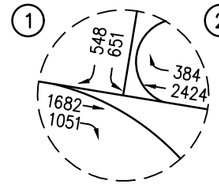
= PROJECT AREA

FIGURE 6-6

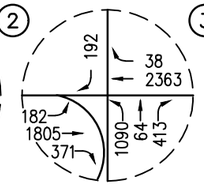
YEAR 2024 CUMULATIVE PLUS PROJECT AM PEAK HOUR TRAFFIC VOLUMES

BREA PLAZA EXPANSION PROJECT, BREA

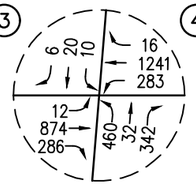




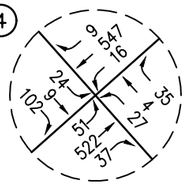
SR-57 SB RAMPS @
IMPERIAL HWY



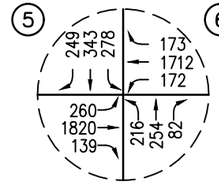
SR-57 NB RAMPS/
BREA PLAZA DWY 1 @
IMPERIAL HWY



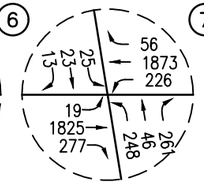
S. ASSOCIATED RD @
BIRCH ST



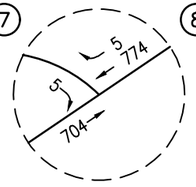
S. ASSOCIATED RD @
GREENBRIAR LN



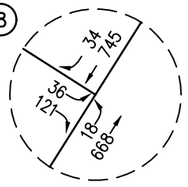
S. ASSOCIATED RD @
IMPERIAL HWY



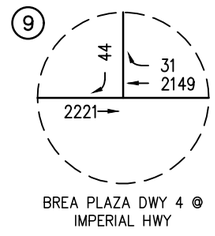
CASTLEGATE LN/
PLACENTIA AVE @
IMPERIAL HWY



S. ASSOCIATED RD @
BREA PLAZA DWY 2



S. ASSOCIATED RD @
BREA PLAZA DWY 3



BREA PLAZA DWY 4 @
IMPERIAL HWY

n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f6-7.dwg LDP 15:43:27 05-12-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

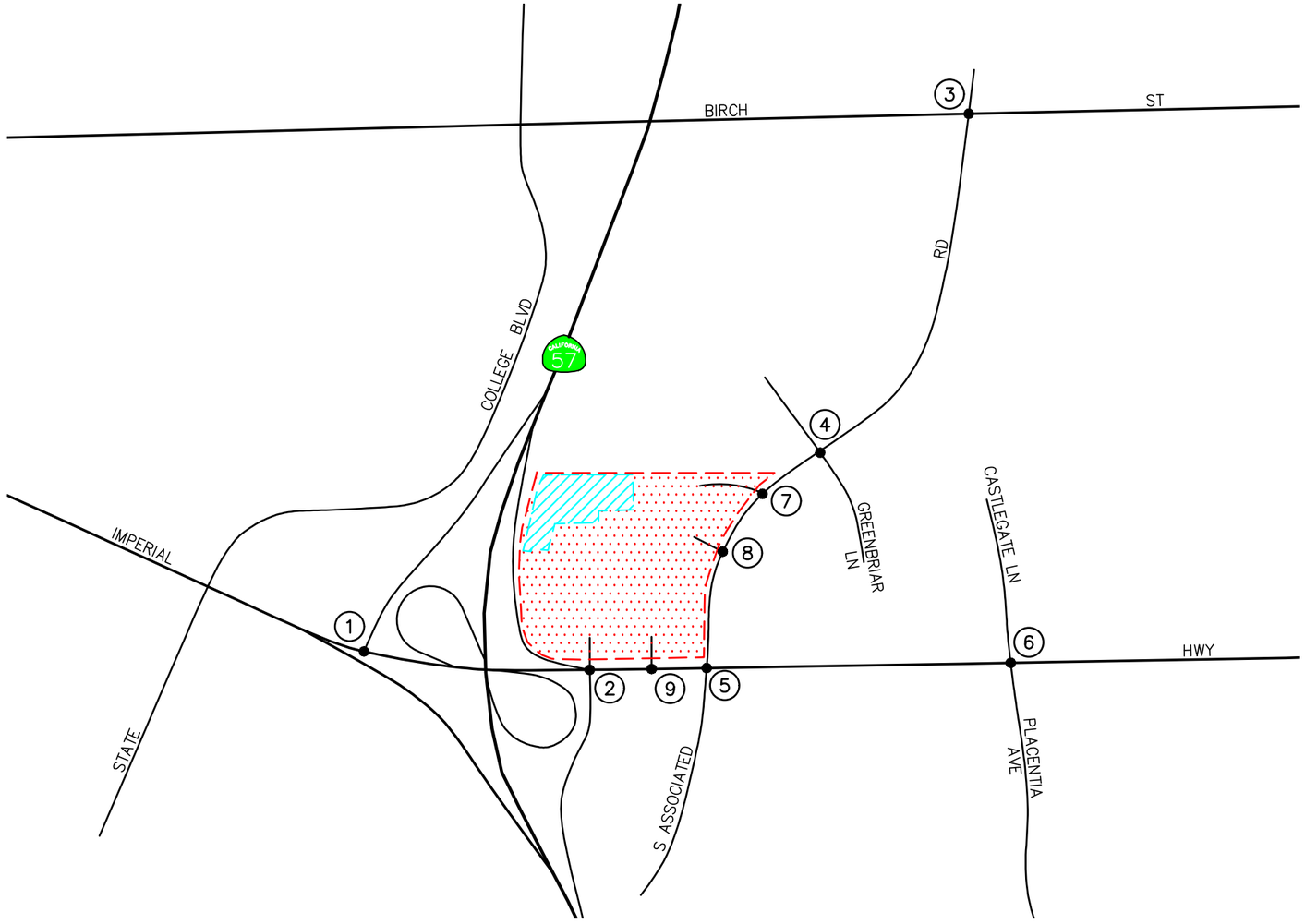
KEY

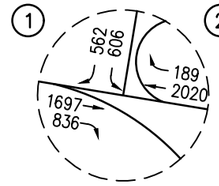
(#) = STUDY INTERSECTION
X,XXX = DAILY TRAFFIC VOLUMES
= BREA PLAZA
= PROJECT AREA

FIGURE 6-7

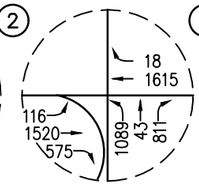
YEAR 2024 CUMULATIVE PLUS PROJECT PM PEAK HOUR AND DAILY TRAFFIC VOLUMES

BREA PLAZA EXPANSION PROJECT, BREA

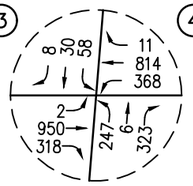




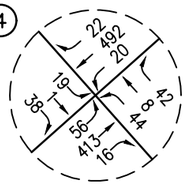
SR-57 SB RAMPS @
IMPERIAL HWY



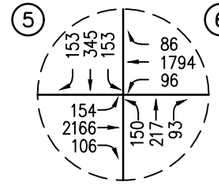
SR-57 NB RAMPS/
BREA PLAZA DWY 1 @
IMPERIAL HWY



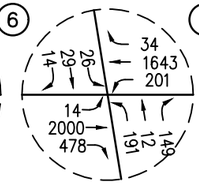
S. ASSOCIATED RD @
BIRCH ST



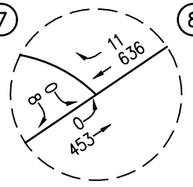
S. ASSOCIATED RD @
GREENBRIAR LN



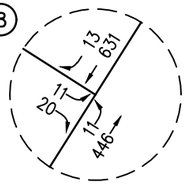
S. ASSOCIATED RD @
IMPERIAL HWY



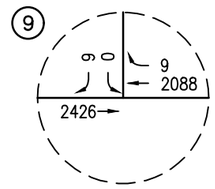
CASTLEGATE LN/
PLACENTIA AVE @
IMPERIAL HWY



S. ASSOCIATED RD @
BREA PLAZA DWY 2



S. ASSOCIATED RD @
BREA PLAZA DWY 3



BREA PLAZA DWY 4 @
IMPERIAL HWY

n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f6-8.dwg LDP 15:45:14 05-12-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

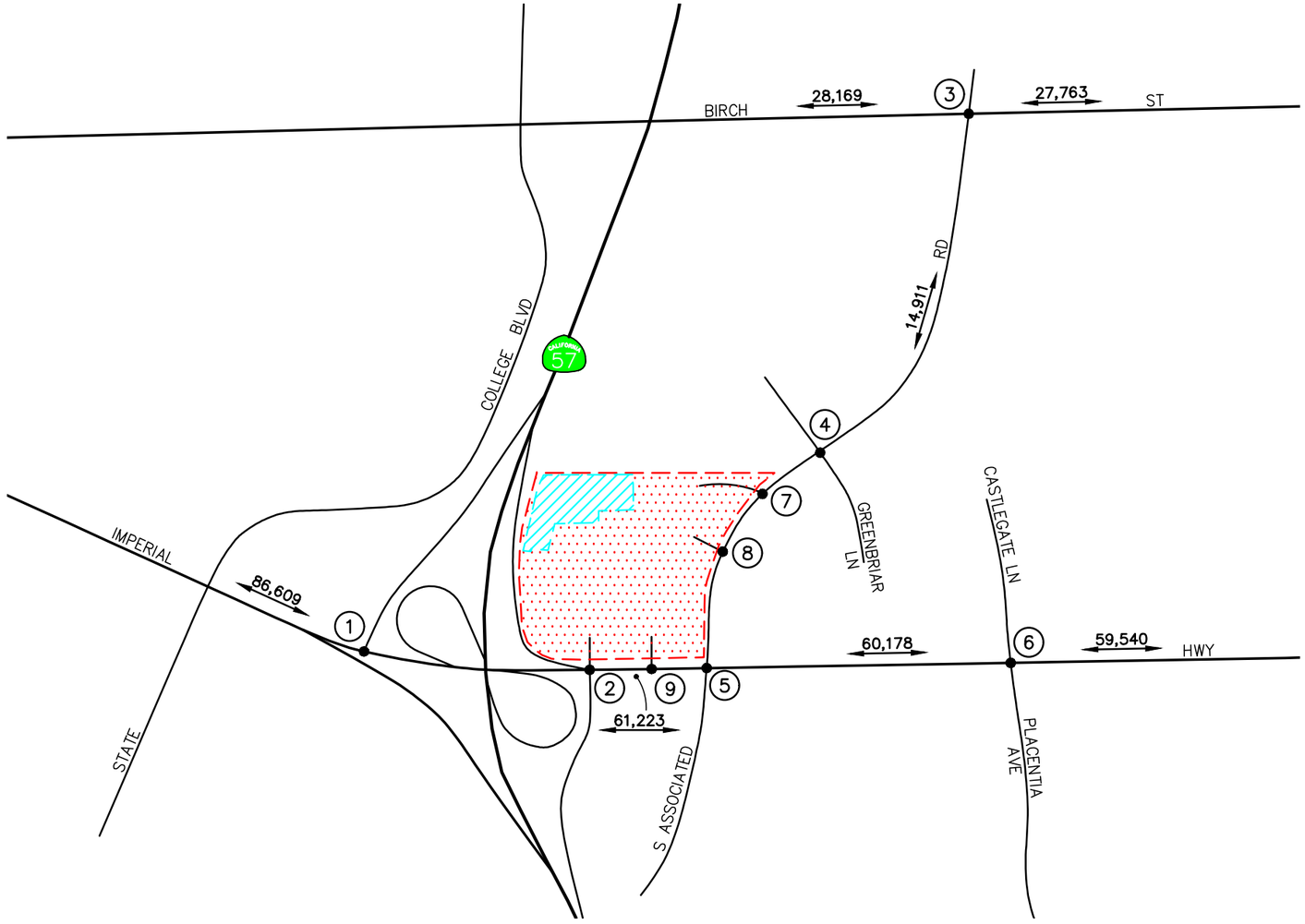
= BREA PLAZA

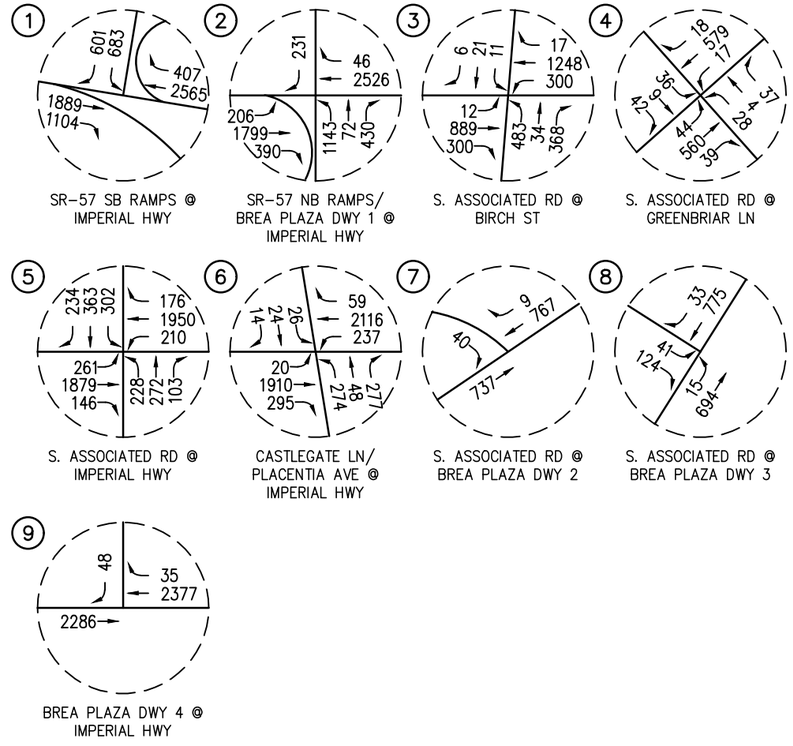
= PROJECT AREA

FIGURE 6-8

YEAR 2045 GENERAL PLAN BUILDOUT AM PEAK HOUR TRAFFIC VOLUMES

BREA PLAZA EXPANSION PROJECT, BREA





n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f6-9.dwg LDP 15:50:04 05-12-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

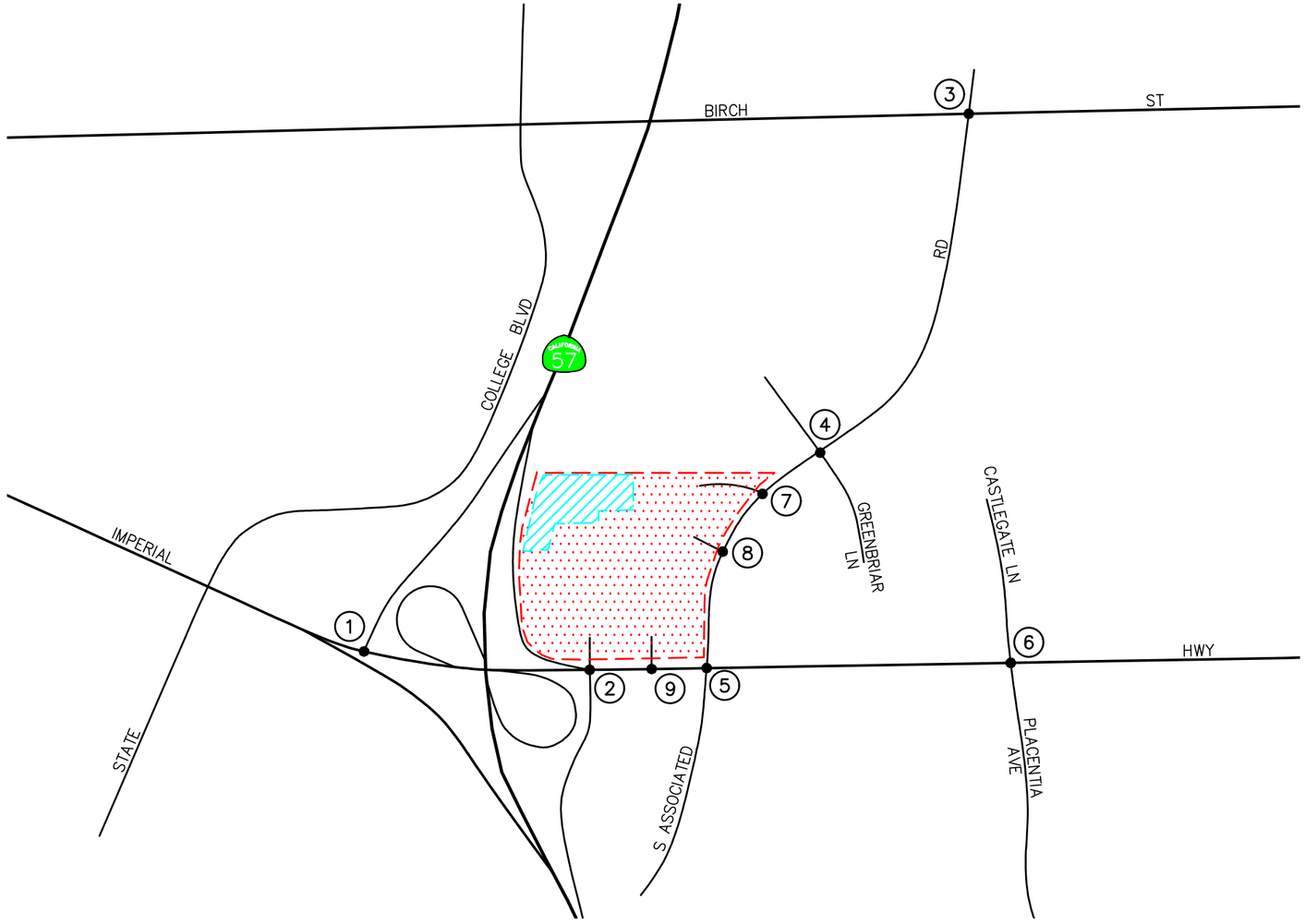
N NO SCALE

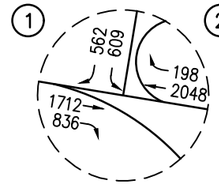
KEY

(#) = STUDY INTERSECTION
X,XXX = DAILY TRAFFIC VOLUMES
= BREA PLAZA
= PROJECT AREA

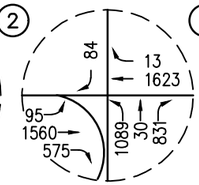
FIGURE 6-9

YEAR 2045 GENERAL PLAN BUILDOUT
PM PEAK HOUR AND DAILY TRAFFIC VOLUMES
BREA PLAZA EXPANSION PROJECT, BREA

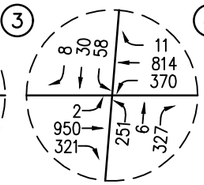




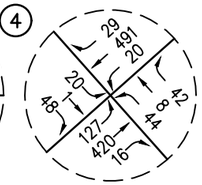
SR-57 SB RAMPS @
IMPERIAL HWY



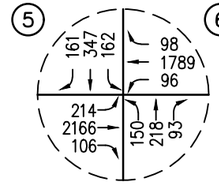
SR-57 NB RAMPS/
BREA PLAZA DWY 1 @
IMPERIAL HWY



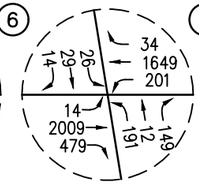
S. ASSOCIATED RD @
BIRCH ST



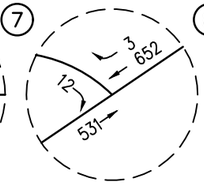
S. ASSOCIATED RD @
GREENBRIAR LN



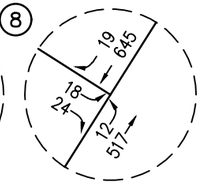
S. ASSOCIATED RD @
IMPERIAL HWY



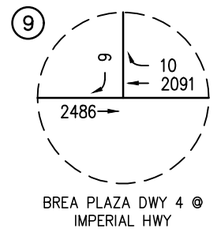
CASTLEGATE LN/
PLACENTIA AVE @
IMPERIAL HWY



S. ASSOCIATED RD @
BREA PLAZA DWY 2



S. ASSOCIATED RD @
BREA PLAZA DWY 3



BREA PLAZA DWY 4 @
IMPERIAL HWY

n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f6-10.dwg LDP 15:51:49 05-12-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

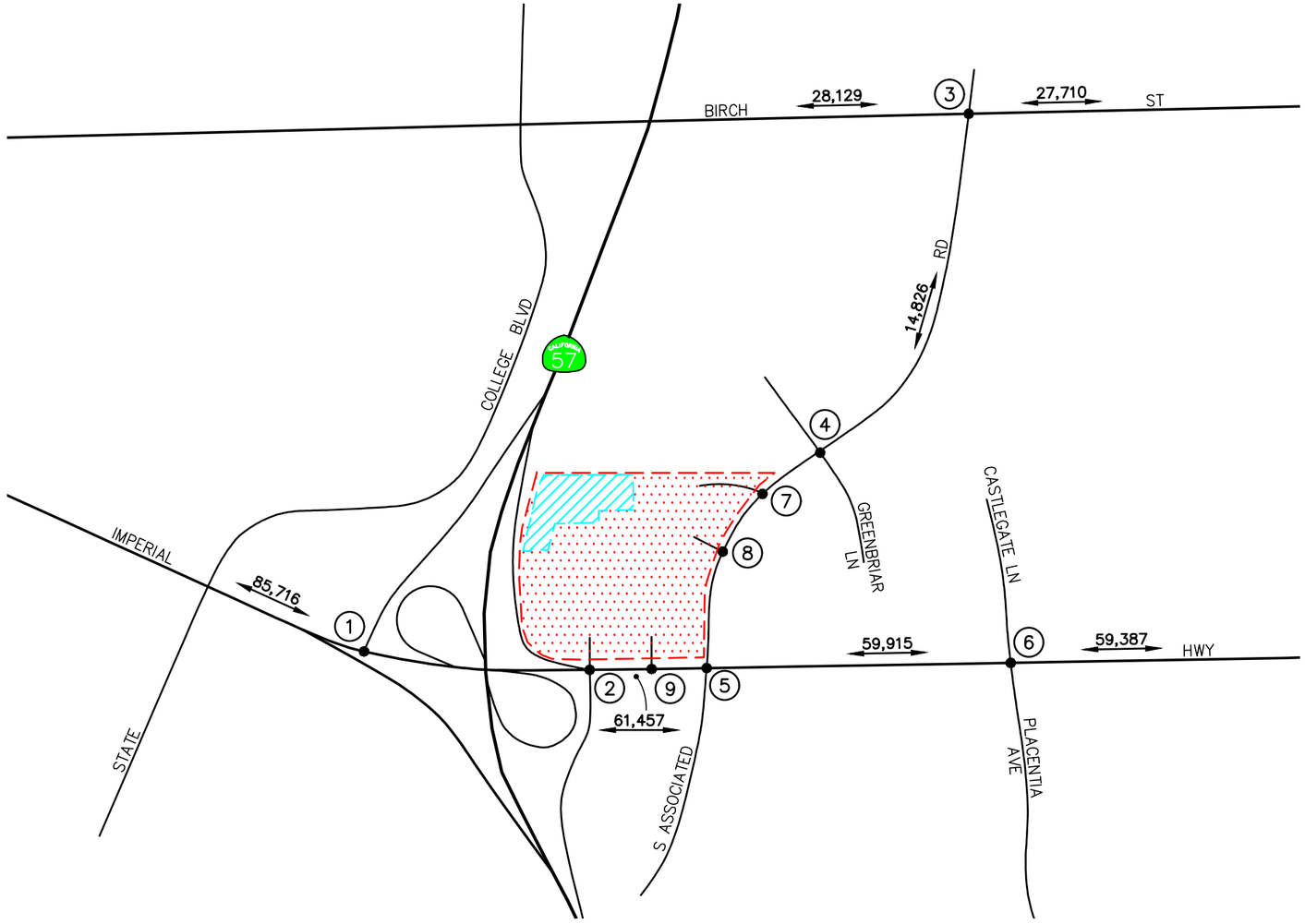
= BREA PLAZA

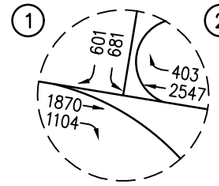
= PROJECT AREA

FIGURE 6-10

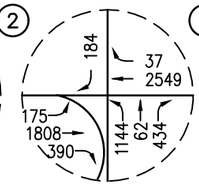
YEAR 2045 GENERAL PLAN BUILDOUT PLUS PROJECT AM PEAK HOUR TRAFFIC VOLUMES

BREA PLAZA EXPANSION PROJECT, BREA

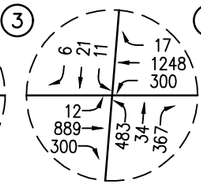




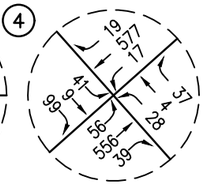
SR-57 SB RAMPS @
IMPERIAL HWY



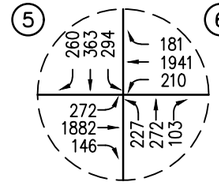
SR-57 NB RAMPS/
BREA PLAZA DWY 1 @
IMPERIAL HWY



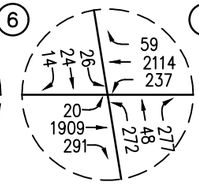
S. ASSOCIATED RD @
BIRCH ST



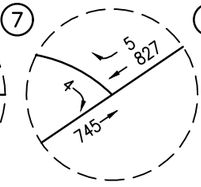
S. ASSOCIATED RD @
GREENBRIAR LN



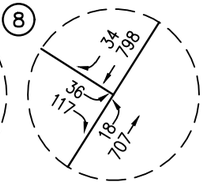
S. ASSOCIATED RD @
IMPERIAL HWY



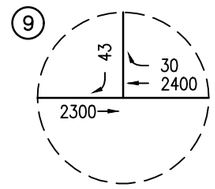
CASTLEGATE LN/
PLACENTIA AVE @
IMPERIAL HWY



S. ASSOCIATED RD @
BREA PLAZA DWY 2



S. ASSOCIATED RD @
BREA PLAZA DWY 3



BREA PLAZA DWY 4 @
IMPERIAL HWY

n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f6-11.dwg LDP 15:54:51 05-12-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION
X,XXX = DAILY TRAFFIC VOLUMES
= BREA PLAZA
= PROJECT AREA

FIGURE 6-11

YEAR 2045 GENERAL PLAN BUILDOUT PLUS PROJECT PM PEAK HOUR AND DAILY TRAFFIC VOLUMES

BREA PLAZA EXPANSION PROJECT, BREA

7.0 TRAFFIC ANALYSIS METHODOLOGY

7.1 Level of Service Consequences and Thresholds

The potential LOS consequences of the added project traffic volumes generated by the proposed Project during the weekday peak hours was evaluated based on analysis of future operating conditions at the nine (9) study intersections, without, then with, the proposed Project. The previously discussed capacity analysis procedures were utilized to investigate the future volume-to-capacity relationships and service level characteristics at each study intersection. The consequence of added project-related peak hour traffic on the LOS at each study intersection then evaluated using the following criteria.

7.1.1 *City of Brea*

For the ICU analysis, the need for potential Project-related improvements will be assessed based on the following criteria:

- The Project causes an intersection operating at LOS D or better to degrade to LOS E or F, or
- The Project increases traffic demand at a signalized study intersection by 0.020 or greater and the intersection is forecast to operate at LOS E or F.

For the HCM analysis, the need for potential Project-related improvements will be assessed based on the following criteria:

- The Project causes one or more study intersections operating at LOS D or better to degrade to LOS E or F, or
- The Project causes a change in control delay of 4 seconds for intersections already operating at LOS E, or
- The Project causes a change in control delay of 2 seconds for intersections already operating at LOS F.

7.2 Traffic Analysis Scenarios

The following scenarios are those for which volume/capacity calculations have been performed at the nine (9) study intersections for existing, near-term (Year 2024) and General Plan Buildout (Year 2045) traffic conditions:

1. Existing (Year 2021) Traffic Conditions;
2. Near-Term (Year 2024) Background Traffic Conditions (Existing plus Ambient Growth plus Related Projects);
3. Near-Term (Year 2024) Background Plus Project Traffic Conditions;
4. Scenario (3) with improvements to be implemented as conditions of approval (COA), if necessary;
5. General Plan Buildout[19] (Year 2045) Traffic Conditions;

[19] It should be noted that the General Plan Buildout assessment has been included since the proposed Project would require an amendment to the General Plan to accommodate a change is Zoning to allow for residential uses.

6. General Plan Buildout (Year 2045) Plus Project Traffic Conditions; and
7. Scenario (6) with improvements to be implemented as conditions of approval (COA), if necessary.

7.3 City of Brea Nexus Program

To satisfy the AB 1600 legislative requirement, development impact fees have been established for future traffic improvements within the City of Brea. Ensuring that every development project contributes a fair share of transportation improvements in the community, the City has introduced the "Transportation Improvement Nexus Program". In 2011, the Nexus Program was updated to reflect transportation needs and incorporate capacity improvements in an orderly fashion. The program ensures all future development with the City of Brea contributes on a fair share basis.

8.0 PEAK HOUR INTERSECTION CAPACITY ANALYSIS

8.1 Year 2024 Traffic Conditions - ICU

Table 8-1 summarizes the peak hour Level of Service results at the six (6) signalized study intersections evaluated under ICU analysis for the Year 2024 horizon year. The first column (1) of ICU/LOS values in *Table 8-1* presents a summary of existing peak hour traffic conditions. The second column (2) lists projected cumulative traffic conditions (existing plus ambient plus related projects traffic) based on existing intersection geometry, but without any traffic generated from the proposed Project. The third column (3) presents forecast Year 2024 near-term traffic conditions with the addition of Project traffic. The fourth column (4) shows the increase in ICU value due to the added peak hour Project trips and indicates whether the traffic associated with the proposed Project will exceed the LOS thresholds defined in this report. The fifth column (5) presents the resultant level of service with the inclusion of recommended traffic improvements, where needed, to achieve an acceptable level of service.

8.1.1 *Year 2024 Cumulative Traffic Conditions - ICU*

Review of column (2) of *Table 8-1* indicates that all of the signalized study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours under Year 2024 cumulative traffic conditions.

8.1.2 *Year 2024 Cumulative Plus Project Conditions - ICU*

Review of columns (3) and (4) of *Table 8-1* indicates that all of the signalized study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours with the addition of proposed Project traffic to Year 2024 cumulative traffic.

Appendix C presents the ICU LOS calculation worksheets for the study intersections.

TABLE 8-1

YEAR 2024 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Study Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2024 Cumulative Traffic Conditions		(3) Year 2024 Cumulative Plus Project Traffic Conditions		(4) Exceed LOS Thresholds		(5) Year 2024 Cumulative Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
1. SR-57 SB Ramps at Imperial Highway	E	AM	0.558	A	0.638	B	0.644	B	0.006	No	--	--
		PM	0.680	B	0.764	C	0.760	C	-0.004[20]	No	--	--
2. SR-57 NB Ramps/Brea Plaza Driveway 1 at Imperial Highway	E	AM	0.557	A	0.615	B	0.604	B	-0.011[21]	No	--	--
		PM	0.693	B	0.758	C	0.741	C	-0.017[21]	No	--	--
3. S. Associated Road at Birch Street	D	AM	0.603	B	0.628	B	0.631	B	0.003	No	--	--
		PM	0.602	B	0.625	B	0.625	B	0.000	No	--	--
4. S. Associated Road at Greenbriar Lane	D	AM	0.262	A	0.269	A	0.313	A	0.044	No	--	--
		PM	0.286	A	0.296	A	0.339	A	0.043	No	--	--
5. S. Associated Road at Imperial Highway	D	AM	0.691	B	0.721	C	0.723	C	0.002	No	--	--
		PM	0.763	C	0.800	D	0.801	D	0.001	No	--	--
6. Placentia Avenue/Castlegate Lane at Imperial Highway	D	AM	0.590	A	0.615	B	0.616	B	0.001	No	--	--
		PM	0.684	B	0.716	C	0.715	C	-0.001[20]	No	--	--
7. S. Associated Road at Brea Plaza Driveway 2	D	AM	--	--	--	--	--	--	--	--	--	--
		PM	--	--	--	--	--	--	--	--	--	--

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

[20] A reduction in delay is due to the negative net project volumes during the PM peak hour only.

[21] A reduction in delay is due to the shifting of volumes going to/from the Mercury Insurance site under Project conditions. Currently, cross-access between Mercury Insurance and Brea Plaza is currently allowed, however, the easement with Mercury Insurance will no longer be applicable as part of the proposed Project. Employees/patrons of Mercury Insurance will be expected to utilize Greenbriar Road to access their site rather than cutting through Brea Plaza. The reduction in delay is also due to the negative net project volumes during the PM peak hour only.

TABLE 8-1 (CONTINUED)

YEAR 2024 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Study Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2024 Cumulative Traffic Conditions		(3) Year 2024 Cumulative Plus Project Traffic Conditions		(4) Exceed LOS Thresholds		(5) Year 2024 Cumulative Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
8. S. Associated Road at Brea Plaza Driveway 3	D	AM	--	--	--	--	--	--	--	--	--	--
		PM	--	--	--	--	--	--	--	--	--	--
9. Brea Plaza Driveway 4 at Imperial Highway	D	AM	--	--	--	--	--	--	--	--	--	--
		PM	--	--	--	--	--	--	--	--	--	--

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

8.2 Year 2024 Traffic Conditions - HCM

Table 8-2 summarizes the peak hour Level of Service results at the nine (9) study intersections evaluated under HCM analysis for the Year 2024 horizon year. The first column (1) of HCM/LOS values in *Table 8-2* presents a summary of existing peak hour traffic conditions. The second column (2) lists projected cumulative traffic conditions (existing plus ambient plus related projects traffic) based on existing intersection geometry, but without any traffic generated from the proposed Project. The third column (3) presents forecast Year 2024 near-term traffic conditions with the addition of Project traffic. The fourth column (4) shows the increase in delay due to the added peak hour Project trips and indicates whether the traffic associated with the proposed Project will exceed the LOS thresholds defined in this report. The fifth column (5) presents the resultant level of service with the inclusion of recommended traffic improvements, where needed, to achieve an acceptable level of service.

8.2.1 *Year 2024 Cumulative Traffic Conditions - HCM*

Review of column (2) of *Table 8-2* indicates that one (1) intersection is forecast to operate adversely during the AM and/or PM peak hours under Year 2024 cumulative traffic conditions. The remaining study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours. The intersection operating adversely includes the following:

	AM Peak Hour		PM Peak Hour	
Study Intersection	**Delay (s/v)**	**LOS**	**Delay (s/v)**	**LOS**
9. Brea Plaza Driveway 4 at Imperial Highway	--	--	35.8	E

8.2.2 *Year 2024 Cumulative Plus Project Conditions - HCM*

Review of columns (3) and (4) of *Table 8-2* indicates that all of the study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours with the addition proposed Project traffic to Year 2024 cumulative traffic.

Although the intersection of Brea Plaza Driveway 4/Imperial Highway (Intersection #9) was operating adversely under Year 2024 cumulative traffic conditions, review of column (4) of *Table 8-2* indicates that the addition of the proposed Project traffic results in a reduction in delay in the PM peak hour. The reduction in delay is due to the negative net project volumes during the PM peak hour.

Appendix D presents the HCM LOS calculation worksheets for the study intersections.

TABLE 8-2

YEAR 2024 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - HCM

Study Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2024 Cumulative Traffic Conditions		(3) Year 2024 Cumulative Plus Project Traffic Conditions		(4) Exceed LOS Thresholds		(5) Year 2024 Cumulative Plus Project Plus Improvements Traffic Conditions	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Delay (s/v)	LOS	Increase	Yes/No	Delay (s/v)	LOS
1. SR-57 SB Ramps at Imperial Highway	E	AM	14.9	B	15.5	B	15.5	B	0.0	No	--	--
		PM	15.3	B	16.3	B	16.2	B	-0.1[22]	No	--	--
2. SR-57 NB Ramps/Brea Plaza Driveway 1 at Imperial Highway	E	AM	22.7	C	25.3	C	25.0	C	-0.3[23]	No	--	--
		PM	23.3	C	27.8	C	25.4	C	-2.4[23]	No	--	--
3. S. Associated Road at Birch Street	D	AM	27.9	C	28.6	C	28.9	C	0.3	No	--	--
		PM	27.5	C	27.9	C	27.9	C	0.0	No	--	--
4. S. Associated Road at Greenbriar Lane	D	AM	8.3	A	8.3	A	8.3	A	0.0	No	--	--
		PM	6.1	A	6.2	A	8.2	A	2.0	No	--	--
5. S. Associated Road at Imperial Highway	D	AM	26.7	C	28.9	C	30.4	C	1.5	No	--	--
		PM	39.5	D	40.6	D	42.4	D	1.8	No	--	--
6. Placentia Avenue/Castlegate Lane at Imperial Highway	D	AM	17.7	B	18.3	B	18.4	B	0.1	No	--	--
		PM	23.4	C	24.7	C	24.7	C	0.0	No	--	--
7. S. Associated Road at Brea Plaza Driveway 2	D	AM	10.3	B	10.4	B	10.5	B	0.1	No	--	--
		PM	11.1	B	11.3	B	11.2	B	-0.1[22]	No	--	--

Notes:

- s/v = seconds per vehicle
- **Bold HCM/LOS** values indicate adverse service levels based on the City LOS standards.

[22] A reduction in delay is due to the negative net project volumes during the PM peak hour only.

[23] A reduction in delay is due to the shifting of volumes going to/from the Mercury Insurance site under Project conditions. Currently, cross-access between Mercury Insurance and Brea Plaza is currently allowed, however, the easement with Mercury Insurance will no longer be applicable as part of the proposed Project. Employees/patrons of Mercury Insurance will be expected to utilize Greenbriar Road to access their site rather than cutting through Brea Plaza. The reduction in delay is also due to the negative net project volumes during the PM peak hour only.

TABLE 8-2 (CONTINUED)

YEAR 2024 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - HCM

Study Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2024 Cumulative Traffic Conditions		(3) Year 2024 Cumulative Plus Project Traffic Conditions		(4) Exceed LOS Thresholds		(5) Year 2024 Cumulative Plus Project Plus Improvements Traffic Conditions	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Delay (s/v)	LOS	Increase	Yes/No	Delay (s/v)	LOS
8. S. Associated Road at Brea Plaza Driveway 3	D	AM	12.5	B	12.7	B	14.2	B	1.5	No	--	--
		PM	16.3	C	16.9	C	17.0	C	0.1	No	--	--
9. Brea Plaza Driveway 4 at Imperial Highway	D	AM	21.4	C	23.4	C	23.4	C	0.0	No	--	--
		PM	30.9	D	**35.8**	**E**	35.0	D	-0.8[24]	No	--	--

Notes:

- s/v = seconds per vehicle
- **Bold HCM/LOS** values indicate adverse service levels based on the City LOS standards.

[24] A reduction in delay is due to the shifting of volumes going to/from the Mercury Insurance site under Project conditions. Currently, cross-access between Mercury Insurance and Brea Plaza is currently allowed, however, the easement with Mercury Insurance will no longer be applicable as part of the proposed Project. Employees/patrons of Mercury Insurance will be expected to utilize Greenbriar Road to access their site rather than cutting through Brea Plaza. The reduction in delay is also due to the negative net project volumes during the PM peak hour only.

8.3 Year 2045 General Plan Buildout Traffic Conditions - ICU

Table 8-3 summarizes the peak hour Level of Service results at the six (6) signalized study intersections evaluated under ICU analysis for the Year 2045. The first column (1) of ICU/LOS values in *Table 8-3* presents a summary of existing peak hour traffic conditions. The second column (2) lists projected Year 2045 General Plan Buildout traffic conditions based on existing intersection geometry, but without any traffic generated from the proposed Project. The third column (3) presents forecast Year 2045 General Plan Buildout traffic conditions with the addition of Project traffic. The fourth column (4) shows the increase in ICU value due to the added peak hour Project trips and indicates whether the traffic associated with the proposed Project will exceed the LOS thresholds defined in this report. The fifth column (5) presents the resultant level of service with the inclusion of recommended traffic improvements, where needed, to achieve an acceptable level of service.

8.3.1 *Year 2045 General Plan Buildout Traffic Conditions - ICU*

Review of column (2) of *Table 8-3* indicates that all of the signalized study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours under Year 2045 General Plan Buildout traffic conditions.

8.3.2 *Year 2045 General Plan Buildout Plus Project Traffic Conditions - ICU*

Review of columns (3) and (4) of *Table 8-3* indicates that all of the signalized study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours with the addition of proposed Project traffic to Year 2045 General Plan Buildout traffic.

Appendix C presents the ICU LOS calculation worksheets for the study intersections.

TABLE 8-3

YEAR 2045 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Study Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2045 General Plan Buildout Traffic Conditions		(3) Year 2045 General Plan Buildout Plus Project Traffic Conditions		(4) Exceed LOS Thresholds		(5) Year 2045 General Plan Buildout Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
1. SR-57 SB Ramps at Imperial Highway	E	AM	0.558	A	0.675	B	0.681	B	0.006	No	--	--
		PM	0.680	B	0.805	D	0.801	D	-0.004[25]	No	--	--
2. SR-57 NB Ramps/Brea Plaza Driveway 1 at Imperial Highway	E	AM	0.557	A	0.644	B	0.643	B	-0.001[26]	No	--	--
		PM	0.693	B	0.791	C	0.774	C	-0.017[26]	No	--	--
3. S. Associated Road at Birch Street	D	AM	0.603	B	0.647	B	0.650	B	0.003	No	--	--
		PM	0.602	B	0.646	B	0.646	B	0.000	No	--	--
4. S. Associated Road at Greenbriar Lane	D	AM	0.262	A	0.301	A	0.345	A	0.044	No	--	--
		PM	0.286	A	0.319	A	0.362	A	0.043	No	--	--
5. S. Associated Road at Imperial Highway	D	AM	0.691	B	0.799	C	0.800	D	0.001	No	--	--
		PM	0.763	C	0.851	D	0.851	D	0.000	No	--	--
6. Placentia Avenue/Castlegate Lane at Imperial Highway	D	AM	0.590	A	0.673	B	0.675	B	0.002	No	--	--
		PM	0.684	B	0.749	C	0.749	C	0.000	No	--	--
7. S. Associated Road at Brea Plaza Driveway 2	D	AM	--	--	--	--	--	--	--	--	--	--
		PM	--	--	--	--	--	--	--	--	--	--

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

[25] A reduction in delay is due to the negative net project volumes during the PM peak hour only.

[26] A reduction in delay is due to the shifting of volumes going to/from the Mercury Insurance site under Project conditions. Currently, cross-access between Mercury Insurance and Brea Plaza is currently allowed, however, the easement with Mercury Insurance will no longer be applicable as part of the proposed Project. Employees/patrons of Mercury Insurance will be expected to utilize Greenbriar Road to access their site rather than cutting through Brea Plaza. The reduction in delay is also due to the negative net project volumes during the PM peak hour only.

TABLE 8-3 (CONTINUED)

YEAR 2045 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Study Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2045 General Plan Buildout Traffic Conditions		(3) Year 2045 General Plan Buildout Plus Project Traffic Conditions		(4) Exceed LOS Thresholds		(5) Year 2045 General Plan Buildout Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
8. S. Associated Road at Brea Plaza Driveway 3	D	AM	--	--	--	--	--	--	--	--	--	--
		PM	--	--	--	--	--	--	--	--	--	--
9. Brea Plaza Driveway 4 at Imperial Highway	D	AM	--	--	--	--	--	--	--	--	--	--
		PM	--	--	--	--	--	--	--	--	--	--

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

8.4 Year 2045 General Plan Buildout Traffic Conditions - HCM

Table 8-4 summarizes the peak hour Level of Service results at the nine (9) study intersections evaluated under HCM analysis for the Year 2045. The first column (1) of HCM/LOS values in *Table 8-4* presents a summary of existing peak hour traffic conditions. The second column (2) lists projected Year 2045 General Plan Buildout traffic conditions based on existing intersection geometry, but without any traffic generated from the proposed Project. The third column (3) presents forecast Year 2045 General Plan Buildout traffic conditions with the addition of Project traffic. The fourth column (4) shows the increase in delay due to the added peak hour Project trips and indicates whether the traffic associated with the proposed Project will exceed the LOS thresholds defined in this report. The fifth column (5) presents the resultant level of service with the inclusion of recommended traffic improvements, where needed, to achieve an acceptable level of service.

8.4.1 *Year 2045 General Plan Buildout Traffic Conditions - HCM*

Review of column (2) of *Table 8-4* indicates that one (1) intersection is forecast to operate adversely during the AM and/or PM peak hours under Year 2045 General Plan Buildout traffic conditions. The remaining study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours. The intersection operating adversely includes the following:

	AM Peak Hour		PM Peak Hour	
Study Intersection	**Delay (s/v)**	**LOS**	**Delay (s/v)**	**LOS**
9. Brea Plaza Driveway 4 at Imperial Highway	--	--	39.6	E

8.4.2 *Year 2045 General Plan Buildout Plus Project Traffic Conditions – HCM*

Review of column (3) of *Table 8-4* indicates that one (1) intersection is forecast to operate adversely during the AM and/or PM peak hours with the addition of proposed Project traffic to Year 2045 General Plan Buildout traffic. The remaining study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours. The intersection operating adversely includes the following:

	AM Peak Hour		PM Peak Hour	
Study Intersection	**Delay (s/v)**	**LOS**	**Delay (s/v)**	**LOS**
9. Brea Plaza Driveway 4 at Imperial Highway	--	--	38.8	E

Review of column (4) of *Table 8-4* indicates that the addition of proposed Project traffic at the intersection of Brea Plaza Driveway 4/Imperial Highway (Intersection #9) results in a reduction in delay in the PM peak hour. The reduction in delay is due to the negative net project volumes during the PM peak hour. Therefore, Project-related improvements at this location are not required based on the criteria defined in this report.

Appendix D presents the HCM LOS calculation worksheets for the study intersections.

TABLE 8-4

YEAR 2045 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - HCM

Study Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2045 General Plan Buildout Traffic Conditions		(3) Year 2045 General Plan Buildout Plus Project Traffic Conditions		(4) Exceed LOS Thresholds		(5) Year 2045 General Plan Buildout Plus Project Plus Improvements Traffic Conditions	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Delay (s/v)	LOS	Increase	Yes/No	Delay (s/v)	LOS
1. SR-57 SB Ramps at Imperial Highway	E	AM	14.9	B	14.9	B	14.9	B	0.0	No	--	--
		PM	15.3	B	16.4	B	16.4	B	0.0	No	--	--
2. SR-57 NB Ramps/Brea Plaza Driveway 1 at Imperial Highway	E	AM	22.7	C	24.0	C	23.0	C	-1.0[27]	No	--	--
		PM	23.3	C	27.8	C	26.1	C	-1.7[27]	No	--	--
3. S. Associated Road at Birch Street	D	AM	27.9	C	25.3	C	25.5	C	0.2	No	--	--
		PM	27.5	C	27.1	C	27.1	C	0.0	No	--	--
4. S. Associated Road at Greenbriar Lane	D	AM	8.3	A	6.8	A	6.8	A	0.0	No	--	--
		PM	6.1	A	6.1	A	7.9	A	1.8	No	--	--
5. S. Associated Road at Imperial Highway	D	AM	26.7	C	27.9	C	30.2	C	2.3	No	--	--
		PM	39.5	D	39.6	D	40.1	D	0.5	No	--	--
6. Placentia Avenue/Castlegate Lane at Imperial Highway	D	AM	17.7	B	17.5	B	17.6	B	0.1	No	--	--
		PM	23.4	C	23.1	C	23.1	C	0.0	No	--	--
7. S. Associated Road at Brea Plaza Driveway 2	D	AM	10.3	B	10.4	B	10.5	B	0.1	No	--	--
		PM	11.1	B	11.3	B	11.2	B	-0.1[28]	No	--	--

Notes:

- s/v = seconds per vehicle
- **Bold HCM/LOS** values indicate adverse service levels based on the City LOS standards.

[27] A reduction in delay is due to the shifting of volumes going to/from the Mercury Insurance site under Project conditions. Currently, cross-access between Mercury Insurance and Brea Plaza is currently allowed, however, the easement with Mercury Insurance will no longer be applicable as part of the proposed Project. Employees/patrons of Mercury Insurance will be expected to utilize Greenbriar Road to access their site rather than cutting through Brea Plaza. The reduction in delay is also due to the negative net project volumes during the PM peak hour only.

[28] A reduction in delay is due to the negative net project volumes during the PM peak hour only.

TABLE 8-4 (CONTINUED)

YEAR 2045 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - HCM

Study Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2045 General Plan Buildout Traffic Conditions		(3) Year 2045 General Plan Buildout Plus Project Traffic Conditions		(4) Exceed LOS Thresholds		(5) Year 2045 General Plan Buildout Plus Project Plus Improvements Traffic Conditions	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Delay (s/v)	LOS	Increase	Yes/No	Delay (s/v)	LOS
8. S. Associated Road at Brea Plaza Driveway 3	D	AM	12.5	B	13.3	B	14.6	B	1.3	No	--	--
		PM	16.3	C	17.0	C	17.1	C	0.1	No	--	--
9. Brea Plaza Driveway 4 at Imperial Highway	D	AM	21.4	C	24.6	C	24.7	C	0.1	No	--	--
		PM	30.9	D	**39.6**	**E**	**38.8**	**E**	-0.8[29]	No	--	--

Notes:

- s/v = seconds per vehicle
- **Bold HCM/LOS** values indicate adverse service levels based on the City LOS standards.

[29] A reduction in delay is due to the negative net project volumes during the PM peak hour only.

9.0 INTERSECTION VEHICLE QUEUEING EVALUATION

A queueing evaluation has been completed at the nine (9) study intersections to assess if the stacking requirements with the proposed Project are adequate. In addition, it is our understanding that Caltrans has concerns regarding safety and queuing issues due to weaving along Imperial Highway at the SR-57 NB On-Ramp, located approximately 150 feet from the Brea Plaza Driveway 1.

The queuing evaluation was conducted for Year 2024 Cumulative and Year 2045 General Plan Buildout traffic conditions based on the Average Queue methodology, which calculates the average queue value in terms of number of vehicles per lane. At signalized intersections, the storage length for left-turn and right-turn lanes may be based on one and one-half (1½) to two (2) times the average number of vehicles that would store per signal cycle[30]. For the purposes of this traffic analysis, the minimum storage requirement for left-turn lanes and right-turn lanes was calculated by taking 1½ times the average queue length. (Minimum required storage = Q_{av} (feet) x 1.5). The storage lengths at unsignalized intersection locations are based on 95th Percentile methodology.

It should be noted that the Synchro software takes into consideration traffic volume data, lane configurations, traffic signal phasing and potential weaving between intersections in order to calculate the queues for each movement. The existing storage lengths were determined based on a review of aerial maps of the subject intersections obtained from Google Earth and field reviews conducted by LLG Engineers. An average vehicle length of 25 feet is assumed for the purposes of this analysis.

9.1 Year 2024 Traffic Conditions

Table 9-1 presents the AM and PM peak hour queueing analyses results for the nine (9) study intersections. Column (1) presents the queueing results for Year 2024 Cumulative traffic conditions. Column (2) presents the queueing results for Year 2024 Cumulative Plus Project traffic conditions.

9.1.1 *Year 2024 Cumulative Traffic Conditions*

Review of column (1) of *Table 9-1* indicates that the queues for the nine (9) study intersections are considered adequate under Year 2024 Cumulative traffic conditions.

9.1.2 *Year 2024 Cumulative Plus Project Traffic Conditions*

Review of column (2) of *Table 9-1* indicates that the queues for the nine (9) study intersections are considered adequate with the addition of project traffic to Year 2024 Cumulative traffic. Furthermore, review of SR-57 NB Ramps/Brea Plaza Driveway 1/Imperial Highway (Intersection #2) indicates that the proposed Project will not adversely affect the queues at the intersection or adversely contribute to the potential weaving along Imperial Highway between the SR-57 NB On-Ramp and Brea Plaza Driveway 1.

Appendix F presents the Synchro queuing worksheets for the study intersections.

[30] Source: Highway Design Manual, Intersections at Grade, page 400-9, CALTRANS

9.2 Year 2045 General Plan Buildout Traffic Conditions

Table 9-2 presents the AM and PM peak hour queueing analyses results for the nine (9) study intersections. Column (1) presents the queueing results for Year 2045 General Plan Buildout traffic conditions. Column (2) presents the queueing results for Year 2045 General Plan Buildout Plus Project traffic conditions.

9.2.1 *Year 2045 General Plan Buildout Traffic Conditions*

Review of column (1) of *Table 9-2* indicates that the queues for the nine (9) study intersections are considered adequate under Year 2045 General Plan Buildout traffic conditions.

9.2.2 *Year 2045 General Plan Buildout Plus Project Traffic Conditions*

Review of column (2) of *Table 9-2* indicates that the queues for the nine (9) study intersections are considered adequate with the addition of project traffic to Year 2045 General Plan Buildout traffic. Furthermore, review of SR-57 NB Ramps/Brea Plaza Driveway 1/Imperial Highway (Intersection #2) indicates that the proposed Project will not adversely affect the queues at the intersection or adversely contribute to the potential weaving along Imperial Highway between the SR-57 NB On-Ramp and Brea Plaza Driveway 1.

Appendix F presents the Synchro queuing worksheets for the study intersections.

TABLE 9-1

YEAR 2024 PEAK HOUR INTERSECTION QUEUING ANALYSIS

Study Intersections	Estimated Storage Provided (feet)	(1) Year 2024 Cumulative Traffic Conditions				(2) Year 2024 Cumulative Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required[31]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[31]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[31]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[31]	Adequate Storage (Yes / No)
1. SR-57 SB Ramps at Imperial Highway									
Southbound Left-Turn	1,300	398	Yes	456	Yes	401	Yes	455	Yes
Southbound Left/Right-Turn	1,300	398	Yes	456	Yes	401	Yes	455	Yes
Southbound Right-Turn	1,300[32]	401	Yes	456	Yes	401	Yes	456	Yes
2. SR-57 NB Ramps/Brea Plaza Driveway 1 at Imperial Highway									
Northbound Left-Turn	955[33]	500	Yes	494	Yes	500	Yes	495	Yes
Northbound Left/Through/Right	1,300	570	Yes	525	Yes	582	Yes	521	Yes
Northbound Right-Turn	1,300[34]	417	Yes	357	Yes	425	Yes	350	Yes
Southbound Right-Turn	145[35]	25	Yes	129	Yes	39	Yes	93	Yes
Eastbound Left-turn	260	162	Yes	258	Yes	132	Yes	216	Yes
Eastbound Through	990	510	Yes	438	Yes	531	Yes	437	Yes

31 Maximum queue is calculated by multiplying the *Average Queue* by a factor of 1.5 for signalized intersections. Maximum queue is based on the 95th percentile for unsignalized intersections.

32 The southbound right-turn pocket consists of approximately 265 feet of storage; however, an additional 1,035 feet of storage from the shared left/right-turn lane can accommodate the remaining vehicles.

33 The northbound left-turn consists of dual lanes. The first lane consists of approximately 1,300 feet of storage and the second lane consists of approximately 610 feet of storage. The storage reported is the average of both lanes.

34 The northbound right-turn pocket consists of approximately 500 feet or storage; however, an additional 800 feet of storage from the shared left/thru/right lane can accommodate the remaining vehicles.

35 The turn-lane consists of dual lanes.

TABLE 9-1 (CONTINUED)

YEAR 2024 PEAK HOUR INTERSECTION QUEUING ANALYSIS

Study Intersections	Estimated Storage Provided (feet)	(1) Year 2024 Cumulative Traffic Conditions				(2) Year 2024 Cumulative Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required[36]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[36]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[36]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[36]	Adequate Storage (Yes / No)
2. *SR-57 NB Ramps/Brea Plaza Driveway 1 at Imperial Highway (Continued)*									
Westbound Through	435	126	Yes	209	Yes	116	Yes	215	Yes
Westbound Through/Right	435	126	Yes	209	Yes	116	Yes	215	Yes
3. S. Associated Road at Birch Street									
Northbound Left-Turn	298[37]	173	Yes	275	Yes	167	Yes	272	Yes
Northbound Right-Turn	230	162	Yes	189	Yes	147	Yes	185	Yes
Southbound Left-Turn	100	66	Yes	25	Yes	66	Yes	25	Yes
Eastbound Left-turn	150	25	Yes	25	Yes	25	Yes	25	Yes
Westbound Left-Turn	220[38]	231	Yes[39]	182	Yes	234	Yes[39]	182	Yes
4. S. Associated Road at Greenbriar Lane									
Northbound Left-Turn	100	25	Yes	25	Yes	25	Yes	25	Yes
Southbound Left-Turn	110	25	Yes	25	Yes	25	Yes	25	Yes

[36] Maximum queue is calculated by multiplying the *Average Queue* by a factor of 1.5 for signalized intersections. Maximum queue is based on the 95th percentile for unsignalized intersections.

[37] The northbound left-turn consists of dual lanes. The first lane consists of approximately 370 feet of storage and the second lane consists of approximately 225 feet of storage. The storage reported is the average of both lanes.

[38] The turn-lane consists of dual lanes.

[39] The remaining queue can be accommodated within the transition area of the turn-lane.

TABLE 9-1 (CONTINUED)

YEAR 2024 PEAK HOUR INTERSECTION QUEUING ANALYSIS

Study Intersections	Estimated Storage Provided (feet)	(1) Year 2024 Cumulative Traffic Conditions				(2) Year 2024 Cumulative Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required[40]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[40]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[40]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[40]	Adequate Storage (Yes / No)
5. S. Associated Road at Imperial Highway									
Northbound Left-Turn	170[41]	101	Yes	143	Yes	101	Yes	141	Yes
Southbound Left-Turn	210[42]	96	Yes	239	Yes[43]	104	Yes	225	Yes[43]
Southbound Right-Turn	215	25	Yes	25	Yes	25	Yes	25	Yes
Eastbound Left-turn	340	195	Yes	294	Yes	275	Yes	308	Yes
Westbound Left-Turn	200	113	Yes	212	Yes[43]	113	Yes	213	Yes[43]
6. Placentia Avenue/Castlegate Lane at Imperial Highway									
Northbound Left-Turn	195	123	Yes	192	Yes	123	Yes	191	Yes
Northbound Right-Turn	195	25	Yes	25	Yes	25	Yes	25	Yes
Southbound Left-Turn	85	42	Yes	44	Yes	42	Yes	44	Yes
Eastbound Left-turn	140	25	Yes	25	Yes	25	Yes	25	Yes
Eastbound Right-Turn	200	25	Yes	25	Yes	25	Yes	25	Yes
Westbound Left-Turn	225	216	Yes	267	Yes[43]	216	Yes	267	Yes[43]

[40] Maximum queue is calculated by multiplying the *Average Queue* by a factor of 1.5 for signalized intersections. Maximum queue is based on the 95th percentile for unsignalized intersections.

[41] The northbound left-turn consists of dual lanes. The first lane consists of approximately 240 feet of storage and the second lane consists of approximately 100 feet of storage. The storage reported is the average of both lanes.

[42] The turn-lane consists of dual lanes.

[43] The remaining queue can be accommodated within the transition area of the turn-lane.

TABLE 9-1 (CONTINUED)

YEAR 2024 PEAK HOUR INTERSECTION QUEUING ANALYSIS

Study Intersections	Estimated Storage Provided (feet)	(1) Year 2024 Cumulative Traffic Conditions				(2) Year 2024 Cumulative Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required[44]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[44]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[44]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[44]	Adequate Storage (Yes / No)
7. S. Associated Road at Brea Plaza Driveway 2									
Eastbound Right-Turn	90	25	Yes	25	Yes	25	Yes	25	Yes
8. S. Associated Road at Brea Plaza Driveway 3									
Northbound Left-Turn	90	25	Yes	25	Yes	25	Yes	25	Yes
Eastbound Left-Turn	75	25	Yes	25	Yes	25	Yes	25	Yes
Eastbound Right-Turn	75	25	Yes	25	Yes	25	Yes	25	Yes
9. Brea Plaza Driveway 4 at Imperial Highway									
Southbound Right-Turn	160	25	Yes	25	Yes	25	Yes	25	Yes

[44] Maximum queue is calculated by multiplying the *Average Queue* by a factor of 1.5 for signalized intersections. Maximum queue is based on the 95th percentile for unsignalized intersections.

TABLE 9-2

YEAR 2045 PEAK HOUR INTERSECTION QUEUING ANALYSIS

Study Intersections	Estimated Storage Provided (feet)	(1) Year 2045 General Plan Buildout Traffic Conditions				(2) Year 2045 General Plan Buildout Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required[45]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[45]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[45]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[45]	Adequate Storage (Yes / No)
1. SR-57 SB Ramps at Imperial Highway									
Southbound Left-Turn	1,300	383	Yes	467	Yes	381	Yes	465	Yes
Southbound Left/Right-Turn	1,300	383	Yes	467	Yes	381	Yes	465	Yes
Southbound Right-Turn	1,300[46]	374	Yes	464	Yes	384	Yes	464	Yes
2. SR-57 NB Ramps/Brea Plaza Driveway 1 at Imperial Highway									
Northbound Left-Turn	955[47]	467	Yes	492	Yes	467	Yes	494	Yes
Northbound Left/Through/Right	1,300	518	Yes	521	Yes	527	Yes	509	Yes
Northbound Right-Turn	1,300[48]	378	Yes	350	Yes	383	Yes	350	Yes
Southbound Right-Turn	145[49]	25	Yes	104	Yes	25	Yes	72	Yes
Eastbound Left-turn	260	137	Yes	240	Yes	111	Yes	203	Yes
Eastbound Through	990	530	Yes	416	Yes	548	Yes	414	Yes

45 Maximum queue is calculated by multiplying the *Average Queue* by a factor of 1.5 for signalized intersections. Maximum queue is based on the 95th percentile for unsignalized intersections.

46 The southbound right-turn pocket consists of approximately 265 feet of storage; however, an additional 1,035 feet of storage from the shared left/right-turn lane can accommodate the remaining vehicles.

47 The northbound left-turn consists of dual lanes. The first lane consists of approximately 1,300 feet of storage and the second lane consists of approximately 610 feet of storage. The storage reported is the average of both lanes.

48 The northbound right-turn pocket consists of approximately 500 feet or storage; however, an additional 800 feet of storage from the shared left/thru/right lane can accommodate the remaining vehicles.

49 The turn-lane consists of dual lanes.

TABLE 9-2 (CONTINUED)

YEAR 2045 PEAK HOUR INTERSECTION QUEUING ANALYSIS

Study Intersections	Estimated Storage Provided (feet)	(1) Year 2045 General Plan Buildout Traffic Conditions				(2) Year 2045 General Plan Buildout Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required[50]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[50]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[50]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[50]	Adequate Storage (Yes / No)
2. SR-57 NB Ramps/Brea Plaza Driveway 1 at Imperial Highway (Continued)									
Westbound Through	435	111	Yes	201	Yes	114	Yes	204	Yes
Westbound Through/Right	435	111	Yes	201	Yes	114	Yes	25	Yes
3. S. Associated Road at Birch Street									
Northbound Left-Turn	298[51]	147	Yes	296	Yes	137	Yes	294	Yes
Northbound Right-Turn	230	83	Yes	170	Yes	81	Yes	170	Yes
Southbound Left-Turn	100	51	Yes	25	Yes	51	Yes	25	Yes
Eastbound Left-turn	150	25	Yes	25	Yes	25	Yes	25	Yes
Westbound Left-Turn	220[52]	221	Yes[53]	182	Yes	222	Yes[53]	182	Yes
4. S. Associated Road at Greenbriar Lane									
Northbound Left-Turn	100	25	Yes	25	Yes	25	Yes	25	Yes
Southbound Left-Turn	110	25	Yes	25	Yes	25	Yes	25	Yes

[50] Maximum queue is calculated by multiplying the *Average Queue* by a factor of 1.5 for signalized intersections. Maximum queue is based on the 95th percentile for unsignalized intersections.

[51] The northbound left-turn consists of dual lanes. The first lane consists of approximately 370 feet of storage and the second lane consists of approximately 225 feet of storage. The storage reported is the average of both lanes.

[52] The turn-lane consists of dual lanes.

[53] The remaining queue can be accommodated within the transition area of the turn-lane.

TABLE 9-2 (CONTINUED)

YEAR 2045 PEAK HOUR INTERSECTION QUEUING ANALYSIS

Study Intersections	Estimated Storage Provided (feet)	(1) Year 2045 General Plan Buildout Traffic Conditions				(2) Year 2045 General Plan Buildout Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required[54]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[54]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[54]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[54]	Adequate Storage (Yes / No)
5. S. Associated Road at Imperial Highway									
Northbound Left-Turn	170[55]	90	Yes	137	Yes	90	Yes	137	Yes
Southbound Left-Turn	210[56]	95	Yes	203	Yes	101	Yes	192	Yes
Southbound Right-Turn	215	25	Yes	25	Yes	25	Yes	25	Yes
Eastbound Left-turn	340	185	Yes	323	Yes	260	Yes	353	Yes[57]
Westbound Left-Turn	200	114	Yes	267	Yes[57]	114	Yes	267	Yes[57]
6. Placentia Avenue/Castlegate Lane at Imperial Highway									
Northbound Left-Turn	195	108	Yes	176	Yes	108	Yes	174	Yes
Northbound Right-Turn	195	25	Yes	25	Yes	25	Yes	25	Yes
Southbound Left-Turn	85	30	Yes	30	Yes	30	Yes	30	Yes
Eastbound Left-turn	140	25	Yes	25	Yes	25	Yes	25	Yes
Eastbound Right-Turn	200	25	Yes	25	Yes	25	Yes	25	Yes
Westbound Left-Turn	225	225	Yes	264	Yes[57]	225	Yes	264	Yes[57]

54 Maximum queue is calculated by multiplying the *Average Queue* by a factor of 1.5 for signalized intersections. Maximum queue is based on the 95th percentile for unsignalized intersections.

55 The northbound left-turn consists of dual lanes. The first lane consists of approximately 240 feet of storage and the second lane consists of approximately 100 feet of storage. The storage reported is the average of both lanes.

56 The turn-lane consists of dual lanes.

57 The remaining queue can be accommodated within the transition area of the turn-lane.

TABLE 9-2 (CONTINUED)

YEAR 2045 PEAK HOUR INTERSECTION QUEUING ANALYSIS

Study Intersections	Estimated Storage Provided (feet)	(1) Year 2045 General Plan Buildout Traffic Conditions				(2) Year 2045 General Plan Buildout Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required[58]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[58]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[58]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[58]	Adequate Storage (Yes / No)
7. S. Associated Road at Brea Plaza Driveway 2									
Eastbound Right-Turn	90	25	Yes	25	Yes	25	Yes	25	Yes
8. S. Associated Road at Brea Plaza Driveway 3									
Northbound Left-Turn	90	25	Yes	25	Yes	25	Yes	25	Yes
Eastbound Left-Turn	75	25	Yes	25	Yes	25	Yes	25	Yes
Eastbound Right-Turn	75	25	Yes	25	Yes	25	Yes	25	Yes
9. Brea Plaza Driveway 4 at Imperial Highway									
Southbound Right-Turn	160	25	Yes	25	Yes	25	Yes	25	Yes

[58] Maximum queue is calculated by multiplying the *Average Queue* by a factor of 1.5 for signalized intersections. Maximum queue is based on the 95th percentile for unsignalized intersections.

10.0 INTERSECTION SAFETY EVALUATION

10.1 Imperial Highway Intersection Safety Evaluation

It is our understanding that Caltrans has implemented improvements at intersections along Imperial Highway within the recent years which generally include traffic signal upgrades and ADA improvements. As such, an intersection safety evaluation has been completed for all of the signalized study intersections located along Imperial Highway to validate whether the recent improvements have helped reduce the collision frequency at these locations.

Five years of collision history has been researched via the Statewide Integrated Traffic Records System (SWITRS); the data was compiled from May 2016 through May 2021. ***Table 10-1*** presents a summary of the last five (5) years of accident history at the four (4) study intersections located along Imperial Highway. Review of *Table 10-1* indicates that when taking into consideration the total number of collisions that occur within the project study area, the number of collisions along Imperial Highway have generally declined within the last five years. Therefore, it can be concluded that the improvements implemented at these intersections have played a role in reducing the collision frequency and has generally helped increase safety at the locations.

10.2 Intersection Safety Enhancements at S. Associated Road and Birch Street

The City has raised concerns regarding bicycle safety at the intersection of S. Associated Road at Birch Street. It is our understanding that the eastbound right-turn movement at the intersection currently experiences high traffic volumes due to the existing Brea Plaza center. Review of *Figures 3-5* and *3-6* indicate that 294 vehicles in the AM peak hour and 278 vehicles in the PM peak hour currently complete an eastbound right-turn under existing traffic conditions. Vehicles are required to cross the existing bike lane in order to complete the turn movement which creates a safety issue for bicyclists traveling eastbound. Therefore, to increase bicycle safety as well as improve traffic flow, it is recommended to implement the following improvements:

- **Intersection No. 3 – S. Associated Road at Birch Street:** Restripe the west leg to provide an exclusive eastbound right-turn pocket with 150-feet of storage and a 4-foot bike lane located to the left of the turn pocket. Modify the existing traffic signal to allow for an eastbound right-turn overlap phase and replace the existing R73-5(CA) sign for the northbound left-turn lanes with a R73-6(CA) sign to restrict U-turns in the northbound direction. These improvements are subject to the approval of the City of Brea and are recommended as a condition of approval for the proposed Project.

Figure 10-1 presents a conceptual improvement plan for the intersection safety enhancements at S. Associated Road and Birch Street.

Table 10-2 presents the peak hour level of service results based on both ICU and HCM analyses at the intersection of S. Associated Road at Birch Street for Year 2045 traffic conditions. The first

column (1) presents a summary of Year 2045 General Plan Buildout Plus Project traffic conditions, which was previously presented in *Tables 8-3* and *8-4*. The second column (2) presents Year 2045 General Plan Buildout Plus Project traffic conditions with the implementation of the intersection safety enhancement improvements. Review of *Table 10-2* indicates that the intersection is forecast to operate at acceptable level of service during the weekday AM and PM peak hours with the improvements. Furthermore, a comparison of columns (1) and (2) indicate that the improvements will improve service levels at the intersection.

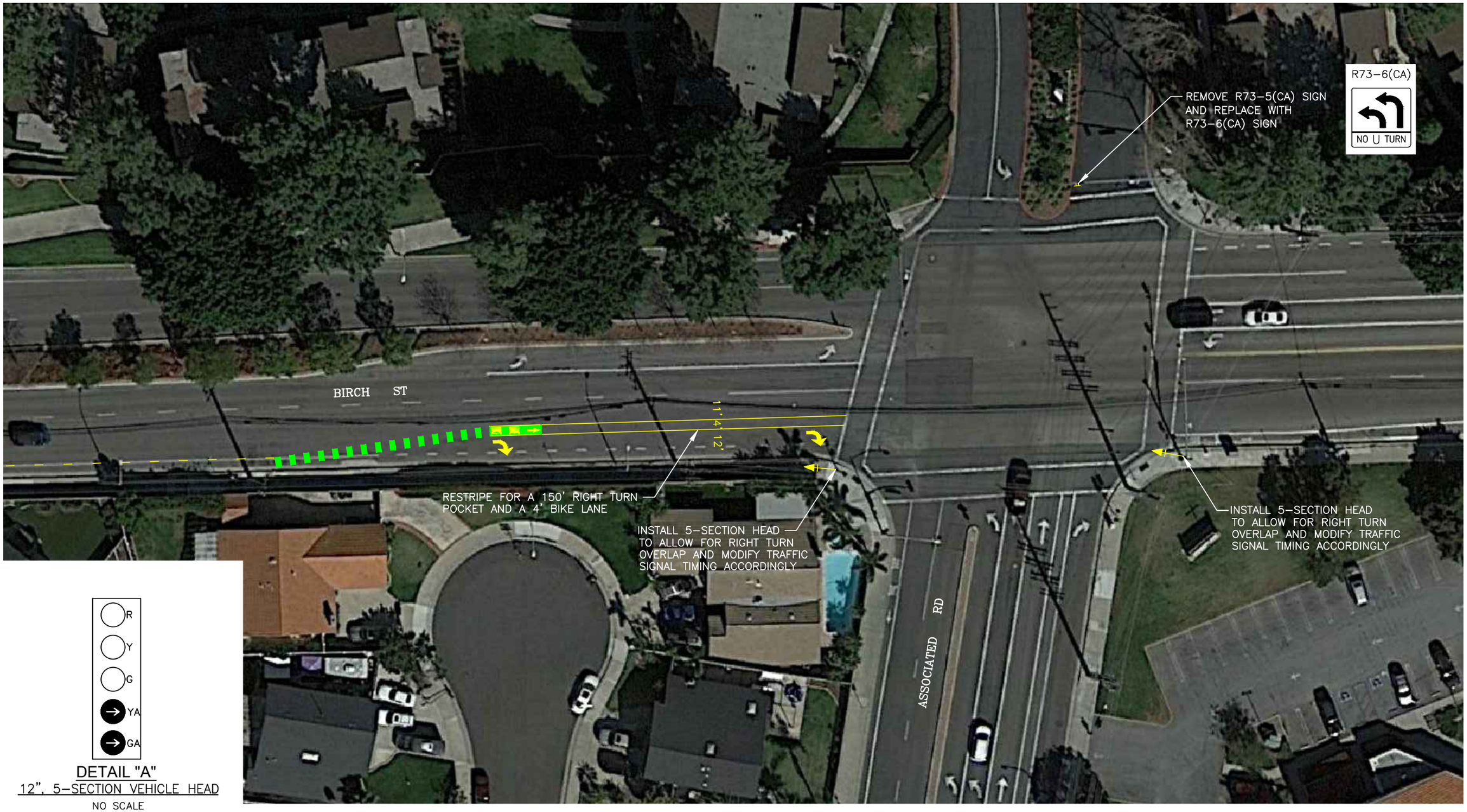
Table 10-3 presents the AM and PM peak hour queueing analyses results for the eastbound right-turn pocket for Year 2045 General Plan Buildout Plus Project traffic conditions with the implementation of the intersection safety enhancement improvements. Review of *Table 10-3* indicates that the eastbound right-turn queues at the intersection can be accommodated within the proposed storage of 150 feet.

Appendix G presents the level of service and queueing worksheets based on the intersection safety enhancement.

TABLE 10-1

IMPERIAL HIGHWAY ACCIDENT HISTORY

Study Intersection	Number of Collisions Per Year				
	2016 - 2017	2017-2018	2018-2019	2019-2020	2020-2021
1. SR-57 SB Ramps at Imperial Highway	8	3	8	7	4
2. SR-57 NB Ramps/Brea Plaza Driveway 1 at Imperial Highway	20	18	12	8	11
5. S. Associated Road at Imperial Highway	11	17	14	14	15
6. Placentia Avenue/Castlegate Lane at Imperial Highway	13	8	11	6	5
Total Collisions along Imperial Highway	**52**	**46**	**45**	**35**	**35**



DETAIL "A"
12", 5-SECTION VEHICLE HEAD
NO SCALE

n:\4100\2194157 - brea plaza expansion project, brea\dwg\concept\4099 cp-01.dwg LDP 09:58:14 07-29-2021 lam

LINSCOTT LAW & GREENSPAN engineers

N SCALE: 1"=40'

FIGURE 10-1

CONCEPTUAL IMPROVEMENT PLAN - BIRCH ST AT ASSOCIATED RD
BREA PLAZA EXPANSION PROJECT, BREA

TABLE 10-2

YEAR 2045 PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Study Intersection	Minimum Acceptable LOS	Time Period	(1) Year 2045 General Plan Buildout Plus Project Traffic Conditions				(2) Year 2045 General Plan Buildout Plus Project Traffic Conditions with Intersection Safety Enhancements			
			ICU	LOS	Delay (s/v)	LOS	ICU	LOS	Delay (s/v)	LOS
3. S. Associated Road at Birch Street	D	AM	0.650	B	25.5	C	0.556	A	23.4	C
		PM	0.646	B	27.1	C	0.587	A	25.9	C

Notes:

- s/v = seconds per vehicle
- **Bold HCM/LOS** values indicate adverse service levels based on the City LOS standards.

TABLE 10-3

YEAR 2045 GENERAL PLAN BUILDOUT PLUS PROJECT PEAK HOUR INTERSECTION QUEUING ANALYSIS

Study Intersections	Proposed Storage	(1) Year 2045 General Plan Buildout Plus Project Traffic Conditions with Intersection Safety Enhancements			
		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required[59]	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required[59]	Adequate Storage (Yes / No)
3. S. Associated Road at Birch Street					
Eastbound Right-Turn	150’	38’	Yes	38’	Yes

[59] Maximum queue is calculated by multiplying the *Average Queue* by a factor of 1.5 for signalized intersections. Maximum queue is based on the 95th percentile for unsignalized intersections.

11.0 SITE ACCESS EVALUATION

11.1 Driveway 3 Traffic Signal Warrant Analysis

Due to the expiration of the Mercury Insurance easement, motorists leaving the project site who wish to travel north will no longer have access to Greenbriar Lane and are anticipated to primarily utilize Driveway 3. As such, a traffic signal warrant analysis was completed for S. Associated Road at Brea Plaza Driveway 3 to determine the need for signalization at the intersection.

This assessment is made on the basis of signal warrant criteria adopted by Caltrans. For this study, the need for signalization is assessed on the basis of the peak-hour traffic signal warrant, Warrant #3, described in the *California Manual on Uniform Traffic Control Devices (MUTCD).*

Warrant #3 has two parts:

1. *Part A* evaluates peak hour vehicle delay for traffic on the minor street approach with the highest delay, and
2. *Part B* evaluates peak-hour traffic volumes on the major and minor streets.

This method provides an indication of whether peak-hour traffic conditions or peak-hour traffic volume levels are, or would be, sufficient to justify installation of a traffic signal. Other traffic signal warrants are available, however, they cannot be checked under future conditions because they rely on data for which forecasts are not available (such as accidents, pedestrian volume, and four- or eight-hour vehicle volumes).

The decision to install a traffic signal should not be based purely on the warrants alone. Instead, the installation of a signal should be considered and further analysis performed when one or more of the warrants are met. Additionally, engineering judgment is exercised on a case-by-case basis to evaluate the effect a traffic signal will have on certain types of accidents and traffic conditions at the subject intersection as well as at adjacent intersections.

The results of the peak-hour traffic signal warrant analysis for Year 2024 Cumulative Plus Project and Year 2045 General Plan Buildout Plus Project traffic conditions are summarized in ***Table 11-1***. The results indicate that S. Associated Road at Brea Plaza Driveway 3 does not satisfy the criteria for a traffic signal. Furthermore, review of the level of service results presented in Section 8.0 indicates that the intersection is forecast to operate at acceptable level of service without the installation of a traffic signal. Therefore, the installation of a traffic signal the intersection is not recommended.

Appendix H presents the traffic signal warrant worksheets.

TABLE 11-1

DRIVEWAY 3 TRAFFIC SIGNAL WARRANT ANALYSIS SUMMARY[60]

Key Intersection	Time Period	(1) Year 2024 Cumulative Plus Project Traffic Conditions		(2) Year 2045 General Plan Buildout Plus Project Traffic Conditions	
		Part A of Warrant 3 Satisfied?	Part B of Warrant 3 Satisfied?	Part A of Warrant 3 Satisfied?	Part B of Warrant 3 Satisfied?
8. S. Associated Road at Brea Plaza Driveway 3	AM	No	No	No	No
	PM	No	No	No	No

60 Signal Warrant checks based on Warrant 3, Part A – Peak Hour Delay Warrant and Part B – Peak Hour Volume Warrant combined in the California MUTCD.

11.2 Internal Circulation Evaluation

As previously stated, access to the project site will continue to be served by the existing Brea Plaza driveways including the signalized intersection of Imperial Highway at SR-57 NB Ramps/Brea Plaza (Intersection #2), a right-turn only driveway on Associated Road (Intersection #7), a full access unsignalized driveway on Associated Road (Intersection #8), and a right-turn only driveway on Imperial Highway (Intersection #9). Since there are no changes proposed at any of the driveways as part of the proposed Project, it is assumed that trash trucks, delivery trucks, and fire trucks will continue to access the Project site without any issues. Additionally, the on-site circulation was evaluated in terms of vehicle-pedestrian conflicts. Based on our review of the proposed site plan, the overall layout does not create any unsafe vehicle-pedestrian conflict points and the driveway throating is sufficient such that access to parking spaces is not impacted by internal vehicle queuing/stacking. The on-site circulation is adequate based on our review of the proposed site plan, whereas the alignment, spacing, and throating of the Project driveways is adequate. The circulation around the buildings is adequate with sufficient sight distance along the drive aisles.

12.0 AREA-WIDE TRAFFIC IMPROVEMENTS

For those intersections where projected traffic volumes are expected to exceed the LOS criteria thresholds, this report recommends traffic improvements that change the intersection geometry to increase capacity. These capacity improvements involve roadway widening and/or re-striping to reconfigure roadways to specific approaches of a study intersection. The identified improvements are expected to improve levels of service at the location which exceed the LOS criteria thresholds.

12.1 Project-Specific Improvements

As previously discussed in Section 10.2, the following improvements are recommended as a condition of approval for the proposed Project in order to increase bicycle safety as well as improve traffic flow at the intersection of S. Associated Road at Birch Street:

- **Intersection No. 3 – S. Associated Road at Birch Street:** Restripe the west leg to provide an exclusive eastbound right-turn pocket with 150-feet of storage and a 4-foot bike lane located to the left of the turn pocket. Modify the existing traffic signal to allow for an eastbound right-turn overlap phase and replace the existing R73-5(CA) sign for the northbound left-turn lanes with a R73-6(CA) sign to restrict U-turns in the northbound direction. These improvements are subject to the approval of the City of Brea.

12.2 Year 2024 Cumulative Plus Project Traffic Conditions

The results of the intersection capacity analyses presented previously in *Tables 8-1* and *8-2* indicate that none of the nine (9) study intersections are forecast to exceed the LOS criteria thresholds under Year 2024 Cumulative Plus Project traffic conditions. Therefore, Project-related improvements are not required or recommended.

12.3 Year 2045 General Plan Buildout Plus Project Traffic Conditions

The results of the intersection capacity analyses presented previously in *Tables 8-3* and *8-4* indicate that none of the nine (9) study intersections are forecast to exceed the LOS criteria thresholds under Year 2045 General Plan Buildout Plus Project traffic conditions. Therefore, Project-related improvements are not required or recommended.

12.4 City of Brea Traffic Impact Fees

Based on information published on the City of Brea website, the Brea City Council adopted Ordinance 966 in July 1995, establishing Traffic Impact Fees for all new development in Brea and annexed portions of its sphere-of-influence. Based on a Transportation Improvement Nexus Program study conducted in 2011, the City Council adopted Resolution 2011-096, which updated the impact fees, which became effective February 4, 2012. These fees are required, in part, by Orange County's Measure M, a transportation initiative passed by voters in 1990. More importantly, these are fair-share based fees that will serve to offset the required traffic improvements caused by new development.

Review of ***Table 12-1*** indicates that the City's Traffic Impact Fee rate for residential land uses range from $1,203 per dwelling unit to $1,974 per dwelling unit. For Office uses the City's rate is $1.25 per gross square foot.

Subject to confirmation by City staff, the proposed Project's Traffic Impact Fee totals $260,852.75 based on a net increase of 21,355 SF of office uses along with 229 high density residential units (i.e. 21,355 SF x $1.25 per SF = $26,693.75 and 229 DU x $1,203 per DU = $275,487.00). Since fees have already been paid towards the existing theater which will be removed a credit of $41,328.00 could be taken (i.e. 18,450 SF x $2.24 = $41,328.00). The precise fee will be determined upon issuance of Project building permits by the City of Brea Community Development Department.

TABLE 12-1

CITY OF BREA TRAFFIC IMPACT FEE RATES [61]

Land Use Category	Unit of Development	Fee
▪ Low density residential	Per dwelling unit	$1,974
▪ Medium density residential	Per dwelling unit	$1,453
▪ High density residential	Per dwelling unit	$1,203
▪ Commercial, general, mixed use	Per gross square foot	$2.53
▪ Regional commercial	Per gross square foot	$2.24
▪ Office / industrial	Per gross square foot	$1.25
▪ School	Student	$0
▪ All other uses	Per trip end	$89

61 Source: City of Brea website - http://www.ci.brea.ca.us/162/Traffic-Impact-Fees

13.0 CONGESTION MANAGEMENT PROGRAM (CMP) COMPLIANCE ASSESSMENT

This analysis is consistent with the requirements and procedures outlined in the current *Orange County Congestion Management Program (CMP).* The CMP requires that a traffic analysis be conducted for any project generating 2,400 or more daily trips, or 1,600 or more daily trips for projects that directly access the CMP Highway System (HS). As noted in *Section 5.0* of this traffic study, the proposed Project is forecast to generate -1,680 weekday net daily trip-ends and therefore a CMP analysis is not required.

14.0 SUMMARY OF FINDINGS AND CONCLUSIONS

- ***Project Description*** – Brea Plaza is an existing retail center addressed at 409-477 S. Associated Road and 1555, 1609, 1623, 1643 E. Imperial Highway that is generally located north of Imperial Highway, west of Associated Road, and east of SR-57 Freeway in the City of Brea, California. The existing Brea Plaza includes 165,329 square-feet (SF) of floor area consisting of mixture of retail/commercial use, service/retail shops, a movie theatre, restaurant/ food uses and fast-food restaurants with drive-through. Parking for the retail center currently totals 725 on-site spaces with an additional 180 spaces available in an easement with Mercury Insurance during business hours and all spaces after 5:00 PM and on weekends. It is our understanding that the easement with Mercury Insurance will expire upon completion of the proposed Project, therefore, all of the project parking demands will be accommodated on-site. The proposed Project includes a mixed-use development that consists of 21,355 SF of office space and 189 apartment units. Fifteen (15) of the proposed apartments are considered co-living units, which include five (5) 3-bedroom units and ten (10) four-bedroom units, therefore, to provide a conservative assessment, the co-living unit bedrooms have been counted as individual units for a total apartment count of 229 units. The proposed Project also includes a 387-space and 10 tandem stall parking structure on the northwest quadrant of the subject property. The implementation of the proposed Project would require the demolition of the existing 18,450 SF movie theatre (Brea Plaza 5 Cinemas) and result in the overall loss of 116 surface parking spaces.

  Vehicular access to Brea Plaza is currently provided via one (1) right-turn only and one (1) full access unsignalized driveways on Associated Road, and a right-turn only driveway on Imperial Highway, and the signalized intersection of Imperial Highway at SR-57 NB Ramps/Brea Plaza. No change in access to Brea Plaza is proposed as a part of the Project. Further, with the exception of the parking and circulation layout on the northwest corner of the site where the proposed Project will be constructed, no changes to the internal circulation and primary parking layout in the center and southern portion of the site will change. To maintain circulation around the entire property, the Project does propose to maintain/construct a "Fire Lane" along the northern and western edge of the Project thereby providing emergency vehicle as well as Project-related traffic the ability to circulate the entire site to access either Associated Road or Imperial Highway.

- ***Study Scope*** – Nine (9) study intersections have been identified for evaluation in collaboration with City of Brea staff. The nine (9) intersections listed below provide regional and local access to the study area and define the extent of the boundaries for this traffic analysis, as well as identifies the governing jurisdiction. It should be noted that intersections that border Brea but are under the governing jurisdiction of Caltrans show the City in parentheses [i.e. (Brea)].

  Study Intersections – Jurisdiction (City)

  1. SR-57 SB Ramps at Imperial Highway - Caltrans (Brea)
  2. SR-57 NB Ramps/Brea Plaza Driveway 1 at Imperial Highway -Caltrans (Brea)
  3. S. Associated Road at Birch Street - Brea
  4. S. Associated Road at Greenbriar Lane - Brea

5. S. Associated Road at Imperial Highway – Caltrans (Brea)
6. Castlegate Lane/Placentia Avenue at Imperial Highway – Caltrans (Brea)
7. S. Associated Road at Brea Plaza Driveway 2 - Brea
8. S. Associated Road at Brea Plaza Driveway 3 - Brea
9. Brea Plaza Driveway 4 at Imperial Highway – Caltrans (Brea)

- ***Existing Traffic Conditions ICU*** – All of the signalized study intersections currently operate at acceptable service levels during the weekday AM and PM peak hours.

- ***Existing Traffic Conditions HCM*** – All of the study intersections currently operate at acceptable service levels during the weekday AM and PM peak hours.

- ***Project Trip Generation*** – A fully occupied Brea Plaza is forecast to generate approximately 8,963 daily trips, with 202 trips (126 inbound, 76 outbound) produced in the AM peak hour and 576 trips (283 inbound, 293 outbound) produced in the PM peak hour on a "typical" weekday, and 12,644 daily trips with 1,261 trips (646 inbound, 615 outbound) produced in the Midday peak hour on a "typical" Saturday.

  The trip generation associated with Brea Plaza upon implementation of the proposed Project is forecast to generate approximately 7,283 daily trips, with 302 trips (165 inbound, 137 outbound) produced in the AM peak hour and 516 trips (250 inbound, 266 outbound) produced in the PM peak hour on a "typical" weekday, and 10,362 daily trips with 772 trips (370 inbound, 402 outbound) produced in the Midday peak hour on a "typical" Saturday.

  When the existing Brea Plaza is compared to the retail center with the proposed Project, the implementation of the proposed Project is forecast result in 1,680 *fewer* weekday daily trips, 100 *more* weekday AM peak hour trips, and 60 *fewer* weekday PM peak hour trips, as well as 2,282 *fewer* Saturday daily trips, and 489 *fewer* Saturday midday peak hour trips. As a result, a Saturday analysis is not recommended. Therefore, this traffic analysis will be based on the net AM peak hour and PM peak hour project trips.

- ***Related Projects Traffic Characteristics –*** Fourteen (14) related projects were considered as part of the cumulative background setting. The fourteen (14) related projects on a weekday daily and peak hour basis. As shown, the related projects are expected to generate 35,920 weekday daily trips, with 2,713 trips (1,312 inbound, 1,401 outbound) anticipated during the AM peak hour and 3,274 trips (1,709 inbound, 1,565 outbound) produced during the PM peak hour.

- ***Year 2024 Cumulative Traffic Conditions Plus Project ICU*** – All of the signalized study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours with the addition of proposed Project traffic to Year 2024 cumulative traffic.

- ***Year 2024 Cumulative Traffic Conditions Plus Project HCM*** – All of the study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours with the addition proposed Project traffic to Year 2024 cumulative traffic.

Although the intersection of Brea Plaza Driveway 4/Imperial Highway (Intersection #9) was operating adversely under Year 2024 cumulative traffic conditions, the addition of the proposed Project traffic results in a reduction in delay in the PM peak hour. The reduction in delay is due to the negative net project volumes during the PM peak hour.

- ***Year 2045 General Plan Buildout Traffic Conditions Plus Project ICU*** – All of the signalized study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours with the addition of proposed Project traffic to Year 2045 General Plan Buildout traffic.

- ***Year 2045 General Plan Buildout Traffic Conditions Plus Project HCM*** – One (1) intersection is forecast to operate adversely during the AM and/or PM peak hours with the addition of proposed Project traffic to Year 2045 General Plan Buildout traffic. The remaining study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours. The intersection operating adversely includes the following:

	AM Peak Hour		PM Peak Hour	
Study Intersection	**Delay (s/v)**	**LOS**	**Delay (s/v)**	**LOS**
9. Brea Plaza Driveway 4 at Imperial Highway	--	--	38.8	E

The addition of proposed Project traffic at the intersection of Brea Plaza Driveway 4/Imperial Highway (Intersection #9) results in a reduction in delay in the PM peak hour. The reduction in delay is due to the negative net project volumes during the PM peak hour. Therefore, Project-related improvements at this location are not required based on the criteria defined in this report.

- ***Year 2024 Cumulative Traffic Conditions Plus Project Queueing*** – The queues for the nine (9) study intersections are considered adequate with the addition of proposed project traffic to Year 2024 Cumulative traffic. Furthermore, review of SR-57 NB Ramps/Brea Plaza Driveway 1/Imperial Highway (Intersection #2) indicates that the proposed Project will not adversely affect the queues at the intersection or adversely contribute to the potential weaving along Imperial Highway between the SR-57 NB On-Ramp and Brea Plaza Driveway 1.

- ***Year 2045 General Plan Buildout Traffic Conditions Plus Project Queueing*** – The queues for the nine (9) study intersections are considered adequate with the addition of proposed project traffic to Year 2045 General Plan Buildout traffic. Furthermore, review of SR-57 NB Ramps/Brea Plaza Driveway 1/Imperial Highway (Intersection #2) indicates that the proposed Project will not adversely affect the queues at the intersection or adversely contribute to the potential weaving along Imperial Highway between the SR-57 NB On-Ramp and Brea Plaza Driveway 1.

- ***Imperial Highway Intersection Safety Evaluation*** – It is our understanding that Caltrans has implemented improvements at intersections along Imperial Highway within the recent years which generally include traffic signal upgrades and ADA improvements. Five years of collision history has been researched via the Statewide Integrated Traffic Records System (SWITRS); the data was compiled from May 2016 through May 2021. When taking into consideration the total

number of collisions that occur within the project study area, the number of collisions along Imperial Highway have generally declined within the last five years. Therefore, it can be concluded that the improvements implemented at these intersections have played a role in reducing the collision frequency and has generally helped increase safety at the locations

- ***Intersection Safety Enhancements at S. Associated Road at Birch Street*** – The City has raised concerns regarding bicycle safety at the intersection of S. Associated Road at Birch Street. It is our understanding that the eastbound right-turn movement at the intersection currently experiences high traffic volumes due to the existing Brea Plaza center. Vehicles are required to cross the existing bike lane in order to complete the turn movement which creates a safety issue for bicyclists traveling eastbound. Therefore, to increase bicycle safety as well as improve traffic flow, it is recommended to implement the following improvements:

  - Intersection No. 3 – S. Associated Road at Birch Street: Restripe the west leg to provide an exclusive eastbound right-turn pocket with 150-feet of storage and a 4-foot bike lane located to the left of the turn pocket. Modify the existing traffic signal to allow for an eastbound right-turn overlap phase and replace the existing R73-5(CA) sign for the northbound left-turn lanes with a R73-6(CA) sign to restrict U-turns in the northbound direction. These improvements are subject to the approval of the City of Brea and are recommended as a condition of approval for the proposed Project.

  The intersection is forecast to operate at acceptable level of service during the weekday AM and PM peak hours with the improvements and will also improve service levels at the intersection. Additionally, the eastbound right-turn queues at the intersection can be accommodated within the proposed storage of 150 feet.

- ***Driveway 3 Traffic Signal Warrant Analysis –*** S. Associated Road at Brea Plaza Driveway 3 does not satisfy the criteria for a traffic signal. Furthermore, review of the level of service results indicates that the intersection is forecast to operate at acceptable level of service without the installation of a traffic signal. Therefore, the installation of a traffic signal the intersection is not recommended.

- ***Internal Circulation Evaluation –*** Access to the project site will continue to be served by the existing Brea Plaza driveways including the signalized intersection of Imperial Highway at SR-57 NB Ramps/Brea Plaza (Intersection #2), a right-turn only driveway on Associated Road (Intersection #7), a full access unsignalized driveway on Associated Road (Intersection #8), and a right-turn only driveway on Imperial Highway (Intersection #9). Since there are no changes proposed at any of the driveways as part of the proposed Project, it is assumed that trash trucks, delivery trucks, and fire trucks will continue to access the Project site without any issues. Additionally, based on our review of the proposed site plan, the overall layout does not create any unsafe vehicle-pedestrian conflict points and the driveway throating is sufficient such that access to parking spaces is not impacted by internal vehicle queuing/stacking. The on-site circulation is adequate based on our review of the proposed site plan, whereas the alignment, spacing, and throating of the Project driveways is adequate. The circulation around the buildings is adequate with sufficient sight distance along the drive aisles.

- ***Project-Specific Improvements*** – The following improvements are recommended as a condition of approval for the proposed Project in order to increase bicycle safety as well as improve traffic flow at the intersection of S. Associated Road at Birch Street:

  - Intersection No. 3 – S. Associated Road at Birch Street: Restripe the west leg to provide an exclusive eastbound right-turn pocket with 150-feet of storage and a 4-foot bike lane located to the left of the turn pocket. Modify the existing traffic signal to allow for an eastbound right-turn overlap phase and replace the existing R73-5(CA) sign for the northbound left-turn lanes with a R73-6(CA) sign to restrict U-turns in the northbound direction. These improvements are subject to the approval of the City of Brea and are recommended as a condition of approval for the proposed Project.

- ***Year 2024 Cumulative Plus Project Recommended Improvements*** – None of the nine (9) study intersections are forecast to exceed the LOS criteria thresholds under Year 2024 Cumulative Plus Project traffic conditions. Therefore, Project-related improvements are not required or recommended.
- ***Year 2045 General Plan Buildout Plus Project Recommended Improvements*** – None of the nine (9) study intersections are forecast to exceed the LOS criteria thresholds under Year 2045 General Plan Buildout Plus Project traffic conditions. Therefore, Project-related improvements are not required or recommended.
- ***Traffic Impact Fees*** – Subject to confirmation by City staff, the proposed Project's Traffic Impact Fee totals $260,852.75 based on a net increase of 21,355 SF of office uses along with 229 high density residential units (i.e. 21,355 SF x $1.25 per SF = $26,693.75 and 229 DU x $1,203 per DU = $275,487.00). Since fees have already been paid towards the existing theater which will be removed a credit of $41,328.00 could be taken (i.e. 18,450 SF x $2.24 = $41,328.00). The precise fee will be determined upon issuance of Project building permits by the City of Brea Community Development Department.

- ***CMP Compliance Assessment –*** The proposed Project is forecast to generate -1,680 weekday net daily trip-ends and therefore a CMP analysis is not required.

APPENDIX A

TRAFFIC STUDY SCOPE OF WORK

MEMORANDUM

To:	Dave Roseman, P.E., City Traffic Engineer City of Brea	Date:	April 7, 2021
From:	Richard E. Barretto, P.E., Principal Linscott, Law & Greenspan, Engineers	LLG Ref:	2.19.4157.1
Subject:	***Revised Circulation Assessment Scope of Work for Brea Plaza Expansion Project Brea, California***		

Linscott, Law & Greenspan, Engineers (LLG) is pleased to submit the following Revised Scope of Work for the Circulation Assessment for the proposed Brea Plaza Expansion Project in the City of Brea for your review and approval. It is our understanding that a Circulation Assessment is required to provide consistency with the General Plan. The work program summarized below is based on our current experience within the City and prior coordination efforts with City staff.

Circulation Assessment Scope of Work

A. Project Location: Brea Plaza is an existing retail center addressed at 409-477 S. Associated Road & 1555, 1609, 1623, 1643 E. Imperial Highway that is generally located north of Imperial Highway, west of Associated Road, and east of SR-57 Freeway in the City of Brea, California. ***Figure 1-1*** presents a Vicinity Map that illustrates the general location of the Project and surrounding street system. ***Figure 2-1*** is an existing aerial photograph of the Project site.

B. Project Description: ***Table 2-1*** summarizes the proposed Project development. The existing Brea Plaza includes 165,329 square-feet (SF) of floor area consisting of mixture of retail/commercial use, service/retail shops, a movie theatre, restaurant/ food uses and fast-food restaurants with drive-through. Parking for the retail center currently totals 725 on-site spaces with an additional 180 spaces available in an easement with Mercury Insurance during business hours and all spaces after 5:00 PM and on weekends. It is our understanding that the easement with Mercury Insurance will expire soon. Therefore, all of the project parking demands will be accommodated on-site. Vehicular access to Brea Plaza is now provided via a right-turn only and a full access driveway on Associated Road, and a right-turn only on Imperial Highway plus the signalized intersection of Imperial Highway at SR-57 NB ramps/Brea Plaza.

The proposed Project includes a mixed-use development that consists of 21,355 SF of office space and 189 apartment units. Fifteen (15) of the proposed apartments are considered co-living units, which include five (5) 3-bedroom units and ten (10) four-bedroom units, therefore, to provide a conservative assessment, the co-living unit bedrooms have been counted as individual units for a total apartment count of 229 units. The proposed Project also includes a 387-space

LINSCOTT LAW & GREENSPAN engineers

Engineers & Planners
Traffic
Transportation
Parking

Linscott, Law & Greenspan, Engineers
2 Executive Circle
Suite 250
Irvine, CA 92614
949.825.6175 T
949.825.6173 F
www.llgengineers.com

Pasadena
Irvine
San Diego
Woodland Hills

Philip M. Linscott, PE (1924-2000)
Jack M. Greenspan, PE (Ret.)
William A. Law, PE (Ret.)
Paul W. Wilkinson, PE
John P. Keating, PE
David S. Shender, PE
John A. Boarman, PE
Clare M. Look-Jaeger, PE
Richard E. Barretto, PE
Keil D. Maberry, PE

An LG2WS Company Founded 1966

and 10 tandem stall parking structure on the northwest quadrant of the subject property. The implementation of the Project would require the demolition of the existing 18,450 SF movie theatre (Brea Plaza 5 Cinemas) and result in the overall loss of 116 surface parking spaces. ***Figure 2-2*** illustrates the conceptual site plan for the Project prepared by Architects Orange, dated February 10, 2021.

C. Traffic Study Locations: The following thirteen (13) key study intersections have been identified, based on coordination with the City, for which the Project's potential traffic impact is to be assessed.

Key Study Intersections

1. Brea Boulevard at Imperial Highway (Brea/Caltrans)
2. State College Boulevard at Birch Street (Brea)
3. State College Boulevard at Imperial Highway (Brea/Caltrans)
4. SR-57 SB Ramps at Imperial Highway (Brea/Caltrans)
5. SR-57 NB Ramps/Brea Plaza at Imperial Highway (Brea/Caltrans)
6. S. Associated Road at Birch Street (Brea)
7. S. Associated Road at Greenbriar Lane (Brea)
8. S. Associated Road at Imperial Highway (Brea/Caltrans)
9. Kraemer Boulevard at Imperial Highway (Brea/Caltrans)
10. Placentia Avenue at Imperial Highway (Brea/Caltrans)
11. S. Associated Road at Brea Plaza Right-turn only Driveway (Brea)
12. S. Associated Road at Brea Plaza Full access Driveway (Brea)
13. Brea Plaza Right-turn only Driveway at Imperial Highway (Brea/Caltrans)

However, inconsideration of the City's "50 peak hour trip" threshold, only two (2) of the potential study locations, SR-57 SB Ramps at Imperial Highway (No. 4) and SR-57 NB Ramps/Brea Plaza at Imperial Highway (No. 5), meets the criteria and hence would warrant evaluation. Given the proximity of the following nine (9) study locations are recommended for evaluation. Subject to confirmation by the City Traffic Engineer, Level of Service (LOS) calculations would be prepared at these locations.:

4. SR-57 SB Ramps at Imperial Highway (Brea/Caltrans)
5. SR-57 NB Ramps/Brea Plaza at Imperial Highway (Brea/Caltrans)
6. S. Associated Road at Birch Street (Brea)
7. S. Associated Road at Greenbriar Lane (Brea)
8. S. Associated Road at Imperial Highway (Brea/Caltrans)
10. Placentia Avenue at Imperial Highway (Brea/Caltrans)

11. S. Associated Road at Brea Plaza Right-turn only Driveway (Brea)
12. S. Associated Road at Brea Plaza Full access Driveway (Brea)
13. Brea Plaza Right-turn only Driveway at Imperial Highway (Brea/Caltrans)

The remaining four (4) locations do not meet the "50 peak hour trip" threshold and would not warrant analysis, subject to review/confirmation by City staff (See ***Table 5-2*** for added project-related traffic volumes). Of the nine (9) recommended study locations, five (5) locations are under Caltrans jurisdiction. *Figure 1-1* identifies the study locations.

D. Traffic Counts: Based on current conditions, due to COVID-19 virus, the ability to collect traffic counts to establish baseline conditions is not possible. As such, to establish existing "baseline" traffic conditions, pre-COVID-19, LLG has researched historical data and was able to obtain Year 2018/2019 counts at five (5) of the nine key study locations. ***Table 1*** presents a summary of the study intersections with available historical data.

Given the availability of historical data, LLG proposes the following to establish pre-COVID-19 traffic conditions:

(1) Historic data is available at five (5) locations for Year 2018/2019.

(2) Given data is not available at one (1) study location (Intersection #7 – not including the existing Brea Plaza driveways), LLG collected Year 2020 Covid-19 traffic counts at the study location, as well as intersections adjacent to the missing intersections, in October 2020 for use in establishing traffic counts/turning movement percentages. *Table 1* indicates the intersections which required new count collection.

(3) Using information from (1) and (2), compare 2018/2019 to 2020 to establish change in traffic counts due to current COVID-19 environment.

(4) Apply the rate calculated in (3) to 2020 COVID-19 traffic counts and forecast 2018/2019 traffic conditions at the one (1) missing intersection (Intersection #7).

(5) Lastly, apply an annual growth factor of 1% per year to the Year 2018/2019 traffic conditions to establish Year 2021 pre-COVID-19 baseline traffic conditions.

Additionally, the existing ingress and egress volumes for the Brea Plaza driveways (Intersections 5, 11, 12 and 13) will be based on forecasted trips for the existing center rather than applying adjustments in place of collecting traffic counts.

LINSCOTT LAW & GREENSPAN engineers

E. Project Traffic Generation: The trip generation potential of the proposed Project will be estimated using trip rates contained in the 10th Edition of *Trip Generation,* published by the Institute of Transportation Engineers (ITE), [Washington, D.C., 2017].

Table 5-1 summarizes the trip generation rates used in forecasting the vehicular trips generated by the proposed Project based on the entire Brea Plaza retail center and also presents the project's forecast peak hour and daily traffic volumes. As shown in the upper portion of *Table 5-1,* ITE Land Use 221: Multifamily Housing (Mid-Rise), ITE 444: Movie Theater, ITE 710: General Office Building, and ITE 820: Shopping Center trip rates will be used to forecast the trip generation potential of the Project, as well as the trip generation potential of a fully occupied existing Brea Plaza.

A review of the middle portion of *Table 5-1* indicates that a fully occupied Brea Plaza is forecast to generate approximately 8,963 daily trips, with 202 trips (126 inbound, 76 outbound) produced in the AM peak hour and 576 trips (283 inbound, 293 outbound) produced in the PM peak hour on a "typical" weekday, and 12,644 daily trips with 1,261 trips (646 inbound, 615 outbound) produced in the Midday peak hour on a "typical" Saturday.

A review of the lower portion of *Table 5-1* indicates that the trip generation associated with Brea Plaza upon implementation of the proposed Project is forecast to generate approximately 7,283 daily trips, with 302 trips (165 inbound, 137 outbound) produced in the AM peak hour and 516 trips (250 inbound, 266 outbound) produced in the PM peak hour on a "typical" weekday, and 10,362 daily trips with 772 trips (370 inbound, 402 outbound) produced in the Midday peak hour on a "typical" Saturday.

When the existing Brea Plaza is compared to the retail center with the proposed Project, the implementation of the proposed Project is forecast result in 1,680 *fewer* weekday daily trips, 100 *more* weekday AM peak hour trips, and 60 *fewer* weekday PM peak hour trips, as well as 2,282 *fewer* Saturday daily trips, and 489 *fewer* Saturday midday trips. As a result of trips documented in *Table 5-1,* which identifies changes to the Saturday daily and peak hour trips, a Saturday analysis is not recommended.

F. Project Trip Distribution Pattern: See attached ***Figures 5-1*** through ***5-4*** for the Project Trip Distribution for the existing retail land uses, proposed retail land uses, proposed residential, and proposed office, respectively, for review by the

City. The project trip distributions have been distributed and assigned to the adjacent street system based on the following considerations:

- location of site access points in relation to the surrounding street system,
- the site's proximity to major traffic carriers and regional access routes,
- physical characteristics of the circulation system such as lane channelization and presence of traffic signals that affect travel patterns,
- presence of traffic congestion in the surrounding vicinity, and
- ingress/egress availability at the project site.

Table 5-2 summarizes the added Project-related AM peak hour and PM peak hour traffic volumes at the initial thirteen (13) potential study locations.

G. Near-Term Cumulative Background Traffic:

- Project Completion Year: 2024 (to be confirmed by the City/Project Applicant)
- Ambient Growth Rate: 1% per year
- Cumulative Projects: Planned and/or approved projects will be researched at the City of Brea and adjacent jurisdictions (i.e. Fullerton, La Habra, Yorba Linda, and Placentia).

H. General Plan Buildout Traffic: General Plan Buildout (Year 2045) traffic volume forecasts will be developed based on OCTAM 5.0 approved computer traffic model runs for baseline conditions and buildout conditions for the AM and PM peak periods and daily traffic conditions. Forecast future buildout traffic volumes using the following methodology:

a. Peak period traffic volumes will be converted to peak hour (i.e., one-hour) traffic volumes using a conversion factor of 0.3566 for the AM peak hour and 0.2662 for the PM peak hour;
b. Calculate the difference between the baseline and buildout peak period traffic volumes and convert to AM and PM peak hour (i.e., one-hour) link traffic volumes;
c. Link traffic volumes (i.e., two-way directional traffic volumes on each roadway segment) will be post-processed using the “b-turns” program and the relationship of the base year validation model run output to the base year "ground" traffic counts to develop buildout AM and PM peak hour traffic volumes.

I. Analysis Scenarios: Prepare AM and PM peak hour Level of Service (LOS) calculations at the nine (9) key study intersections to determine the potential impacts of the proposed Project. The following traffic scenarios will be prepared.

1. Existing (Year 2021) Traffic Conditions;
2. Near-Term (Year 2024) Background Traffic Conditions (Existing plus Ambient Growth plus Related Projects);
3. Near-Term (Year 2024) Background Plus Project Traffic Conditions;
4. Scenario (5) with improvements to be implemented as conditions of approval (COA), if necessary;
5. General Plan Buildout[1] (Year 2045) Traffic Conditions;
6. General Plan Buildout (Year 2045) Plus Project Traffic Conditions; and
7. Scenario (8) with improvements to be implemented as conditions of approval (COA), if necessary.

J. LOS Methodology: The LOS calculations will be based on the HCM 6th Edition methodology for both signalized and unsignalized intersections to be consistent with the City of Brea Transportation Impact Analysis (TIA) Guidelines. Additionally, the LOS calculations will also be based on the Intersection Capacity Utilization (ICU) methodology for signalized intersections to be consistent with the City of Brea General Plan.

The HCM calculations will utilize the following parameters:

- Utilization of exiting cycle length and pedestrian timing parameters,
- Minimum left-turn split time, including clearance interval timing = 10 seconds
- Saturation flow rates:
  - Thru and Right-turns = 1,900 vehicles per hour (vph)
  - Left-turns = Single Lane: 1,800 vph, Dual Lanes = 3,500 vph

The ICU calculations will utilize the following parameters:

- Lane capacity of 1,700 vph for through and all turn lanes with a clearance adjustment factor of 0.05

Subject to confirmation by the City Traffic Engineer, the following LOS review criteria will be used to assess the need for potential Project-related improvements in relation to the guidance provided in the City of Brea General Plan:

- HCM Methodology:
  - The Project causes one or more study intersections operating at LOS D or better to degrade to LOS E or F, or
  - The Project causes a change in control delay of 4 seconds for intersections already operating at LOS E, or
  - The Project causes a change in control delay of 2 seconds for intersections already operating at LOS F.

[1] It should be noted that the General Plan Buildout assessment has been included since the proposed Project would require an amendment to the General Plan to accommodate a change is Zoning to allow for residential uses.

- ICU Methodology:
  - The Project causes an intersection operating at LOS D or better to degrade to LOS E or F, or
  - The Project increases traffic demand at a signalized study intersection by 0.020 or greater and the intersection is forecast to operate at LOS E or F.

K. Other Issues:

- Evaluate site access and internal circulation of the proposed Project.
- Conduct a safety evaluation at all key study intersections which will include 5 years of collision history data. Recommend physical and/or timing changes to improve safety where applicable.
- Conduct a queuing evaluation at all key study intersections located along Imperial Highway and Associated Road, inclusive of the SR-57 off-ramps to Imperial Highway to address potential Caltrans concerns/comments.
- Perform an active transportation facilities assessment of the near-by roadways as it relates to pedestrian mobility and bicycle mobility.
- Provide documentation of existing near-by transit facilities and transit routes that provide services to the site.
- Since the project driveway on Imperial Highway is approximately 150 feet from the SR-57 NB On-ramp, conduct an operations weaving assessment between driveway and freeway on-ramp for the westbound direction of Imperial Highway. This weaving assessment will be conducted via Synchro 10.0.
- Prepare a standalone VMT screening memo.

L. OCTA NOP Comments: The comments have been reviewed and the contents of this scope of work adequately addresses all comments.

M. City of Fullerton NOP Comments: The comments have been reviewed and the contents of this scope of work have been updated to address all comments. However, the City of Fullerton has requested for LOS analyses to include intersections along Associated Road and State College Boulevard, between Imperial Highway and CSU Fullerton. Review of the project's trip generation and trip distribution patterns indicate that intersections along those roadways would not satisfy the 50-trip threshold criteria. Therefore, project trips at these intersections are considered

nominal and have not been included in the scope of work. Language will be added to the report to further discuss why these intersections were excluded from analysis.

N. Caltrans NOP Comments: The comments have been reviewed and the contents of this scope of work have been updated to address all comments.

O. Neighborhood Scoping Meeting Comments: The comments have been reviewed and the contents of this scope of work adequately addresses all comments. As it relates to congestion along Imperial Highway resulting in cut-through traffic along Associated Road and Castlegate/Placentia, this is believed to be an existing issue that currently happens. Therefore, the analysis at the key study intersections will identify if additional improvements are needed to satisfy existing and future traffic demands.

* * * * * * * * * *

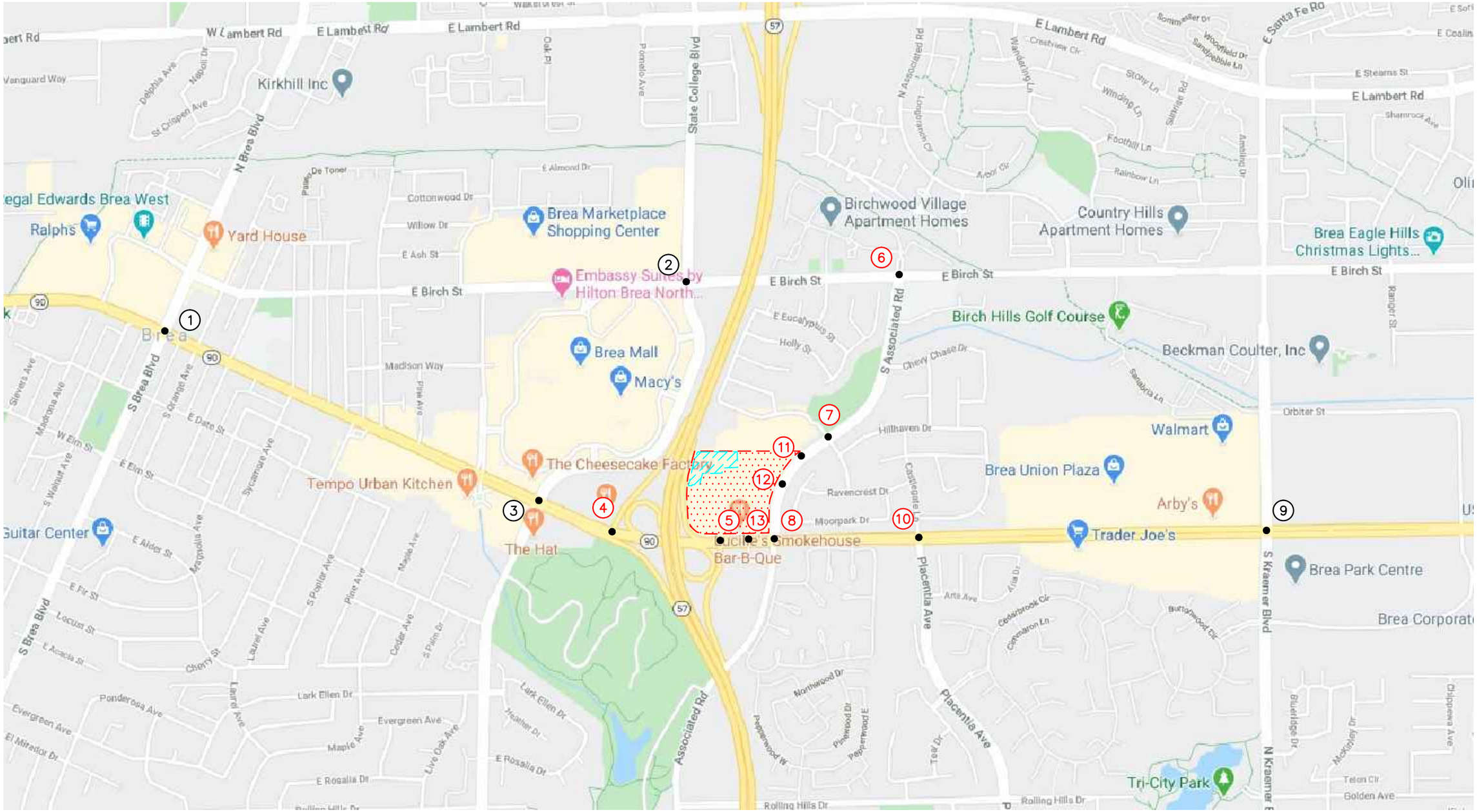
We appreciate the opportunity to provide this scope of work. Should you have any questions, please call us at (949)825-6175. Thank you.

Approved by:

_____ _____

City of Brea Date

cc. File
Shane Green, P.E., LLG



n:\4100\2194157 – brea plaza expansion project, brea\dwg\4157 f1-1.dwg LDP 10:58:11 03-17-2021 lam

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

(#) = STUDY INTERSECTION BASED ON DISCUSSIONS WITH THE CITY

(#) = RECOMMENDED STUDY INTERSECTION BASED ON THE 50 PEAK HOUR TRIP THRESHOLD

= BREA PLAZA

= PROJECT AREA

FIGURE 1-1

VICINITY MAP

BREA PLAZA EXPANSION PROJECT, BREA

n:\4100\2194157 – brea plaza expansion project, brea\dwg\4157 f2-1.dwg LDP 13:52:01 03-17-2021 lam

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

(#) = STUDY INTERSECTION

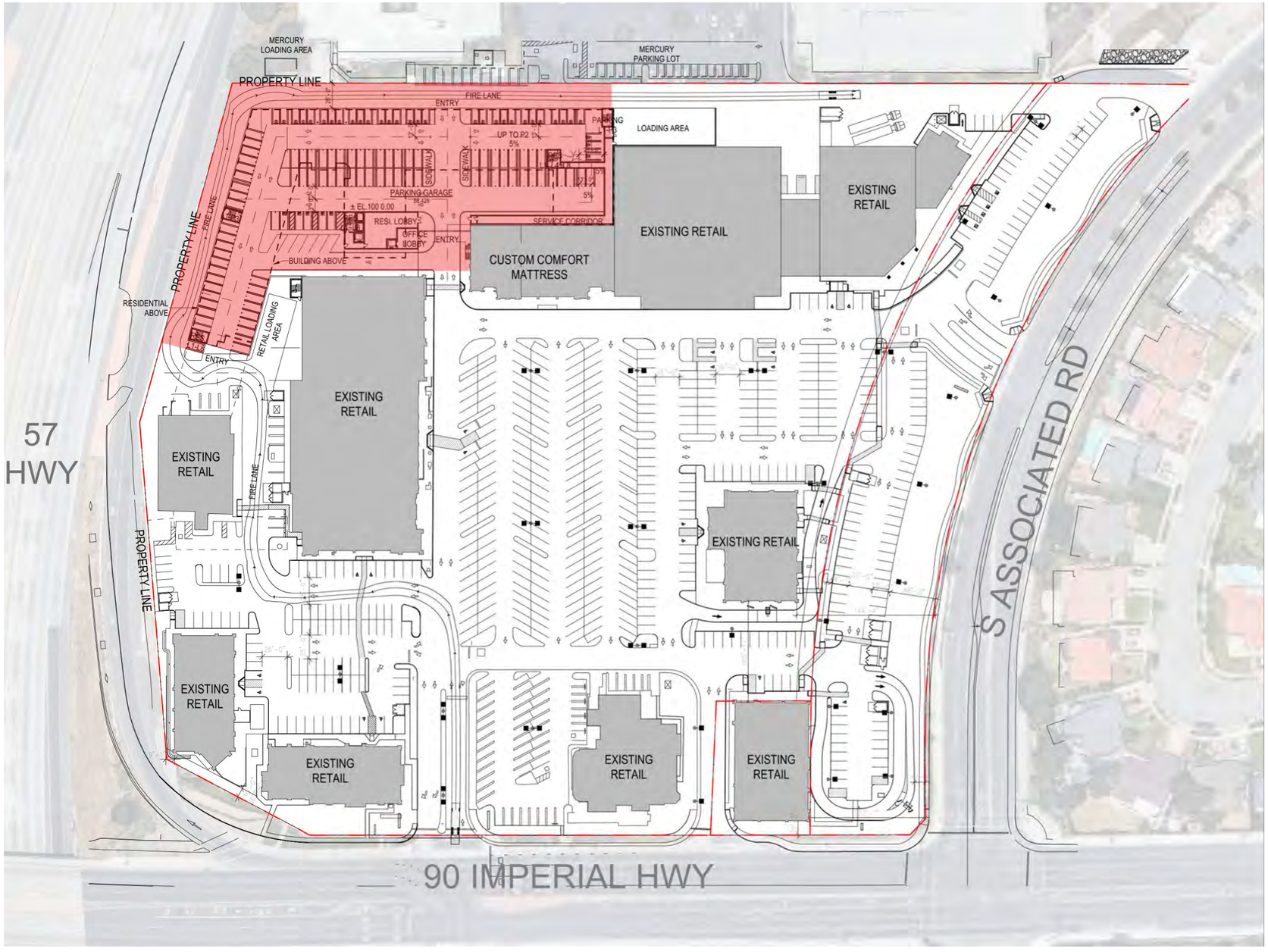
= BREA PLAZA

= PROJECT AREA

FIGURE 2-1

EXISTING SITE AERIAL

BREA PLAZA EXPANSION PROJECT, BREA



n:\4100\2194157 – brea plaza expansion project, brea\dwg\4157 f2–2.dwg LDP 11:47:04 03–12–2021 lam

LINSCOTT LAW & GREENSPAN engineers

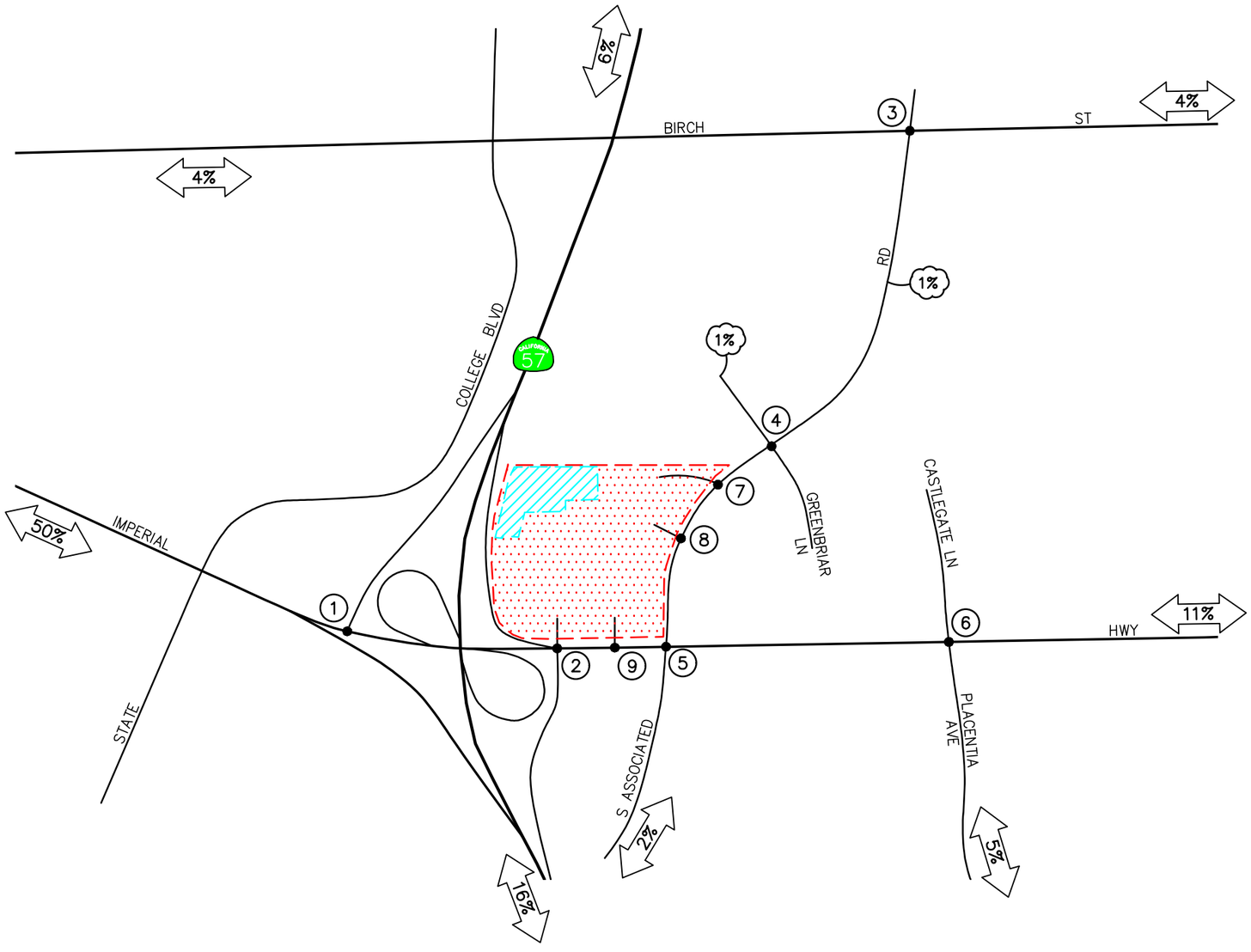
N NO SCALE

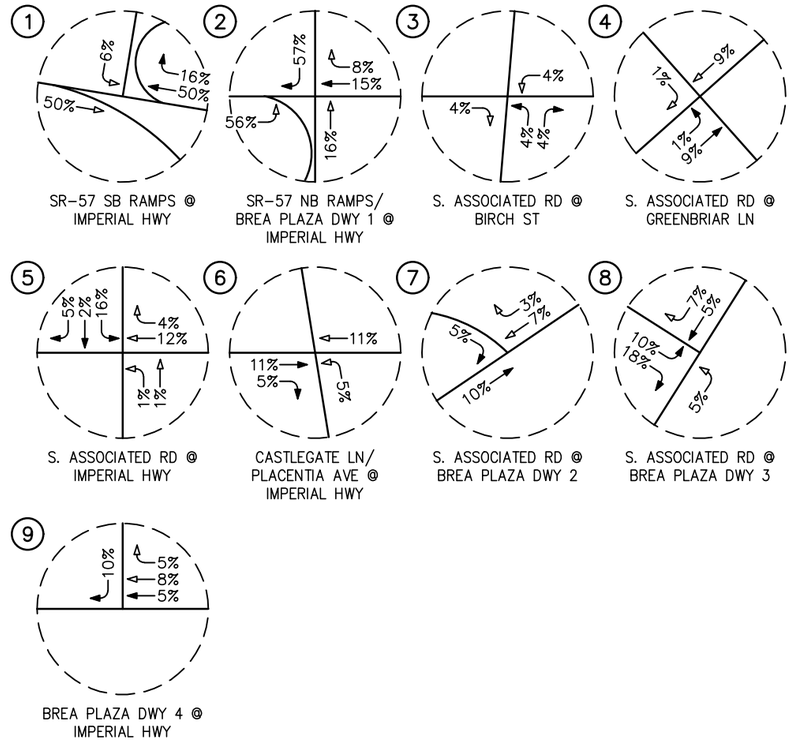
SOURCE: ARCHITECTS ORANGE

FIGURE 2–2

PROPOSED SITE PLAN

BREA PLAZA EXPANSION PROJECT, BREA





n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f5-1.dwg LDP 08:42:18 05-13-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

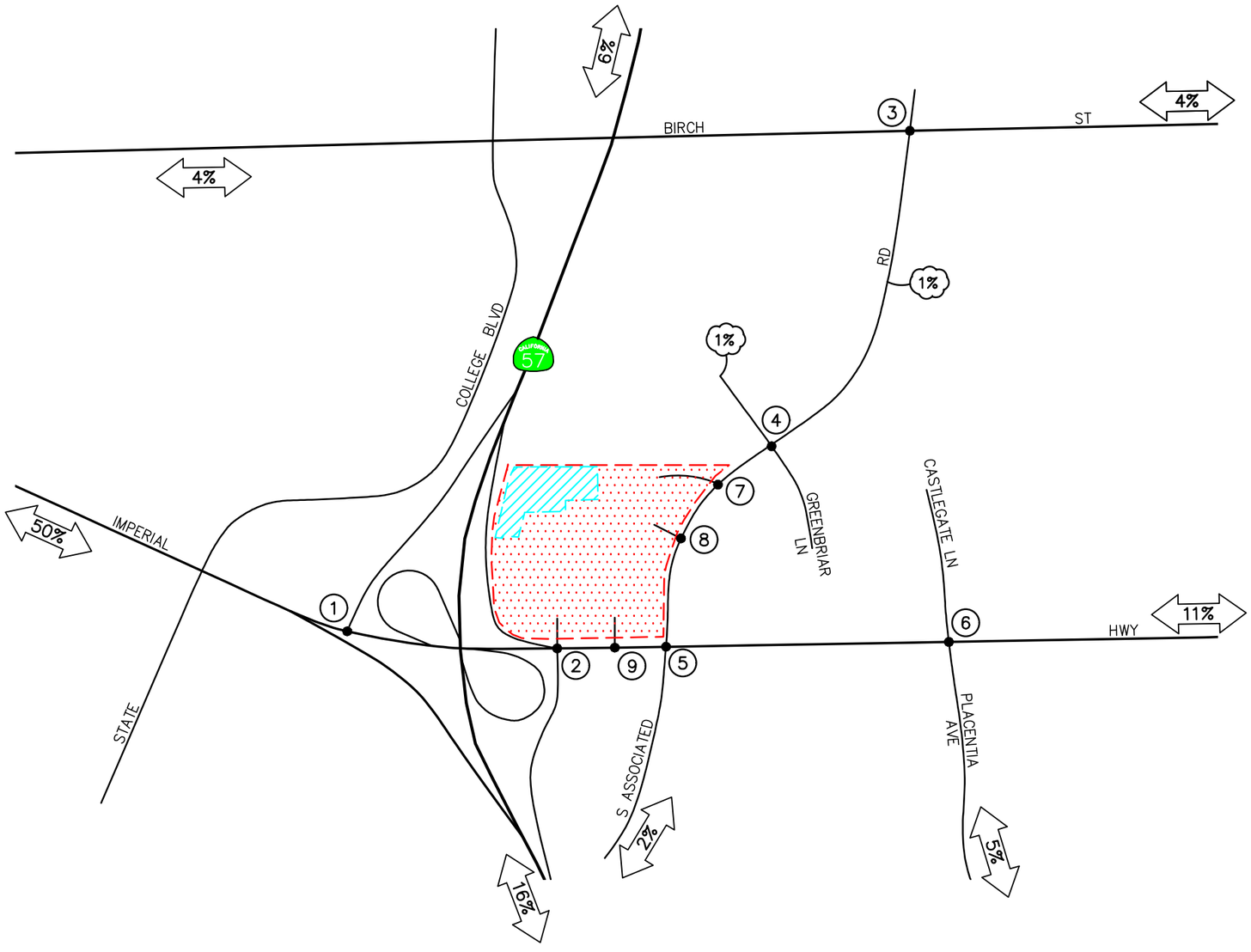
KEY

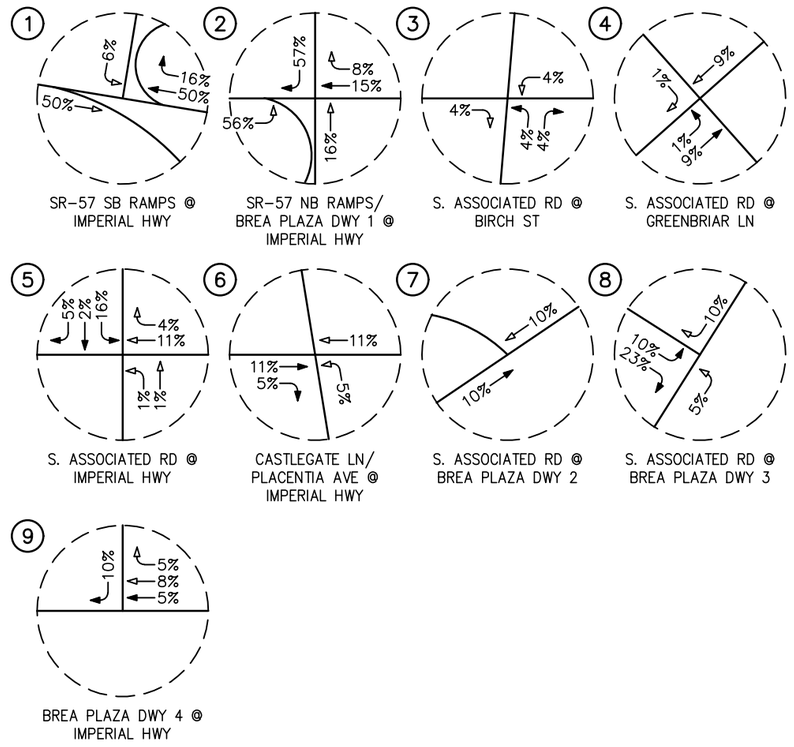
- (#) = STUDY INTERSECTION
- ⟵ = INBOUND PERCENTAGE
- ⟵ = OUTBOUND PERCENTAGE
- = BREA PLAZA
- = PROJECT AREA

FIGURE 5-1

PROJECT TRAFFIC DISTRIBUTION PATTERN – EXISTING RETAIL

BREA PLAZA EXPANSION PROJECT, BREA





n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f5-2.dwg LDP 08:43:52 05-13-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

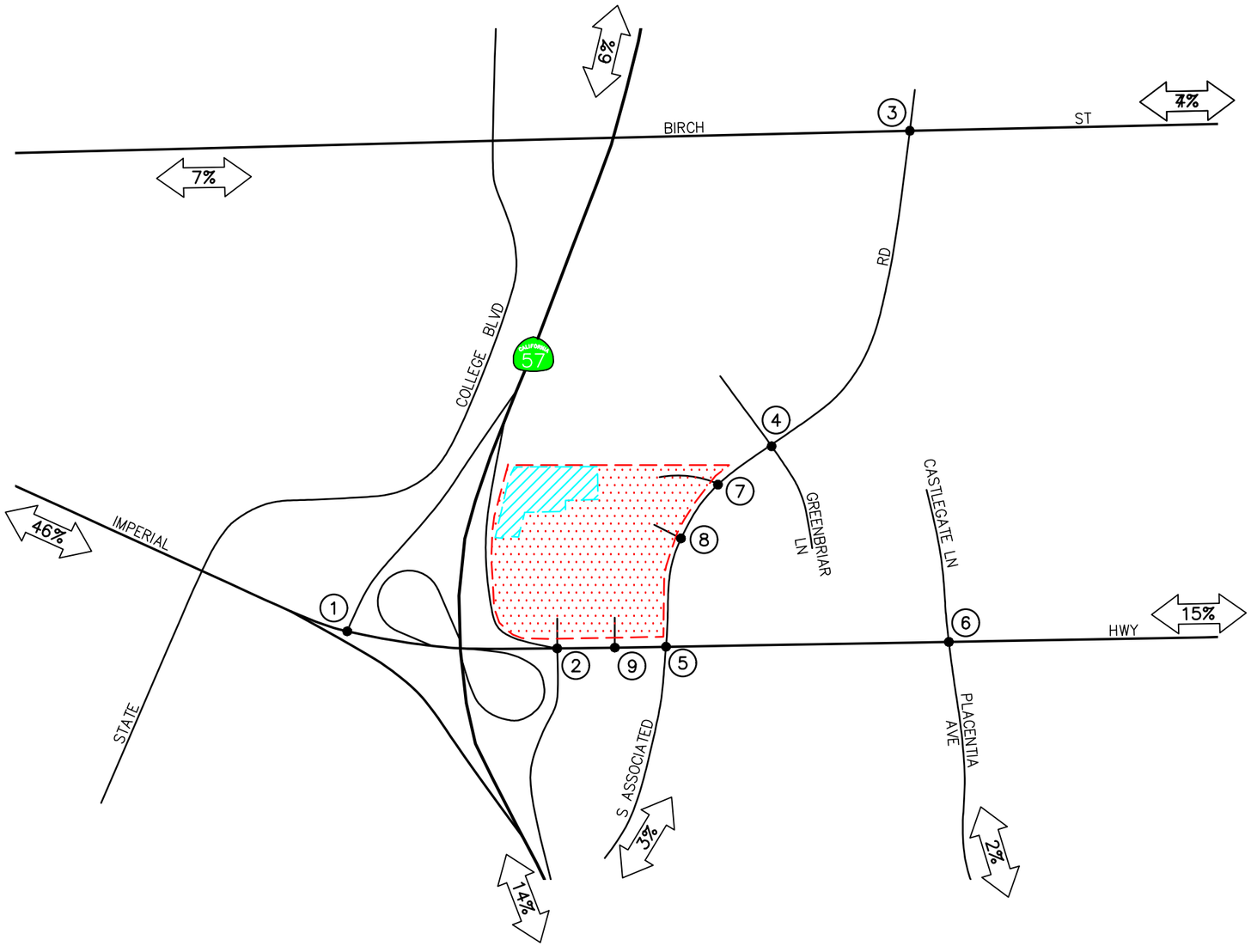
KEY

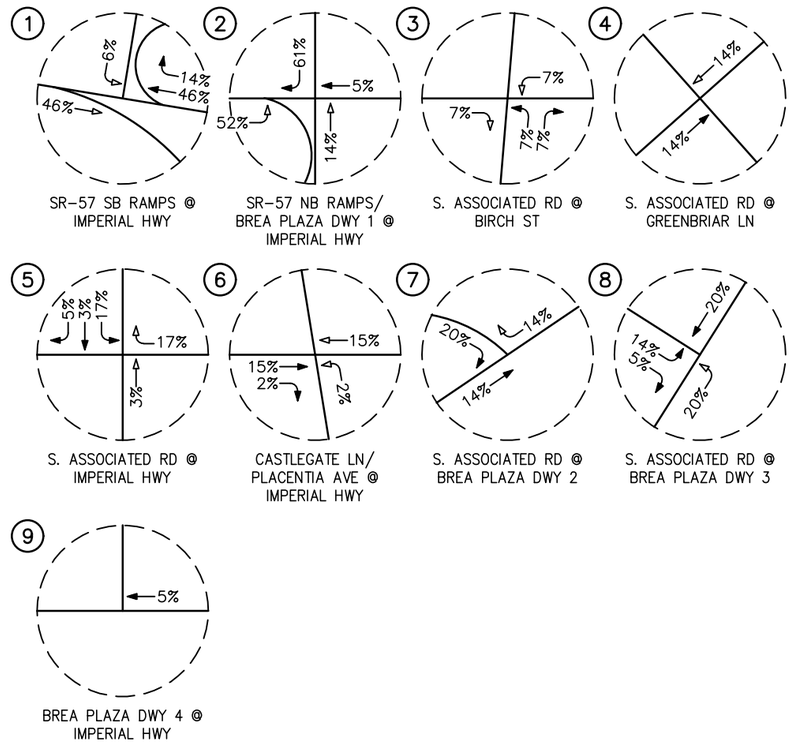
(#) = STUDY INTERSECTION
← = INBOUND PERCENTAGE
← = OUTBOUND PERCENTAGE
= BREA PLAZA
= PROJECT AREA

FIGURE 5-2

PROJECT TRAFFIC DISTRIBUTION PATTERN – PROPOSED RETAIL

BREA PLAZA EXPANSION PROJECT, BREA





n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f5-3.dwg LDP 08:48:13 05-13-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

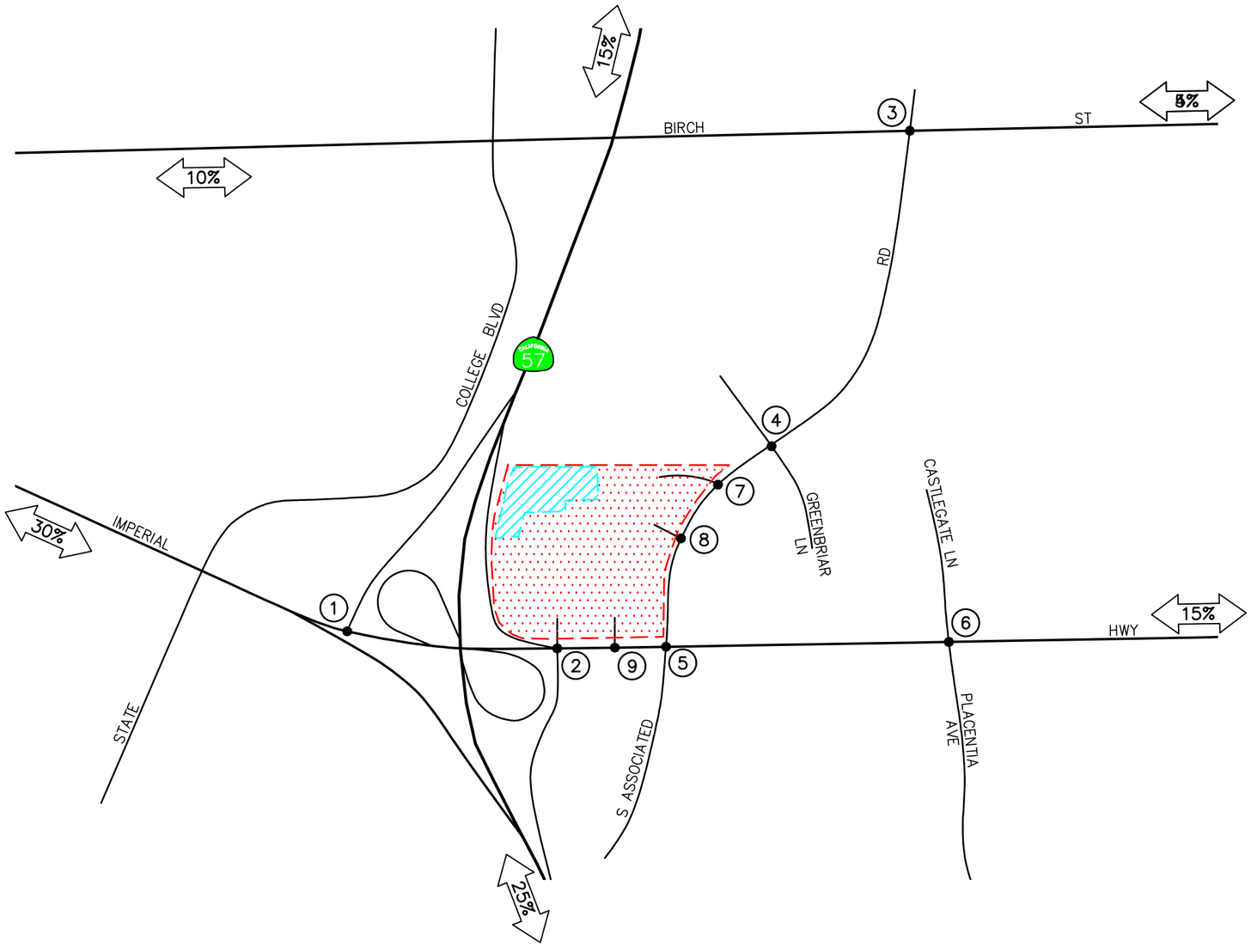
KEY

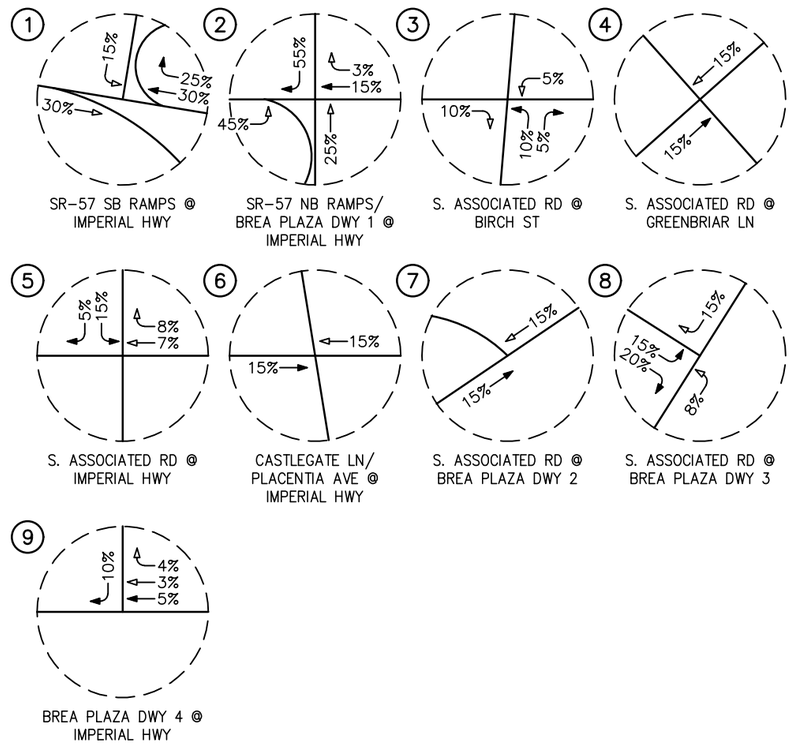
- (#) = STUDY INTERSECTION
- ⟵ = INBOUND PERCENTAGE
- ⟵ = OUTBOUND PERCENTAGE
- = BREA PLAZA
- = PROJECT AREA

FIGURE 5-3

PROJECT TRAFFIC DISTRIBUTION PATTERN – RESIDENTIAL

BREA PLAZA EXPANSION PROJECT, BREA





n:\4100\2194157 - brea plaza expansion project, brea\dwg\4157 f5-4.dwg LDP 08:50:22 05-13-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

- (#) = STUDY INTERSECTION
- ⟵ = INBOUND PERCENTAGE
- ⟵ = OUTBOUND PERCENTAGE
- = BREA PLAZA
- = PROJECT AREA

FIGURE 5-4

PROJECT TRAFFIC DISTRIBUTION PATTERN – OFFICE

BREA PLAZA EXPANSION PROJECT, BREA

LINSCOTT LAW & GREENSPAN engineers

TABLE 1

EXISTING TRAFFIC COUNT SUMMARY

Key Study Intersections	Historical Year 2018/2019 Counts Available?	Collect Year 2020 COVID-19 Counts?
4. SR-57 SB Ramps at Imperial Highway	Yes	--
5. SR-57 NB Ramps/Brea Plaza at Imperial Highway	Yes	--
6. S. Associated Road at Birch Street	Yes	--
7. S. Associated Road at Greenbriar Lane	**No**	**Yes**
8. S. Associated Road at Imperial Highway	Yes	**Yes**
10. Placentia Avenue at Imperial Highway	Yes	**Yes**
11. S. Associated Road at Brea Plaza Right-turn only Driveway	**No**	--
12. S. Associated Road at Brea Plaza Full access Driveway	**No**	--
13. Brea Plaza Right-turn only Driveway at Imperial Highway	**No**	--

LINSCOTT LAW & GREENSPAN engineers

TABLE 2-1
PROJECT DEVELOPMENT SUMMARY[2]

Project Description	(1) Existing Site	(2) Demolition	(3) New Construction	(4) Total Updated Site
Land Use				
▪ Residential Apartments	--	--	229 DU[3]	229 DU[3]
▪ Office	--	--	21,355 SF	21,355 SF
▪ Medical Office	1,596 SF	--	--	1,596 SF
▪ Restaurants	42,649 SF	--	--	42,649 SF
▪ Movie Theater (1,100 seats with 5 screens)	18,450 SF	18,450 SF	--	--
▪ Grocery Store	16,206 SF	--	--	16,206 SF
▪ Retail	68,415 SF	--	--	68,415 SF
▪ Liquor Store	18,013 SF	--	--	18,013 SF
Total Project	**165,329 SF**	**18,450 SF**	**229 DU and 21,355 SF**	**229 DU and 168,234 SF**
Parking				
▪ 3-Level Parking Structure	--		387 spaces and 10 tandem stalls	387 spaces and 10 tandem stalls
▪ Surface Parking	725 spaces[4]	116 spaces	--	609 spaces
Total Parking	**725 spaces**	**116 spaces**	**387 spaces and 10 tandem stalls**	**996 spaces and 10 tandem stalls**

2 Project development summary is based on project site plan prepared by Architects Orange, dated February 10, 2021.

3 There is a total of 189 apartment units. A portion of the proposed apartments are considered co-living units, which include five (5) 3-bedroom units and ten (10) 4-bedroom units. Therefore, to provide a conservative assessment, the co-living unit bedrooms have been counted as individual units for a total apartment count of 229 units.

4 Currently, there are a total of 725 parking stalls plus an additional 180 spaces during business hours and all surface spaces after 5PM and weekend through an easement with Mercury Insurance. However, the easement with Mercury Insurance will no longer be applicable as part of the proposed Project and all of the project parking demands will be accommodated on-site.

TABLE 5-1

PROJECT TRIP GENERATION FORECAST – ENTIRE BREA PLAZA[5]

Project Description	Weekday							Saturday			
	Daily	AM Peak Hour			PM Peak Hour			Daily	Midday Peak Hour		
	2-Way	Enter	Exit	Total	Enter	Exit	Total	2-Way	Enter	Exit	Total
Trip Generation Rates											
▪ 221: Multifamily Housing (Mid-Rise) (TE/DU)	5.44	26%	74%	0.36	61%	39%	0.44	4.91	49%	51%	0.44
▪ 444: Movie Theater (TE/Seat)	1.76	--	--	--	55%	45%	0.09	2.24	56%	44%	0.46
▪ 710: General Office Building (TE/TSF)	9.74	86%	14%	1.16	16%	84%	1.15	2.21	54%	46%	0.53
▪ 820: Shopping Center (TE/TSF GLA)	Eq.[6]	62%	38%	Eq.[6]	48%	52%	Eq.[6]	Eq.[6]	52%	48%	Eq.[6]
Existing Brea Plaza											
▪ Existing Shopping Center (146,879 SF)	7,808	140	85	225	347	375	722	11,311	403	436	839
Pass-by Reduction[7]	-781	-14	-9	-23	-118	-127	-245	-1,131	-40	-44	-84
Existing Shopping Center Total	**7,027**	**126**	**76**	**202**	**229**	**248**	**477**	**10,180**	**363**	**392**	**755**
▪ Existing Theater (1,100 seats)	1,936	--	--	--	54	45	99	2,464	283	223	506
Existing Brea Plaza Total	**8,963**	**126**	**76**	**202**	**283**	**293**	**576**	**12,644**	**646**	**615**	**1,261**
Proposed Brea Plaza											
▪ Proposed Shopping Center (146,879 SF)	7,808	140	85	225	347	375	722	11,311	403	436	839
Internal Capture[8]	-602	-2	-1	-3	-20	-30	-50	-507	-23	-25	-48
Subtotal	7,206	138	84	222	327	345	672	10,804	380	411	791
Pass-by Reduction[7]	-721	-14	-8	-22	-111	-117	-228	-1,080	-38	-41	-79
Proposed Shopping Center Total	**6,485**	**124**	**76**	**200**	**216**	**228**	**444**	**9,724**	**342**	**370**	**712**
▪ Proposed Residential (229 DU)	1,246	21	61	82	62	39	101	1,124	49	52	101
Internal Capture[8]	-576	0	-2	-2	-29	-18	-47	-508	-23	-24	-47
Proposed Residential Total	**670**	**21**	**59**	**80**	**33**	**21**	**54**	**616**	**26**	**28**	**54**
▪ Proposed Office (21,355 SF)	208	22	3	25	4	21	25	47	6	5	11
Internal Capture[8]	-80	-2	-1	-3	-3	-4	-7	-25	-4	-1	-5
Proposed Office Total	**128**	**20**	**2**	**22**	**1**	**17**	**18**	**22**	**2**	**4**	**6**
Proposed Brea Plaza Total	**7,283**	**165**	**137**	**302**	**250**	**266**	**516**	**10,362**	**370**	**402**	**772**
Net Trip Generation (Proposed Brea Plaza - Existing Brea Plaza)	**-1,680**	**39**	**61**	**100**	**-33**	**-27**	**-60**	**-2,282**	**-276**	**-213**	**-489**

5 Source: *Trip Generation*, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017).

6 Trip Generation rates based on the following equations:
- Weekday Daily: Ln(T) = 0.68Ln(X) + 5.57
- Weekday AM Peak Hour: T = 0.50(X) + 151.78
- Weekday PM Peak Hour: Ln(T) = 0.74Ln(X) + 2.89
- Saturday Daily: Ln(T) = 0.62Ln(X) + 6.24
- Saturday Peak Hour of Generator: Ln(T) = 0.79Ln(X) + 2.79

7 Pass-By Trips are trips made as intermediate stops on the way from an origin to a primary trip destination. Pass-by trips are attracted from traffic passing the site on adjacent streets, which contain direct access to the generator. For this analysis, the following pass-by reduction factors were used (Source: *Trip Generation Handbook,3rd Edition*, ITE 2017):
- 820: Shopping Center: PM Peak Hour – 34%, Daily/AM peak hour/Saturday Daily/Saturday Midday Peak Hour – Assume 10%

8 Consistent with the *Trip Generation Handbook,* published by ITE (2017), Project trip generation was adjusted to account for internal capture between the retail and residential components of the Project. As there are no Saturday internal capture worksheets available, Weekday Daily and Weekday PM peak hour calculations have been applied to Saturday Daily and Saturday Midday peak hour.

LINSCOTT LAW & GREENSPAN engineers

TABLE 5-2

PROJECT-RELATED ADDED PEAK HOUR TRAFFIC VOLUMES

Key Intersections	Jurisdiction	City Study Location Peak Hour "Threshold"	Time Period	Added Peak Hour Project Trips	Exceed "50 peak hour trip" threshold (Yes/No)
1. Brea Boulevard at Imperial Highway	Brea/ Caltrans	50 peak hour trips	AM PM	22 -26	No No
2. State College Boulevard at Birch Street	Brea	50 peak hour trips	AM PM	7 -2	No No
3. State College Boulevard at Imperial Highway	Brea/ Caltrans	50 peak hour trips	AM PM	42 -36	No No
4. SR-57 SB Ramps at Imperial Highway	Brea/ Caltrans	50 peak hour trips	AM PM	**55** -43	**Yes** No
5. SR-57 NB Ramps/Brea Plaza at Imperial Highway	Brea/ Caltrans	50 peak hour trips	AM PM	**68** -58	**Yes** No
6. S. Associated Road at Birch Street	Brea	50 peak hour trips	AM PM	13 -1	No No
7. S. Associated Road at Greenbriar Lane	Brea	50 peak hour trips	AM PM	14 -2	No No
8. S. Associated Road at Imperial Highway	Brea/ Caltrans	50 peak hour trips	AM PM	21 -12	No No
9. Kraemer Boulevard at Imperial Highway	Brea/ Caltrans	50 peak hour trips	AM PM	12 -4	No No
10. Placentia Avenue at Imperial Highway	Brea/ Caltrans	50 peak hour trips	AM PM	16 -9	No No
11. S. Associated Road at Brea Plaza Right-turn only Driveway	Brea	50 peak hour trips	AM PM	21 -12	No No
12. S. Associated Road at Brea Plaza Full access Driveway	Brea	50 peak hour trips	AM PM	33 -4	No No
13. Brea Plaza Right-turn only Driveway at Imperial Highway	Brea/ Caltrans	50 peak hour trips	AM PM	4 -14	No No

APPENDIX B

EXISTING TRAFFIC COUNT DATA

APPENDIX B-I

EXISTING (YEAR 2021) VOLUME DEVELOPMENT SUMMARY

Table B-1
Year 2021 Pre-COVID-19 Baseline Volume Development

Study Intersection	(1) 2018 AM Intersection Volume	(2) 2018 PM Intersection Volume	(3) 2020 COVID-19 AM Volume	(4) 2020 COVID-19 PM Volume	(5) 2020 COVID-19 AM Growth Per Year (%) [1]	(6) 2020 COVID-19 PM Growth Per Year (%) [2]	(7) 2018 Adjusted AM Intersection Volume [3]	(8) 2018 Adjusted PM Intersection Volume [4]	(9) 2018 Baseline AM Intersection Volume	(10) 2018 Baseline PM Intersection Volume	(11) 2021 Baseline AM Intersection Volume by applying 1% per year to Column 9	(12) 2021 Baseline PM Intersection Volume by applying 1% per year to Column 10
1. SR-57 SB Ramps at Imperial Highway	--	--	--	--	--	--	--	--	--	--	--	--
2. SR-57 NB Ramps/Brea Plaza at Imperial Highway	--	--	--	--	--	--	--	--	--	--	--	--
3. S. Associated Road at Birch Street	--	--	--	--	--	--	--	--	--	--	--	--
4. S. Associated Road at Greenbriar Lane	--	--	710	1,093	--	--	987	1,215	987	1,215	1,017	1,251
5. S. Associated Road at Imperial Highway	4,533	5,195	3,278	4,637	-19.1%	-6.0%	--	--	4,533	5,195	4,669	5,351
6. Placentia Avenue at Imperial Highway	3,906	4,478	2,792	4,062	-19.9%	-5.1%	--	--	3,906	4,478	4,023	4,612
Average Growth Rate Per Year					**-19.5%**	**-5.6%**						

Notes:

[1] [(Column 3 - Column 1)/Column 3] / (2020-2018)

[2] [(Column 4 - Column 2)/Column 4] / (2020-2018)

[3] 2018 Adjusted Volumes were developed by applying the average growth rate per year calculated in Column 5.
Column 3 + [Column 3 × (19.5% × (2020 - 2018))]

[4] 2018 Adjusted Volumes were developed by applying the average growth rate per year calculated in Column 6.
Column 4 + [Column 4 × (5.6% × (2020 - 2018))]

APPENDIX B-II

HISTORIC COUNTS

National Data & Surveying Services

Intersection Turning Movement Count

Location: SR-57 SB Ramps & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01101-015
Date: 5/22/2019

Total

NS/EW Streets:	SR-57 SB Ramps				SR-57 SB Ramps				Imperial Hwy				Imperial Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1.5	0	1.5	0	0	3	1	0	0	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	145	0	89	0	0	316	142	0	0	305	30	0	1027
7:15 AM	0	0	0	0	145	0	107	0	0	343	138	0	0	363	35	0	1131
7:30 AM	0	0	0	0	164	0	115	0	0	367	158	0	0	417	43	0	1264
7:45 AM	0	0	0	0	123	0	128	0	0	312	155	0	0	391	35	0	1144
8:00 AM	0	0	0	0	115	0	86	0	0	317	156	0	0	387	58	0	1119
8:15 AM	0	0	0	0	102	0	83	0	0	328	162	0	0	328	47	0	1050
8:30 AM	0	0	0	0	89	0	80	0	0	326	130	0	0	332	64	0	1021
8:45 AM	0	0	0	0	102	0	99	0	0	284	105	0	0	394	61	0	1045
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	985	0	787	0	0	2593	1146	0	0	2917	373	0	8801
APPROACH %'s :					55.59%	0.00%	44.41%	0.00%	0.00%	69.35%	30.65%	0.00%	0.00%	88.66%	11.34%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	547	0	436	0	0	1339	607	0	0	1558	171	0	4658
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.834	0.000	0.852	0.000	0.000	0.912	0.960	0.000	0.000	0.934	0.737	0.000	0.921
					0.881				0.927				0.940				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1.5	0	1.5	0	0	3	1	0	0	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	131	0	102	0	0	340	161	0	0	527	111	0	1372
4:15 PM	0	0	0	0	142	0	108	0	0	385	134	0	0	459	104	0	1332
4:30 PM	0	0	0	0	102	0	97	0	0	343	169	0	0	502	101	0	1314
4:45 PM	0	0	0	0	129	0	117	0	0	327	175	0	0	522	137	0	1407
5:00 PM	0	0	0	0	150	0	135	0	0	345	248	0	0	517	100	0	1495
5:15 PM	0	0	0	0	169	0	127	0	0	411	213	0	0	496	86	0	1502
5:30 PM	0	0	0	0	161	0	120	0	0	396	194	0	0	507	82	0	1460
5:45 PM	0	0	0	0	140	0	110	0	0	384	190	0	0	518	100	0	1442
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	1124	0	916	0	0	2931	1484	0	0	4048	821	0	11324
APPROACH %'s :					55.10%	0.00%	44.90%	0.00%	0.00%	66.39%	33.61%	0.00%	0.00%	83.14%	16.86%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	620	0	492	0	0	1536	845	0	0	2038	368	0	5899
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.917	0.000	0.911	0.000	0.000	0.934	0.852	0.000	0.000	0.984	0.920	0.000	0.982
					0.939				0.954				0.973				

Prepared by National Data & Surveying Services

SR-57 SB Ramps & Imperial Hwy

Peak Hour Turning Movement Count

ID: 19-01101-015
City: Brea

Day: Wednesday
Date: 05/22/2019

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
05:00 PM - 06:00 PM	04:00 PM - 06:00 PM

SR-57 SB Ramps — SOUTHBOUND

AM	436	0	547	0	171	AM
NOON	0	0	0	0	0	NOON
PM	492	0	620	0	368	PM
	1.5	0	1.5	0		

Imperial Hwy — EASTBOUND

AM	NOON	PM	
1994	0	2530	⇦
0	0	0	0 ↶
0	0	0	0 ↱
1339	0	1536	3 →
607	0	845	1 ↳
AM	NOON	PM	

CONTROL

Signalized

TEV	4658	0	5899
	AM	NOON	PM
PHF	0.92		0.98

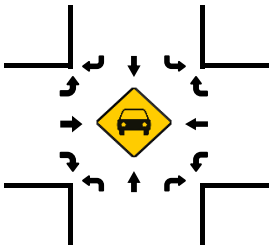
Imperial Hwy — WESTBOUND

PM	NOON	AM	
368	0	171	1 ↰
2038	0	1558	3 ←
0	0	0	0 ↰
0	0	0	0 ↶
2156	0	1886	⇨
PM	NOON	AM	

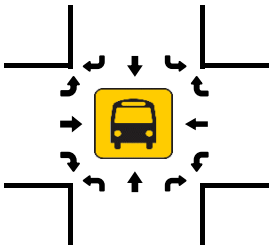
SR-57 SB Ramps — NORTHBOUND

PM	845	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	607	0	0	0	0	AM
		0	0	0	0	

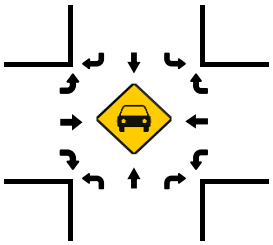
Total Vehicles (AM)



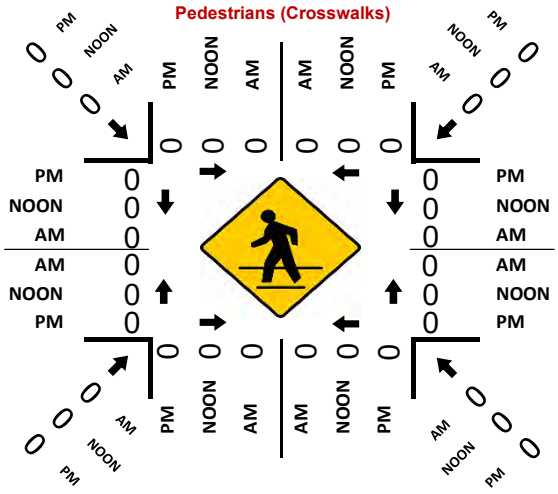
Total Vehicles (AM)



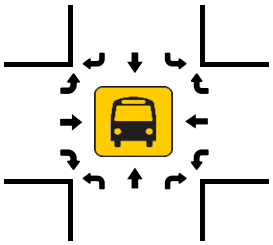
Total Vehicles (NOON)



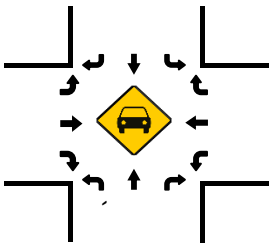
Pedestrians (Crosswalks)



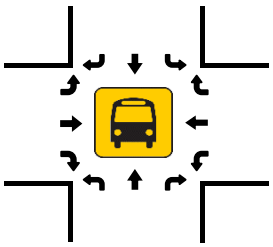
Total Vehicles (NOON)



Total Vehicles (PM)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: SR-57 NB Ramps & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01101-016
Date: 5/22/2019

Total

NS/EW Streets:	SR-57 NB Ramps					SR-57 NB Ramps					Imperial Hwy					Imperial Hwy									
AM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2					
	2.3	0.3	1.3	0	0	0	0	2	0	0	1	3	1	0	0	0	4	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2U	S2L2	S2T2	S2R2	S2U2	TOTAL
7:00 AM	152	46	165	0	0	0	0	14	0	6	23	318	132	0	0	0	167	3	0	125	0	0	0	0	0	1151
7:15 AM	207	50	192	0	0	0	0	16	0	17	29	312	133	0	0	0	177	2	0	105	0	0	0	0	0	1240
7:30 AM	245	50	173	0	0	0	0	12	0	9	34	366	133	0	0	0	203	3	0	119	0	0	0	0	0	1347
7:45 AM	174	43	204	0	1	0	0	12	0	7	65	264	122	0	0	0	240	1	0	111	0	0	0	0	0	1244
8:00 AM	160	24	177	0	0	0	0	12	0	5	24	275	117	0	0	0	253	0	0	120	0	0	0	0	0	1167
8:15 AM	187	24	187	0	1	0	0	12	0	13	15	302	109	0	0	0	200	3	0	124	0	0	0	0	0	1177
8:30 AM	171	34	212	0	1	0	0	18	0	5	29	274	116	0	0	0	203	3	0	108	0	0	0	0	0	1174
8:45 AM	223	28	203	0	0	0	0	15	0	9	39	242	97	0	0	0	226	4	0	93	0	0	0	0	0	1179
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2U	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	1519	299	1513	0	3	0	0	111	0	71	258	2353	959	0	0	0	1669	19	0	905	0	0	0	0	0	9679
APPROACH %'s :	45.56%	8.97%	45.38%	0.00%	0.09%	0.00%	0.00%	60.99%	0.00%	39.01%	7.23%	65.91%	26.86%	0.00%	0.00%	0.00%	64.37%	0.73%	0.00%	34.90%						
PEAK HR :	07:15 AM - 08:15 AM																									TOTAL
PEAK HR VOL :	786	167	746	0	1	0	0	52	0	38	152	1217	505	0	0	0	873	6	0	455	0	0	0	0	0	4998
PEAK HR FACTOR :	0.802	0.835	0.914	0.000	0.250	0.000	0.000	0.813	0.000	0.559	0.585	0.831	0.949	0.000	0.000	0.000	0.863	0.500	0.000	0.948	0.000	0.000	0.000	0.000	0.000	0.928
			0.908					0.682					0.879					0.894								

PM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2					
	2.3	0.3	1.3	0	0	0	0	2	0	0	1	3	1	0	0	0	4	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2U	S2L2	S2T2	S2R2	S2U2	TOTAL
4:00 PM	258	15	128	0	1	0	0	51	0	8	38	392	44	0	0	0	327	9	0	88	0	0	0	0	0	1359
4:15 PM	195	12	112	0	2	0	0	30	0	14	37	417	70	0	0	0	345	14	0	133	0	0	0	0	0	1381
4:30 PM	188	21	117	0	1	0	0	39	0	13	48	358	63	0	0	0	371	6	0	149	0	0	0	0	0	1374
4:45 PM	215	26	120	0	3	0	0	51	0	17	45	327	55	0	0	0	393	11	0	174	0	0	0	0	0	1437
5:00 PM	200	6	125	0	6	0	0	51	0	15	40	394	79	0	0	0	366	8	0	176	0	0	0	0	0	1466
5:15 PM	205	15	84	0	6	0	0	37	0	18	43	425	99	0	0	0	332	12	0	201	0	0	0	0	0	1477
5:30 PM	208	16	82	0	4	0	0	59	0	10	47	422	80	0	0	0	347	8	0	180	0	0	0	0	0	1463
5:45 PM	200	22	98	0	2	0	0	41	0	13	52	396	80	0	0	0	360	15	0	181	0	0	0	0	0	1460
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2U	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	1669	133	866	0	25	0	0	359	0	108	350	3131	570	0	0	0	2841	83	0	1282	0	0	0	0	0	11417
APPROACH %'s :	61.98%	4.94%	32.16%	0.00%	0.93%	0.00%	0.00%	76.87%	0.00%	23.13%	8.64%	77.29%	14.07%	0.00%	0.00%	0.00%	67.55%	1.97%	0.00%	30.48%						
PEAK HR :	05:00 PM - 06:00 PM																									TOTAL
PEAK HR VOL :	813	59	389	0	18	0	0	188	0	56	182	1637	338	0	0	0	1405	43	0	738	0	0	0	0	0	5866
PEAK HR FACTOR :	0.977	0.670	0.778	0.000	0.750	0.000	0.000	0.797	0.000	0.778	0.875	0.963	0.854	0.000	0.000	0.000	0.960	0.717	0.000	0.918	0.000	0.000	0.000	0.000	0.000	0.993
			0.949					0.884					0.951					0.983								

Prepared by National Data & Surveying Services

SR-57 NB Ramps & Imperial Hwy

Peak Hour Turning Movement Count

ID: 19-01101-016
City: Brea

Day: Wednesday
Date: 05/22/2019

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
05:00 PM - 06:00 PM	04:00 PM - 06:00 PM

SR-57 NB Ramps — SOUTHBOUND

AM	52	0	0	0	325 AM
NOON	0	0	0	0	0 NOON
PM	188	0	0	0	284 PM

EASTBOUND — Imperial Hwy

AM	NOON	PM	
1711	0	2406	⇦
0	0	0	0 ↶
152	0	182	1 ↱
1217	0	1637	3 →
505	0	338	1 ↳

WESTBOUND — Imperial Hwy

PM	NOON	AM	
43	0	6	0 ↶
1405	0	873	4 ←
0	0	0	0 ↰
0	0	0	0 ↩
2026	0	1963	⇨

CONTROL

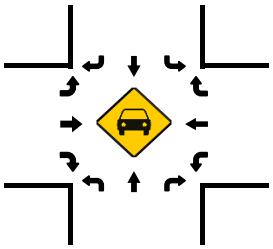
Signalized

TEV	4504 AM	0 NOON	5054 PM
PHF	0.93		0.99

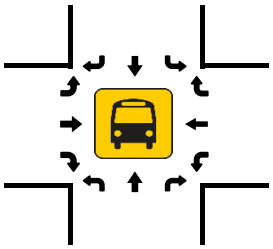
NORTHBOUND — SR-57 NB Ramps

PM	338	0	813	59	389 PM
NOON	0	0	0	0	0 NOON
AM	505	0	786	167	746 AM
		0 ↶	2.3 ↰	0.3 ↑	1.3 ↱

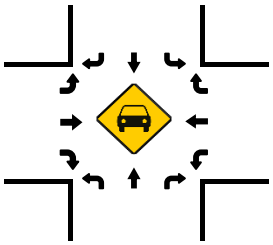
Total Vehicles (AM)



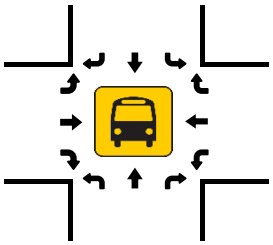
Total Vehicles (AM)



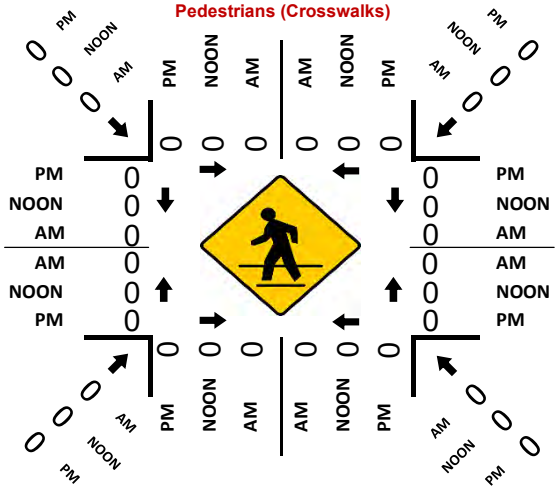
Total Vehicles (NOON)



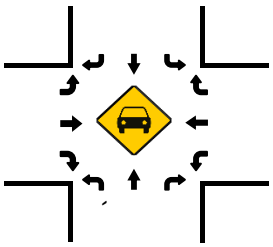
Total Vehicles (NOON)



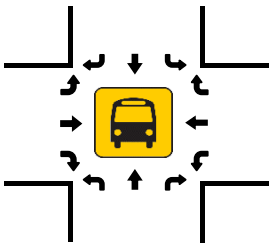
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: S Associated Rd & Birch St
City: Brea
Control: Signalized

Project ID: 18-01231-006
Date: 11/13/2018

Total

NS/EW Streets:	S Associated Rd				S Associated Rd				Birch St				Birch St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	1	0	0	1	2	0	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	20	0	51	4	5	4	0	0	0	155	71	0	74	88	1	0	473
7:15 AM	23	0	45	0	10	4	5	0	0	157	73	0	66	104	0	0	487
7:30 AM	40	1	58	7	9	13	3	0	1	220	86	0	80	134	4	0	656
7:45 AM	50	1	66	6	14	6	1	0	0	249	85	0	77	206	0	0	761
8:00 AM	47	3	69	10	6	3	2	0	0	228	68	0	84	194	1	0	715
8:15 AM	54	1	96	7	22	5	2	0	1	160	46	0	81	169	5	0	649
8:30 AM	53	1	47	8	5	3	2	0	3	99	52	0	75	120	3	0	471
8:45 AM	43	0	41	6	5	5	2	0	1	101	60	0	45	138	2	0	449
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	330	7	473	48	76	43	17	0	6	1369	541	0	582	1153	16	0	4661
APPROACH %'s :	38.46%	0.82%	55.13%	5.59%	55.88%	31.62%	12.50%	0.00%	0.31%	71.45%	28.24%	0.00%	33.24%	65.85%	0.91%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	191	6	289	30	51	27	8	0	2	857	285	0	322	703	10	0	2781
PEAK HR FACTOR :	0.884	0.500	0.753	0.750	0.580	0.519	0.667	0.000	0.500	0.860	0.828	0.000	0.958	0.853	0.500	0.000	0.914
			0.816				0.741				0.856				0.914		

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	1	0	0	1	2	0	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	81	4	56	2	2	2	2	0	0	167	58	1	66	199	6	0	646
4:15 PM	86	2	68	2	1	2	2	0	0	186	62	0	59	194	3	0	667
4:30 PM	99	4	67	3	3	1	1	0	0	200	60	0	60	260	5	0	763
4:45 PM	124	7	74	5	3	3	1	0	5	196	66	0	60	276	5	0	825
5:00 PM	120	9	77	4	2	6	2	0	1	196	76	1	76	279	5	0	854
5:15 PM	95	7	87	2	3	5	2	0	1	209	61	2	77	299	2	0	852
5:30 PM	81	7	85	3	2	4	1	0	2	203	67	0	54	288	4	0	801
5:45 PM	80	5	74	3	5	4	2	0	3	181	53	0	57	217	6	0	690
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	766	45	588	24	21	27	13	0	12	1538	503	4	509	2012	36	0	6098
APPROACH %'s :	53.83%	3.16%	41.32%	1.69%	34.43%	44.26%	21.31%	0.00%	0.58%	74.77%	24.45%	0.19%	19.91%	78.69%	1.41%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	420	30	323	14	10	18	6	0	9	804	270	3	267	1142	16	0	3332
PEAK HR FACTOR :	0.847	0.833	0.928	0.700	0.833	0.750	0.750	0.000	0.450	0.962	0.888	0.375	0.867	0.955	0.800	0.000	0.975
			0.937				0.850				0.991				0.942		

Prepared by National Data & Surveying Services

S Associated Rd & Birch St

Peak Hour Turning Movement Count

ID: 18-01231-006
City: Brea

Day: Tuesday
Date: 11/13/2018

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 04:45 PM - 05:45 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

S Associated Rd

SOUTHBOUND

AM	8	27	51	0	18	AM
NOON	0	0	0	0	0	NOON
PM	6	18	10	0	55	PM

EASTBOUND (Birch St)

AM	NOON	PM		
902	0	1571	⇦	
0	0	3	↶	0
2	0	9	↱	1
857	0	804	→	2
285	0	270	↴	0

WESTBOUND (Birch St)

	PM	NOON	AM
0	16	0	10
2	1142	0	703
2	267	0	322
0	0	0	0
⇨	1137	0	1197

CONTROL

Signalized

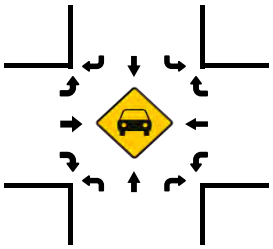
TEV	2781 AM	0 NOON	3332 PM
PHF	0.91		0.98

NORTHBOUND

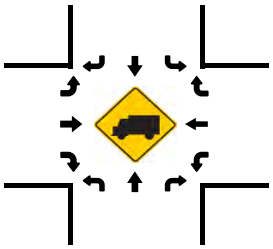
PM	569	14	420	30	323	PM
NOON	0	0	0	0	0	NOON
AM	664	30	191	6	289	AM

S Associated Rd

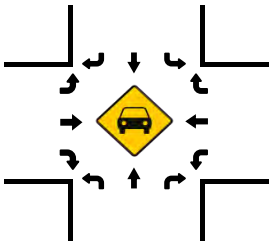
Total Vehicles (AM)



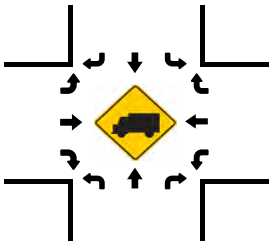
2axle (AM)



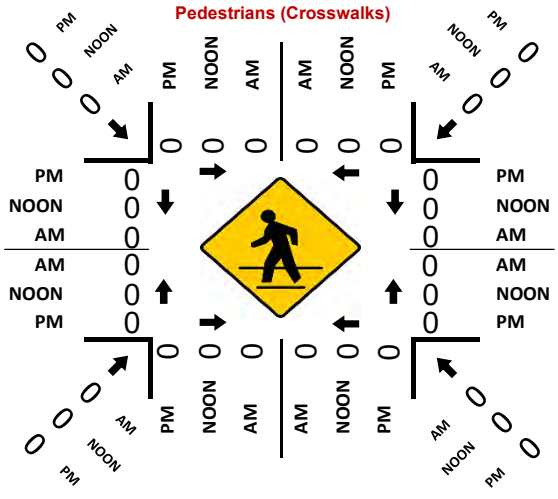
Total Vehicles (Noon)



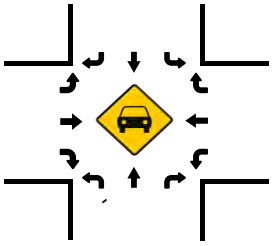
2axle (NOON)



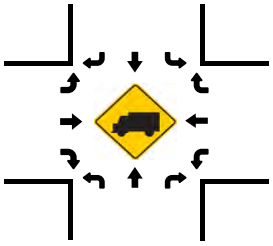
Pedestrians (Crosswalks)



Total Vehicles (PM)



2axle (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Associated Rd & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 18-01231-009
Date: 11/13/2018

Total

NS/EW Streets:	Associated Rd				Associated Rd				Imperial Hwy				Imperial Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	2	1	1	0	1	3	0	0	1	4	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	34	29	10	0	27	78	24	0	35	385	21	0	15	278	10	0	946
7:15 AM	50	32	12	0	32	65	26	0	37	376	32	1	23	297	10	0	993
7:30 AM	33	44	13	0	24	86	37	0	32	386	27	1	20	347	17	0	1067
7:45 AM	28	62	21	0	29	66	31	0	38	464	29	0	12	388	22	0	1190
8:00 AM	43	47	15	0	47	68	34	1	38	422	17	0	23	378	21	0	1154
8:15 AM	32	39	17	0	36	85	33	1	29	435	19	0	30	348	18	0	1122
8:30 AM	38	20	14	0	50	68	30	0	28	464	26	0	21	286	14	0	1059
8:45 AM	40	33	33	0	43	51	17	0	25	418	18	1	21	284	17	0	1001
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	298	306	135	0	288	567	232	2	262	3350	189	3	165	2606	129	0	8532
APPROACH %'s :	40.32%	41.41%	18.27%	0.00%	26.45%	52.07%	21.30%	0.18%	6.89%	88.07%	4.97%	0.08%	5.69%	89.86%	4.45%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	136	192	66	0	136	305	135	2	137	1707	92	1	85	1461	78	0	4533
PEAK HR FACTOR :	0.791	0.774	0.786	0.000	0.723	0.887	0.912	0.500	0.901	0.920	0.793	0.250	0.708	0.941	0.886	0.000	0.952
	0.887				0.932				0.912				0.962				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	2	1	1	0	1	3	0	0	1	4	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	36	48	23	0	60	60	44	1	47	389	32	1	33	392	29	0	1195
4:15 PM	50	57	24	0	49	76	58	1	49	415	35	0	32	378	39	0	1263
4:30 PM	48	56	16	0	55	67	37	0	45	406	22	0	29	412	46	1	1240
4:45 PM	52	41	17	0	75	97	69	0	55	410	31	0	37	362	55	0	1301
5:00 PM	52	56	21	1	73	87	52	0	56	383	29	1	38	346	36	0	1231
5:15 PM	55	67	20	0	60	63	48	0	65	431	34	0	45	422	33	0	1343
5:30 PM	39	76	20	0	62	76	37	0	56	424	34	0	42	420	34	0	1320
5:45 PM	50	48	21	1	63	62	42	0	62	433	41	1	32	383	41	0	1280
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	382	449	162	2	497	588	387	2	435	3291	258	3	288	3115	313	1	10173
APPROACH %'s :	38.39%	45.13%	16.28%	0.20%	33.72%	39.89%	26.26%	0.14%	10.91%	82.54%	6.47%	0.08%	7.75%	83.80%	8.42%	0.03%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	198	240	78	1	270	323	206	0	232	1648	128	1	162	1550	158	0	5195
PEAK HR FACTOR :	0.900	0.789	0.929	0.250	0.900	0.832	0.746	0.000	0.892	0.956	0.941	0.250	0.900	0.918	0.718	0.000	0.967
	0.910				0.829				0.948				0.935				

Prepared by National Data & Surveying Services

Associated Rd & Imperial Hwy

Peak Hour Turning Movement Count

ID: 18-01231-009
City: Brea

Day: Tuesday
Date: 11/13/2018

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

SOUTHBOUND — Associated Rd

AM	135	305	136	2	409	AM
NOON	0	0	0	0	0	NOON
PM	206	323	270	0	630	PM

EASTBOUND — Imperial Hwy

AM	NOON	PM	
1733	0	1955	
1	0	1	0
137	0	232	1
1707	0	1648	3
92	0	128	0

WESTBOUND — Imperial Hwy

PM	NOON	AM	
158	0	78	0
1550	0	1461	4
162	0	85	1
0	0	0	0
1996	0	1909	

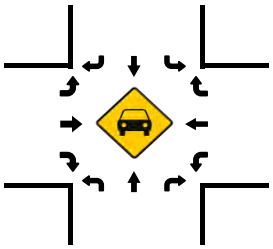
NORTHBOUND — Associated Rd

PM	614	1	198	240	78	PM
NOON	0	0	0	0	0	NOON
AM	482	0	136	192	66	AM

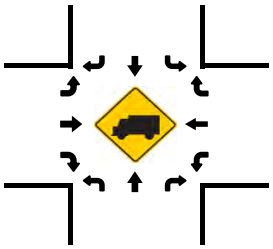
CONTROL: Signalized

TEV	4533	0	5195
	AM	NOON	PM
PHF	0.95		0.97

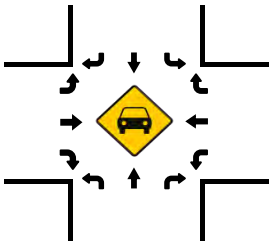
Total Vehicles (AM)



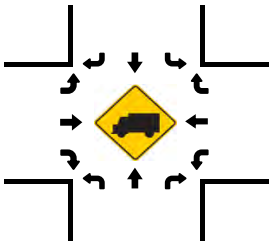
2axle (AM)



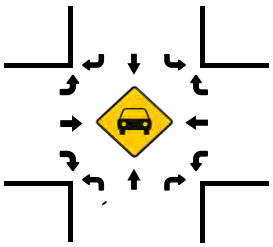
Total Vehicles (Noon)



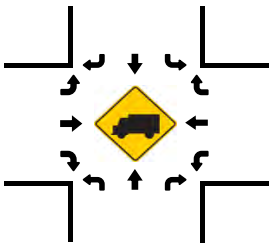
2axle (NOON)



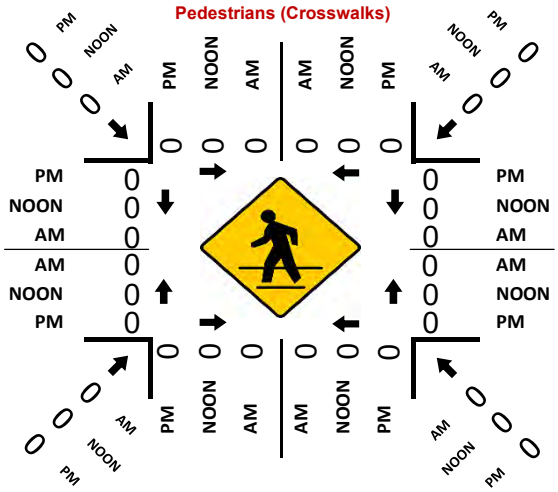
Total Vehicles (PM)



2axle (PM)



Pedestrians (Crosswalks)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Castlegate Ln/Placentia Ave & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 18-01231-010
Date: 11/13/2018

Total

NS/EW Streets:	Castlegate Ln/Placentia Ave				Castlegate Ln/Placentia Ave				Imperial Hwy				Imperial Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1	1	0	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	27	1	19	0	6	1	0	0	0	363	55	0	21	289	5	0	787
7:15 AM	30	5	27	0	8	6	4	0	0	356	50	0	30	292	5	0	813
7:30 AM	49	5	40	0	4	2	5	0	1	362	85	0	34	312	1	0	900
7:45 AM	54	5	32	0	6	12	5	0	4	429	78	1	42	377	9	0	1054
8:00 AM	25	3	24	0	5	6	2	0	2	415	83	0	46	346	7	0	964
8:15 AM	42	1	30	0	4	5	3	0	2	392	77	0	26	338	9	0	929
8:30 AM	37	2	48	0	8	3	3	0	3	435	91	0	48	276	5	0	959
8:45 AM	34	1	32	0	8	5	3	0	2	424	72	0	32	292	7	1	913
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	298	23	252	0	49	40	25	0	14	3176	591	1	279	2522	48	1	7319
APPROACH %'s :	52.01%	4.01%	43.98%	0.00%	42.98%	35.09%	21.93%	0.00%	0.37%	83.98%	15.63%	0.03%	9.79%	88.49%	1.68%	0.04%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	158	11	134	0	23	26	13	0	11	1671	329	1	162	1337	30	0	3906
PEAK HR FACTOR :	0.731	0.550	0.698	0.000	0.719	0.542	0.650	0.000	0.688	0.960	0.904	0.250	0.844	0.887	0.833	0.000	0.926
	0.832				0.674				0.951				0.893				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1	1	0	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	41	6	35	0	8	6	2	0	3	409	61	1	40	425	12	2	1051
4:15 PM	50	8	54	0	6	3	5	0	3	421	47	0	40	433	7	1	1078
4:30 PM	66	9	56	0	2	3	2	0	5	411	54	0	48	447	7	0	1110
4:45 PM	47	4	55	0	8	12	2	0	7	425	59	0	48	405	9	0	1081
5:00 PM	49	11	63	0	7	3	5	0	3	398	65	0	56	417	14	4	1095
5:15 PM	56	20	72	0	6	3	4	0	2	429	77	0	53	444	22	4	1192
5:30 PM	41	7	54	0	5	2	2	0	4	421	77	0	38	414	15	1	1081
5:45 PM	44	10	41	0	7	4	2	0	0	445	56	2	48	404	13	1	1077
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	394	75	430	0	49	36	24	0	27	3359	496	3	371	3389	99	13	8765
APPROACH %'s :	43.83%	8.34%	47.83%	0.00%	44.95%	33.03%	22.02%	0.00%	0.69%	86.46%	12.77%	0.08%	9.58%	87.53%	2.56%	0.34%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	218	44	246	0	23	21	13	0	17	1663	255	0	205	1713	52	8	4478
PEAK HR FACTOR :	0.826	0.550	0.854	0.000	0.719	0.438	0.650	0.000	0.607	0.969	0.828	0.000	0.915	0.958	0.591	0.500	0.939
	0.858				0.648				0.952				0.946				

Prepared by National Data & Surveying Services

Castlegate Ln/Placentia Ave & Imperial Hwy

Peak Hour Turning Movement Count

ID: 18-01231-010
City: Brea

Day: Tuesday
Date: 11/13/2018

PEAK HOURS

AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Castlegate Ln/Placentia Ave — SOUTHBOUND

AM	13	26	23	0	52	AM
NOON	0	0	0	0	0	NOON
PM	13	21	23	0	113	PM

Imperial Hwy — EASTBOUND

AM	NOON	PM		
1509	0	1944	⇦	
1	0	0	↶	0
11	0	17	↱	1
1671	0	1663	→	3
329	0	255	↳	1
AM	NOON	PM		

Imperial Hwy — WESTBOUND

PM	NOON	AM		
52	0	30	↰	0
1713	0	1337	←	3
205	0	162	↰	1
8	0	0	↶	0
1940	0	1828	⇨	
PM	NOON	AM		

CONTROL: Signalized

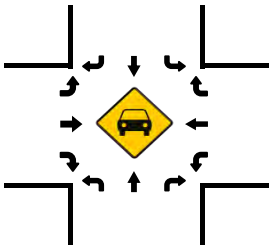
TEV	3906	0	4478
	AM	NOON	PM
PHF	0.93		0.94

Castlegate Ln/Placentia Ave — NORTHBOUND

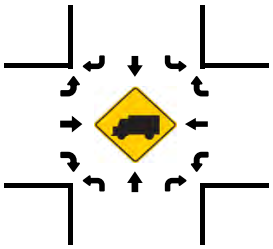
PM	481	0	218	44	246	PM
NOON	0	0	0	0	0	NOON
AM	517	0	158	11	134	AM
		0	1.5	0.5	1	

	0	1	1	0

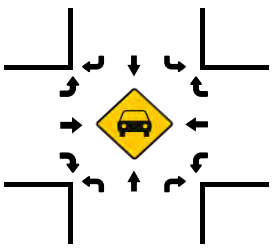
Total Vehicles (AM)



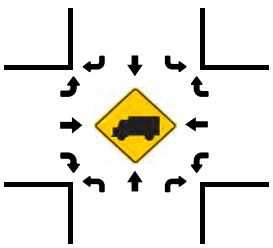
2axle (AM)



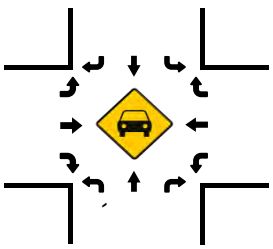
Total Vehicles (Noon)



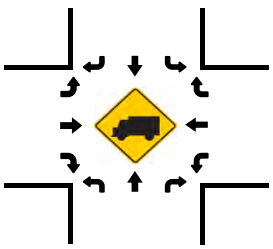
2axle (NOON)



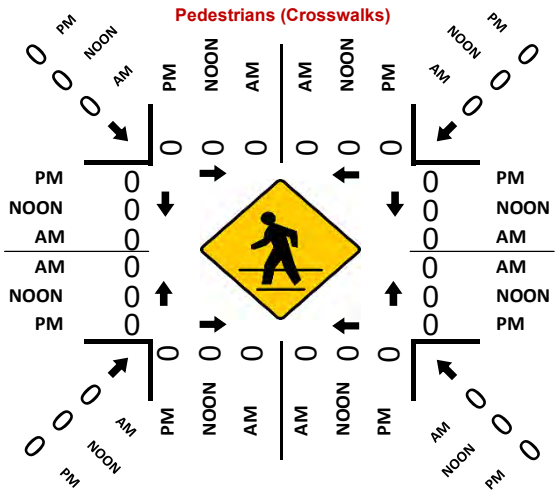
Total Vehicles (PM)



2axle (PM)



Pedestrians (Crosswalks)



Prepared by NDS/ATD

VOLUME

Imperial Hwy E/O SR-57 NB Ramps

Day: Tuesday
Date: 11/13/2018

City: Brea
Project #: CA18_1233_013

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	26,754	26,304	53,058

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
0:00			44		32		76		12:00			363		466		829	
0:15			36		32		68		12:15			394		437		831	
0:30			34		23		57		12:30			365		461		826	
0:45			16	130	11	98	27	228	12:45			394	1516	454	1818	848	3334
1:00			22		27		49		13:00			390		438		828	
1:15			17		9		26		13:15			428		431		859	
1:30			19		29		48		13:30			409		449		858	
1:45			19	77	18	83	37	160	13:45			429	1656	404	1722	833	3378
2:00			14		17		31		14:00			412		426		838	
2:15			14		16		30		14:15			378		441		819	
2:30			18		12		30		14:30			393		456		849	
2:45			26	72	14	59	40	131	14:45			396	1579	414	1737	810	3316
3:00			14		21		35		15:00			398		484		882	
3:15			10		21		31		15:15			465		450		915	
3:30			25		43		68		15:30			491		480		971	
3:45			35	84	38	123	73	207	15:45			473	1827	517	1931	990	3758
4:00			32		47		79		16:00			469		473		942	
4:15			38		50		88		16:15			499		486		985	
4:30			107		89		196		16:30			473		497		970	
4:45			153	330	87	273	240	603	16:45			496	1937	483	1939	979	3876
5:00			88		98		186		17:00			469		451		920	
5:15			133		117		250		17:15			530		525		1055	
5:30			177		188		365		17:30			514		496		1010	
5:45			235	633	179	582	414	1215	17:45			537	2050	476	1948	1013	3998
6:00			249		228		477		18:00			464		436		900	
6:15			260		233		493		18:15			477		418		895	
6:30			404		255		659		18:30			418		378		796	
6:45			417	1330	310	1026	727	2356	18:45			389	1748	347	1579	736	3327
7:00			441		336		777		19:00			380		340		720	
7:15			446		374		820		19:15			358		346		704	
7:30			446		418		864		19:30			292		310		602	
7:45			531	1864	447	1575	978	3439	19:45			268	1298	276	1272	544	2570
8:00			477		455		932		20:00			253		301		554	
8:15			483		413		896		20:15			254		247		501	
8:30			518		354		872		20:30			242		245		487	
8:45			462	1940	342	1564	804	3504	20:45			205	954	247	1040	452	1994
9:00			413		297		710		21:00			180		230		410	
9:15			359		295		654		21:15			176		222		398	
9:30			369		290		659		21:30			141		164		305	
9:45			374	1515	376	1258	750	2773	21:45			137	634	163	779	300	1413
10:00			362		349		711		22:00			142		145		287	
10:15			412		339		751		22:15			127		98		225	
10:30			352		408		760		22:30			106		94		200	
10:45			355	1481	416	1512	771	2993	22:45			78	453	96	433	174	886
11:00			366		389		755		23:00			52		61		113	
11:15			363		441		804		23:15			57		61		118	
11:30			349		453		802		23:30			41		57		98	
11:45			382	1460	455	1738	837	3198	23:45			36	186	36	215	72	401
TOTALS				10916		9891		**20807**	**TOTALS**				15838		16413		**32251**
SPLIT %				52.5%		47.5%		**39.2%**	**SPLIT %**				49.1%		50.9%		**60.8%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	26,754	26,304	53,058

AM Peak Hour			7:45	11:45	**7:45**	**PM Peak Hour**			17:00	15:45	**17:00**
AM Pk Volume			2009	1819	**3678**	**PM Pk Volume**			2050	1973	**3998**
Pk Hr Factor			0.946	0.976	**0.940**	**Pk Hr Factor**			0.954	0.954	**0.947**
7 - 9 Volume	0	0	3804	3139	**6943**	**4 - 6 Volume**	0	0	3987	3887	**7874**
7 - 9 Peak Hour			7:45	7:30	**7:45**	**4 - 6 Peak Hour**			17:00	16:30	**17:00**
7 - 9 Pk Volume	0	0	2009	1733	**3678**	**4 - 6 Pk Volume**	0	0	2050	1956	**3998**
Pk Hr Factor	0.000	0.000	0.946	0.952	**0.940**	**Pk Hr Factor**	0.000	0.000	0.954	0.931	**0.947**

Prepared by NDS/ATD

VOLUME

Imperial Hwy E/O Associated Rd

Day: Tuesday
Date: 11/13/2018

City: Brea
Project #: CA18_1233_014

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	26,549	24,435	50,984

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
0:00			31		23		54		12:00			390		434		824	
0:15			26		22		48		12:15			434		435		869	
0:30			28		19		47		12:30			414		427		841	
0:45			13	98	11	75	24	173	12:45			464	1702	436	1732	900	3434
1:00			18		22		40		13:00			428		413		841	
1:15			13		6		19		13:15			452		417		869	
1:30			17		20		37		13:30			417		445		862	
1:45			16	64	12	60	28	124	13:45			468	1765	388	1663	856	3428
2:00			14		15		29		14:00			431		400		831	
2:15			11		13		24		14:15			395		424		819	
2:30			16		10		26		14:30			408		438		846	
2:45			22	63	10	48	32	111	14:45			394	1628	384	1646	778	3274
3:00			11		12		23		15:00			412		451		863	
3:15			7		17		24		15:15			478		425		903	
3:30			23		28		51		15:30			480		472		952	
3:45			35	76	28	85	63	161	15:45			479	1849	472	1820	951	3669
4:00			31		38		69		16:00			472		454		926	
4:15			31		39		70		16:15			488		449		937	
4:30			89		68		157		16:30			478		488		966	
4:45			141	292	64	209	205	501	16:45			502	1940	454	1845	956	3785
5:00			87		65		152		17:00			477		420		897	
5:15			128		86		214		17:15			511		500		1011	
5:30			164		143		307		17:30			506		496		1002	
5:45			217	596	148	442	365	1038	17:45			517	2011	456	1872	973	3883
6:00			238		187		425		18:00			462		425		887	
6:15			245		183		428		18:15			468		422		890	
6:30			372		235		607		18:30			410		366		776	
6:45			402	1257	271	876	673	2133	18:45			352	1692	333	1546	685	3238
7:00			422		303		725		19:00			357		325		682	
7:15			420		330		750		19:15			342		332		674	
7:30			423		384		807		19:30			285		291		576	
7:45			514	1779	422	1439	936	3218	19:45			267	1251	250	1198	517	2449
8:00			484		422		906		20:00			238		293		531	
8:15			488		396		884		20:15			236		216		452	
8:30			528		321		849		20:30			238		216		454	
8:45			494	1994	322	1461	816	3455	20:45			183	895	219	944	402	1839
9:00			425		275		700		21:00			146		209		355	
9:15			351		294		645		21:15			161		191		352	
9:30			356		267		623		21:30			125		139		264	
9:45			346	1478	365	1201	711	2679	21:45			112	544	139	678	251	1222
10:00			367		351		718		22:00			133		116		249	
10:15			412		320		732		22:15			105		83		188	
10:30			373		375		748		22:30			80		82		162	
10:45			360	1512	418	1464	778	2976	22:45			64	382	78	359	142	741
11:00			387		360		747		23:00			36		48		84	
11:15			368		418		786		23:15			50		38		88	
11:30			365		423		788		23:30			32		35		67	
11:45			409	1529	428	1629	837	3158	23:45			34	152	22	143	56	295
TOTALS				10738		8989		**19727**	**TOTALS**				15811		15446		**31257**
SPLIT %				54.4%		45.6%		**38.7%**	**SPLIT %**				50.6%		49.4%		**61.3%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	26,549	24,435	50,984

AM Peak Hour			7:45	11:45	**7:45**	**PM Peak Hour**			17:00	17:15	**17:00**
AM Pk Volume			2014	1724	**3575**	**PM Pk Volume**			2011	1877	**3883**
Pk Hr Factor			0.954	0.991	**0.955**	**Pk Hr Factor**			0.972	0.939	**0.960**
7 - 9 Volume	0	0	3773	2900	**6673**	**4 - 6 Volume**	0	0	3951	3717	**7668**
7 - 9 Peak Hour			7:45	7:30	**7:45**	**4 - 6 Peak Hour**			17:00	17:00	**17:00**
7 - 9 Pk Volume	0	0	2014	1624	**3575**	**4 - 6 Pk Volume**	0	0	2011	1872	**3883**
Pk Hr Factor	0.000	0.000	0.954	0.962	**0.955**	**Pk Hr Factor**	0.000	0.000	0.972	0.936	**0.960**

Prepared by NDS/ATD

VOLUME

Imperial Hwy E/O Castlegate Ln/Placentia Ave

Day: Tuesday
Date: 11/13/2018

City: Brea
Project #: CA18_1233_015

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	26,188	24,966	51,154

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
0:00			27		20		47		12:00			398		437		835	
0:15			18		18		36		12:15			448		429		877	
0:30			24		15		39		12:30			419		457		876	
0:45			11	80	8	61	19	141	12:45			495	1760	415	1738	910	3498
1:00			11		19		30		13:00			450		421		871	
1:15			16		3		19		13:15			464		428		892	
1:30			13		18		31		13:30			434		464		898	
1:45			17	57	13	53	30	110	13:45			456	1804	412	1725	868	3529
2:00			15		14		29		14:00			444		439		883	
2:15			10		6		16		14:15			415		430		845	
2:30			15		7		22		14:30			426		456		882	
2:45			20	60	9	36	29	96	14:45			419	1704	399	1724	818	3428
3:00			10		12		22		15:00			447		434		881	
3:15			7		14		21		15:15			485		448		933	
3:30			21		30		51		15:30			491		478		969	
3:45			31	69	25	81	56	150	15:45			500	1923	468	1828	968	3751
4:00			33		36		69		16:00			454		479		933	
4:15			31		40		71		16:15			482		481		963	
4:30			80		63		143		16:30			469		502		971	
4:45			129	273	57	196	186	469	16:45			488	1893	462	1924	950	3817
5:00			78		62		140		17:00			472		491		963	
5:15			114		72		186		17:15			511		523		1034	
5:30			175		136		311		17:30			481		468		949	
5:45			248	615	131	401	379	1016	17:45			494	1958	466	1948	960	3906
6:00			231		191		422		18:00			431		445		876	
6:15			227		164		391		18:15			438		452		890	
6:30			331		236		567		18:30			450		422		872	
6:45			403	1192	295	886	698	2078	18:45			334	1653	331	1650	665	3303
7:00			388		315		703		19:00			342		341		683	
7:15			391		327		718		19:15			324		338		662	
7:30			406		347		753		19:30			266		304		570	
7:45			467	1652	428	1417	895	3069	19:45			258	1190	260	1243	518	2433
8:00			444		399		843		20:00			236		307		543	
8:15			426		373		799		20:15			213		251		464	
8:30			491		329		820		20:30			213		221		434	
8:45			465	1826	332	1433	797	3259	20:45			162	824	227	1006	389	1830
9:00			411		325		736		21:00			121		228		349	
9:15			364		312		676		21:15			143		197		340	
9:30			393		271		664		21:30			107		151		258	
9:45			376	1544	368	1276	744	2820	21:45			106	477	141	717	247	1194
10:00			381		355		736		22:00			103		106		209	
10:15			418		315		733		22:15			85		91		176	
10:30			380		381		761		22:30			68		80		148	
10:45			376	1555	413	1464	789	3019	22:45			49	305	73	350	122	655
11:00			384		378		762		23:00			35		52		87	
11:15			411		411		822		23:15			48		40		88	
11:30			393		432		825		23:30			32		34		66	
11:45			440	1628	439	1660	879	3288	23:45			31	146	23	149	54	295
TOTALS				10551		8964		**19515**	**TOTALS**				15637		16002		**31639**
SPLIT %				54.1%		45.9%		**38.1%**	**SPLIT %**				49.4%		50.6%		**61.9%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	26,188	24,966	51,154

AM Peak Hour			7:45	11:45	**11:45**	**PM Peak Hour**			17:00	16:30	**16:30**
AM Pk Volume			1828	1762	**3467**	**PM Pk Volume**			1958	1978	**3918**
Pk Hr Factor			0.931	0.964	**0.986**	**Pk Hr Factor**			0.958	0.946	**0.947**
7 - 9 Volume	0	0	3478	2850	**6328**	**4 - 6 Volume**	0	0	3851	3872	**7723**
7 - 9 Peak Hour			7:45	7:30	**7:45**	**4 - 6 Peak Hour**			17:00	16:30	**16:30**
7 - 9 Pk Volume	0	0	1828	1547	**3357**	**4 - 6 Pk Volume**	0	0	1958	1978	**3918**
Pk Hr Factor	0.000	0.000	0.931	0.904	**0.938**	**Pk Hr Factor**	0.000	0.000	0.958	0.946	**0.947**

Prepared by NDS/ATD

VOLUME

Birch St E/O S Associated Rd

Day: Tuesday
Date: 11/13/2018

City: Brea
Project #: CA18_1232_008

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	12,383	11,595	23,978

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			13		6		19		12:00			201		199		400	
00:15			10		10		20		12:15			187		185		372	
00:30			6		1		7		12:30			175		147		322	
00:45			3	32	3	20	6	52	12:45			215	778	177	708	392	1486
01:00			6		4		10		13:00			163		161		324	
01:15			4		3		7		13:15			215		145		360	
01:30			2		4		6		13:30			205		180		385	
01:45			5	17	2	13	7	30	13:45			242	825	160	646	402	1471
02:00			0		2		2		14:00			248		153		401	
02:15			3		2		5		14:15			239		166		405	
02:30			2		1		3		14:30			278		206		484	
02:45			6	11	1	6	7	17	14:45			256	1021	307	832	563	1853
03:00			6		4		10		15:00			310		233		543	
03:15			1		9		10		15:15			280		185		465	
03:30			4		15		19		15:30			242		266		508	
03:45			5	16	10	38	15	54	15:45			237	1069	248	932	485	2001
04:00			2		7		9		16:00			218		268		486	
04:15			16		13		29		16:15			254		264		518	
04:30			32		18		50		16:30			265		320		585	
04:45			31	81	24	62	55	143	16:45			265	1002	324	1176	589	2178
05:00			18		20		38		17:00			269		365		634	
05:15			29		26		55		17:15			294		368		662	
05:30			31		47		78		17:30			284		344		628	
05:45			92	170	64	157	156	327	17:45			263	1110	278	1355	541	2465
06:00			75		49		124		18:00			235		224		459	
06:15			97		97		194		18:15			242		193		435	
06:30			214		108		322		18:30			186		193		379	
06:45			256	642	147	401	403	1043	18:45			208	871	141	751	349	1622
07:00			202		164		366		19:00			173		112		285	
07:15			215		165		380		19:15			137		123		260	
07:30			282		223		505		19:30			123		96		219	
07:45			335	1034	296	848	631	1882	19:45			96	529	87	418	183	947
08:00			292		271		563		20:00			114		81		195	
08:15			275		246		521		20:15			109		77		186	
08:30			148		188		336		20:30			112		57		169	
08:45			147	862	182	887	329	1749	20:45			93	428	65	280	158	708
09:00			133		157		290		21:00			75		50		125	
09:15			101		126		227		21:15			68		22		90	
09:30			107		134		241		21:30			48		31		79	
09:45			110	451	158	575	268	1026	21:45			54	245	27	130	81	375
10:00			97		145		242		22:00			45		23		68	
10:15			111		122		233		22:15			38		32		70	
10:30			124		148		272		22:30			35		22		57	
10:45			126	458	142	557	268	1015	22:45			17	135	15	92	32	227
11:00			133		135		268		23:00			27		15		42	
11:15			125		159		284		23:15			14		14		28	
11:30			123		189		312		23:30			13		15		28	
11:45			154	535	175	658	329	1193	23:45			7	61	9	53	16	114
TOTALS				4309		4222		8531	TOTALS				8074		7373		15447
SPLIT %				50.5%		49.5%		35.6%	SPLIT %				52.3%		47.7%		64.4%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	12,383	11,595	23,978

AM Peak Hour			07:30	07:30	07:30	PM Peak Hour			14:30	16:45	16:45
AM Pk Volume			1184	1036	2220	PM Pk Volume			1124	1401	2513
Pk Hr Factor			0.884	0.875	0.880	Pk Hr Factor			0.906	0.952	0.949
7 - 9 Volume	0	0	1896	1735	3631	4 - 6 Volume	0	0	2112	2531	4643
7 - 9 Peak Hour			07:30	07:30	07:30	4 - 6 Peak Hour			16:45	16:45	16:45
7 - 9 Pk Volume	0	0	1184	1036	2220	4 - 6 Pk Volume	0	0	1112	1401	2513
Pk Hr Factor	0.000	0.000	0.884	0.875	0.880	Pk Hr Factor	0.000	0.000	0.946	0.952	0.949

APPENDIX B-III

YEAR 2020 COVID-19 COUNTS

National Data & Surveying Services

Intersection Turning Movement Count

Location: S Associated Rd & Greenbriar Ln
City: Brea
Control: Signalized

Project ID: 20-010024-001
Date: 10/29/2020

Total

NS/EW Streets:	S Associated Rd				S Associated Rd				Greenbriar Ln				Greenbriar Ln				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	55	1	0	1	45	0	0	0	0	9	0	3	2	3	0	120
7:15 AM	0	55	1	0	0	66	0	0	1	0	2	0	11	2	2	0	140
7:30 AM	4	56	3	0	0	70	1	0	0	1	3	0	7	0	4	0	149
7:45 AM	4	84	2	1	4	82	1	0	1	1	7	0	6	3	7	0	203
8:00 AM	3	70	3	0	1	75	1	0	1	0	5	0	10	3	12	0	184
8:15 AM	5	60	1	0	3	83	1	0	1	0	4	0	2	0	6	0	166
8:30 AM	8	52	4	0	4	72	1	0	0	0	4	0	10	0	2	0	157
8:45 AM	4	53	5	0	6	54	0	0	1	0	4	0	8	1	4	0	140
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	29	485	20	1	19	547	5	0	5	2	38	0	57	11	40	0	1259
APPROACH %'s :	5.42%	90.65%	3.74%	0.19%	3.33%	95.80%	0.88%	0.00%	11.11%	4.44%	84.44%	0.00%	52.78%	10.19%	37.04%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	20	266	10	1	12	312	4	0	3	1	20	0	28	6	27	0	710
PEAK HR FACTOR :	0.625	0.792	0.625	0.250	0.750	0.940	1.000	0.000	0.750	0.250	0.714	0.000	0.700	0.500	0.563	0.000	0.874
	0.816				0.943				0.667				0.610				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	8	93	10	2	3	113	2	1	3	0	5	0	4	1	5	0	250
4:15 PM	8	105	6	0	5	110	1	0	7	1	3	0	4	0	5	0	255
4:30 PM	5	108	8	0	2	89	3	1	2	1	5	0	3	2	10	0	239
4:45 PM	8	107	6	1	2	110	2	0	4	1	7	0	3	1	6	0	258
5:00 PM	9	101	9	0	5	112	1	0	3	2	6	0	5	2	7	0	262
5:15 PM	10	120	7	0	3	128	2	0	4	1	6	0	7	0	10	0	298
5:30 PM	4	118	9	1	4	115	1	0	1	4	4	0	6	1	7	0	275
5:45 PM	7	110	8	0	5	93	1	0	2	5	4	0	8	4	7	0	254
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	59	862	63	4	29	870	13	2	26	15	40	0	40	11	57	0	2091
APPROACH %'s :	5.97%	87.25%	6.38%	0.40%	3.17%	95.19%	1.42%	0.22%	32.10%	18.52%	49.38%	0.00%	37.04%	10.19%	52.78%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	31	446	31	2	14	465	6	0	12	8	23	0	21	4	30	0	1093
PEAK HR FACTOR :	0.775	0.929	0.861	0.500	0.700	0.908	0.750	0.000	0.750	0.500	0.821	0.000	0.750	0.500	0.750	0.000	0.917
	0.931				0.912				0.896				0.809				

Prepared by National Data & Surveying Services

S Associated Rd & Greenbriar Ln

Peak Hour Turning Movement Count

ID: 20-010024-001
City: Brea

Day: Thursday
Date: 10/29/2020

PEAK HOURS

AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 04:45 PM - 05:45 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

S Associated Rd — SOUTHBOUND

AM	4	312	12	0	296	AM
NOON	0	0	0	0	0	NOON
PM	6	465	14	0	488	PM

EASTBOUND — Greenbriar Ln

AM	NOON	PM	
30	0	41	
0	0	0	0
3	0	12	0
1	0	8	1
20	0	23	0
AM	NOON	PM	

WESTBOUND — Greenbriar Ln

PM	NOON	AM	
30	0	27	0
4	0	6	1
21	0	28	0
0	0	0	0
53	0	23	
PM	NOON	AM	

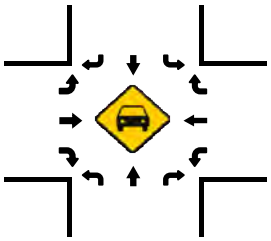
NORTHBOUND — S Associated Rd

PM	511	2	31	446	31	PM
NOON	0	0	0	0	0	NOON
AM	361	1	20	266	10	AM

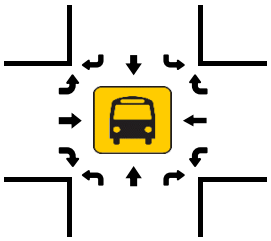
CONTROL: Signalized

TEV	710 AM	0 NOON	1093 PM
PHF	0.87		0.92

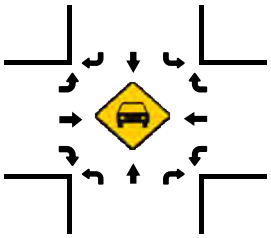
Total Vehicles (AM)



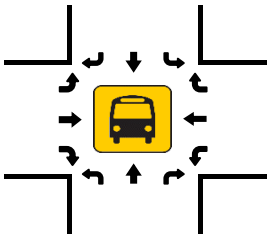
Total Vehicles (AM)



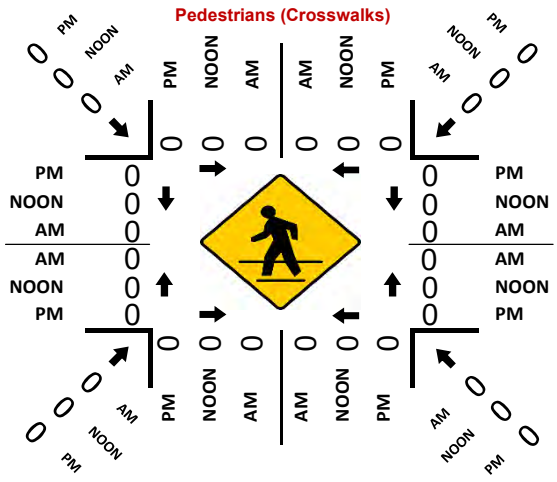
Total Vehicles (NOON)



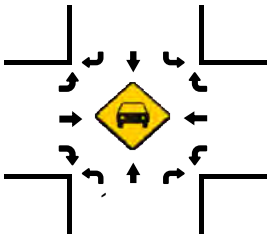
Total Vehicles (NOON)



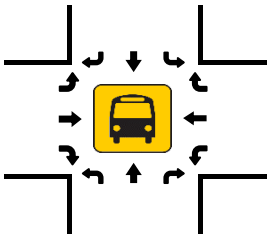
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: S Associated Rd & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 20-010024-002
Date: 10/29/2020

Total

NS/EW Streets:	S Associated Rd				S Associated Rd				Imperial Hwy				Imperial Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	2	1	1	0	1	3	0	0	1	4	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	27	11	4	0	5	28	23	0	32	267	7	1	5	192	9	0	611
7:15 AM	30	22	10	0	24	33	27	0	38	289	10	0	11	245	8	0	747
7:30 AM	49	36	24	0	16	41	40	0	43	345	18	0	19	237	12	0	880
7:45 AM	23	29	11	0	16	28	27	0	36	385	16	0	12	244	12	0	839
8:00 AM	22	15	9	0	24	41	30	1	22	323	12	0	14	249	17	0	779
8:15 AM	24	14	15	0	21	29	26	1	26	346	11	0	8	233	26	0	780
8:30 AM	27	23	11	0	25	29	21	0	27	319	11	0	14	245	13	0	765
8:45 AM	24	13	10	0	16	31	33	0	26	351	15	0	10	216	14	0	759
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	226	163	94	0	147	260	227	2	250	2625	100	1	93	1861	111	0	6160
APPROACH %'s :	46.79%	33.75%	19.46%	0.00%	23.11%	40.88%	35.69%	0.31%	8.40%	88.21%	3.36%	0.03%	4.50%	90.12%	5.38%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	118	94	59	0	77	139	123	2	127	1399	57	0	53	963	67	0	3278
PEAK HR FACTOR :	0.602	0.653	0.615	0.000	0.802	0.848	0.769	0.500	0.738	0.908	0.792	0.000	0.697	0.967	0.644	0.000	0.931
	0.622				0.879				0.906				0.967				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	2	1	1	0	1	3	0	0	1	4	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	42	27	16	1	64	54	56	0	54	376	23	2	29	379	33	0	1156
4:15 PM	34	36	13	1	49	42	42	1	41	360	29	1	21	397	43	0	1110
4:30 PM	44	29	22	0	53	43	49	0	39	379	27	3	22	396	43	0	1149
4:45 PM	45	32	13	0	49	36	44	0	59	381	36	0	34	362	40	0	1131
5:00 PM	32	42	17	0	45	62	65	0	46	394	33	2	26	404	43	0	1211
5:15 PM	38	41	22	0	58	33	42	1	55	401	38	0	34	340	32	0	1135
5:30 PM	38	43	23	0	53	38	51	0	55	405	42	2	29	341	40	0	1160
5:45 PM	42	30	21	0	55	42	48	0	55	363	25	0	33	377	31	0	1122
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	315	280	147	2	426	350	397	2	404	3059	253	10	228	2996	305	0	9174
APPROACH %'s :	42.34%	37.63%	19.76%	0.27%	36.26%	29.79%	33.79%	0.17%	10.84%	82.10%	6.79%	0.27%	6.46%	84.90%	8.64%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	153	158	75	0	205	169	202	1	215	1581	149	4	123	1447	155	0	4637
PEAK HR FACTOR :	0.850	0.919	0.815	0.000	0.884	0.681	0.777	0.250	0.911	0.976	0.887	0.500	0.904	0.895	0.901	0.000	0.957
	0.928				0.839				0.967				0.912				

Prepared by National Data & Surveying Services

S Associated Rd & Imperial Hwy

Peak Hour Turning Movement Count

ID: 20-010024-002
City: Brea

Day: Thursday
Date: 10/29/2020

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 04:45 PM - 05:45 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

S Associated Rd — SOUTHBOUND

AM	123	139	77	2	290	AM
NOON	0	0	0	0	0	NOON
PM	202	169	205	1	529	PM
	1	1	2	0		

Imperial Hwy — EASTBOUND

AM	NOON	PM	
1204	0	1806	
0	0	4	0
127	0	215	1
1399	0	1581	3
57	0	149	0
AM	NOON	PM	

CONTROL

Signalized

	AM	NOON	PM
TEV	3278	0	4637
PHF	0.93		0.96

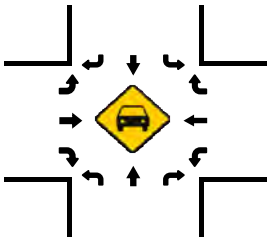
Imperial Hwy — WESTBOUND

PM	NOON	AM	
155	0	67	0
1447	0	963	4
123	0	53	1
0	0	0	0
1861	0	1535	
PM	NOON	AM	

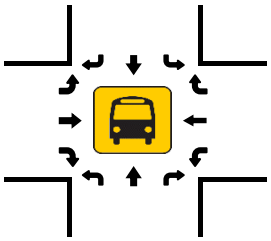
S Associated Rd — NORTHBOUND

PM	441	0	153	158	75	PM
NOON	0	0	0	0	0	NOON
AM	249	0	118	94	59	AM
		0	2	2	0	

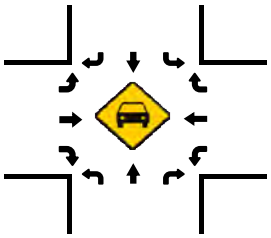
Total Vehicles (AM)



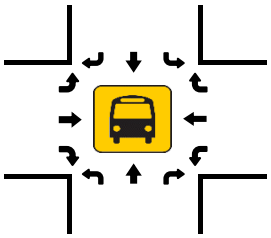
Total Vehicles (AM)



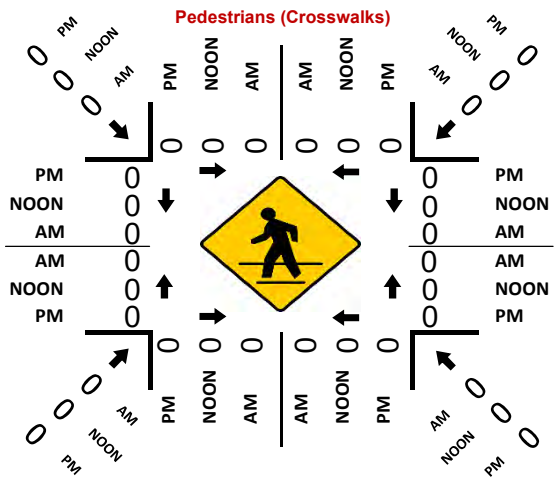
Total Vehicles (NOON)



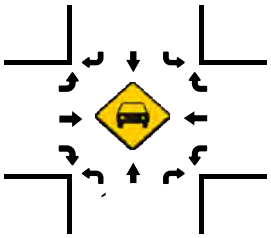
Total Vehicles (NOON)



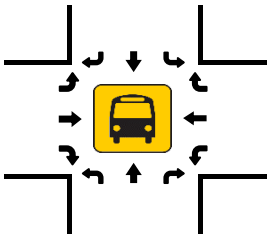
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Castlegate Ln/Placentia Ave & Imperial Hwy/CA 90
City: Brea
Control: Signalized

Project ID: 20-010024-003
Date: 10/29/2020

Total

NS/EW Streets:	Castlegate Ln/Placentia Ave				Castlegate Ln/Placentia Ave				Imperial Hwy/CA 90				Imperial Hwy/CA 90				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1	1	0	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	9	2	10	0	2	2	4	0	0	255	17	0	2	169	1	0	473
7:15 AM	23	3	19	0	1	2	3	0	3	267	16	0	9	220	0	0	566
7:30 AM	18	0	30	0	4	3	1	0	1	322	22	0	10	251	1	0	663
7:45 AM	36	6	33	0	3	1	4	0	2	312	23	0	18	222	1	0	661
8:00 AM	16	7	35	0	3	2	4	0	1	361	37	0	24	258	1	0	749
8:15 AM	17	0	13	0	2	2	3	0	4	304	38	2	18	232	1	0	636
8:30 AM	21	2	26	0	3	3	6	0	3	335	30	2	18	234	4	0	687
8:45 AM	21	2	37	0	10	1	7	0	2	349	34	0	21	232	4	0	720
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	161	22	203	0	28	16	32	0	16	2505	217	4	120	1818	13	0	5155
APPROACH %'s :	41.71%	5.70%	52.59%	0.00%	36.84%	21.05%	42.11%	0.00%	0.58%	91.36%	7.91%	0.15%	6.15%	93.18%	0.67%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	75	11	111	0	18	8	20	0	10	1349	139	4	81	956	10	0	2792
PEAK HR FACTOR :	0.893	0.393	0.750	0.000	0.450	0.667	0.714	0.000	0.625	0.934	0.914	0.500	0.844	0.926	0.625	0.000	0.932
	0.821				0.639				0.941				0.925				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1	1	0	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	16	4	53	0	5	2	1	0	2	380	42	1	40	422	8	1	977
4:15 PM	28	6	38	0	7	4	1	0	0	400	44	0	35	403	5	2	973
4:30 PM	33	3	51	0	5	4	3	0	4	357	38	0	42	410	11	0	961
4:45 PM	46	15	60	0	5	1	5	0	2	413	49	1	31	411	11	2	1052
5:00 PM	37	5	43	0	6	6	2	0	4	375	50	1	36	404	7	1	977
5:15 PM	45	7	51	0	5	6	6	0	5	418	49	0	32	390	8	0	1022
5:30 PM	28	5	49	0	8	4	3	0	7	426	49	1	50	369	10	2	1011
5:45 PM	38	7	46	0	7	2	2	0	3	408	50	1	49	399	6	0	1018
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	271	52	391	0	48	29	23	0	27	3177	371	5	315	3208	66	8	7991
APPROACH %'s :	37.96%	7.28%	54.76%	0.00%	48.00%	29.00%	23.00%	0.00%	0.75%	88.74%	10.36%	0.14%	8.76%	89.19%	1.83%	0.22%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	156	32	203	0	24	17	16	0	18	1632	197	3	149	1574	36	5	4062
PEAK HR FACTOR :	0.848	0.533	0.846	0.000	0.750	0.708	0.667	0.000	0.643	0.958	0.985	0.750	0.745	0.957	0.818	0.625	0.965
	0.808				0.838				0.958				0.969				

Prepared by National Data & Surveying Services

Castlegate Ln/Placentia Ave & Imperial Hwy/CA 90

Peak Hour Turning Movement Count

ID: 20-010024-003
City: Brea

Day: Thursday
Date: 10/29/2020

PEAK HOURS	
AM	08:00 AM - 09:00 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Castlegate Ln/Placentia Ave — SOUTHBOUND

AM	20	8	18	0	31	AM
NOON	0	0	0	0	0	NOON
PM	16	17	24	0	86	PM

EASTBOUND — Imperial Hwy/CA 90

AM	NOON	PM		
1055	0	1749	⇦	
4	0	3	↶	0
10	0	18	↱	1
1349	0	1632	→	3
139	0	197	↴	1
AM	NOON	PM		

WESTBOUND — Imperial Hwy/CA 90

PM	NOON	AM		
36	0	10	↰	0
1574	0	956	←	3
149	0	81	↰	1
5	0	0	↶	0
1864	0	1478	⇨	
PM	NOON	AM		

NORTHBOUND — Castlegate Ln/Placentia Ave

PM	363	0	156	32	203	PM
NOON	0	0	0	0	0	NOON
AM	228	0	75	11	111	AM

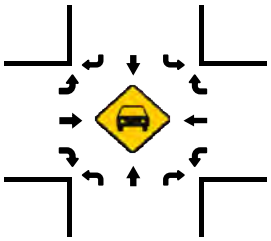
	0	1	1	0
	0	1.5	0.5	1

CONTROL

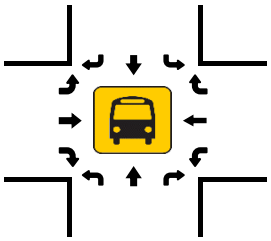
Signalized

TEV	2792	0	4062
	AM	NOON	PM
PHF	0.93		0.97

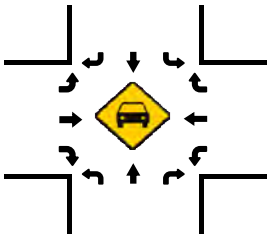
Total Vehicles (AM)



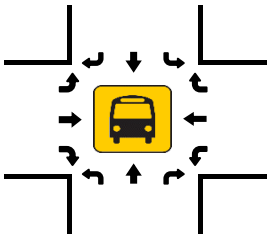
Total Vehicles (AM)



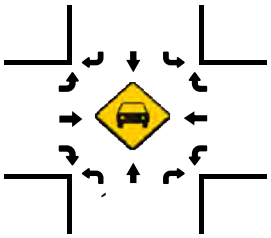
Total Vehicles (NOON)



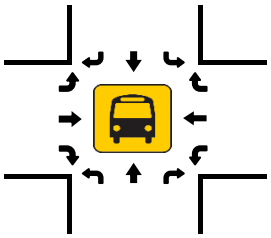
Total Vehicles (NOON)



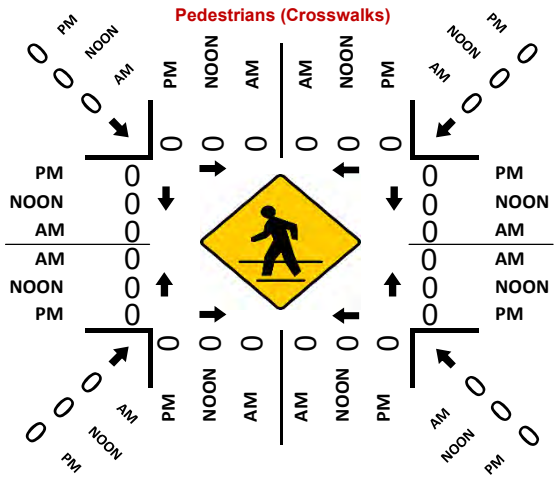
Total Vehicles (PM)



Total Vehicles (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

VOLUME

E Birch St E/O S Associated Rd

Day: Thursday
Date: 10/29/2020

City: Brea
Project #: CA20_010025_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	9,853	9,119	18,972

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			10		6		16		12:00			174		175		349	
00:15			12		3		15		12:15			178		177		355	
00:30			7		1		8		12:30			182		162		344	
00:45			5	34	3	13	8	47	12:45			154	688	201	715	355	1403
01:00			4		6		10		13:00			159		173		332	
01:15			4		1		5		13:15			187		167		354	
01:30			1		1		2		13:30			185		191		376	
01:45			6	15	7	15	13	30	13:45			170	701	159	690	329	1391
02:00			4		3		7		14:00			192		152		344	
02:15			1		2		3		14:15			165		190		355	
02:30			1		1		2		14:30			206		192		398	
02:45			0	6	1	7	1	13	14:45			209	772	155	689	364	1461
03:00			1		3		4		15:00			195		187		382	
03:15			3		1		4		15:15			221		196		417	
03:30			5		14		19		15:30			189		233		422	
03:45			11	20	11	29	22	49	15:45			196	801	218	834	414	1635
04:00			5		7		12		16:00			213		209		422	
04:15			11		8		19		16:15			222		224		446	
04:30			13		6		19		16:30			212		207		419	
04:45			25	54	12	33	37	87	16:45			251	898	217	857	468	1755
05:00			17		12		29		17:00			225		248		473	
05:15			15		15		30		17:15			275		242		517	
05:30			29		22		51		17:30			243		179		422	
05:45			47	108	41	90	88	198	17:45			211	954	211	880	422	1834
06:00			32		22		54		18:00			200		172		372	
06:15			64		41		105		18:15			184		179		363	
06:30			83		49		132		18:30			182		136		318	
06:45			136	315	71	183	207	498	18:45			163	729	126	613	289	1342
07:00			88		74		162		19:00			152		105		257	
07:15			123		105		228		19:15			131		92		223	
07:30			193		141		334		19:30			97		82		179	
07:45			230	634	239	559	469	1193	19:45			132	512	74	353	206	865
08:00			179		173		352		20:00			78		64		142	
08:15			160		162		322		20:15			88		60		148	
08:30			129		114		243		20:30			73		47		120	
08:45			128	596	154	603	282	1199	20:45			79	318	42	213	121	531
09:00			100		99		199		21:00			59		38		97	
09:15			110		114		224		21:15			60		36		96	
09:30			90		106		196		21:30			35		24		59	
09:45			107	407	127	446	234	853	21:45			39	193	32	130	71	323
10:00			89		88		177		22:00			31		14		45	
10:15			106		102		208		22:15			34		22		56	
10:30			110		132		242		22:30			22		14		36	
10:45			110	415	115	437	225	852	22:45			20	107	15	65	35	172
11:00			104		139		243		23:00			15		13		28	
11:15			125		145		270		23:15			19		21		40	
11:30			132		163		295		23:30			15		10		25	
11:45			155	516	161	608	316	1124	23:45			11	60	13	57	24	117
TOTALS				3120		3023		6143	TOTALS				6733		6096		12829
SPLIT %				50.8%		49.2%		32.4%	SPLIT %				52.5%		47.5%		67.6%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	9,853	9,119	18,972

AM Peak Hour			07:30	07:30	07:30	PM Peak Hour			16:45	16:30	16:45
AM Pk Volume			762	715	1477	PM Pk Volume			994	914	1880
Pk Hr Factor			0.828	0.748	0.787	Pk Hr Factor			0.904	0.921	0.909
7 - 9 Volume	0	0	1230	1162	2392	4 - 6 Volume	0	0	1852	1737	3589
7 - 9 Peak Hour			07:30	07:30	07:30	4 - 6 Peak Hour			16:45	16:30	16:45
7 - 9 Pk Volume	0	0	762	715	1477	4 - 6 Pk Volume	0	0	994	914	1880
Pk Hr Factor	0.000	0.000	0.828	0.748	0.787	Pk Hr Factor	0.000	0.000	0.904	0.921	0.909

Prepared by National Data & Surveying Services

VOLUME

S Associated Rd S/O E Birch St

Day: Thursday
Date: 10/29/2020

City: Brea
Project #: CA20_010025_002

DAILY TOTALS	NB	SB	EB	WB	Total
	5,312	5,130	0	0	10,442

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	8		4				12		12:00	113		95				208	
00:15	4		3				7		12:15	98		93				191	
00:30	3		2				5		12:30	107		106				213	
00:45	4	19	4	13			8	32	12:45	105	423	101	395			206	818
01:00	2		2				4		13:00	83		98				181	
01:15	3		0				3		13:15	112		108				220	
01:30	3		2				5		13:30	94		109				203	
01:45	4	12	2	6			6	18	13:45	95	384	104	419			199	803
02:00	6		2				8		14:00	108		75				183	
02:15	2		1				3		14:15	84		93				177	
02:30	2		0				2		14:30	95		93				188	
02:45	1	11	2	5			3	16	14:45	112	399	90	351			202	750
03:00	0		3				3		15:00	103		108				211	
03:15	3		1				4		15:15	120		98				218	
03:30	2		12				14		15:30	102		108				210	
03:45	12	17	9	25			21	42	15:45	113	438	86	400			199	838
04:00	3		5				8		16:00	108		135				243	
04:15	7		3				10		16:15	129		100				229	
04:30	9		5				14		16:30	107		98				205	
04:45	19	38	12	25			31	63	16:45	122	466	117	450			239	916
05:00	10		10				20		17:00	116		135				251	
05:15	12		11				23		17:15	126		128				254	
05:30	17		21				38		17:30	117		110				227	
05:45	19	58	32	74			51	132	17:45	108	467	102	475			210	942
06:00	13		25				38		18:00	101		73				174	
06:15	37		29				66		18:15	91		103				194	
06:30	33		34				67		18:30	94		90				184	
06:45	58	141	29	117			87	258	18:45	95	381	69	335			164	716
07:00	51		55				106		19:00	91		73				164	
07:15	58		57				115		19:15	76		75				151	
07:30	67		84				151		19:30	65		51				116	
07:45	94	270	82	278			176	548	19:45	69	301	38	237			107	538
08:00	78		86				164		20:00	55		39				94	
08:15	66		81				147		20:15	45		48				93	
08:30	57		65				122		20:30	48		37				85	
08:45	51	252	67	299			118	551	20:45	50	198	34	158			84	356
09:00	59		54				113		21:00	41		25				66	
09:15	50		62				112		21:15	22		29				51	
09:30	53		56				109		21:30	20		28				48	
09:45	71	233	65	237			136	470	21:45	19	102	21	103			40	205
10:00	49		72				121		22:00	25		24				49	
10:15	65		58				123		22:15	25		15				40	
10:30	70		63				133		22:30	10		10				20	
10:45	63	247	74	267			137	514	22:45	16	76	9	58			25	134
11:00	65		71				136		23:00	10		8				18	
11:15	72		104				176		23:15	14		9				23	
11:30	80		88				168		23:30	18		11				29	
11:45	104	321	107	370			211	691	23:45	16	58	5	33			21	91
TOTALS		1619		1716				3335	TOTALS		3693		3414				7107
SPLIT %		48.5%		51.5%				31.9%	SPLIT %		52.0%		48.0%				68.1%

DAILY TOTALS	NB	SB	EB	WB	Total
	5,312	5,130	0	0	10,442

AM Peak Hour	11:45	11:45			11:45	PM Peak Hour	16:45	16:45			16:45
AM Pk Volume	422	401			823	PM Pk Volume	481	490			971
Pk Hr Factor	0.934	0.937			0.966	Pk Hr Factor	0.954	0.907			0.956
7 - 9 Volume	522	577	0	0	1099	4 - 6 Volume	933	925	0	0	1858
7 - 9 Peak Hour	07:30	07:30			07:30	4 - 6 Peak Hour	16:45	16:45			16:45
7 - 9 Pk Volume	305	333	0	0	638	4 - 6 Pk Volume	481	490	0	0	971
Pk Hr Factor	0.811	0.968	0.000	0.000	0.906	Pk Hr Factor	0.954	0.907	0.000	0.000	0.956

APPENDIX C

INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS - ICU

APPENDIX C-I

EXISTING TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.558

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	558	0	445	0	1366	619	0	1589	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	558	0	445	0	1366	619	0	1589	174
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	140	0	111	0	342	155	0	397	44
Total Analysis Volume [veh/h]	0	0	0	558	0	445	0	1366	619	0	1589	174
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.16	0.00	0.20	0.00	0.27	0.00	0.00	0.31	0.00
Intersection LOS	A											
Intersection V/C	0.558											

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.557

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	803	43	761	0	0	50	116	1241	515	0	1355	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	803	43	761	0	0	50	116	1241	515	0	1355	18
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	201	11	190	0	0	13	29	310	129	0	339	5
Total Analysis Volume [veh/h]	803	43	761	0	0	50	116	1241	515	0	1355	18
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.16	0.24	0.24	0.00	0.00	0.00	0.07	0.24	0.00	0.00	0.20	0.20
Intersection LOS	A											
Intersection V/C	0.557											

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.603

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Base Volume Input [veh/h]	228	6	298	53	28	8	2	883	294	332	724	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	228	6	298	53	28	8	2	883	294	332	724	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	2	75	13	7	2	1	221	74	83	181	3
Total Analysis Volume [veh/h]	228	6	298	53	28	8	2	883	294	332	724	10
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.08	0.03	0.02	0.02	0.00	0.35	0.35	0.10	0.22	0.22
Intersection LOS	B											
Intersection V/C	0.603											

Intersection Level Of Service Report
Intersection 4: S. Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.262

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Base Volume Input [veh/h]	37	381	14	18	447	13	6	1	30	40	8	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	381	14	18	447	13	6	1	30	40	8	39
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	95	4	5	112	3	2	0	8	10	2	10
Total Analysis Volume [veh/h]	37	381	14	18	447	13	6	1	30	40	8	39
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.12	0.12	0.01	0.14	0.14	0.00	0.02	0.02	0.02	0.05	0.05
Intersection LOS	A											
Intersection V/C	0.262											

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.691

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	140	198	68	142	314	139	142	1758	95	88	1505	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	140	198	68	142	314	139	142	1758	95	88	1505	80
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	50	17	36	79	35	36	440	24	22	376	20
Total Analysis Volume [veh/h]	140	198	68	142	314	139	142	1758	95	88	1505	80
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.08	0.08	0.04	0.18	0.08	0.08	0.36	0.36	0.05	0.23	0.23
Intersection LOS	B											
Intersection V/C	0.691											

Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.590

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	163	11	138	24	27	13	12	1721	339	167	1377	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	163	11	138	24	27	13	12	1721	339	167	1377	31
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	3	35	6	7	3	3	430	85	42	344	8
Total Analysis Volume [veh/h]	163	11	138	24	27	13	12	1721	339	167	1377	31
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.05	0.08	0.01	0.02	0.02	0.01	0.34	0.20	0.10	0.28	0.28
Intersection LOS	A											
Intersection V/C	0.590											

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.680

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	632	0	502	0	1567	862	0	2079	375
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	632	0	502	0	1567	862	0	2079	375
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	158	0	126	0	392	216	0	520	94
Total Analysis Volume [veh/h]	0	0	0	632	0	502	0	1567	862	0	2079	375
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.19	0.00	0.22	0.00	0.31	0.00	0.00	0.41	0.00
Intersection LOS	B											
Intersection V/C	0.680											

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.693

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	848	72	397	0	0	231	206	1670	345	0	2186	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	848	72	397	0	0	231	206	1670	345	0	2186	46
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	212	18	99	0	0	58	52	418	86	0	547	12
Total Analysis Volume [veh/h]	848	72	397	0	0	231	206	1670	345	0	2186	46
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.19	0.19	0.00	0.00	0.00	0.12	0.33	0.00	0.00	0.33	0.33
Intersection LOS	B											
Intersection V/C	0.693											

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.602

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Base Volume Input [veh/h]	447	31	333	10	19	6	12	828	278	275	1176	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	447	31	333	10	19	6	12	828	278	275	1176	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	112	8	83	3	5	2	3	207	70	69	294	4
Total Analysis Volume [veh/h]	447	31	333	10	19	6	12	828	278	275	1176	16
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.02	0.12	0.01	0.01	0.01	0.01	0.33	0.33	0.08	0.35	0.35
Intersection LOS	B											
Intersection V/C	0.602											

Intersection Level Of Service Report
Intersection 4: S. Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.286

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Base Volume Input [veh/h]	37	511	35	16	533	8	18	9	42	24	4	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	511	35	16	533	8	18	9	42	24	4	34
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	128	9	4	133	2	5	2	11	6	1	9
Total Analysis Volume [veh/h]	37	511	35	16	533	8	18	9	42	24	4	34
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.16	0.16	0.01	0.16	0.16	0.01	0.04	0.04	0.01	0.04	0.04
Intersection LOS	A											
Intersection V/C	0.286											

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.763

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	205	247	80	278	333	212	240	1697	132	167	1597	163
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	205	247	80	278	333	212	240	1697	132	167	1597	163
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	62	20	70	83	53	60	424	33	42	399	41
Total Analysis Volume [veh/h]	205	247	80	278	333	212	240	1697	132	167	1597	163
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.10	0.10	0.08	0.20	0.12	0.14	0.36	0.36	0.10	0.26	0.26
Intersection LOS	C											
Intersection V/C	0.763											

Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.684

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	224	45	253	24	22	13	18	1713	263	219	1764	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	224	45	253	24	22	13	18	1713	263	219	1764	54
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	11	63	6	6	3	5	428	66	55	441	14
Total Analysis Volume [veh/h]	224	45	253	24	22	13	18	1713	263	219	1764	54
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.08	0.15	0.01	0.02	0.02	0.01	0.34	0.15	0.13	0.36	0.36
Intersection LOS	B											
Intersection V/C	0.684											

APPENDIX C-II

YEAR 2024 CUMULATIVE TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.638

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	577	0	501	0	1479	796	0	1921	180
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	577	0	501	0	1479	796	0	1921	180
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	144	0	125	0	370	199	0	480	45
Total Analysis Volume [veh/h]	0	0	0	577	0	501	0	1479	796	0	1921	180
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.17	0.00	0.21	0.00	0.29	0.00	0.00	0.38	0.00
Intersection LOS	B											
Intersection V/C	0.638											

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.615

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	1037	44	784	0	0	53	121	1333	548	0	1474	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1037	44	784	0	0	53	121	1333	548	0	1474	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	259	11	196	0	0	13	30	333	137	0	369	5
Total Analysis Volume [veh/h]	1037	44	784	0	0	53	121	1333	548	0	1474	19
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.20	0.27	0.27	0.00	0.00	0.00	0.07	0.26	0.00	0.00	0.22	0.22
Intersection LOS	B											
Intersection V/C	0.615											

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.628

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Base Volume Input [veh/h]	235	6	307	55	29	8	2	937	303	342	763	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	235	6	307	55	29	8	2	937	303	342	763	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	2	77	14	7	2	1	234	76	86	191	3
Total Analysis Volume [veh/h]	235	6	307	55	29	8	2	937	303	342	763	10
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.08	0.03	0.02	0.02	0.00	0.36	0.36	0.10	0.23	0.23
Intersection LOS	B											
Intersection V/C	0.628											

Intersection Level Of Service Report
Intersection 4: S. Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.269

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Base Volume Input [veh/h]	39	392	15	19	460	13	6	1	32	42	8	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	392	15	19	460	13	6	1	32	42	8	40
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	98	4	5	115	3	2	0	8	11	2	10
Total Analysis Volume [veh/h]	39	392	15	19	460	13	6	1	32	42	8	40
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.12	0.12	0.01	0.14	0.14	0.00	0.02	0.02	0.02	0.05	0.05
Intersection LOS	A											
Intersection V/C	0.269											

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.721

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	148	204	70	146	323	146	147	1859	101	91	1621	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	148	204	70	146	323	146	147	1859	101	91	1621	82
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	51	18	37	81	37	37	465	25	23	405	21
Total Analysis Volume [veh/h]	148	204	70	146	323	146	147	1859	101	91	1621	82
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.08	0.08	0.04	0.19	0.09	0.09	0.38	0.38	0.05	0.25	0.25
Intersection LOS	C											
Intersection V/C	0.721											

Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.615

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	179	11	142	25	28	13	12	1814	358	172	1478	32
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	11	142	25	28	13	12	1814	358	172	1478	32
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	3	36	6	7	3	3	454	90	43	370	8
Total Analysis Volume [veh/h]	179	11	142	25	28	13	12	1814	358	172	1478	32
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.06	0.08	0.01	0.02	0.02	0.01	0.36	0.21	0.10	0.30	0.30
Intersection LOS	B											
Intersection V/C	0.615											

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.764

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	653	0	548	0	1701	1051	0	2442	388
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	653	0	548	0	1701	1051	0	2442	388
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	163	0	137	0	425	263	0	611	97
Total Analysis Volume [veh/h]	0	0	0	653	0	548	0	1701	1051	0	2442	388
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.19	0.00	0.24	0.00	0.33	0.00	0.00	0.48	0.00
Intersection LOS	C											
Intersection V/C	0.764											

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.758

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	1089	74	409	0	0	239	213	1796	371	0	2340	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1089	74	409	0	0	239	213	1796	371	0	2340	47
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	272	19	102	0	0	60	53	449	93	0	585	12
Total Analysis Volume [veh/h]	1089	74	409	0	0	239	213	1796	371	0	2340	47
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.23	0.23	0.00	0.00	0.00	0.13	0.35	0.00	0.00	0.35	0.35
Intersection LOS	C											
Intersection V/C	0.758											

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.625

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Base Volume Input [veh/h]	460	32	343	10	20	6	12	874	286	283	1241	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	460	32	343	10	20	6	12	874	286	283	1241	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	115	8	86	3	5	2	3	219	72	71	310	4
Total Analysis Volume [veh/h]	460	32	343	10	20	6	12	874	286	283	1241	16
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.02	0.12	0.01	0.02	0.02	0.01	0.34	0.34	0.08	0.37	0.37
Intersection LOS	B											
Intersection V/C	0.625											

Intersection Level Of Service Report
Intersection 4: S. Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.296

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Base Volume Input [veh/h]	39	526	37	16	549	8	19	9	45	27	4	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	526	37	16	549	8	19	9	45	27	4	35
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	132	9	4	137	2	5	2	11	7	1	9
Total Analysis Volume [veh/h]	39	526	37	16	549	8	19	9	45	27	4	35
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.17	0.17	0.01	0.16	0.16	0.01	0.04	0.04	0.02	0.04	0.04
Intersection LOS	A											
Intersection V/C	0.296											

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.800

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	217	254	82	286	343	223	249	1817	139	172	1721	168
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	217	254	82	286	343	223	249	1817	139	172	1721	168
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	54	64	21	72	86	56	62	454	35	43	430	42
Total Analysis Volume [veh/h]	217	254	82	286	343	223	249	1817	139	172	1721	168
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.10	0.10	0.08	0.20	0.13	0.15	0.38	0.38	0.10	0.28	0.28
Intersection LOS	D											
Intersection V/C	0.800											

Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.716

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	250	46	261	25	23	13	19	1826	281	226	1875	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	250	46	261	25	23	13	19	1826	281	226	1875	56
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	12	65	6	6	3	5	457	70	57	469	14
Total Analysis Volume [veh/h]	250	46	261	25	23	13	19	1826	281	226	1875	56
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.09	0.15	0.01	0.02	0.02	0.01	0.36	0.17	0.13	0.38	0.38
Intersection LOS	C											
Intersection V/C	0.716											

APPENDIX C-III

YEAR 2024 CUMULATIVE PLUS PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.644

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	580	0	501	0	1494	796	0	1949	189
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	580	0	501	0	1494	796	0	1949	189
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	145	0	125	0	374	199	0	487	47
Total Analysis Volume [veh/h]	0	0	0	580	0	501	0	1494	796	0	1949	189
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.17	0.00	0.21	0.00	0.29	0.00	0.00	0.38	0.00
Intersection LOS	B											
Intersection V/C	0.644											

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.604

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	1037	31	804	0	0	87	100	1373	548	0	1482	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1037	31	804	0	0	87	100	1373	548	0	1482	14
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	259	8	201	0	0	22	25	343	137	0	371	4
Total Analysis Volume [veh/h]	1037	31	804	0	0	87	100	1373	548	0	1482	14
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.20	0.28	0.28	0.00	0.00	0.00	0.06	0.27	0.00	0.00	0.22	0.22
Intersection LOS	B											
Intersection V/C	0.604											

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.631

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Base Volume Input [veh/h]	239	6	311	55	29	8	2	937	306	344	763	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	239	6	311	55	29	8	2	937	306	344	763	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	2	78	14	7	2	1	234	77	86	191	3
Total Analysis Volume [veh/h]	239	6	311	55	29	8	2	937	306	344	763	10
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.08	0.03	0.02	0.02	0.00	0.37	0.37	0.10	0.23	0.23
Intersection LOS	B											
Intersection V/C	0.631											

Intersection Level Of Service Report
Intersection 4: S. Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.313

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Base Volume Input [veh/h]	110	399	15	19	459	20	7	1	42	42	8	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	399	15	19	459	20	7	1	42	42	8	40
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	100	4	5	115	5	2	0	11	11	2	10
Total Analysis Volume [veh/h]	110	399	15	19	459	20	7	1	42	42	8	40
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.12	0.12	0.01	0.14	0.14	0.00	0.03	0.03	0.02	0.05	0.05
Intersection LOS	A											
Intersection V/C	0.313											

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.723

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	148	205	70	155	325	154	207	1859	101	91	1616	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	148	205	70	155	325	154	207	1859	101	91	1616	94
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	51	18	39	81	39	52	465	25	23	404	24
Total Analysis Volume [veh/h]	148	205	70	155	325	154	207	1859	101	91	1616	94
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.08	0.08	0.05	0.19	0.09	0.12	0.38	0.38	0.05	0.25	0.25
Intersection LOS	C											
Intersection V/C	0.723											

Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.616

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	179	11	142	25	28	13	12	1823	359	172	1484	32
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	11	142	25	28	13	12	1823	359	172	1484	32
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	3	36	6	7	3	3	456	90	43	371	8
Total Analysis Volume [veh/h]	179	11	142	25	28	13	12	1823	359	172	1484	32
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.06	0.08	0.01	0.02	0.02	0.01	0.36	0.21	0.10	0.30	0.30
Intersection LOS	B											
Intersection V/C	0.616											

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.760

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	651	0	548	0	1682	1051	0	2424	384
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	651	0	548	0	1682	1051	0	2424	384
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	163	0	137	0	421	263	0	606	96
Total Analysis Volume [veh/h]	0	0	0	651	0	548	0	1682	1051	0	2424	384
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.19	0.00	0.24	0.00	0.33	0.00	0.00	0.48	0.00
Intersection LOS	C											
Intersection V/C	0.760											

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.741

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	1090	64	413	0	0	192	182	1805	371	0	2363	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1090	64	413	0	0	192	182	1805	371	0	2363	38
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	273	16	103	0	0	48	46	451	93	0	591	10
Total Analysis Volume [veh/h]	1090	64	413	0	0	192	182	1805	371	0	2363	38
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.23	0.23	0.00	0.00	0.00	0.11	0.35	0.00	0.00	0.35	0.35
Intersection LOS	C											
Intersection V/C	0.741											

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.625

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Base Volume Input [veh/h]	460	32	342	10	20	6	12	874	286	283	1241	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	460	32	342	10	20	6	12	874	286	283	1241	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	115	8	86	3	5	2	3	219	72	71	310	4
Total Analysis Volume [veh/h]	460	32	342	10	20	6	12	874	286	283	1241	16
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.02	0.12	0.01	0.02	0.02	0.01	0.34	0.34	0.08	0.37	0.37
Intersection LOS	B											
Intersection V/C	0.625											

Intersection Level Of Service Report
Intersection 4: S. Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.339

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Base Volume Input [veh/h]	51	522	37	16	547	9	24	9	102	27	4	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	522	37	16	547	9	24	9	102	27	4	35
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	131	9	4	137	2	6	2	26	7	1	9
Total Analysis Volume [veh/h]	51	522	37	16	547	9	24	9	102	27	4	35
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.16	0.16	0.01	0.16	0.16	0.01	0.08	0.08	0.02	0.04	0.04
Intersection LOS	A											
Intersection V/C	0.339											

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.801

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	216	254	82	278	343	249	260	1820	139	172	1712	173
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	216	254	82	278	343	249	260	1820	139	172	1712	173
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	54	64	21	70	86	62	65	455	35	43	428	43
Total Analysis Volume [veh/h]	216	254	82	278	343	249	260	1820	139	172	1712	173
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.10	0.10	0.08	0.20	0.15	0.15	0.38	0.38	0.10	0.28	0.28
Intersection LOS	D											
Intersection V/C	0.801											

Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	248	46	261	25	23	13	19	1825	277	226	1873	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	248	46	261	25	23	13	19	1825	277	226	1873	56
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	62	12	65	6	6	3	5	456	69	57	468	14
Total Analysis Volume [veh/h]	248	46	261	25	23	13	19	1825	277	226	1873	56
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.09	0.15	0.01	0.02	0.02	0.01	0.36	0.16	0.13	0.38	0.38
Intersection LOS	C											
Intersection V/C	0.715											

APPENDIX C-IV

YEAR 2045 GENERAL PLAN BUILDOUT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.675

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	606	0	562	0	1697	836	0	2020	189
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	606	0	562	0	1697	836	0	2020	189
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	152	0	141	0	424	209	0	505	47
Total Analysis Volume [veh/h]	0	0	0	606	0	562	0	1697	836	0	2020	189
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.18	0.00	0.23	0.00	0.33	0.00	0.00	0.40	0.00
Intersection LOS	B											
Intersection V/C	0.675											

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.644

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	1089	43	811	0	0	50	116	1520	575	0	1615	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1089	43	811	0	0	50	116	1520	575	0	1615	18
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	272	11	203	0	0	13	29	380	144	0	404	5
Total Analysis Volume [veh/h]	1089	43	811	0	0	50	116	1520	575	0	1615	18
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.29	0.29	0.00	0.00	0.00	0.07	0.30	0.00	0.00	0.24	0.24
Intersection LOS	B											
Intersection V/C	0.644											

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.647

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Base Volume Input [veh/h]	247	6	323	58	30	8	2	950	318	368	814	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	247	6	323	58	30	8	2	950	318	368	814	11
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	62	2	81	15	8	2	1	238	80	92	204	3
Total Analysis Volume [veh/h]	247	6	323	58	30	8	2	950	318	368	814	11
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.08	0.03	0.02	0.02	0.00	0.37	0.37	0.11	0.24	0.24
Intersection LOS	B											
Intersection V/C	0.647											

Intersection Level Of Service Report
Intersection 4: S. Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.301

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Base Volume Input [veh/h]	56	413	16	20	492	22	19	1	38	44	8	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	413	16	20	492	22	19	1	38	44	8	42
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	103	4	5	123	6	5	0	10	11	2	11
Total Analysis Volume [veh/h]	56	413	16	20	492	22	19	1	38	44	8	42
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.13	0.13	0.01	0.15	0.15	0.01	0.03	0.03	0.03	0.06	0.06
Intersection LOS	A											
Intersection V/C	0.301											

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.799

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	150	217	93	153	345	153	154	2166	106	96	1794	86
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	217	93	153	345	153	154	2166	106	96	1794	86
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	54	23	38	86	38	39	542	27	24	449	22
Total Analysis Volume [veh/h]	150	217	93	153	345	153	154	2166	106	96	1794	86
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.09	0.09	0.05	0.20	0.09	0.09	0.45	0.45	0.06	0.28	0.28
Intersection LOS	C											
Intersection V/C	0.799											

Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.673

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	191	12	149	26	29	14	14	2000	478	201	1643	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	191	12	149	26	29	14	14	2000	478	201	1643	34
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	3	37	7	7	4	4	500	120	50	411	9
Total Analysis Volume [veh/h]	191	12	149	26	29	14	14	2000	478	201	1643	34
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.06	0.09	0.02	0.03	0.03	0.01	0.39	0.28	0.12	0.33	0.33
Intersection LOS	B											
Intersection V/C	0.673											

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.805

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	683	0	601	0	1889	1104	0	2565	407
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	683	0	601	0	1889	1104	0	2565	407
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	171	0	150	0	472	276	0	641	102
Total Analysis Volume [veh/h]	0	0	0	683	0	601	0	1889	1104	0	2565	407
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.20	0.00	0.25	0.00	0.37	0.00	0.00	0.50	0.00
Intersection LOS	D											
Intersection V/C	0.805											

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.791

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	1143	72	430	0	0	231	206	1799	390	0	2526	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1143	72	430	0	0	231	206	1799	390	0	2526	46
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	286	18	108	0	0	58	52	450	98	0	632	12
Total Analysis Volume [veh/h]	1143	72	430	0	0	231	206	1799	390	0	2526	46
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.22	0.24	0.24	0.00	0.00	0.00	0.12	0.35	0.00	0.00	0.38	0.38
Intersection LOS	C											
Intersection V/C	0.791											

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Base Volume Input [veh/h]	483	34	368	11	21	6	12	889	300	300	1248	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	483	34	368	11	21	6	12	889	300	300	1248	17
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	9	92	3	5	2	3	222	75	75	312	4
Total Analysis Volume [veh/h]	483	34	368	11	21	6	12	889	300	300	1248	17
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.02	0.13	0.01	0.02	0.02	0.01	0.35	0.35	0.09	0.37	0.37
Intersection LOS	B											
Intersection V/C	0.646											

Intersection Level Of Service Report
Intersection 4: S. Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.319

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Base Volume Input [veh/h]	44	560	39	17	579	18	36	9	42	28	4	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	560	39	17	579	18	36	9	42	28	4	37
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	140	10	4	145	5	9	2	11	7	1	9
Total Analysis Volume [veh/h]	44	560	39	17	579	18	36	9	42	28	4	37
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.18	0.18	0.01	0.18	0.18	0.02	0.05	0.05	0.02	0.04	0.04
Intersection LOS	A											
Intersection V/C	0.319											

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.851

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	228	272	103	302	363	234	261	1879	146	210	1950	176
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	228	272	103	302	363	234	261	1879	146	210	1950	176
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	68	26	76	91	59	65	470	37	53	488	44
Total Analysis Volume [veh/h]	228	272	103	302	363	234	261	1879	146	210	1950	176
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.11	0.11	0.09	0.21	0.14	0.15	0.40	0.40	0.12	0.31	0.31
Intersection LOS	D											
Intersection V/C	0.851											

Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.749

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	274	48	277	26	24	14	20	1910	295	237	2116	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	274	48	277	26	24	14	20	1910	295	237	2116	59
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	12	69	7	6	4	5	478	74	59	529	15
Total Analysis Volume [veh/h]	274	48	277	26	24	14	20	1910	295	237	2116	59
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.09	0.16	0.02	0.02	0.02	0.01	0.37	0.17	0.14	0.43	0.43
Intersection LOS	C											
Intersection V/C	0.749											

APPENDIX C-V

YEAR 2045 GENERAL PLAN BUILDOUT PLUS PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.681

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	609	0	562	0	1712	836	0	2048	198
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	609	0	562	0	1712	836	0	2048	198
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	152	0	141	0	428	209	0	512	50
Total Analysis Volume [veh/h]	0	0	0	609	0	562	0	1712	836	0	2048	198
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

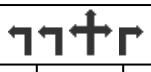
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.18	0.00	0.23	0.00	0.34	0.00	0.00	0.40	0.00
Intersection LOS	B											
Intersection V/C	0.681											

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.643

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	1089	30	831	0	0	84	95	1560	575	0	1623	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1089	30	831	0	0	84	95	1560	575	0	1623	13
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	272	8	208	0	0	21	24	390	144	0	406	3
Total Analysis Volume [veh/h]	1089	30	831	0	0	84	95	1560	575	0	1623	13
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.29	0.29	0.00	0.00	0.00	0.06	0.31	0.00	0.00	0.24	0.24
Intersection LOS	B											
Intersection V/C	0.643											

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.650

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Base Volume Input [veh/h]	251	6	327	58	30	8	2	950	321	370	814	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	251	6	327	58	30	8	2	950	321	370	814	11
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	2	82	15	8	2	1	238	80	93	204	3
Total Analysis Volume [veh/h]	251	6	327	58	30	8	2	950	321	370	814	11
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.08	0.03	0.02	0.02	0.00	0.37	0.37	0.11	0.24	0.24
Intersection LOS	B											
Intersection V/C	0.650											

Intersection Level Of Service Report
Intersection 4: S. Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.345

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Base Volume Input [veh/h]	127	420	16	20	491	29	20	1	48	44	8	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	127	420	16	20	491	29	20	1	48	44	8	42
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	105	4	5	123	7	5	0	12	11	2	11
Total Analysis Volume [veh/h]	127	420	16	20	491	29	20	1	48	44	8	42
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.13	0.13	0.01	0.15	0.15	0.01	0.04	0.04	0.03	0.06	0.06
Intersection LOS	A											
Intersection V/C	0.345											

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.800

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	150	218	93	162	347	161	214	2166	106	96	1789	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	218	93	162	347	161	214	2166	106	96	1789	98
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	55	23	41	87	40	54	542	27	24	447	25
Total Analysis Volume [veh/h]	150	218	93	162	347	161	214	2166	106	96	1789	98
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.09	0.09	0.05	0.20	0.09	0.13	0.45	0.45	0.06	0.28	0.28
Intersection LOS	D											
Intersection V/C	0.800											

Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.675

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	191	12	149	26	29	14	14	2009	479	201	1649	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	191	12	149	26	29	14	14	2009	479	201	1649	34
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	3	37	7	7	4	4	502	120	50	412	9
Total Analysis Volume [veh/h]	191	12	149	26	29	14	14	2009	479	201	1649	34
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.06	0.09	0.02	0.03	0.03	0.01	0.39	0.28	0.12	0.33	0.33
Intersection LOS	B											
Intersection V/C	0.675											

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.801

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	681	0	601	0	1870	1104	0	2547	403
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	681	0	601	0	1870	1104	0	2547	403
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	170	0	150	0	468	276	0	637	101
Total Analysis Volume [veh/h]	0	0	0	681	0	601	0	1870	1104	0	2547	403
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.20	0.00	0.25	0.00	0.37	0.00	0.00	0.50	0.00
Intersection LOS	D											
Intersection V/C	0.801											

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.774

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	1144	62	434	0	0	184	175	1808	390	0	2549	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1144	62	434	0	0	184	175	1808	390	0	2549	37
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	286	16	109	0	0	46	44	452	98	0	637	9
Total Analysis Volume [veh/h]	1144	62	434	0	0	184	175	1808	390	0	2549	37
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.22	0.24	0.24	0.00	0.00	0.00	0.10	0.35	0.00	0.00	0.38	0.38
Intersection LOS	C											
Intersection V/C	0.774											

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Base Volume Input [veh/h]	483	34	367	11	21	6	12	889	300	300	1248	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	483	34	367	11	21	6	12	889	300	300	1248	17
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	9	92	3	5	2	3	222	75	75	312	4
Total Analysis Volume [veh/h]	483	34	367	11	21	6	12	889	300	300	1248	17
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.02	0.13	0.01	0.02	0.02	0.01	0.35	0.35	0.09	0.37	0.37
Intersection LOS	B											
Intersection V/C	0.646											

Intersection Level Of Service Report
Intersection 4: S. Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.362

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Greenbriar Ln			Greenbriar Ln		
Base Volume Input [veh/h]	56	556	39	17	577	19	41	9	99	28	4	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	556	39	17	577	19	41	9	99	28	4	37
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	139	10	4	144	5	10	2	25	7	1	9
Total Analysis Volume [veh/h]	56	556	39	17	577	19	41	9	99	28	4	37
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.18	0.18	0.01	0.18	0.18	0.02	0.09	0.09	0.02	0.04	0.04
Intersection LOS	A											
Intersection V/C	0.362											

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.851

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	227	272	103	294	363	260	272	1882	146	210	1941	181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	227	272	103	294	363	260	272	1882	146	210	1941	181
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	68	26	74	91	65	68	471	37	53	485	45
Total Analysis Volume [veh/h]	227	272	103	294	363	260	272	1882	146	210	1941	181
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.11	0.11	0.09	0.21	0.15	0.16	0.40	0.40	0.12	0.31	0.31
Intersection LOS	D											
Intersection V/C	0.851											

Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.749

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	272	48	277	26	24	14	20	1909	291	237	2114	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	272	48	277	26	24	14	20	1909	291	237	2114	59
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	12	69	7	6	4	5	477	73	59	529	15
Total Analysis Volume [veh/h]	272	48	277	26	24	14	20	1909	291	237	2114	59
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.09	0.16	0.02	0.02	0.02	0.01	0.37	0.17	0.14	0.43	0.43
Intersection LOS	C											
Intersection V/C	0.749											

APPENDIX D

INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS - HCM

APPENDIX D-I

EXISTING TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	14.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.557

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	558	0	445	0	1366	619	0	1589	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	558	0	445	0	1366	619	0	1589	174
Peak Hour Factor	1.0000	1.0000	1.0000	0.8810	1.0000	0.8810	1.0000	0.9270	0.9270	1.0000	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	158	0	126	0	368	167	0	423	46
Total Analysis Volume [veh/h]	0	0	0	633	0	505	0	1474	668	0	1690	185
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		23	23	23	59	59
g / C, Green / Cycle		0.26	0.26	0.26	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate		0.21	0.21	0.20	0.26	0.30
s, saturation flow rate [veh/h]		1800	1800	1900	5700	5700
c, Capacity [veh/h]		461	461	486	3734	3734
d1, Uniform Delay [s]		31.51	31.51	31.08	7.21	7.60
k, delay calibration		0.11	0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		3.77	3.77	2.76	0.31	0.40
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.82	0.82	0.78	0.39	0.45
d, Delay for Lane Group [s/veh]		35.28	35.28	33.84	7.52	7.99
Lane Group LOS		D	D	C	A	A
Critical Lane Group		Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		8.02	8.02	7.81	3.91	4.74
50th-Percentile Queue Length [ft/ln]		200.54	200.54	195.22	97.85	118.39
95th-Percentile Queue Length [veh/ln]		12.67	12.67	12.39	7.04	8.30
95th-Percentile Queue Length [ft/ln]		316.66	316.66	309.79	176.12	207.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	35.28	0.00	34.20	0.00	7.52	0.00	0.00	7.99	0.00
Movement LOS				D		C		A			A	
d_A, Approach Delay [s/veh]	0.00			34.80			7.52			7.99		
Approach LOS	A			C			A			A		
d_I, Intersection Delay [s/veh]	14.92											
Intersection LOS	B											
Intersection V/C	0.557											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	34.67	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.408	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1333	489	489
d_b, Bicycle Delay [s]	45.00	5.00	25.69	25.69
l_b,int, Bicycle LOS Score for Intersection	4.132	3.437	2.370	2.489
Bicycle LOS	D	C	B	B

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.605

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	803	43	761	0	0	50	116	1241	515	0	1355	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	803	43	761	0	0	50	116	1241	515	0	1355	18
Peak Hour Factor	0.9080	0.9080	0.9080	1.0000	1.0000	0.6820	0.8790	0.8790	0.8790	1.0000	0.8940	0.8940
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	221	12	210	0	0	18	33	353	146	0	379	5
Total Analysis Volume [veh/h]	884	47	838	0	0	73	132	1412	586	0	1516	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	37	0	0	0	13	13	43	0	0	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	28	28	8	8	50	38	38
g / C, Green / Cycle	0.31	0.31	0.31	0.09	0.09	0.55	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.25	0.25	0.24	0.02	0.07	0.25	0.20	0.20
s, saturation flow rate [veh/h]	3500	1800	1900	3800	1800	5700	5700	1900
c, Capacity [veh/h]	1095	563	594	351	166	3151	2372	791
d1, Uniform Delay [s]	28.35	28.37	27.88	37.88	40.09	11.98	19.26	19.26
k, delay calibration	0.11	0.15	0.13	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.37	3.59	2.30	0.29	8.32	0.46	0.71	2.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.80	0.76	0.21	0.79	0.45	0.49	0.49
d, Delay for Lane Group [s/veh]	29.72	31.95	30.18	38.17	48.41	12.45	19.97	21.39
Lane Group LOS	C	C	C	D	D	B	B	C
Critical Lane Group	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.51	9.12	8.79	0.75	3.21	5.32	5.79	6.10
50th-Percentile Queue Length [ft/ln]	212.83	227.94	219.74	18.82	80.28	133.07	144.65	152.42
95th-Percentile Queue Length [veh/ln]	13.30	14.07	13.65	1.36	5.78	9.11	9.73	10.15
95th-Percentile Queue Length [ft/ln]	332.45	351.75	341.29	33.88	144.50	227.67	243.27	253.66

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.72	31.95	31.02	0.00	0.00	38.17	48.41	12.45	0.00	0.00	20.31	21.39
Movement LOS	C	C	C			D	D	B			C	C
d_A, Approach Delay [s/veh]	30.40			38.17			15.52			20.33		
Approach LOS	C			D			B			C		
d_I, Intersection Delay [s/veh]	22.71											
Intersection LOS	C											
Intersection V/C	0.605											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.644	2.197	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	200	867	578
d_b, Bicycle Delay [s]	18.05	36.45	14.45	22.76
l_b,int, Bicycle LOS Score for Intersection	4.478	1.560	2.409	2.193
Bicycle LOS	E	A	B	B

Sequence

Ring 1	-	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	27.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	228	6	298	53	28	8	2	883	294	332	724	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	228	6	298	53	28	8	2	883	294	332	724	10
Peak Hour Factor	0.8160	0.8160	0.8160	0.7410	0.7410	0.7410	0.8560	0.8560	0.8560	0.9140	0.9140	0.9140
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	2	91	18	9	3	1	258	86	91	198	3
Total Analysis Volume [veh/h]	279	7	365	72	38	11	2	1032	343	363	792	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	55	0	0	37	0	10	38	0	17	45	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	27	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No			No		No	No		No	No	
Maximum Recall	No	No			No		No	No		No	No	
Pedestrian Recall	No	No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	24	24	9	9	0	61	61	13	74	74
g / C, Green / Cycle	0.10	0.21	0.21	0.08	0.08	0.00	0.56	0.56	0.12	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.08	0.00	0.19	0.04	0.03	0.00	0.38	0.35	0.10	0.21	0.21
s, saturation flow rate [veh/h]	3500	1900	1900	1800	1900	1800	1900	1900	3500	1900	1900
c, Capacity [veh/h]	348	409	409	174	151	8	1058	1058	415	1276	1276
d1, Uniform Delay [s]	48.52	34.02	41.95	48.57	47.86	54.64	17.29	16.59	47.71	7.54	7.54
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.32	0.02	6.88	1.58	1.22	16.65	3.43	2.80	5.88	0.65	0.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.02	0.89	0.41	0.32	0.26	0.67	0.63	0.87	0.32	0.31
d, Delay for Lane Group [s/veh]	52.85	34.03	48.83	50.15	49.09	71.29	20.72	19.39	53.59	8.19	8.18
Lane Group LOS	D	C	D	D	D	E	C	B	D	A	A
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.95	0.15	10.32	1.97	1.32	0.09	13.14	11.65	5.21	3.87	3.85
50th-Percentile Queue Length [ft/ln]	98.67	3.76	258.02	49.25	33.04	2.28	328.48	291.14	130.31	96.83	96.26
95th-Percentile Queue Length [veh/ln]	7.10	0.27	15.59	3.55	2.38	0.16	19.08	17.24	8.96	6.97	6.93
95th-Percentile Queue Length [ft/ln]	177.60	6.76	389.73	88.65	59.47	4.10	477.09	431.06	223.92	174.30	173.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.85	34.03	48.83	50.15	49.09	49.09	71.29	20.30	19.39	53.59	8.19	8.18
Movement LOS	D	C	D	D	D	D	E	C	B	D	A	A
d_A, Approach Delay [s/veh]	50.39			49.72			20.15			22.32		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	27.93											
Intersection LOS	C											
Intersection V/C	0.785											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	44.55	44.55	44.55
l_p,int, Pedestrian LOS Score for Intersection	2.689	1.996	2.789	2.993
Crosswalk LOS	B	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	927	600	618	745
d_b, Bicycle Delay [s]	15.82	26.95	26.25	21.64
l_b,int, Bicycle LOS Score for Intersection	2.634	1.759	2.696	2.522
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: S.Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	8.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.229

Intersection Setup

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Base Volume Input [veh/h]	37	381	14	18	447	13	6	1	30	40	8	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	381	14	18	447	13	6	1	30	40	8	39
Peak Hour Factor	0.8160	0.8160	0.8160	0.9430	0.9430	0.9430	0.6670	0.6670	0.6670	0.6100	0.6100	0.6100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	117	4	5	119	3	2	0	11	16	3	16
Total Analysis Volume [veh/h]	45	467	17	19	474	14	9	1	45	66	13	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	24	0	0	24	0	0	66	0	0	66	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	13	0	0	13	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	73	73	73	73	73	73	9	9
g / C, Green / Cycle	0.81	0.81	0.81	0.81	0.81	0.81	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.03	0.13	0.13	0.01	0.13	0.13	0.03	0.08
s, saturation flow rate [veh/h]	1800	1900	1900	1800	1900	1900	1800	1800
c, Capacity [veh/h]	1423	1540	1540	1424	1540	1540	227	239
d1, Uniform Delay [s]	1.65	1.85	1.85	1.63	1.85	1.85	37.49	39.48
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	0.22	0.22	0.02	0.22	0.22	0.54	2.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.16	0.16	0.01	0.16	0.16	0.24	0.60
d, Delay for Lane Group [s/veh]	1.69	2.07	2.06	1.65	2.07	2.07	38.04	41.87
Lane Group LOS	A	A	A	A	A	A	D	D
Critical Lane Group	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.10	0.61	0.60	0.04	0.61	0.61	1.15	3.20
50th-Percentile Queue Length [ft/ln]	2.53	15.18	15.01	1.05	15.30	15.17	28.64	80.03
95th-Percentile Queue Length [veh/ln]	0.18	1.09	1.08	0.08	1.10	1.09	2.06	5.76
95th-Percentile Queue Length [ft/ln]	4.56	27.32	27.01	1.89	27.55	27.30	51.56	144.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.69	2.07	2.06	1.65	2.07	2.07	38.04	38.04	38.04	41.87	41.87	41.87
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	2.03			2.05			38.04			41.87		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	8.26											
Intersection LOS	A											
Intersection V/C	0.229											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.610	2.516	1.840	1.829
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	444	444	1378	1378
d_b, Bicycle Delay [s]	27.22	27.22	4.36	4.36
l_b,int, Bicycle LOS Score for Intersection	1.996	1.978	1.650	1.796
Bicycle LOS	A	A	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	26.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.758

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	140	198	68	142	314	139	142	1758	95	88	1505	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	140	198	68	142	314	139	142	1758	95	88	1505	80
Peak Hour Factor	0.8870	0.8870	0.8870	0.9320	0.9320	0.9320	0.9120	0.9120	0.9120	0.9620	0.9620	0.9620
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	56	19	38	84	37	39	482	26	23	391	21
Total Analysis Volume [veh/h]	158	223	77	152	337	149	156	1928	104	91	1564	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	11	40	0	14	40	0	10	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	20	20	6	20	20	10	52	52	6	48	48
g / C, Green / Cycle	0.06	0.20	0.20	0.06	0.20	0.20	0.10	0.52	0.52	0.06	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.08	0.04	0.18	0.08	0.09	0.35	0.36	0.05	0.21	0.23
s, saturation flow rate [veh/h]	3500	1900	1900	3500	1900	1900	1800	3800	1900	1800	5700	1900
c, Capacity [veh/h]	213	383	383	220	387	387	181	1957	978	110	2708	903
d1, Uniform Delay [s]	46.25	34.76	34.57	45.96	38.61	34.46	44.34	18.21	18.51	46.51	17.53	17.85
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.03	0.69	0.62	3.83	6.15	0.63	11.28	1.98	4.28	14.62	0.54	1.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.40	0.38	0.69	0.87	0.39	0.86	0.69	0.71	0.83	0.45	0.48
d, Delay for Lane Group [s/veh]	51.28	35.45	35.18	49.79	44.76	35.09	55.62	20.18	22.79	61.14	18.07	19.66
Lane Group LOS	D	D	D	D	D	D	E	C	C	E	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.07	3.33	3.10	1.96	8.55	3.18	4.35	11.49	12.63	2.67	6.15	6.98
50th-Percentile Queue Length [ft/ln]	51.77	83.29	77.53	48.96	213.82	79.55	108.66	287.29	315.78	66.79	153.70	174.43
95th-Percentile Queue Length [veh/ln]	3.73	6.00	5.58	3.53	13.35	5.73	7.77	17.05	18.46	4.81	10.21	11.31
95th-Percentile Queue Length [ft/ln]	93.19	149.91	139.55	88.13	333.72	143.20	194.14	426.28	461.50	120.23	255.36	282.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.28	35.37	35.18	49.79	44.76	35.09	55.62	20.98	22.79	61.14	18.42	19.66
Movement LOS	D	D	D	D	D	D	E	C	C	E	B	B
d_A, Approach Delay [s/veh]	40.83			43.70			23.53			20.72		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	26.70											
Intersection LOS	C											
Intersection V/C	0.758											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	39.61
l_p,int, Pedestrian LOS Score for Intersection	2.619	2.636	3.225	3.205
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	720	720	640
d_b, Bicycle Delay [s]	21.13	20.48	20.48	23.12
l_b,int, Bicycle LOS Score for Intersection	1.937	2.612	2.763	2.277
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.656

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	163	11	138	24	27	13	12	1721	339	167	1377	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	163	11	138	24	27	13	12	1721	339	167	1377	31
Peak Hour Factor	0.8320	0.8320	0.8320	0.6740	0.6740	0.6740	0.9510	0.9510	0.9510	0.8930	0.8930	0.8930
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	3	41	9	10	5	3	452	89	47	385	9
Total Analysis Volume [veh/h]	196	13	166	36	40	19	13	1810	356	187	1542	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	26	0	0	10	0	10	32	0	22	44	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	10	10	5	5	2	47	47	11	56	56
g / C, Green / Cycle	0.12	0.12	0.12	0.06	0.06	0.02	0.52	0.52	0.13	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.06	0.06	0.09	0.02	0.03	0.01	0.32	0.19	0.10	0.27	0.28
s, saturation flow rate [veh/h]	1800	1800	1900	1800	1900	1800	5700	1900	1800	3800	1900
c, Capacity [veh/h]	209	209	221	111	117	36	2956	985	227	2374	1187
d1, Uniform Delay [s]	37.32	37.46	38.59	40.52	40.98	43.63	15.32	12.86	38.42	8.73	8.86
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.73	1.95	5.10	1.68	3.33	6.05	0.96	1.03	7.30	0.59	1.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.51	0.75	0.32	0.50	0.36	0.61	0.36	0.82	0.44	0.45
d, Delay for Lane Group [s/veh]	39.05	39.41	43.68	42.19	44.31	49.68	16.27	13.89	45.72	9.32	10.12
Lane Group LOS	D	D	D	D	D	D	B	B	D	A	B
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.17	2.32	3.81	0.81	1.36	0.34	8.34	4.28	4.42	4.81	5.28
50th-Percentile Queue Length [ft/ln]	54.20	57.89	95.30	20.22	34.08	8.60	208.38	107.06	110.62	120.31	132.11
95th-Percentile Queue Length [veh/ln]	3.90	4.17	6.86	1.46	2.45	0.62	13.07	7.68	7.87	8.41	9.05
95th-Percentile Queue Length [ft/ln]	97.56	104.20	171.55	36.40	61.35	15.47	326.75	191.91	196.87	210.25	226.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.22	39.41	43.68	42.19	44.31	44.31	49.68	16.27	13.89	45.72	9.58	10.12
Movement LOS	D	D	D	D	D	D	D	B	B	D	A	B
d_A, Approach Delay [s/veh]	41.20			43.51			16.08			13.42		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	17.74											
Intersection LOS	B											
Intersection V/C	0.656											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.486	1.990	0.000	3.119
Crosswalk LOS	B	A	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	489	133	622	889
d_b, Bicycle Delay [s]	25.69	39.20	21.36	13.89
l_b,int, Bicycle LOS Score for Intersection	2.178	1.716	2.758	2.530
Bicycle LOS	B	A	C	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: S. Associated Road at Brea Plaza Dwy 2

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Base Volume Input [veh/h]	0	418	577	11	0	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	418	577	11	0	8
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	110	152	3	0	2
Total Analysis Volume [veh/h]	0	440	607	12	0	8
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.31
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.04
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.88
d_A, Approach Delay [s/veh]	0.00		0.00		10.31	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.08					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: S. Associated Rd at Brea Plaza Dwy 3

Control Type:	Two-way stop	Delay (sec / veh):	17.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.030

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Base Volume Input [veh/h]	11	409	575	10	9	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	409	575	10	9	20
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	108	151	3	2	5
Total Analysis Volume [veh/h]	12	431	605	11	9	21
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.00	0.03	0.03
d_M, Delay for Movement [s/veh]	8.80	0.00	0.00	0.00	17.55	10.40
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.04	0.00	0.00	0.00	0.09	0.09
95th-Percentile Queue Length [ft/ln]	0.95	0.00	0.00	0.00	2.35	2.36
d_A, Approach Delay [s/veh]	0.24		0.00		12.54	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.44					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Brea Plaza Dwy 4 at Imperial Highway

Control Type:	Two-way stop	Delay (sec / veh):	21.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.039

Intersection Setup

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Base Volume Input [veh/h]	0	9	0	1995	1775	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	9	0	1995	1775	9
Peak Hour Factor	1.0000	0.9500	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	0	525	467	2
Total Analysis Volume [veh/h]	0	9	0	2100	1868	9
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.04	0.00	0.02	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	21.44	0.00	0.00	0.00	0.00
Movement LOS		C		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.12	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	3.07	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	21.44		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.05					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	15.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.657

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	632	0	502	0	1567	862	0	2079	375
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	632	0	502	0	1567	862	0	2079	375
Peak Hour Factor	1.0000	1.0000	1.0000	0.9390	1.0000	0.9390	1.0000	0.9540	0.9540	1.0000	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	168	0	134	0	411	226	0	534	96
Total Analysis Volume [veh/h]	0	0	0	673	0	535	0	1643	904	0	2137	385
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		24	24	24	58	58
g / C, Green / Cycle		0.27	0.27	0.27	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate		0.22	0.22	0.21	0.29	0.37
s, saturation flow rate [veh/h]		1800	1800	1900	5700	5700
c, Capacity [veh/h]		487	487	514	3652	3652
d1, Uniform Delay [s]		30.81	30.81	30.35	8.15	9.28
k, delay calibration		0.11	0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		3.66	3.66	2.68	0.40	0.69
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.83	0.83	0.78	0.45	0.59
d, Delay for Lane Group [s/veh]		34.47	34.47	33.02	8.55	9.97
Lane Group LOS		C	C	C	A	A
Critical Lane Group		Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		8.44	8.44	8.21	4.83	7.19
50th-Percentile Queue Length [ft/ln]		211.12	211.12	205.32	120.81	179.74
95th-Percentile Queue Length [veh/ln]		13.21	13.21	12.91	8.44	11.59
95th-Percentile Queue Length [ft/ln]		330.27	330.27	322.82	210.94	289.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	34.47	0.00	33.38	0.00	8.55	0.00	0.00	9.97	0.00
Movement LOS				C		C		A			A	
d_A, Approach Delay [s/veh]	0.00			33.99			8.55			9.97		
Approach LOS	A			C			A			A		
d_I, Intersection Delay [s/veh]	15.32											
Intersection LOS	B											
Intersection V/C	0.657											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	34.67	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.425	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1333	489	489
d_b, Bicycle Delay [s]	45.00	5.00	25.69	25.69
l_b,int, Bicycle LOS Score for Intersection	4.132	3.553	2.463	2.735
Bicycle LOS	D	D	B	B

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	23.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.709

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	848	72	397	0	0	231	206	1670	345	0	2186	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	848	72	397	0	0	231	206	1670	345	0	2186	46
Peak Hour Factor	0.9490	0.9490	0.9490	1.0000	1.0000	0.8840	0.9510	0.9510	0.9510	1.0000	0.9830	0.9830
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	223	19	105	0	0	65	54	439	91	0	556	12
Total Analysis Volume [veh/h]	894	76	418	0	0	261	217	1756	363	0	2224	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	26	0	0	0	24	24	54	0	0	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	22	22	13	13	56	39	39
g / C, Green / Cycle	0.24	0.24	0.24	0.15	0.15	0.62	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.20	0.20	0.19	0.07	0.12	0.31	0.30	0.30
s, saturation flow rate [veh/h]	3500	1800	1900	3800	1800	5700	5700	1900
c, Capacity [veh/h]	844	434	458	565	268	3559	2459	820
d1, Uniform Delay [s]	32.26	32.27	31.86	35.09	37.16	9.19	20.79	20.79
k, delay calibration	0.11	0.15	0.13	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.92	4.98	3.17	0.59	5.84	0.49	1.63	4.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.81	0.77	0.46	0.81	0.49	0.69	0.69
d, Delay for Lane Group [s/veh]	34.18	37.25	35.03	35.68	43.01	9.69	22.42	25.57
Lane Group LOS	C	D	D	D	D	A	C	C
Critical Lane Group	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.06	7.64	7.36	2.63	4.98	5.68	9.55	10.27
50th-Percentile Queue Length [ft/ln]	176.51	191.05	183.91	65.74	124.58	141.93	238.74	256.68
95th-Percentile Queue Length [veh/ln]	11.42	12.18	11.80	4.73	8.64	9.58	14.62	15.52
95th-Percentile Queue Length [ft/ln]	285.45	304.39	295.11	118.33	216.10	239.62	365.44	388.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.88	37.25	35.41	0.00	0.00	35.68	43.01	9.69	0.00	0.00	23.16	25.57
Movement LOS	C	D	D			D	D	A			C	C
d_A, Approach Delay [s/veh]	35.18			35.68			13.35			23.21		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	23.28											
Intersection LOS	C											
Intersection V/C	0.709											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.570	2.277	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	489	444	1111	578
d_b, Bicycle Delay [s]	25.69	27.22	8.89	22.76
l_b,int, Bicycle LOS Score for Intersection	3.850	1.560	2.645	2.496
Bicycle LOS	D	A	B	B

Sequence

Ring 1	-	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	27.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.666

Intersection Setup

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	447	31	333	10	19	6	12	828	278	275	1176	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	447	31	333	10	19	6	12	828	278	275	1176	16
Peak Hour Factor	0.9370	0.9370	0.9370	0.8500	0.8500	0.8500	0.9910	0.9910	0.9910	0.9420	0.9420	0.9420
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	119	8	89	3	6	2	3	209	70	73	312	4
Total Analysis Volume [veh/h]	477	33	355	12	22	7	12	836	281	292	1248	17
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	28	65	0	0	37	0	10	38	0	17	45	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	27	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No			No		No	No		No	No	
Maximum Recall	No	No			No		No	No		No	No	
Pedestrian Recall	No	No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	27	27	4	4	2	69	69	12	79	79
g / C, Green / Cycle	0.16	0.23	0.23	0.04	0.04	0.02	0.57	0.57	0.10	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.14	0.02	0.19	0.01	0.02	0.01	0.31	0.28	0.08	0.33	0.33
s, saturation flow rate [veh/h]	3500	1900	1900	1800	1900	1800	1900	1900	3500	1900	1900
c, Capacity [veh/h]	549	433	433	76	72	31	1088	1088	349	1245	1245
d1, Uniform Delay [s]	49.40	36.42	44.01	55.95	56.44	58.39	15.83	15.27	53.06	10.70	10.68
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.38	0.07	3.91	0.94	3.65	8.01	1.89	1.59	5.29	1.49	1.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.08	0.82	0.16	0.40	0.39	0.54	0.49	0.84	0.51	0.51
d, Delay for Lane Group [s/veh]	53.79	36.49	47.92	56.89	60.08	66.40	17.72	16.85	58.36	12.19	12.16
Lane Group LOS	D	D	D	E	E	E	B	B	E	B	B
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.30	0.78	10.45	0.37	0.93	0.43	10.12	8.92	4.58	8.68	8.64
50th-Percentile Queue Length [ft/ln]	182.52	19.42	261.35	9.32	23.31	10.73	252.88	223.05	114.46	216.96	215.96
95th-Percentile Queue Length [veh/ln]	11.73	1.40	15.76	0.67	1.68	0.77	15.33	13.82	8.09	13.51	13.46
95th-Percentile Queue Length [ft/ln]	293.30	34.96	393.91	16.78	41.97	19.31	383.28	345.52	202.19	337.75	336.46

Movement, Approach, & Intersection Results

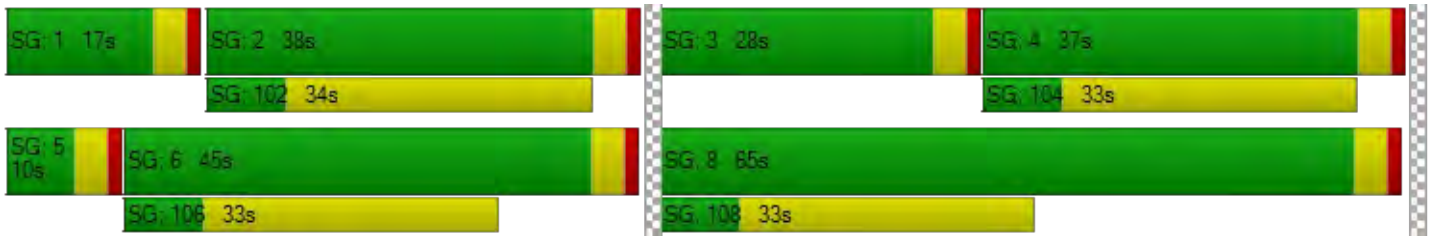
d_M, Delay for Movement [s/veh]	53.79	36.49	47.92	56.89	60.08	60.08	66.40	17.46	16.85	58.36	12.18	12.16
Movement LOS	D	D	D	E	E	E	E	B	B	E	B	B
d_A, Approach Delay [s/veh]	50.72			59.15			17.83			20.84		
Approach LOS	D			E			B			C		
d_I, Intersection Delay [s/veh]	27.52											
Intersection LOS	C											
Intersection V/C	0.666											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.704	1.987	2.872	2.932
Crosswalk LOS	B	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	550	567	683
d_b, Bicycle Delay [s]	14.50	31.54	30.82	26.00
l_b,int, Bicycle LOS Score for Intersection	2.987	1.627	2.491	2.844
Bicycle LOS	C	A	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: S.Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	6.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.219

Intersection Setup

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Base Volume Input [veh/h]	37	511	35	16	533	8	18	9	42	24	4	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	511	35	16	533	8	18	9	42	24	4	34
Peak Hour Factor	0.9310	0.9310	0.9310	0.9120	0.9120	0.9120	0.8960	0.8960	0.8960	0.8090	0.8090	0.8090
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	137	9	4	146	2	5	3	12	7	1	11
Total Analysis Volume [veh/h]	40	549	38	18	584	9	20	10	47	30	5	42
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	54	0	0	54	0	0	36	0	0	36	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	13	0	0	13	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	77	77	77	77	77	77	5	5
g / C, Green / Cycle	0.85	0.85	0.85	0.85	0.85	0.85	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.15	0.01	0.16	0.16	0.04	0.04
s, saturation flow rate [veh/h]	1800	1900	1900	1800	1900	1900	1800	1800
c, Capacity [veh/h]	1511	1621	1621	1511	1621	1621	155	160
d1, Uniform Delay [s]	0.99	1.15	1.15	0.98	1.15	1.15	41.68	41.68
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	0.25	0.24	0.01	0.25	0.25	2.46	2.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.18	0.18	0.01	0.18	0.18	0.50	0.48
d, Delay for Lane Group [s/veh]	1.02	1.40	1.39	0.99	1.40	1.40	44.14	43.92
Lane Group LOS	A	A	A	A	A	A	D	D
Critical Lane Group	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.05	0.38	0.37	0.02	0.38	0.38	1.77	1.76
50th-Percentile Queue Length [ft/ln]	1.13	9.59	9.36	0.50	9.61	9.56	44.21	44.05
95th-Percentile Queue Length [veh/ln]	0.08	0.69	0.67	0.04	0.69	0.69	3.18	3.17
95th-Percentile Queue Length [ft/ln]	2.04	17.25	16.85	0.90	17.31	17.21	79.58	79.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.02	1.39	1.39	0.99	1.40	1.40	44.14	44.14	44.14	43.92	43.92	43.92
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	1.37			1.39			44.14			43.92		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	6.10											
Intersection LOS	A											
Intersection V/C	0.219											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.593	2.566	1.835	1.810
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1111	1111	711	711
d_b, Bicycle Delay [s]	8.89	8.89	18.69	18.69
l_b,int, Bicycle LOS Score for Intersection	2.077	2.064	1.687	1.687
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	39.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.829

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	205	247	80	278	333	212	240	1697	132	167	1597	163
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	205	247	80	278	333	212	240	1697	132	167	1597	163
Peak Hour Factor	0.9100	0.9100	0.9100	0.8290	0.8290	0.8290	0.9480	0.9480	0.9480	0.9350	0.9350	0.9350
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	68	22	84	100	64	63	448	35	45	427	44
Total Analysis Volume [veh/h]	225	271	88	335	402	256	253	1790	139	179	1708	174
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	39	0	17	43	0	23	47	0	17	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	24	24	13	28	28	19	54	54	13	48	48
g / C, Green / Cycle	0.08	0.20	0.20	0.11	0.23	0.23	0.16	0.45	0.45	0.11	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.06	0.10	0.09	0.10	0.21	0.13	0.14	0.34	0.34	0.10	0.25	0.25
s, saturation flow rate [veh/h]	3500	1900	1900	3500	1900	1900	1800	3800	1900	1800	5700	1900
c, Capacity [veh/h]	265	382	382	381	445	445	280	1702	851	196	2287	762
d1, Uniform Delay [s]	54.82	42.47	42.14	52.72	44.64	40.67	49.82	27.56	27.86	52.94	28.52	28.85
k, delay calibration	0.11	0.11	0.11	0.11	0.20	0.11	0.13	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.48	0.96	0.84	6.64	12.01	1.17	12.24	3.09	6.53	15.13	1.23	3.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.49	0.45	0.88	0.90	0.57	0.90	0.75	0.77	0.91	0.61	0.63
d, Delay for Lane Group [s/veh]	62.30	43.43	42.98	59.36	56.64	41.85	62.06	30.65	34.39	68.07	29.75	32.84
Lane Group LOS	E	D	D	E	E	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.64	5.00	4.61	5.32	13.03	6.85	8.39	15.64	16.94	6.16	10.80	11.89
50th-Percentile Queue Length [ft/ln]	90.88	125.01	115.24	133.06	325.78	171.13	209.84	390.97	423.44	153.95	270.12	297.32
95th-Percentile Queue Length [veh/ln]	6.54	8.67	8.13	9.11	18.95	11.14	13.15	22.12	23.69	10.23	16.20	17.55
95th-Percentile Queue Length [ft/ln]	163.58	216.69	203.26	227.64	473.79	278.40	328.63	553.11	592.18	255.69	404.89	438.71

Movement, Approach, & Intersection Results

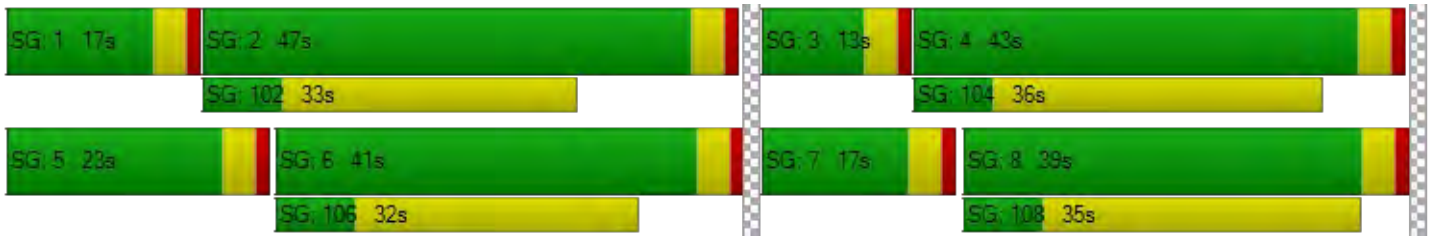
d_M, Delay for Movement [s/veh]	62.30	43.29	42.98	59.36	56.64	41.85	62.06	31.72	34.39	68.07	30.31	32.84
Movement LOS	E	D	D	E	E	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	50.57			53.74			35.41			33.80		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	39.49											
Intersection LOS	D											
Intersection V/C	0.829											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.679	2.741	3.272	3.260
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	650	717	617
d_b, Bicycle Delay [s]	30.10	27.34	24.70	28.70
l_b,int, Bicycle LOS Score for Intersection	2.041	3.198	2.760	2.410
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.764

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	224	45	253	24	22	13	18	1713	263	219	1764	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	224	45	253	24	22	13	18	1713	263	219	1764	54
Peak Hour Factor	0.8580	0.8580	0.8580	0.6480	0.6480	0.6480	0.9520	0.9520	0.9520	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	13	74	9	8	5	5	450	69	58	466	14
Total Analysis Volume [veh/h]	261	52	295	37	34	20	19	1799	276	232	1865	57
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	26	0	0	10	0	10	32	0	22	44	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	17	17	5	5	2	38	38	14	50	50
g / C, Green / Cycle	0.18	0.18	0.18	0.06	0.06	0.03	0.43	0.43	0.15	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.08	0.09	0.16	0.02	0.03	0.01	0.32	0.15	0.13	0.33	0.35
s, saturation flow rate [veh/h]	1800	1800	1900	1800	1900	1800	5700	1900	1800	3800	1900
c, Capacity [veh/h]	331	331	349	110	116	48	2431	810	272	2094	1047
d1, Uniform Delay [s]	32.79	33.00	35.56	40.59	40.92	43.18	21.67	17.35	37.28	13.62	13.88
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.98	1.12	5.60	1.79	2.90	5.23	2.07	1.14	7.39	1.30	2.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.49	0.84	0.34	0.47	0.40	0.74	0.34	0.85	0.60	0.63
d, Delay for Lane Group [s/veh]	33.77	34.12	41.16	42.39	43.82	48.40	23.74	18.50	44.67	14.92	16.73
Lane Group LOS	C	C	D	D	D	D	C	B	D	B	B
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.98	3.22	6.67	0.83	1.24	0.48	10.50	3.95	5.45	8.27	9.18
50th-Percentile Queue Length [ft/ln]	74.60	80.55	166.69	20.85	30.99	12.06	262.42	98.85	136.28	206.86	229.57
95th-Percentile Queue Length [veh/ln]	5.37	5.80	10.90	1.50	2.23	0.87	15.81	7.12	9.28	12.99	14.15
95th-Percentile Queue Length [ft/ln]	134.27	144.99	272.56	37.53	55.79	21.70	395.26	177.92	232.00	324.80	353.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.92	34.12	41.16	42.39	43.82	43.82	48.40	23.74	18.50	44.67	15.50	16.73
Movement LOS	C	C	D	D	D	D	D	C	B	D	B	B
d_A, Approach Delay [s/veh]	37.45			43.24			23.28			18.68		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	23.38											
Intersection LOS	C											
Intersection V/C	0.764											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.524	2.011	0.000	3.190
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	489	133	622	889
d_b, Bicycle Delay [s]	25.69	39.20	21.36	13.89
l_b,int, Bicycle LOS Score for Intersection	2.563	1.710	2.711	2.744
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: S. Associated Road at Brea Plaza Dwy 2

Control Type:	Two-way stop	Delay (sec / veh):	11.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.067

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Base Volume Input [veh/h]	0	675	691	9	0	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	675	691	9	0	40
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	178	182	2	0	11
Total Analysis Volume [veh/h]	0	711	727	9	0	42
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.07
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	11.13
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.21
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	5.35
d_A, Approach Delay [s/veh]	0.00		0.00		11.13	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.31					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: S. Associated Rd at Brea Plaza Dwy 3

Control Type:	Two-way stop	Delay (sec / veh):	28.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.213

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Base Volume Input [veh/h]	15	635	699	32	40	124
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	635	699	32	40	124
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	167	184	8	11	33
Total Analysis Volume [veh/h]	16	668	736	34	42	131
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.01	0.00	0.21	0.21
d_M, Delay for Movement [s/veh]	9.37	0.00	0.00	0.00	28.18	12.46
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.06	0.00	0.00	0.00	0.78	0.80
95th-Percentile Queue Length [ft/ln]	1.46	0.00	0.00	0.00	19.55	20.10
d_A, Approach Delay [s/veh]	0.22		0.00		16.27	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.82					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 9: Brea Plaza Dwy 4 at Imperial Highway

Control Type:	Two-way stop	Delay (sec / veh):	30.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.270

Intersection Setup

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Base Volume Input [veh/h]	0	48	0	2069	1979	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	48	0	2069	1979	35
Peak Hour Factor	1.0000	0.9500	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	0	544	521	9
Total Analysis Volume [veh/h]	0	51	0	2178	2083	37
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.27	0.00	0.02	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	30.92	0.00	0.00	0.00	0.00
Movement LOS		D		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	1.04	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	26.11	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	30.92		0.00		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	0.36					
Intersection LOS	D					

APPENDIX D-II

YEAR 2024 CUMULATIVE TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	15.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.642

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	577	0	501	0	1479	796	0	1921	180
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	577	0	501	0	1479	796	0	1921	180
Peak Hour Factor	1.0000	1.0000	1.0000	0.8810	1.0000	0.8810	1.0000	0.9270	0.9270	1.0000	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	164	0	142	0	399	215	0	511	48
Total Analysis Volume [veh/h]	0	0	0	655	0	569	0	1595	859	0	2044	191
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		25	25	25	57	57
g / C, Green / Cycle		0.27	0.27	0.27	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate		0.23	0.23	0.21	0.28	0.36
s, saturation flow rate [veh/h]		1800	1800	1900	5700	5700
c, Capacity [veh/h]		493	493	520	3632	3632
d1, Uniform Delay [s]		30.63	30.63	30.17	8.21	9.22
k, delay calibration		0.11	0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		3.63	3.63	2.65	0.39	0.64
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.83	0.83	0.78	0.44	0.56
d, Delay for Lane Group [s/veh]		34.26	34.26	32.82	8.60	9.85
Lane Group LOS		C	C	C	A	A
Critical Lane Group		Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		8.54	8.54	8.30	4.70	6.79
50th-Percentile Queue Length [ft/ln]		213.44	213.44	207.53	117.49	169.72
95th-Percentile Queue Length [veh/ln]		13.33	13.33	13.03	8.25	11.06
95th-Percentile Queue Length [ft/ln]		333.24	333.24	325.66	206.37	276.54

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	34.26	0.00	33.23	0.00	8.60	0.00	0.00	9.85	0.00
Movement LOS				C		C		A			A	
d_A, Approach Delay [s/veh]	0.00			33.78			8.60			9.85		
Approach LOS	A			C			A			A		
d_I, Intersection Delay [s/veh]	15.46											
Intersection LOS	B											
Intersection V/C	0.642											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	34.67	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.429	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1333	489	489
d_b, Bicycle Delay [s]	45.00	5.00	25.69	25.69
l_b,int, Bicycle LOS Score for Intersection	4.132	3.579	2.437	2.684
Bicycle LOS	D	D	B	B

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	25.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.670

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	1037	44	784	0	0	53	121	1333	548	0	1474	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1037	44	784	0	0	53	121	1333	548	0	1474	19
Peak Hour Factor	0.9080	0.9080	0.9080	1.0000	1.0000	0.6820	0.8790	0.8790	0.8790	1.0000	0.8940	0.8940
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	286	12	216	0	0	19	34	379	156	0	412	5
Total Analysis Volume [veh/h]	1142	48	863	0	0	78	138	1516	623	0	1649	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	42	0	0	0	13	13	43	0	0	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	34	34	34	9	9	49	36	36
g / C, Green / Cycle	0.36	0.36	0.36	0.09	0.09	0.52	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.29	0.29	0.27	0.02	0.08	0.27	0.22	0.22
s, saturation flow rate [veh/h]	3500	1800	1900	3800	1800	5700	5700	1900
c, Capacity [veh/h]	1243	639	675	360	171	2950	2170	723
d1, Uniform Delay [s]	27.83	27.84	27.26	39.80	42.22	15.09	23.39	23.39
k, delay calibration	0.11	0.19	0.16	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.35	4.41	2.86	0.30	8.75	0.64	1.13	3.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.81	0.77	0.22	0.81	0.51	0.58	0.58
d, Delay for Lane Group [s/veh]	29.17	32.26	30.12	40.10	50.97	15.73	24.51	26.73
Lane Group LOS	C	C	C	D	D	B	C	C
Critical Lane Group	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.29	11.15	10.68	0.85	3.56	6.95	7.42	7.87
50th-Percentile Queue Length [ft/ln]	257.31	278.75	267.12	21.31	88.97	173.87	185.56	196.68
95th-Percentile Queue Length [veh/ln]	15.55	16.63	16.05	1.53	6.41	11.28	11.89	12.47
95th-Percentile Queue Length [ft/ln]	388.85	415.65	401.14	38.36	160.14	282.00	297.27	311.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.49	32.26	30.99	0.00	0.00	40.10	50.97	15.73	0.00	0.00	25.04	26.73
Movement LOS	C	C	C			D	D	B			C	C
d_A, Approach Delay [s/veh]	30.20			40.10			18.67			25.07		
Approach LOS	C			D			B			C		
d_I, Intersection Delay [s/veh]	25.27											
Intersection LOS	C											
Intersection V/C	0.670											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.14	37.14	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.702	2.203	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	189	821	547
d_b, Bicycle Delay [s]	17.10	38.93	16.51	25.06
l_b,int, Bicycle LOS Score for Intersection	4.947	1.560	2.469	2.248
Bicycle LOS	E	A	B	B

Sequence

Ring 1	-	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	28.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.817

Intersection Setup

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	235	6	307	55	29	8	2	937	303	342	763	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	235	6	307	55	29	8	2	937	303	342	763	10
Peak Hour Factor	0.8160	0.8160	0.8160	0.7410	0.7410	0.7410	0.8560	0.8560	0.8560	0.9140	0.9140	0.9140
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	2	94	19	10	3	1	274	88	94	209	3
Total Analysis Volume [veh/h]	288	7	376	74	39	11	2	1095	354	374	835	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	54	0	0	37	0	10	38	0	18	46	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	27	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No			No		No	No		No	No	
Maximum Recall	No	No			No		No	No		No	No	
Pedestrian Recall	No	No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	24	24	9	9	0	60	60	14	73	73
g / C, Green / Cycle	0.10	0.22	0.22	0.08	0.08	0.00	0.55	0.55	0.12	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.08	0.00	0.20	0.04	0.03	0.00	0.39	0.37	0.11	0.22	0.22
s, saturation flow rate [veh/h]	3500	1900	1900	1800	1900	1800	1900	1900	3500	1900	1900
c, Capacity [veh/h]	354	420	420	181	159	8	1037	1037	435	1264	1264
d1, Uniform Delay [s]	48.46	33.51	41.63	48.21	47.47	54.64	18.76	18.02	47.27	7.93	7.92
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.53	0.02	6.86	1.48	1.12	16.65	4.36	3.54	5.08	0.72	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.02	0.89	0.41	0.31	0.26	0.72	0.68	0.86	0.34	0.33
d, Delay for Lane Group [s/veh]	52.99	33.53	48.49	49.69	48.59	71.29	23.11	21.55	52.35	8.64	8.63
Lane Group LOS	D	C	D	D	D	E	C	C	D	A	A
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.08	0.15	10.61	2.01	1.34	0.09	14.82	13.22	5.31	4.24	4.22
50th-Percentile Queue Length [ft/ln]	102.08	3.72	265.37	50.34	33.50	2.28	370.41	330.51	132.75	106.07	105.48
95th-Percentile Queue Length [veh/ln]	7.35	0.27	15.96	3.62	2.41	0.16	21.13	19.18	9.09	7.62	7.59
95th-Percentile Queue Length [ft/ln]	183.74	6.70	398.95	90.62	60.29	4.10	528.23	479.59	227.23	190.52	189.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.99	33.53	48.49	49.69	48.59	48.59	71.29	22.62	21.55	52.35	8.64	8.63
Movement LOS	D	C	D	D	D	D	E	C	C	D	A	A
d_A, Approach Delay [s/veh]	50.26			49.25			22.43			22.04		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	28.64											
Intersection LOS	C											
Intersection V/C	0.817											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	44.55	44.55	44.55
l_p,int, Pedestrian LOS Score for Intersection	2.696	1.997	2.813	3.017
Crosswalk LOS	B	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	909	600	618	764
d_b, Bicycle Delay [s]	16.36	26.95	26.25	21.02
l_b,int, Bicycle LOS Score for Intersection	2.667	1.764	2.757	2.566
Bicycle LOS	B	A	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: S.Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	8.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.236

Intersection Setup

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Base Volume Input [veh/h]	39	392	15	19	460	13	6	1	32	42	8	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	392	15	19	460	13	6	1	32	42	8	40
Peak Hour Factor	0.8160	0.8160	0.8160	0.9430	0.9430	0.9430	0.6670	0.6670	0.6670	0.6100	0.6100	0.6100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	120	5	5	122	3	2	0	12	17	3	16
Total Analysis Volume [veh/h]	48	480	18	20	488	14	9	1	48	69	13	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	24	0	0	24	0	0	66	0	0	66	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	13	0	0	13	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	73	73	73	73	73	73	9	9
g / C, Green / Cycle	0.81	0.81	0.81	0.81	0.81	0.81	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.03	0.13	0.13	0.01	0.13	0.13	0.03	0.08
s, saturation flow rate [veh/h]	1800	1900	1900	1800	1900	1900	1800	1800
c, Capacity [veh/h]	1416	1534	1534	1416	1534	1534	232	245
d1, Uniform Delay [s]	1.71	1.92	1.91	1.68	1.92	1.92	37.31	39.34
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	0.23	0.23	0.02	0.23	0.23	0.56	2.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.16	0.16	0.01	0.16	0.16	0.25	0.60
d, Delay for Lane Group [s/veh]	1.75	2.14	2.14	1.70	2.15	2.14	37.86	41.73
Lane Group LOS	A	A	A	A	A	A	D	D
Critical Lane Group	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.11	0.65	0.64	0.05	0.65	0.65	1.21	3.31
50th-Percentile Queue Length [ft/ln]	2.80	16.25	16.05	1.15	16.37	16.23	30.13	82.74
95th-Percentile Queue Length [veh/ln]	0.20	1.17	1.16	0.08	1.18	1.17	2.17	5.96
95th-Percentile Queue Length [ft/ln]	5.04	29.24	28.90	2.07	29.47	29.21	54.24	148.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.75	2.14	2.14	1.70	2.15	2.14	37.86	37.86	37.86	41.73	41.73	41.73
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	2.11			2.13			37.86			41.73		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	8.35											
Intersection LOS	A											
Intersection V/C	0.236											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.622	2.522	1.847	1.834
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	444	444	1378	1378
d_b, Bicycle Delay [s]	27.22	27.22	4.36	4.36
l_b,int, Bicycle LOS Score for Intersection	2.010	1.990	1.655	1.804
Bicycle LOS	B	A	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	28.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.782

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	148	204	70	146	323	146	147	1859	101	91	1621	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	148	204	70	146	323	146	147	1859	101	91	1621	82
Peak Hour Factor	0.8870	0.8870	0.8870	0.9320	0.9320	0.9320	0.9120	0.9120	0.9120	0.9620	0.9620	0.9620
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	57	20	39	87	39	40	510	28	24	421	21
Total Analysis Volume [veh/h]	167	230	79	157	347	157	161	2038	111	95	1685	85
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	12	41	0	16	48	0	11	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	22	22	7	23	23	12	58	58	7	54	54
g / C, Green / Cycle	0.05	0.20	0.20	0.06	0.21	0.21	0.11	0.53	0.53	0.06	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.08	0.04	0.18	0.08	0.09	0.37	0.39	0.05	0.23	0.24
s, saturation flow rate [veh/h]	3500	1900	1900	3500	1900	1900	1800	3800	1900	1800	5700	1900
c, Capacity [veh/h]	194	377	377	220	392	392	191	2009	1005	116	2776	925
d1, Uniform Delay [s]	51.59	38.59	38.36	50.61	42.43	37.81	48.31	19.50	19.88	50.87	18.79	19.17
k, delay calibration	0.11	0.11	0.11	0.11	0.12	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.70	0.75	0.67	4.25	7.57	0.66	9.63	2.11	4.63	13.12	0.57	1.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.42	0.40	0.71	0.89	0.40	0.84	0.71	0.73	0.82	0.47	0.50
d, Delay for Lane Group [s/veh]	62.29	39.34	39.04	54.86	50.00	38.47	57.94	21.62	24.51	64.00	19.37	21.12
Lane Group LOS	E	D	D	D	D	D	E	C	C	E	B	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.57	3.85	3.57	2.25	9.90	3.73	4.83	13.58	14.97	3.00	7.36	8.35
50th-Percentile Queue Length [ft/ln]	64.21	96.17	89.37	56.21	247.59	93.31	120.86	339.60	374.13	75.07	183.94	208.69
95th-Percentile Queue Length [veh/ln]	4.62	6.92	6.43	4.05	15.06	6.72	8.44	19.63	21.31	5.41	11.81	13.09
95th-Percentile Queue Length [ft/ln]	115.57	173.11	160.86	101.17	376.61	167.95	211.00	490.71	532.73	135.13	295.15	327.15

Movement, Approach, & Intersection Results

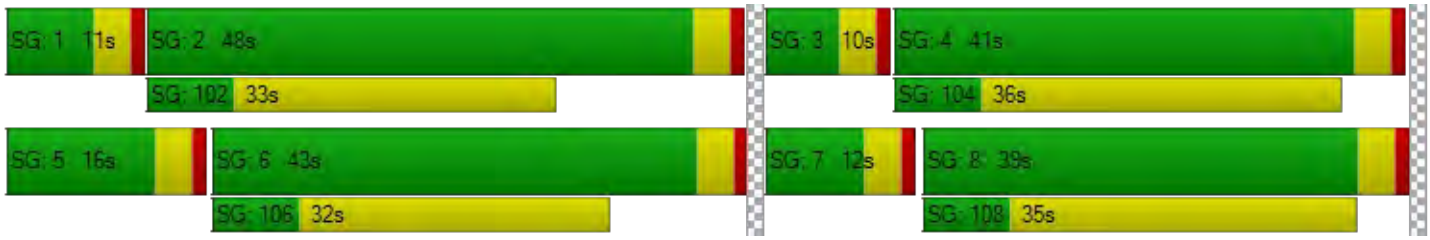
d_M, Delay for Movement [s/veh]	62.29	39.25	39.04	54.86	50.00	38.47	57.94	22.50	24.51	64.00	19.76	21.12
Movement LOS	E	D	D	D	D	D	E	C	C	E	B	C
d_A, Approach Delay [s/veh]	47.30			48.42			25.06			22.08		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	28.91											
Intersection LOS	C											
Intersection V/C	0.782											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	44.55	44.55	44.55
l_p,int, Pedestrian LOS Score for Intersection	2.630	2.647	3.261	3.239
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	636	673	800	709
d_b, Bicycle Delay [s]	25.57	24.22	19.80	22.91
l_b,int, Bicycle LOS Score for Intersection	1.952	2.650	2.830	2.329
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	18.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.686

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	179	11	142	25	28	13	12	1814	358	172	1478	32
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	11	142	25	28	13	12	1814	358	172	1478	32
Peak Hour Factor	0.8320	0.8320	0.8320	0.6740	0.6740	0.6740	0.9510	0.9510	0.9510	0.8930	0.8930	0.8930
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	54	3	43	9	10	5	3	477	94	48	414	9
Total Analysis Volume [veh/h]	215	13	171	37	42	19	13	1907	376	193	1655	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	26	0	0	10	0	10	32	0	22	44	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	11	11	6	6	2	46	46	12	56	56
g / C, Green / Cycle	0.12	0.12	0.12	0.06	0.06	0.02	0.51	0.51	0.13	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.06	0.07	0.09	0.02	0.03	0.01	0.33	0.20	0.11	0.29	0.30
s, saturation flow rate [veh/h]	1800	1800	1900	1800	1900	1800	5700	1900	1800	3800	1900
c, Capacity [veh/h]	215	215	227	112	118	36	2916	972	233	2361	1181
d1, Uniform Delay [s]	37.26	37.41	38.43	40.50	40.98	43.63	16.16	13.41	38.26	9.14	9.29
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.91	2.16	5.04	1.72	3.48	6.05	1.16	1.16	7.29	0.68	1.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.55	0.75	0.33	0.52	0.36	0.65	0.39	0.83	0.47	0.49
d, Delay for Lane Group [s/veh]	39.17	39.58	43.48	42.22	44.47	49.68	17.32	14.57	45.56	9.82	10.75
Lane Group LOS	D	D	D	D	D	D	B	B	D	A	B
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.37	2.54	3.92	0.83	1.41	0.34	9.20	4.68	4.56	5.38	5.93
50th-Percentile Queue Length [ft/ln]	59.32	63.38	97.97	20.79	35.31	8.60	230.03	116.90	114.03	134.49	148.28
95th-Percentile Queue Length [veh/ln]	4.27	4.56	7.05	1.50	2.54	0.62	14.18	8.22	8.06	9.18	9.93
95th-Percentile Queue Length [ft/ln]	106.77	114.08	176.34	37.42	63.56	15.47	354.40	205.55	201.59	229.58	248.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.37	39.58	43.48	42.22	44.47	44.47	49.68	17.32	14.57	45.56	10.12	10.75
Movement LOS	D	D	D	D	D	D	D	B	B	D	B	B
d_A, Approach Delay [s/veh]	41.14			43.62			17.05			13.77		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	18.34											
Intersection LOS	B											
Intersection V/C	0.686											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.496	1.992	0.000	3.150
Crosswalk LOS	B	A	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	489	133	622	889
d_b, Bicycle Delay [s]	25.69	39.20	21.36	13.89
l_b,int, Bicycle LOS Score for Intersection	2.218	1.721	2.822	2.596
Bicycle LOS	B	A	C	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: S. Associated Road at Brea Plaza Dwy 2

Control Type:	Two-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Base Volume Input [veh/h]	0	432	595	11	0	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	432	595	11	0	8
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	114	157	3	0	2
Total Analysis Volume [veh/h]	0	455	626	12	0	8
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.38
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.04
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.90
d_A, Approach Delay [s/veh]	0.00		0.00		10.38	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.08					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: S. Associated Rd at Brea Plaza Dwy 3

Control Type:	Two-way stop	Delay (sec / veh):	18.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.032

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Base Volume Input [veh/h]	11	422	593	10	9	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	422	593	10	9	21
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	111	156	3	2	6
Total Analysis Volume [veh/h]	12	444	624	11	9	22
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.00	0.03	0.03
d_M, Delay for Movement [s/veh]	8.86	0.00	0.00	0.00	18.05	10.49
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.04	0.00	0.00	0.00	0.10	0.10
95th-Percentile Queue Length [ft/ln]	0.97	0.00	0.00	0.00	2.44	2.51
d_A, Approach Delay [s/veh]	0.23		0.00		12.68	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.45					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Brea Plaza Dwy 4 at Imperial Highway

Control Type:	Two-way stop	Delay (sec / veh):	23.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.044

Intersection Setup

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Base Volume Input [veh/h]	0	9	0	2110	1906	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	9	0	2110	1906	9
Peak Hour Factor	1.0000	0.9500	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	0	555	502	2
Total Analysis Volume [veh/h]	0	9	0	2221	2006	9
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.04	0.00	0.02	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	23.36	0.00	0.00	0.00	0.00
Movement LOS		C		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.14	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	3.42	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	23.36		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.05					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	16.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.743

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	653	0	548	0	1701	1051	0	2442	388
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	653	0	548	0	1701	1051	0	2442	388
Peak Hour Factor	1.0000	1.0000	1.0000	0.9390	1.0000	0.9390	1.0000	0.9540	0.9540	1.0000	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	174	0	146	0	446	275	0	627	100
Total Analysis Volume [veh/h]	0	0	0	695	0	584	0	1783	1102	0	2510	399
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		26	26	26	56	56
g / C, Green / Cycle		0.29	0.29	0.29	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate		0.24	0.24	0.22	0.31	0.44
s, saturation flow rate [veh/h]		1800	1800	1900	5700	5700
c, Capacity [veh/h]		513	513	542	3567	3567
d1, Uniform Delay [s]		30.08	30.08	29.60	9.15	11.23
k, delay calibration		0.11	0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		3.56	3.56	2.58	0.50	1.19
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.83	0.83	0.79	0.50	0.70
d, Delay for Lane Group [s/veh]		33.64	33.64	32.18	9.65	12.42
Lane Group LOS		C	C	C	A	B
Critical Lane Group		Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		8.86	8.86	8.61	5.76	10.07
50th-Percentile Queue Length [ft/ln]		221.56	221.56	215.26	144.11	251.73
95th-Percentile Queue Length [veh/ln]		13.74	13.74	13.42	9.70	15.27
95th-Percentile Queue Length [ft/ln]		343.62	343.62	335.56	242.55	381.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	33.64	0.00	32.57	0.00	9.65	0.00	0.00	12.42	0.00
Movement LOS				C		C		A			B	
d_A, Approach Delay [s/veh]	0.00			33.15			9.65			12.42		
Approach LOS	A			C			A			B		
d_I, Intersection Delay [s/veh]	16.29											
Intersection LOS	B											
Intersection V/C	0.743											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	34.67	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.442	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1333	489	489
d_b, Bicycle Delay [s]	45.00	5.00	25.69	25.69
l_b,int, Bicycle LOS Score for Intersection	4.132	3.670	2.540	2.940
Bicycle LOS	D	D	B	C

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	27.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	1089	74	409	0	0	239	213	1796	371	0	2340	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1089	74	409	0	0	239	213	1796	371	0	2340	47
Peak Hour Factor	0.9490	0.9490	0.9490	1.0000	1.0000	0.8840	0.9510	0.9510	0.9510	1.0000	0.9830	0.9830
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	287	19	108	0	0	68	56	472	98	0	595	12
Total Analysis Volume [veh/h]	1148	78	431	0	0	270	224	1889	390	0	2380	48
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	34	0	0	0	26	26	56	0	0	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	28	28	15	15	60	41	41
g / C, Green / Cycle	0.28	0.28	0.28	0.15	0.15	0.60	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.23	0.23	0.22	0.07	0.12	0.33	0.32	0.32
s, saturation flow rate [veh/h]	3500	1800	1900	3800	1800	5700	5700	1900
c, Capacity [veh/h]	987	508	536	571	270	3403	2319	773
d1, Uniform Delay [s]	33.66	33.67	33.14	38.93	41.30	12.16	25.88	25.88
k, delay calibration	0.11	0.20	0.18	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.84	6.36	4.13	0.61	6.43	0.66	2.76	7.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.83	0.78	0.47	0.83	0.56	0.79	0.79
d, Delay for Lane Group [s/veh]	35.50	40.03	37.27	39.54	47.73	12.82	28.64	33.76
Lane Group LOS	D	D	D	D	D	B	C	C
Critical Lane Group	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.33	10.25	9.82	3.06	5.79	8.04	12.72	13.81
50th-Percentile Queue Length [ft/ln]	233.34	256.31	245.57	76.60	144.79	201.03	317.88	345.33
95th-Percentile Queue Length [veh/ln]	14.34	15.50	14.96	5.52	9.74	12.69	18.56	19.91
95th-Percentile Queue Length [ft/ln]	358.60	387.59	374.06	137.88	243.46	317.29	464.08	497.71

Movement, Approach, & Intersection Results

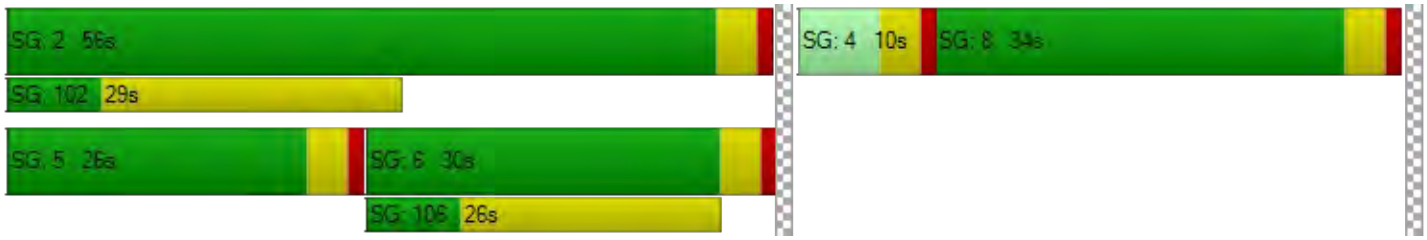
d_M, Delay for Movement [s/veh]	36.79	40.03	37.38	0.00	0.00	39.54	47.73	12.82	0.00	0.00	29.84	33.76
Movement LOS	D	D	D			D	D	B			C	C
d_A, Approach Delay [s/veh]	37.10			39.54			16.52			29.92		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	27.78											
Intersection LOS	C											
Intersection V/C	0.770											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.628	2.287	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	440	1040	520
d_b, Bicycle Delay [s]	24.50	30.42	11.52	27.38
l_b,int, Bicycle LOS Score for Intersection	4.294	1.560	2.722	2.561
Bicycle LOS	E	A	B	B

Sequence

Ring 1	-	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	27.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.691

Intersection Setup

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	460	32	343	10	20	6	12	874	286	283	1241	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	460	32	343	10	20	6	12	874	286	283	1241	16
Peak Hour Factor	0.9370	0.9370	0.9370	0.8500	0.8500	0.8500	0.9910	0.9910	0.9910	0.9420	0.9420	0.9420
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	123	9	92	3	6	2	3	220	72	75	329	4
Total Analysis Volume [veh/h]	491	34	366	12	24	7	12	882	289	300	1317	17
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	66	0	0	37	0	10	38	0	16	44	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	27	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No			No		No	No		No	No	
Maximum Recall	No	No			No		No	No		No	No	
Pedestrian Recall	No	No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	28	28	5	5	2	68	68	12	78	78
g / C, Green / Cycle	0.16	0.23	0.23	0.04	0.04	0.02	0.57	0.57	0.10	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.14	0.02	0.19	0.01	0.02	0.01	0.32	0.30	0.09	0.35	0.35
s, saturation flow rate [veh/h]	3500	1900	1900	1800	1900	1800	1900	1900	3500	1900	1900
c, Capacity [veh/h]	564	443	443	77	73	31	1077	1077	351	1235	1235
d1, Uniform Delay [s]	49.11	35.94	43.72	55.85	56.40	58.39	16.60	15.99	53.14	11.34	11.32
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.30	0.07	3.98	0.92	3.85	8.01	2.16	1.80	5.98	1.70	1.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.08	0.83	0.16	0.42	0.39	0.57	0.52	0.85	0.54	0.54
d, Delay for Lane Group [s/veh]	53.41	36.01	47.70	56.78	60.25	66.40	18.76	17.80	59.12	13.04	13.02
Lane Group LOS	D	D	D	E	E	E	B	B	E	B	B
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.50	0.79	10.78	0.37	1.00	0.43	11.02	9.74	4.74	9.61	9.58
50th-Percentile Queue Length [ft/ln]	187.47	19.87	269.42	9.31	24.94	10.73	275.41	243.42	118.50	240.29	239.38
95th-Percentile Queue Length [veh/ln]	11.99	1.43	16.16	0.67	1.80	0.77	16.46	14.85	8.31	14.70	14.65
95th-Percentile Queue Length [ft/ln]	299.75	35.76	404.01	16.75	44.90	19.31	411.49	371.35	207.77	367.41	366.25

Movement, Approach, & Intersection Results

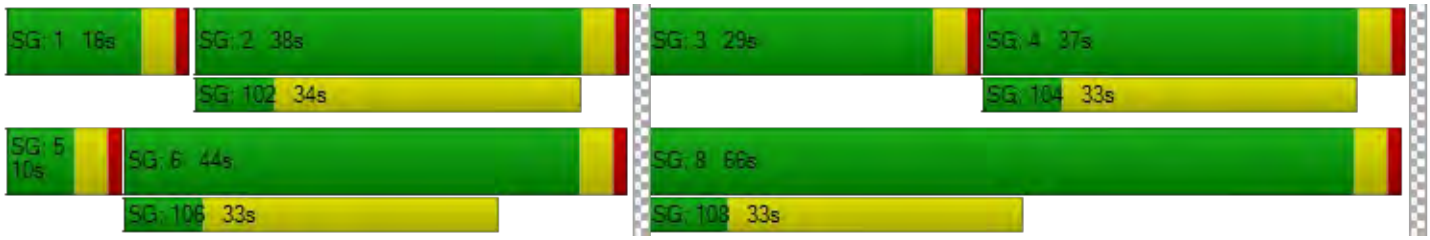
d_M, Delay for Movement [s/veh]	53.41	36.01	47.70	56.78	60.25	60.25	66.40	18.46	17.80	59.12	13.03	13.02
Movement LOS	D	D	D	E	E	E	E	B	B	E	B	B
d_A, Approach Delay [s/veh]	50.40			59.28			18.78			21.49		
Approach LOS	D			E			B			C		
d_I, Intersection Delay [s/veh]	27.94											
Intersection LOS	C											
Intersection V/C	0.691											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.711	1.988	2.898	2.954
Crosswalk LOS	B	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1033	550	567	667
d_b, Bicycle Delay [s]	14.02	31.54	30.82	26.67
l_b,int, Bicycle LOS Score for Intersection	3.030	1.631	2.536	2.908
Bicycle LOS	C	A	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: S.Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	6.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.226

Intersection Setup

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Base Volume Input [veh/h]	39	526	37	16	549	8	19	9	45	27	4	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	526	37	16	549	8	19	9	45	27	4	35
Peak Hour Factor	0.9310	0.9310	0.9310	0.9120	0.9120	0.9120	0.8960	0.8960	0.8960	0.8090	0.8090	0.8090
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	141	10	4	150	2	5	3	13	8	1	11
Total Analysis Volume [veh/h]	42	565	40	18	602	9	21	10	50	33	5	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	24	0	0	24	0	0	66	0	0	66	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	13	0	0	13	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	77	77	77	77	77	77	5	5
g / C, Green / Cycle	0.85	0.85	0.85	0.85	0.85	0.85	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.16	0.01	0.16	0.16	0.05	0.05
s, saturation flow rate [veh/h]	1800	1900	1900	1800	1900	1900	1800	1800
c, Capacity [veh/h]	1502	1617	1617	1502	1617	1617	159	164
d1, Uniform Delay [s]	1.02	1.19	1.19	1.01	1.19	1.19	41.59	41.59
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	0.26	0.25	0.01	0.26	0.26	2.53	2.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.19	0.19	0.01	0.19	0.19	0.51	0.49
d, Delay for Lane Group [s/veh]	1.06	1.45	1.44	1.02	1.45	1.45	44.12	43.86
Lane Group LOS	A	A	A	A	A	A	D	D
Critical Lane Group	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.05	0.42	0.41	0.02	0.42	0.42	1.86	1.85
50th-Percentile Queue Length [ft/ln]	1.25	10.47	10.22	0.53	10.50	10.44	46.49	46.30
95th-Percentile Queue Length [veh/ln]	0.09	0.75	0.74	0.04	0.76	0.75	3.35	3.33
95th-Percentile Queue Length [ft/ln]	2.25	18.85	18.39	0.95	18.89	18.79	83.69	83.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.06	1.44	1.44	1.02	1.45	1.45	44.12	44.12	44.12	43.86	43.86	43.86
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	1.42			1.44			44.12			43.86		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	6.22											
Intersection LOS	A											
Intersection V/C	0.226											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.606	2.575	1.841	1.813
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	444	444	1378	1378
d_b, Bicycle Delay [s]	27.22	27.22	4.36	4.36
l_b,int, Bicycle LOS Score for Intersection	2.093	2.079	1.693	1.693
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	40.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.879

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	217	254	82	286	343	223	249	1817	139	172	1721	168
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	217	254	82	286	343	223	249	1817	139	172	1721	168
Peak Hour Factor	0.9100	0.9100	0.9100	0.8290	0.8290	0.8290	0.9480	0.9480	0.9480	0.9350	0.9350	0.9350
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	70	23	86	103	67	66	479	37	46	460	45
Total Analysis Volume [veh/h]	238	279	90	345	414	269	263	1917	147	184	1841	180
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	39	0	17	44	0	22	42	0	17	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	23	23	13	28	28	18	50	50	13	45	45
g / C, Green / Cycle	0.07	0.20	0.20	0.11	0.24	0.24	0.16	0.44	0.44	0.11	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10	0.09	0.10	0.22	0.14	0.15	0.36	0.37	0.10	0.26	0.27
s, saturation flow rate [veh/h]	3500	1900	1900	3500	1900	1900	1800	3800	1900	1800	5700	1900
c, Capacity [veh/h]	246	378	378	397	461	461	282	1652	826	204	2232	744
d1, Uniform Delay [s]	53.37	41.04	40.71	50.16	42.23	38.47	47.91	28.68	29.10	50.36	28.92	29.33
k, delay calibration	0.11	0.11	0.11	0.11	0.19	0.11	0.13	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.98	1.05	0.91	5.86	10.51	1.18	14.98	4.86	10.48	13.26	1.64	5.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.97	0.51	0.47	0.87	0.90	0.58	0.93	0.83	0.85	0.90	0.67	0.70
d, Delay for Lane Group [s/veh]	73.35	42.09	41.62	56.03	52.73	39.65	62.89	33.54	39.58	63.63	30.56	34.73
Lane Group LOS	E	D	D	E	D	D	E	C	D	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.11	4.94	4.55	5.19	12.63	6.83	8.59	17.25	19.19	5.97	11.58	12.96
50th-Percentile Queue Length [ft/ln]	102.73	123.56	113.69	129.85	315.86	170.86	214.66	431.15	479.84	149.23	289.40	323.91
95th-Percentile Queue Length [veh/ln]	7.40	8.59	8.05	8.93	18.46	11.12	13.39	24.06	26.38	9.98	17.16	18.86
95th-Percentile Queue Length [ft/ln]	184.91	214.71	201.13	223.30	461.59	278.05	334.80	601.41	659.46	249.40	428.90	471.49

Movement, Approach, & Intersection Results

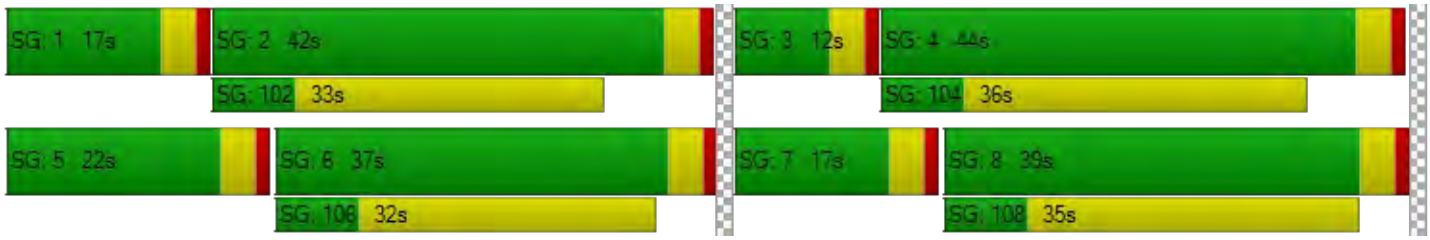
d_M, Delay for Movement [s/veh]	73.35	41.94	41.62	56.03	52.73	39.65	62.89	35.28	39.58	63.63	31.33	34.73
Movement LOS	E	D	D	E	D	D	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	54.21			50.41			38.67			34.31		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	40.60											
Intersection LOS	D											
Intersection V/C	0.879											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.03	47.03	47.03	47.03
l_p,int, Pedestrian LOS Score for Intersection	2.684	2.749	3.307	3.293
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	609	696	661	574
d_b, Bicycle Delay [s]	27.83	24.46	25.78	29.23
l_b,int, Bicycle LOS Score for Intersection	2.060	3.256	2.839	2.469
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	24.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.800

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	250	46	261	25	23	13	19	1826	281	226	1875	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	250	46	261	25	23	13	19	1826	281	226	1875	56
Peak Hour Factor	0.8580	0.8580	0.8580	0.6480	0.6480	0.6480	0.9520	0.9520	0.9520	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	13	76	10	9	5	5	480	74	60	496	15
Total Analysis Volume [veh/h]	291	54	304	39	35	20	20	1918	295	239	1982	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	26	0	0	10	0	10	32	0	22	44	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	17	17	5	5	2	38	38	14	49	49
g / C, Green / Cycle	0.19	0.19	0.19	0.06	0.06	0.03	0.42	0.42	0.15	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.09	0.10	0.16	0.02	0.03	0.01	0.34	0.16	0.13	0.35	0.37
s, saturation flow rate [veh/h]	1800	1800	1900	1800	1900	1800	5700	1900	1800	3800	1900
c, Capacity [veh/h]	340	340	358	111	117	50	2379	793	279	2070	1035
d1, Uniform Delay [s]	32.71	32.95	35.34	40.60	40.90	43.11	23.07	18.12	37.11	14.45	14.77
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.10	1.26	5.61	1.90	2.93	5.15	3.04	1.34	7.42	1.59	3.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.53	0.85	0.35	0.47	0.40	0.81	0.37	0.86	0.65	0.67
d, Delay for Lane Group [s/veh]	33.81	34.21	40.95	42.50	43.83	48.26	26.11	19.46	44.54	16.03	18.28
Lane Group LOS	C	C	D	D	D	D	C	B	D	B	B
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.30	3.56	6.86	0.88	1.26	0.51	11.92	4.37	5.61	9.27	10.38
50th-Percentile Queue Length [ft/ln]	82.59	89.12	171.51	22.01	31.57	12.63	298.05	109.32	140.30	231.69	259.41
95th-Percentile Queue Length [veh/ln]	5.95	6.42	11.16	1.58	2.27	0.91	17.58	7.80	9.50	14.26	15.66
95th-Percentile Queue Length [ft/ln]	148.65	160.41	278.90	39.61	56.83	22.74	439.62	195.06	237.42	356.50	391.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.98	34.21	40.95	42.50	43.83	43.83	48.26	26.11	19.46	44.54	16.76	18.28
Movement LOS	C	C	D	D	D	D	D	C	B	D	B	B
d_A, Approach Delay [s/veh]	37.26			43.28			25.43			19.71		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	24.73											
Intersection LOS	C											
Intersection V/C	0.800											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.537	2.013	0.000	3.226
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	489	133	622	889
d_b, Bicycle Delay [s]	25.69	39.20	21.36	13.89
l_b,int, Bicycle LOS Score for Intersection	2.630	1.715	2.788	2.814
Bicycle LOS	B	A	C	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: S. Associated Road at Brea Plaza Dwy 2

Control Type:	Two-way stop	Delay (sec / veh):	11.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.070

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Base Volume Input [veh/h]	0	696	714	9	0	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	696	714	9	0	41
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	183	188	2	0	11
Total Analysis Volume [veh/h]	0	733	752	9	0	43
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.07
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	11.27
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.22
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	5.60
d_A, Approach Delay [s/veh]	0.00		0.00		11.27	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.32					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: S. Associated Rd at Brea Plaza Dwy 3

Control Type:	Two-way stop	Delay (sec / veh):	30.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.230

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Base Volume Input [veh/h]	15	655	722	33	41	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	655	722	33	41	128
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	172	190	9	11	34
Total Analysis Volume [veh/h]	16	689	760	35	43	135
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.01	0.00	0.23	0.22
d_M, Delay for Movement [s/veh]	9.47	0.00	0.00	0.00	29.95	12.70
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.06	0.00	0.00	0.00	0.86	0.85
95th-Percentile Queue Length [ft/ln]	1.49	0.00	0.00	0.00	21.42	21.37
d_A, Approach Delay [s/veh]	0.21		0.00		16.87	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.88					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 9: Brea Plaza Dwy 4 at Imperial Highway

Control Type:	Two-way stop	Delay (sec / veh):	35.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.310

Intersection Setup

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Base Volume Input [veh/h]	0	49	0	2207	2126	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	49	0	2207	2126	36
Peak Hour Factor	1.0000	0.9500	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	0	581	559	9
Total Analysis Volume [veh/h]	0	52	0	2323	2238	38
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.31	0.00	0.02	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	35.84	0.00	0.00	0.00	0.00
Movement LOS		E		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	1.24	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	31.05	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	35.84		0.00		0.00	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	0.40					
Intersection LOS	E					

APPENDIX D-III

YEAR 2024 CUMULATIVE PLUS PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	15.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	580	0	501	0	1494	796	0	1949	189
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	580	0	501	0	1494	796	0	1949	189
Peak Hour Factor	1.0000	1.0000	1.0000	0.8810	1.0000	0.8810	1.0000	0.9270	0.9270	1.0000	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	165	0	142	0	403	215	0	518	50
Total Analysis Volume [veh/h]	0	0	0	658	0	569	0	1612	859	0	2073	201
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		25	25	25	57	57
g / C, Green / Cycle		0.27	0.27	0.27	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate		0.23	0.23	0.22	0.28	0.36
s, saturation flow rate [veh/h]		1800	1800	1900	5700	5700
c, Capacity [veh/h]		494	494	521	3629	3629
d1, Uniform Delay [s]		30.60	30.60	30.14	8.27	9.32
k, delay calibration		0.11	0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		3.63	3.63	2.65	0.40	0.66
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.83	0.83	0.78	0.44	0.57
d, Delay for Lane Group [s/veh]		34.23	34.23	32.78	8.67	9.98
Lane Group LOS		C	C	C	A	A
Critical Lane Group		Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		8.56	8.56	8.32	4.78	6.96
50th-Percentile Queue Length [ft/ln]		213.89	213.89	207.96	119.54	173.99
95th-Percentile Queue Length [veh/ln]		13.35	13.35	13.05	8.37	11.29
95th-Percentile Queue Length [ft/ln]		333.81	333.81	326.21	209.20	282.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	34.23	0.00	33.19	0.00	8.67	0.00	0.00	9.98	0.00
Movement LOS				C		C		A			A	
d_A, Approach Delay [s/veh]	0.00			33.75			8.67			9.98		
Approach LOS	A			C			A			A		
d_I, Intersection Delay [s/veh]	15.49											
Intersection LOS	B											
Intersection V/C	0.649											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	34.67	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.430	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1333	489	489
d_b, Bicycle Delay [s]	45.00	5.00	25.69	25.69
l_b,int, Bicycle LOS Score for Intersection	4.132	3.584	2.446	2.700
Bicycle LOS	D	D	B	B

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	25.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.657

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	1037	31	804	0	0	87	100	1373	548	0	1482	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1037	31	804	0	0	87	100	1373	548	0	1482	14
Peak Hour Factor	0.9080	0.9080	0.9080	1.0000	1.0000	0.6820	0.8790	0.8790	0.8790	1.0000	0.8940	0.8940
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	286	9	221	0	0	32	28	391	156	0	414	4
Total Analysis Volume [veh/h]	1142	34	885	0	0	128	114	1562	623	0	1658	16
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	43	0	0	0	12	12	42	0	0	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	34	34	34	8	8	49	37	37
g / C, Green / Cycle	0.36	0.36	0.36	0.08	0.08	0.52	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.29	0.29	0.28	0.03	0.06	0.27	0.22	0.22
s, saturation flow rate [veh/h]	3500	1800	1900	3800	1800	5700	5700	1900
c, Capacity [veh/h]	1252	644	680	306	145	2935	2237	746
d1, Uniform Delay [s]	27.64	27.66	27.07	41.64	42.96	15.42	22.52	22.52
k, delay calibration	0.11	0.18	0.16	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.31	4.13	2.67	0.91	9.10	0.70	1.02	3.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.81	0.77	0.42	0.79	0.53	0.56	0.56
d, Delay for Lane Group [s/veh]	28.96	31.78	29.74	42.55	52.06	16.12	23.55	25.57
Lane Group LOS	C	C	C	D	D	B	C	C
Critical Lane Group	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.30	11.11	10.66	1.46	2.97	7.30	7.26	7.68
50th-Percentile Queue Length [ft/ln]	257.38	277.78	266.44	36.43	74.31	182.50	181.55	192.00
95th-Percentile Queue Length [veh/ln]	15.56	16.58	16.01	2.62	5.35	11.73	11.68	12.22
95th-Percentile Queue Length [ft/ln]	388.93	414.45	400.29	65.58	133.76	293.28	292.04	305.62

Movement, Approach, & Intersection Results

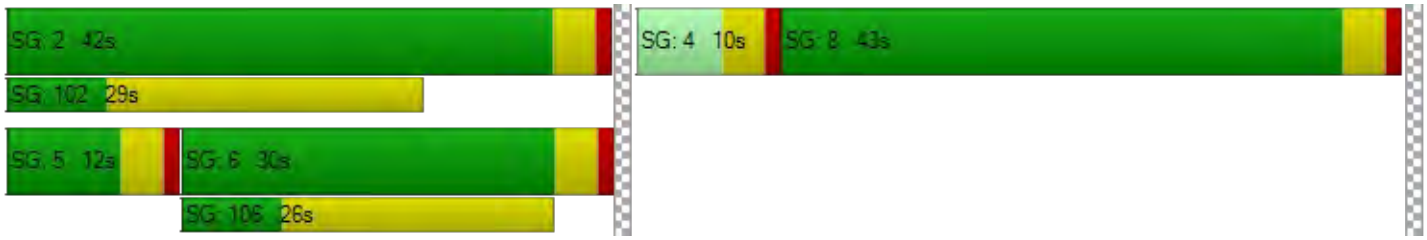
d_M, Delay for Movement [s/veh]	29.24	31.78	30.60	0.00	0.00	42.55	52.06	16.12	0.00	0.00	24.04	25.57
Movement LOS	C	C	C			D	D	B			C	C
d_A, Approach Delay [s/veh]	29.87			42.55			18.56			24.05		
Approach LOS	C			D			B			C		
d_I, Intersection Delay [s/veh]	24.98											
Intersection LOS	C											
Intersection V/C	0.657											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.14	37.14	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.704	2.205	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	821	168	800	547
d_b, Bicycle Delay [s]	16.51	39.84	17.10	25.06
l_b,int, Bicycle LOS Score for Intersection	4.960	1.560	2.481	2.250
Bicycle LOS	E	A	B	B

Sequence

Ring 1	-	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	28.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.822

Intersection Setup

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	239	6	311	55	29	8	2	937	306	344	763	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	239	6	311	55	29	8	2	937	306	344	763	10
Peak Hour Factor	0.8160	0.8160	0.8160	0.7410	0.7410	0.7410	0.8560	0.8560	0.8560	0.9140	0.9140	0.9140
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	2	95	19	10	3	1	274	89	94	209	3
Total Analysis Volume [veh/h]	293	7	381	74	39	11	2	1095	357	376	835	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	54	0	0	37	0	10	38	0	18	46	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	27	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No			No		No	No		No	No	
Maximum Recall	No	No			No		No	No		No	No	
Pedestrian Recall	No	No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	25	25	9	9	0	60	60	14	73	73
g / C, Green / Cycle	0.10	0.22	0.22	0.08	0.08	0.00	0.54	0.54	0.12	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.08	0.00	0.20	0.04	0.03	0.00	0.39	0.37	0.11	0.22	0.22
s, saturation flow rate [veh/h]	3500	1900	1900	1800	1900	1800	1900	1900	3500	1900	1900
c, Capacity [veh/h]	359	425	425	183	161	8	1031	1031	437	1259	1259
d1, Uniform Delay [s]	48.39	33.28	41.48	48.07	47.34	54.64	19.04	18.29	47.25	8.06	8.05
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.56	0.02	6.85	1.43	1.08	16.65	4.50	3.64	5.10	0.72	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.02	0.90	0.40	0.31	0.26	0.73	0.68	0.86	0.34	0.34
d, Delay for Lane Group [s/veh]	52.95	33.30	48.33	49.50	48.41	71.29	23.54	21.93	52.35	8.78	8.76
Lane Group LOS	D	C	D	D	D	E	C	C	D	A	A
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.15	0.15	10.75	2.01	1.34	0.09	15.02	13.39	5.34	4.29	4.26
50th-Percentile Queue Length [ft/ln]	103.86	3.71	268.69	50.23	33.42	2.28	375.46	334.76	133.49	107.22	106.62
95th-Percentile Queue Length [veh/ln]	7.48	0.27	16.12	3.62	2.41	0.16	21.37	19.39	9.13	7.69	7.65
95th-Percentile Queue Length [ft/ln]	186.95	6.67	403.11	90.41	60.15	4.10	534.35	484.79	228.23	192.13	191.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.95	33.30	48.33	49.50	48.41	48.41	71.29	23.04	21.93	52.35	8.77	8.76
Movement LOS	D	C	D	D	D	D	E	C	C	D	A	A
d_A, Approach Delay [s/veh]	50.17			49.06			22.83			22.18		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	28.88											
Intersection LOS	C											
Intersection V/C	0.822											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	44.55	44.55	44.55
l_p,int, Pedestrian LOS Score for Intersection	2.699	1.997	2.815	3.018
Crosswalk LOS	B	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	909	600	618	764
d_b, Bicycle Delay [s]	16.36	26.95	26.25	21.02
l_b,int, Bicycle LOS Score for Intersection	2.683	1.764	2.759	2.568
Bicycle LOS	B	A	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: S.Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	8.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.238

Intersection Setup

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Base Volume Input [veh/h]	110	399	15	19	459	20	7	1	42	42	8	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	399	15	19	459	20	7	1	42	42	8	40
Peak Hour Factor	0.8160	0.8160	0.8160	0.9430	0.9430	0.9430	0.6670	0.6670	0.6670	0.6100	0.6100	0.6100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	122	5	5	122	5	3	0	16	17	3	16
Total Analysis Volume [veh/h]	135	489	18	20	487	21	10	1	63	69	13	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	24	0	0	24	0	0	66	0	0	66	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	13	0	0	13	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	73	73	73	73	73	73	9	9
g / C, Green / Cycle	0.81	0.81	0.81	0.81	0.81	0.81	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.08	0.13	0.13	0.01	0.13	0.13	0.04	0.08
s, saturation flow rate [veh/h]	1800	1900	1900	1800	1900	1900	1800	1800
c, Capacity [veh/h]	1415	1534	1534	1415	1534	1534	232	245
d1, Uniform Delay [s]	1.80	1.92	1.92	1.68	1.92	1.92	37.65	39.34
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	0.23	0.23	0.02	0.23	0.23	0.79	2.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.10	0.17	0.16	0.01	0.17	0.16	0.32	0.60
d, Delay for Lane Group [s/veh]	1.93	2.16	2.15	1.70	2.16	2.15	38.44	41.73
Lane Group LOS	A	A	A	A	A	A	D	D
Critical Lane Group	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.33	0.66	0.66	0.05	0.67	0.66	1.56	3.31
50th-Percentile Queue Length [ft/ln]	8.31	16.59	16.38	1.15	16.64	16.42	38.91	82.74
95th-Percentile Queue Length [veh/ln]	0.60	1.19	1.18	0.08	1.20	1.18	2.80	5.96
95th-Percentile Queue Length [ft/ln]	14.96	29.87	29.49	2.07	29.95	29.55	70.04	148.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.93	2.15	2.15	1.70	2.15	2.15	38.44	38.44	38.44	41.73	41.73	41.73
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	2.11			2.14			38.44			41.73		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	8.26											
Intersection LOS	A											
Intersection V/C	0.238											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.643	2.527	2.025	1.834
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	444	444	1378	1378
d_b, Bicycle Delay [s]	27.22	27.22	4.36	4.36
l_b,int, Bicycle LOS Score for Intersection	2.089	1.995	1.682	1.804
Bicycle LOS	B	A	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	30.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.783

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	148	205	70	155	325	154	207	1859	101	91	1616	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	148	205	70	155	325	154	207	1859	101	91	1616	94
Peak Hour Factor	0.8870	0.8870	0.8870	0.9320	0.9320	0.9320	0.9120	0.9120	0.9120	0.9620	0.9620	0.9620
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	58	20	42	87	41	57	510	28	24	420	24
Total Analysis Volume [veh/h]	167	231	79	166	349	165	227	2038	111	95	1680	98
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	12	41	0	20	48	0	11	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	22	22	7	23	23	16	58	58	7	50	50
g / C, Green / Cycle	0.05	0.20	0.20	0.07	0.21	0.21	0.14	0.53	0.53	0.06	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.08	0.05	0.18	0.09	0.13	0.37	0.39	0.05	0.23	0.24
s, saturation flow rate [veh/h]	3500	1900	1900	3500	1900	1900	1800	3800	1900	1800	5700	1900
c, Capacity [veh/h]	194	375	375	229	394	394	257	2004	1002	116	2560	853
d1, Uniform Delay [s]	51.59	38.73	38.51	50.47	42.36	37.87	46.30	19.60	20.00	50.87	21.70	22.11
k, delay calibration	0.11	0.11	0.11	0.11	0.12	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.70	0.77	0.69	4.31	7.65	0.71	9.71	2.13	4.69	13.12	0.74	2.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.43	0.40	0.72	0.89	0.42	0.88	0.71	0.73	0.82	0.51	0.54
d, Delay for Lane Group [s/veh]	62.29	39.50	39.19	54.78	50.01	38.58	56.01	21.73	24.69	64.00	22.44	24.60
Lane Group LOS	E	D	D	D	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.57	3.87	3.60	2.38	9.97	3.94	6.75	13.62	15.04	3.00	8.10	9.16
50th-Percentile Queue Length [ft/ln]	64.21	96.72	89.88	59.40	249.15	98.38	168.85	340.47	376.12	75.07	202.42	229.04
95th-Percentile Queue Length [veh/ln]	4.62	6.96	6.47	4.28	15.14	7.08	11.02	19.67	21.41	5.41	12.76	14.13
95th-Percentile Queue Length [ft/ln]	115.57	174.09	161.78	106.93	378.58	177.09	275.40	491.78	535.15	135.13	319.08	353.13

Movement, Approach, & Intersection Results

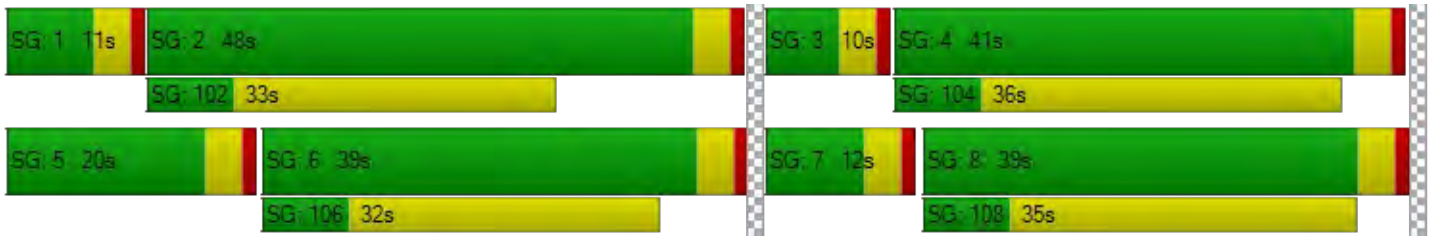
d_M, Delay for Movement [s/veh]	62.29	39.41	39.19	54.78	50.01	38.58	56.01	22.63	24.69	64.00	22.91	24.60
Movement LOS	E	D	D	D	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	47.38			48.40			25.92			25.08		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	30.35											
Intersection LOS	C											
Intersection V/C	0.783											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	44.55	44.55	44.55
l_p,int, Pedestrian LOS Score for Intersection	2.630	2.663	3.270	3.242
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	636	673	800	636
d_b, Bicycle Delay [s]	25.57	24.22	19.80	25.57
l_b,int, Bicycle LOS Score for Intersection	1.953	2.682	2.866	2.332
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	18.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.688

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	179	11	142	25	28	13	12	1823	359	172	1484	32
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	11	142	25	28	13	12	1823	359	172	1484	32
Peak Hour Factor	0.8320	0.8320	0.8320	0.6740	0.6740	0.6740	0.9510	0.9510	0.9510	0.8930	0.8930	0.8930
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	54	3	43	9	10	5	3	479	94	48	415	9
Total Analysis Volume [veh/h]	215	13	171	37	42	19	13	1917	377	193	1662	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	26	0	0	10	0	10	32	0	22	44	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	11	11	6	6	2	46	46	12	56	56
g / C, Green / Cycle	0.12	0.12	0.12	0.06	0.06	0.02	0.51	0.51	0.13	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.06	0.07	0.09	0.02	0.03	0.01	0.34	0.20	0.11	0.29	0.31
s, saturation flow rate [veh/h]	1800	1800	1900	1800	1900	1800	5700	1900	1800	3800	1900
c, Capacity [veh/h]	215	215	227	112	118	36	2916	972	233	2361	1181
d1, Uniform Delay [s]	37.26	37.41	38.43	40.50	40.98	43.63	16.20	13.42	38.26	9.16	9.31
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.91	2.16	5.04	1.72	3.48	6.05	1.18	1.17	7.29	0.68	1.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.55	0.75	0.33	0.52	0.36	0.66	0.39	0.83	0.47	0.49
d, Delay for Lane Group [s/veh]	39.17	39.58	43.48	42.22	44.47	49.68	17.38	14.58	45.56	9.84	10.78
Lane Group LOS	D	D	D	D	D	D	B	B	D	A	B
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.37	2.54	3.92	0.83	1.41	0.34	9.28	4.69	4.56	5.41	5.97
50th-Percentile Queue Length [ft/ln]	59.32	63.38	97.97	20.79	35.31	8.60	231.90	117.29	114.03	135.28	149.19
95th-Percentile Queue Length [veh/ln]	4.27	4.56	7.05	1.50	2.54	0.62	14.27	8.24	8.06	9.23	9.97
95th-Percentile Queue Length [ft/ln]	106.77	114.08	176.34	37.42	63.56	15.47	356.78	206.10	201.59	230.65	249.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.37	39.58	43.48	42.22	44.47	44.47	49.68	17.38	14.58	45.56	10.15	10.78
Movement LOS	D	D	D	D	D	D	D	B	B	D	B	B
d_A, Approach Delay [s/veh]	41.14			43.62			17.10			13.77		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	18.36											
Intersection LOS	B											
Intersection V/C	0.688											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.496	1.992	0.000	3.153
Crosswalk LOS	B	A	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	489	133	622	889
d_b, Bicycle Delay [s]	25.69	39.20	21.36	13.89
l_b,int, Bicycle LOS Score for Intersection	2.218	1.721	2.828	2.600
Bicycle LOS	B	A	C	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: S. Associated Road at Brea Plaza Dwy 2

Control Type:	Two-way stop	Delay (sec / veh):	10.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.019

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Base Volume Input [veh/h]	0	510	611	3	0	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	510	611	3	0	12
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	134	161	1	0	3
Total Analysis Volume [veh/h]	0	537	643	3	0	13
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.46
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.06
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	1.48
d_A, Approach Delay [s/veh]	0.00		0.00		10.46	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.11					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: S. Associated Rd at Brea Plaza Dwy 3

Control Type:	Two-way stop	Delay (sec / veh):	19.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.065

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Base Volume Input [veh/h]	12	493	607	16	16	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	493	607	16	16	25
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	130	160	4	4	7
Total Analysis Volume [veh/h]	13	519	639	17	17	26
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.01	0.00	0.07	0.04
d_M, Delay for Movement [s/veh]	8.94	0.00	0.00	0.00	19.74	10.61
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.04	0.00	0.00	0.00	0.21	0.12
95th-Percentile Queue Length [ft/ln]	1.07	0.00	0.00	0.00	5.19	3.03
d_A, Approach Delay [s/veh]	0.22		0.00		14.22	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.59					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Brea Plaza Dwy 4 at Imperial Highway

Control Type:	Two-way stop	Delay (sec / veh):	23.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.044

Intersection Setup

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Base Volume Input [veh/h]	0	9	0	2170	1909	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	9	0	2170	1909	10
Peak Hour Factor	1.0000	0.9500	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	0	571	502	3
Total Analysis Volume [veh/h]	0	9	0	2284	2009	11
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.04	0.00	0.02	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	23.43	0.00	0.00	0.00	0.00
Movement LOS		C		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.14	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	3.44	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	23.43		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.05					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	16.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.739

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	651	0	548	0	1682	1051	0	2424	384
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	651	0	548	0	1682	1051	0	2424	384
Peak Hour Factor	1.0000	1.0000	1.0000	0.9390	1.0000	0.9390	1.0000	0.9540	0.9540	1.0000	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	173	0	146	0	441	275	0	623	99
Total Analysis Volume [veh/h]	0	0	0	693	0	584	0	1763	1102	0	2491	395
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		26	26	26	56	56
g / C, Green / Cycle		0.29	0.29	0.29	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate		0.24	0.24	0.22	0.31	0.44
s, saturation flow rate [veh/h]		1800	1800	1900	5700	5700
c, Capacity [veh/h]		512	512	541	3570	3570
d1, Uniform Delay [s]		30.10	30.10	29.62	9.08	11.14
k, delay calibration		0.11	0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		3.56	3.56	2.59	0.49	1.15
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.83	0.83	0.79	0.49	0.70
d, Delay for Lane Group [s/veh]		33.66	33.66	32.20	9.57	12.30
Lane Group LOS		C	C	C	A	B
Critical Lane Group		Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		8.85	8.85	8.60	5.66	9.91
50th-Percentile Queue Length [ft/ln]		221.27	221.27	214.98	141.52	247.84
95th-Percentile Queue Length [veh/ln]		13.73	13.73	13.41	9.56	15.08
95th-Percentile Queue Length [ft/ln]		343.24	343.24	335.21	239.08	376.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	33.66	0.00	32.60	0.00	9.57	0.00	0.00	12.30	0.00
Movement LOS				C		C		A			B	
d_A, Approach Delay [s/veh]	0.00			33.17			9.57			12.30		
Approach LOS	A			C			A			B		
d_I, Intersection Delay [s/veh]	16.25											
Intersection LOS	B											
Intersection V/C	0.739											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	34.67	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.442	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1333	489	489
d_b, Bicycle Delay [s]	45.00	5.00	25.69	25.69
l_b,int, Bicycle LOS Score for Intersection	4.132	3.667	2.529	2.930
Bicycle LOS	D	D	B	C

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	25.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.762

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	1090	64	413	0	0	192	182	1805	371	0	2363	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1090	64	413	0	0	192	182	1805	371	0	2363	38
Peak Hour Factor	0.9490	0.9490	0.9490	1.0000	1.0000	0.8840	0.9510	0.9510	0.9510	1.0000	0.9830	0.9830
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	287	17	109	0	0	54	48	475	98	0	601	10
Total Analysis Volume [veh/h]	1149	67	435	0	0	217	191	1898	390	0	2404	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	31	0	0	0	19	19	49	0	0	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	26	26	12	12	52	37	37
g / C, Green / Cycle	0.29	0.29	0.29	0.13	0.13	0.58	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.23	0.23	0.22	0.06	0.11	0.33	0.32	0.32
s, saturation flow rate [veh/h]	3500	1800	1900	3800	1800	5700	5700	1900
c, Capacity [veh/h]	1000	514	543	495	235	3306	2310	770
d1, Uniform Delay [s]	29.97	29.98	29.51	36.17	38.15	11.93	23.51	23.51
k, delay calibration	0.11	0.19	0.16	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.66	5.45	3.56	0.61	6.73	0.73	2.90	8.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.81	0.77	0.44	0.81	0.57	0.79	0.79
d, Delay for Lane Group [s/veh]	31.63	35.43	33.07	36.78	44.88	12.66	26.41	31.74
Lane Group LOS	C	D	C	D	D	B	C	C
Critical Lane Group	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.17	8.95	8.58	2.22	4.48	7.46	11.41	12.55
50th-Percentile Queue Length [ft/ln]	204.16	223.87	214.59	55.41	111.89	186.46	285.19	313.74
95th-Percentile Queue Length [veh/ln]	12.85	13.86	13.39	3.99	7.94	11.94	16.95	18.36
95th-Percentile Queue Length [ft/ln]	321.33	346.57	334.71	99.73	198.62	298.43	423.67	458.98

Movement, Approach, & Intersection Results

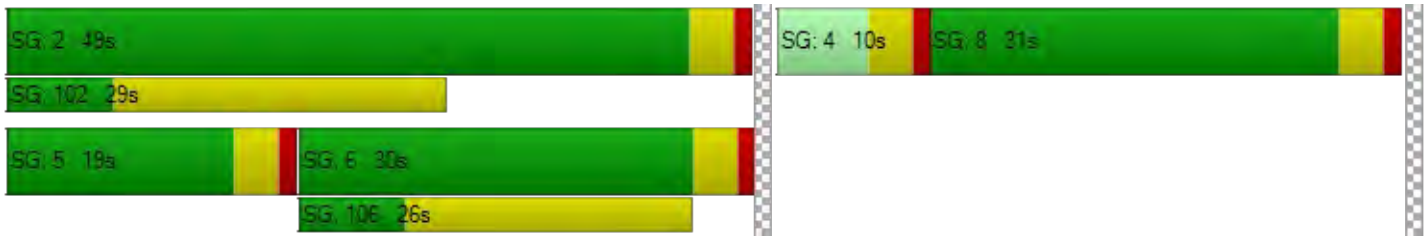
d_M, Delay for Movement [s/veh]	32.72	35.43	33.19	0.00	0.00	36.78	44.88	12.66	0.00	0.00	27.68	31.74
Movement LOS	C	D	C			D	D	B			C	C
d_A, Approach Delay [s/veh]	32.96			36.78			15.61			27.74		
Approach LOS	C			D			B			C		
d_I, Intersection Delay [s/veh]	25.43											
Intersection LOS	C											
Intersection V/C	0.762											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.621	2.256	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	333	1000	578
d_b, Bicycle Delay [s]	22.05	31.25	11.25	22.76
l_b,int, Bicycle LOS Score for Intersection	4.284	1.560	2.709	2.567
Bicycle LOS	E	A	B	B

Sequence

Ring 1	-	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	27.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.691

Intersection Setup

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	460	32	342	10	20	6	12	874	286	283	1241	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	460	32	342	10	20	6	12	874	286	283	1241	16
Peak Hour Factor	0.9370	0.9370	0.9370	0.8500	0.8500	0.8500	0.9910	0.9910	0.9910	0.9420	0.9420	0.9420
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	123	9	91	3	6	2	3	220	72	75	329	4
Total Analysis Volume [veh/h]	491	34	365	12	24	7	12	882	289	300	1317	17
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	66	0	0	37	0	10	38	0	16	44	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	27	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No			No		No	No		No	No	
Maximum Recall	No	No			No		No	No		No	No	
Pedestrian Recall	No	No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	28	28	5	5	2	68	68	12	78	78
g / C, Green / Cycle	0.16	0.23	0.23	0.04	0.04	0.02	0.57	0.57	0.10	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.14	0.02	0.19	0.01	0.02	0.01	0.32	0.30	0.09	0.35	0.35
s, saturation flow rate [veh/h]	3500	1900	1900	1800	1900	1800	1900	1900	3500	1900	1900
c, Capacity [veh/h]	564	443	443	77	73	31	1077	1077	351	1235	1235
d1, Uniform Delay [s]	49.11	35.94	43.69	55.85	56.40	58.39	16.60	15.99	53.14	11.34	11.32
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.30	0.07	3.92	0.92	3.85	8.01	2.16	1.80	5.98	1.70	1.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.08	0.82	0.16	0.42	0.39	0.57	0.52	0.85	0.54	0.54
d, Delay for Lane Group [s/veh]	53.41	36.01	47.61	56.78	60.25	66.40	18.76	17.80	59.12	13.04	13.02
Lane Group LOS	D	D	D	E	E	E	B	B	E	B	B
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.50	0.79	10.74	0.37	1.00	0.43	11.02	9.74	4.74	9.61	9.58
50th-Percentile Queue Length [ft/ln]	187.47	19.87	268.38	9.31	24.94	10.73	275.41	243.42	118.50	240.29	239.38
95th-Percentile Queue Length [veh/ln]	11.99	1.43	16.11	0.67	1.80	0.77	16.46	14.85	8.31	14.70	14.65
95th-Percentile Queue Length [ft/ln]	299.75	35.76	402.71	16.75	44.90	19.31	411.49	371.35	207.77	367.41	366.25

Movement, Approach, & Intersection Results

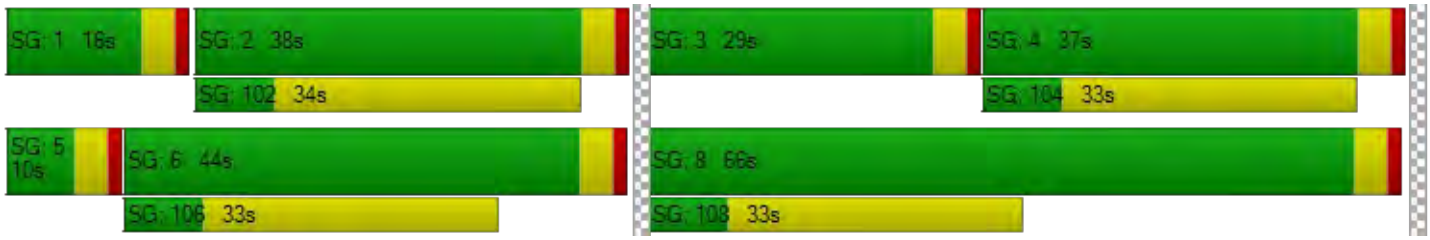
d_M, Delay for Movement [s/veh]	53.41	36.01	47.61	56.78	60.25	60.25	66.40	18.46	17.80	59.12	13.03	13.02
Movement LOS	D	D	D	E	E	E	E	B	B	E	B	B
d_A, Approach Delay [s/veh]	50.37			59.28			18.78			21.49		
Approach LOS	D			E			B			C		
d_I, Intersection Delay [s/veh]	27.92											
Intersection LOS	C											
Intersection V/C	0.691											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.711	1.988	2.898	2.954
Crosswalk LOS	B	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1033	550	567	667
d_b, Bicycle Delay [s]	14.02	31.54	30.82	26.67
l_b,int, Bicycle LOS Score for Intersection	3.028	1.631	2.536	2.908
Bicycle LOS	C	A	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: S.Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	8.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.269

Intersection Setup

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Base Volume Input [veh/h]	51	522	37	16	547	9	24	9	102	27	4	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	522	37	16	547	9	24	9	102	27	4	35
Peak Hour Factor	0.9310	0.9310	0.9310	0.9120	0.9120	0.9120	0.8960	0.8960	0.8960	0.8090	0.8090	0.8090
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	140	10	4	150	2	7	3	28	8	1	11
Total Analysis Volume [veh/h]	55	561	40	18	600	10	27	10	114	33	5	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	24	0	0	24	0	0	66	0	0	66	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	13	0	0	13	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	72	72	72	72	72	72	9	9
g / C, Green / Cycle	0.81	0.81	0.81	0.81	0.81	0.81	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.03	0.16	0.16	0.01	0.16	0.16	0.08	0.05
s, saturation flow rate [veh/h]	1800	1900	1900	1800	1900	1900	1800	1800
c, Capacity [veh/h]	1396	1530	1530	1397	1530	1530	238	247
d1, Uniform Delay [s]	1.76	2.03	2.02	1.72	2.03	2.03	39.20	37.61
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	0.29	0.28	0.02	0.29	0.29	2.80	0.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.04	0.20	0.19	0.01	0.20	0.20	0.64	0.33
d, Delay for Lane Group [s/veh]	1.81	2.32	2.31	1.74	2.33	2.32	42.00	38.37
Lane Group LOS	A	A	A	A	A	A	D	D
Critical Lane Group	No	No	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.13	0.84	0.82	0.04	0.85	0.84	3.39	1.70
50th-Percentile Queue Length [ft/ln]	3.32	20.95	20.43	1.06	21.13	21.00	84.79	42.56
95th-Percentile Queue Length [veh/ln]	0.24	1.51	1.47	0.08	1.52	1.51	6.10	3.06
95th-Percentile Queue Length [ft/ln]	5.97	37.72	36.78	1.91	38.03	37.80	152.62	76.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.81	2.31	2.31	1.74	2.32	2.32	42.00	42.00	42.00	38.37	38.37	38.37
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	2.27			2.31			42.00			38.37		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	8.17											
Intersection LOS	A											
Intersection V/C	0.269											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.620	2.583	1.900	1.813
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	444	444	1378	1378
d_b, Bicycle Delay [s]	27.22	27.22	4.36	4.36
l_b,int, Bicycle LOS Score for Intersection	2.101	2.078	1.809	1.693
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	42.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.873

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	216	254	82	278	343	249	260	1820	139	172	1712	173
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	216	254	82	278	343	249	260	1820	139	172	1712	173
Peak Hour Factor	0.9100	0.9100	0.9100	0.8290	0.8290	0.8290	0.9480	0.9480	0.9480	0.9350	0.9350	0.9350
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	70	23	84	103	75	69	480	37	46	458	46
Total Analysis Volume [veh/h]	237	279	90	335	414	300	274	1920	147	184	1831	185
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	39	0	16	42	0	24	48	0	17	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	26	26	12	29	29	20	53	53	13	46	46
g / C, Green / Cycle	0.08	0.22	0.22	0.10	0.24	0.24	0.17	0.44	0.44	0.11	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10	0.09	0.10	0.22	0.16	0.15	0.36	0.37	0.10	0.26	0.27
s, saturation flow rate [veh/h]	3500	1900	1900	3500	1900	1900	1800	3800	1900	1800	5700	1900
c, Capacity [veh/h]	267	410	410	354	457	457	301	1674	837	197	2182	727
d1, Uniform Delay [s]	54.97	41.07	40.74	53.67	44.28	41.13	49.16	29.35	29.79	53.07	31.03	31.44
k, delay calibration	0.11	0.11	0.11	0.11	0.23	0.11	0.16	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.66	0.83	0.72	12.79	13.39	1.61	14.76	4.52	9.77	17.71	1.78	5.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.47	0.43	0.95	0.91	0.66	0.91	0.82	0.84	0.94	0.69	0.71
d, Delay for Lane Group [s/veh]	64.63	41.89	41.47	66.47	57.67	42.74	63.92	33.87	39.56	70.78	32.81	37.29
Lane Group LOS	E	D	D	E	E	D	E	C	D	E	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.91	5.04	4.64	5.65	13.58	8.20	9.28	17.84	19.76	6.47	12.33	13.76
50th-Percentile Queue Length [ft/ln]	97.75	126.08	116.07	141.27	339.40	204.91	232.06	445.99	494.01	161.71	308.33	344.12
95th-Percentile Queue Length [veh/ln]	7.04	8.73	8.18	9.55	19.62	12.89	14.28	24.77	27.05	10.64	18.09	19.85
95th-Percentile Queue Length [ft/ln]	175.95	218.16	204.41	238.73	490.47	322.29	356.97	619.17	676.26	265.98	452.32	496.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.63	41.76	41.47	66.47	57.67	42.74	63.92	35.51	39.56	70.78	33.63	37.29
Movement LOS	E	D	D	E	E	D	E	D	D	E	C	D
d_A, Approach Delay [s/veh]	50.66			56.21			39.09			37.04		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	42.39											
Intersection LOS	D											
Intersection V/C	0.873											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.686	2.757	3.313	3.293
Crosswalk LOS	B	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	633	733	617
d_b, Bicycle Delay [s]	30.10	28.02	24.07	28.70
l_b,int, Bicycle LOS Score for Intersection	2.060	3.290	2.847	2.467
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	24.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.800

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	248	46	261	25	23	13	19	1825	277	226	1873	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	248	46	261	25	23	13	19	1825	277	226	1873	56
Peak Hour Factor	0.8580	0.8580	0.8580	0.6480	0.6480	0.6480	0.9520	0.9520	0.9520	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	13	76	10	9	5	5	479	73	60	495	15
Total Analysis Volume [veh/h]	289	54	304	39	35	20	20	1917	291	239	1980	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	26	0	0	10	0	10	32	0	22	44	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	17	17	5	5	2	38	38	14	49	49
g / C, Green / Cycle	0.19	0.19	0.19	0.06	0.06	0.03	0.42	0.42	0.15	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.09	0.10	0.16	0.02	0.03	0.01	0.34	0.15	0.13	0.35	0.37
s, saturation flow rate [veh/h]	1800	1800	1900	1800	1900	1800	5700	1900	1800	3800	1900
c, Capacity [veh/h]	339	339	358	111	117	50	2379	793	279	2071	1035
d1, Uniform Delay [s]	32.70	32.93	35.34	40.60	40.90	43.11	23.06	18.07	37.11	14.44	14.76
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.09	1.24	5.61	1.90	2.93	5.15	3.03	1.31	7.42	1.58	3.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.52	0.85	0.35	0.47	0.40	0.81	0.37	0.86	0.65	0.67
d, Delay for Lane Group [s/veh]	33.79	34.17	40.96	42.50	43.83	48.26	26.09	19.38	44.54	16.02	18.26
Lane Group LOS	C	C	D	D	D	D	C	B	D	B	B
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.28	3.54	6.86	0.88	1.26	0.51	11.91	4.30	5.61	9.25	10.36
50th-Percentile Queue Length [ft/ln]	82.05	88.54	171.53	22.01	31.57	12.63	297.76	107.52	140.30	231.30	258.94
95th-Percentile Queue Length [veh/ln]	5.91	6.37	11.16	1.58	2.27	0.91	17.57	7.70	9.50	14.24	15.64
95th-Percentile Queue Length [ft/ln]	147.68	159.37	278.93	39.61	56.83	22.74	439.26	192.55	237.42	356.01	390.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.95	34.17	40.96	42.50	43.83	43.83	48.26	26.09	19.38	44.54	16.74	18.26
Movement LOS	C	C	D	D	D	D	D	C	B	D	B	B
d_A, Approach Delay [s/veh]	37.26			43.28			25.41			19.70		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	24.71											
Intersection LOS	C											
Intersection V/C	0.800											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.536	2.013	0.000	3.225
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	489	133	622	889
d_b, Bicycle Delay [s]	25.69	39.20	21.36	13.89
l_b,int, Bicycle LOS Score for Intersection	2.627	1.715	2.785	2.813
Bicycle LOS	B	A	C	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: S. Associated Road at Brea Plaza Dwy 2

Control Type:	Two-way stop	Delay (sec / veh):	11.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Base Volume Input [veh/h]	0	704	774	5	0	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	704	774	5	0	5
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	185	204	1	0	1
Total Analysis Volume [veh/h]	0	741	815	5	0	5
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	11.15
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.03
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.64
d_A, Approach Delay [s/veh]	0.00		0.00		11.15	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.04					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: S. Associated Rd at Brea Plaza Dwy 3

Control Type:	Two-way stop	Delay (sec / veh):	31.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.216

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Base Volume Input [veh/h]	18	668	745	34	36	121
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	668	745	34	36	121
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	176	196	9	9	32
Total Analysis Volume [veh/h]	19	703	784	36	38	127
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.01	0.00	0.22	0.21
d_M, Delay for Movement [s/veh]	9.58	0.00	0.00	0.00	31.05	12.75
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.07	0.00	0.00	0.00	0.79	0.81
95th-Percentile Queue Length [ft/ln]	1.81	0.00	0.00	0.00	19.78	20.25
d_A, Approach Delay [s/veh]	0.25		0.00		16.97	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.75					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 9: Brea Plaza Dwy 4 at Imperial Highway

Control Type:	Two-way stop	Delay (sec / veh):	35.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.278

Intersection Setup

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Base Volume Input [veh/h]	0	44	0	2221	2149	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	44	0	2221	2149	31
Peak Hour Factor	1.0000	0.9500	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	12	0	584	566	8
Total Analysis Volume [veh/h]	0	46	0	2338	2262	33
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.28	0.00	0.02	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	34.99	0.00	0.00	0.00	0.00
Movement LOS		D		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	1.08	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	26.98	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	34.99		0.00		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	0.34					
Intersection LOS	D					

APPENDIX D-IV

YEAR 2045 GENERAL PLAN BUILDOUT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	14.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.626

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	606	0	562	0	1697	836	0	2020	189
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	606	0	562	0	1697	836	0	2020	189
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	152	0	141	0	424	209	0	505	47
Total Analysis Volume [veh/h]	0	0	0	606	0	562	0	1697	836	0	2020	189
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		24	24	24	58	58
g / C, Green / Cycle		0.26	0.26	0.26	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate		0.22	0.22	0.20	0.30	0.35
s, saturation flow rate [veh/h]		1800	1800	1900	5700	5700
c, Capacity [veh/h]		472	472	498	3698	3698
d1, Uniform Delay [s]		31.19	31.19	30.75	7.89	8.59
k, delay calibration		0.11	0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		3.70	3.70	2.71	0.41	0.58
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.82	0.82	0.78	0.46	0.55
d, Delay for Lane Group [s/veh]		34.90	34.90	33.46	8.31	9.17
Lane Group LOS		C	C	C	A	A
Critical Lane Group		Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		8.20	8.20	7.98	4.90	6.36
50th-Percentile Queue Length [ft/ln]		204.99	204.99	199.48	122.38	158.89
95th-Percentile Queue Length [veh/ln]		12.90	12.90	12.61	8.52	10.49
95th-Percentile Queue Length [ft/ln]		322.40	322.40	315.30	213.09	262.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	34.90	0.00	33.90	0.00	8.31	0.00	0.00	9.17	0.00
Movement LOS				C		C		A			A	
d_A, Approach Delay [s/veh]	0.00			34.42			8.31			9.17		
Approach LOS	A			C			A			A		
d_I, Intersection Delay [s/veh]	14.91											
Intersection LOS	B											
Intersection V/C	0.626											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	34.67	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.415	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1333	489	489
d_b, Bicycle Delay [s]	45.00	5.00	25.69	25.69
l_b,int, Bicycle LOS Score for Intersection	4.132	3.487	2.493	2.671
Bicycle LOS	D	C	B	B

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	24.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.633

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	1089	43	811	0	0	50	116	1520	575	0	1615	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1089	43	811	0	0	50	116	1520	575	0	1615	18
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	272	11	203	0	0	13	29	380	144	0	404	5
Total Analysis Volume [veh/h]	1089	43	811	0	0	50	116	1520	575	0	1615	18
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	43	0	0	0	12	12	42	0	0	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	32	32	32	8	8	51	39	39
g / C, Green / Cycle	0.34	0.34	0.34	0.08	0.08	0.53	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.26	0.01	0.06	0.27	0.21	0.21
s, saturation flow rate [veh/h]	3500	1800	1900	3800	1800	5700	5700	1900
c, Capacity [veh/h]	1190	612	646	310	147	3036	2331	777
d1, Uniform Delay [s]	28.52	28.54	27.98	40.67	42.90	14.17	21.17	21.17
k, delay calibration	0.11	0.15	0.13	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.32	3.57	2.28	0.24	9.08	0.59	0.85	2.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.81	0.76	0.16	0.79	0.50	0.53	0.53
d, Delay for Lane Group [s/veh]	29.84	32.11	30.26	40.91	51.98	14.77	22.02	23.70
Lane Group LOS	C	C	C	D	D	B	C	C
Critical Lane Group	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.80	10.48	10.09	0.55	3.02	6.69	6.79	7.15
50th-Percentile Queue Length [ft/ln]	245.06	262.05	252.29	13.80	75.55	167.30	169.63	178.72
95th-Percentile Queue Length [veh/ln]	14.94	15.79	15.30	0.99	5.44	10.93	11.06	11.53
95th-Percentile Queue Length [ft/ln]	373.42	394.79	382.53	24.85	136.00	273.36	276.43	288.34

Movement, Approach, & Intersection Results

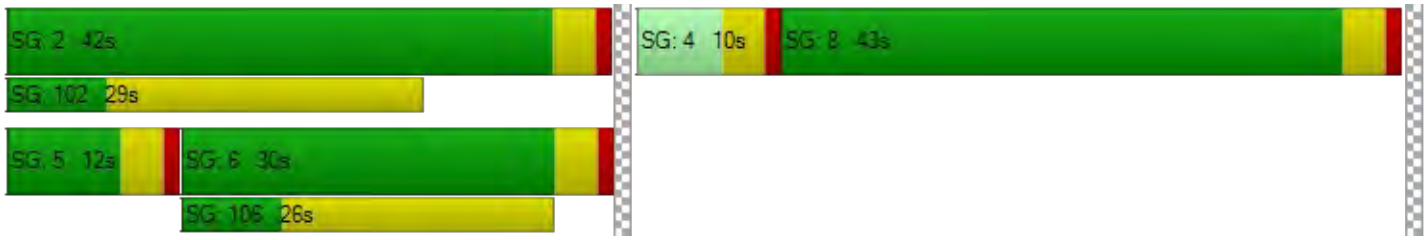
d_M, Delay for Movement [s/veh]	30.10	32.11	31.00	0.00	0.00	40.91	51.98	14.77	0.00	0.00	22.43	23.70
Movement LOS	C	C	C			D	D	B			C	C
d_A, Approach Delay [s/veh]	30.52			40.91			17.41			22.44		
Approach LOS	C			D			B			C		
d_I, Intersection Delay [s/veh]	24.04											
Intersection LOS	C											
Intersection V/C	0.633											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.14	37.14	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.681	2.189	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	821	168	800	547
d_b, Bicycle Delay [s]	16.51	39.84	17.10	25.06
l_b,int, Bicycle LOS Score for Intersection	4.766	1.560	2.459	2.233
Bicycle LOS	E	A	B	B

Sequence

Ring 1	-	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	25.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.734

Intersection Setup

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	247	6	323	58	30	8	2	950	318	368	814	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	247	6	323	58	30	8	2	950	318	368	814	11
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	62	2	81	15	8	2	1	238	80	92	204	3
Total Analysis Volume [veh/h]	247	6	323	58	30	8	2	950	318	368	814	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	50	0	0	37	0	10	38	0	17	45	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	27	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No			No		No	No		No	No	
Maximum Recall	No	No			No		No	No		No	No	
Pedestrian Recall	No	No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	20	20	7	7	0	60	60	13	72	72
g / C, Green / Cycle	0.09	0.19	0.19	0.07	0.07	0.00	0.57	0.57	0.12	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.07	0.00	0.17	0.03	0.02	0.00	0.35	0.32	0.11	0.22	0.22
s, saturation flow rate [veh/h]	3500	1900	1900	1800	1900	1800	1900	1900	3500	1900	1900
c, Capacity [veh/h]	302	369	369	159	132	8	1081	1081	431	1306	1306
d1, Uniform Delay [s]	47.20	34.25	41.14	47.02	46.43	52.16	14.97	14.38	45.16	6.56	6.55
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.38	0.02	6.67	1.40	1.18	16.15	2.57	2.12	4.91	0.64	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.02	0.88	0.37	0.29	0.25	0.61	0.56	0.85	0.32	0.32
d, Delay for Lane Group [s/veh]	52.59	34.27	47.80	48.42	47.61	68.31	17.55	16.51	50.08	7.20	7.19
Lane Group LOS	D	C	D	D	D	E	B	B	D	A	A
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.39	0.13	8.72	1.52	0.98	0.09	10.55	9.30	4.96	3.51	3.49
50th-Percentile Queue Length [ft/ln]	84.67	3.15	217.99	37.92	24.62	2.19	263.69	232.60	124.12	87.78	87.27
95th-Percentile Queue Length [veh/ln]	6.10	0.23	13.56	2.73	1.77	0.16	15.87	14.31	8.62	6.32	6.28
95th-Percentile Queue Length [ft/ln]	152.41	5.67	339.06	68.25	44.31	3.94	396.85	357.66	215.48	158.00	157.09

Movement, Approach, & Intersection Results

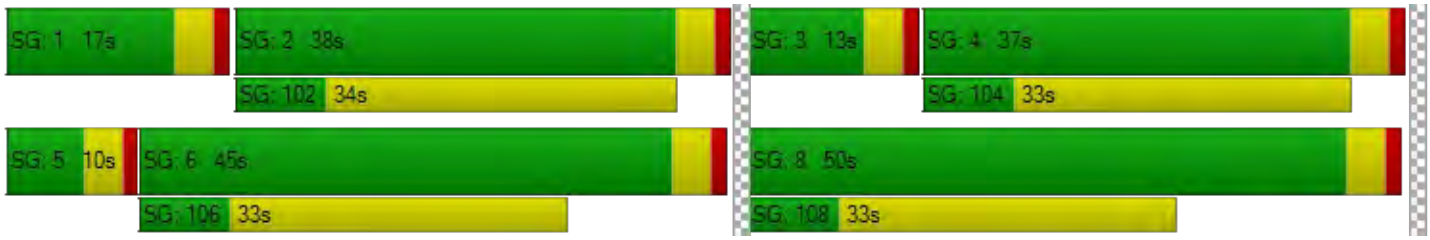
d_M, Delay for Movement [s/veh]	52.59	34.27	47.80	48.42	47.61	47.61	68.31	17.23	16.51	50.08	7.19	7.19
Movement LOS	D	C	D	D	D	D	E	B	B	D	A	A
d_A, Approach Delay [s/veh]	49.71			48.10			17.13			20.42		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	25.32											
Intersection LOS	C											
Intersection V/C	0.734											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	42.08	42.08	42.08	42.08
l_p,int, Pedestrian LOS Score for Intersection	2.670	1.985	2.763	2.953
Crosswalk LOS	B	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	876	629	648	781
d_b, Bicycle Delay [s]	16.58	24.69	24.00	19.50
l_b,int, Bicycle LOS Score for Intersection	2.510	1.718	2.607	2.544
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: S.Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	6.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.207

Intersection Setup

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Base Volume Input [veh/h]	56	413	16	20	492	22	19	1	38	44	8	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	413	16	20	492	22	19	1	38	44	8	42
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	103	4	5	123	6	5	0	10	11	2	11
Total Analysis Volume [veh/h]	56	413	16	20	492	22	19	1	38	44	8	42
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	24	0	0	24	0	0	66	0	0	66	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	13	0	0	13	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	76	76	76	76	76	76	6	6
g / C, Green / Cycle	0.84	0.84	0.84	0.84	0.84	0.84	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.03	0.11	0.11	0.01	0.14	0.13	0.03	0.05
s, saturation flow rate [veh/h]	1800	1900	1900	1800	1900	1900	1800	1800
c, Capacity [veh/h]	1495	1600	1600	1504	1600	1600	177	183
d1, Uniform Delay [s]	1.15	1.26	1.26	1.13	1.30	1.29	40.28	41.13
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	0.18	0.17	0.02	0.22	0.21	1.07	2.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.04	0.13	0.13	0.01	0.16	0.16	0.33	0.51
d, Delay for Lane Group [s/veh]	1.20	1.44	1.43	1.15	1.51	1.51	41.35	43.37
Lane Group LOS	A	A	A	A	A	A	D	D
Critical Lane Group	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.08	0.33	0.33	0.03	0.41	0.41	1.27	2.14
50th-Percentile Queue Length [ft/ln]	2.00	8.33	8.24	0.70	10.27	10.13	31.86	53.40
95th-Percentile Queue Length [veh/ln]	0.14	0.60	0.59	0.05	0.74	0.73	2.29	3.84
95th-Percentile Queue Length [ft/ln]	3.61	15.00	14.83	1.26	18.49	18.23	57.35	96.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.20	1.44	1.43	1.15	1.51	1.51	41.35	41.35	41.35	43.37	43.37	43.37
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	1.41			1.50			41.35			43.37		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	6.79											
Intersection LOS	A											
Intersection V/C	0.207											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.568	2.523	1.864	1.807
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	444	444	1378	1378
d_b, Bicycle Delay [s]	27.22	27.22	4.36	4.36
l_b,int, Bicycle LOS Score for Intersection	1.960	2.000	1.655	1.715
Bicycle LOS	A	B	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	27.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.816

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	150	217	93	153	345	153	154	2166	106	96	1794	86
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	217	93	153	345	153	154	2166	106	96	1794	86
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	54	23	38	86	38	39	542	27	24	449	22
Total Analysis Volume [veh/h]	150	217	93	153	345	153	154	2166	106	96	1794	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	11	40	0	14	40	0	10	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	21	21	6	21	21	10	51	51	6	47	47
g / C, Green / Cycle	0.06	0.21	0.21	0.06	0.21	0.21	0.10	0.51	0.51	0.06	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.04	0.08	0.08	0.04	0.18	0.08	0.09	0.39	0.41	0.05	0.24	0.26
s, saturation flow rate [veh/h]	3500	1900	1900	3500	1900	1900	1800	3800	1900	1800	5700	1900
c, Capacity [veh/h]	213	390	390	221	395	395	181	1941	970	110	2684	895
d1, Uniform Delay [s]	46.14	34.53	34.30	45.95	38.39	34.17	44.29	19.78	20.26	46.65	18.52	18.94
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.22	0.70	0.61	3.83	6.14	0.62	10.53	3.04	6.86	18.82	0.71	2.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.41	0.38	0.69	0.87	0.39	0.85	0.77	0.80	0.88	0.52	0.55
d, Delay for Lane Group [s/veh]	50.35	35.23	34.91	49.78	44.53	34.79	54.82	22.82	27.12	65.47	19.24	21.39
Lane Group LOS	D	D	C	D	D	C	D	C	C	E	B	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.95	3.45	3.17	1.97	8.74	3.25	4.26	14.01	15.85	2.93	7.38	8.48
50th-Percentile Queue Length [ft/ln]	48.63	86.32	79.35	49.28	218.61	81.35	106.40	350.27	396.34	73.22	184.50	211.94
95th-Percentile Queue Length [veh/ln]	3.50	6.22	5.71	3.55	13.59	5.86	7.64	20.15	22.38	5.27	11.84	13.25
95th-Percentile Queue Length [ft/ln]	87.54	155.38	142.83	88.70	339.85	146.43	190.98	503.74	559.59	131.79	295.89	331.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.35	35.15	34.91	49.78	44.53	34.79	54.82	24.15	27.12	65.47	19.73	21.39
Movement LOS	D	D	C	D	D	C	D	C	C	E	B	C
d_A, Approach Delay [s/veh]	40.06			43.48			26.22			22.02		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	27.91											
Intersection LOS	C											
Intersection V/C	0.816											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	39.61
l_p,int, Pedestrian LOS Score for Intersection	2.621	2.638	3.282	3.265
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	720	720	640
d_b, Bicycle Delay [s]	21.13	20.48	20.48	23.12
l_b,int, Bicycle LOS Score for Intersection	1.939	2.634	2.894	2.375
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	17.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.685

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	191	12	149	26	29	14	14	2000	478	201	1643	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	191	12	149	26	29	14	14	2000	478	201	1643	34
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	3	37	7	7	4	4	500	120	50	411	9
Total Analysis Volume [veh/h]	191	12	149	26	29	14	14	2000	478	201	1643	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	26	0	0	10	0	10	32	0	22	44	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	10	10	5	5	2	47	47	12	58	58
g / C, Green / Cycle	0.11	0.11	0.11	0.06	0.06	0.02	0.53	0.53	0.13	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate	0.05	0.06	0.08	0.01	0.02	0.01	0.35	0.25	0.11	0.29	0.30
s, saturation flow rate [veh/h]	1800	1800	1900	1800	1900	1800	5700	1900	1800	3800	1900
c, Capacity [veh/h]	193	193	204	101	106	38	2993	998	241	2425	1213
d1, Uniform Delay [s]	38.01	38.15	38.99	40.77	41.11	43.55	15.66	13.59	38.05	8.32	8.46
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.08	2.35	4.98	1.33	2.45	5.86	1.20	1.65	7.30	0.62	1.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.54	0.73	0.26	0.40	0.37	0.67	0.48	0.83	0.45	0.47
d, Delay for Lane Group [s/veh]	40.09	40.50	43.97	42.10	43.56	49.41	16.87	15.23	45.35	8.94	9.78
Lane Group LOS	D	D	D	D	D	D	B	B	D	A	A
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.14	2.29	3.43	0.58	0.99	0.37	9.54	6.18	4.74	4.98	5.49
50th-Percentile Queue Length [ft/ln]	53.49	57.14	85.73	14.62	24.64	9.18	238.50	154.56	118.58	124.38	137.25
95th-Percentile Queue Length [veh/ln]	3.85	4.11	6.17	1.05	1.77	0.66	14.61	10.26	8.31	8.63	9.33
95th-Percentile Queue Length [ft/ln]	96.29	102.85	154.31	26.32	44.35	16.52	365.14	256.50	207.87	215.83	233.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.29	40.50	43.97	42.10	43.56	43.56	49.41	16.87	15.23	45.35	9.22	9.78
Movement LOS	D	D	D	D	D	D	D	B	B	D	A	A
d_A, Approach Delay [s/veh]	41.85			43.01			16.74			13.09		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	17.53											
Intersection LOS	B											
Intersection V/C	0.685											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.506	1.982	0.000	3.158
Crosswalk LOS	B	A	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	489	133	622	889
d_b, Bicycle Delay [s]	25.69	39.20	21.36	13.89
I_b,int, Bicycle LOS Score for Intersection	2.140	1.673	2.930	2.593
Bicycle LOS	B	A	C	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: S. Associated Road at Brea Plaza Dwy 2

Control Type:	Two-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Base Volume Input [veh/h]	0	453	636	11	0	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	453	636	11	0	8
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	113	159	3	0	2
Total Analysis Volume [veh/h]	0	453	636	11	0	8
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.42
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.04
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.90
d_A, Approach Delay [s/veh]	0.00		0.00		10.42	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.08					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: S. Associated Rd at Brea Plaza Dwy 3

Control Type:	Two-way stop	Delay (sec / veh):	18.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.039

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Base Volume Input [veh/h]	11	446	631	13	11	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	446	631	13	11	20
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	112	158	3	3	5
Total Analysis Volume [veh/h]	11	446	631	13	11	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.00	0.04	0.03
d_M, Delay for Movement [s/veh]	8.89	0.00	0.00	0.00	18.28	10.51
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.04	0.00	0.00	0.00	0.12	0.09
95th-Percentile Queue Length [ft/ln]	0.89	0.00	0.00	0.00	3.03	2.29
d_A, Approach Delay [s/veh]	0.21		0.00		13.26	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.45					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Brea Plaza Dwy 4 at Imperial Highway

Control Type:	Two-way stop	Delay (sec / veh):	24.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.047

Intersection Setup

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Base Volume Input [veh/h]	0	9	0	2426	2088	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	9	0	2426	2088	9
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	0	607	522	2
Total Analysis Volume [veh/h]	0	9	0	2426	2088	9
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.05	0.00	0.02	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	24.61	0.00	0.00	0.00	0.00
Movement LOS		C		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.15	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	3.65	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	24.61		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.05					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	16.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.755

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	683	0	601	0	1889	1104	0	2565	407
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	683	0	601	0	1889	1104	0	2565	407
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	171	0	150	0	472	276	0	641	102
Total Analysis Volume [veh/h]	0	0	0	683	0	601	0	1889	1104	0	2565	407
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		26	26	26	56	56
g / C, Green / Cycle		0.29	0.29	0.29	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate		0.24	0.24	0.23	0.33	0.45
s, saturation flow rate [veh/h]		1800	1800	1900	5700	5700
c, Capacity [veh/h]		515	515	544	3561	3561
d1, Uniform Delay [s]		30.02	30.02	29.54	9.46	11.50
k, delay calibration		0.11	0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		3.54	3.54	2.57	0.57	1.29
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.83	0.83	0.79	0.53	0.72
d, Delay for Lane Group [s/veh]		33.57	33.57	32.11	10.03	12.79
Lane Group LOS		C	C	C	B	B
Critical Lane Group		Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		8.89	8.89	8.64	6.31	10.53
50th-Percentile Queue Length [ft/ln]		222.25	222.25	215.91	157.75	263.26
95th-Percentile Queue Length [veh/ln]		13.78	13.78	13.46	10.43	15.85
95th-Percentile Queue Length [ft/ln]		344.50	344.50	336.40	260.74	396.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	33.57	0.00	32.53	0.00	10.03	0.00	0.00	12.79	0.00
Movement LOS				C		C		B			B	
d_A, Approach Delay [s/veh]	0.00			33.08			10.03			12.79		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	16.42											
Intersection LOS	B											
Intersection V/C	0.755											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	34.67	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.444	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1333	489	489
d_b, Bicycle Delay [s]	45.00	5.00	25.69	25.69
l_b,int, Bicycle LOS Score for Intersection	4.132	3.678	2.599	2.970
Bicycle LOS	D	D	B	C

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	27.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	1143	72	430	0	0	231	206	1799	390	0	2526	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1143	72	430	0	0	231	206	1799	390	0	2526	46
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	286	18	108	0	0	58	52	450	98	0	632	12
Total Analysis Volume [veh/h]	1143	72	430	0	0	231	206	1799	390	0	2526	46
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	0	25	25	55	0	0	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	28	28	14	14	60	42	42
g / C, Green / Cycle	0.28	0.28	0.28	0.14	0.14	0.60	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.23	0.23	0.22	0.06	0.11	0.32	0.34	0.34
s, saturation flow rate [veh/h]	3500	1800	1900	3800	1800	5700	5700	1900
c, Capacity [veh/h]	986	507	535	529	251	3404	2383	794
d1, Uniform Delay [s]	33.61	33.62	33.09	39.50	41.90	11.87	25.63	25.63
k, delay calibration	0.11	0.19	0.16	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.78	5.70	3.68	0.57	6.63	0.59	3.10	8.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.82	0.78	0.44	0.82	0.53	0.81	0.81
d, Delay for Lane Group [s/veh]	35.38	39.32	36.77	40.07	48.52	12.46	28.73	34.38
Lane Group LOS	D	D	D	D	D	B	C	C
Critical Lane Group	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.24	10.08	9.68	2.63	5.36	7.47	13.59	14.83
50th-Percentile Queue Length [ft/ln]	231.10	251.91	241.90	65.78	133.98	186.66	339.70	370.82
95th-Percentile Queue Length [veh/ln]	14.23	15.28	14.78	4.74	9.16	11.95	19.63	21.15
95th-Percentile Queue Length [ft/ln]	355.76	382.05	369.43	118.40	228.90	298.69	490.83	528.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.51	39.32	36.89	0.00	0.00	40.07	48.52	12.46	0.00	0.00	30.07	34.38
Movement LOS	D	D	D			D	D	B			C	C
d_A, Approach Delay [s/veh]	36.73			40.07			16.17			30.14		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	27.84											
Intersection LOS	C											
Intersection V/C	0.778											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.625	2.271	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	620	420	1020	520
d_b, Bicycle Delay [s]	23.81	31.21	12.01	27.38
l_b,int, Bicycle LOS Score for Intersection	4.274	1.560	2.662	2.621
Bicycle LOS	E	A	B	B

Sequence

Ring 1	-	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	27.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.703

Intersection Setup

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	483	34	368	11	21	6	12	889	300	300	1248	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	483	34	368	11	21	6	12	889	300	300	1248	17
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	9	92	3	5	2	3	222	75	75	312	4
Total Analysis Volume [veh/h]	483	34	368	11	21	6	12	889	300	300	1248	17
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	61	0	0	37	0	10	38	0	16	44	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	27	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No			No		No	No		No	No	
Maximum Recall	No	No			No		No	No		No	No	
Pedestrian Recall	No	No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	26	26	4	4	2	65	65	12	75	75
g / C, Green / Cycle	0.16	0.23	0.23	0.04	0.04	0.02	0.57	0.57	0.10	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.14	0.02	0.19	0.01	0.01	0.01	0.33	0.30	0.09	0.33	0.33
s, saturation flow rate [veh/h]	3500	1900	1900	1800	1900	1800	1900	1900	3500	1900	1900
c, Capacity [veh/h]	548	434	434	76	71	31	1074	1074	358	1235	1235
d1, Uniform Delay [s]	47.48	34.87	42.48	53.65	54.09	55.94	16.14	15.53	50.71	10.56	10.54
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.87	0.08	4.68	0.86	3.37	7.82	2.26	1.88	5.28	1.52	1.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.08	0.85	0.14	0.38	0.39	0.58	0.53	0.84	0.51	0.51
d, Delay for Lane Group [s/veh]	52.35	34.95	47.16	54.51	57.47	63.76	18.40	17.41	56.00	12.08	12.06
Lane Group LOS	D	C	D	D	E	E	B	B	E	B	B
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.11	0.76	10.51	0.33	0.83	0.41	10.78	9.50	4.50	8.38	8.35
50th-Percentile Queue Length [ft/ln]	177.86	19.08	262.63	8.17	20.75	10.29	269.50	237.50	112.40	209.60	208.65
95th-Percentile Queue Length [veh/ln]	11.49	1.37	15.82	0.59	1.49	0.74	16.16	14.55	7.97	13.13	13.08
95th-Percentile Queue Length [ft/ln]	287.21	34.35	395.52	14.71	37.35	18.52	404.11	363.87	199.34	328.32	327.09

Movement, Approach, & Intersection Results

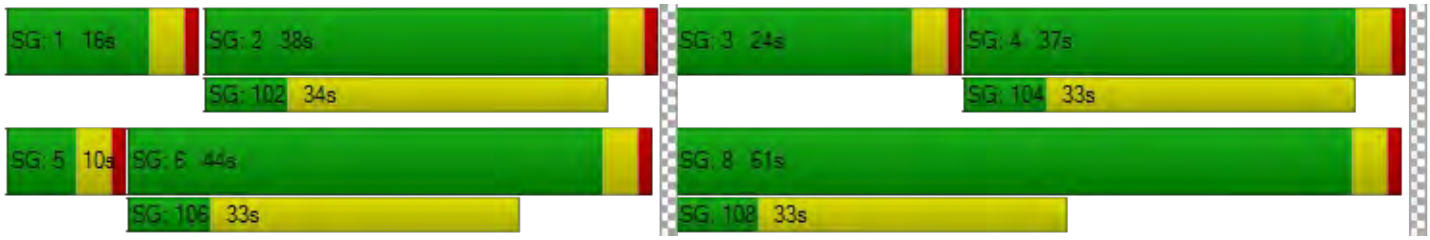
d_M, Delay for Movement [s/veh]	52.35	34.95	47.16	54.51	57.47	57.47	63.76	18.10	17.41	56.00	12.07	12.06
Movement LOS	D	C	D	D	E	E	E	B	B	E	B	B
d_A, Approach Delay [s/veh]	49.53			56.61			18.38			20.49		
Approach LOS	D			E			B			C		
d_I, Intersection Delay [s/veh]	27.14											
Intersection LOS	C											
Intersection V/C	0.703											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.03	47.03	47.03	47.03
l_p,int, Pedestrian LOS Score for Intersection	2.709	1.985	2.884	2.941
Crosswalk LOS	B	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	991	574	591	696
d_b, Bicycle Delay [s]	14.63	29.23	28.53	24.46
l_b,int, Bicycle LOS Score for Intersection	3.020	1.622	2.550	2.851
Bicycle LOS	C	A	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: S.Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	6.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.228

Intersection Setup

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Base Volume Input [veh/h]	44	560	39	17	579	18	36	9	42	28	4	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	560	39	17	579	18	36	9	42	28	4	37
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	140	10	4	145	5	9	2	11	7	1	9
Total Analysis Volume [veh/h]	44	560	39	17	579	18	36	9	42	28	4	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	24	0	0	24	0	0	66	0	0	66	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	13	0	0	13	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	76	76	76	76	76	76	6	6
g / C, Green / Cycle	0.85	0.85	0.85	0.85	0.85	0.85	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.16	0.01	0.16	0.16	0.05	0.04
s, saturation flow rate [veh/h]	1800	1900	1900	1800	1900	1900	1800	1800
c, Capacity [veh/h]	1495	1609	1609	1495	1609	1609	172	172
d1, Uniform Delay [s]	1.08	1.25	1.25	1.06	1.25	1.25	41.38	40.95
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	0.26	0.25	0.01	0.26	0.25	2.29	1.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.19	0.18	0.01	0.19	0.18	0.51	0.40
d, Delay for Lane Group [s/veh]	1.12	1.51	1.50	1.08	1.51	1.50	43.67	42.47
Lane Group LOS	A	A	A	A	A	A	D	D
Critical Lane Group	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.06	0.45	0.44	0.02	0.45	0.44	1.98	1.54
50th-Percentile Queue Length [ft/ln]	1.43	11.27	11.00	0.54	11.15	11.03	49.61	38.60
95th-Percentile Queue Length [veh/ln]	0.10	0.81	0.79	0.04	0.80	0.79	3.57	2.78
95th-Percentile Queue Length [ft/ln]	2.57	20.29	19.80	0.98	20.08	19.86	89.30	69.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.12	1.51	1.50	1.08	1.50	1.50	43.67	43.67	43.67	42.47	42.47	42.47
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	1.48			1.49			43.67			42.47		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	6.08											
Intersection LOS	A											
Intersection V/C	0.228											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.591	2.594	1.852	1.804
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	444	444	1378	1378
d_b, Bicycle Delay [s]	27.22	27.22	4.36	4.36
l_b,int, Bicycle LOS Score for Intersection	2.090	2.066	1.703	1.673
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	39.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.847

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	228	272	103	302	363	234	261	1879	146	210	1950	176
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	228	272	103	302	363	234	261	1879	146	210	1950	176
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	68	26	76	91	59	65	470	37	53	488	44
Total Analysis Volume [veh/h]	228	272	103	302	363	234	261	1879	146	210	1950	176
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	39	0	15	42	0	23	47	0	19	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	23	23	11	26	26	19	55	55	15	51	51
g / C, Green / Cycle	0.07	0.19	0.19	0.09	0.21	0.21	0.16	0.46	0.46	0.13	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10	0.09	0.09	0.19	0.12	0.15	0.35	0.36	0.12	0.28	0.29
s, saturation flow rate [veh/h]	3500	1900	1900	3500	1900	1900	1800	3800	1900	1800	5700	1900
c, Capacity [veh/h]	236	359	359	323	406	406	285	1749	875	226	2434	811
d1, Uniform Delay [s]	55.86	44.03	43.63	54.14	45.88	42.33	49.71	27.00	27.37	51.98	27.24	27.71
k, delay calibration	0.11	0.11	0.11	0.11	0.17	0.11	0.14	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.43	1.29	1.08	12.28	10.30	1.29	14.04	3.26	6.98	15.40	1.35	4.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.97	0.54	0.50	0.94	0.89	0.58	0.91	0.77	0.78	0.93	0.65	0.68
d, Delay for Lane Group [s/veh]	76.28	45.31	44.71	66.42	56.19	43.62	63.75	30.27	34.35	67.38	28.59	32.22
Lane Group LOS	E	D	D	E	E	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.11	5.39	4.91	5.08	11.63	6.37	8.80	16.40	17.89	7.21	12.08	13.53
50th-Percentile Queue Length [ft/ln]	102.76	134.70	122.63	126.93	290.84	159.33	219.96	409.92	447.33	180.36	301.92	338.16
95th-Percentile Queue Length [veh/ln]	7.40	9.19	8.54	8.77	17.23	10.51	13.66	23.04	24.83	11.62	17.78	19.56
95th-Percentile Queue Length [ft/ln]	184.97	229.87	213.43	219.31	430.68	262.84	341.58	575.94	620.76	290.48	444.40	488.95

Movement, Approach, & Intersection Results

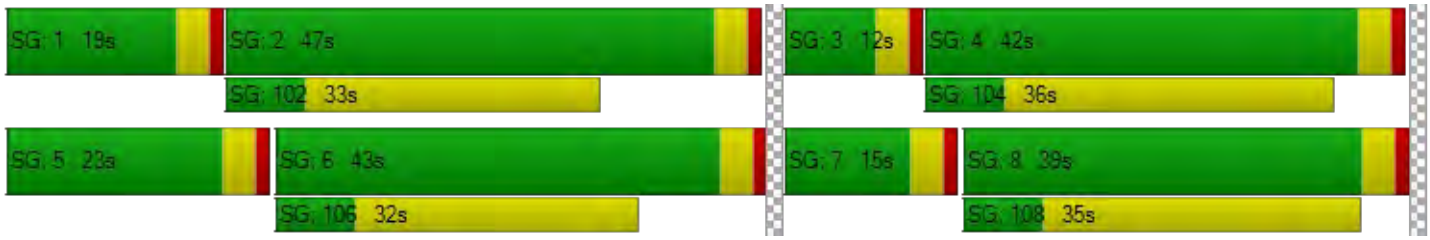
d_M, Delay for Movement [s/veh]	76.28	45.14	44.71	66.42	56.19	43.62	63.75	31.44	34.35	67.38	29.28	32.22
Movement LOS	E	D	D	E	E	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	56.84			56.35			35.31			32.93		
Approach LOS	E			E			D			C		
d_I, Intersection Delay [s/veh]	39.61											
Intersection LOS	D											
Intersection V/C	0.847											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.681	2.728	3.312	3.302
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	633	717	650
d_b, Bicycle Delay [s]	30.10	28.02	24.70	27.34
l_b,int, Bicycle LOS Score for Intersection	2.057	3.043	2.817	2.523
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	23.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.769

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	274	48	277	26	24	14	20	1910	295	237	2116	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	274	48	277	26	24	14	20	1910	295	237	2116	59
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	12	69	7	6	4	5	478	74	59	529	15
Total Analysis Volume [veh/h]	274	48	277	26	24	14	20	1910	295	237	2116	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	26	0	0	10	0	10	32	0	22	44	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	16	16	5	5	2	40	40	14	51	51
g / C, Green / Cycle	0.18	0.18	0.18	0.05	0.05	0.03	0.44	0.44	0.15	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.09	0.09	0.15	0.01	0.02	0.01	0.34	0.16	0.13	0.38	0.39
s, saturation flow rate [veh/h]	1800	1800	1900	1800	1900	1800	5700	1900	1800	3800	1900
c, Capacity [veh/h]	316	316	334	98	104	50	2498	833	277	2146	1073
d1, Uniform Delay [s]	33.53	33.75	35.86	40.90	41.13	43.11	21.40	16.84	37.16	13.70	14.06
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.18	1.36	5.30	1.42	2.16	5.15	2.29	1.18	7.41	1.66	3.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.53	0.83	0.27	0.37	0.40	0.76	0.35	0.85	0.67	0.69
d, Delay for Lane Group [s/veh]	34.72	35.11	41.16	42.33	43.30	48.26	23.69	18.02	44.57	15.36	17.77
Lane Group LOS	C	D	D	D	D	D	C	B	D	B	B
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.13	3.37	6.25	0.59	0.87	0.51	11.20	4.17	5.57	9.64	10.89
50th-Percentile Queue Length [ft/ln]	78.15	84.31	156.13	14.68	21.71	12.63	280.05	104.14	139.15	241.06	272.19
95th-Percentile Queue Length [veh/ln]	5.63	6.07	10.34	1.06	1.56	0.91	16.69	7.50	9.43	14.73	16.30
95th-Percentile Queue Length [ft/ln]	140.67	151.76	258.59	26.43	39.08	22.74	417.27	187.45	235.87	368.37	407.48

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.88	35.11	41.16	42.33	43.30	43.30	48.26	23.69	18.02	44.57	16.14	17.77
Movement LOS	C	D	D	D	D	D	D	C	B	D	B	B
d_A, Approach Delay [s/veh]	37.81			42.90			23.16			18.97		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	23.15											
Intersection LOS	C											
Intersection V/C	0.769											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.525	2.002	0.000	3.238
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	489	133	622	889
d_b, Bicycle Delay [s]	25.69	39.20	21.36	13.89
l_b,int, Bicycle LOS Score for Intersection	2.548	1.665	2.783	2.886
Bicycle LOS	B	A	C	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: S. Associated Road at Brea Plaza Dwy 2

Control Type:	Two-way stop	Delay (sec / veh):	11.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.066

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Base Volume Input [veh/h]	0	737	767	9	0	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	737	767	9	0	40
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	184	192	2	0	10
Total Analysis Volume [veh/h]	0	737	767	9	0	40
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.07
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	11.31
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.21
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	5.24
d_A, Approach Delay [s/veh]	0.00		0.00		11.31	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.29					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: S. Associated Rd at Brea Plaza Dwy 3

Control Type:	Two-way stop	Delay (sec / veh):	30.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.224

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Base Volume Input [veh/h]	15	694	775	33	41	124
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	694	775	33	41	124
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	174	194	8	10	31
Total Analysis Volume [veh/h]	15	694	775	33	41	124
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.01	0.00	0.22	0.21
d_M, Delay for Movement [s/veh]	9.51	0.00	0.00	0.00	30.28	12.62
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.06	0.00	0.00	0.00	0.83	0.78
95th-Percentile Queue Length [ft/ln]	1.41	0.00	0.00	0.00	20.70	19.44
d_A, Approach Delay [s/veh]	0.20		0.00		17.01	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.75					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 9: Brea Plaza Dwy 4 at Imperial Highway

Control Type:	Two-way stop	Delay (sec / veh):	39.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.318

Intersection Setup

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Base Volume Input [veh/h]	0	48	0	2286	2377	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	48	0	2286	2377	35
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	12	0	572	594	9
Total Analysis Volume [veh/h]	0	48	0	2286	2377	35
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.32	0.00	0.02	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	39.62	0.00	0.00	0.00	0.00
Movement LOS		E		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	1.27	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	31.84	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	39.62		0.00		0.00	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	0.40					
Intersection LOS	E					

APPENDIX D-V

YEAR 2045 GENERAL PLAN BUILDOUT PLUS PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	14.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.632

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	609	0	562	0	1712	836	0	2048	198
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	609	0	562	0	1712	836	0	2048	198
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	152	0	141	0	428	209	0	512	50
Total Analysis Volume [veh/h]	0	0	0	609	0	562	0	1712	836	0	2048	198
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		24	24	24	58	58
g / C, Green / Cycle		0.26	0.26	0.26	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate		0.22	0.22	0.21	0.30	0.36
s, saturation flow rate [veh/h]		1800	1800	1900	5700	5700
c, Capacity [veh/h]		473	473	499	3694	3694
d1, Uniform Delay [s]		31.16	31.16	30.71	7.95	8.68
k, delay calibration		0.11	0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		3.70	3.70	2.71	0.42	0.60
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.82	0.82	0.78	0.46	0.55
d, Delay for Lane Group [s/veh]		34.86	34.86	33.43	8.37	9.29
Lane Group LOS		C	C	C	A	A
Critical Lane Group		Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		8.22	8.22	8.00	4.97	6.51
50th-Percentile Queue Length [ft/ln]		205.45	205.45	199.92	124.26	162.79
95th-Percentile Queue Length [veh/ln]		12.92	12.92	12.63	8.63	10.70
95th-Percentile Queue Length [ft/ln]		322.98	322.98	315.86	215.66	267.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	34.86	0.00	33.86	0.00	8.37	0.00	0.00	9.29	0.00
Movement LOS				C		C		A			A	
d_A, Approach Delay [s/veh]	0.00			34.38			8.37			9.29		
Approach LOS	A			C			A			A		
d_I, Intersection Delay [s/veh]	14.93											
Intersection LOS	B											
Intersection V/C	0.632											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	34.67	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.416	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1333	489	489
d_b, Bicycle Delay [s]	45.00	5.00	25.69	25.69
l_b,int, Bicycle LOS Score for Intersection	4.132	3.492	2.501	2.686
Bicycle LOS	D	C	B	B

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	23.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.633

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	1089	30	831	0	0	84	95	1560	575	0	1623	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1089	30	831	0	0	84	95	1560	575	0	1623	13
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	272	8	208	0	0	21	24	390	144	0	406	3
Total Analysis Volume [veh/h]	1089	30	831	0	0	84	95	1560	575	0	1623	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	40	0	0	0	10	10	40	0	0	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	31	31	31	6	6	47	37	37
g / C, Green / Cycle	0.34	0.34	0.34	0.07	0.07	0.52	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.26	0.02	0.05	0.27	0.22	0.22
s, saturation flow rate [veh/h]	3500	1800	1900	3800	1800	5700	5700	1900
c, Capacity [veh/h]	1201	618	652	257	122	2978	2340	780
d1, Uniform Delay [s]	26.82	26.83	26.30	40.09	41.39	14.15	19.96	19.96
k, delay calibration	0.11	0.16	0.14	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.28	3.61	2.32	0.73	10.32	0.66	0.84	2.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.80	0.76	0.33	0.78	0.52	0.52	0.52
d, Delay for Lane Group [s/veh]	28.09	30.43	28.63	40.82	51.71	14.82	20.81	22.48
Lane Group LOS	C	C	C	D	D	B	C	C
Critical Lane Group	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.19	9.87	9.49	0.90	2.40	6.66	6.35	6.72
50th-Percentile Queue Length [ft/ln]	229.68	246.64	237.16	22.62	60.02	166.56	158.87	167.91
95th-Percentile Queue Length [veh/ln]	14.16	15.02	14.54	1.63	4.32	10.90	10.49	10.97
95th-Percentile Queue Length [ft/ln]	353.95	375.41	363.45	40.72	108.04	272.39	262.22	274.16

Movement, Approach, & Intersection Results

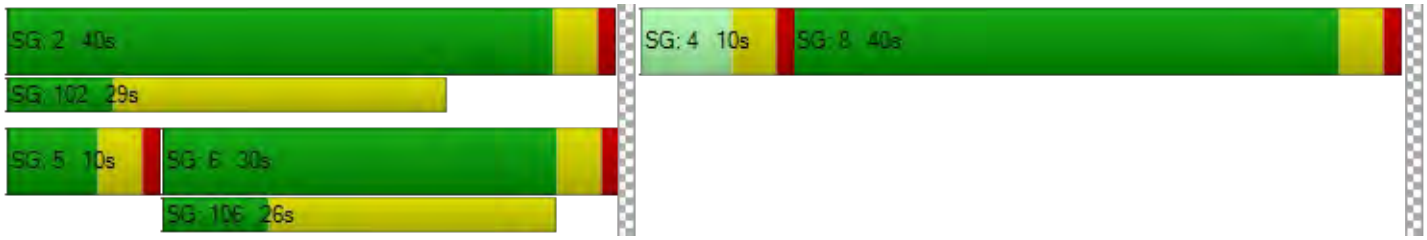
d_M, Delay for Movement [s/veh]	28.34	30.43	29.37	0.00	0.00	40.82	51.71	14.82	0.00	0.00	21.21	22.48
Movement LOS	C	C	C			D	D	B			C	C
d_A, Approach Delay [s/veh]	28.82			40.82			16.93			21.22		
Approach LOS	C			D			B			C		
d_I, Intersection Delay [s/veh]	22.98											
Intersection LOS	C											
Intersection V/C	0.633											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.680	2.185	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	133	800	578
d_b, Bicycle Delay [s]	16.20	39.20	16.20	22.76
l_b,int, Bicycle LOS Score for Intersection	4.777	1.560	2.470	2.234
Bicycle LOS	E	A	B	B

Sequence

Ring 1	-	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	25.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.738

Intersection Setup

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	251	6	327	58	30	8	2	950	321	370	814	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	251	6	327	58	30	8	2	950	321	370	814	11
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	2	82	15	8	2	1	238	80	93	204	3
Total Analysis Volume [veh/h]	251	6	327	58	30	8	2	950	321	370	814	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	50	0	0	37	0	10	38	0	17	45	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	27	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No			No		No	No		No	No	
Maximum Recall	No	No			No		No	No		No	No	
Pedestrian Recall	No	No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	21	21	8	8	0	60	60	13	72	72
g / C, Green / Cycle	0.09	0.20	0.20	0.07	0.07	0.00	0.57	0.57	0.12	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.07	0.00	0.17	0.03	0.02	0.00	0.35	0.32	0.11	0.22	0.22
s, saturation flow rate [veh/h]	3500	1900	1900	1800	1900	1800	1900	1900	3500	1900	1900
c, Capacity [veh/h]	302	373	373	163	136	8	1076	1076	433	1302	1302
d1, Uniform Delay [s]	47.26	34.07	41.02	46.80	46.22	52.16	15.18	14.57	45.14	6.65	6.64
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.84	0.02	6.66	1.32	1.10	16.15	2.63	2.17	4.94	0.64	0.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.02	0.88	0.36	0.28	0.25	0.61	0.57	0.86	0.32	0.32
d, Delay for Lane Group [s/veh]	53.10	34.09	47.68	48.12	47.32	68.31	17.81	16.74	50.09	7.29	7.28
Lane Group LOS	D	C	D	D	D	E	B	B	D	A	A
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.46	0.13	8.82	1.51	0.98	0.09	10.68	9.41	4.99	3.55	3.52
50th-Percentile Queue Length [ft/ln]	86.53	3.14	220.55	37.77	24.51	2.19	266.94	235.25	124.83	88.63	88.12
95th-Percentile Queue Length [veh/ln]	6.23	0.23	13.69	2.72	1.76	0.16	16.04	14.44	8.66	6.38	6.34
95th-Percentile Queue Length [ft/ln]	155.75	5.66	342.33	67.98	44.12	3.94	400.91	361.02	216.45	159.53	158.61

Movement, Approach, & Intersection Results

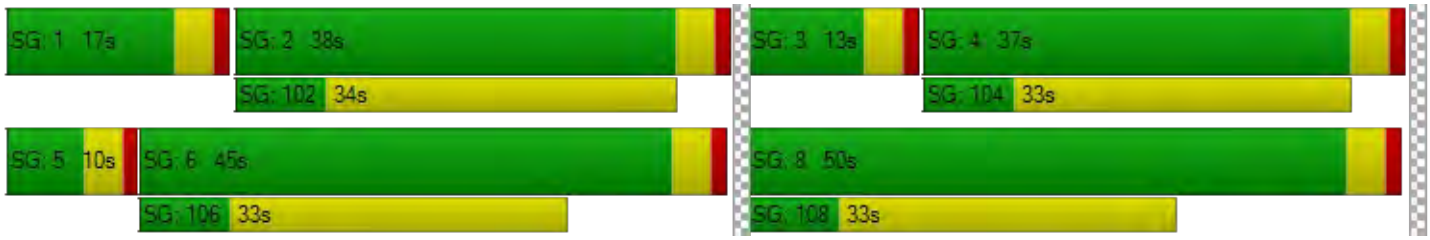
d_M, Delay for Movement [s/veh]	53.10	34.09	47.68	48.12	47.32	47.32	68.31	17.48	16.74	50.09	7.29	7.28
Movement LOS	D	C	D	D	D	D	E	B	B	D	A	A
d_A, Approach Delay [s/veh]	49.87			47.80			17.38			20.54		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	25.53											
Intersection LOS	C											
Intersection V/C	0.738											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	42.08	42.08	42.08	42.08
l_p,int, Pedestrian LOS Score for Intersection	2.672	1.985	2.765	2.954
Crosswalk LOS	B	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	876	629	648	781
d_b, Bicycle Delay [s]	16.58	24.69	24.00	19.50
l_b,int, Bicycle LOS Score for Intersection	2.523	1.718	2.610	2.545
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: S.Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	6.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.209

Intersection Setup

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Base Volume Input [veh/h]	127	420	16	20	491	29	20	1	48	44	8	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	127	420	16	20	491	29	20	1	48	44	8	42
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	105	4	5	123	7	5	0	12	11	2	11
Total Analysis Volume [veh/h]	127	420	16	20	491	29	20	1	48	44	8	42
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	24	0	0	24	0	0	66	0	0	66	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	13	0	0	13	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	76	76	76	76	76	76	6	6
g / C, Green / Cycle	0.84	0.84	0.84	0.84	0.84	0.84	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.07	0.12	0.11	0.01	0.14	0.14	0.04	0.05
s, saturation flow rate [veh/h]	1800	1900	1900	1800	1900	1900	1800	1800
c, Capacity [veh/h]	1494	1600	1600	1503	1600	1600	175	183
d1, Uniform Delay [s]	1.20	1.26	1.26	1.13	1.30	1.29	40.54	41.13
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	0.18	0.18	0.02	0.22	0.22	1.43	2.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.14	0.14	0.01	0.16	0.16	0.39	0.51
d, Delay for Lane Group [s/veh]	1.32	1.44	1.44	1.15	1.52	1.51	41.97	43.37
Lane Group LOS	A	A	A	A	A	A	D	D
Critical Lane Group	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.19	0.34	0.34	0.03	0.42	0.41	1.53	2.14
50th-Percentile Queue Length [ft/ln]	4.75	8.49	8.39	0.70	10.43	10.24	38.32	53.40
95th-Percentile Queue Length [veh/ln]	0.34	0.61	0.60	0.05	0.75	0.74	2.76	3.84
95th-Percentile Queue Length [ft/ln]	8.55	15.28	15.10	1.26	18.78	18.44	68.97	96.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.32	1.44	1.44	1.15	1.51	1.51	41.97	41.97	41.97	43.37	43.37	43.37
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	1.41			1.50			41.97			43.37		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	6.78											
Intersection LOS	A											
Intersection V/C	0.209											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.585	2.527	2.009	1.807
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	444	444	1378	1378
d_b, Bicycle Delay [s]	27.22	27.22	4.36	4.36
l_b,int, Bicycle LOS Score for Intersection	2.024	2.005	1.673	1.715
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	30.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.804

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	150	218	93	162	347	161	214	2166	106	96	1789	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	218	93	162	347	161	214	2166	106	96	1789	98
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	55	23	41	87	40	54	542	27	24	447	25
Total Analysis Volume [veh/h]	150	218	93	162	347	161	214	2166	106	96	1789	98
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	16	45	0	19	44	0	11	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	22	22	7	23	23	15	58	58	7	50	50
g / C, Green / Cycle	0.05	0.20	0.20	0.07	0.21	0.21	0.14	0.53	0.53	0.06	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.04	0.08	0.08	0.05	0.18	0.08	0.12	0.39	0.41	0.05	0.24	0.26
s, saturation flow rate [veh/h]	3500	1900	1900	3500	1900	1900	1800	3800	1900	1800	5700	1900
c, Capacity [veh/h]	194	374	374	229	393	393	244	2007	1003	116	2605	868
d1, Uniform Delay [s]	51.33	38.82	38.56	50.41	42.37	37.84	46.70	20.22	20.72	50.90	21.47	21.93
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.48	0.79	0.69	3.98	6.64	0.69	9.74	2.57	5.80	13.74	0.79	2.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.43	0.40	0.71	0.88	0.41	0.88	0.75	0.77	0.83	0.53	0.57
d, Delay for Lane Group [s/veh]	57.80	39.61	39.25	54.40	49.01	38.53	56.44	22.78	26.52	64.64	22.26	24.63
Lane Group LOS	E	D	D	D	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.21	3.91	3.59	2.31	9.80	3.83	6.38	14.91	16.72	3.05	8.60	9.79
50th-Percentile Queue Length [ft/ln]	55.30	97.67	89.79	57.73	244.93	95.85	159.51	372.85	418.03	76.29	215.00	244.71
95th-Percentile Queue Length [veh/ln]	3.98	7.03	6.46	4.16	14.93	6.90	10.52	21.25	23.43	5.49	13.41	14.92
95th-Percentile Queue Length [ft/ln]	99.54	175.80	161.62	103.91	373.27	172.53	263.07	531.19	585.68	137.31	335.23	372.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.80	39.52	39.25	54.40	49.01	38.53	56.44	23.94	26.52	64.64	22.79	24.63
Movement LOS	E	D	D	D	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	45.41			47.79			26.85			24.90		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	30.19											
Intersection LOS	C											
Intersection V/C	0.804											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	44.55	44.55	44.55
l_p,int, Pedestrian LOS Score for Intersection	2.627	2.657	3.294	3.272
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	636	745	727	582
d_b, Bicycle Delay [s]	25.57	21.64	22.27	27.65
l_b,int, Bicycle LOS Score for Intersection	1.940	2.665	2.927	2.378
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	17.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.687

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	191	12	149	26	29	14	14	2009	479	201	1649	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	191	12	149	26	29	14	14	2009	479	201	1649	34
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	3	37	7	7	4	4	502	120	50	412	9
Total Analysis Volume [veh/h]	191	12	149	26	29	14	14	2009	479	201	1649	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	26	0	0	10	0	10	32	0	22	44	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	10	10	5	5	2	47	47	12	58	58
g / C, Green / Cycle	0.11	0.11	0.11	0.06	0.06	0.02	0.53	0.53	0.13	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate	0.05	0.06	0.08	0.01	0.02	0.01	0.35	0.25	0.11	0.29	0.30
s, saturation flow rate [veh/h]	1800	1800	1900	1800	1900	1800	5700	1900	1800	3800	1900
c, Capacity [veh/h]	193	193	204	101	106	38	2993	998	241	2425	1213
d1, Uniform Delay [s]	38.01	38.15	38.99	40.77	41.11	43.55	15.70	13.60	38.05	8.33	8.47
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.08	2.35	4.98	1.33	2.45	5.86	1.22	1.65	7.30	0.62	1.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.54	0.73	0.26	0.40	0.37	0.67	0.48	0.83	0.46	0.48
d, Delay for Lane Group [s/veh]	40.09	40.50	43.97	42.10	43.56	49.41	16.92	15.25	45.35	8.95	9.81
Lane Group LOS	D	D	D	D	D	D	B	B	D	A	A
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.14	2.29	3.43	0.58	0.99	0.37	9.61	6.20	4.74	5.00	5.52
50th-Percentile Queue Length [ft/ln]	53.49	57.14	85.73	14.62	24.64	9.18	240.21	155.00	118.58	125.01	137.98
95th-Percentile Queue Length [veh/ln]	3.85	4.11	6.17	1.05	1.77	0.66	14.69	10.28	8.31	8.67	9.37
95th-Percentile Queue Length [ft/ln]	96.29	102.85	154.31	26.32	44.35	16.52	367.30	257.09	207.87	216.69	234.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.29	40.50	43.97	42.10	43.56	43.56	49.41	16.92	15.25	45.35	9.23	9.81
Movement LOS	D	D	D	D	D	D	D	B	B	D	A	A
d_A, Approach Delay [s/veh]	41.85			43.01			16.78			13.10		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	17.55											
Intersection LOS	B											
Intersection V/C	0.687											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.506	1.982	0.000	3.160
Crosswalk LOS	B	A	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	489	133	622	889
d_b, Bicycle Delay [s]	25.69	39.20	21.36	13.89
l_b,int, Bicycle LOS Score for Intersection	2.140	1.673	2.936	2.596
Bicycle LOS	B	A	C	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: S. Associated Road at Brea Plaza Dwy 2

Control Type:	Two-way stop	Delay (sec / veh):	10.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Base Volume Input [veh/h]	0	531	652	3	0	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	531	652	3	0	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	133	163	1	0	3
Total Analysis Volume [veh/h]	0	531	652	3	0	12
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.49
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.05
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	1.37
d_A, Approach Delay [s/veh]	0.00		0.00		10.49	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.11					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: S. Associated Rd at Brea Plaza Dwy 3

Control Type:	Two-way stop	Delay (sec / veh):	19.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.069

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Base Volume Input [veh/h]	12	517	645	19	18	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	517	645	19	18	24
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	129	161	5	5	6
Total Analysis Volume [veh/h]	12	517	645	19	18	24
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.01	0.00	0.07	0.04
d_M, Delay for Movement [s/veh]	8.96	0.00	0.00	0.00	19.88	10.63
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.04	0.00	0.00	0.00	0.22	0.11
95th-Percentile Queue Length [ft/ln]	0.99	0.00	0.00	0.00	5.54	2.81
d_A, Approach Delay [s/veh]	0.20		0.00		14.59	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.58					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Brea Plaza Dwy 4 at Imperial Highway

Control Type:	Two-way stop	Delay (sec / veh):	24.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.047

Intersection Setup

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Base Volume Input [veh/h]	0	9	0	2486	2091	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	9	0	2486	2091	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	0	622	523	3
Total Analysis Volume [veh/h]	0	9	0	2486	2091	10
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.05	0.00	0.02	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	24.68	0.00	0.00	0.00	0.00
Movement LOS		C		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.15	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	3.67	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	24.68		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.05					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 1: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	16.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.751

Intersection Setup

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	0	0	0	681	0	601	0	1870	1104	0	2547	403
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	681	0	601	0	1870	1104	0	2547	403
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	170	0	150	0	468	276	0	637	101
Total Analysis Volume [veh/h]	0	0	0	681	0	601	0	1870	1104	0	2547	403
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		26	26	26	56	56
g / C, Green / Cycle		0.29	0.29	0.29	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate		0.24	0.24	0.22	0.33	0.45
s, saturation flow rate [veh/h]		1800	1800	1900	5700	5700
c, Capacity [veh/h]		514	514	543	3563	3563
d1, Uniform Delay [s]		30.04	30.04	29.56	9.39	11.41
k, delay calibration		0.11	0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		3.55	3.55	2.58	0.56	1.25
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.83	0.83	0.79	0.52	0.71
d, Delay for Lane Group [s/veh]		33.59	33.59	32.14	9.95	12.66
Lane Group LOS		C	C	C	A	B
Critical Lane Group		Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		8.88	8.88	8.63	6.20	10.38
50th-Percentile Queue Length [ft/ln]		221.96	221.96	215.63	155.12	259.38
95th-Percentile Queue Length [veh/ln]		13.76	13.76	13.44	10.29	15.66
95th-Percentile Queue Length [ft/ln]		344.12	344.12	336.05	257.24	391.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	33.59	0.00	32.56	0.00	9.95	0.00	0.00	12.66	0.00
Movement LOS				C		C		A			B	
d_A, Approach Delay [s/veh]	0.00			33.10			9.95			12.66		
Approach LOS	A			C			A			B		
d_I, Intersection Delay [s/veh]	16.37											
Intersection LOS	B											
Intersection V/C	0.751											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	34.67	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.443	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1333	489	489
d_b, Bicycle Delay [s]	45.00	5.00	25.69	25.69
l_b,int, Bicycle LOS Score for Intersection	4.132	3.675	2.588	2.960
Bicycle LOS	D	D	B	C

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-57 NB Ramps/Brea Plaza Dwy 1 at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	26.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.765

Intersection Setup

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Brea Plaza Dwy 1			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	1144	62	434	0	0	184	175	1808	390	0	2549	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1144	62	434	0	0	184	175	1808	390	0	2549	37
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	286	16	109	0	0	46	44	452	98	0	637	9
Total Analysis Volume [veh/h]	1144	62	434	0	0	184	175	1808	390	0	2549	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	0	20	20	50	0	0	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	27	27	11	11	56	40	40
g / C, Green / Cycle	0.29	0.29	0.29	0.12	0.12	0.59	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.23	0.23	0.22	0.05	0.10	0.32	0.34	0.34
s, saturation flow rate [veh/h]	3500	1800	1900	3800	1800	5700	5700	1900
c, Capacity [veh/h]	999	514	542	457	217	3347	2422	807
d1, Uniform Delay [s]	31.59	31.60	31.11	38.69	40.78	11.87	23.86	23.86
k, delay calibration	0.11	0.16	0.14	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.62	4.55	2.92	0.57	6.99	0.63	2.90	8.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.81	0.77	0.40	0.81	0.54	0.80	0.80
d, Delay for Lane Group [s/veh]	33.20	36.15	34.03	39.26	47.77	12.50	26.75	32.07
Lane Group LOS	C	D	C	D	D	B	C	C
Critical Lane Group	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.62	9.30	8.96	2.00	4.37	7.26	12.69	13.88
50th-Percentile Queue Length [ft/ln]	215.49	232.49	223.88	50.12	109.19	181.56	317.15	346.97
95th-Percentile Queue Length [veh/ln]	13.43	14.30	13.86	3.61	7.79	11.68	18.53	19.99
95th-Percentile Queue Length [ft/ln]	335.87	357.52	346.57	90.22	194.87	292.05	463.18	499.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.05	36.15	34.15	0.00	0.00	39.26	47.77	12.50	0.00	0.00	28.02	32.07
Movement LOS	C	D	C			D	D	B			C	C
d_A, Approach Delay [s/veh]	34.16			39.26			15.61			28.08		
Approach LOS	C			D			B			C		
d_I, Intersection Delay [s/veh]	26.10											
Intersection LOS	C											
Intersection V/C	0.765											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.14	37.14	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.622	2.245	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	653	337	968	547
d_b, Bicycle Delay [s]	21.56	32.85	12.64	25.06
l_b,int, Bicycle LOS Score for Intersection	4.266	1.560	2.650	2.626
Bicycle LOS	E	A	B	B

Sequence

Ring 1	-	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	27.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.703

Intersection Setup

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	483	34	367	11	21	6	12	889	300	300	1248	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	483	34	367	11	21	6	12	889	300	300	1248	17
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	9	92	3	5	2	3	222	75	75	312	4
Total Analysis Volume [veh/h]	483	34	367	11	21	6	12	889	300	300	1248	17
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	61	0	0	37	0	10	38	0	16	44	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	27	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No			No		No	No		No	No	
Maximum Recall	No	No			No		No	No		No	No	
Pedestrian Recall	No	No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	26	26	4	4	2	65	65	12	75	75
g / C, Green / Cycle	0.16	0.23	0.23	0.04	0.04	0.02	0.57	0.57	0.10	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.14	0.02	0.19	0.01	0.01	0.01	0.33	0.30	0.09	0.33	0.33
s, saturation flow rate [veh/h]	3500	1900	1900	1800	1900	1800	1900	1900	3500	1900	1900
c, Capacity [veh/h]	548	434	434	76	71	31	1074	1074	358	1235	1235
d1, Uniform Delay [s]	47.48	34.87	42.45	53.65	54.09	55.94	16.14	15.53	50.71	10.56	10.54
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.87	0.08	4.61	0.86	3.37	7.82	2.26	1.88	5.28	1.52	1.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.08	0.85	0.14	0.38	0.39	0.58	0.53	0.84	0.51	0.51
d, Delay for Lane Group [s/veh]	52.35	34.95	47.06	54.51	57.47	63.76	18.40	17.41	56.00	12.08	12.06
Lane Group LOS	D	C	D	D	E	E	B	B	E	B	B
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.11	0.76	10.46	0.33	0.83	0.41	10.78	9.50	4.50	8.38	8.35
50th-Percentile Queue Length [ft/ln]	177.86	19.08	261.58	8.17	20.75	10.29	269.50	237.50	112.40	209.60	208.65
95th-Percentile Queue Length [veh/ln]	11.49	1.37	15.77	0.59	1.49	0.74	16.16	14.55	7.97	13.13	13.08
95th-Percentile Queue Length [ft/ln]	287.21	34.35	394.20	14.71	37.35	18.52	404.11	363.87	199.34	328.32	327.09

Movement, Approach, & Intersection Results

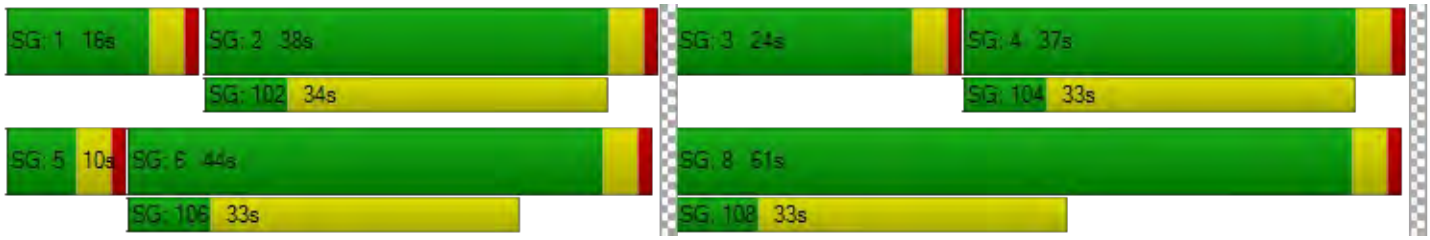
d_M, Delay for Movement [s/veh]	52.35	34.95	47.06	54.51	57.47	57.47	63.76	18.10	17.41	56.00	12.07	12.06
Movement LOS	D	C	D	D	E	E	E	B	B	E	B	B
d_A, Approach Delay [s/veh]	49.49			56.61			18.38			20.49		
Approach LOS	D			E			B			C		
d_I, Intersection Delay [s/veh]	27.13											
Intersection LOS	C											
Intersection V/C	0.703											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.03	47.03	47.03	47.03
l_p,int, Pedestrian LOS Score for Intersection	2.709	1.985	2.884	2.940
Crosswalk LOS	B	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	991	574	591	696
d_b, Bicycle Delay [s]	14.63	29.23	28.53	24.46
l_b,int, Bicycle LOS Score for Intersection	3.018	1.622	2.550	2.851
Bicycle LOS	C	A	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: S.Associated Road at Greenbriar Lane

Control Type:	Signalized	Delay (sec / veh):	7.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.265

Intersection Setup

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Greenbriar Lane			Greenbriar Lane		
Base Volume Input [veh/h]	56	556	39	17	577	19	41	9	99	28	4	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	556	39	17	577	19	41	9	99	28	4	37
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	139	10	4	144	5	10	2	25	7	1	9
Total Analysis Volume [veh/h]	56	556	39	17	577	19	41	9	99	28	4	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	24	0	0	24	0	0	66	0	0	66	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	13	0	0	13	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	73	73	73	73	73	73	9	9
g / C, Green / Cycle	0.81	0.81	0.81	0.81	0.81	0.81	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.03	0.16	0.15	0.01	0.16	0.16	0.08	0.04
s, saturation flow rate [veh/h]	1800	1900	1900	1800	1900	1900	1800	1800
c, Capacity [veh/h]	1401	1532	1532	1401	1532	1532	239	244
d1, Uniform Delay [s]	1.74	2.00	1.99	1.70	2.00	1.99	39.28	37.46
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	0.29	0.28	0.02	0.29	0.28	2.65	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.04	0.20	0.19	0.01	0.20	0.19	0.62	0.28
d, Delay for Lane Group [s/veh]	1.79	2.28	2.27	1.71	2.28	2.27	41.93	38.09
Lane Group LOS	A	A	A	A	A	A	D	D
Critical Lane Group	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.13	0.82	0.80	0.04	0.81	0.80	3.34	1.44
50th-Percentile Queue Length [ft/ln]	3.33	20.38	19.88	0.99	20.29	20.05	83.55	36.02
95th-Percentile Queue Length [veh/ln]	0.24	1.47	1.43	0.07	1.46	1.44	6.02	2.59
95th-Percentile Queue Length [ft/ln]	5.99	36.68	35.79	1.78	36.52	36.10	150.38	64.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.79	2.28	2.27	1.71	2.28	2.27	41.93	41.93	41.93	38.09	38.09	38.09
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	2.23			2.26			41.93			38.09		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	7.91											
Intersection LOS	A											
Intersection V/C	0.265											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.603	2.601	1.905	1.804
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	444	444	1378	1378
d_b, Bicycle Delay [s]	27.22	27.22	4.36	4.36
l_b,int, Bicycle LOS Score for Intersection	2.097	2.065	1.805	1.673
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: S. Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	40.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.847

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	227	272	103	294	363	260	272	1882	146	210	1941	181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	227	272	103	294	363	260	272	1882	146	210	1941	181
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	68	26	74	91	65	68	471	37	53	485	45
Total Analysis Volume [veh/h]	227	272	103	294	363	260	272	1882	146	210	1941	181
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	39	0	15	41	0	24	47	0	19	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	24	24	11	26	26	20	54	54	15	49	49
g / C, Green / Cycle	0.08	0.20	0.20	0.09	0.21	0.21	0.17	0.45	0.45	0.13	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.06	0.10	0.09	0.08	0.19	0.14	0.15	0.35	0.36	0.12	0.28	0.29
s, saturation flow rate [veh/h]	3500	1900	1900	3500	1900	1900	1800	3800	1900	1800	5700	1900
c, Capacity [veh/h]	265	375	375	323	407	407	298	1716	858	226	2345	782
d1, Uniform Delay [s]	54.85	43.10	42.71	54.00	45.85	42.97	49.22	27.89	28.27	51.98	28.74	29.21
k, delay calibration	0.11	0.11	0.11	0.11	0.18	0.11	0.16	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.87	1.12	0.95	9.86	10.80	1.68	14.65	3.61	7.75	15.40	1.55	5.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.52	0.48	0.91	0.89	0.64	0.91	0.78	0.80	0.93	0.67	0.70
d, Delay for Lane Group [s/veh]	62.72	44.22	43.66	63.87	56.65	44.65	63.87	31.50	36.02	67.38	30.29	34.39
Lane Group LOS	E	D	D	E	E	D	E	C	D	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.68	5.31	4.84	4.84	11.69	7.22	9.20	16.79	18.40	7.21	12.46	13.98
50th-Percentile Queue Length [ft/ln]	92.03	132.85	120.99	120.95	292.16	180.40	230.11	419.87	459.96	180.36	311.62	349.57
95th-Percentile Queue Length [veh/ln]	6.63	9.09	8.45	8.45	17.29	11.62	14.18	23.52	25.43	11.62	18.25	20.12
95th-Percentile Queue Length [ft/ln]	165.65	227.36	211.18	211.14	432.32	290.53	354.50	587.89	635.82	290.48	456.37	502.88

Movement, Approach, & Intersection Results

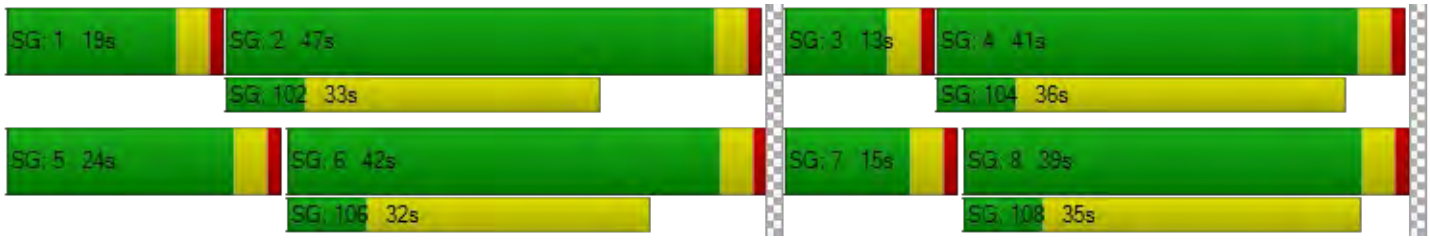
d_M, Delay for Movement [s/veh]	62.72	44.06	43.66	63.87	56.65	44.65	63.87	32.80	36.02	67.38	31.06	34.39
Movement LOS	E	D	D	E	E	D	E	C	D	E	C	C
d_A, Approach Delay [s/veh]	51.03			55.56			36.68			34.59		
Approach LOS	D			E			D			C		
d_I, Intersection Delay [s/veh]	40.11											
Intersection LOS	D											
Intersection V/C	0.847											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.681	2.733	3.315	3.301
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	617	717	633
d_b, Bicycle Delay [s]	30.10	28.70	24.70	28.02
l_b,int, Bicycle LOS Score for Intersection	2.056	3.073	2.825	2.522
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Placentia Avenue/Castlegate Lane at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	23.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.769

Intersection Setup

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Ave			Castlegate Ln			Imperial Hwy			Imperial Hwy		
Base Volume Input [veh/h]	272	48	277	26	24	14	20	1909	291	237	2114	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	272	48	277	26	24	14	20	1909	291	237	2114	59
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	12	69	7	6	4	5	477	73	59	529	15
Total Analysis Volume [veh/h]	272	48	277	26	24	14	20	1909	291	237	2114	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	26	0	0	10	0	10	32	0	22	44	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	16	16	5	5	2	40	40	14	51	51
g / C, Green / Cycle	0.18	0.18	0.18	0.05	0.05	0.03	0.44	0.44	0.15	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.09	0.09	0.15	0.01	0.02	0.01	0.33	0.15	0.13	0.38	0.39
s, saturation flow rate [veh/h]	1800	1800	1900	1800	1900	1800	5700	1900	1800	3800	1900
c, Capacity [veh/h]	316	316	334	98	104	50	2499	833	277	2146	1073
d1, Uniform Delay [s]	33.51	33.74	35.86	40.90	41.13	43.11	21.39	16.80	37.16	13.69	14.05
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.17	1.34	5.31	1.42	2.16	5.15	2.28	1.16	7.41	1.65	3.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.52	0.83	0.27	0.37	0.40	0.76	0.35	0.85	0.67	0.69
d, Delay for Lane Group [s/veh]	34.68	35.07	41.17	42.33	43.30	48.26	23.67	17.95	44.57	15.34	17.75
Lane Group LOS	C	D	D	D	D	D	C	B	D	B	B
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.10	3.35	6.25	0.59	0.87	0.51	11.19	4.10	5.57	9.63	10.87
50th-Percentile Queue Length [ft/ln]	77.60	83.73	156.15	14.68	21.71	12.63	279.78	102.43	139.15	240.66	271.70
95th-Percentile Queue Length [veh/ln]	5.59	6.03	10.34	1.06	1.56	0.91	16.68	7.37	9.43	14.71	16.27
95th-Percentile Queue Length [ft/ln]	139.69	150.71	258.62	26.43	39.08	22.74	416.94	184.37	235.87	367.87	406.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.85	35.07	41.17	42.33	43.30	43.30	48.26	23.67	17.95	44.57	16.12	17.75
Movement LOS	C	D	D	D	D	D	D	C	B	D	B	B
d_A, Approach Delay [s/veh]	37.80			42.90			23.14			18.96		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	23.13											
Intersection LOS	C											
Intersection V/C	0.769											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.523	2.002	0.000	3.237
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	489	133	622	889
d_b, Bicycle Delay [s]	25.69	39.20	21.36	13.89
l_b,int, Bicycle LOS Score for Intersection	2.545	1.665	2.781	2.885
Bicycle LOS	B	A	C	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: S. Associated Road at Brea Plaza Dwy 2

Control Type:	Two-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 2	
Base Volume Input [veh/h]	0	745	827	5	0	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	745	827	5	0	4
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	186	207	1	0	1
Total Analysis Volume [veh/h]	0	745	827	5	0	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	11.19
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.52
d_A, Approach Delay [s/veh]	0.00		0.00		11.19	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.03					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: S. Associated Rd at Brea Plaza Dwy 3

Control Type:	Two-way stop	Delay (sec / veh):	31.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.209

Intersection Setup

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	S. Associated Rd		S. Associated Rd		Brea Plaza Dwy 3	
Base Volume Input [veh/h]	18	707	798	34	36	117
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	707	798	34	36	117
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	177	200	9	9	29
Total Analysis Volume [veh/h]	18	707	798	34	36	117
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.01	0.00	0.21	0.20
d_M, Delay for Movement [s/veh]	9.63	0.00	0.00	0.00	31.29	12.68
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.07	0.00	0.00	0.00	0.76	0.74
95th-Percentile Queue Length [ft/ln]	1.73	0.00	0.00	0.00	18.94	18.50
d_A, Approach Delay [s/veh]	0.24		0.00		17.06	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.63					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 9: Brea Plaza Dwy 4 at Imperial Highway

Control Type:	Two-way stop	Delay (sec / veh):	38.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.289

Intersection Setup

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Brea Plaza Dwy 4		Imperial Hwy		Imperial Hwy	
Base Volume Input [veh/h]	0	43	0	2300	2400	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	43	0	2300	2400	30
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	11	0	575	600	8
Total Analysis Volume [veh/h]	0	43	0	2300	2400	30
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.29	0.00	0.02	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	38.75	0.00	0.00	0.00	0.00
Movement LOS		E		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	1.12	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	28.10	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	38.75		0.00		0.00	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	0.35					
Intersection LOS	E					

APPENDIX E

YEAR 2045 MODELING WORKSHEETS

1. SR-57 SB Ramps at Imperial Highway

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	0	NORTHBOUND	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	603
SOUTH BOUND	LEFT	558	SOUTHBOUND	
	THRU	0	IN ...	1134
	RIGHT	445	OUT ...	174
EAST BOUND	LEFT	0	EASTBOUND	
	THRU	1366	IN ...	2318
	RIGHT	619	OUT ...	2300
WEST BOUND	LEFT	0	WESTBOUND	
	THRU	1589	IN ...	1895
	RIGHT	174	OUT ...	2269

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
SOUTH BOUND	LEFT	558	606
	THRU	0	0
	RIGHT	445	562
EAST BOUND	LEFT	0	0
	THRU	1,366	1,696
	RIGHT	619	836
WEST BOUND	LEFT	0	0
	THRU	1,589	2,017
	RIGHT	174	189

2. SR-57 NB Ramps/Brea Plaza at Imperial Highway

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	803	NORTHBOUND	
	THRU	43	IN ...	1593
	RIGHT	761	OUT ...	515
SOUTH BOUND	LEFT	0	SOUTHBOUND	
	THRU	0	IN ...	50
	RIGHT	50	OUT ...	177
EAST BOUND	LEFT	116	EASTBOUND	
	THRU	1241	IN ...	2150
	RIGHT	515	OUT ...	2407
WEST BOUND	LEFT	0	WESTBOUND	
	THRU	1355	IN ...	1636
	RIGHT	18	OUT ...	2331

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	803	1,089
	THRU	43	46
	RIGHT	761	811
SOUTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	50	56
EAST BOUND	LEFT	116	127
	THRU	1,241	1,520
	RIGHT	515	575
WEST BOUND	LEFT	0	0
	THRU	1,355	1,613
	RIGHT	18	21

3. S.Associated Road at Birch Street

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	228	NORTHBOUND	
	THRU	6	IN ...	527
	RIGHT	298	OUT ...	539
SOUTH BOUND	LEFT	53	SOUTHBOUND	
	THRU	28	IN ...	89
	RIGHT	8	OUT ...	18
EAST BOUND	LEFT	2	EASTBOUND	
	THRU	883	IN ...	1,178
	RIGHT	294	OUT ...	1,030
WEST BOUND	LEFT	332	WESTBOUND	
	THRU	724	IN ...	1,102
	RIGHT	10	OUT ...	1,309

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	228	247
	THRU	6	6
	RIGHT	298	322
SOUTH BOUND	LEFT	53	58
	THRU	28	30
	RIGHT	8	8
EAST BOUND	LEFT	2	2
	THRU	883	947
	RIGHT	294	318
WEST BOUND	LEFT	332	359
	THRU	724	804
	RIGHT	10	11

4. S.Associated Road at Greenbriar Lane

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	22	NORTHBOUND	
	THRU	381	IN ...	342
	RIGHT	14	OUT ...	347
SOUTH BOUND	LEFT	18	SOUTHBOUND	
	THRU	447	IN ...	355
	RIGHT	5	OUT ...	419
EAST BOUND	LEFT	4	EASTBOUND	
	THRU	1	IN ...	34
	RIGHT	26	OUT ...	23
WEST BOUND	LEFT	40	WESTBOUND	
	THRU	8	IN ...	37
	RIGHT	39	OUT ...	-22

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	22	41
	THRU	381	412
	RIGHT	14	16
SOUTH BOUND	LEFT	18	20
	THRU	447	483
	RIGHT	5	14
EAST BOUND	LEFT	4	17
	THRU	1	1
	RIGHT	26	34
WEST BOUND	LEFT	40	44
	THRU	8	8
	RIGHT	39	42

5. S.Associated Road at Imperial Highway

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	140	NORTHBOUND	
	THRU	198	IN ...	410
	RIGHT	68	OUT ...	341
SOUTH BOUND	LEFT	142	SOUTHBOUND	
	THRU	314	IN ...	429
	RIGHT	139	OUT ...	345
EAST BOUND	LEFT	142	EASTBOUND	
	THRU	1758	IN ...	2,324
	RIGHT	95	OUT ...	2,047
WEST BOUND	LEFT	88	WESTBOUND	
	THRU	1505	IN ...	1,966
	RIGHT	80	OUT ...	2,396

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	140	150
	THRU	198	214
	RIGHT	68	94
SOUTH BOUND	LEFT	142	153
	THRU	314	339
	RIGHT	139	153
EAST BOUND	LEFT	142	154
	THRU	1,758	2,165
	RIGHT	95	106
WEST BOUND	LEFT	88	96
	THRU	1,505	1,792
	RIGHT	80	86

6. Placentia Avenue at Imperial Highway

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	163	NORTHBOUND	
	THRU	11	IN ...	335
	RIGHT	138	OUT ...	708
SOUTH BOUND	LEFT	24	SOUTHBOUND	
	THRU	27	IN ...	64
	RIGHT	13	OUT ...	54
EAST BOUND	LEFT	12	EASTBOUND	
	THRU	1721	IN ...	2,500
	RIGHT	339	OUT ...	1,846
WEST BOUND	LEFT	167	WESTBOUND	
	THRU	1377	IN ...	1,862
	RIGHT	31	OUT ...	2,154

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	163	191
	THRU	11	12
	RIGHT	138	149
SOUTH BOUND	LEFT	24	26
	THRU	27	29
	RIGHT	13	14
EAST BOUND	LEFT	12	14
	THRU	1,721	1,999
	RIGHT	339	478
WEST BOUND	LEFT	167	201
	THRU	1,377	1,641
	RIGHT	31	34

1. SR-57 SB Ramps at Imperial Highway

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	0	NORTHBOUND	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	821
SOUTH BOUND	LEFT	632	SOUTHBOUND	
	THRU	0	IN ...	1191
	RIGHT	502	OUT ...	375
EAST BOUND	LEFT	0	EASTBOUND	
	THRU	1567	IN ...	2739
	RIGHT	862	OUT ...	2943
WEST BOUND	LEFT	0	WESTBOUND	
	THRU	2079	IN ...	2686
	RIGHT	375	OUT ...	2476

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
SOUTH BOUND	LEFT	632	686
	THRU	0	0
	RIGHT	502	601
EAST BOUND	LEFT	0	0
	THRU	1,567	1,886
	RIGHT	862	1,104
WEST BOUND	LEFT	0	0
	THRU	2,079	2,564
	RIGHT	375	407

2. SR-57 NB Ramps/Brea Plaza at Imperial Highway

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	848	NORTHBOUND	
	THRU	72	IN ...	1316
	RIGHT	397	OUT ...	345
SOUTH BOUND	LEFT	0	SOUTHBOUND	
	THRU	0	IN ...	231
	RIGHT	231	OUT ...	324
EAST BOUND	LEFT	206	EASTBOUND	
	THRU	1670	IN ...	2367
	RIGHT	345	OUT ...	3639
WEST BOUND	LEFT	0	WESTBOUND	
	THRU	2186	IN ...	2563
	RIGHT	46	OUT ...	2169

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	848	1,143
	THRU	72	78
	RIGHT	397	429
SOUTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	231	251
EAST BOUND	LEFT	206	213
	THRU	1,670	1,798
	RIGHT	345	390
WEST BOUND	LEFT	0	0
	THRU	2,186	2,526
	RIGHT	46	49

3. S.Associated Road at Birch Street

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	447	NORTHBOUND	
	THRU	31	IN ...	807
	RIGHT	333	OUT ...	531
SOUTH BOUND	LEFT	10	SOUTHBOUND	
	THRU	19	IN ...	35
	RIGHT	6	OUT ...	59
EAST BOUND	LEFT	12	EASTBOUND	
	THRU	828	IN ...	1,145
	RIGHT	278	OUT ...	1,684
WEST BOUND	LEFT	275	WESTBOUND	
	THRU	1176	IN ...	1,518
	RIGHT	16	OUT ...	1,232

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	447	483
	THRU	31	34
	RIGHT	333	360
SOUTH BOUND	LEFT	10	11
	THRU	19	21
	RIGHT	6	6
EAST BOUND	LEFT	12	12
	THRU	828	880
	RIGHT	278	300
WEST BOUND	LEFT	275	297
	THRU	1,176	1,241
	RIGHT	16	17

4. S.Associated Road at Greenbriar Lane

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	34	NORTHBOUND	
	THRU	511	IN ...	481
	RIGHT	35	OUT ...	509
SOUTH BOUND	LEFT	16	SOUTHBOUND	
	THRU	533	IN ...	514
	RIGHT	6	OUT ...	549
EAST BOUND	LEFT	8	EASTBOUND	
	THRU	9	IN ...	27
	RIGHT	17	OUT ...	48
WEST BOUND	LEFT	24	WESTBOUND	
	THRU	4	IN ...	26
	RIGHT	34	OUT ...	-59

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	34	41
	THRU	511	552
	RIGHT	35	39
SOUTH BOUND	LEFT	16	17
	THRU	533	576
	RIGHT	6	16
EAST BOUND	LEFT	8	26
	THRU	9	9
	RIGHT	17	47
WEST BOUND	LEFT	24	28
	THRU	4	4
	RIGHT	34	37

5. S.Associated Road at Imperial Highway

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	205	NORTHBOUND	
	THRU	247	IN ...	531
	RIGHT	80	OUT ...	625
SOUTH BOUND	LEFT	278	SOUTHBOUND	
	THRU	333	IN ...	758
	RIGHT	212	OUT ...	551
EAST BOUND	LEFT	240	EASTBOUND	
	THRU	1697	IN ...	2,171
	RIGHT	132	OUT ...	2,345
WEST BOUND	LEFT	167	WESTBOUND	
	THRU	1597	IN ...	2,330
	RIGHT	163	OUT ...	2,269

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	205	228
	THRU	247	267
	RIGHT	80	103
SOUTH BOUND	LEFT	278	302
	THRU	333	360
	RIGHT	212	234
EAST BOUND	LEFT	240	261
	THRU	1,697	1,878
	RIGHT	132	146
WEST BOUND	LEFT	167	210
	THRU	1,597	1,950
	RIGHT	163	176

6. Placentia Avenue at Imperial Highway

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	224	NORTHBOUND	
	THRU	45	IN ...	596
	RIGHT	253	OUT ...	515
SOUTH BOUND	LEFT	24	SOUTHBOUND	
	THRU	22	IN ...	59
	RIGHT	13	OUT ...	117
EAST BOUND	LEFT	18	EASTBOUND	
	THRU	1713	IN ...	2,208
	RIGHT	263	OUT ...	2,404
WEST BOUND	LEFT	219	WESTBOUND	
	THRU	1764	IN ...	2,383
	RIGHT	54	OUT ...	2,211

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	224	274
	THRU	45	48
	RIGHT	253	277
SOUTH BOUND	LEFT	24	26
	THRU	22	24
	RIGHT	13	14
EAST BOUND	LEFT	18	20
	THRU	1,713	1,910
	RIGHT	263	295
WEST BOUND	LEFT	219	237
	THRU	1,764	2,116
	RIGHT	54	59

APPENDIX F

INTERSECTION QUEUEING WORKSHEETS

APPENDIX F-I

YEAR 2024 CUMULATIVE TRAFFIC CONDITIONS

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	0	432	595	11
Future Vol, veh/h	0	8	0	432	595	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	8	0	455	626	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	319	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	677	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	677	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	677	-	-
HCM Lane V/C Ratio	-	0.012	-	-
HCM Control Delay (s)	-	10.4	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

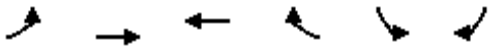
Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	21	11	422	593	10
Future Vol, veh/h	9	21	11	422	593	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	90	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	22	12	444	624	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	876	318	635	0	-	0
Stage 1	630	-	-	-	-	-
Stage 2	246	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	288	678	944	-	-	-
Stage 1	493	-	-	-	-	-
Stage 2	772	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	284	678	944	-	-	-
Mov Cap-2 Maneuver	284	-	-	-	-	-
Stage 1	487	-	-	-	-	-
Stage 2	772	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	0.2	0
HCM LOS	B		

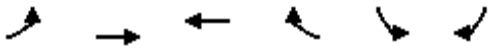
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	944	-	284	678	-	-
HCM Lane V/C Ratio	0.012	-	0.033	0.033	-	-
HCM Control Delay (s)	8.9	-	18.1	10.5	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0.1	-	-



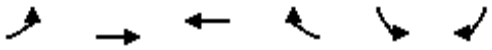
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2110	1906	9	0	9
Future Volume (Veh/h)	0	2110	1906	9	0	9
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	2221	2006	9	0	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		285	267			
pX, platoon unblocked	0.76				0.87	0.76
vC, conflicting volume	2015				2566	506
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	784				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	634				886	828

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	555	555	555	555	573	573	573	296	9
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	9	9
cSH	1700	1700	1700	1700	1700	1700	1700	1700	828
Volume to Capacity	0.33	0.33	0.33	0.33	0.34	0.34	0.34	0.17	0.01
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4
Lane LOS									A
Approach Delay (s)	0.0				0.0				9.4
Approach LOS									A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		



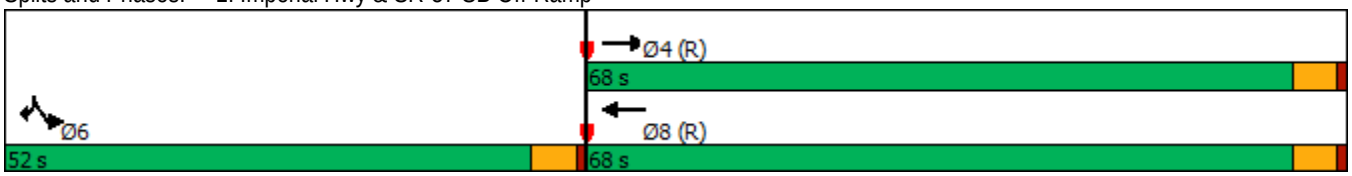
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1479	1921	0	577	501
Future Volume (vph)	0	1479	1921	0	577	501
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0	0	260
Storage Lanes	0			0	2	1
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.97	0.91
Frt					0.967	0.850
Flt Protected					0.962	
Satd. Flow (prot)	0	5085	5085	0	3362	1441
Flt Permitted					0.962	
Satd. Flow (perm)	0	5085	5085	0	3362	1441
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					5	5
Link Speed (mph)		30	30		30	
Link Distance (ft)		420	362		866	
Travel Time (s)		9.5	8.2		19.7	
Peak Hour Factor	0.93	0.93	0.94	0.94	0.88	0.88
Adj. Flow (vph)	0	1590	2044	0	656	569
Shared Lane Traffic (%)						32%
Lane Group Flow (vph)	0	1590	2044	0	838	387
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		24	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Prot
Protected Phases		4	8		6	6
Permitted Phases						

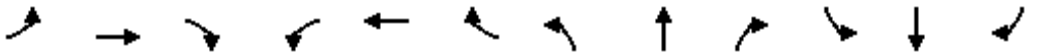


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		6.0	6.0		6.0	6.0
Minimum Split (s)		11.0	27.0		11.0	11.0
Total Split (s)		68.0	68.0		52.0	52.0
Total Split (%)		56.7%	56.7%		43.3%	43.3%
Maximum Green (s)		63.0	63.0		47.0	47.0
Yellow Time (s)		4.0	4.0		4.0	4.0
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		C-Max	C-Max		Max	Max
Walk Time (s)			7.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			5			
Act Effct Green (s)		63.0	63.0		47.0	47.0
Actuated g/C Ratio		0.52	0.52		0.39	0.39
v/c Ratio		0.60	0.77		0.64	0.68
Control Delay		20.9	16.3		32.0	37.3
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		20.9	16.3		32.0	37.3
LOS		C	B		C	D
Approach Delay		20.9	16.3		33.7	
Approach LOS		C	B		C	
Queue Length 50th (ft)		300	418		265	267
Queue Length 95th (ft)		347	501		323	382
Internal Link Dist (ft)		340	282		786	
Turn Bay Length (ft)						260
Base Capacity (vph)		2669	2669		1319	567
Starvation Cap Reductn		0	0		0	0
Spillback Cap Reductn		0	0		0	0
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.60	0.77		0.64	0.68

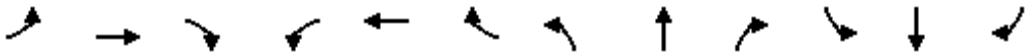
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 49 (41%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 22.2		Intersection LOS: C	
Intersection Capacity Utilization 67.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Imperial Hwy & SR-57 SB Off-Ramp





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	1333	0	0	1474	19	1037	44	784	0	0	53
Future Volume (vph)	121	1333	0	0	1474	19	1037	44	784	0	0	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		350	0		0
Storage Lanes	1		0	0		0	2		1	0		2
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86	0.86	0.91	0.86	0.95	1.00	1.00	0.88
Frt					0.998			0.896	0.850			0.850
Flt Protected	0.950						0.950	0.989				
Satd. Flow (prot)	1770	5085	0	0	6395	0	3221	1420	1504	0	0	2787
Flt Permitted	0.950						0.950	0.989				
Satd. Flow (perm)	1770	5085	0	0	6395	0	3221	1420	1504	0	0	2787
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					2			11	55			64
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		192			285			643			368	
Travel Time (s)		4.4			6.5			14.6			8.4	
Peak Hour Factor	0.88	0.88	0.88	0.89	0.89	0.89	0.91	0.91	0.91	0.68	0.68	0.68
Adj. Flow (vph)	138	1515	0	0	1656	21	1140	48	862	0	0	78
Shared Lane Traffic (%)							10%		42%			
Lane Group Flow (vph)	138	1515	0	0	1677	0	1026	524	500	0	0	78
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			1
Detector Template	Left	Thru			Thru		Left	Thru	Right			Right
Leading Detector (ft)	20	100			100		20	100	20			20
Trailing Detector (ft)	0	0			0		0	0	0			0
Detector 1 Position(ft)	0	0			0		0	0	0			0
Detector 1 Size(ft)	20	6			6		20	6	20			20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA		Split	NA	Prot			Over
Protected Phases	7	4			8		2	2	2			7
Permitted Phases												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4			8		2	2	2			7
Switch Phase												
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0	6.0			6.0
Minimum Split (s)	10.0	34.0			31.0		11.0	11.0	11.0			10.0
Total Split (s)	17.0	59.0			42.0		61.0	61.0	61.0			17.0
Total Split (%)	14.2%	49.2%			35.0%		50.8%	50.8%	50.8%			14.2%
Maximum Green (s)	13.0	54.0			37.0		56.0	56.0	56.0			13.0
Yellow Time (s)	3.0	4.0			4.0		4.0	4.0	4.0			3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0	1.0			1.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)	4.0	5.0			5.0		5.0	5.0	5.0			4.0
Lead/Lag	Lead				Lag							Lead
Lead-Lag Optimize?	Yes				Yes							Yes
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			3.0
Recall Mode	None	C-Max			C-Max		Max	Max	Max			None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		22.0			19.0							
Pedestrian Calls (#/hr)		5			5							
Act Effct Green (s)	12.3	54.0			37.7		56.0	56.0	56.0			12.3
Actuated g/C Ratio	0.10	0.45			0.31		0.47	0.47	0.47			0.10
v/c Ratio	0.77	0.66			0.83		0.68	0.78	0.68			0.23
Control Delay	70.1	27.4			17.2		28.0	36.4	27.9			17.7
Queue Delay	0.0	0.1			0.0		0.0	0.0	0.0			0.0
Total Delay	70.1	27.5			17.2		28.0	36.4	27.9			17.7
LOS	E	C			B		C	D	C			B
Approach Delay		31.0			17.2			30.1			17.7	
Approach LOS		C			B			C			B	
Queue Length 50th (ft)	108	340			84		333	380	278			5
Queue Length 95th (ft)	#194	401			m118		414	562	416			17
Internal Link Dist (ft)		112			205			563			288	
Turn Bay Length (ft)									350			
Base Capacity (vph)	191	2288			2011		1503	668	731			358
Starvation Cap Reductn	0	0			0		0	0	0			0
Spillback Cap Reductn	0	90			0		0	0	0			0
Storage Cap Reductn	0	0			0		0	0	0			0
Reduced v/c Ratio	0.72	0.69			0.83		0.68	0.78	0.68			0.22

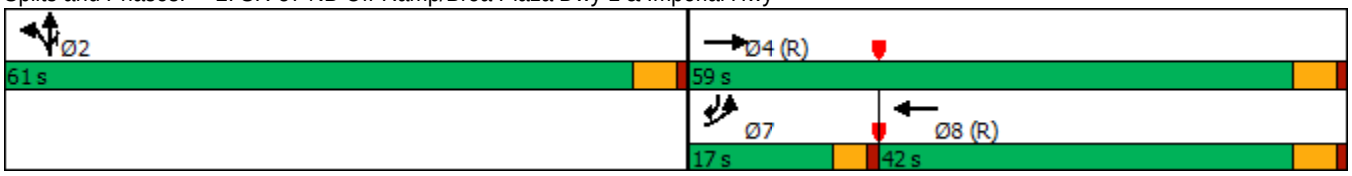
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 10 (8%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 26.2		Intersection LOS: C	
Intersection Capacity Utilization 66.5%		ICU Level of Service C	
Analysis Period (min) 15			

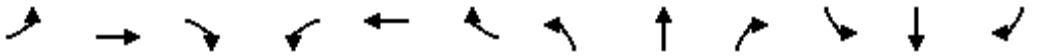
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

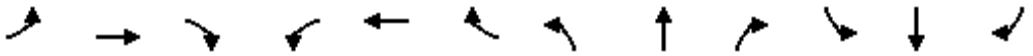
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: SR-57 NB Off-Ramp/Brea Plaza Dwy 1 & Imperial Hwy





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	937	303	342	763	10	235	6	307	55	29	8
Future Volume (vph)	2	937	303	342	763	10	235	6	307	55	29	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	220		0	225		230	100		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.963			0.998				0.850		0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3408	0	3433	3532	0	3433	1863	1583	1770	1801	0
Flt Permitted	0.950			0.950			0.950			0.753		
Satd. Flow (perm)	1770	3408	0	3433	3532	0	3433	1863	1583	1403	1801	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			1				55		11	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		664			723			1874			318	
Travel Time (s)		15.1			16.4			42.6			7.2	
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.82	0.82	0.82	0.74	0.74	0.74
Adj. Flow (vph)	2	1090	352	376	838	11	287	7	374	74	39	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	1442	0	376	849	0	287	7	374	74	50	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8		5	2	3		6	
Permitted Phases									2	6		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	39.0		10.0	38.0		10.0	38.0	10.0	38.0	38.0	
Total Split (s)	10.0	51.0		17.0	58.0		14.0	52.0	17.0	38.0	38.0	
Total Split (%)	8.3%	42.5%		14.2%	48.3%		11.7%	43.3%	14.2%	31.7%	31.7%	
Maximum Green (s)	6.0	46.0		13.0	53.0		10.0	47.0	13.0	33.0	33.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	4.0	5.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lag		Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	Max	None	Max	Max	
Walk Time (s)		7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		27.0			26.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		5			5			5		5	5	
Act Effct Green (s)	6.0	46.0		13.0	61.0		10.0	47.0	65.0	33.0	33.0	
Actuated g/C Ratio	0.05	0.38		0.11	0.51		0.08	0.39	0.54	0.28	0.28	
v/c Ratio	0.02	1.08		1.01	0.47		1.00	0.01	0.42	0.19	0.10	
Control Delay	55.0	85.1		103.2	20.7		101.3	17.7	10.4	35.0	27.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	55.0	85.1		103.2	20.7		101.3	17.7	10.4	35.0	27.4	
LOS	D	F		F	C		F	B	B	C	C	
Approach Delay		85.1			46.0			49.5			31.9	
Approach LOS		F			D			D			C	
Queue Length 50th (ft)	2	~648		~154	208		~115	3	108	44	22	
Queue Length 95th (ft)	10	#727		#257	311		#178	11	167	68	43	
Internal Link Dist (ft)		584			643			1794			238	
Turn Bay Length (ft)	150			220			225		230	100		
Base Capacity (vph)	88	1332		371	1795		286	729	882	385	503	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.02	1.08		1.01	0.47		1.00	0.01	0.42	0.19	0.10	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 77 (64%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 62.5		Intersection LOS: E	
Intersection Capacity Utilization 71.3%		ICU Level of Service C	
Analysis Period (min) 15			

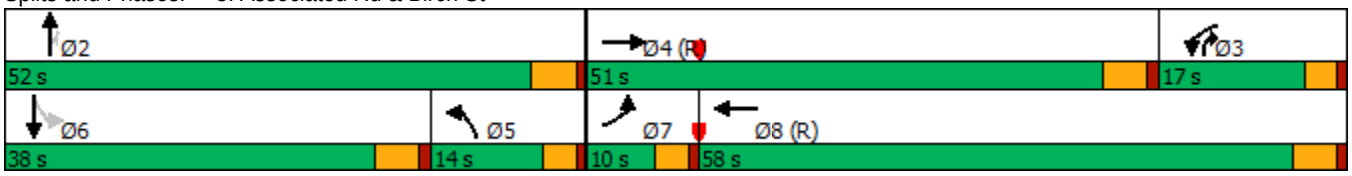
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

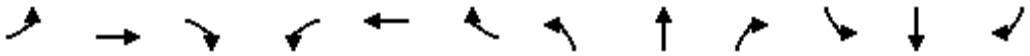
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Associated Rd & Birch St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1	32	42	8	40	39	392	15	19	460	13
Future Volume (vph)	6	1	32	42	8	40	39	392	15	19	460	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	110		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.888			0.940			0.995			0.996	
Flt Protected		0.992			0.977		0.950			0.950		
Satd. Flow (prot)	0	1641	0	0	1711	0	1770	3522	0	1770	3525	0
Flt Permitted		0.952			0.844		0.467			0.470		
Satd. Flow (perm)	0	1575	0	0	1478	0	870	3522	0	875	3525	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		48			39			5			4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		496			521			383			1874	
Travel Time (s)		11.3			11.8			8.7			42.6	
Peak Hour Factor	0.67	0.67	0.67	0.61	0.61	0.61	0.82	0.82	0.82	0.94	0.94	0.94
Adj. Flow (vph)	9	1	48	69	13	66	48	478	18	20	489	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	58	0	0	148	0	48	496	0	20	503	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

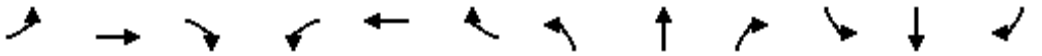


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	37.0	37.0		37.0	37.0		25.0	25.0		25.0	25.0	
Total Split (s)	50.0	50.0		50.0	50.0		70.0	70.0		70.0	70.0	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	45.0	45.0		45.0	45.0		65.0	65.0		65.0	65.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		16.6			16.6		93.4	93.4		93.4	93.4	
Actuated g/C Ratio		0.14			0.14		0.78	0.78		0.78	0.78	
v/c Ratio		0.22			0.62		0.07	0.18		0.03	0.18	
Control Delay		15.8			45.3		2.8	2.3		1.0	0.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		15.8			45.3		2.8	2.3		1.0	0.7	
LOS		B			D		A	A		A	A	
Approach Delay		15.8			45.3			2.4			0.7	
Approach LOS		B			D			A			A	
Queue Length 50th (ft)		7			82		4	20		0	1	
Queue Length 95th (ft)		22			73		m10	34		m2	m32	
Internal Link Dist (ft)		416			441			303			1794	
Turn Bay Length (ft)							100			110		
Base Capacity (vph)		620			578		677	2742		681	2744	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.09			0.26		0.07	0.18		0.03	0.18	

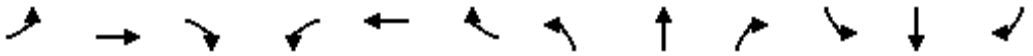
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 21 (18%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 7.3		Intersection LOS: A	
Intersection Capacity Utilization 42.5%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Associated Rd & Greenbriar Ln



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	1859	101	91	1621	82	148	204	70	146	323	146
Future Volume (vph)	147	1859	101	91	1621	82	148	204	70	146	323	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	170		0	210		0
Storage Lanes	1		0	1		0	2		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.86	0.86	0.97	0.95	0.95	0.97	1.00	1.00
Frt		0.992			0.993			0.962				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5045	0	1770	6363	0	3433	3405	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5045	0	1770	6363	0	3433	3405	0	3433	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			9			40				157
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		267			331			892			545	
Travel Time (s)		6.1			7.5			20.3			12.4	
Peak Hour Factor	0.91	0.91	0.91	0.96	0.96	0.96	0.89	0.89	0.89	0.93	0.93	0.93
Adj. Flow (vph)	162	2043	111	95	1689	85	166	229	79	157	347	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	162	2154	0	95	1774	0	166	308	0	157	347	157
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	10.0	38.0		10.0	37.0		10.0	40.0		10.0	41.0	41.0
Total Split (s)	23.0	58.0		11.0	46.0		10.0	40.0		11.0	41.0	41.0
Total Split (%)	19.2%	48.3%		9.2%	38.3%		8.3%	33.3%		9.2%	34.2%	34.2%
Maximum Green (s)	19.0	53.0		7.0	41.0		6.0	35.0		7.0	36.0	36.0
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		26.0			25.0			28.0			29.0	29.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)	15.6	53.0		7.0	44.4		6.0	35.0		7.0	36.0	36.0
Actuated g/C Ratio	0.13	0.44		0.06	0.37		0.05	0.29		0.06	0.30	0.30
v/c Ratio	0.71	0.96		0.92	0.75		0.97	0.30		0.79	0.62	0.27
Control Delay	71.1	34.8		111.2	26.6		118.7	29.5		66.8	22.8	2.4
Queue Delay	0.0	3.9		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	71.1	38.7		111.2	26.6		118.7	29.5		66.8	22.8	2.4
LOS	E	D		F	C		F	C		E	C	A
Approach Delay		41.0			30.9			60.7			28.4	
Approach LOS		D			C			E			C	
Queue Length 50th (ft)	130	368		75	204		67	84		64	147	2
Queue Length 95th (ft)	m188	#689		#181	219		#137	122		#120	219	30
Internal Link Dist (ft)		187			251			812			465	
Turn Bay Length (ft)				200			170			210		
Base Capacity (vph)	280	2233		103	2362		171	1021		200	558	584
Starvation Cap Reductn	0	62		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.58	0.99		0.92	0.75		0.97	0.30		0.79	0.62	0.27

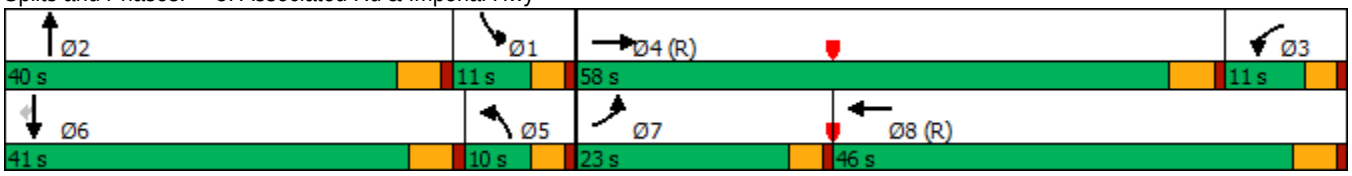
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 37.6		Intersection LOS: D	
Intersection Capacity Utilization 80.2%		ICU Level of Service D	
Analysis Period (min) 15			

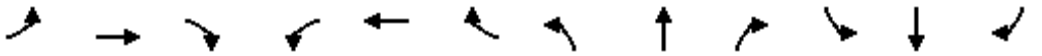
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

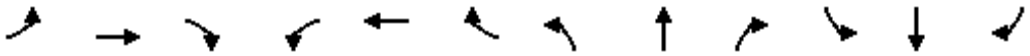
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Associated Rd & Imperial Hwy





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1814	358	172	1478	32	179	11	142	25	28	13
Future Volume (vph)	12	1814	358	172	1478	32	179	11	142	25	28	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		200	225		0	195		0	85		0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.997				0.850		0.953	
Flt Protected	0.950			0.950			0.950	0.958		0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5070	0	1681	1695	1583	1770	1775	0
Flt Permitted	0.950			0.950			0.950	0.958		0.950		
Satd. Flow (perm)	1770	5085	1583	1770	5070	0	1681	1695	1583	1770	1775	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			265		4				171		14	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1111			1324			560			455	
Travel Time (s)		25.3			30.1			12.7			10.3	
Peak Hour Factor	0.95	0.95	0.95	0.89	0.89	0.89	0.83	0.83	0.83	0.67	0.67	0.67
Adj. Flow (vph)	13	1909	377	193	1661	36	216	13	171	37	42	19
Shared Lane Traffic (%)							47%					
Lane Group Flow (vph)	13	1909	377	193	1697	0	114	115	171	37	61	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4						2			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	33.0	33.0	10.0	26.0		27.0	27.0	27.0	11.0	11.0	
Total Split (s)	10.0	59.0	59.0	23.0	72.0		27.0	27.0	27.0	11.0	11.0	
Total Split (%)	8.3%	49.2%	49.2%	19.2%	60.0%		22.5%	22.5%	22.5%	9.2%	9.2%	
Maximum Green (s)	6.0	54.0	54.0	19.0	67.0		22.0	22.0	22.0	6.0	6.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		21.0	21.0		14.0		15.0	15.0	15.0			
Pedestrian Calls (#/hr)		5	5		5		5	5	5			
Act Effct Green (s)	6.0	56.2	56.2	16.8	73.0		22.0	22.0	22.0	6.0	6.0	
Actuated g/C Ratio	0.05	0.47	0.47	0.14	0.61		0.18	0.18	0.18	0.05	0.05	
v/c Ratio	0.15	0.80	0.43	0.78	0.55		0.37	0.37	0.40	0.42	0.60	
Control Delay	33.5	9.4	1.2	70.8	15.2		47.0	47.0	9.2	70.0	68.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	33.5	9.4	1.2	70.8	15.2		47.0	47.0	9.2	70.0	68.3	
LOS	C	A	A	E	B		D	D	A	E	E	
Approach Delay		8.2			20.9			30.8			68.9	
Approach LOS		A			C			C			E	
Queue Length 50th (ft)	9	116	0	144	239		82	83	0	28	36	
Queue Length 95th (ft)	m9	m124	m0	#225	344		130	131	46	48	58	
Internal Link Dist (ft)		1031			1244			480			375	
Turn Bay Length (ft)	140		200	225			195			85		
Base Capacity (vph)	88	2380	882	280	3085		308	310	429	88	102	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.15	0.80	0.43	0.69	0.55		0.37	0.37	0.40	0.42	0.60	

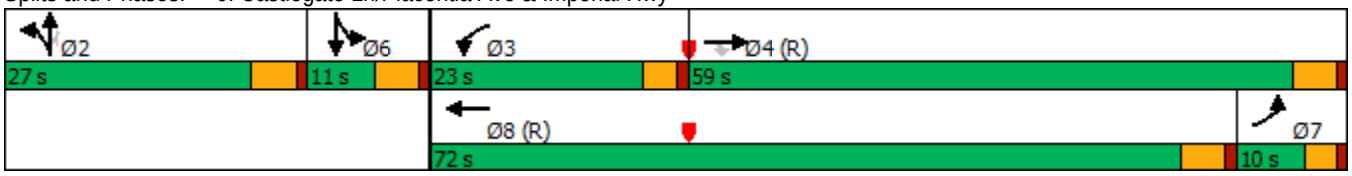
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 3 (3%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 68.2%		ICU Level of Service C	
Analysis Period (min) 15			

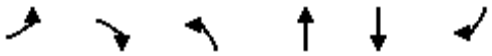
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

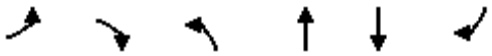
Splits and Phases: 6: Castlegate Ln/Placentia Ave & Imperial Hwy





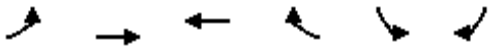
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	8	0	432	595	11
Future Volume (vph)	0	8	0	432	595	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.865			0.997	
Flt Protected						
Satd. Flow (prot)	0	1611	0	3539	3529	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	3539	3529	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	540			324	383	
Travel Time (s)	12.3			7.4	8.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	8	0	455	626	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	8	0	455	638	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.8%		ICU Level of Service A	
Analysis Period (min) 15			



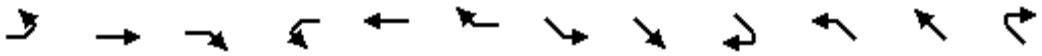
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	9	21	11	422	593	10
Future Volume (vph)	9	21	11	422	593	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	90			0
Storage Lanes	1	1	1			0
Taper Length (ft)	60		60			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.997	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	3539	3529	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	3539	3529	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	192			545	324	
Travel Time (s)	4.4			12.4	7.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	9	22	12	444	624	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	22	12	444	635	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.7%		ICU Level of Service A	
Analysis Period (min) 15			



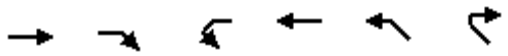
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2110	1906	9	0	9
Future Volume (vph)	0	2110	1906	9	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	0	1
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	0.86	0.86	0.86	1.00	1.00
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	6408	6401	0	0	1611
Flt Permitted						
Satd. Flow (perm)	0	6408	6401	0	0	1611
Link Speed (mph)		30	30		30	
Link Distance (ft)		285	267		252	
Travel Time (s)		6.5	6.1		5.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2221	2006	9	0	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2221	2015	0	0	9
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.8%		ICU Level of Service A	
Analysis Period (min) 15			



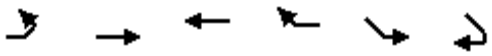
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	0	1454	548	0	2101	463	0	0	0	0	0	0
Future Volume (vph)	0	1454	548	0	2101	463	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	0		0	0		0	0		0
Storage Lanes	1		0	0		1	0		0	0		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.86	0.86	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.959				0.850						
Flt Protected												
Satd. Flow (prot)	0	6145	0	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	6145	0	0	5085	1583	0	0	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		563			192			626			545	
Travel Time (s)		12.8			4.4			14.2			12.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1454	548	0	2101	463	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2002	0	0	2101	463	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.9%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	1479	796	0	2422	0	0
Future Volume (vph)	1479	796	0	2422	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	5085	1583	0	5085	0	0
Flt Permitted						
Satd. Flow (perm)	5085	1583	0	5085	0	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	355			420	859	
Travel Time (s)	8.1			9.5	19.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1479	796	0	2422	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1479	796	0	2422	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.6%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	0	2056	1921	180	0	0
Future Volume (vph)	0	2056	1921	180	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	0.91	0.91	1.00	1.00
Frt			0.987			
Flt Protected						
Satd. Flow (prot)	0	5085	5019	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	5085	5019	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		362	563		627	
Travel Time (s)		8.2	12.8		14.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2056	1921	180	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2056	2101	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.2%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	41	0	696	714	9
Future Vol, veh/h	0	41	0	696	714	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	43	0	733	752	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	381	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	617	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	617	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	617	-	-
HCM Lane V/C Ratio	-	0.07	-	-
HCM Control Delay (s)	-	11.3	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-

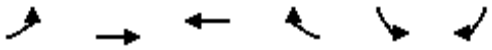
Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	41	128	15	655	722	33
Future Vol, veh/h	41	128	15	655	722	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	90	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	135	16	689	760	35

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1155	398	795	0	-	0
Stage 1	778	-	-	-	-	-
Stage 2	377	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	190	601	822	-	-	-
Stage 1	413	-	-	-	-	-
Stage 2	663	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	186	601	822	-	-	-
Mov Cap-2 Maneuver	186	-	-	-	-	-
Stage 1	405	-	-	-	-	-
Stage 2	663	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.9	0.2	0
HCM LOS	C		

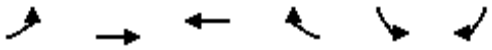
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	822	-	186	601	-	-
HCM Lane V/C Ratio	0.019	-	0.232	0.224	-	-
HCM Control Delay (s)	9.5	-	30.1	12.7	-	-
HCM Lane LOS	A	-	D	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.9	0.9	-	-



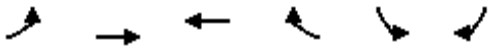
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2207	2126	36	0	49
Future Volume (Veh/h)	0	2207	2126	36	0	49
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	2323	2238	38	0	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		285	267			
pX, platoon unblocked	0.71				0.82	0.71
vC, conflicting volume	2276				2838	578
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	721				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	93
cM capacity (veh/h)	618				835	765

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	581	581	581	581	639	639	639	358	52
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	38	52
cSH	1700	1700	1700	1700	1700	1700	1700	1700	765
Volume to Capacity	0.34	0.34	0.34	0.34	0.38	0.38	0.38	0.21	0.07
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0
Lane LOS									B
Approach Delay (s)	0.0				0.0				10.0
Approach LOS									B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1701	2442	0	653	548
Future Volume (vph)	0	1701	2442	0	653	548
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0	0	260
Storage Lanes	0			0	2	1
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.97	0.91
Frt					0.969	0.850
Flt Protected					0.962	
Satd. Flow (prot)	0	5085	5085	0	3369	1441
Flt Permitted					0.962	
Satd. Flow (perm)	0	5085	5085	0	3369	1441
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					2	2
Link Speed (mph)		30	30		30	
Link Distance (ft)		420	362		866	
Travel Time (s)		9.5	8.2		19.7	
Peak Hour Factor	0.95	0.95	0.97	0.97	0.94	0.94
Adj. Flow (vph)	0	1791	2518	0	695	583
Shared Lane Traffic (%)						31%
Lane Group Flow (vph)	0	1791	2518	0	876	402
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		24	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Prot
Protected Phases		4	8		6	6
Permitted Phases						



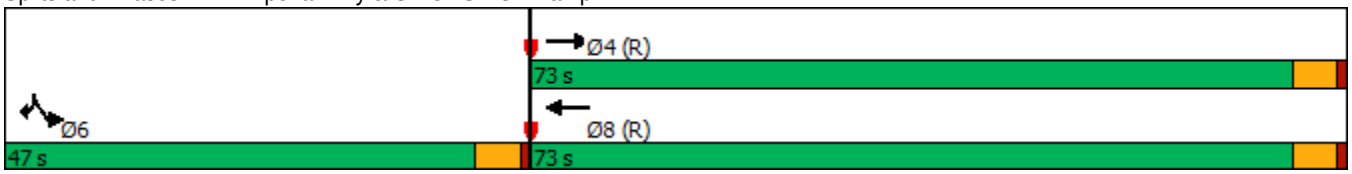
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		6.0	6.0		6.0	6.0
Minimum Split (s)		11.0	27.0		11.0	11.0
Total Split (s)		73.0	73.0		47.0	47.0
Total Split (%)		60.8%	60.8%		39.2%	39.2%
Maximum Green (s)		68.0	68.0		42.0	42.0
Yellow Time (s)		4.0	4.0		4.0	4.0
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		C-Max	C-Max		Max	Max
Walk Time (s)			7.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			5			
Act Effct Green (s)		68.0	68.0		42.0	42.0
Actuated g/C Ratio		0.57	0.57		0.35	0.35
v/c Ratio		0.62	0.87		0.74	0.80
Control Delay		18.6	16.9		38.8	48.3
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		18.6	16.9		38.8	48.3
LOS		B	B		D	D
Approach Delay		18.6	16.9		41.8	
Approach LOS		B	B		D	
Queue Length 50th (ft)		323	299		304	304
Queue Length 95th (ft)		371	319		381	#481
Internal Link Dist (ft)		340	282		786	
Turn Bay Length (ft)						260
Base Capacity (vph)		2881	2881		1180	505
Starvation Cap Reductn		0	0		0	0
Spillback Cap Reductn		0	0		0	0
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.62	0.87		0.74	0.80

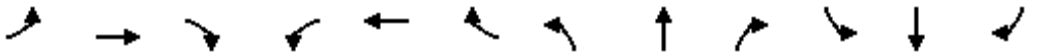
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 5 (4%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 23.1		Intersection LOS: C	
Intersection Capacity Utilization 79.9%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

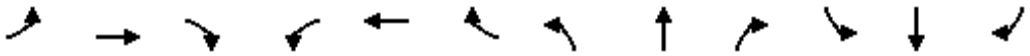
Queue shown is maximum after two cycles.

Splits and Phases: 1: Imperial Hwy & SR-57 SB Off-Ramp





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	213	1796	0	0	2340	47	1089	74	409	0	0	239
Future Volume (vph)	213	1796	0	0	2340	47	1089	74	409	0	0	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		350	0		0
Storage Lanes	1		0	0		0	2		1	0		2
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86	0.86	0.91	0.86	0.95	1.00	1.00	0.88
Frt					0.997			0.983	0.850			0.850
Flt Protected	0.950						0.950	0.966				
Satd. Flow (prot)	1770	5085	0	0	6389	0	3221	1521	1504	0	0	2787
Flt Permitted	0.950						0.950	0.966				
Satd. Flow (perm)	1770	5085	0	0	6389	0	3221	1521	1504	0	0	2787
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					4			6	55			64
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		192			285			643			368	
Travel Time (s)		4.4			6.5			14.6			8.4	
Peak Hour Factor	0.95	0.95	0.95	0.98	0.98	0.98	0.95	0.95	0.95	0.88	0.88	0.88
Adj. Flow (vph)	224	1891	0	0	2388	48	1146	78	431	0	0	272
Shared Lane Traffic (%)							26%		11%			
Lane Group Flow (vph)	224	1891	0	0	2436	0	848	423	384	0	0	272
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			1
Detector Template	Left	Thru			Thru		Left	Thru	Right			Right
Leading Detector (ft)	20	100			100		20	100	20			20
Trailing Detector (ft)	0	0			0		0	0	0			0
Detector 1 Position(ft)	0	0			0		0	0	0			0
Detector 1 Size(ft)	20	6			6		20	6	20			20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA		Split	NA	Prot			Over
Protected Phases	7	4			8		2	2	2			7
Permitted Phases												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4			8		2	2	2			7
Switch Phase												
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0	6.0			6.0
Minimum Split (s)	10.0	34.0			31.0		11.0	11.0	11.0			10.0
Total Split (s)	21.0	76.0			55.0		44.0	44.0	44.0			21.0
Total Split (%)	17.5%	63.3%			45.8%		36.7%	36.7%	36.7%			17.5%
Maximum Green (s)	17.0	71.0			50.0		39.0	39.0	39.0			17.0
Yellow Time (s)	3.0	4.0			4.0		4.0	4.0	4.0			3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0	1.0			1.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)	4.0	5.0			5.0		5.0	5.0	5.0			4.0
Lead/Lag	Lead				Lag							Lead
Lead-Lag Optimize?	Yes				Yes							Yes
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			3.0
Recall Mode	None	C-Max			C-Max		Max	Max	Max			None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		22.0			19.0							
Pedestrian Calls (#/hr)		5			5							
Act Effct Green (s)	16.7	71.0			50.3		39.0	39.0	39.0			16.7
Actuated g/C Ratio	0.14	0.59			0.42		0.32	0.32	0.32			0.14
v/c Ratio	0.91	0.63			0.91		0.81	0.85	0.73			0.61
Control Delay	85.8	17.5			12.5		44.4	54.5	40.0			43.4
Queue Delay	0.0	0.2			0.4		0.0	0.0	0.0			0.0
Total Delay	85.8	17.7			12.8		44.4	54.5	40.0			43.4
LOS	F	B			B		D	D	D			D
Approach Delay		24.9			12.8			46.0			43.4	
Approach LOS		C			B			D			D	
Queue Length 50th (ft)	172	292			139		329	350	238			86
Queue Length 95th (ft)	m#313	355			m144		414	#555	367			133
Internal Link Dist (ft)		112			205			563			288	
Turn Bay Length (ft)									350			
Base Capacity (vph)	250	3008			2678		1046	498	525			449
Starvation Cap Reductn	0	0			38		0	0	0			0
Spillback Cap Reductn	0	332			0		0	0	2			0
Storage Cap Reductn	0	0			0		0	0	0			0
Reduced v/c Ratio	0.90	0.71			0.92		0.81	0.85	0.73			0.61

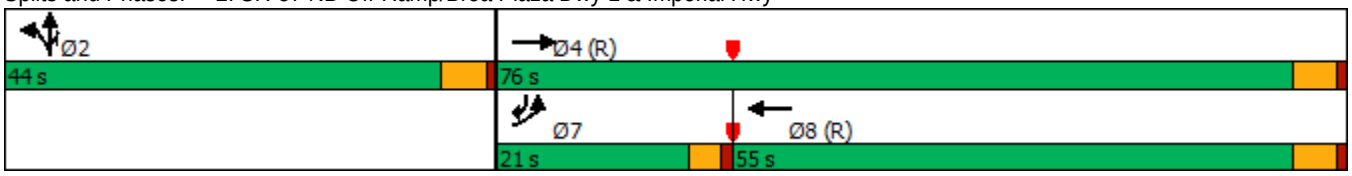
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 119 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 26.5		Intersection LOS: C	
Intersection Capacity Utilization 82.3%		ICU Level of Service E	
Analysis Period (min) 15			

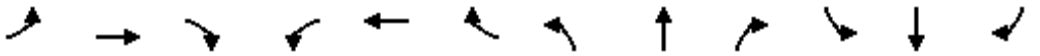
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

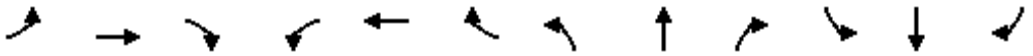
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: SR-57 NB Off-Ramp/Brea Plaza Dwy 1 & Imperial Hwy





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	874	286	283	1241	16	460	32	343	10	20	6
Future Volume (vph)	12	874	286	283	1241	16	460	32	343	10	20	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	220		0	225		230	100		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.963			0.998				0.850		0.966	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3408	0	3433	3532	0	3433	1863	1583	1770	1799	0
Flt Permitted	0.950			0.950			0.950			0.735		
Satd. Flow (perm)	1770	3408	0	3433	3532	0	3433	1863	1583	1369	1799	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40			1				55		7	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		664			723			1874			318	
Travel Time (s)		15.1			16.4			42.6			7.2	
Peak Hour Factor	0.99	0.99	0.99	0.94	0.94	0.94	0.94	0.94	0.94	0.85	0.85	0.85
Adj. Flow (vph)	12	883	289	301	1320	17	489	34	365	12	24	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	1172	0	301	1337	0	489	34	365	12	31	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8		5	2	3		6	
Permitted Phases									2	6		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	39.0		10.0	38.0		10.0	38.0	10.0	38.0	38.0	
Total Split (s)	10.0	45.0		15.0	50.0		22.0	60.0	15.0	38.0	38.0	
Total Split (%)	8.3%	37.5%		12.5%	41.7%		18.3%	50.0%	12.5%	31.7%	31.7%	
Maximum Green (s)	6.0	40.0		11.0	45.0		18.0	55.0	11.0	33.0	33.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	4.0	5.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lag		Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	Max	None	Max	Max	
Walk Time (s)		7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		27.0			26.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		5			5			5		5	5	
Act Effct Green (s)	6.0	40.0		11.0	51.0		18.0	55.0	71.0	33.0	33.0	
Actuated g/C Ratio	0.05	0.33		0.09	0.42		0.15	0.46	0.59	0.28	0.28	
v/c Ratio	0.14	1.01		0.96	0.89		0.95	0.04	0.38	0.03	0.06	
Control Delay	58.2	67.2		95.8	41.4		75.3	16.5	10.1	32.3	27.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	58.2	67.2		95.8	41.4		75.3	16.5	10.1	32.3	27.0	
LOS	E	E		F	D		E	B	B	C	C	
Approach Delay		67.1			51.4			46.2			28.5	
Approach LOS		E			D			D			C	
Queue Length 50th (ft)	9	~472		121	463		183	15	126	7	14	
Queue Length 95th (ft)	30	#627		#210	#711		#291	35	187	21	36	
Internal Link Dist (ft)		584			643			1794			238	
Turn Bay Length (ft)	150			220			225		230	100		
Base Capacity (vph)	88	1162		314	1501		514	853	959	376	499	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.14	1.01		0.96	0.89		0.95	0.04	0.38	0.03	0.06	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 81 (68%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 54.9		Intersection LOS: D	
Intersection Capacity Utilization 72.8%		ICU Level of Service C	
Analysis Period (min) 15			

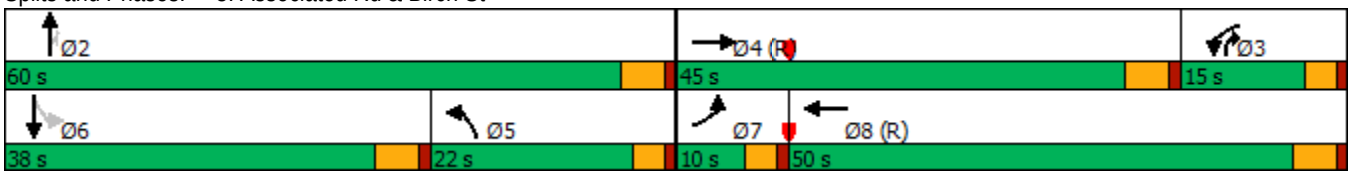
~ Volume exceeds capacity, queue is theoretically infinite.

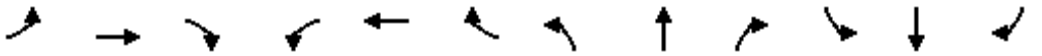
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

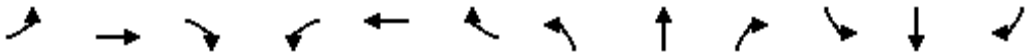
Queue shown is maximum after two cycles.

Splits and Phases: 3: Associated Rd & Birch St





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	9	45	27	4	35	39	526	37	16	549	8
Future Volume (vph)	19	9	45	27	4	35	39	526	37	16	549	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	110		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.917			0.928			0.990			0.998	
Flt Protected		0.987			0.980		0.950			0.950		
Satd. Flow (prot)	0	1686	0	0	1694	0	1770	3504	0	1770	3532	0
Flt Permitted		0.892			0.794		0.420			0.423		
Satd. Flow (perm)	0	1524	0	0	1373	0	782	3504	0	788	3532	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			43			9			2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		496			521			383			1874	
Travel Time (s)		11.3			11.8			8.7			42.6	
Peak Hour Factor	0.90	0.90	0.90	0.81	0.81	0.81	0.93	0.93	0.93	0.91	0.91	0.91
Adj. Flow (vph)	21	10	50	33	5	43	42	566	40	18	603	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	81	0	0	81	0	42	606	0	18	612	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

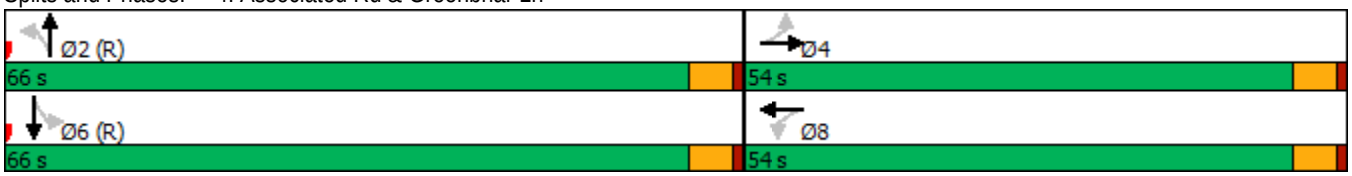


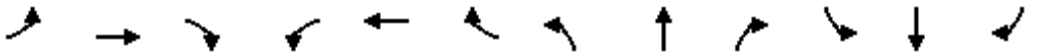
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	37.0	37.0		37.0	37.0		25.0	25.0		25.0	25.0	
Total Split (s)	54.0	54.0		54.0	54.0		66.0	66.0		66.0	66.0	
Total Split (%)	45.0%	45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Maximum Green (s)	49.0	49.0		49.0	49.0		61.0	61.0		61.0	61.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		12.7			12.7		100.5	100.5		100.5	100.5	
Actuated g/C Ratio		0.11			0.11		0.84	0.84		0.84	0.84	
v/c Ratio		0.39			0.44		0.06	0.21		0.03	0.21	
Control Delay		25.6			31.2		1.7	1.4		1.2	1.1	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		25.6			31.2		1.7	1.4		1.2	1.1	
LOS		C			C		A	A		A	A	
Approach Delay		25.6			31.2			1.4			1.1	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		23			29		2	12		0	1	
Queue Length 95th (ft)		58			54		m5	m40		m3	m55	
Internal Link Dist (ft)		416			441			303			1794	
Turn Bay Length (ft)							100			110		
Base Capacity (vph)		651			586		655	2936		660	2958	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.12			0.14		0.06	0.21		0.03	0.21	

Intersection Summary

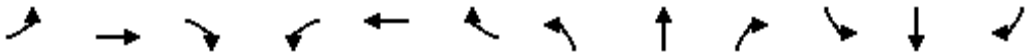
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 29 (24%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.44
Intersection Signal Delay: 4.3 Intersection LOS: A
Intersection Capacity Utilization 39.5% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Associated Rd & Greenbriar Ln





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	1817	139	172	1721	168	217	254	82	286	343	223
Future Volume (vph)	249	1817	139	172	1721	168	217	254	82	286	343	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	170		0	210		0
Storage Lanes	1		0	1		0	2		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.86	0.86	0.97	0.95	0.95	0.97	1.00	1.00
Frt		0.989			0.987			0.963				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5029	0	1770	6325	0	3433	3408	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5029	0	1770	6325	0	3433	3408	0	3433	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			19			37				269
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		267			331			892			545	
Travel Time (s)		6.1			7.5			20.3			12.4	
Peak Hour Factor	0.95	0.95	0.95	0.94	0.94	0.94	0.91	0.91	0.91	0.83	0.83	0.83
Adj. Flow (vph)	262	1913	146	183	1831	179	238	279	90	345	413	269
Shared Lane Traffic (%)												
Lane Group Flow (vph)	262	2059	0	183	2010	0	238	369	0	345	413	269
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	10.0	38.0		10.0	37.0		10.0	40.0		10.0	41.0	41.0
Total Split (s)	23.0	49.0		16.0	42.0		14.0	40.0		15.0	41.0	41.0
Total Split (%)	19.2%	40.8%		13.3%	35.0%		11.7%	33.3%		12.5%	34.2%	34.2%
Maximum Green (s)	19.0	44.0		12.0	37.0		10.0	35.0		11.0	36.0	36.0
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		26.0			25.0			28.0			29.0	29.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)	19.0	44.0		12.0	37.0		10.0	35.0		11.0	36.0	36.0
Actuated g/C Ratio	0.16	0.37		0.10	0.31		0.08	0.29		0.09	0.30	0.30
v/c Ratio	0.94	1.11		1.03	1.02		0.83	0.36		1.10	0.74	0.41
Control Delay	95.4	84.5		115.0	57.9		78.2	31.3		120.4	30.6	2.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	95.4	84.5		115.0	57.9		78.2	31.3		120.4	30.6	2.3
LOS	F	F		F	E		E	C		F	C	A
Approach Delay		85.7			62.7			49.7			53.4	
Approach LOS		F			E			D			D	
Queue Length 50th (ft)	196	~671		~141	~380		95	106		~159	196	5
Queue Length 95th (ft)	m#354	#747		#296	#542		#162	151		#228	281	0
Internal Link Dist (ft)		187			251			812			465	
Turn Bay Length (ft)				200			170			210		
Base Capacity (vph)	280	1850		177	1964		286	1020		314	558	663
Starvation Cap Reductn	0	21		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.94	1.13		1.03	1.02		0.83	0.36		1.10	0.74	0.41

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 68.5		Intersection LOS: E	
Intersection Capacity Utilization 87.0%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

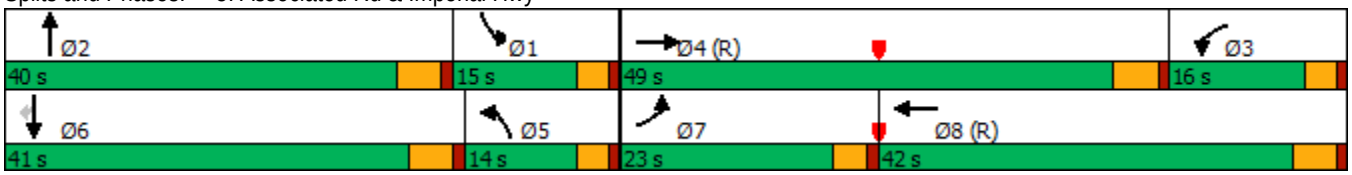
Queue shown is maximum after two cycles.

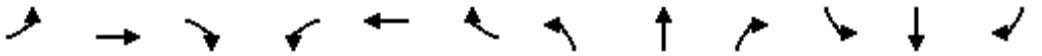
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

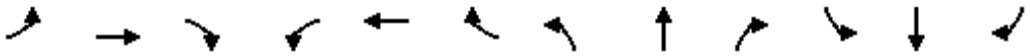
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Associated Rd & Imperial Hwy





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1826	281	226	1875	56	250	46	261	25	23	13
Future Volume (vph)	19	1826	281	226	1875	56	250	46	261	25	23	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		200	225		0	195		0	85		0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.996				0.850		0.945	
Flt Protected	0.950			0.950			0.950	0.967		0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5065	0	1681	1711	1583	1770	1760	0
Flt Permitted	0.950			0.950			0.950	0.967		0.950		
Satd. Flow (perm)	1770	5085	1583	1770	5065	0	1681	1711	1583	1770	1760	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			200		6				303		18	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1111			1324			560			455	
Travel Time (s)		25.3			30.1			12.7			10.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.86	0.86	0.86	0.65	0.65	0.65
Adj. Flow (vph)	20	1922	296	238	1974	59	291	53	303	38	35	20
Shared Lane Traffic (%)							41%					
Lane Group Flow (vph)	20	1922	296	238	2033	0	172	172	303	38	55	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4						2			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	33.0	33.0	10.0	26.0		27.0	27.0	27.0	11.0	11.0	
Total Split (s)	10.0	57.0	57.0	25.0	72.0		27.0	27.0	27.0	11.0	11.0	
Total Split (%)	8.3%	47.5%	47.5%	20.8%	60.0%		22.5%	22.5%	22.5%	9.2%	9.2%	
Maximum Green (s)	6.0	52.0	52.0	21.0	67.0		22.0	22.0	22.0	6.0	6.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		21.0	21.0		14.0		15.0	15.0	15.0			
Pedestrian Calls (#/hr)		5	5		5		5	5	5			
Act Effct Green (s)	6.0	53.7	53.7	19.3	73.0		22.0	22.0	22.0	6.0	6.0	
Actuated g/C Ratio	0.05	0.45	0.45	0.16	0.61		0.18	0.18	0.18	0.05	0.05	
v/c Ratio	0.23	0.85	0.36	0.84	0.66		0.56	0.55	0.56	0.43	0.52	
Control Delay	25.7	3.8	0.3	73.3	17.3		52.4	52.0	9.2	70.7	58.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	25.7	3.8	0.3	73.3	17.3		52.4	52.0	9.2	70.7	58.3	
LOS	C	A	A	E	B		D	D	A	E	E	
Approach Delay		3.5			23.2			32.1			63.4	
Approach LOS		A			C			C			E	
Queue Length 50th (ft)	13	86	1	178	318		128	128	0	29	28	
Queue Length 95th (ft)	m13	m69	m0	#297	462		196	195	63	47	47	
Internal Link Dist (ft)		1031			1244			480			375	
Turn Bay Length (ft)	140		200	225			195			85		
Base Capacity (vph)	88	2274	818	309	3083		308	313	537	88	105	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.23	0.85	0.36	0.77	0.66		0.56	0.55	0.56	0.43	0.52	

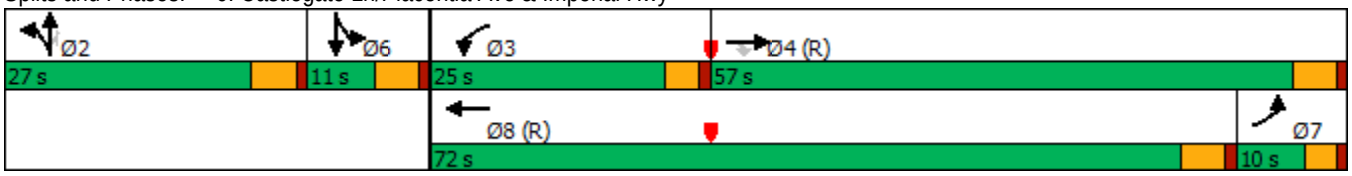
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 1 (1%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 16.6		Intersection LOS: B	
Intersection Capacity Utilization 74.3%		ICU Level of Service D	
Analysis Period (min) 15			

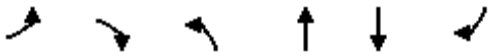
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

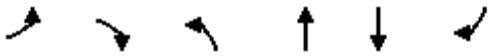
Splits and Phases: 6: Castlegate Ln/Placentia Ave & Imperial Hwy





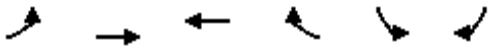
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	41	0	696	714	9
Future Volume (vph)	0	41	0	696	714	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.865			0.998	
Flt Protected						
Satd. Flow (prot)	0	1611	0	3539	3532	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	3539	3532	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	540			324	383	
Travel Time (s)	12.3			7.4	8.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	43	0	733	752	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	43	0	733	761	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.0%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	128	15	655	722	33
Future Volume (vph)	41	128	15	655	722	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	90			0
Storage Lanes	1	1	1			0
Taper Length (ft)	60		60			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.993	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	3539	3514	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	3539	3514	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	192			545	324	
Travel Time (s)	4.4			12.4	7.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	43	135	16	689	760	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	135	16	689	795	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 35.6%		ICU Level of Service A	
Analysis Period (min) 15			

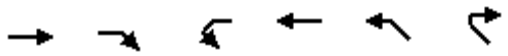


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2207	2126	36	0	49
Future Volume (vph)	0	2207	2126	36	0	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	0	1
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	0.86	0.86	0.86	1.00	1.00
Frt			0.997			0.865
Flt Protected						
Satd. Flow (prot)	0	6408	6389	0	0	1611
Flt Permitted						
Satd. Flow (perm)	0	6408	6389	0	0	1611
Link Speed (mph)		30	30		30	
Link Distance (ft)		285	267		252	
Travel Time (s)		6.5	6.1		5.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2323	2238	38	0	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2323	2276	0	0	52
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.4%		ICU Level of Service A	
Analysis Period (min) 15			

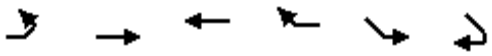
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	0	2009	371	0	2830	838	0	0	0	0	0	0
Future Volume (vph)	0	2009	371	0	2830	838	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	0		0	0		0	0		0
Storage Lanes	1		0	0		1	0		0	0		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.86	0.86	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977				0.850						
Flt Protected												
Satd. Flow (prot)	0	6260	0	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	6260	0	0	5085	1583	0	0	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		563			192			626			545	
Travel Time (s)		12.8			4.4			14.2			12.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2009	371	0	2830	838	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2380	0	0	2830	838	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	1701	1051	0	2990	0	0
Future Volume (vph)	1701	1051	0	2990	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	5085	1583	0	5085	0	0
Flt Permitted						
Satd. Flow (perm)	5085	1583	0	5085	0	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	355			420	859	
Travel Time (s)	8.1			9.5	19.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1701	1051	0	2990	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1701	1051	0	2990	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 68.4%		ICU Level of Service C	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	0	2354	2442	388	0	0
Future Volume (vph)	0	2354	2442	388	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	0.91	0.91	1.00	1.00
Frt			0.979			
Flt Protected						
Satd. Flow (prot)	0	5085	4979	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	5085	4979	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		362	563		627	
Travel Time (s)		8.2	12.8		14.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2354	2442	388	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2354	2830	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 79.9%		ICU Level of Service D	
Analysis Period (min) 15			

APPENDIX F-II

YEAR 2024 CUMULATIVE PLUS PROJECT
TRAFFIC CONDITIONS

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	12	0	510	611	3
Future Vol, veh/h	0	12	0	510	611	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	13	0	537	643	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	323	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	673	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	673	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	673	-	-
HCM Lane V/C Ratio	-	0.019	-	-
HCM Control Delay (s)	-	10.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

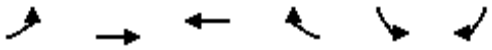
Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	25	12	493	607	16
Future Vol, veh/h	16	25	12	493	607	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	90	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	26	13	519	639	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	934	328	656	0	-	0
Stage 1	648	-	-	-	-	-
Stage 2	286	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	264	668	927	-	-	-
Stage 1	483	-	-	-	-	-
Stage 2	737	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	260	668	927	-	-	-
Mov Cap-2 Maneuver	260	-	-	-	-	-
Stage 1	476	-	-	-	-	-
Stage 2	737	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.2	0.2	0
HCM LOS	B		

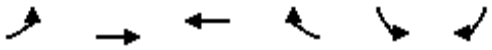
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	927	-	260	668	-	-
HCM Lane V/C Ratio	0.014	-	0.065	0.039	-	-
HCM Control Delay (s)	8.9	-	19.8	10.6	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	0.1	-	-



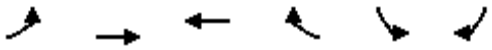
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2170	1909	10	0	9
Future Volume (Veh/h)	0	2170	1909	10	0	9
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	2284	2009	11	0	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		285	267			
pX, platoon unblocked	0.76				0.86	0.76
vC, conflicting volume	2020				2586	508
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	729				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	657				882	819

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	571	571	571	571	574	574	574	298	9
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	11	9
cSH	1700	1700	1700	1700	1700	1700	1700	1700	819
Volume to Capacity	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.18	0.01
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4
Lane LOS									A
Approach Delay (s)	0.0				0.0				9.4
Approach LOS									A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		



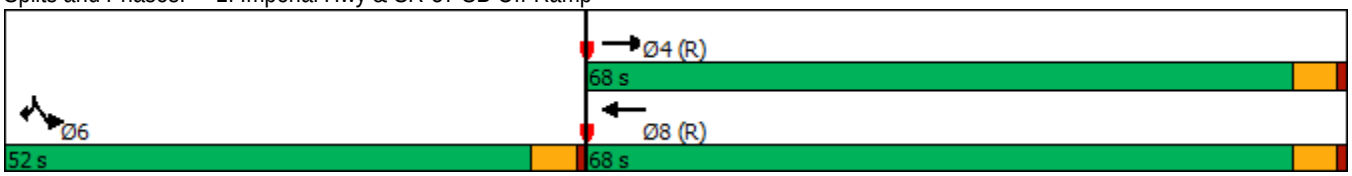
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1494	1949	0	580	501
Future Volume (vph)	0	1494	1949	0	580	501
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0	0	260
Storage Lanes	0			0	2	1
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.97	0.91
Frt					0.968	0.850
Flt Protected					0.962	
Satd. Flow (prot)	0	5085	5085	0	3365	1441
Flt Permitted					0.962	
Satd. Flow (perm)	0	5085	5085	0	3365	1441
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					5	5
Link Speed (mph)		30	30		30	
Link Distance (ft)		420	362		866	
Travel Time (s)		9.5	8.2		19.7	
Peak Hour Factor	0.93	0.93	0.94	0.94	0.88	0.88
Adj. Flow (vph)	0	1606	2073	0	659	569
Shared Lane Traffic (%)						32%
Lane Group Flow (vph)	0	1606	2073	0	841	387
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		24	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Prot
Protected Phases		4	8		6	6
Permitted Phases						

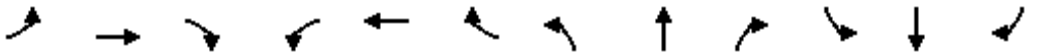


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		6.0	6.0		6.0	6.0
Minimum Split (s)		11.0	27.0		11.0	11.0
Total Split (s)		68.0	68.0		52.0	52.0
Total Split (%)		56.7%	56.7%		43.3%	43.3%
Maximum Green (s)		63.0	63.0		47.0	47.0
Yellow Time (s)		4.0	4.0		4.0	4.0
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		C-Max	C-Max		Max	Max
Walk Time (s)			7.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			5			
Act Effct Green (s)		63.0	63.0		47.0	47.0
Actuated g/C Ratio		0.52	0.52		0.39	0.39
v/c Ratio		0.60	0.78		0.64	0.68
Control Delay		21.0	17.3		32.1	37.3
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		21.0	17.3		32.1	37.3
LOS		C	B		C	D
Approach Delay		21.0	17.3		33.7	
Approach LOS		C	B		C	
Queue Length 50th (ft)		304	428		267	267
Queue Length 95th (ft)		352	519		325	382
Internal Link Dist (ft)		340	282		786	
Turn Bay Length (ft)						260
Base Capacity (vph)		2669	2669		1321	567
Starvation Cap Reductn		0	0		0	0
Spillback Cap Reductn		0	0		0	0
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.60	0.78		0.64	0.68

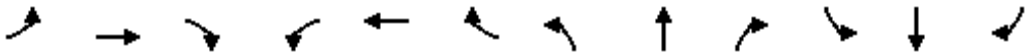
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 49 (41%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 22.6		Intersection LOS: C	
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Imperial Hwy & SR-57 SB Off-Ramp





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	1373	0	0	1482	14	1037	31	804	0	0	87
Future Volume (vph)	100	1373	0	0	1482	14	1037	31	804	0	0	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		350	0		0
Storage Lanes	1		0	0		0	2		1	0		2
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86	0.86	0.91	0.86	0.95	1.00	1.00	0.88
Frt					0.999			0.892	0.850			0.850
Flt Protected	0.950						0.950	0.989				
Satd. Flow (prot)	1770	5085	0	0	6401	0	3221	1413	1504	0	0	2787
Flt Permitted	0.950						0.950	0.989				
Satd. Flow (perm)	1770	5085	0	0	6401	0	3221	1413	1504	0	0	2787
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1			9	55			64
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		192			285			643			368	
Travel Time (s)		4.4			6.5			14.6			8.4	
Peak Hour Factor	0.88	0.88	0.88	0.89	0.89	0.89	0.91	0.91	0.91	0.68	0.68	0.68
Adj. Flow (vph)	114	1560	0	0	1665	16	1140	34	884	0	0	128
Shared Lane Traffic (%)							10%		43%			
Lane Group Flow (vph)	114	1560	0	0	1681	0	1026	528	504	0	0	128
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			1
Detector Template	Left	Thru			Thru		Left	Thru	Right			Right
Leading Detector (ft)	20	100			100		20	100	20			20
Trailing Detector (ft)	0	0			0		0	0	0			0
Detector 1 Position(ft)	0	0			0		0	0	0			0
Detector 1 Size(ft)	20	6			6		20	6	20			20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA		Split	NA	Prot			Over
Protected Phases	7	4			8		2	2	2			7
Permitted Phases												

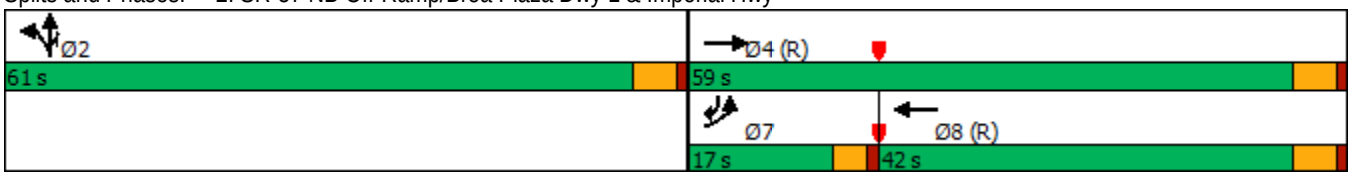


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4			8		2	2	2			7
Switch Phase												
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0	6.0			6.0
Minimum Split (s)	10.0	34.0			31.0		11.0	11.0	11.0			10.0
Total Split (s)	17.0	59.0			42.0		61.0	61.0	61.0			17.0
Total Split (%)	14.2%	49.2%			35.0%		50.8%	50.8%	50.8%			14.2%
Maximum Green (s)	13.0	54.0			37.0		56.0	56.0	56.0			13.0
Yellow Time (s)	3.0	4.0			4.0		4.0	4.0	4.0			3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0	1.0			1.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)	4.0	5.0			5.0		5.0	5.0	5.0			4.0
Lead/Lag	Lead				Lag							Lead
Lead-Lag Optimize?	Yes				Yes							Yes
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			3.0
Recall Mode	None	C-Max			C-Max		Max	Max	Max			None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		22.0			19.0							
Pedestrian Calls (#/hr)		5			5							
Act Effct Green (s)	11.6	54.0			38.4		56.0	56.0	56.0			11.6
Actuated g/C Ratio	0.10	0.45			0.32		0.47	0.47	0.47			0.10
v/c Ratio	0.67	0.68			0.82		0.68	0.80	0.69			0.39
Control Delay	62.7	27.8			15.7		28.0	37.3	28.1			29.6
Queue Delay	0.0	0.1			0.0		0.0	0.0	0.0			0.0
Total Delay	62.7	27.9			15.7		28.0	37.3	28.1			29.6
LOS	E	C			B		C	D	C			C
Approach Delay		30.3			15.7			30.4			29.6	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	88	354			77		333	388	283			26
Queue Length 95th (ft)	m146	413			m125		414	575	421			38
Internal Link Dist (ft)		112			205			563			288	
Turn Bay Length (ft)									350			
Base Capacity (vph)	191	2288			2050		1503	664	731			358
Starvation Cap Reductn	0	0			0		0	0	0			0
Spillback Cap Reductn	0	96			0		0	0	1			0
Storage Cap Reductn	0	0			0		0	0	0			0
Reduced v/c Ratio	0.60	0.71			0.82		0.68	0.80	0.69			0.36

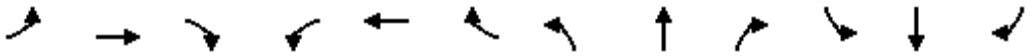
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 10 (8%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 25.9		Intersection LOS: C	
Intersection Capacity Utilization 68.1%		ICU Level of Service C	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: SR-57 NB Off-Ramp/Brea Plaza Dwy 1 & Imperial Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	937	306	344	763	10	239	6	311	55	29	8
Future Volume (vph)	2	937	306	344	763	10	239	6	311	55	29	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	220		0	225		230	100		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.963			0.998				0.850		0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3408	0	3433	3532	0	3433	1863	1583	1770	1801	0
Flt Permitted	0.950			0.950			0.950			0.753		
Satd. Flow (perm)	1770	3408	0	3433	3532	0	3433	1863	1583	1403	1801	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43			1				55		11	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		664			723			1874			318	
Travel Time (s)		15.1			16.4			42.6			7.2	
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.82	0.82	0.82	0.74	0.74	0.74
Adj. Flow (vph)	2	1090	356	378	838	11	291	7	379	74	39	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	1446	0	378	849	0	291	7	379	74	50	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8		5	2	3		6	
Permitted Phases									2	6		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	39.0		10.0	38.0		10.0	38.0	10.0	38.0	38.0	
Total Split (s)	10.0	51.0		17.0	58.0		14.0	52.0	17.0	38.0	38.0	
Total Split (%)	8.3%	42.5%		14.2%	48.3%		11.7%	43.3%	14.2%	31.7%	31.7%	
Maximum Green (s)	6.0	46.0		13.0	53.0		10.0	47.0	13.0	33.0	33.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	4.0	5.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lag		Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	Max	None	Max	Max	
Walk Time (s)		7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		27.0			26.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		5			5			5		5	5	
Act Effct Green (s)	6.0	46.0		13.0	61.0		10.0	47.0	65.0	33.0	33.0	
Actuated g/C Ratio	0.05	0.38		0.11	0.51		0.08	0.39	0.54	0.28	0.28	
v/c Ratio	0.02	1.09		1.02	0.47		1.02	0.01	0.43	0.19	0.10	
Control Delay	55.0	86.2		104.4	20.7		104.1	19.8	11.3	35.0	27.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	55.0	86.2		104.4	20.7		104.1	19.8	11.3	35.0	27.4	
LOS	D	F		F	C		F	B	B	C	C	
Approach Delay		86.1			46.5			51.3			31.9	
Approach LOS		F			D			D			C	
Queue Length 50th (ft)	2	~651		~156	208		~111	3	98	44	22	
Queue Length 95th (ft)	10	#731		#259	311		#180	10	170	68	43	
Internal Link Dist (ft)		584			643			1794			238	
Turn Bay Length (ft)	150			220			225		230	100		
Base Capacity (vph)	88	1332		371	1795		286	729	882	385	503	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.02	1.09		1.02	0.47		1.02	0.01	0.43	0.19	0.10	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 77 (64%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay: 63.4		Intersection LOS: E	
Intersection Capacity Utilization 71.6%		ICU Level of Service C	
Analysis Period (min) 15			

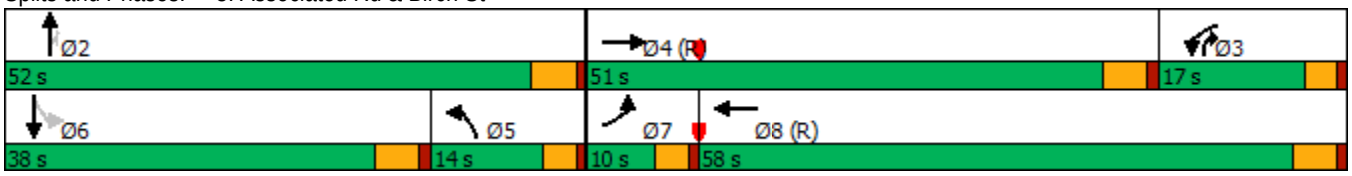
~ Volume exceeds capacity, queue is theoretically infinite.

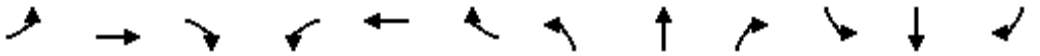
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

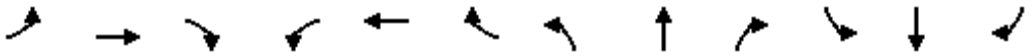
Queue shown is maximum after two cycles.

Splits and Phases: 3: Associated Rd & Birch St





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	1	42	42	8	40	110	399	15	19	459	20
Future Volume (vph)	7	1	42	42	8	40	110	399	15	19	459	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	110		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.885			0.940			0.995			0.994	
Flt Protected		0.993			0.977		0.950			0.950		
Satd. Flow (prot)	0	1637	0	0	1711	0	1770	3522	0	1770	3518	0
Flt Permitted		0.955			0.807		0.465			0.466		
Satd. Flow (perm)	0	1574	0	0	1413	0	866	3522	0	868	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		63			39			5			6	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		496			521			383			1874	
Travel Time (s)		11.3			11.8			8.7			42.6	
Peak Hour Factor	0.67	0.67	0.67	0.61	0.61	0.61	0.82	0.82	0.82	0.94	0.94	0.94
Adj. Flow (vph)	10	1	63	69	13	66	134	487	18	20	488	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	74	0	0	148	0	134	505	0	20	509	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

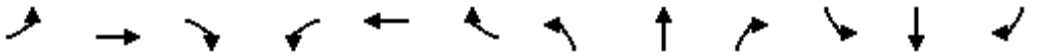


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	37.0	37.0		37.0	37.0		25.0	25.0		25.0	25.0	
Total Split (s)	50.0	50.0		50.0	50.0		70.0	70.0		70.0	70.0	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	45.0	45.0		45.0	45.0		65.0	65.0		65.0	65.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		16.6			16.6		93.4	93.4		93.4	93.4	
Actuated g/C Ratio		0.14			0.14		0.78	0.78		0.78	0.78	
v/c Ratio		0.27			0.65		0.20	0.18		0.03	0.19	
Control Delay		14.7			46.9		3.0	2.2		1.0	0.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		14.7			46.9		3.0	2.2		1.0	0.7	
LOS		B			D		A	A		A	A	
Approach Delay		14.7			46.9			2.3			0.7	
Approach LOS		B			D			A			A	
Queue Length 50th (ft)		8			82		10	19		0	1	
Queue Length 95th (ft)		23			74		m20	32		m2	m32	
Internal Link Dist (ft)		416			441			303			1794	
Turn Bay Length (ft)							100			110		
Base Capacity (vph)		629			554		673	2741		675	2738	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.12			0.27		0.20	0.18		0.03	0.19	

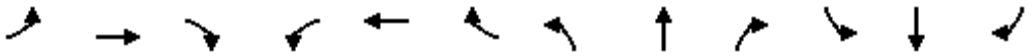
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 21 (18%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 7.1		Intersection LOS: A	
Intersection Capacity Utilization 43.8%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Associated Rd & Greenbriar Ln



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	1859	101	91	1616	94	148	205	70	155	325	154
Future Volume (vph)	207	1859	101	91	1616	94	148	205	70	155	325	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	170		0	210		0
Storage Lanes	1		0	1		0	2		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.86	0.86	0.97	0.95	0.95	0.97	1.00	1.00
Frt		0.992			0.992			0.962				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5045	0	1770	6357	0	3433	3405	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5045	0	1770	6357	0	3433	3405	0	3433	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			11			40				166
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		267			331			892			545	
Travel Time (s)		6.1			7.5			20.3			12.4	
Peak Hour Factor	0.91	0.91	0.91	0.96	0.96	0.96	0.89	0.89	0.89	0.93	0.93	0.93
Adj. Flow (vph)	227	2043	111	95	1683	98	166	230	79	167	349	166
Shared Lane Traffic (%)												
Lane Group Flow (vph)	227	2154	0	95	1781	0	166	309	0	167	349	166
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	10.0	38.0		10.0	37.0		10.0	40.0		10.0	41.0	41.0
Total Split (s)	23.0	58.0		11.0	46.0		10.0	40.0		11.0	41.0	41.0
Total Split (%)	19.2%	48.3%		9.2%	38.3%		8.3%	33.3%		9.2%	34.2%	34.2%
Maximum Green (s)	19.0	53.0		7.0	41.0		6.0	35.0		7.0	36.0	36.0
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		26.0			25.0			28.0			29.0	29.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)	18.0	53.0		7.0	42.0		6.0	35.0		7.0	36.0	36.0
Actuated g/C Ratio	0.15	0.44		0.06	0.35		0.05	0.29		0.06	0.30	0.30
v/c Ratio	0.86	0.96		0.92	0.80		0.97	0.30		0.83	0.63	0.28
Control Delay	81.0	35.5		111.2	28.5		118.7	29.5		73.8	23.5	2.5
Queue Delay	0.0	5.3		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	81.0	40.7		111.2	28.5		118.7	29.5		73.8	23.5	2.5
LOS	F	D		F	C		F	C		E	C	A
Approach Delay		44.6			32.7			60.7			30.7	
Approach LOS		D			C			E			C	
Queue Length 50th (ft)	183	378		75	205		67	84		69	151	3
Queue Length 95th (ft)	m#296	#689		#181	221		#137	122		#131	225	31
Internal Link Dist (ft)		187			251			812			465	
Turn Bay Length (ft)				200			170			210		
Base Capacity (vph)	280	2233		103	2232		171	1021		200	558	591
Starvation Cap Reductn	0	76		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.81	1.00		0.92	0.80		0.97	0.30		0.83	0.63	0.28

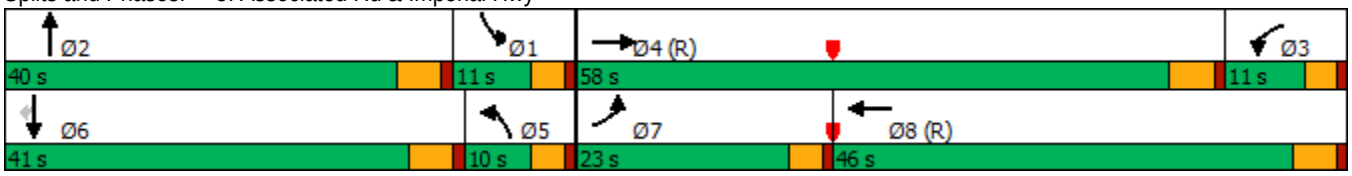
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 40.1		Intersection LOS: D	
Intersection Capacity Utilization 80.3%		ICU Level of Service D	
Analysis Period (min) 15			

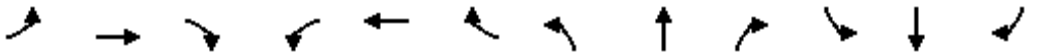
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

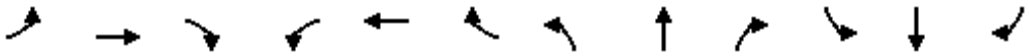
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Associated Rd & Imperial Hwy





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1823	359	172	1484	32	179	11	142	25	28	13
Future Volume (vph)	12	1823	359	172	1484	32	179	11	142	25	28	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		200	225		0	195		0	85		0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.997				0.850		0.953	
Flt Protected	0.950			0.950			0.950	0.958		0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5070	0	1681	1695	1583	1770	1775	0
Flt Permitted	0.950			0.950			0.950	0.958		0.950		
Satd. Flow (perm)	1770	5085	1583	1770	5070	0	1681	1695	1583	1770	1775	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			264		4				171		14	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1111			1324			560			455	
Travel Time (s)		25.3			30.1			12.7			10.3	
Peak Hour Factor	0.95	0.95	0.95	0.89	0.89	0.89	0.83	0.83	0.83	0.67	0.67	0.67
Adj. Flow (vph)	13	1919	378	193	1667	36	216	13	171	37	42	19
Shared Lane Traffic (%)							47%					
Lane Group Flow (vph)	13	1919	378	193	1703	0	114	115	171	37	61	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4						2			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	33.0	33.0	10.0	26.0		27.0	27.0	27.0	11.0	11.0	
Total Split (s)	10.0	59.0	59.0	23.0	72.0		27.0	27.0	27.0	11.0	11.0	
Total Split (%)	8.3%	49.2%	49.2%	19.2%	60.0%		22.5%	22.5%	22.5%	9.2%	9.2%	
Maximum Green (s)	6.0	54.0	54.0	19.0	67.0		22.0	22.0	22.0	6.0	6.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		21.0	21.0		14.0		15.0	15.0	15.0			
Pedestrian Calls (#/hr)		5	5		5		5	5	5			
Act Effct Green (s)	6.0	56.2	56.2	16.8	73.0		22.0	22.0	22.0	6.0	6.0	
Actuated g/C Ratio	0.05	0.47	0.47	0.14	0.61		0.18	0.18	0.18	0.05	0.05	
v/c Ratio	0.15	0.81	0.43	0.78	0.55		0.37	0.37	0.40	0.42	0.60	
Control Delay	33.1	9.5	1.2	70.8	15.3		47.0	47.0	9.2	70.0	68.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	33.1	9.5	1.2	70.8	15.3		47.0	47.0	9.2	70.0	68.3	
LOS	C	A	A	E	B		D	D	A	E	E	
Approach Delay		8.2			20.9			30.8			68.9	
Approach LOS		A			C			C			E	
Queue Length 50th (ft)	9	117	0	144	240		82	83	0	28	36	
Queue Length 95th (ft)	m9	m127	m0	#225	346		130	131	46	48	58	
Internal Link Dist (ft)		1031			1244			480			375	
Turn Bay Length (ft)	140		200	225			195			85		
Base Capacity (vph)	88	2380	881	280	3085		308	310	429	88	102	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.15	0.81	0.43	0.69	0.55		0.37	0.37	0.40	0.42	0.60	

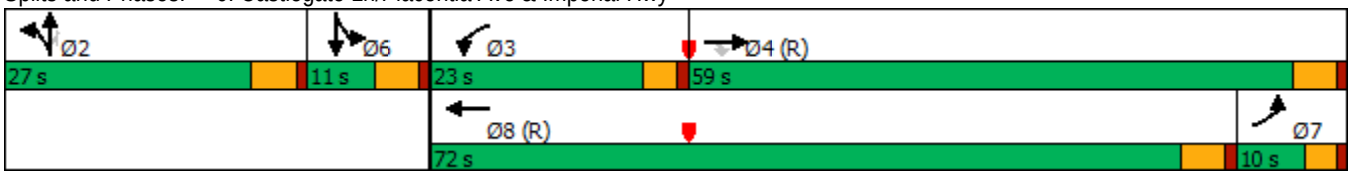
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 3 (3%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 68.3%		ICU Level of Service C	
Analysis Period (min) 15			

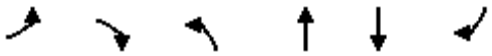
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

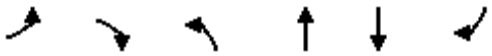
Splits and Phases: 6: Castlegate Ln/Placentia Ave & Imperial Hwy





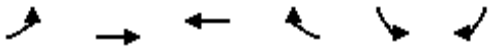
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	12	0	510	611	3
Future Volume (vph)	0	12	0	510	611	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.865			0.999	
Flt Protected						
Satd. Flow (prot)	0	1611	0	3539	3536	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	3539	3536	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	540			324	383	
Travel Time (s)	12.3			7.4	8.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	13	0	537	643	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	13	0	537	646	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.0%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	16	25	12	493	607	16
Future Volume (vph)	16	25	12	493	607	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	90			0
Storage Lanes	1	1	1			0
Taper Length (ft)	60		60			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.996	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	3539	3525	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	3539	3525	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	192			545	324	
Travel Time (s)	4.4			12.4	7.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	17	26	13	519	639	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	26	13	519	656	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.3%		ICU Level of Service A	
Analysis Period (min) 15			

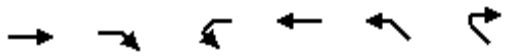


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2170	1909	10	0	9
Future Volume (vph)	0	2170	1909	10	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	0	1
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	0.86	0.86	0.86	1.00	1.00
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	6408	6401	0	0	1611
Flt Permitted						
Satd. Flow (perm)	0	6408	6401	0	0	1611
Link Speed (mph)		30	30		30	
Link Distance (ft)		285	267		252	
Travel Time (s)		6.5	6.1		5.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2284	2009	11	0	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2284	2020	0	0	9
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.8%		ICU Level of Service A	
Analysis Period (min) 15			

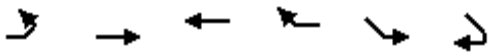
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	0	1473	548	0	2138	468	0	0	0	0	0	0
Future Volume (vph)	0	1473	548	0	2138	468	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	0		0	0		0	0		0
Storage Lanes	1		0	0		1	0		0	0		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.86	0.86	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.959				0.850						
Flt Protected												
Satd. Flow (prot)	0	6145	0	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	6145	0	0	5085	1583	0	0	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		563			192			626			545	
Travel Time (s)		12.8			4.4			14.2			12.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1473	548	0	2138	468	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2021	0	0	2138	468	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.6%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	1494	796	0	2450	0	0
Future Volume (vph)	1494	796	0	2450	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	5085	1583	0	5085	0	0
Flt Permitted						
Satd. Flow (perm)	5085	1583	0	5085	0	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	355			420	859	
Travel Time (s)	8.1			9.5	19.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1494	796	0	2450	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1494	796	0	2450	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.6%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	0	2074	1949	189	0	0
Future Volume (vph)	0	2074	1949	189	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	0.91	0.91	1.00	1.00
Frt			0.987			
Flt Protected						
Satd. Flow (prot)	0	5085	5019	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	5085	5019	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		362	563		627	
Travel Time (s)		8.2	12.8		14.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2074	1949	189	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2074	2138	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	0	704	774	5
Future Vol, veh/h	0	5	0	704	774	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	5	0	741	815	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	410	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	591	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	591	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	591	-	-
HCM Lane V/C Ratio	-	0.009	-	-
HCM Control Delay (s)	-	11.1	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

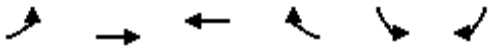
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	36	121	18	668	745	34
Future Vol, veh/h	36	121	18	668	745	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	90	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	127	19	703	784	36

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1192	410	820	0	-	0
Stage 1	802	-	-	-	-	-
Stage 2	390	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	180	591	805	-	-	-
Stage 1	402	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	176	591	805	-	-	-
Mov Cap-2 Maneuver	176	-	-	-	-	-
Stage 1	392	-	-	-	-	-
Stage 2	653	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17	0.3	0
HCM LOS	C		

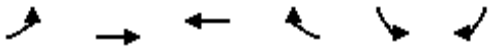
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	805	-	176	591	-	-
HCM Lane V/C Ratio	0.024	-	0.215	0.216	-	-
HCM Control Delay (s)	9.6	-	31	12.8	-	-
HCM Lane LOS	A	-	D	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.8	0.8	-	-



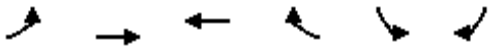
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2221	2149	31	0	44
Future Volume (Veh/h)	0	2221	2149	31	0	44
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	2338	2262	33	0	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		285	267			
pX, platoon unblocked	0.71				0.82	0.71
vC, conflicting volume	2295				2863	582
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	750				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	94
cM capacity (veh/h)	603				836	765

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	584	584	584	584	646	646	646	356	46
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	33	46
cSH	1700	1700	1700	1700	1700	1700	1700	1700	765
Volume to Capacity	0.34	0.34	0.34	0.34	0.38	0.38	0.38	0.21	0.06
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0
Lane LOS									B
Approach Delay (s)	0.0				0.0				10.0
Approach LOS									B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1682	2424	0	651	548
Future Volume (vph)	0	1682	2424	0	651	548
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0	0	260
Storage Lanes	0			0	2	1
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.97	0.91
Frt					0.969	0.850
Flt Protected					0.962	
Satd. Flow (prot)	0	5085	5085	0	3369	1441
Flt Permitted					0.962	
Satd. Flow (perm)	0	5085	5085	0	3369	1441
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					2	2
Link Speed (mph)		30	30		30	
Link Distance (ft)		420	362		866	
Travel Time (s)		9.5	8.2		19.7	
Peak Hour Factor	0.95	0.95	0.97	0.97	0.94	0.94
Adj. Flow (vph)	0	1771	2499	0	693	583
Shared Lane Traffic (%)						31%
Lane Group Flow (vph)	0	1771	2499	0	874	402
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		24	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Prot
Protected Phases		4	8		6	6
Permitted Phases						



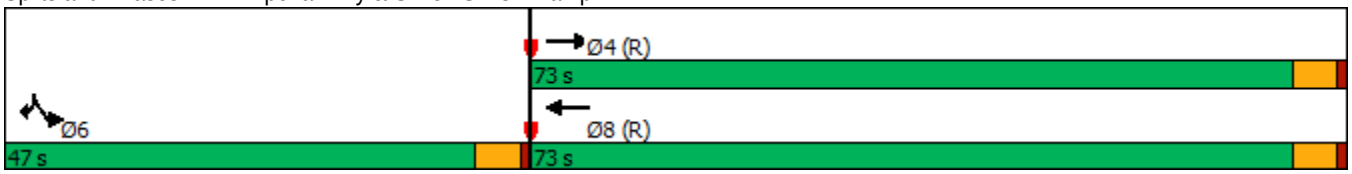
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		6.0	6.0		6.0	6.0
Minimum Split (s)		11.0	27.0		11.0	11.0
Total Split (s)		73.0	73.0		47.0	47.0
Total Split (%)		60.8%	60.8%		39.2%	39.2%
Maximum Green (s)		68.0	68.0		42.0	42.0
Yellow Time (s)		4.0	4.0		4.0	4.0
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		C-Max	C-Max		Max	Max
Walk Time (s)			7.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			5			
Act Effct Green (s)		68.0	68.0		42.0	42.0
Actuated g/C Ratio		0.57	0.57		0.35	0.35
v/c Ratio		0.61	0.87		0.74	0.80
Control Delay		18.5	16.6		38.7	48.3
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		18.5	16.6		38.7	48.3
LOS		B	B		D	D
Approach Delay		18.5	16.6		41.7	
Approach LOS		B	B		D	
Queue Length 50th (ft)		317	288		303	304
Queue Length 95th (ft)		365	309		379	#481
Internal Link Dist (ft)		340	282		786	
Turn Bay Length (ft)						260
Base Capacity (vph)		2881	2881		1180	505
Starvation Cap Reductn		0	0		0	0
Spillback Cap Reductn		0	0		0	0
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.61	0.87		0.74	0.80

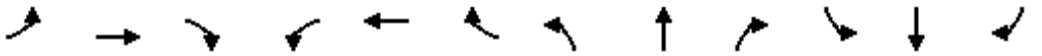
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 5 (4%), Referenced to phase 4:EBT and 8:WBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 23.0	Intersection LOS: C
Intersection Capacity Utilization 79.5%	ICU Level of Service D
Analysis Period (min) 15	

95th percentile volume exceeds capacity, queue may be longer.

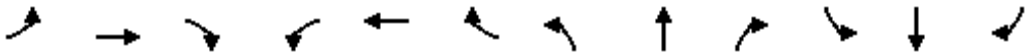
Queue shown is maximum after two cycles.

Splits and Phases: 1: Imperial Hwy & SR-57 SB Off-Ramp





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	1805	0	0	2363	38	1090	64	413	0	0	192
Future Volume (vph)	182	1805	0	0	2363	38	1090	64	413	0	0	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		350	0		0
Storage Lanes	1		0	0		0	2		1	0		2
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86	0.86	0.91	0.86	0.95	1.00	1.00	0.88
Frt					0.998			0.980	0.850			0.850
Flt Protected	0.950						0.950	0.966				
Satd. Flow (prot)	1770	5085	0	0	6395	0	3221	1517	1504	0	0	2787
Flt Permitted	0.950						0.950	0.966				
Satd. Flow (perm)	1770	5085	0	0	6395	0	3221	1517	1504	0	0	2787
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					3			7	55			64
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		192			285			643			368	
Travel Time (s)		4.4			6.5			14.6			8.4	
Peak Hour Factor	0.95	0.95	0.95	0.98	0.98	0.98	0.95	0.95	0.95	0.88	0.88	0.88
Adj. Flow (vph)	192	1900	0	0	2411	39	1147	67	435	0	0	218
Shared Lane Traffic (%)							26%		13%			
Lane Group Flow (vph)	192	1900	0	0	2450	0	849	422	378	0	0	218
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			1
Detector Template	Left	Thru			Thru		Left	Thru	Right			Right
Leading Detector (ft)	20	100			100		20	100	20			20
Trailing Detector (ft)	0	0			0		0	0	0			0
Detector 1 Position(ft)	0	0			0		0	0	0			0
Detector 1 Size(ft)	20	6			6		20	6	20			20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA		Split	NA	Prot			Over
Protected Phases	7	4			8		2	2	2			7
Permitted Phases												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4			8		2	2	2			7
Switch Phase												
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0	6.0			6.0
Minimum Split (s)	10.0	34.0			31.0		11.0	11.0	11.0			10.0
Total Split (s)	21.0	76.0			55.0		44.0	44.0	44.0			21.0
Total Split (%)	17.5%	63.3%			45.8%		36.7%	36.7%	36.7%			17.5%
Maximum Green (s)	17.0	71.0			50.0		39.0	39.0	39.0			17.0
Yellow Time (s)	3.0	4.0			4.0		4.0	4.0	4.0			3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0	1.0			1.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)	4.0	5.0			5.0		5.0	5.0	5.0			4.0
Lead/Lag	Lead				Lag							Lead
Lead-Lag Optimize?	Yes				Yes							Yes
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			3.0
Recall Mode	None	C-Max			C-Max		Max	Max	Max			None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		22.0			19.0							
Pedestrian Calls (#/hr)		5			5							
Act Effct Green (s)	15.9	71.0			51.1		39.0	39.0	39.0			15.9
Actuated g/C Ratio	0.13	0.59			0.43		0.32	0.32	0.32			0.13
v/c Ratio	0.82	0.63			0.90		0.81	0.85	0.72			0.51
Control Delay	75.3	17.3			12.2		44.5	54.4	39.3			38.2
Queue Delay	0.0	0.2			0.3		0.0	0.0	0.1			0.0
Total Delay	75.3	17.5			12.5		44.5	54.4	39.3			38.2
LOS	E	B			B		D	D	D			D
Approach Delay		22.8			12.5			45.8			38.2	
Approach LOS		C			B			D			D	
Queue Length 50th (ft)	144	291			143		330	347	233			62
Queue Length 95th (ft)	m#248	355			m147		415	#553	358			103
Internal Link Dist (ft)		112			205			563			288	
Turn Bay Length (ft)									350			
Base Capacity (vph)	250	3008			2723		1046	497	525			449
Starvation Cap Reductn	0	0			38		0	0	0			0
Spillback Cap Reductn	0	336			0		0	0	3			0
Storage Cap Reductn	0	0			0		0	0	0			0
Reduced v/c Ratio	0.77	0.71			0.91		0.81	0.85	0.72			0.49

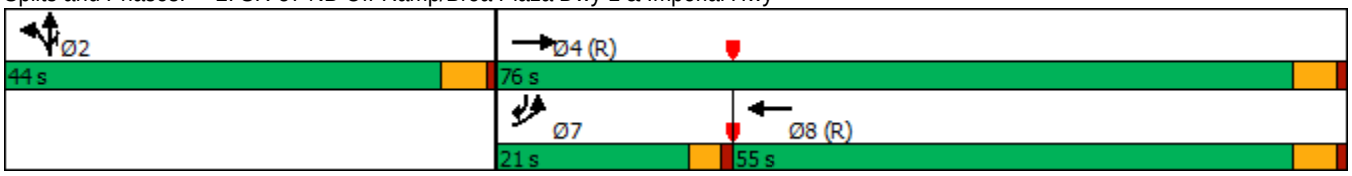
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 119 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 25.3		Intersection LOS: C	
Intersection Capacity Utilization 80.7%		ICU Level of Service D	
Analysis Period (min) 15			

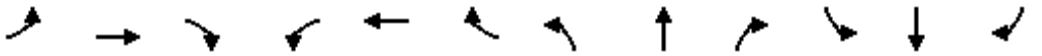
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

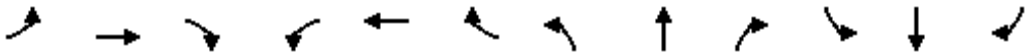
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: SR-57 NB Off-Ramp/Brea Plaza Dwy 1 & Imperial Hwy





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	874	286	283	1241	16	460	32	342	10	20	6
Future Volume (vph)	12	874	286	283	1241	16	460	32	342	10	20	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	220		0	225		230	100		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.963			0.998				0.850		0.966	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3408	0	3433	3532	0	3433	1863	1583	1770	1799	0
Flt Permitted	0.950			0.950			0.950			0.735		
Satd. Flow (perm)	1770	3408	0	3433	3532	0	3433	1863	1583	1369	1799	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40			1				55		7	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		664			723			1874			318	
Travel Time (s)		15.1			16.4			42.6			7.2	
Peak Hour Factor	0.99	0.99	0.99	0.94	0.94	0.94	0.94	0.94	0.94	0.85	0.85	0.85
Adj. Flow (vph)	12	883	289	301	1320	17	489	34	364	12	24	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	1172	0	301	1337	0	489	34	364	12	31	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8		5	2	3		6	
Permitted Phases									2	6		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	39.0		10.0	38.0		10.0	38.0	10.0	38.0	38.0	
Total Split (s)	10.0	45.0		15.0	50.0		22.0	60.0	15.0	38.0	38.0	
Total Split (%)	8.3%	37.5%		12.5%	41.7%		18.3%	50.0%	12.5%	31.7%	31.7%	
Maximum Green (s)	6.0	40.0		11.0	45.0		18.0	55.0	11.0	33.0	33.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	4.0	5.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lag		Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	Max	None	Max	Max	
Walk Time (s)		7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		27.0			26.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		5			5			5		5	5	
Act Effct Green (s)	6.0	40.0		11.0	51.0		18.0	55.0	71.0	33.0	33.0	
Actuated g/C Ratio	0.05	0.33		0.09	0.42		0.15	0.46	0.59	0.28	0.28	
v/c Ratio	0.14	1.01		0.96	0.89		0.95	0.04	0.38	0.03	0.06	
Control Delay	58.2	67.2		95.8	41.4		74.9	16.4	10.0	32.3	27.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	58.2	67.2		95.8	41.4		74.9	16.4	10.0	32.3	27.0	
LOS	E	E		F	D		E	B	B	C	C	
Approach Delay		67.1			51.4			46.1			28.5	
Approach LOS		E			D			D			C	
Queue Length 50th (ft)	9	~472		121	463		181	15	123	7	14	
Queue Length 95th (ft)	30	#627		#210	#711		#290	34	184	21	36	
Internal Link Dist (ft)		584			643			1794			238	
Turn Bay Length (ft)	150			220			225		230	100		
Base Capacity (vph)	88	1162		314	1501		514	853	959	376	499	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.14	1.01		0.96	0.89		0.95	0.04	0.38	0.03	0.06	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 81 (68%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 54.8		Intersection LOS: D	
Intersection Capacity Utilization 72.8%		ICU Level of Service C	
Analysis Period (min) 15			

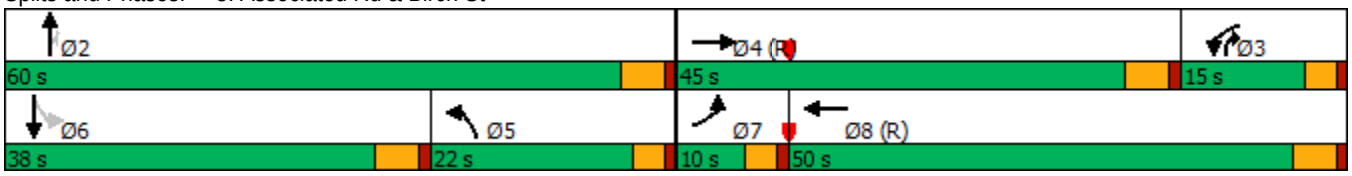
~ Volume exceeds capacity, queue is theoretically infinite.

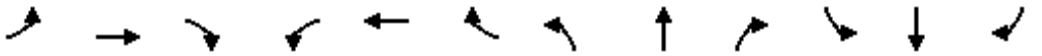
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

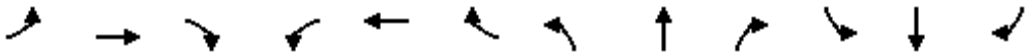
Queue shown is maximum after two cycles.

Splits and Phases: 3: Associated Rd & Birch St





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	9	102	27	4	35	51	522	37	16	547	9
Future Volume (vph)	24	9	102	27	4	35	51	522	37	16	547	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	110		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.898			0.928			0.990			0.998	
Flt Protected		0.991			0.980		0.950			0.950		
Satd. Flow (prot)	0	1658	0	0	1694	0	1770	3504	0	1770	3532	0
Flt Permitted		0.923			0.577		0.421			0.425		
Satd. Flow (perm)	0	1544	0	0	997	0	784	3504	0	792	3532	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		113			43			9			2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		496			521			383			1874	
Travel Time (s)		11.3			11.8			8.7			42.6	
Peak Hour Factor	0.90	0.90	0.90	0.81	0.81	0.81	0.93	0.93	0.93	0.91	0.91	0.91
Adj. Flow (vph)	27	10	113	33	5	43	55	561	40	18	601	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	150	0	0	81	0	55	601	0	18	611	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

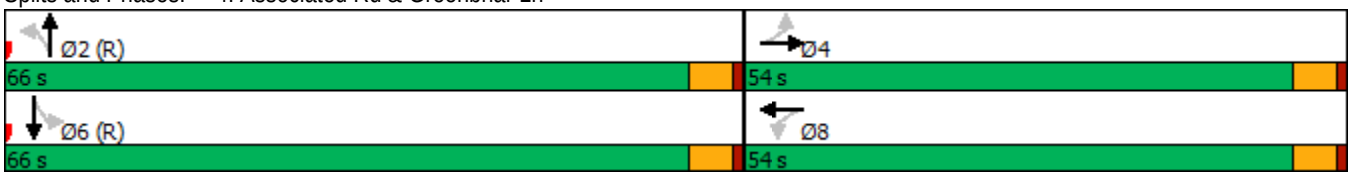


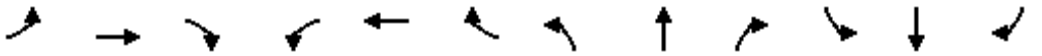
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	37.0	37.0		37.0	37.0		25.0	25.0		25.0	25.0	
Total Split (s)	54.0	54.0		54.0	54.0		66.0	66.0		66.0	66.0	
Total Split (%)	45.0%	45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Maximum Green (s)	49.0	49.0		49.0	49.0		61.0	61.0		61.0	61.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		12.9			12.9		97.1	97.1		97.1	97.1	
Actuated g/C Ratio		0.11			0.11		0.81	0.81		0.81	0.81	
v/c Ratio		0.56			0.56		0.09	0.21		0.03	0.21	
Control Delay		21.9			38.8		1.7	1.4		1.2	1.1	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		21.9			38.8		1.7	1.4		1.2	1.1	
LOS		C			D		A	A		A	A	
Approach Delay		21.9			38.8			1.4			1.1	
Approach LOS		C			D			A			A	
Queue Length 50th (ft)		28			29		2	12		0	1	
Queue Length 95th (ft)		76			56		m7	m37		m2	m55	
Internal Link Dist (ft)		416			441			303			1794	
Turn Bay Length (ft)							100			110		
Base Capacity (vph)		697			432		634	2838		641	2859	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.22			0.19		0.09	0.21		0.03	0.21	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 29 (24%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 5.3		Intersection LOS: A	
Intersection Capacity Utilization 41.8%		ICU Level of Service A	
Analysis Period (min) 15			

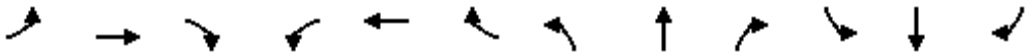
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Associated Rd & Greenbriar Ln





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	1820	139	172	1712	173	216	254	82	278	343	249
Future Volume (vph)	260	1820	139	172	1712	173	216	254	82	278	343	249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	170		0	210		0
Storage Lanes	1		0	1		0	2		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.86	0.86	0.97	0.95	0.95	0.97	1.00	1.00
Frt		0.989			0.986			0.963				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5029	0	1770	6318	0	3433	3408	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5029	0	1770	6318	0	3433	3408	0	3433	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			20			37				300
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		267			331			892			545	
Travel Time (s)		6.1			7.5			20.3			12.4	
Peak Hour Factor	0.95	0.95	0.95	0.94	0.94	0.94	0.91	0.91	0.91	0.83	0.83	0.83
Adj. Flow (vph)	274	1916	146	183	1821	184	237	279	90	335	413	300
Shared Lane Traffic (%)												
Lane Group Flow (vph)	274	2062	0	183	2005	0	237	369	0	335	413	300
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	10.0	38.0		10.0	37.0		10.0	40.0		10.0	41.0	41.0
Total Split (s)	23.0	49.0		16.0	42.0		14.0	40.0		15.0	41.0	41.0
Total Split (%)	19.2%	40.8%		13.3%	35.0%		11.7%	33.3%		12.5%	34.2%	34.2%
Maximum Green (s)	19.0	44.0		12.0	37.0		10.0	35.0		11.0	36.0	36.0
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		26.0			25.0			28.0			29.0	29.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)	19.0	44.0		12.0	37.0		10.0	35.0		11.0	36.0	36.0
Actuated g/C Ratio	0.16	0.37		0.10	0.31		0.08	0.29		0.09	0.30	0.30
v/c Ratio	0.98	1.11		1.03	1.02		0.83	0.36		1.07	0.74	0.44
Control Delay	103.7	85.3		115.1	57.6		77.9	31.3		111.4	30.9	2.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	103.7	85.3		115.1	57.6		77.9	31.3		111.4	30.9	2.6
LOS	F	F		F	E		E	C		F	C	A
Approach Delay		87.5			62.4			49.5			48.5	
Approach LOS		F			E			D			D	
Queue Length 50th (ft)	205	~673		~142	~374		94	106		~150	198	5
Queue Length 95th (ft)	m#380	#748		#297	#539		#161	151		#219	283	3
Internal Link Dist (ft)		187			251			812			465	
Turn Bay Length (ft)				200			170			210		
Base Capacity (vph)	280	1850		177	1961		286	1020		314	558	684
Starvation Cap Reductn	0	22		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.98	1.13		1.03	1.02		0.83	0.36		1.07	0.74	0.44

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 68.3		Intersection LOS: E	
Intersection Capacity Utilization 87.0%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

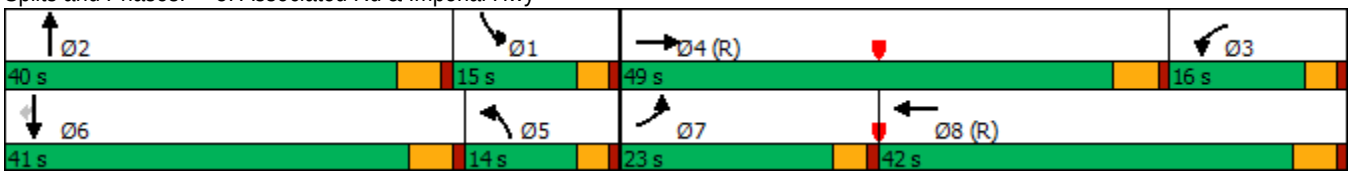
Queue shown is maximum after two cycles.

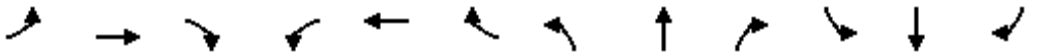
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

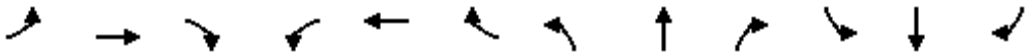
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Associated Rd & Imperial Hwy





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1825	277	226	1873	56	248	46	261	25	23	13
Future Volume (vph)	19	1825	277	226	1873	56	248	46	261	25	23	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		200	225		0	195		0	85		0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.996				0.850		0.945	
Flt Protected	0.950			0.950			0.950	0.967		0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5065	0	1681	1711	1583	1770	1760	0
Flt Permitted	0.950			0.950			0.950	0.967		0.950		
Satd. Flow (perm)	1770	5085	1583	1770	5065	0	1681	1711	1583	1770	1760	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			198		6				303		18	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1111			1324			560			455	
Travel Time (s)		25.3			30.1			12.7			10.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.86	0.86	0.86	0.65	0.65	0.65
Adj. Flow (vph)	20	1921	292	238	1972	59	288	53	303	38	35	20
Shared Lane Traffic (%)							41%					
Lane Group Flow (vph)	20	1921	292	238	2031	0	170	171	303	38	55	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4						2			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	33.0	33.0	10.0	26.0		27.0	27.0	27.0	11.0	11.0	
Total Split (s)	10.0	57.0	57.0	25.0	72.0		27.0	27.0	27.0	11.0	11.0	
Total Split (%)	8.3%	47.5%	47.5%	20.8%	60.0%		22.5%	22.5%	22.5%	9.2%	9.2%	
Maximum Green (s)	6.0	52.0	52.0	21.0	67.0		22.0	22.0	22.0	6.0	6.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		21.0	21.0		14.0		15.0	15.0	15.0			
Pedestrian Calls (#/hr)		5	5		5		5	5	5			
Act Effct Green (s)	6.0	53.7	53.7	19.3	73.0		22.0	22.0	22.0	6.0	6.0	
Actuated g/C Ratio	0.05	0.45	0.45	0.16	0.61		0.18	0.18	0.18	0.05	0.05	
v/c Ratio	0.23	0.84	0.36	0.84	0.66		0.55	0.55	0.56	0.43	0.52	
Control Delay	25.5	3.8	0.3	73.3	17.3		52.2	51.9	9.2	70.7	58.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	25.5	3.8	0.3	73.3	17.3		52.2	51.9	9.2	70.7	58.3	
LOS	C	A	A	E	B		D	D	A	E	E	
Approach Delay		3.5			23.2			31.9			63.4	
Approach LOS		A			C			C			E	
Queue Length 50th (ft)	13	83	1	178	317		127	127	0	29	28	
Queue Length 95th (ft)	m13	m68	m0	#297	461		194	195	63	47	47	
Internal Link Dist (ft)		1031			1244			480			375	
Turn Bay Length (ft)	140		200	225			195			85		
Base Capacity (vph)	88	2274	817	309	3083		308	313	537	88	105	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.23	0.84	0.36	0.77	0.66		0.55	0.55	0.56	0.43	0.52	

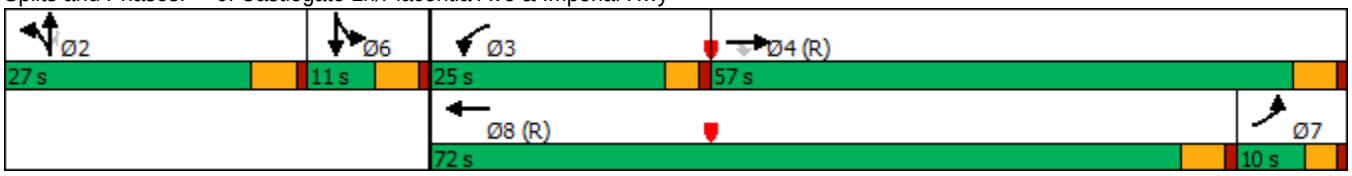
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 1 (1%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 16.6		Intersection LOS: B	
Intersection Capacity Utilization 74.2%		ICU Level of Service D	
Analysis Period (min) 15			

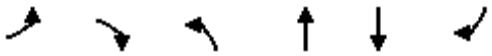
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

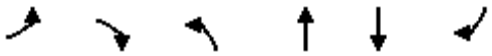
Splits and Phases: 6: Castlegate Ln/Placentia Ave & Imperial Hwy





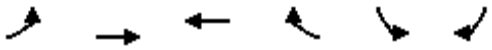
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	5	0	704	774	5
Future Volume (vph)	0	5	0	704	774	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.865			0.999	
Flt Protected						
Satd. Flow (prot)	0	1611	0	3539	3536	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	3539	3536	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	540			324	383	
Travel Time (s)	12.3			7.4	8.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	5	0	741	815	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	5	0	741	820	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 31.6%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	36	121	18	668	745	34
Future Volume (vph)	36	121	18	668	745	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	90			0
Storage Lanes	1	1	1			0
Taper Length (ft)	60		60			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.993	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	3539	3514	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	3539	3514	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	192			545	324	
Travel Time (s)	4.4			12.4	7.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	38	127	19	703	784	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	38	127	19	703	820	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 35.8%		ICU Level of Service A	
Analysis Period (min) 15			

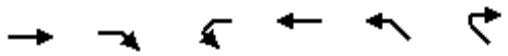


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2221	2149	31	0	44
Future Volume (vph)	0	2221	2149	31	0	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	0	1
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	0.86	0.86	0.86	1.00	1.00
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	6408	6395	0	0	1611
Flt Permitted						
Satd. Flow (perm)	0	6408	6395	0	0	1611
Link Speed (mph)		30	30		30	
Link Distance (ft)		285	267		252	
Travel Time (s)		6.5	6.1		5.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2338	2262	33	0	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2338	2295	0	0	46
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.7%		ICU Level of Service A	
Analysis Period (min) 15			

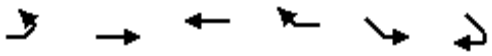
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	0	1987	371	0	2808	837	0	0	0	0	0	0
Future Volume (vph)	0	1987	371	0	2808	837	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	0		0	0		0	0		0
Storage Lanes	1		0	0		1	0		0	0		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.86	0.86	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.976				0.850						
Flt Protected												
Satd. Flow (prot)	0	6254	0	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	6254	0	0	5085	1583	0	0	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		563			192			626			545	
Travel Time (s)		12.8			4.4			14.2			12.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1987	371	0	2808	837	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2358	0	0	2808	837	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	1682	1051	0	2972	0	0
Future Volume (vph)	1682	1051	0	2972	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	5085	1583	0	5085	0	0
Flt Permitted						
Satd. Flow (perm)	5085	1583	0	5085	0	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	355			420	859	
Travel Time (s)	8.1			9.5	19.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1682	1051	0	2972	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1682	1051	0	2972	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 68.4%		ICU Level of Service C	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	0	2333	2424	384	0	0
Future Volume (vph)	0	2333	2424	384	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	0.91	0.91	1.00	1.00
Frt			0.979			
Flt Protected						
Satd. Flow (prot)	0	5085	4979	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	5085	4979	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		362	563		627	
Travel Time (s)		8.2	12.8		14.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2333	2424	384	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2333	2808	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 79.5%		ICU Level of Service D	
Analysis Period (min) 15			

APPENDIX F-III

YEAR 2045 GENERAL PLAN BUILDOUT TRAFFIC CONDITIONS

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	0	453	636	11
Future Vol, veh/h	0	8	0	453	636	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	8	0	453	636	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	324	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	672	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	672	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	672	-	-
HCM Lane V/C Ratio	-	0.012	-	-
HCM Control Delay (s)	-	10.4	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

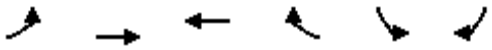
Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	20	11	446	631	13
Future Vol, veh/h	11	20	11	446	631	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	90	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	20	11	446	631	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	883	322	644	0	-	0
Stage 1	638	-	-	-	-	-
Stage 2	245	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	285	674	937	-	-	-
Stage 1	488	-	-	-	-	-
Stage 2	773	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	282	674	937	-	-	-
Mov Cap-2 Maneuver	282	-	-	-	-	-
Stage 1	482	-	-	-	-	-
Stage 2	773	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.3	0.2	0
HCM LOS	B		

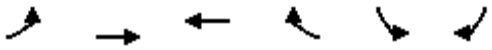
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	937	-	282	674	-	-
HCM Lane V/C Ratio	0.012	-	0.039	0.03	-	-
HCM Control Delay (s)	8.9	-	18.3	10.5	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0.1	-	-



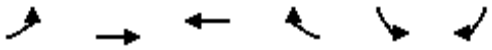
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2426	2088	9	0	9
Future Volume (Veh/h)	0	2426	2088	9	0	9
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2426	2088	9	0	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		285	267			
pX, platoon unblocked	0.74				0.85	0.74
vC, conflicting volume	2097				2699	526
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	761				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	631				871	808

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	606	606	606	606	597	597	597	307	9
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	9	9
cSH	1700	1700	1700	1700	1700	1700	1700	1700	808
Volume to Capacity	0.36	0.36	0.36	0.36	0.35	0.35	0.35	0.18	0.01
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5
Lane LOS									A
Approach Delay (s)	0.0				0.0				9.5
Approach LOS									A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		



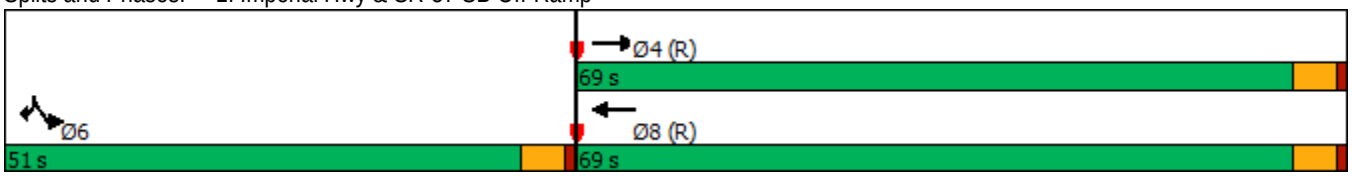
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1697	2020	0	606	562
Future Volume (vph)	0	1697	2020	0	606	562
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0	0	260
Storage Lanes	0			0	2	1
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.97	0.91
Frt					0.963	0.850
Flt Protected					0.964	
Satd. Flow (prot)	0	5085	5085	0	3355	1441
Flt Permitted					0.964	
Satd. Flow (perm)	0	5085	5085	0	3355	1441
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					6	6
Link Speed (mph)		30	30		30	
Link Distance (ft)		420	362		866	
Travel Time (s)		9.5	8.2		19.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1697	2020	0	606	562
Shared Lane Traffic (%)						35%
Lane Group Flow (vph)	0	1697	2020	0	803	365
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		24	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Prot
Protected Phases		4	8		6	6
Permitted Phases						

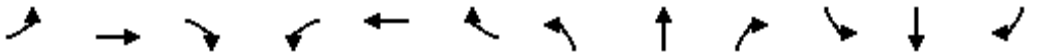


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		6.0	6.0		6.0	6.0
Minimum Split (s)		11.0	27.0		11.0	11.0
Total Split (s)		69.0	69.0		51.0	51.0
Total Split (%)		57.5%	57.5%		42.5%	42.5%
Maximum Green (s)		64.0	64.0		46.0	46.0
Yellow Time (s)		4.0	4.0		4.0	4.0
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		C-Max	C-Max		Max	Max
Walk Time (s)			7.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			5			
Act Effct Green (s)		64.0	64.0		46.0	46.0
Actuated g/C Ratio		0.53	0.53		0.38	0.38
v/c Ratio		0.63	0.74		0.62	0.66
Control Delay		20.9	15.7		32.3	36.8
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		20.9	15.7		32.3	36.8
LOS		C	B		C	D
Approach Delay		20.9	15.7		33.7	
Approach LOS		C	B		C	
Queue Length 50th (ft)		323	408		255	249
Queue Length 95th (ft)		373	469		321	372
Internal Link Dist (ft)		340	282		786	
Turn Bay Length (ft)						260
Base Capacity (vph)		2712	2712		1289	556
Starvation Cap Reductn		0	0		0	0
Spillback Cap Reductn		0	0		0	0
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.63	0.74		0.62	0.66

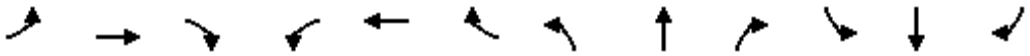
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 46 (38%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 21.8		Intersection LOS: C	
Intersection Capacity Utilization 70.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Imperial Hwy & SR-57 SB Off-Ramp





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	1520	0	0	1615	18	1089	43	811	0	0	50
Future Volume (vph)	116	1520	0	0	1615	18	1089	43	811	0	0	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		350	0		0
Storage Lanes	1		0	0		0	2		1	0		2
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86	0.86	0.91	0.86	0.95	1.00	1.00	0.88
Frt					0.998			0.896	0.850			0.850
Flt Protected	0.950						0.950	0.989				
Satd. Flow (prot)	1770	5085	0	0	6395	0	3221	1420	1504	0	0	2787
Flt Permitted	0.950						0.950	0.989				
Satd. Flow (perm)	1770	5085	0	0	6395	0	3221	1420	1504	0	0	2787
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					2			11	55			64
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		192			285			643			368	
Travel Time (s)		4.4			6.5			14.6			8.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	116	1520	0	0	1615	18	1089	43	811	0	0	50
Shared Lane Traffic (%)							10%		42%			
Lane Group Flow (vph)	116	1520	0	0	1633	0	980	493	470	0	0	50
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			1
Detector Template	Left	Thru			Thru		Left	Thru	Right			Right
Leading Detector (ft)	20	100			100		20	100	20			20
Trailing Detector (ft)	0	0			0		0	0	0			0
Detector 1 Position(ft)	0	0			0		0	0	0			0
Detector 1 Size(ft)	20	6			6		20	6	20			20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA		Split	NA	Prot			Over
Protected Phases	7	4			8		2	2	2			7
Permitted Phases												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4			8		2	2	2			7
Switch Phase												
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0	6.0			6.0
Minimum Split (s)	10.0	34.0			31.0		11.0	11.0	11.0			10.0
Total Split (s)	15.0	59.0			44.0		61.0	61.0	61.0			15.0
Total Split (%)	12.5%	49.2%			36.7%		50.8%	50.8%	50.8%			12.5%
Maximum Green (s)	11.0	54.0			39.0		56.0	56.0	56.0			11.0
Yellow Time (s)	3.0	4.0			4.0		4.0	4.0	4.0			3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0	1.0			1.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)	4.0	5.0			5.0		5.0	5.0	5.0			4.0
Lead/Lag	Lead				Lag							Lead
Lead-Lag Optimize?	Yes				Yes							Yes
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			3.0
Recall Mode	None	C-Max			C-Max		Max	Max	Max			None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		22.0			19.0							
Pedestrian Calls (#/hr)		5			5							
Act Effct Green (s)	10.5	54.0			39.5		56.0	56.0	56.0			10.5
Actuated g/C Ratio	0.09	0.45			0.33		0.47	0.47	0.47			0.09
v/c Ratio	0.75	0.66			0.78		0.65	0.74	0.64			0.17
Control Delay	68.2	27.1			15.2		27.1	33.5	26.2			9.6
Queue Delay	0.0	0.1			0.0		0.0	0.0	0.0			0.0
Total Delay	68.2	27.2			15.2		27.1	33.5	26.2			9.6
LOS	E	C			B		C	C	C			A
Approach Delay		30.1			15.2			28.5			9.6	
Approach LOS		C			B			C			A	
Queue Length 50th (ft)	91	353			74		311	345	252			0
Queue Length 95th (ft)	m#171	428			120		388	511	380			15
Internal Link Dist (ft)		112			205			563			288	
Turn Bay Length (ft)									350			
Base Capacity (vph)	162	2288			2105		1503	668	731			313
Starvation Cap Reductn	0	0			0		0	0	0			0
Spillback Cap Reductn	0	135			0		0	0	1			0
Storage Cap Reductn	0	0			0		0	0	0			0
Reduced v/c Ratio	0.72	0.71			0.78		0.65	0.74	0.64			0.16

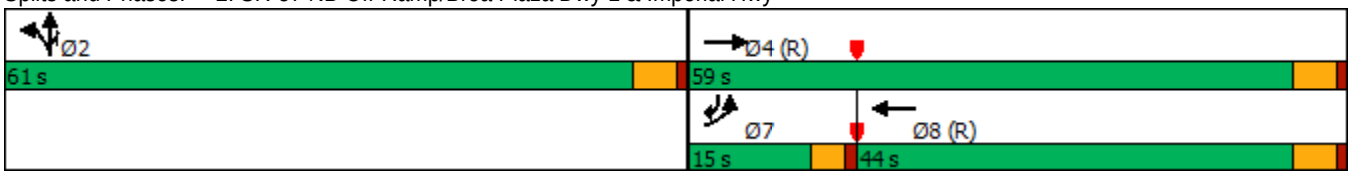
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 4 (3%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 24.7		Intersection LOS: C	
Intersection Capacity Utilization 71.2%		ICU Level of Service C	
Analysis Period (min) 15			

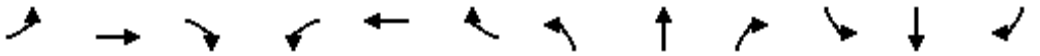
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

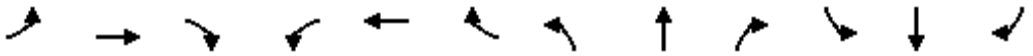
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: SR-57 NB Off-Ramp/Brea Plaza Dwy 1 & Imperial Hwy





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	950	318	368	814	11	247	6	323	58	30	8
Future Volume (vph)	2	950	318	368	814	11	247	6	323	58	30	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	220		0	225		230	100		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.998				0.850		0.968	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3405	0	3433	3532	0	3433	1863	1583	1770	1803	0
Flt Permitted	0.950			0.950			0.950			0.754		
Satd. Flow (perm)	1770	3405	0	3433	3532	0	3433	1863	1583	1405	1803	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		44			1				55		8	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		664			723			1874			318	
Travel Time (s)		15.1			16.4			42.6			7.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2	950	318	368	814	11	247	6	323	58	30	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	1268	0	368	825	0	247	6	323	58	38	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8		5	2	3		6	
Permitted Phases									2	6		



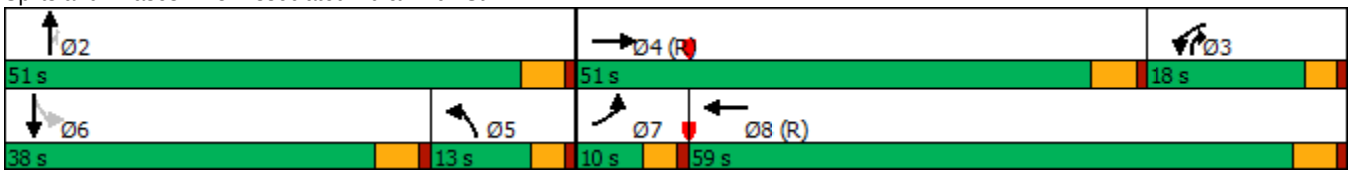
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	39.0		10.0	38.0		10.0	38.0	10.0	38.0	38.0	
Total Split (s)	10.0	51.0		18.0	59.0		13.0	51.0	18.0	38.0	38.0	
Total Split (%)	8.3%	42.5%		15.0%	49.2%		10.8%	42.5%	15.0%	31.7%	31.7%	
Maximum Green (s)	6.0	46.0		14.0	54.0		9.0	46.0	14.0	33.0	33.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	4.0	5.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lag		Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	Max	None	Max	Max	
Walk Time (s)		7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		27.0			26.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		5			5			5		5	5	
Act Effct Green (s)	6.0	46.0		14.0	62.0		9.0	46.0	65.0	33.0	33.0	
Actuated g/C Ratio	0.05	0.38		0.12	0.52		0.08	0.38	0.54	0.28	0.28	
v/c Ratio	0.02	0.95		0.92	0.45		0.96	0.01	0.37	0.15	0.08	
Control Delay	55.0	50.6		81.5	19.8		94.9	18.0	9.4	34.3	27.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	55.0	50.6		81.5	19.8		94.9	18.0	9.4	34.3	27.4	
LOS	D	D		F	B		F	B	A	C	C	
Approach Delay		50.6			38.8			46.1			31.6	
Approach LOS		D			D			D			C	
Queue Length 50th (ft)	2	483		147	196		98	2	55	34	17	
Queue Length 95th (ft)	11	#637		#238	295		#181	11	153	70	45	
Internal Link Dist (ft)		584			643			1794			238	
Turn Bay Length (ft)	150			220			225		230	100		
Base Capacity (vph)	88	1332		400	1825		257	714	882	386	501	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.02	0.95		0.92	0.45		0.96	0.01	0.37	0.15	0.08	

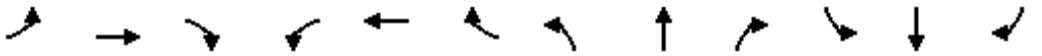
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 74 (62%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 44.7		Intersection LOS: D	
Intersection Capacity Utilization 73.1%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

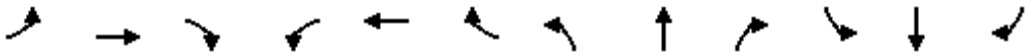
Queue shown is maximum after two cycles.

Splits and Phases: 3: Associated Rd & Birch St





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1	38	44	8	42	56	413	16	20	492	22
Future Volume (vph)	19	1	38	44	8	42	56	413	16	20	492	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	110		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.912			0.940			0.994			0.994	
Flt Protected		0.984			0.977		0.950			0.950		
Satd. Flow (prot)	0	1672	0	0	1711	0	1770	3518	0	1770	3518	0
Flt Permitted		0.886			0.845		0.462			0.502		
Satd. Flow (perm)	0	1505	0	0	1480	0	861	3518	0	935	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			37			5			6	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		496			521			383			1874	
Travel Time (s)		11.3			11.8			8.7			42.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	19	1	38	44	8	42	56	413	16	20	492	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	58	0	0	94	0	56	429	0	20	514	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		



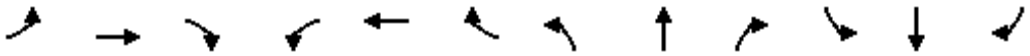
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	37.0	37.0		37.0	37.0		25.0	25.0		25.0	25.0	
Total Split (s)	47.0	47.0		47.0	47.0		73.0	73.0		73.0	73.0	
Total Split (%)	39.2%	39.2%		39.2%	39.2%		60.8%	60.8%		60.8%	60.8%	
Maximum Green (s)	42.0	42.0		42.0	42.0		68.0	68.0		68.0	68.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		13.6			13.6		96.4	96.4		96.4	96.4	
Actuated g/C Ratio		0.11			0.11		0.80	0.80		0.80	0.80	
v/c Ratio		0.28			0.47		0.08	0.15		0.03	0.18	
Control Delay		22.7			36.1		2.3	1.7		0.9	0.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		22.7			36.1		2.3	1.7		0.9	0.7	
LOS		C			D		A	A		A	A	
Approach Delay		22.7			36.1			1.8			0.7	
Approach LOS		C			D			A			A	
Queue Length 50th (ft)		15			43		3	12		0	1	
Queue Length 95th (ft)		46			79		m10	m28		m2	m35	
Internal Link Dist (ft)		416			441			303			1794	
Turn Bay Length (ft)							100			110		
Base Capacity (vph)		551			542		691	2826		751	2826	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.11			0.17		0.08	0.15		0.03	0.18	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 15 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.47
Intersection Signal Delay: 5.1 Intersection LOS: A
Intersection Capacity Utilization 40.1% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Associated Rd & Greenbriar Ln

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	154	2166	106	96	1794	86	150	217	93	153	345	153
Future Volume (vph)	154	2166	106	96	1794	86	150	217	93	153	345	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	170		0	210		0
Storage Lanes	1		0	1		0	2		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.86	0.86	0.97	0.95	0.95	0.97	1.00	1.00
Frt		0.993			0.993			0.955				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5050	0	1770	6363	0	3433	3380	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5050	0	1770	6363	0	3433	3380	0	3433	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			9			56				153
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		267			331			892			545	
Travel Time (s)		6.1			7.5			20.3			12.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	154	2166	106	96	1794	86	150	217	93	153	345	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	154	2272	0	96	1880	0	150	310	0	153	345	153
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	10.0	38.0		10.0	37.0		10.0	40.0		10.0	41.0	41.0
Total Split (s)	22.0	58.0		11.0	47.0		10.0	40.0		11.0	41.0	41.0
Total Split (%)	18.3%	48.3%		9.2%	39.2%		8.3%	33.3%		9.2%	34.2%	34.2%
Maximum Green (s)	18.0	53.0		7.0	42.0		6.0	35.0		7.0	36.0	36.0
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		26.0			25.0			28.0			29.0	29.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)	15.0	53.0		7.0	45.0		6.0	35.0		7.0	36.0	36.0
Actuated g/C Ratio	0.12	0.44		0.06	0.38		0.05	0.29		0.06	0.30	0.30
v/c Ratio	0.70	1.02		0.93	0.79		0.88	0.30		0.77	0.62	0.26
Control Delay	72.8	45.6		114.9	27.2		99.4	27.7		63.4	23.0	2.1
Queue Delay	0.0	3.3		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	72.8	48.9		114.9	27.2		99.4	27.7		63.4	23.0	2.1
LOS	E	D		F	C		F	C		E	C	A
Approach Delay		50.4			31.5			51.1			27.6	
Approach LOS		D			C			D			C	
Queue Length 50th (ft)	123	~385		76	220		60	79		63	142	2
Queue Length 95th (ft)	m183	#756		#180	235		#123	119		#117	217	29
Internal Link Dist (ft)		187			251			812			465	
Turn Bay Length (ft)				200			170			210		
Base Capacity (vph)	265	2234		103	2392		171	1025		200	558	582
Starvation Cap Reductn	0	22		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.58	1.03		0.93	0.79		0.88	0.30		0.77	0.62	0.26

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 116 (97%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 41.0 Intersection LOS: D
Intersection Capacity Utilization 87.7% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

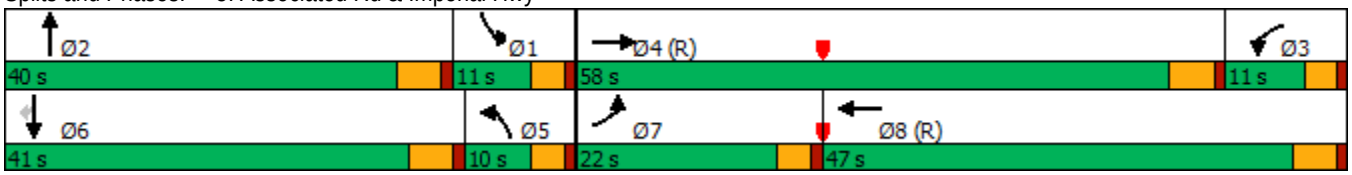
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

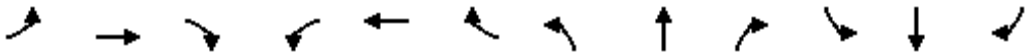
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Associated Rd & Imperial Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	2000	478	201	1643	34	191	12	149	26	29	14
Future Volume (vph)	14	2000	478	201	1643	34	191	12	149	26	29	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		200	225		0	195		0	85		0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.997				0.850		0.951	
Flt Protected	0.950			0.950			0.950	0.958		0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5070	0	1681	1695	1583	1770	1771	0
Flt Permitted	0.950			0.950			0.950	0.958		0.950		
Satd. Flow (perm)	1770	5085	1583	1770	5070	0	1681	1695	1583	1770	1771	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			320		4				149		14	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1111			1324			560			455	
Travel Time (s)		25.3			30.1			12.7			10.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	14	2000	478	201	1643	34	191	12	149	26	29	14
Shared Lane Traffic (%)							47%					
Lane Group Flow (vph)	14	2000	478	201	1677	0	101	102	149	26	43	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4						2			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	33.0	33.0	10.0	26.0		27.0	27.0	27.0	11.0	11.0	
Total Split (s)	10.0	59.0	59.0	23.0	72.0		27.0	27.0	27.0	11.0	11.0	
Total Split (%)	8.3%	49.2%	49.2%	19.2%	60.0%		22.5%	22.5%	22.5%	9.2%	9.2%	
Maximum Green (s)	6.0	54.0	54.0	19.0	67.0		22.0	22.0	22.0	6.0	6.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		21.0	21.0		14.0		15.0	15.0	15.0			
Pedestrian Calls (#/hr)		5	5		5		5	5	5			
Act Effct Green (s)	6.0	55.8	55.8	17.2	73.0		22.0	22.0	22.0	6.0	6.0	
Actuated g/C Ratio	0.05	0.46	0.46	0.14	0.61		0.18	0.18	0.18	0.05	0.05	
v/c Ratio	0.16	0.85	0.53	0.79	0.54		0.33	0.33	0.36	0.30	0.43	
Control Delay	33.9	10.6	1.4	71.9	15.1		46.0	46.0	9.3	63.9	54.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	33.9	10.6	1.4	71.9	15.1		46.0	46.0	9.3	63.9	54.1	
LOS	C	B	A	E	B		D	D	A	E	D	
Approach Delay		9.0			21.2			30.5			57.8	
Approach LOS		A			C			C			E	
Queue Length 50th (ft)	9	128	0	150	235		72	72	0	20	22	
Queue Length 95th (ft)	m11	m128	m0	#251	344		129	130	57	51	61	
Internal Link Dist (ft)		1031			1244			480			375	
Turn Bay Length (ft)	140		200	225			195			85		
Base Capacity (vph)	88	2365	907	280	3085		308	310	411	88	101	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.16	0.85	0.53	0.72	0.54		0.33	0.33	0.36	0.30	0.43	

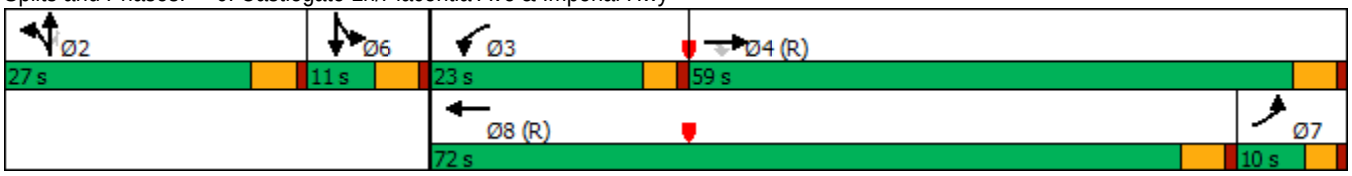
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 16.1		Intersection LOS: B	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

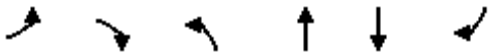
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

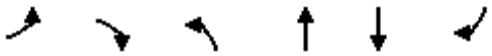
Splits and Phases: 6: Castlegate Ln/Placentia Ave & Imperial Hwy





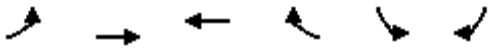
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	8	0	453	636	11
Future Volume (vph)	0	8	0	453	636	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.865			0.997	
Flt Protected						
Satd. Flow (prot)	0	1611	0	3539	3529	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	3539	3529	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	540			324	383	
Travel Time (s)	12.3			7.4	8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	8	0	453	636	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	8	0	453	647	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.9%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	11	20	11	446	631	13
Future Volume (vph)	11	20	11	446	631	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	90			0
Storage Lanes	1	1	1			0
Taper Length (ft)	60		60			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.997	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	3539	3529	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	3539	3529	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	192			545	324	
Travel Time (s)	4.4			12.4	7.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	20	11	446	631	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	20	11	446	644	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.9%		ICU Level of Service A	
Analysis Period (min) 15			

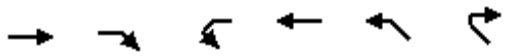


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2426	2088	9	0	9
Future Volume (vph)	0	2426	2088	9	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	0	1
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	0.86	0.86	0.86	1.00	1.00
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	6408	6401	0	0	1611
Flt Permitted						
Satd. Flow (perm)	0	6408	6401	0	0	1611
Link Speed (mph)		30	30		30	
Link Distance (ft)		285	267		252	
Travel Time (s)		6.5	6.1		5.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2426	2088	9	0	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2426	2097	0	0	9
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.4%		ICU Level of Service A	
Analysis Period (min) 15			

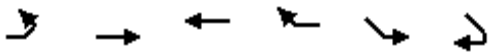
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	0	1636	575	0	2209	545	0	0	0	0	0	0
Future Volume (vph)	0	1636	575	0	2209	545	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	0		0	0		0	0		0
Storage Lanes	1		0	0		1	0		0	0		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.86	0.86	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961				0.850						
Flt Protected												
Satd. Flow (prot)	0	6158	0	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	6158	0	0	5085	1583	0	0	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		563			192			626			545	
Travel Time (s)		12.8			4.4			14.2			12.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1636	575	0	2209	545	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2211	0	0	2209	545	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.0%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	1697	836	0	2582	0	0
Future Volume (vph)	1697	836	0	2582	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	5085	1583	0	5085	0	0
Flt Permitted						
Satd. Flow (perm)	5085	1583	0	5085	0	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	355			420	859	
Travel Time (s)	8.1			9.5	19.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1697	836	0	2582	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1697	836	0	2582	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.1%		ICU Level of Service B	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	0	2303	2020	189	0	0
Future Volume (vph)	0	2303	2020	189	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	0.91	0.91	1.00	1.00
Frt			0.987			
Flt Protected						
Satd. Flow (prot)	0	5085	5019	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	5085	5019	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		362	563		627	
Travel Time (s)		8.2	12.8		14.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2303	2020	189	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2303	2209	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 70.6%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	40	0	737	767	9
Future Vol, veh/h	0	40	0	737	767	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	40	0	737	767	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	388	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	611	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	611	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	611	-	-
HCM Lane V/C Ratio	-	0.065	-	-
HCM Control Delay (s)	-	11.3	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-

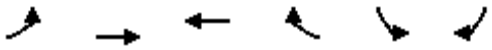
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	41	124	15	694	775	33
Future Vol, veh/h	41	124	15	694	775	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	90	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	124	15	694	775	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1169	404	808	0	-	0
Stage 1	792	-	-	-	-	-
Stage 2	377	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	186	596	813	-	-	-
Stage 1	407	-	-	-	-	-
Stage 2	663	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	183	596	813	-	-	-
Mov Cap-2 Maneuver	183	-	-	-	-	-
Stage 1	400	-	-	-	-	-
Stage 2	663	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17	0.2	0
HCM LOS	C		

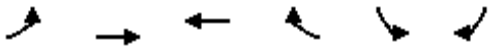
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	813	-	183	596	-	-
HCM Lane V/C Ratio	0.018	-	0.224	0.208	-	-
HCM Control Delay (s)	9.5	-	30.3	12.6	-	-
HCM Lane LOS	A	-	D	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.8	0.8	-	-



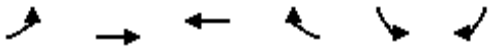
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2286	2377	35	0	48
Future Volume (Veh/h)	0	2286	2377	35	0	48
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2286	2377	35	0	48
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		285	267			
pX, platoon unblocked	0.68				0.78	0.68
vC, conflicting volume	2412				2966	612
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	722				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	93
cM capacity (veh/h)	596				799	737

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	572	572	572	572	679	679	679	375	48
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	35	48
cSH	1700	1700	1700	1700	1700	1700	1700	1700	737
Volume to Capacity	0.34	0.34	0.34	0.34	0.40	0.40	0.40	0.22	0.07
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.2
Lane LOS									B
Approach Delay (s)	0.0				0.0				10.2
Approach LOS									B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	1889	2565	0	683	601
Future Volume (vph)	0	1889	2565	0	683	601
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0	0	260
Storage Lanes	0			0	2	1
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.97	0.91
Frt					0.966	0.850
Flt Protected					0.963	
Satd. Flow (prot)	0	5085	5085	0	3362	1441
Flt Permitted					0.963	
Satd. Flow (perm)	0	5085	5085	0	3362	1441
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					2	2
Link Speed (mph)		30	30		30	
Link Distance (ft)		420	362		866	
Travel Time (s)		9.5	8.2		19.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1889	2565	0	683	601
Shared Lane Traffic (%)						33%
Lane Group Flow (vph)	0	1889	2565	0	881	403
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		24	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Prot
Protected Phases		4	8		6	6
Permitted Phases						



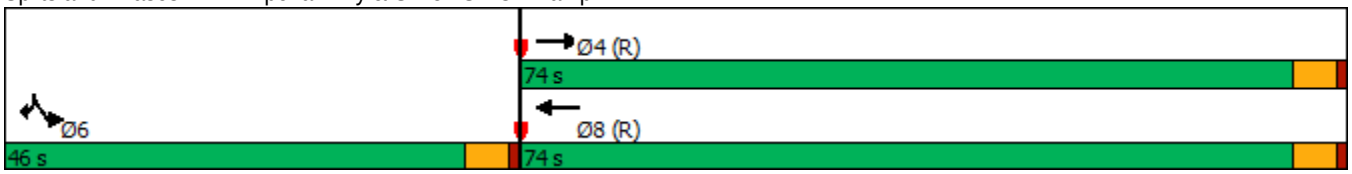
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		6.0	6.0		6.0	6.0
Minimum Split (s)		11.0	27.0		11.0	11.0
Total Split (s)		74.0	74.0		46.0	46.0
Total Split (%)		61.7%	61.7%		38.3%	38.3%
Maximum Green (s)		69.0	69.0		41.0	41.0
Yellow Time (s)		4.0	4.0		4.0	4.0
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		C-Max	C-Max		Max	Max
Walk Time (s)			7.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			5			
Act Effct Green (s)		69.0	69.0		41.0	41.0
Actuated g/C Ratio		0.58	0.58		0.34	0.34
v/c Ratio		0.65	0.88		0.77	0.82
Control Delay		18.5	15.3		40.5	50.9
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		18.5	15.3		40.5	50.9
LOS		B	B		D	D
Approach Delay		18.5	15.3		43.7	
Approach LOS		B	B		D	
Queue Length 50th (ft)		344	274		311	309
Queue Length 95th (ft)		394	292		389	#494
Internal Link Dist (ft)		340	282		786	
Turn Bay Length (ft)						260
Base Capacity (vph)		2923	2923		1150	493
Starvation Cap Reductn		0	0		0	0
Spillback Cap Reductn		0	0		0	0
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.65	0.88		0.77	0.82

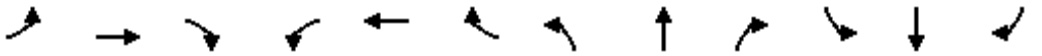
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 8 (7%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 22.7		Intersection LOS: C	
Intersection Capacity Utilization 83.7%		ICU Level of Service E	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

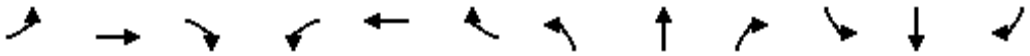
Queue shown is maximum after two cycles.

Splits and Phases: 1: Imperial Hwy & SR-57 SB Off-Ramp





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	206	1799	0	0	2526	46	1143	72	430	0	0	231
Future Volume (vph)	206	1799	0	0	2526	46	1143	72	430	0	0	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		350	0		0
Storage Lanes	1		0	0		0	2		1	0		2
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86	0.86	0.91	0.86	0.95	1.00	1.00	0.88
Frt					0.997			0.981	0.850			0.850
Flt Protected	0.950						0.950	0.966				
Satd. Flow (prot)	1770	5085	0	0	6389	0	3221	1518	1504	0	0	2787
Flt Permitted	0.950						0.950	0.966				
Satd. Flow (perm)	1770	5085	0	0	6389	0	3221	1518	1504	0	0	2787
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					3			6	55			64
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		192			285			643			368	
Travel Time (s)		4.4			6.5			14.6			8.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	206	1799	0	0	2526	46	1143	72	430	0	0	231
Shared Lane Traffic (%)							26%		12%			
Lane Group Flow (vph)	206	1799	0	0	2572	0	846	421	378	0	0	231
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			1
Detector Template	Left	Thru			Thru		Left	Thru	Right			Right
Leading Detector (ft)	20	100			100		20	100	20			20
Trailing Detector (ft)	0	0			0		0	0	0			0
Detector 1 Position(ft)	0	0			0		0	0	0			0
Detector 1 Size(ft)	20	6			6		20	6	20			20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA		Split	NA	Prot			Over
Protected Phases	7	4			8		2	2	2			7
Permitted Phases												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4			8		2	2	2			7
Switch Phase												
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0	6.0			6.0
Minimum Split (s)	10.0	34.0			31.0		11.0	11.0	11.0			10.0
Total Split (s)	19.0	76.0			57.0		44.0	44.0	44.0			19.0
Total Split (%)	15.8%	63.3%			47.5%		36.7%	36.7%	36.7%			15.8%
Maximum Green (s)	15.0	71.0			52.0		39.0	39.0	39.0			15.0
Yellow Time (s)	3.0	4.0			4.0		4.0	4.0	4.0			3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0	1.0			1.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)	4.0	5.0			5.0		5.0	5.0	5.0			4.0
Lead/Lag	Lead				Lag							Lead
Lead-Lag Optimize?	Yes				Yes							Yes
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			3.0
Recall Mode	None	C-Max			C-Max		Max	Max	Max			None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		22.0			19.0							
Pedestrian Calls (#/hr)		5			5							
Act Effct Green (s)	15.0	71.0			52.0		39.0	39.0	39.0			15.0
Actuated g/C Ratio	0.12	0.59			0.43		0.32	0.32	0.32			0.12
v/c Ratio	0.93	0.60			0.93		0.81	0.85	0.72			0.57
Control Delay	91.4	18.0			12.0		44.3	54.3	39.3			41.6
Queue Delay	0.0	0.1			0.4		0.0	0.0	0.0			0.0
Total Delay	91.4	18.1			12.4		44.3	54.3	39.3			41.6
LOS	F	B			B		D	D	D			D
Approach Delay		25.7			12.4			45.7			41.6	
Approach LOS		C			B			D			D	
Queue Length 50th (ft)	160	277			134		328	347	233			69
Queue Length 95th (ft)	m#297	339			m135		413	#553	358			116
Internal Link Dist (ft)		112			205			563			288	
Turn Bay Length (ft)									350			
Base Capacity (vph)	221	3008			2770		1046	497	525			404
Starvation Cap Reductn	0	0			31		0	0	0			0
Spillback Cap Reductn	0	311			0		0	0	2			0
Storage Cap Reductn	0	0			0		0	0	0			0
Reduced v/c Ratio	0.93	0.67			0.94		0.81	0.85	0.72			0.57

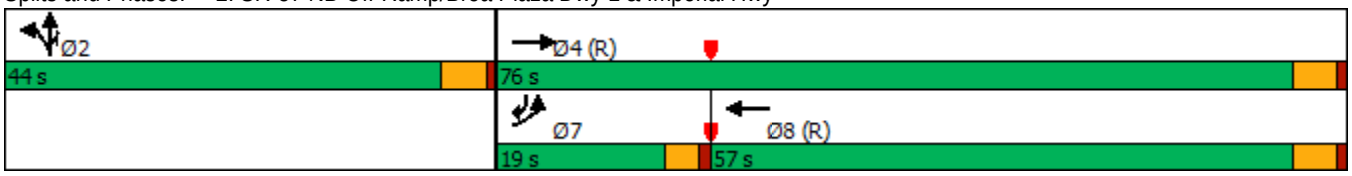
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 26.1		Intersection LOS: C	
Intersection Capacity Utilization 85.7%		ICU Level of Service E	
Analysis Period (min) 15			

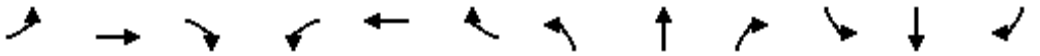
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

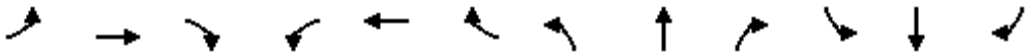
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: SR-57 NB Off-Ramp/Brea Plaza Dwy 1 & Imperial Hwy





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	889	300	300	1248	17	483	34	368	11	21	6
Future Volume (vph)	12	889	300	300	1248	17	483	34	368	11	21	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	220		0	225		230	100		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.998				0.850		0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3405	0	3433	3532	0	3433	1863	1583	1770	1801	0
Flt Permitted	0.950			0.950			0.950			0.735		
Satd. Flow (perm)	1770	3405	0	3433	3532	0	3433	1863	1583	1369	1801	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			1				55		6	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		664			723			1874			318	
Travel Time (s)		15.1			16.4			42.6			7.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	889	300	300	1248	17	483	34	368	11	21	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	1189	0	300	1265	0	483	34	368	11	27	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8		5	2	3		6	
Permitted Phases									2	6		



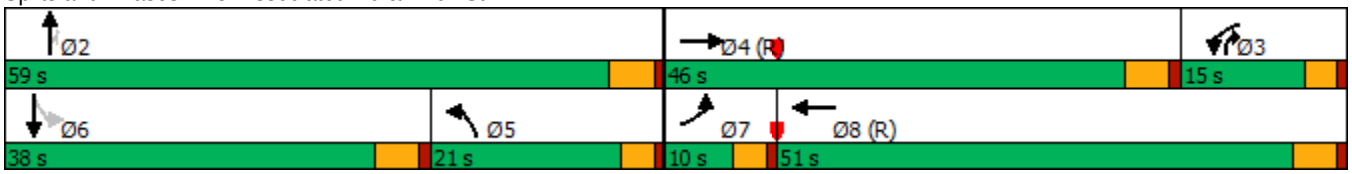
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	39.0		10.0	38.0		10.0	38.0	10.0	38.0	38.0	
Total Split (s)	10.0	46.0		15.0	51.0		21.0	59.0	15.0	38.0	38.0	
Total Split (%)	8.3%	38.3%		12.5%	42.5%		17.5%	49.2%	12.5%	31.7%	31.7%	
Maximum Green (s)	6.0	41.0		11.0	46.0		17.0	54.0	11.0	33.0	33.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	4.0	5.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lag		Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	Max	None	Max	Max	
Walk Time (s)		7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		27.0			26.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		5			5			5		5	5	
Act Effct Green (s)	6.0	41.0		11.0	52.0		17.0	54.0	70.0	33.0	33.0	
Actuated g/C Ratio	0.05	0.34		0.09	0.43		0.14	0.45	0.58	0.28	0.28	
v/c Ratio	0.14	1.00		0.96	0.83		0.99	0.04	0.39	0.03	0.05	
Control Delay	58.2	64.0		95.1	36.5		86.5	16.4	10.7	32.3	27.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	58.2	64.0		95.1	36.5		86.5	16.4	10.7	32.3	27.1	
LOS	E	E		F	D		F	B	B	C	C	
Approach Delay		64.0			47.8			52.3			28.6	
Approach LOS		E			D			D			C	
Queue Length 50th (ft)	9	468		121	417		197	14	113	6	12	
Queue Length 95th (ft)	30	#630		#209	#636		#315	29	148	21	36	
Internal Link Dist (ft)		584			643			1794			238	
Turn Bay Length (ft)	150			220			225		230	100		
Base Capacity (vph)	88	1191		314	1530		486	838	946	376	499	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.14	1.00		0.96	0.83		0.99	0.04	0.39	0.03	0.05	

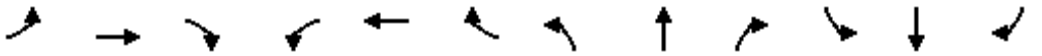
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 86 (72%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 53.9		Intersection LOS: D	
Intersection Capacity Utilization 74.8%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

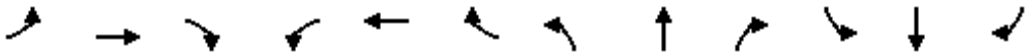
Queue shown is maximum after two cycles.

Splits and Phases: 3: Associated Rd & Birch St





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	9	42	28	4	37	44	560	39	17	579	18
Future Volume (vph)	36	9	42	28	4	37	44	560	39	17	579	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	110		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.935			0.928			0.990			0.995	
Flt Protected		0.980			0.980		0.950			0.950		
Satd. Flow (prot)	0	1707	0	0	1694	0	1770	3504	0	1770	3522	0
Flt Permitted		0.839			0.829		0.426			0.426		
Satd. Flow (perm)	0	1461	0	0	1433	0	794	3504	0	794	3522	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			37			9			4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		496			521			383			1874	
Travel Time (s)		11.3			11.8			8.7			42.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	36	9	42	28	4	37	44	560	39	17	579	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	0	0	69	0	44	599	0	17	597	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

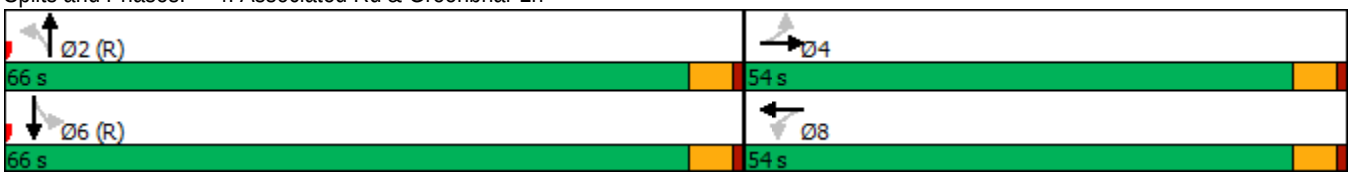


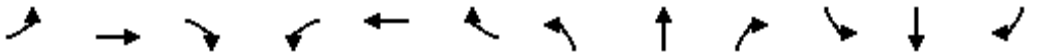
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	37.0	37.0		37.0	37.0		25.0	25.0		25.0	25.0	
Total Split (s)	54.0	54.0		54.0	54.0		66.0	66.0		66.0	66.0	
Total Split (%)	45.0%	45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Maximum Green (s)	49.0	49.0		49.0	49.0		61.0	61.0		61.0	61.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		13.0			13.0		97.0	97.0		97.0	97.0	
Actuated g/C Ratio		0.11			0.11		0.81	0.81		0.81	0.81	
v/c Ratio		0.45			0.37		0.07	0.21		0.03	0.21	
Control Delay		32.3			28.9		4.6	3.5		0.2	0.3	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		32.3			28.9		4.6	3.5		0.2	0.3	
LOS		C			C		A	A		A	A	
Approach Delay		32.3			28.9			3.6			0.3	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		34			24		4	31		0	1	
Queue Length 95th (ft)		69			57		m12	m64		m0	m2	
Internal Link Dist (ft)		416			441			303			1794	
Turn Bay Length (ft)							100			110		
Base Capacity (vph)		621			607		641	2833		641	2846	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.14			0.11		0.07	0.21		0.03	0.21	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 19 (16%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 5.2		Intersection LOS: A	
Intersection Capacity Utilization 40.8%		ICU Level of Service A	
Analysis Period (min) 15			

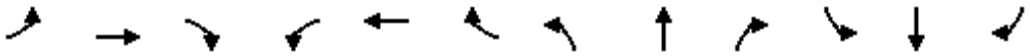
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Associated Rd & Greenbriar Ln





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	261	1879	146	210	1950	176	228	272	103	302	363	234
Future Volume (vph)	261	1879	146	210	1950	176	228	272	103	302	363	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	170		0	210		0
Storage Lanes	1		0	1		0	2		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.86	0.86	0.97	0.95	0.95	0.97	1.00	1.00
Frt		0.989			0.988			0.959				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5029	0	1770	6331	0	3433	3394	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5029	0	1770	6331	0	3433	3394	0	3433	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			18			46				234
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		267			331			892			545	
Travel Time (s)		6.1			7.5			20.3			12.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	261	1879	146	210	1950	176	228	272	103	302	363	234
Shared Lane Traffic (%)												
Lane Group Flow (vph)	261	2025	0	210	2126	0	228	375	0	302	363	234
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	10.0	38.0		10.0	37.0		10.0	40.0		10.0	41.0	41.0
Total Split (s)	21.0	49.0		17.0	45.0		13.0	40.0		14.0	41.0	41.0
Total Split (%)	17.5%	40.8%		14.2%	37.5%		10.8%	33.3%		11.7%	34.2%	34.2%
Maximum Green (s)	17.0	44.0		13.0	40.0		9.0	35.0		10.0	36.0	36.0
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		26.0			25.0			28.0			29.0	29.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)	17.0	44.0		13.0	40.0		9.0	35.0		10.0	36.0	36.0
Actuated g/C Ratio	0.14	0.37		0.11	0.33		0.08	0.29		0.08	0.30	0.30
v/c Ratio	1.04	1.09		1.10	1.00		0.89	0.37		1.06	0.65	0.37
Control Delay	125.5	77.0		129.2	50.8		88.5	30.6		108.7	30.8	3.4
Queue Delay	0.0	2.6		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	125.5	79.5		129.2	50.8		88.5	30.6		108.7	30.8	3.4
LOS	F	E		F	D		F	C		F	C	A
Approach Delay		84.8			57.9			52.5			49.8	
Approach LOS		F			E			D			D	
Queue Length 50th (ft)	~215	~652		~178	~255		91	105		~135	178	4
Queue Length 95th (ft)	m#385	#725		m#325	#476		#165	150		#228	285	19
Internal Link Dist (ft)		187			251			812			465	
Turn Bay Length (ft)				200			170			210		
Base Capacity (vph)	250	1851		191	2122		257	1022		286	558	638
Starvation Cap Reductn	0	19		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.04	1.11		1.10	1.00		0.89	0.37		1.06	0.65	0.37

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.10			
Intersection Signal Delay: 66.2		Intersection LOS: E	
Intersection Capacity Utilization 91.8%		ICU Level of Service F	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

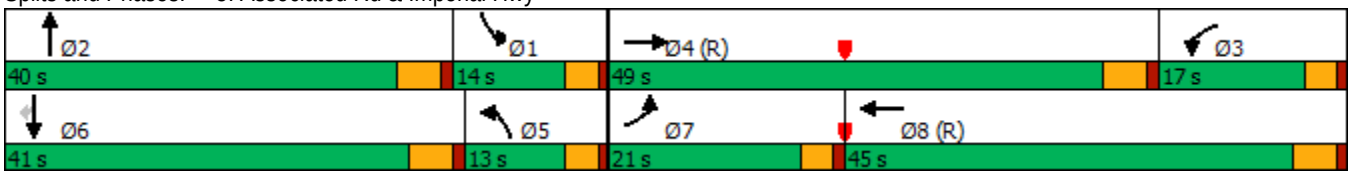
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

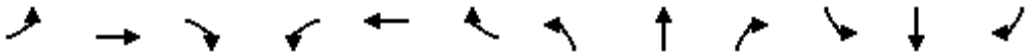
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Associated Rd & Imperial Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1910	295	237	2116	59	274	48	277	26	24	14
Future Volume (vph)	20	1910	295	237	2116	59	274	48	277	26	24	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		200	225		0	195		0	85		0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.996				0.850		0.945	
Flt Protected	0.950			0.950			0.950	0.966		0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5065	0	1681	1709	1583	1770	1760	0
Flt Permitted	0.950			0.950			0.950	0.966		0.950		
Satd. Flow (perm)	1770	5085	1583	1770	5065	0	1681	1709	1583	1770	1760	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			198		5				277		14	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1111			1324			560			455	
Travel Time (s)		25.3			30.1			12.7			10.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	1910	295	237	2116	59	274	48	277	26	24	14
Shared Lane Traffic (%)							42%					
Lane Group Flow (vph)	20	1910	295	237	2175	0	159	163	277	26	38	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4						2			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	33.0	33.0	10.0	26.0		27.0	27.0	27.0	11.0	11.0	
Total Split (s)	10.0	56.0	56.0	26.0	72.0		27.0	27.0	27.0	11.0	11.0	
Total Split (%)	8.3%	46.7%	46.7%	21.7%	60.0%		22.5%	22.5%	22.5%	9.2%	9.2%	
Maximum Green (s)	6.0	51.0	51.0	22.0	67.0		22.0	22.0	22.0	6.0	6.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		21.0	21.0		14.0		15.0	15.0	15.0			
Pedestrian Calls (#/hr)		5	5		5		5	5	5			
Act Effct Green (s)	6.0	53.3	53.3	19.7	73.0		22.0	22.0	22.0	6.0	6.0	
Actuated g/C Ratio	0.05	0.44	0.44	0.16	0.61		0.18	0.18	0.18	0.05	0.05	
v/c Ratio	0.23	0.85	0.36	0.82	0.71		0.52	0.52	0.54	0.30	0.38	
Control Delay	25.6	4.2	0.3	70.2	18.4		51.0	51.0	9.1	63.9	50.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	25.6	4.2	0.3	70.2	18.4		51.0	51.0	9.1	63.9	50.1	
LOS	C	A	A	E	B		D	D	A	E	D	
Approach Delay		3.9			23.5			31.6			55.7	
Approach LOS		A			C			C			E	
Queue Length 50th (ft)	13	82	0	176	357		117	121	0	20	18	
Queue Length 95th (ft)	m13	m78	m0	#283	517		193	196	75	51	56	
Internal Link Dist (ft)		1031			1244			480			375	
Turn Bay Length (ft)	140		200	225			195			85		
Base Capacity (vph)	88	2258	813	324	3083		308	313	516	88	101	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.23	0.85	0.36	0.73	0.71		0.52	0.52	0.54	0.30	0.38	

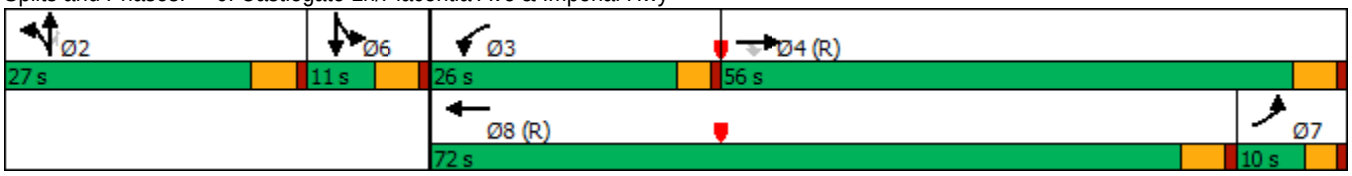
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 4 (3%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 16.6		Intersection LOS: B	
Intersection Capacity Utilization 77.2%		ICU Level of Service D	
Analysis Period (min) 15			

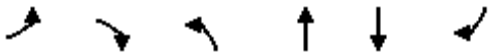
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

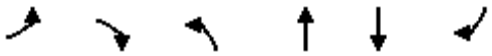
Splits and Phases: 6: Castlegate Ln/Placentia Ave & Imperial Hwy





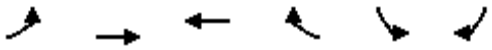
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	40	0	737	767	9
Future Volume (vph)	0	40	0	737	767	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.865			0.998	
Flt Protected						
Satd. Flow (prot)	0	1611	0	3539	3532	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	3539	3532	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	540			324	383	
Travel Time (s)	12.3			7.4	8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	40	0	737	767	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	40	0	737	776	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 31.5%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	124	15	694	775	33
Future Volume (vph)	41	124	15	694	775	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	90			0
Storage Lanes	1	1	1			0
Taper Length (ft)	60		60			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.994	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	3539	3518	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	3539	3518	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	192			545	324	
Travel Time (s)	4.4			12.4	7.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	41	124	15	694	775	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	41	124	15	694	808	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.8%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2286	2377	35	0	48
Future Volume (vph)	0	2286	2377	35	0	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	0	1
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	0.86	0.86	0.86	1.00	1.00
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	6408	6395	0	0	1611
Flt Permitted						
Satd. Flow (perm)	0	6408	6395	0	0	1611
Link Speed (mph)		30	30		30	
Link Distance (ft)		285	267		252	
Travel Time (s)		6.5	6.1		5.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2286	2377	35	0	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2286	2412	0	0	48
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

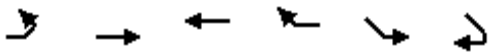
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.0%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	0	2005	390	0	2968	932	0	0	0	0	0	0
Future Volume (vph)	0	2005	390	0	2968	932	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	0		0	0		0	0		0
Storage Lanes	1		0	0		1	0		0	0		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.86	0.86	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.976				0.850						
Flt Protected												
Satd. Flow (prot)	0	6254	0	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	6254	0	0	5085	1583	0	0	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		563			192			626			545	
Travel Time (s)		12.8			4.4			14.2			12.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2005	390	0	2968	932	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2395	0	0	2968	932	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.0%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	1889	1104	0	3166	0	0
Future Volume (vph)	1889	1104	0	3166	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	5085	1583	0	5085	0	0
Flt Permitted						
Satd. Flow (perm)	5085	1583	0	5085	0	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	355			420	859	
Travel Time (s)	8.1			9.5	19.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1889	1104	0	3166	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1889	1104	0	3166	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 71.7%		ICU Level of Service C	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	0	2572	2565	403	0	0
Future Volume (vph)	0	2572	2565	403	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	0.91	0.91	1.00	1.00
Frt			0.980			
Flt Protected						
Satd. Flow (prot)	0	5085	4984	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	5085	4984	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		362	563		627	
Travel Time (s)		8.2	12.8		14.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2572	2565	403	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2572	2968	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 83.7%		ICU Level of Service E	
Analysis Period (min) 15			

APPENDIX F-IV

YEAR 2045 GENERAL PLAN BUILDOUT PLUS PROJECT TRAFFIC CONDITIONS

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	12	0	531	652	3
Future Vol, veh/h	0	12	0	531	652	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	12	0	531	652	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	328	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	668	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	668	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	668	-	-
HCM Lane V/C Ratio	-	0.018	-	-
HCM Control Delay (s)	-	10.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

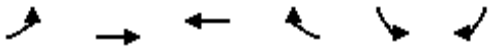
Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	24	12	517	645	19
Future Vol, veh/h	18	24	12	517	645	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	90	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	24	12	517	645	19

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	938	332	664	0	-	0
Stage 1	655	-	-	-	-	-
Stage 2	283	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	263	664	921	-	-	-
Stage 1	479	-	-	-	-	-
Stage 2	740	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	260	664	921	-	-	-
Mov Cap-2 Maneuver	260	-	-	-	-	-
Stage 1	473	-	-	-	-	-
Stage 2	740	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.6	0.2	0
HCM LOS	B		

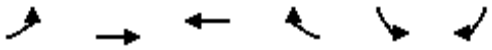
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	921	-	260	664	-	-
HCM Lane V/C Ratio	0.013	-	0.069	0.036	-	-
HCM Control Delay (s)	9	-	19.9	10.6	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	0.1	-	-



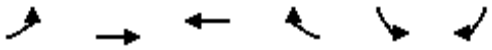
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2486	2091	10	0	9
Future Volume (Veh/h)	0	2486	2091	10	0	9
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2486	2091	10	0	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		285	267			
pX, platoon unblocked	0.74				0.85	0.74
vC, conflicting volume	2101				2718	528
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	704				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	655				867	798

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	622	622	622	622	597	597	597	309	9
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	10	9
cSH	1700	1700	1700	1700	1700	1700	1700	1700	798
Volume to Capacity	0.37	0.37	0.37	0.37	0.35	0.35	0.35	0.18	0.01
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6
Lane LOS									A
Approach Delay (s)	0.0				0.0				9.6
Approach LOS									A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		



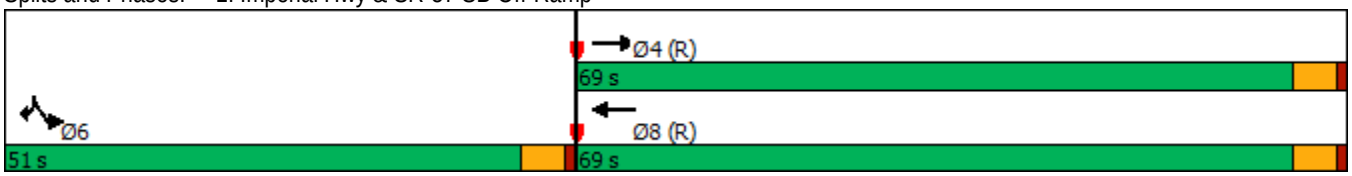
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1712	2048	0	609	562
Future Volume (vph)	0	1712	2048	0	609	562
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0	0	260
Storage Lanes	0			0	2	1
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.97	0.91
Frt					0.964	0.850
Flt Protected					0.963	
Satd. Flow (prot)	0	5085	5085	0	3355	1441
Flt Permitted					0.963	
Satd. Flow (perm)	0	5085	5085	0	3355	1441
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					5	5
Link Speed (mph)		30	30		30	
Link Distance (ft)		420	362		866	
Travel Time (s)		9.5	8.2		19.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1712	2048	0	609	562
Shared Lane Traffic (%)						34%
Lane Group Flow (vph)	0	1712	2048	0	800	371
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		24	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Prot
Protected Phases		4	8		6	6
Permitted Phases						

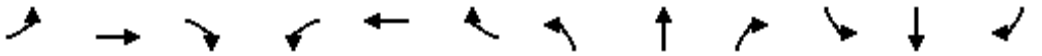


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		6.0	6.0		6.0	6.0
Minimum Split (s)		11.0	27.0		11.0	11.0
Total Split (s)		69.0	69.0		51.0	51.0
Total Split (%)		57.5%	57.5%		42.5%	42.5%
Maximum Green (s)		64.0	64.0		46.0	46.0
Yellow Time (s)		4.0	4.0		4.0	4.0
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		C-Max	C-Max		Max	Max
Walk Time (s)			7.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			5			
Act Effct Green (s)		64.0	64.0		46.0	46.0
Actuated g/C Ratio		0.53	0.53		0.38	0.38
v/c Ratio		0.63	0.76		0.62	0.67
Control Delay		21.0	16.1		32.3	37.4
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		21.0	16.1		32.3	37.4
LOS		C	B		C	D
Approach Delay		21.0	16.1		33.9	
Approach LOS		C	B		C	
Queue Length 50th (ft)		328	416		254	256
Queue Length 95th (ft)		378	485		321	382
Internal Link Dist (ft)		340	282		786	
Turn Bay Length (ft)						260
Base Capacity (vph)		2712	2712		1289	555
Starvation Cap Reductn		0	0		0	0
Spillback Cap Reductn		0	0		0	0
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.63	0.76		0.62	0.67

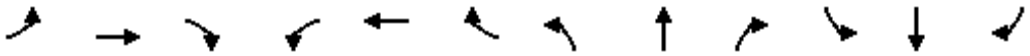
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 46 (38%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 22.1		Intersection LOS: C	
Intersection Capacity Utilization 71.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Imperial Hwy & SR-57 SB Off-Ramp





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	1560	0	0	1623	13	1089	30	831	0	0	84
Future Volume (vph)	95	1560	0	0	1623	13	1089	30	831	0	0	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		350	0		0
Storage Lanes	1		0	0		0	2		1	0		2
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86	0.86	0.91	0.86	0.95	1.00	1.00	0.88
Frt					0.999			0.892	0.850			0.850
Flt Protected	0.950						0.950	0.989				
Satd. Flow (prot)	1770	5085	0	0	6401	0	3221	1413	1504	0	0	2787
Flt Permitted	0.950						0.950	0.989				
Satd. Flow (perm)	1770	5085	0	0	6401	0	3221	1413	1504	0	0	2787
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1			9	55			64
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		192			285			643			368	
Travel Time (s)		4.4			6.5			14.6			8.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	95	1560	0	0	1623	13	1089	30	831	0	0	84
Shared Lane Traffic (%)							10%		43%			
Lane Group Flow (vph)	95	1560	0	0	1636	0	980	496	474	0	0	84
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			1
Detector Template	Left	Thru			Thru		Left	Thru	Right			Right
Leading Detector (ft)	20	100			100		20	100	20			20
Trailing Detector (ft)	0	0			0		0	0	0			0
Detector 1 Position(ft)	0	0			0		0	0	0			0
Detector 1 Size(ft)	20	6			6		20	6	20			20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA		Split	NA	Prot			Over
Protected Phases	7	4			8		2	2	2			7
Permitted Phases												

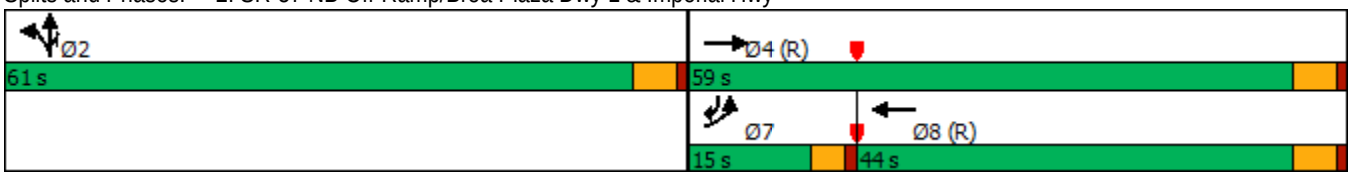


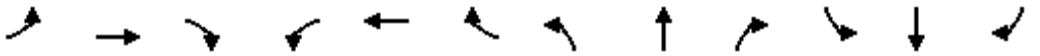
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4			8		2	2	2			7
Switch Phase												
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0	6.0			6.0
Minimum Split (s)	10.0	34.0			31.0		11.0	11.0	11.0			10.0
Total Split (s)	15.0	59.0			44.0		61.0	61.0	61.0			15.0
Total Split (%)	12.5%	49.2%			36.7%		50.8%	50.8%	50.8%			12.5%
Maximum Green (s)	11.0	54.0			39.0		56.0	56.0	56.0			11.0
Yellow Time (s)	3.0	4.0			4.0		4.0	4.0	4.0			3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0	1.0			1.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)	4.0	5.0			5.0		5.0	5.0	5.0			4.0
Lead/Lag	Lead				Lag							Lead
Lead-Lag Optimize?	Yes				Yes							Yes
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			3.0
Recall Mode	None	C-Max			C-Max		Max	Max	Max			None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		22.0			19.0							
Pedestrian Calls (#/hr)		5			5							
Act Effct Green (s)	10.0	54.0			40.0		56.0	56.0	56.0			10.0
Actuated g/C Ratio	0.08	0.45			0.33		0.47	0.47	0.47			0.08
v/c Ratio	0.64	0.68			0.77		0.65	0.75	0.65			0.29
Control Delay	60.1	27.4			14.5		27.1	34.2	26.4			20.6
Queue Delay	0.0	0.2			0.0		0.0	0.0	0.0			0.0
Total Delay	60.1	27.6			14.5		27.1	34.2	26.4			20.6
LOS	E	C			B		C	C	C			C
Approach Delay		29.4			14.5			28.7			20.6	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	74	365			76		311	351	255			7
Queue Length 95th (ft)	m120	438			122		388	519	384			35
Internal Link Dist (ft)		112			205			563			288	
Turn Bay Length (ft)									350			
Base Capacity (vph)	162	2288			2132		1503	664	731			313
Starvation Cap Reductn	0	0			0		0	0	0			0
Spillback Cap Reductn	0	149			0		0	0	1			0
Storage Cap Reductn	0	0			0		0	0	0			0
Reduced v/c Ratio	0.59	0.73			0.77		0.65	0.75	0.65			0.27

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 4 (3%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 24.5		Intersection LOS: C	
Intersection Capacity Utilization 72.8%		ICU Level of Service C	
Analysis Period (min) 15			

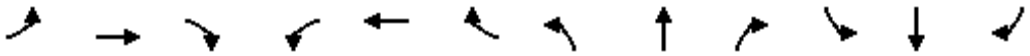
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: SR-57 NB Off-Ramp/Brea Plaza Dwy 1 & Imperial Hwy





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	950	321	370	814	11	251	6	327	58	30	8
Future Volume (vph)	2	950	321	370	814	11	251	6	327	58	30	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	220		0	225		230	100		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.998				0.850		0.968	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3405	0	3433	3532	0	3433	1863	1583	1770	1803	0
Flt Permitted	0.950			0.950			0.950			0.754		
Satd. Flow (perm)	1770	3405	0	3433	3532	0	3433	1863	1583	1405	1803	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45			1				55		8	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		664			723			1874			318	
Travel Time (s)		15.1			16.4			42.6			7.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2	950	321	370	814	11	251	6	327	58	30	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	1271	0	370	825	0	251	6	327	58	38	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8		5	2	3		6	
Permitted Phases									2	6		



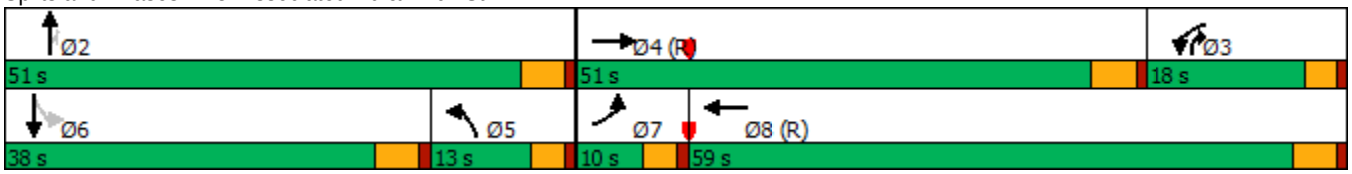
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	39.0		10.0	38.0		10.0	38.0	10.0	38.0	38.0	
Total Split (s)	10.0	51.0		18.0	59.0		13.0	51.0	18.0	38.0	38.0	
Total Split (%)	8.3%	42.5%		15.0%	49.2%		10.8%	42.5%	15.0%	31.7%	31.7%	
Maximum Green (s)	6.0	46.0		14.0	54.0		9.0	46.0	14.0	33.0	33.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	4.0	5.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lag		Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	Max	None	Max	Max	
Walk Time (s)		7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		27.0			26.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		5			5			5		5	5	
Act Effct Green (s)	6.0	46.0		14.0	62.0		9.0	46.0	65.0	33.0	33.0	
Actuated g/C Ratio	0.05	0.38		0.12	0.52		0.08	0.38	0.54	0.28	0.28	
v/c Ratio	0.02	0.95		0.93	0.45		0.98	0.01	0.37	0.15	0.08	
Control Delay	55.0	50.9		82.3	19.8		97.7	19.2	10.0	34.3	27.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	55.0	50.9		82.3	19.8		97.7	19.2	10.0	34.3	27.4	
LOS	D	D		F	B		F	B	A	C	C	
Approach Delay		50.9			39.2			47.8			31.6	
Approach LOS		D			D			D			C	
Queue Length 50th (ft)	2	485		148	196		91	2	54	34	17	
Queue Length 95th (ft)	11	#639		#239	295		#184	11	157	70	45	
Internal Link Dist (ft)		584			643			1794			238	
Turn Bay Length (ft)	150			220			225		230	100		
Base Capacity (vph)	88	1333		400	1825		257	714	882	386	501	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.02	0.95		0.93	0.45		0.98	0.01	0.37	0.15	0.08	

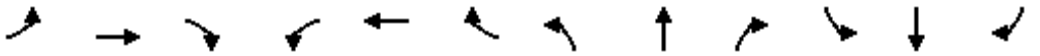
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 74 (62%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 45.3		Intersection LOS: D	
Intersection Capacity Utilization 73.4%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

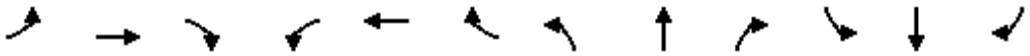
Queue shown is maximum after two cycles.

Splits and Phases: 3: Associated Rd & Birch St





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1	48	44	8	42	127	420	16	20	491	29
Future Volume (vph)	20	1	48	44	8	42	127	420	16	20	491	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	110		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.906			0.940			0.994			0.992	
Flt Protected		0.986			0.977		0.950			0.950		
Satd. Flow (prot)	0	1664	0	0	1711	0	1770	3518	0	1770	3511	0
Flt Permitted		0.896			0.818		0.460			0.499		
Satd. Flow (perm)	0	1512	0	0	1432	0	857	3518	0	930	3511	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		48			37			5			8	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		496			521			383			1874	
Travel Time (s)		11.3			11.8			8.7			42.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	1	48	44	8	42	127	420	16	20	491	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	69	0	0	94	0	127	436	0	20	520	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

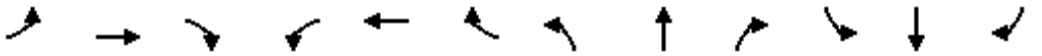


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	37.0	37.0		37.0	37.0		25.0	25.0		25.0	25.0	
Total Split (s)	47.0	47.0		47.0	47.0		73.0	73.0		73.0	73.0	
Total Split (%)	39.2%	39.2%		39.2%	39.2%		60.8%	60.8%		60.8%	60.8%	
Maximum Green (s)	42.0	42.0		42.0	42.0		68.0	68.0		68.0	68.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		13.7			13.7		96.3	96.3		96.3	96.3	
Actuated g/C Ratio		0.11			0.11		0.80	0.80		0.80	0.80	
v/c Ratio		0.32			0.48		0.18	0.15		0.03	0.18	
Control Delay		21.3			36.6		2.4	1.6		0.9	0.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		21.3			36.6		2.4	1.6		0.9	0.7	
LOS		C			D		A	A		A	A	
Approach Delay		21.3			36.6			1.8			0.7	
Approach LOS		C			D			A			A	
Queue Length 50th (ft)		15			43		6	11		0	0	
Queue Length 95th (ft)		49			79		m16	m25		m2	m35	
Internal Link Dist (ft)		416			441			303			1794	
Turn Bay Length (ft)							100			110		
Base Capacity (vph)		560			525		688	2825		746	2820	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.12			0.18		0.18	0.15		0.03	0.18	

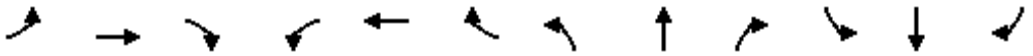
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 15 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 4.9		Intersection LOS: A	
Intersection Capacity Utilization 43.0%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Associated Rd & Greenbriar Ln



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	2166	106	96	1789	98	150	218	93	162	347	161
Future Volume (vph)	214	2166	106	96	1789	98	150	218	93	162	347	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	170		0	210		0
Storage Lanes	1		0	1		0	2		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.86	0.86	0.97	0.95	0.95	0.97	1.00	1.00
Frt		0.993			0.992			0.955				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5050	0	1770	6357	0	3433	3380	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5050	0	1770	6357	0	3433	3380	0	3433	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			10			55				161
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		267			331			892			545	
Travel Time (s)		6.1			7.5			20.3			12.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	214	2166	106	96	1789	98	150	218	93	162	347	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	214	2272	0	96	1887	0	150	311	0	162	347	161
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	10.0	38.0		10.0	37.0		10.0	40.0		10.0	41.0	41.0
Total Split (s)	22.0	58.0		11.0	47.0		10.0	40.0		11.0	41.0	41.0
Total Split (%)	18.3%	48.3%		9.2%	39.2%		8.3%	33.3%		9.2%	34.2%	34.2%
Maximum Green (s)	18.0	53.0		7.0	42.0		6.0	35.0		7.0	36.0	36.0
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		26.0			25.0			28.0			29.0	29.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)	17.1	53.0		7.0	42.9		6.0	35.0		7.0	36.0	36.0
Actuated g/C Ratio	0.14	0.44		0.06	0.36		0.05	0.29		0.06	0.30	0.30
v/c Ratio	0.85	1.02		0.93	0.83		0.88	0.30		0.81	0.62	0.27
Control Delay	83.0	46.1		114.9	29.3		99.4	27.9		69.1	23.6	2.1
Queue Delay	0.0	5.5		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	83.0	51.6		114.9	29.3		99.4	27.9		69.1	23.6	2.1
LOS	F	D		F	C		F	C		E	C	A
Approach Delay		54.3			33.4			51.1			29.5	
Approach LOS		D			C			D			C	
Queue Length 50th (ft)	173	~393		76	222		60	80		67	145	2
Queue Length 95th (ft)	m#287	#757		#180	236		#123	120		#125	222	30
Internal Link Dist (ft)		187			251			812			465	
Turn Bay Length (ft)				200			170			210		
Base Capacity (vph)	265	2234		103	2278		171	1024		200	558	587
Starvation Cap Reductn	0	35		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.81	1.03		0.93	0.83		0.88	0.30		0.81	0.62	0.27

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 116 (97%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 43.7		Intersection LOS: D	
Intersection Capacity Utilization 87.8%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

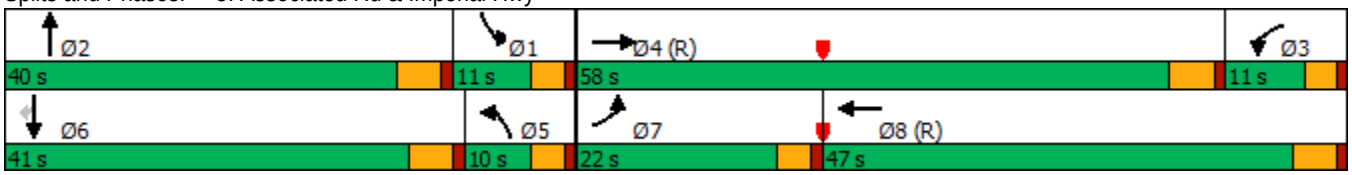
Queue shown is maximum after two cycles.

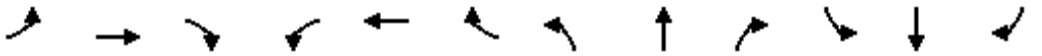
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

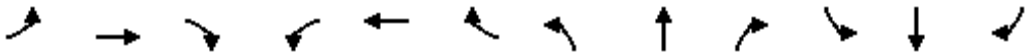
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Associated Rd & Imperial Hwy





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	2009	479	201	1649	34	191	12	149	26	29	14
Future Volume (vph)	14	2009	479	201	1649	34	191	12	149	26	29	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		200	225		0	195		0	85		0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.997				0.850		0.951	
Flt Protected	0.950			0.950			0.950	0.958		0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5070	0	1681	1695	1583	1770	1771	0
Flt Permitted	0.950			0.950			0.950	0.958		0.950		
Satd. Flow (perm)	1770	5085	1583	1770	5070	0	1681	1695	1583	1770	1771	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			319		4				149		14	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1111			1324			560			455	
Travel Time (s)		25.3			30.1			12.7			10.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	14	2009	479	201	1649	34	191	12	149	26	29	14
Shared Lane Traffic (%)							47%					
Lane Group Flow (vph)	14	2009	479	201	1683	0	101	102	149	26	43	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4						2			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	33.0	33.0	10.0	26.0		27.0	27.0	27.0	11.0	11.0	
Total Split (s)	10.0	59.0	59.0	23.0	72.0		27.0	27.0	27.0	11.0	11.0	
Total Split (%)	8.3%	49.2%	49.2%	19.2%	60.0%		22.5%	22.5%	22.5%	9.2%	9.2%	
Maximum Green (s)	6.0	54.0	54.0	19.0	67.0		22.0	22.0	22.0	6.0	6.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		21.0	21.0		14.0		15.0	15.0	15.0			
Pedestrian Calls (#/hr)		5	5		5		5	5	5			
Act Effct Green (s)	6.0	55.8	55.8	17.2	73.0		22.0	22.0	22.0	6.0	6.0	
Actuated g/C Ratio	0.05	0.46	0.46	0.14	0.61		0.18	0.18	0.18	0.05	0.05	
v/c Ratio	0.16	0.85	0.53	0.79	0.55		0.33	0.33	0.36	0.30	0.43	
Control Delay	33.9	10.8	1.4	71.9	15.2		46.0	46.0	9.3	63.9	54.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	33.9	10.8	1.4	71.9	15.2		46.0	46.0	9.3	63.9	54.1	
LOS	C	B	A	E	B		D	D	A	E	D	
Approach Delay		9.1			21.2			30.5			57.8	
Approach LOS		A			C			C			E	
Queue Length 50th (ft)	9	131	0	150	236		72	72	0	20	22	
Queue Length 95th (ft)	m11	m131	m0	#251	347		129	130	57	51	61	
Internal Link Dist (ft)		1031			1244			480			375	
Turn Bay Length (ft)	140		200	225			195			85		
Base Capacity (vph)	88	2365	906	280	3085		308	310	411	88	101	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.16	0.85	0.53	0.72	0.55		0.33	0.33	0.36	0.30	0.43	

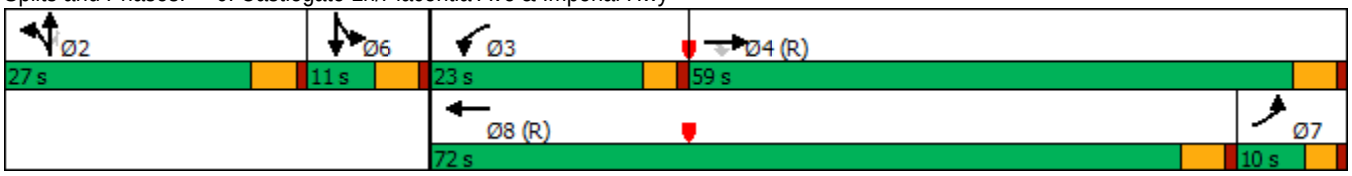
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 16.1		Intersection LOS: B	
Intersection Capacity Utilization 73.9%		ICU Level of Service D	
Analysis Period (min) 15			

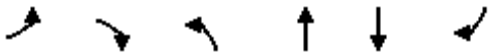
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

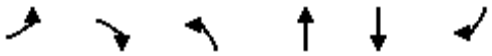
Splits and Phases: 6: Castlegate Ln/Placentia Ave & Imperial Hwy





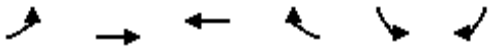
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	12	0	531	652	3
Future Volume (vph)	0	12	0	531	652	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.865			0.999	
Flt Protected						
Satd. Flow (prot)	0	1611	0	3539	3536	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	3539	3536	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	540			324	383	
Travel Time (s)	12.3			7.4	8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	12	0	531	652	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	12	0	531	655	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.1%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	18	24	12	517	645	19
Future Volume (vph)	18	24	12	517	645	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	90			0
Storage Lanes	1	1	1			0
Taper Length (ft)	60		60			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.996	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	3539	3525	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	3539	3525	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	192			545	324	
Travel Time (s)	4.4			12.4	7.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	18	24	12	517	645	19
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	24	12	517	664	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.4%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2486	2091	10	0	9
Future Volume (vph)	0	2486	2091	10	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	0	1
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	0.86	0.86	0.86	1.00	1.00
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	6408	6401	0	0	1611
Flt Permitted						
Satd. Flow (perm)	0	6408	6401	0	0	1611
Link Speed (mph)		30	30		30	
Link Distance (ft)		285	267		252	
Travel Time (s)		6.5	6.1		5.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2486	2091	10	0	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2486	2101	0	0	9
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

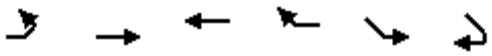
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.5%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	0	1655	575	0	2246	550	0	0	0	0	0	0
Future Volume (vph)	0	1655	575	0	2246	550	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	0		0	0		0	0		0
Storage Lanes	1		0	0		1	0		0	0		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.86	0.86	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961				0.850						
Flt Protected												
Satd. Flow (prot)	0	6158	0	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	6158	0	0	5085	1583	0	0	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		563			192			626			545	
Travel Time (s)		12.8			4.4			14.2			12.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1655	575	0	2246	550	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2230	0	0	2246	550	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.7%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	1712	836	0	2610	0	0
Future Volume (vph)	1712	836	0	2610	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	5085	1583	0	5085	0	0
Flt Permitted						
Satd. Flow (perm)	5085	1583	0	5085	0	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	355			420	859	
Travel Time (s)	8.1			9.5	19.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1712	836	0	2610	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1712	836	0	2610	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.1%		ICU Level of Service B	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	0	2321	2048	198	0	0
Future Volume (vph)	0	2321	2048	198	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	0.91	0.91	1.00	1.00
Frt			0.987			
Flt Protected						
Satd. Flow (prot)	0	5085	5019	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	5085	5019	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		362	563		627	
Travel Time (s)		8.2	12.8		14.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2321	2048	198	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2321	2246	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 71.2%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	4	0	745	827	5
Future Vol, veh/h	0	4	0	745	827	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	0	745	827	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	416	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	585	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	585	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	585	-	-
HCM Lane V/C Ratio	-	0.007	-	-
HCM Control Delay (s)	-	11.2	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

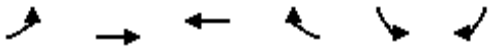
Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	36	117	18	707	798	34
Future Vol, veh/h	36	117	18	707	798	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	90	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	117	18	707	798	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1205	416	832	0	-	0
Stage 1	815	-	-	-	-	-
Stage 2	390	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	176	585	796	-	-	-
Stage 1	396	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	172	585	796	-	-	-
Mov Cap-2 Maneuver	172	-	-	-	-	-
Stage 1	387	-	-	-	-	-
Stage 2	653	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.1	0.2	0
HCM LOS	C		

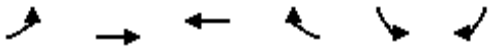
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	796	-	172	585	-	-
HCM Lane V/C Ratio	0.023	-	0.209	0.2	-	-
HCM Control Delay (s)	9.6	-	31.4	12.7	-	-
HCM Lane LOS	A	-	D	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.8	0.7	-	-



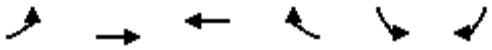
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2300	2400	30	0	43
Future Volume (Veh/h)	0	2300	2400	30	0	43
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2300	2400	30	0	43
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		285	267			
pX, platoon unblocked	0.68				0.78	0.68
vC, conflicting volume	2430				2990	615
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	750				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	94
cM capacity (veh/h)	581				800	737

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	575	575	575	575	686	686	686	373	43
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	30	43
cSH	1700	1700	1700	1700	1700	1700	1700	1700	737
Volume to Capacity	0.34	0.34	0.34	0.34	0.40	0.40	0.40	0.22	0.06
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.2
Lane LOS									B
Approach Delay (s)	0.0				0.0				10.2
Approach LOS									B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1870	2547	0	681	601
Future Volume (vph)	0	1870	2547	0	681	601
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0	0	260
Storage Lanes	0			0	2	1
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.97	0.91
Frt					0.966	0.850
Flt Protected					0.963	
Satd. Flow (prot)	0	5085	5085	0	3362	1441
Flt Permitted					0.963	
Satd. Flow (perm)	0	5085	5085	0	3362	1441
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					2	2
Link Speed (mph)		30	30		30	
Link Distance (ft)		420	362		866	
Travel Time (s)		9.5	8.2		19.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1870	2547	0	681	601
Shared Lane Traffic (%)						33%
Lane Group Flow (vph)	0	1870	2547	0	879	403
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		24	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Prot
Protected Phases		4	8		6	6
Permitted Phases						



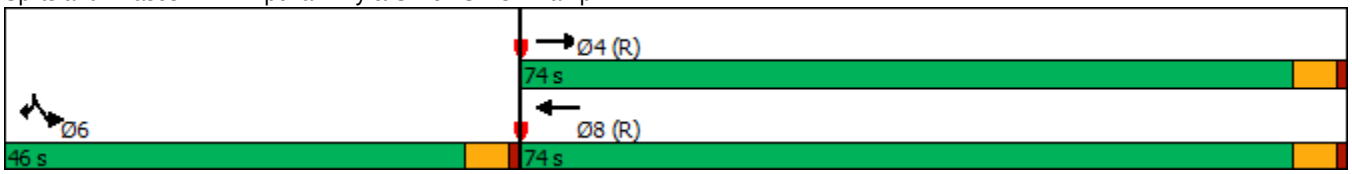
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		6.0	6.0		6.0	6.0
Minimum Split (s)		11.0	27.0		11.0	11.0
Total Split (s)		74.0	74.0		46.0	46.0
Total Split (%)		61.7%	61.7%		38.3%	38.3%
Maximum Green (s)		69.0	69.0		41.0	41.0
Yellow Time (s)		4.0	4.0		4.0	4.0
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		C-Max	C-Max		Max	Max
Walk Time (s)			7.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			5			
Act Effct Green (s)		69.0	69.0		41.0	41.0
Actuated g/C Ratio		0.58	0.58		0.34	0.34
v/c Ratio		0.64	0.87		0.76	0.82
Control Delay		18.4	15.0		40.4	50.9
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		18.4	15.0		40.4	50.9
LOS		B	B		D	D
Approach Delay		18.4	15.0		43.7	
Approach LOS		B	B		D	
Queue Length 50th (ft)		338	264		310	309
Queue Length 95th (ft)		388	283		387	#494
Internal Link Dist (ft)		340	282		786	
Turn Bay Length (ft)						260
Base Capacity (vph)		2923	2923		1150	493
Starvation Cap Reductn		0	0		0	0
Spillback Cap Reductn		0	0		0	0
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.64	0.87		0.76	0.82

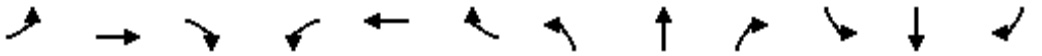
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 8 (7%), Referenced to phase 4:EBT and 8:WBT, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 22.6	Intersection LOS: C
Intersection Capacity Utilization 83.3%	ICU Level of Service E
Analysis Period (min) 15	

95th percentile volume exceeds capacity, queue may be longer.

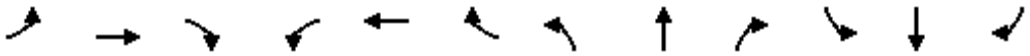
Queue shown is maximum after two cycles.

Splits and Phases: 1: Imperial Hwy & SR-57 SB Off-Ramp





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	1808	0	0	2549	37	1144	62	434	0	0	184
Future Volume (vph)	175	1808	0	0	2549	37	1144	62	434	0	0	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		350	0		0
Storage Lanes	1		0	0		0	2		1	0		2
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86	0.86	0.91	0.86	0.95	1.00	1.00	0.88
Frt					0.998			0.980	0.850			0.850
Flt Protected	0.950						0.950	0.965				
Satd. Flow (prot)	1770	5085	0	0	6395	0	3221	1515	1504	0	0	2787
Flt Permitted	0.950						0.950	0.965				
Satd. Flow (perm)	1770	5085	0	0	6395	0	3221	1515	1504	0	0	2787
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					3			7	55			64
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		192			285			643			368	
Travel Time (s)		4.4			6.5			14.6			8.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	1808	0	0	2549	37	1144	62	434	0	0	184
Shared Lane Traffic (%)							26%		13%			
Lane Group Flow (vph)	175	1808	0	0	2586	0	847	415	378	0	0	184
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			1
Detector Template	Left	Thru			Thru		Left	Thru	Right			Right
Leading Detector (ft)	20	100			100		20	100	20			20
Trailing Detector (ft)	0	0			0		0	0	0			0
Detector 1 Position(ft)	0	0			0		0	0	0			0
Detector 1 Size(ft)	20	6			6		20	6	20			20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA		Split	NA	Prot			Over
Protected Phases	7	4			8		2	2	2			7
Permitted Phases												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4			8		2	2	2			7
Switch Phase												
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0	6.0			6.0
Minimum Split (s)	10.0	34.0			31.0		11.0	11.0	11.0			10.0
Total Split (s)	19.0	76.0			57.0		44.0	44.0	44.0			19.0
Total Split (%)	15.8%	63.3%			47.5%		36.7%	36.7%	36.7%			15.8%
Maximum Green (s)	15.0	71.0			52.0		39.0	39.0	39.0			15.0
Yellow Time (s)	3.0	4.0			4.0		4.0	4.0	4.0			3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0	1.0			1.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)	4.0	5.0			5.0		5.0	5.0	5.0			4.0
Lead/Lag	Lead				Lag							Lead
Lead-Lag Optimize?	Yes				Yes							Yes
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			3.0
Recall Mode	None	C-Max			C-Max		Max	Max	Max			None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		22.0			19.0							
Pedestrian Calls (#/hr)		5			5							
Act Effct Green (s)	14.4	71.0			52.6		39.0	39.0	39.0			14.4
Actuated g/C Ratio	0.12	0.59			0.44		0.32	0.32	0.32			0.12
v/c Ratio	0.83	0.60			0.92		0.81	0.84	0.72			0.47
Control Delay	77.4	17.8			11.7		44.4	53.0	39.3			35.9
Queue Delay	0.0	0.1			0.3		0.0	0.0	0.0			0.0
Total Delay	77.4	18.0			12.0		44.4	53.0	39.3			35.9
LOS	E	B			B		D	D	D			D
Approach Delay		23.2			12.0			45.4			35.9	
Approach LOS		C			B			D			D	
Queue Length 50th (ft)	135	276			136		329	339	233			48
Queue Length 95th (ft)	m#235	338			m138		413	#540	358			89
Internal Link Dist (ft)		112			205			563			288	
Turn Bay Length (ft)									350			
Base Capacity (vph)	221	3008			2806		1046	497	525			404
Starvation Cap Reductn	0	0			30		0	0	0			0
Spillback Cap Reductn	0	315			0		0	0	2			0
Storage Cap Reductn	0	0			0		0	0	0			0
Reduced v/c Ratio	0.79	0.67			0.93		0.81	0.84	0.72			0.46

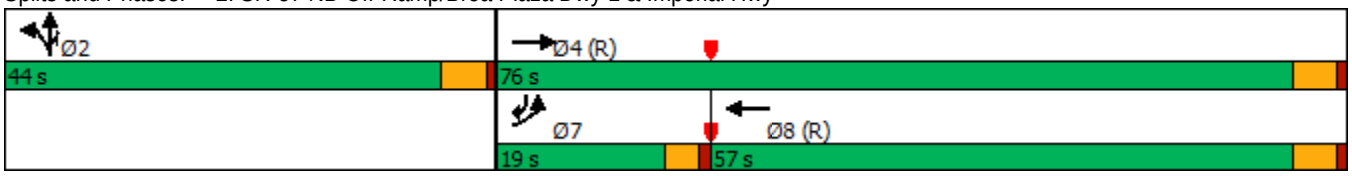
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 24.7		Intersection LOS: C	
Intersection Capacity Utilization 84.1%		ICU Level of Service E	
Analysis Period (min) 15			

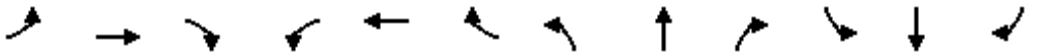
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

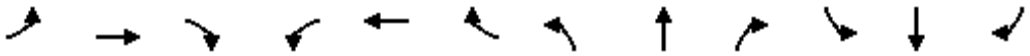
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: SR-57 NB Off-Ramp/Brea Plaza Dwy 1 & Imperial Hwy





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	889	300	300	1248	17	483	34	367	11	21	6
Future Volume (vph)	12	889	300	300	1248	17	483	34	367	11	21	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	220		0	225		230	100		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.998				0.850		0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3405	0	3433	3532	0	3433	1863	1583	1770	1801	0
Flt Permitted	0.950			0.950			0.950			0.735		
Satd. Flow (perm)	1770	3405	0	3433	3532	0	3433	1863	1583	1369	1801	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			1				55		6	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		664			723			1874			318	
Travel Time (s)		15.1			16.4			42.6			7.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	889	300	300	1248	17	483	34	367	11	21	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	1189	0	300	1265	0	483	34	367	11	27	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8		5	2	3		6	
Permitted Phases									2	6		



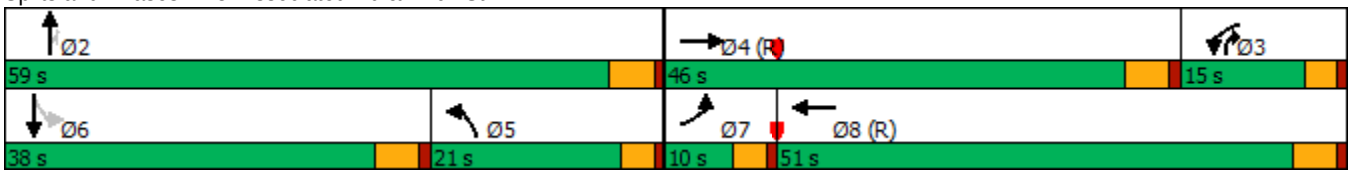
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	39.0		10.0	38.0		10.0	38.0	10.0	38.0	38.0	
Total Split (s)	10.0	46.0		15.0	51.0		21.0	59.0	15.0	38.0	38.0	
Total Split (%)	8.3%	38.3%		12.5%	42.5%		17.5%	49.2%	12.5%	31.7%	31.7%	
Maximum Green (s)	6.0	41.0		11.0	46.0		17.0	54.0	11.0	33.0	33.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	4.0	5.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lag		Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	Max	None	Max	Max	
Walk Time (s)		7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		27.0			26.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		5			5			5		5	5	
Act Effct Green (s)	6.0	41.0		11.0	52.0		17.0	54.0	70.0	33.0	33.0	
Actuated g/C Ratio	0.05	0.34		0.09	0.43		0.14	0.45	0.58	0.28	0.28	
v/c Ratio	0.14	1.00		0.96	0.83		0.99	0.04	0.39	0.03	0.05	
Control Delay	58.2	64.0		95.1	36.5		86.3	16.3	10.6	32.3	27.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	58.2	64.0		95.1	36.5		86.3	16.3	10.6	32.3	27.1	
LOS	E	E		F	D		F	B	B	C	C	
Approach Delay		64.0			47.8			52.2			28.6	
Approach LOS		E			D			D			C	
Queue Length 50th (ft)	9	468		121	417		196	14	113	6	12	
Queue Length 95th (ft)	30	#630		#209	#636		#314	29	145	21	36	
Internal Link Dist (ft)		584			643			1794			238	
Turn Bay Length (ft)	150			220			225		230	100		
Base Capacity (vph)	88	1191		314	1530		486	838	946	376	499	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.14	1.00		0.96	0.83		0.99	0.04	0.39	0.03	0.05	

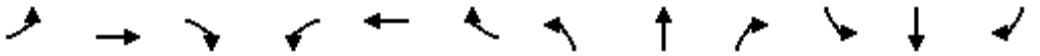
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 86 (72%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 53.9		Intersection LOS: D	
Intersection Capacity Utilization 74.8%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

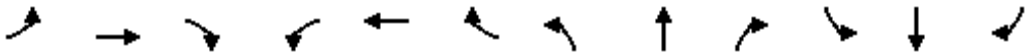
Queue shown is maximum after two cycles.

Splits and Phases: 3: Associated Rd & Birch St





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	9	99	28	4	37	56	556	39	17	577	19
Future Volume (vph)	41	9	99	28	4	37	56	556	39	17	577	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	110		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.910			0.928			0.990			0.995	
Flt Protected		0.986			0.980		0.950			0.950		
Satd. Flow (prot)	0	1671	0	0	1694	0	1770	3504	0	1770	3522	0
Flt Permitted		0.887			0.666		0.427			0.427		
Satd. Flow (perm)	0	1504	0	0	1151	0	795	3504	0	795	3522	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		99			37			9			4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		496			521			383			1874	
Travel Time (s)		11.3			11.8			8.7			42.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	41	9	99	28	4	37	56	556	39	17	577	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	149	0	0	69	0	56	595	0	17	596	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

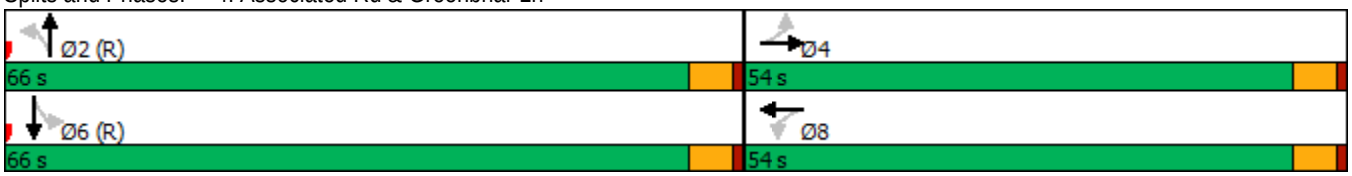


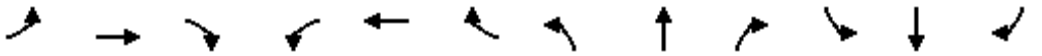
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	37.0	37.0		37.0	37.0		25.0	25.0		25.0	25.0	
Total Split (s)	54.0	54.0		54.0	54.0		66.0	66.0		66.0	66.0	
Total Split (%)	45.0%	45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Maximum Green (s)	49.0	49.0		49.0	49.0		61.0	61.0		61.0	61.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		13.3			13.3		96.7	96.7		96.7	96.7	
Actuated g/C Ratio		0.11			0.11		0.81	0.81		0.81	0.81	
v/c Ratio		0.58			0.43		0.09	0.21		0.03	0.21	
Control Delay		26.5			31.7		4.6	3.5		0.2	0.3	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		26.5			31.7		4.6	3.5		0.2	0.3	
LOS		C			C		A	A		A	A	
Approach Delay		26.5			31.7			3.6			0.3	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		38			24		5	30		0	1	
Queue Length 95th (ft)		85			58		m14	m61		m0	m2	
Internal Link Dist (ft)		416			441			303			1794	
Turn Bay Length (ft)							100			110		
Base Capacity (vph)		672			491		640	2824		640	2837	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.22			0.14		0.09	0.21		0.03	0.21	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 19 (16%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 5.8		Intersection LOS: A	
Intersection Capacity Utilization 44.3%		ICU Level of Service A	
Analysis Period (min) 15			

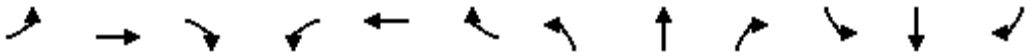
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Associated Rd & Greenbriar Ln





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	272	1882	146	210	1941	181	227	272	103	294	363	260
Future Volume (vph)	272	1882	146	210	1941	181	227	272	103	294	363	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	200		0	170		0	210		0
Storage Lanes	1		0	1		0	2		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.86	0.86	0.97	0.95	0.95	0.97	1.00	1.00
Frt		0.989			0.987			0.959				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5029	0	1770	6325	0	3433	3394	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5029	0	1770	6325	0	3433	3394	0	3433	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			19			46				260
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		267			331			892			545	
Travel Time (s)		6.1			7.5			20.3			12.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	272	1882	146	210	1941	181	227	272	103	294	363	260
Shared Lane Traffic (%)												
Lane Group Flow (vph)	272	2028	0	210	2122	0	227	375	0	294	363	260
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	10.0	38.0		10.0	37.0		10.0	40.0		10.0	41.0	41.0
Total Split (s)	21.0	49.0		17.0	45.0		13.0	40.0		14.0	41.0	41.0
Total Split (%)	17.5%	40.8%		14.2%	37.5%		10.8%	33.3%		11.7%	34.2%	34.2%
Maximum Green (s)	17.0	44.0		13.0	40.0		9.0	35.0		10.0	36.0	36.0
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		26.0			25.0			28.0			29.0	29.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)	17.0	44.0		13.0	40.0		9.0	35.0		10.0	36.0	36.0
Actuated g/C Ratio	0.14	0.37		0.11	0.33		0.08	0.29		0.08	0.30	0.30
v/c Ratio	1.09	1.10		1.10	1.00		0.88	0.37		1.03	0.65	0.40
Control Delay	136.3	77.7		129.2	50.5		87.9	30.6		102.0	31.3	3.6
Queue Delay	0.0	1.9		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	136.3	79.6		129.2	50.5		87.9	30.6		102.0	31.3	3.6
LOS	F	E		F	D		F	C		F	C	A
Approach Delay		86.3			57.6			52.2			46.1	
Approach LOS		F			E			D			D	
Queue Length 50th (ft)	~235	~653		~178	~253		91	105		~128	179	4
Queue Length 95th (ft)	m#410	#727		m#325	#472		#164	150		#221	289	20
Internal Link Dist (ft)		187			251			812			465	
Turn Bay Length (ft)				200			170			210		
Base Capacity (vph)	250	1851		191	2121		257	1022		286	558	656
Starvation Cap Reductn	0	19		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.09	1.11		1.10	1.00		0.88	0.37		1.03	0.65	0.40

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 66.1 Intersection LOS: E
Intersection Capacity Utilization 91.8% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

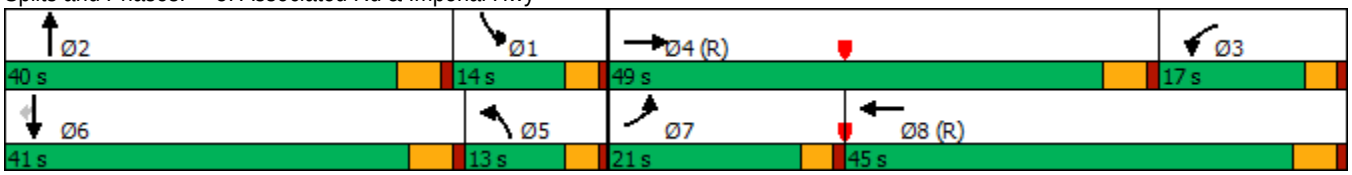
Queue shown is maximum after two cycles.

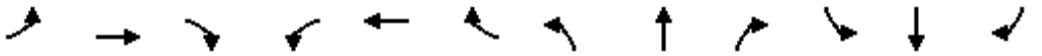
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

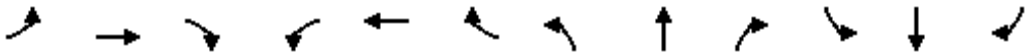
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Associated Rd & Imperial Hwy





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1909	291	237	2114	59	272	48	277	26	24	14
Future Volume (vph)	20	1909	291	237	2114	59	272	48	277	26	24	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		200	225		0	195		0	85		0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.996				0.850		0.945	
Flt Protected	0.950			0.950			0.950	0.966		0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5065	0	1681	1709	1583	1770	1760	0
Flt Permitted	0.950			0.950			0.950	0.966		0.950		
Satd. Flow (perm)	1770	5085	1583	1770	5065	0	1681	1709	1583	1770	1760	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			195		5				277		14	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1111			1324			560			455	
Travel Time (s)		25.3			30.1			12.7			10.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	1909	291	237	2114	59	272	48	277	26	24	14
Shared Lane Traffic (%)							42%					
Lane Group Flow (vph)	20	1909	291	237	2173	0	158	162	277	26	38	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4						2			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	33.0	33.0	10.0	26.0		27.0	27.0	27.0	11.0	11.0	
Total Split (s)	10.0	56.0	56.0	26.0	72.0		27.0	27.0	27.0	11.0	11.0	
Total Split (%)	8.3%	46.7%	46.7%	21.7%	60.0%		22.5%	22.5%	22.5%	9.2%	9.2%	
Maximum Green (s)	6.0	51.0	51.0	22.0	67.0		22.0	22.0	22.0	6.0	6.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		21.0	21.0		14.0		15.0	15.0	15.0			
Pedestrian Calls (#/hr)		5	5		5		5	5	5			
Act Effct Green (s)	6.0	53.3	53.3	19.7	73.0		22.0	22.0	22.0	6.0	6.0	
Actuated g/C Ratio	0.05	0.44	0.44	0.16	0.61		0.18	0.18	0.18	0.05	0.05	
v/c Ratio	0.23	0.85	0.36	0.82	0.70		0.51	0.52	0.54	0.30	0.38	
Control Delay	25.5	4.1	0.3	70.2	18.4		50.9	50.9	9.1	63.9	50.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	25.5	4.1	0.3	70.2	18.4		50.9	50.9	9.1	63.9	50.1	
LOS	C	A	A	E	B		D	D	A	E	D	
Approach Delay		3.8			23.5			31.5			55.7	
Approach LOS		A			C			C			E	
Queue Length 50th (ft)	13	79	0	176	357		116	120	0	20	18	
Queue Length 95th (ft)	m13	m76	m0	#283	516		191	195	75	51	56	
Internal Link Dist (ft)		1031			1244			480			375	
Turn Bay Length (ft)	140		200	225			195			85		
Base Capacity (vph)	88	2258	811	324	3083		308	313	516	88	101	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.23	0.85	0.36	0.73	0.70		0.51	0.52	0.54	0.30	0.38	

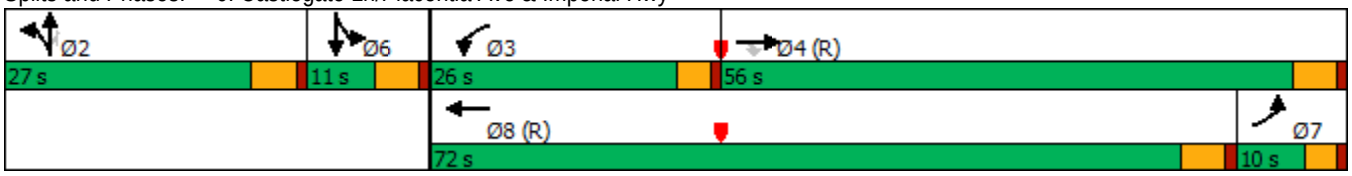
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 4 (3%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 77.1%		ICU Level of Service D	
Analysis Period (min) 15			

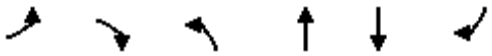
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

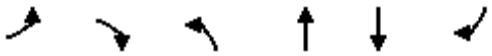
Splits and Phases: 6: Castlegate Ln/Placentia Ave & Imperial Hwy





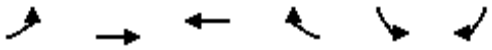
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	4	0	745	827	5
Future Volume (vph)	0	4	0	745	827	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.865			0.999	
Flt Protected						
Satd. Flow (prot)	0	1611	0	3539	3536	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	3539	3536	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	540			324	383	
Travel Time (s)	12.3			7.4	8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	4	0	745	827	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	4	0	745	832	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.0%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	36	117	18	707	798	34
Future Volume (vph)	36	117	18	707	798	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	90			0
Storage Lanes	1	1	1			0
Taper Length (ft)	60		60			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.994	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	3539	3518	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	3539	3518	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	192			545	324	
Travel Time (s)	4.4			12.4	7.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	36	117	18	707	798	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	117	18	707	832	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.1%		ICU Level of Service A	
Analysis Period (min) 15			

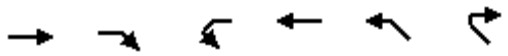


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2300	2400	30	0	43
Future Volume (vph)	0	2300	2400	30	0	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	0	1
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	0.86	0.86	0.86	1.00	1.00
Frt			0.998			0.865
Flt Protected						
Satd. Flow (prot)	0	6408	6395	0	0	1611
Flt Permitted						
Satd. Flow (perm)	0	6408	6395	0	0	1611
Link Speed (mph)		30	30		30	
Link Distance (ft)		285	267		252	
Travel Time (s)		6.5	6.1		5.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2300	2400	30	0	43
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2300	2430	0	0	43
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.3%		ICU Level of Service A	
Analysis Period (min) 15			

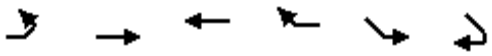
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	0	1983	390	0	2950	927	0	0	0	0	0	0
Future Volume (vph)	0	1983	390	0	2950	927	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		0	0		0	0		0	0		0
Storage Lanes	1		0	0		1	0		0	0		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.86	0.86	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975				0.850						
Flt Protected												
Satd. Flow (prot)	0	6248	0	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	6248	0	0	5085	1583	0	0	0	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		563			192			626			545	
Travel Time (s)		12.8			4.4			14.2			12.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1983	390	0	2950	927	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2373	0	0	2950	927	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.7%		ICU Level of Service B	
Analysis Period (min) 15			



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	1870	1104	0	3148	0	0
Future Volume (vph)	1870	1104	0	3148	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	5085	1583	0	5085	0	0
Flt Permitted						
Satd. Flow (perm)	5085	1583	0	5085	0	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	355			420	859	
Travel Time (s)	8.1			9.5	19.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1870	1104	0	3148	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1870	1104	0	3148	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 71.7%		ICU Level of Service C	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	0	2551	2547	403	0	0
Future Volume (vph)	0	2551	2547	403	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	0.91	0.91	1.00	1.00
Frt			0.980			
Flt Protected						
Satd. Flow (prot)	0	5085	4984	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	5085	4984	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		362	563		627	
Travel Time (s)		8.2	12.8		14.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2551	2547	403	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2551	2950	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 83.3%		ICU Level of Service E	
Analysis Period (min) 15			

APPENDIX G

INTERSECTION SAFETY ENHANCEMENT WORKSHEETS

APPENDIX G-I

INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS – ICU

YEAR 2045 GENERAL PLAN BUILDOUT PLUS PROJECT TRAFFIC CONDITIONS WITH INTERSECTION SAFETY ENHANCEMENTS

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.556

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Base Volume Input [veh/h]	251	6	327	58	30	8	2	950	321	370	814	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	251	6	327	58	30	8	2	950	321	370	814	11
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	2	82	15	8	2	1	238	80	93	204	3
Total Analysis Volume [veh/h]	251	6	327	58	30	8	2	950	321	370	814	11
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.08	0.03	0.02	0.02	0.00	0.28	0.12	0.11	0.24	0.24
Intersection LOS	A											
Intersection V/C	0.556											

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.587

Intersection Setup

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Rd			S. Associated Rd			Birch St			Birch St		
Base Volume Input [veh/h]	483	34	367	11	21	6	12	889	300	300	1248	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	483	34	367	11	21	6	12	889	300	300	1248	17
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	9	92	3	5	2	3	222	75	75	312	4
Total Analysis Volume [veh/h]	483	34	367	11	21	6	12	889	300	300	1248	17
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.02	0.13	0.01	0.02	0.02	0.01	0.26	0.03	0.09	0.37	0.37
Intersection LOS	A											
Intersection V/C	0.587											

APPENDIX G-II

INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS – HCM

YEAR 2045 GENERAL PLAN BUILDOUT PLUS PROJECT TRAFFIC CONDITIONS WITH INTERSECTION SAFETY ENHANCEMENTS

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.623

Intersection Setup

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	251	6	327	58	30	8	2	950	321	370	814	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	251	6	327	58	30	8	2	950	321	370	814	11
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	2	82	15	8	2	1	238	80	93	204	3
Total Analysis Volume [veh/h]	251	6	327	58	30	8	2	950	321	370	814	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	0	4	0	5	2	2	1	6	0
Auxiliary Signal Groups									2,3			
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	0	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	0	0	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	13	50	0	0	37	0	10	38	38	17	45	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	27	27	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No			No		No	No	No	No	No	
Maximum Recall	No	No			No		No	No	No	No	No	
Pedestrian Recall	No	No			No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	21	21	8	8	0	60	73	13	72	72
g / C, Green / Cycle	0.09	0.20	0.20	0.07	0.07	0.00	0.57	0.69	0.12	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.07	0.00	0.17	0.03	0.02	0.00	0.25	0.17	0.11	0.22	0.22
s, saturation flow rate [veh/h]	3500	1900	1900	1800	1900	1800	3800	1900	3500	1900	1900
c, Capacity [veh/h]	302	373	373	163	136	8	2151	1312	433	1302	1302
d1, Uniform Delay [s]	47.26	34.07	41.02	46.80	46.22	52.16	13.19	6.06	45.14	6.65	6.64
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.84	0.02	6.66	1.32	1.10	16.15	0.66	0.44	4.94	0.64	0.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.02	0.88	0.36	0.28	0.25	0.44	0.24	0.86	0.32	0.32
d, Delay for Lane Group [s/veh]	53.10	34.09	47.68	48.12	47.32	68.31	13.85	6.50	50.09	7.29	7.28
Lane Group LOS	D	C	D	D	D	E	B	A	D	A	A
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.46	0.13	8.82	1.51	0.98	0.09	6.38	2.53	4.99	3.55	3.52
50th-Percentile Queue Length [ft/ln]	86.53	3.14	220.55	37.77	24.51	2.19	159.40	63.27	124.83	88.63	88.12
95th-Percentile Queue Length [veh/ln]	6.23	0.23	13.69	2.72	1.76	0.16	10.52	4.56	8.66	6.38	6.34
95th-Percentile Queue Length [ft/ln]	155.75	5.66	342.33	67.98	44.12	3.94	262.93	113.89	216.45	159.53	158.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.10	34.09	47.68	48.12	47.32	47.32	68.31	13.85	6.50	50.09	7.29	7.28
Movement LOS	D	C	D	D	D	D	E	B	A	D	A	A
d_A, Approach Delay [s/veh]	49.87			47.80			12.09			20.54		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	23.39											
Intersection LOS	C											
Intersection V/C	0.623											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	42.08	42.08	42.08	42.08
l_p,int, Pedestrian LOS Score for Intersection	2.672	1.985	2.841	2.954
Crosswalk LOS	B	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	876	629	648	781
d_b, Bicycle Delay [s]	16.58	24.69	24.00	19.50
l_b,int, Bicycle LOS Score for Intersection	2.523	1.718	2.610	2.545
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: S. Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	25.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.615

Intersection Setup

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Associated Road			S. Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	483	34	367	11	21	6	12	889	300	300	1248	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	483	34	367	11	21	6	12	889	300	300	1248	17
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	9	92	3	5	2	3	222	75	75	312	4
Total Analysis Volume [veh/h]	483	34	367	11	21	6	12	889	300	300	1248	17
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	0	4	0	5	2	2	1	6	0
Auxiliary Signal Groups									2,3			
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	0	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	0	0	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	28	65	0	0	37	0	10	38	38	17	45	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	27	27	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No			No		No	No	No	No	No	
Maximum Recall	No	No			No		No	No	No	No	No	
Pedestrian Recall	No	No			No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	28	28	4	4	2	68	91	12	78	78
g / C, Green / Cycle	0.16	0.23	0.23	0.04	0.04	0.02	0.57	0.76	0.10	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.14	0.02	0.19	0.01	0.01	0.01	0.23	0.16	0.09	0.33	0.33
s, saturation flow rate [veh/h]	3500	1900	1900	1800	1900	1800	3800	1900	3500	1900	1900
c, Capacity [veh/h]	569	441	441	73	69	31	2150	1447	357	1236	1236
d1, Uniform Delay [s]	48.82	36.01	43.84	56.07	56.53	58.39	14.77	4.04	52.95	10.98	10.97
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.63	0.07	4.12	0.93	3.57	8.01	0.59	0.32	5.38	1.52	1.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.08	0.83	0.15	0.39	0.39	0.41	0.21	0.84	0.51	0.51
d, Delay for Lane Group [s/veh]	52.45	36.09	47.96	57.00	60.10	66.40	15.36	4.37	58.33	12.50	12.48
Lane Group LOS	D	D	D	E	E	E	B	A	E	B	B
Critical Lane Group	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.30	0.80	10.84	0.34	0.87	0.43	6.89	1.93	4.71	8.83	8.79
50th-Percentile Queue Length [ft/ln]	182.52	19.89	270.98	8.57	21.74	10.73	172.32	48.21	117.65	220.71	219.70
95th-Percentile Queue Length [veh/ln]	11.73	1.43	16.24	0.62	1.57	0.77	11.20	3.47	8.26	13.70	13.65
95th-Percentile Queue Length [ft/ln]	293.30	35.80	405.96	15.42	39.13	19.31	279.97	86.77	206.59	342.53	341.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.45	36.09	47.96	57.00	60.10	60.10	66.40	15.36	4.37	58.33	12.49	12.48
Movement LOS	D	D	D	E	E	E	E	B	A	E	B	B
d_A, Approach Delay [s/veh]	49.96			59.20			13.12			21.28		
Approach LOS	D			E			B			C		
d_I, Intersection Delay [s/veh]	25.89											
Intersection LOS	C											
Intersection V/C	0.615											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.711	1.987	2.944	2.942
Crosswalk LOS	B	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	550	567	683
d_b, Bicycle Delay [s]	14.50	31.54	30.82	26.00
l_b,int, Bicycle LOS Score for Intersection	3.018	1.622	2.550	2.851
Bicycle LOS	C	A	B	C

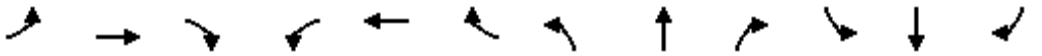
Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

APPENDIX G-III

INTERSECTION QUEUEING WORKSHEETS

YEAR 2045 GENERAL PLAN BUILDOUT PLUS PROJECT TRAFFIC CONDITIONS WITH INTERSECTION SAFETY ENHANCEMENTS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	950	321	370	814	11	251	6	327	58	30	8
Future Volume (vph)	2	950	321	370	814	11	251	6	327	58	30	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	220		0	225		230	100		0
Storage Lanes	1		1	2		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.998				0.850		0.968	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	3433	3532	0	3433	1863	1583	1770	1803	0
Flt Permitted	0.950			0.950			0.950			0.754		
Satd. Flow (perm)	1770	3539	1583	3433	3532	0	3433	1863	1583	1405	1803	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			321		1				55		8	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		664			723			1874			318	
Travel Time (s)		15.1			16.4			42.6			7.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2	950	321	370	814	11	251	6	327	58	30	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	950	321	370	825	0	251	6	327	58	38	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	Perm	NA	
Protected Phases	7	4	5	3	8		5	2	3		6	
Permitted Phases			4						2	6		

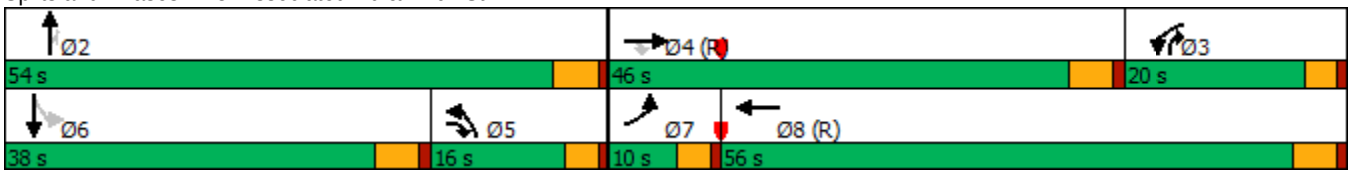
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	5	3	8		5	2	3	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	39.0	10.0	10.0	38.0		10.0	38.0	10.0	38.0	38.0	
Total Split (s)	10.0	46.0	16.0	20.0	56.0		16.0	54.0	20.0	38.0	38.0	
Total Split (%)	8.3%	38.3%	13.3%	16.7%	46.7%		13.3%	45.0%	16.7%	31.7%	31.7%	
Maximum Green (s)	6.0	41.0	12.0	16.0	51.0		12.0	49.0	16.0	33.0	33.0	
Yellow Time (s)	3.0	4.0	3.0	3.0	4.0		3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	4.0	4.0	5.0		4.0	5.0	4.0	5.0	5.0	
Lead/Lag	Lead	Lead	Lag	Lag	Lag		Lag		Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes		Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	None	None	C-Max		None	Max	None	Max	Max	
Walk Time (s)		7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		27.0			26.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		5			5			5		5	5	
Act Effct Green (s)	6.0	41.0	58.0	16.0	59.0		12.0	49.0	70.0	33.0	33.0	
Actuated g/C Ratio	0.05	0.34	0.48	0.13	0.49		0.10	0.41	0.58	0.28	0.28	
v/c Ratio	0.02	0.79	0.35	0.81	0.48		0.73	0.01	0.35	0.15	0.08	
Control Delay	55.0	41.1	3.0	65.2	21.9		56.5	17.5	7.8	34.3	27.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	55.0	41.1	3.0	65.2	21.9		56.5	17.5	7.8	34.3	27.4	
LOS	D	D	A	E	C		E	B	A	C	C	
Approach Delay		31.5			35.3			28.8			31.6	
Approach LOS		C			D			C			C	
Queue Length 50th (ft)	2	346	0	145	208		83	2	52	34	17	
Queue Length 95th (ft)	11	428	47	#215	310		#140	10	90	70	45	
Internal Link Dist (ft)		584			643			1794			238	
Turn Bay Length (ft)	150			220			225		230	100		
Base Capacity (vph)	88	1209	930	457	1736		343	760	946	386	501	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.02	0.79	0.35	0.81	0.48		0.73	0.01	0.35	0.15	0.08	

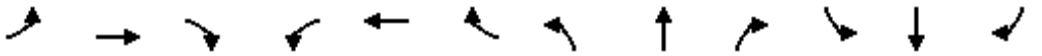
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 74 (62%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 32.5 Intersection LOS: C
Intersection Capacity Utilization 63.2% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

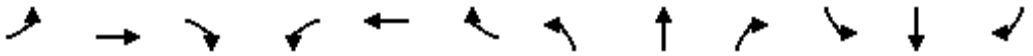
Queue shown is maximum after two cycles.

Splits and Phases: 3: Associated Rd & Birch St





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	889	300	300	1248	17	483	34	367	11	21	6
Future Volume (vph)	12	889	300	300	1248	17	483	34	367	11	21	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	220		0	225		230	100		0
Storage Lanes	1		1	2		0	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.998				0.850		0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	3433	3532	0	3433	1863	1583	1770	1801	0
Flt Permitted	0.950			0.950			0.950			0.735		
Satd. Flow (perm)	1770	3539	1583	3433	3532	0	3433	1863	1583	1369	1801	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			300		1				55		6	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		664			723			1874			318	
Travel Time (s)		15.1			16.4			42.6			7.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	889	300	300	1248	17	483	34	367	11	21	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	889	300	300	1265	0	483	34	367	11	27	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	Perm	NA	
Protected Phases	7	4	5	3	8		5	2	3		6	
Permitted Phases			4						2	6		



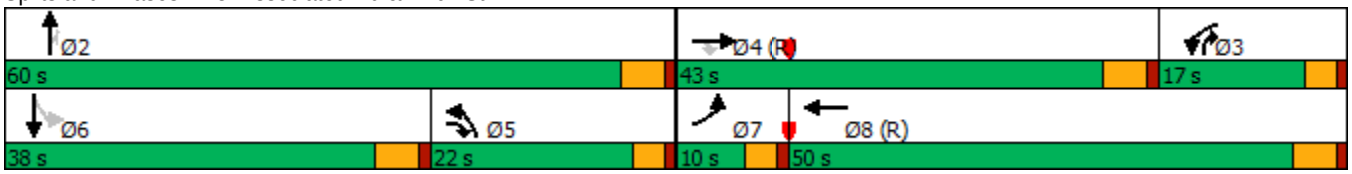
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	5	3	8		5	2	3	6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	39.0	10.0	10.0	38.0		10.0	38.0	10.0	38.0	38.0	
Total Split (s)	10.0	43.0	22.0	17.0	50.0		22.0	60.0	17.0	38.0	38.0	
Total Split (%)	8.3%	35.8%	18.3%	14.2%	41.7%		18.3%	50.0%	14.2%	31.7%	31.7%	
Maximum Green (s)	6.0	38.0	18.0	13.0	45.0		18.0	55.0	13.0	33.0	33.0	
Yellow Time (s)	3.0	4.0	3.0	3.0	4.0		3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	4.0	4.0	5.0		4.0	5.0	4.0	5.0	5.0	
Lead/Lag	Lead	Lead	Lag	Lag	Lag		Lag		Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes		Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	None	None	C-Max		None	Max	None	Max	Max	
Walk Time (s)		7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		27.0			26.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		5			5			5		5	5	
Act Effct Green (s)	6.0	38.0	61.0	13.0	51.0		18.0	55.0	73.0	33.0	33.0	
Actuated g/C Ratio	0.05	0.32	0.51	0.11	0.42		0.15	0.46	0.61	0.28	0.28	
v/c Ratio	0.14	0.79	0.32	0.81	0.84		0.94	0.04	0.37	0.03	0.05	
Control Delay	58.2	43.7	2.7	69.7	38.1		73.1	15.8	9.3	32.3	27.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	58.2	43.7	2.7	69.7	38.1		73.1	15.8	9.3	32.3	27.1	
LOS	E	D	A	E	D		E	B	A	C	C	
Approach Delay		33.6			44.1			44.4			28.6	
Approach LOS		C			D			D			C	
Queue Length 50th (ft)	9	330	0	119	424		191	14	111	6	12	
Queue Length 95th (ft)	30	410	44	#186	#649		#302	29	139	21	36	
Internal Link Dist (ft)		584			643			1794			238	
Turn Bay Length (ft)	150			220			225		230	100		
Base Capacity (vph)	88	1120	952	371	1501		514	853	984	376	499	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.14	0.79	0.32	0.81	0.84		0.94	0.04	0.37	0.03	0.05	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 86 (72%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 40.6		Intersection LOS: D	
Intersection Capacity Utilization 72.2%		ICU Level of Service C	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Associated Rd & Birch St



APPENDIX H

TRAFFIC SIGNAL WARRANT WORKSHEETS

APPENDIX H-I

YEAR 2024 CUMULATIVE PLUS PROJECT TRAFFIC CONDITIONS

Signal Warrants Report For Intersection 8: S. Associated Rd at Brea Plaza Dwy 3

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	505	623	41
2	490	604	40
3	480	592	39
4	449	554	36
5	399	492	32
6	394	486	32
7	389	480	32
8	354	436	29
9	348	430	28
10	343	424	28
11	298	368	24
12	278	343	23
13	273	336	22
14	202	249	16
15	202	249	16
16	141	174	11
17	81	100	7
18	81	100	7
19	45	56	4
20	25	31	2
21	15	19	1
22	5	6	0
23	5	6	0
24	5	6	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	5	1128	2	41	No	No	No	No	No	No	No	No	No	No
2	5	1094	2	40	No	No	No	No	No	No	No	No	No	No
3	5	1072	2	39	No	No	No	No	No	No	No	No	No	No
4	5	1003	2	36	No	No	No	No	No	No	No	No	No	No
5	5	891	2	32	No	No	No	No	No	No	No	No	No	No
6	5	880	2	32	No	No	No	No	No	No	No	No	No	No
7	5	869	2	32	No	No	No	No	No	No	No	No	No	No
8	5	790	2	29	No	No	No	No	No	No	No	No	No	No
9	5	778	2	28	No	No	No	No	No	No	No	No	No	No
10	5	767	2	28	No	No	No	No	No	No	No	No	No	No
11	5	666	2	24	No	No	No	No	No	No	No	No	No	No
12	5	621	2	23	No	No	No	No	No	No	No	No	No	No
13	5	609	2	22	No	No	No	No	No	No	No	No	No	No
14	5	451	2	16	No	No	No	No	No	No	No	No	No	No
15	5	451	2	16	No	No	No	No	No	No	No	No	No	No
16	5	315	2	11	No	No	No	No	No	No	No	No	No	No
17	5	181	2	7	No	No	No	No	No	No	No	No	No	No
18	5	181	2	7	No	No	No	No	No	No	No	No	No	No
19	5	101	2	4	No	No	No	No	No	No	No	No	No	No
20	5	56	2	2	No	No	No	No	No	No	No	No	No	No
21	5	34	2	1	No	No	No	No	No	No	No	No	No	No
22	5	11	2	0	No	No	No	No	No	No	No	No	No	No
23	5	11	2	0	No	No	No	No	No	No	No	No	No	No
24	5	11	2	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.2
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:09
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	41
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1169
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 8: S. Associated Rd at Brea Plaza Dwy 3

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	686	779	157
2	665	756	152
3	652	740	149
4	611	693	140
5	542	615	124
6	535	608	122
7	528	600	121
8	480	545	110
9	473	538	108
10	466	530	107
11	405	460	93
12	377	428	86
13	370	421	85
14	274	312	63
15	274	312	63
16	192	218	44
17	110	125	25
18	110	125	25
19	62	70	14
20	34	39	8
21	21	23	5
22	7	8	2
23	7	8	2
24	7	8	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	5	1465	2	157	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	5	1421	2	152	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	5	1392	2	149	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	5	1304	2	140	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	5	1157	2	124	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
6	5	1143	2	122	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
7	5	1128	2	121	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
8	5	1025	2	110	No	No	No	No	Yes	Yes	Yes	Yes	No	No
9	5	1011	2	108	No	No	No	No	Yes	Yes	Yes	Yes	No	No
10	5	996	2	107	No	No	No	No	Yes	Yes	Yes	Yes	No	No
11	5	865	2	93	No	No	No	No	No	Yes	Yes	Yes	No	No
12	5	805	2	86	No	No	No	No	No	Yes	Yes	Yes	No	No
13	5	791	2	85	No	No	No	No	No	Yes	Yes	Yes	No	No
14	5	586	2	63	No	No	No	No	No	No	No	Yes	No	No
15	5	586	2	63	No	No	No	No	No	No	No	Yes	No	No
16	5	410	2	44	No	No	No	No	No	No	No	No	No	No
17	5	235	2	25	No	No	No	No	No	No	No	No	No	No
18	5	235	2	25	No	No	No	No	No	No	No	No	No	No
19	5	132	2	14	No	No	No	No	No	No	No	No	No	No
20	5	73	2	8	No	No	No	No	No	No	No	No	No	No
21	5	44	2	5	No	No	No	No	No	No	No	No	No	No
22	5	15	2	2	No	No	No	No	No	No	No	No	No	No
23	5	15	2	2	No	No	No	No	No	No	No	No	No	No
24	5	15	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	4	7	10	13	13	15	4	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	17
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:44
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	157
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1622
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

APPENDIX H-II

YEAR 2045 GENERAL PLAN BUILDOUT PLUS PROJECT TRAFFIC CONDITIONS

Signal Warrants Report For Intersection 8: S. Associated Rd at Brea Plaza Dwy 3

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	529	664	42
2	513	644	41
3	503	631	40
4	471	591	37
5	418	525	33
6	413	518	33
7	407	511	32
8	370	465	29
9	365	458	29
10	360	452	29
11	312	392	25
12	291	365	23
13	286	359	23
14	212	266	17
15	212	266	17
16	148	186	12
17	85	106	7
18	85	106	7
19	48	60	4
20	26	33	2
21	16	20	1
22	5	7	0
23	5	7	0
24	5	7	0

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	5	1193	2	42	No	No	No	No	No	No	No	No	No	No
2	5	1157	2	41	No	No	No	No	No	No	No	No	No	No
3	5	1134	2	40	No	No	No	No	No	No	No	No	No	No
4	5	1062	2	37	No	No	No	No	No	No	No	No	No	No
5	5	943	2	33	No	No	No	No	No	No	No	No	No	No
6	5	931	2	33	No	No	No	No	No	No	No	No	No	No
7	5	918	2	32	No	No	No	No	No	No	No	No	No	No
8	5	835	2	29	No	No	No	No	No	No	No	No	No	No
9	5	823	2	29	No	No	No	No	No	No	No	No	No	No
10	5	812	2	29	No	No	No	No	No	No	No	No	No	No
11	5	704	2	25	No	No	No	No	No	No	No	No	No	No
12	5	656	2	23	No	No	No	No	No	No	No	No	No	No
13	5	645	2	23	No	No	No	No	No	No	No	No	No	No
14	5	478	2	17	No	No	No	No	No	No	No	No	No	No
15	5	478	2	17	No	No	No	No	No	No	No	No	No	No
16	5	334	2	12	No	No	No	No	No	No	No	No	No	No
17	5	191	2	7	No	No	No	No	No	No	No	No	No	No
18	5	191	2	7	No	No	No	No	No	No	No	No	No	No
19	5	108	2	4	No	No	No	No	No	No	No	No	No	No
20	5	59	2	2	No	No	No	No	No	No	No	No	No	No
21	5	36	2	1	No	No	No	No	No	No	No	No	No	No
22	5	12	2	0	No	No	No	No	No	No	No	No	No	No
23	5	12	2	0	No	No	No	No	No	No	No	No	No	No
24	5	12	2	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.6
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:10
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	42
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1235
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 8: S. Associated Rd at Brea Plaza Dwy 3

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	725	832	153
2	703	807	148
3	689	790	145
4	645	740	136
5	573	657	121
6	566	649	119
7	558	641	118
8	507	582	107
9	500	574	106
10	493	566	104
11	428	491	90
12	399	458	84
13	392	449	83
14	290	333	61
15	290	333	61
16	203	233	43
17	116	133	24
18	116	133	24
19	65	75	14
20	36	42	8
21	22	25	5
22	7	8	2
23	7	8	2
24	7	8	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	5	1557	2	153	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	5	1510	2	148	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	5	1479	2	145	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	5	1385	2	136	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
5	5	1230	2	121	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
6	5	1215	2	119	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
7	5	1199	2	118	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
8	5	1089	2	107	No	No	No	No	Yes	Yes	Yes	Yes	No	No
9	5	1074	2	106	No	No	No	No	Yes	Yes	Yes	Yes	No	No
10	5	1059	2	104	No	No	No	No	Yes	Yes	Yes	Yes	No	No
11	5	919	2	90	No	No	No	No	No	Yes	Yes	Yes	No	No
12	5	857	2	84	No	No	No	No	No	Yes	Yes	Yes	No	No
13	5	841	2	83	No	No	No	No	No	Yes	Yes	Yes	No	No
14	5	623	2	61	No	No	No	No	No	No	No	Yes	No	No
15	5	623	2	61	No	No	No	No	No	No	No	Yes	No	No
16	5	436	2	43	No	No	No	No	No	No	No	No	No	No
17	5	249	2	24	No	No	No	No	No	No	No	No	No	No
18	5	249	2	24	No	No	No	No	No	No	No	No	No	No
19	5	140	2	14	No	No	No	No	No	No	No	No	No	No
20	5	78	2	8	No	No	No	No	No	No	No	No	No	No
21	5	47	2	5	No	No	No	No	No	No	No	No	No	No
22	5	15	2	2	No	No	No	No	No	No	No	No	No	No
23	5	15	2	2	No	No	No	No	No	No	No	No	No	No
24	5	15	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	3	7	10	13	13	15	4	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.1
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:43
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	153
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1710
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Appendix K Parking Study

Appendices

This page intentionally left blank.

CARLSBAD
FRESNO
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

April 13, 2021

Waad Nadhir
BOSC Realty Advisors
888 West Big Beaver Road, Suite 200
Troy, MI 48084

Subject: Parking Study for Brea Plaza Shopping Center, Brea, California

Dear Mr. Nadhir:

LSA is pleased to submit this parking study for the proposed renovation of the Brea Plaza Shopping Center (project) in Brea, California. The project site is along Imperial Highway between State Route 57 (SR-57) and Associated Road. This analysis is based on the project site plan dated February 24, 2021 (Figure 1 in Attachment A). The proposed project would demolish an 18,450 square foot (sf) theater and some existing surface parking spaces. In the place of the demolished uses, the proposed project would construct 189 residential units and 21,355 sf of office space. Of the 189 proposed residential units, 19 would be designated affordable housing, and 15 would be configured as coliving units (separate bedrooms sharing a common living space), the market rent of which is more affordable than that of traditional apartments. The remaining 155 dwelling units would be traditional market rate apartments.

The renovation project would include travel demand management strategies including bicycle parking, a lounge for rideshare drivers, subsidized car sharing for the residents, and a proposed new bus stop. Strategies such as these can reduce the overall parking demand. Many of the site's proposed uses experience their peak parking demand at different times of day. This means that the completed development may require fewer parking spaces when considered as a whole than would otherwise be required by straight application of the City of Brea (City) Municipal Code. This report analyzes the potential parking demand for the proposed uses during a typical weekday, during a typical weekend, and during December as requested by the City's peer review consultant.

MUNICIPAL CODE PARKING RATES AND REQUIREMENTS

Brea Municipal Code (BMC) Section 20.08.040 establishes off-street parking requirements for residential and nonresidential development. Table A presents the parking requirements for each type of use on the site.

BMC Section 20.08.040 specifically states that where uses are combined, the parking requirement is the sum of the requirements of the various uses, except for shopping centers. Therefore, Table B calculates the existing parking requirement based on the total size of the shopping center. It should be noted, however, that Table A shows that some of the shopping center's uses, such as the movie theater, have a much higher parking demand if considered individually.

Table A: Municipal Code Parking Rates

Land Use	Parking Space Rates per Brea Municipal Code Section 20.08.040
General Retail	1 space per 200 sf
Barbershops and Beauty Parlors	1 space per 250 sf
Cafes/Sit Down Restaurants	Minimum of 10 spaces; 1 space for each 75 sf of gross floor area up to 6,000 sf plus 1 space for each 55 sf over 6,000 sf
Auditoriums/Theaters	1 space per 3 fixed seats or 1 space per 35 sf
Medical/Dental Offices	5.5 spaces per 1,000 sf
Shopping Centers	5.5 spaces per 1,000 sf
Offices	1 space per 250 sf
Two or More Dwelling Units on One Building Site	1.5 spaces per studio unit, 1.75 spaces per 1-bedroom unit, 2.0 spaces per 2-bedroom unit, 2.5 spaces per 3-bedroom unit, or 3.0 spaces per 4-bedroom unit, plus 0.2 guest space per unit

Source: City of Brea Municipal Code Section 20.08.040
sf = square feet

Table B: Existing Municipal Code Parking Requirement

Land Use	Parking Space Rates per Brea Municipal Code Section 20.08.040	Project Parking Requirements		
		Size	Unit	Required Parking Spaces
Shopping Centers	5.5 spaces per 1,000 sf	165.329	TSF	909
			TOTAL	**909**

sf = square feet
TSF = thousand square feet

LSA calculated how the proposed project would affect the BMC parking requirement. As Table A shows, the BMC establishes different parking rates based on the type of residential unit. The BMC does not, however, provide a specific parking requirement for coliving units. Coliving residential units provide private sleeping space and shared common space such as a living room, a kitchen, and laundry facilities. The reduction in total floor area from sharing common space results in market rate rent that is lower than typically configured apartments. Coliving dwelling units provide an affordable housing option that does not require subsidy from the other apartment units. This living configuration has proven successful in urban markets where coliving residential developments have been operating for a few years.

The proposed coliving units would have a common living room, a full kitchen, and a laundry area. Each private bedroom would include a kitchenette and would have a bathroom either en suite or adjacent to the bedroom. Five coliving units would have three bedrooms each, and 10 coliving units would have four bedrooms each. Table C displays the calculation of the BMC parking requirement for the residential portion of the proposed project.

Table C: Residential Municipal Code Parking Requirement

Land Use	Parking Space Rate per Brea Municipal Code Section 20.08.040	Project Parking Requirements	
		Units	Required Parking Spaces
Studio	1.5 spaces per studio unit	16	24
1-Bedroom Unit	1.75 spaces per 1-bedroom unit	109	191
2-Bedroom Unit	2.0 spaces per 2-bedroom unit	44	88
3-Bedroom Unit	2.5 spaces per 3-bedroom unit	5	12.5
Coliving 3-bedroom Unit	2.5 spaces per 3-bedroom unit	5	12.5
Coliving 4-bedroom Unit	3.0 spaces per 4-bedroom unit	10	30
Guest Parking	0.2 space per unit	189	37.8
		TOTAL	**396 (395.8)**

Within the existing 165,329 sf shopping center, the proposed project would demolish the 18,450 sf movie theater. At the completion of construction, the shopping center would provide 146,879 sf of leasable commercial space (165,329 - 18,450 = 146,879). This accounts for all uses in the shopping center other than the new office and residential development. The proposed project would construct 21,355 sf of new office space in a new second floor above a portion of the existing shopping center. Table D shows that the BMC parking requirement upon completion of the proposed project would be 1,289 parking spaces for all Brea Plaza uses.

Table D: Future Municipal Code Parking Requirement

Land Use	Parking Space Rates per Brea Municipal Code Section 20.08.040	Parking Requirements		
		Size	Unit	Required Parking Spaces
Shopping Centers	5.5 spaces per 1,000 sf	146,879	TSF	808
Offices	1 space per 250 sf	21,355	sf	85
Two or More Dwelling Units on One Building Site	1.5 spaces per studio unit, 1.75 spaces per 1-bedroom unit, 2.0 spaces per 2-bedroom unit, 2.5 spaces per 3-bedroom unit, or 3.0 spaces per 4-bedroom unit, plus 0.2 guest space per unit	189	du	396[1]
			TOTAL	**1,289**

[1] See Table C.
du = dwelling unit
sf = square feet
TSF = thousand square feet

While a comparison between Table B and Table D shows a large increase in the BMC parking requirement as a result of the proposed project, it should be noted that the proposed project is replacing the most parking-intensive portion of the Brea Plaza Shopping Center (i.e., the movie theater). Table E calculates BMC parking requirements for the individual uses that would be demolished or added as a result of the proposed project. A comparison of Tables B and D shows that straight application of the BMC, treating all uses within the shopping center equivalently, estimates that the proposed project would require 380 more parking spaces than the existing condition. However, the more fine-grained consideration of the land use being replaced in Table E shows that the proposed project would reduce the parking requirement by 46 parking spaces.

Table E: Comparison of Individual Parking Rates

Land Use	Parking Space Rates per Brea Municipal Code Section 20.08.040	Parking Requirements		
		Size	Unit	Required Parking Spaces
Existing Uses to Be Replaced				
Auditoriums/Theaters	1 space per 3 fixed seats or 1 space per 35 sf	18,450	sf	527
			Total Deleted Parking	**527**
Future Uses to Be Added				
Offices	1 space per 250 sf	21,355	sf	85
Two or More Dwelling Units on One Building Site	1.5 spaces per studio unit, 1.75 spaces per 1-bedroom unit, 2.0 spaces per 2-bedroom unit, or 2.5 spaces per 3-bedroom unit, plus 0.2 guest spaces per unit	189	du	396[1]
			Total Added Parking	**481**
			Net Parking Effect of Proposed Project	**(46)**

[1] See Table C.
du = dwelling unit
sf = square feet

PARKING SUPPLY

Existing Parking Supply

When originally constructed in the late 1970s, the Brea Plaza Shopping Center and the neighboring office building (1700 Greenbriar Lane) were constructed as one project with access and parking rights shared between the shopping center and office building. The Brea Plaza Shopping Center and the Mercury Insurance office building are now under separate ownership, but an access and parking agreement is in place permitting shared access across the Brea Plaza Shopping Center site, specifying Brea Plaza Shopping Center use of portions of the 443 surface parking spaces at all times and full access outside office business hours. This access and parking agreement is in effect until 2026. This parking analysis demonstrates that the project will not rely on the Mercury Insurance parking lot to satisfy typical daily or weekend parking demand.

LSA contracted with an independent data collection company to survey the parking supply in the existing parking lot. Table F details the surface parking lot on Brea Plaza Shopping Center property. As Table F shows, the existing surface parking lot provides 739 parking spaces. The Mercury Insurance office building is supported by 443 surface parking spaces and a 465-space parking structure. Parking surveys are attached to this report (Attachment B).

Future Parking Supply

The proposed project would be constructed in the northwest parking lot, which would eliminate 139 parking spaces. Figure 1 shows that upon completion of the proposed project, the Brea Plaza Shopping Center will have 600 surface parking spaces.

Table F: Existing Brea Plaza Shopping Center Parking Supply

	ADA	Standard	Compact	Reserved/ Time Limited	Loading/ Back of House	Total
Northwest Lot	6	105	37	0	2	150
Southwest Lot	8	72	0	20	0	100
Imperial Highway Pad Buildings	8	63	0	0	0	71
Northeast Lot	4	38	0	2	4	48
Central Lot	11	309	30	20	0	370
TOTAL	**37**	**587**	**67**	**42**	**6**	**739**

ADA = Americans with Disabilities Act

A parking structure will be constructed as part of the proposed project. At this time, striping plans for the parking structure indicate that 397 parking spaces will be provided, of which 20 will be provided in tandem configuration (10 tandem spaces with 2 spaces each). As shown in Figure 1, access into and out of the parking structure will be provided along a north-south drive aisle leading to the signalized intersection of SR-57 northbound ramps/Imperial Highway.

Residents and their guests would park in the parking structure. Five of the tandem parking stalls would be assigned to the five 3-bedroom units, and five of the tandem parking stalls would be assigned to 2-bedroom units. However, no sequestered parking area is anticipated for the remainder of the units at this time. As discussed later in this report, unbundling residential parking is an effective travel demand management strategy. Residents would be issued overnight parking permits that would allow onsite security to distinguish resident vehicles.

Upon completion of the proposed project, a total of 997 parking spaces will be located within the Brea Plaza Shopping Center, an increase of 258 parking spaces from the existing parking supply. This is lower than the BMC parking requirement, but in combination with the flexible parking supply within the parking easement, it is anticipated to accommodate the peak parking demand of the proposed project.

PARKING DEMAND

Published Survey Data

The Institute of Transportation Engineers (ITE) *Parking Generation*, Fifth Edition,[1] provides information based on three decades of research. This resource identifies average parking rates and a confidence interval that assists with analysis of properties with the potential for higher- or lower-than-average parking demand. For the Brea Plaza Shopping Center, the high end of the confidence interval would likely be appropriate. Table G displays the average parking rates and high end of the confidence interval.

[1] Institute of Transportation Engineers. 2019. *Parking Generation*. 5th ed.

Table G: Institute of Transportation Engineers Parking Rates

Land Use (Land Use Code)	Average Rate	Upper Confidence Interval
Shopping Center (820)	1.95 spaces per TSF	2.17 spaces per TSF
Supermarket (850)	2.93 spaces per TSF	4.07 spaces per TSF
High-Turnover (Sit Down) Restaurant (932)	9.44 spaces per TSF	10.92 spaces per TSF
Movie Theater (444)	7.45 spaces per TSF	11.08 spaces per TSF
Medical/Dental Offices (720)	3.23 spaces per TSF	3.42 spaces per TSF
General Office Building (710)	2.39 spaces per TSF	2.50 spaces per TSF
Multifamily Housing (Mid-Rise) (221)	1.31 spaces per dwelling unit or 0.75 space per bedroom	1.36 spaces per dwelling unit or 0.80 space per bedroom

Source: Institute of Transportation Engineers. 2019. *Parking Generation*. 5th ed.
TSF = thousand square feet

Residential Parking Demand

For midrise multifamily housing in a suburban area, the ITE surveyed average peak parking demand ratio is 1.31 spaces per dwelling unit or 0.75 space per bedroom. For this land use, the upper end of the 95 percent confidence interval is 1.36 spaces per dwelling unit or 0.80 space per bedroom.

Surveys of Similar Sites

As mentioned above, the proposed residential building would provide parking in the parking structure with open parking stalls and no individual garages. Multifamily housing developments with individual garages sometimes find that garages transition to storage use over time, which increases the burden on the remaining open parking spaces. Structured parking cannot be used for storage and will always be used for parking.

LSA had collected parking demand data at three large apartment developments with structured parking in 2019. The parking data is recent but also represents typical conditions prior to Covid-19. The three sites surveyed were the Core Apartments at 1815 Westside Drive in Anaheim, the Baker Block development at 125 Baker Street in Costa Mesa, and Rize at 1100 Synergy in Irvine. All three of these apartment developments are midrise and provide all of their parking in an adjoining parking structure. None of the three identified properties have private garages.

LSA contracted with an independent data collection company to collect parking accumulation data from 5:00 p.m. to midnight for weekdays and weekends at each of the identified properties. Survey data is provided in Attachment C. This period was selected to reflect the time of day when Urban Land Institute (ULI) *Shared Parking* time-of-day data identifies peak resident and residential guest parking demand.[1] Table H displays the results of those surveys including the resulting ratios of parking spaces per dwelling unit and parking spaces per bedroom. For the Core Apartments, parking ratios were based on the units occupied at the time the surveys were conducted. Property management for Baker Block and Rize reported full occupancy at the time of the parking surveys.

[1] Urban Land Institute. 2020. *Shared Parking*. 3rd ed.

Table H: Apartment Parking Survey Results

	Core Apartments[1]			Baker Block			Rize	
	222 dwelling units, 328 bedrooms, and 726 parking spaces			240 dwelling units, 349 bedrooms, and 466 parking spaces			363 dwelling units, 511 bedrooms, and 564 parking spaces	
	Thursday 4/25/19	Friday 4/26/19	Saturday 4/27/19	Thursday 5/2/19	Friday 5/3/19	Saturday 5/4/19	Tuesday 8/6/19	Saturday 7/27/19
Peak Parked Cars	306	288	295	310	311	297	429	442
Parking Rate per Unit	1.38	1.30	1.33	1.29	1.30	1.24	1.18	1.22
Parking Rate per Bedroom	0.93	0.88	0.90	0.89	0.89	0.85	0.84	0.86

[1] At the time of the surveys, 222 of the 400 units were occupied.

Table I summarizes the parking rates for the three surveyed midrise apartment developments with structured parking. As Table I shows, the average observed parking rate for midrise apartments in Orange County with structured parking is 1.30 spaces per dwelling unit or 0.89 space per bedroom.

Table I: Average Apartment Parking Rates

	Peak Parking Rate per Dwelling Unit	Peak Parking Rate per Bedroom
Core Apartments	1.38	0.93
Baker Block	1.30	0.89
Rize	1.22	0.86
Average	**1.30**	**0.89**

It should be noted that the presence of on-street parking near each surveyed property likely resulted in resident guests choosing these spaces out of convenience. LSA queried parking survey data in ULI's *Shared Parking*, Third Edition,[1] which identifies a guest parking ratio of 0.10 parking space per dwelling unit. Based on the empirical data for similar developments in the same county, LSA believes that parking demand for the market rate units of the proposed project could be accommodated by providing 1.40 parking spaces per studio and one-bedroom dwelling unit (1.30 for residents and 0.10 for guests), 1.90 parking spaces per two-bedroom dwelling unit (0.89 resident space per bedroom x 2 bedrooms + 0.10 guest space), and 2.8 parking spaces per three-bedroom dwelling unit (0.89 resident space per bedroom x 3 bedrooms + 0.10 guest space).

Affordable Housing Parking Rates

While the section above identifies an appropriate parking ratio for market rate residential units, LSA also considered the appropriate parking ratio for affordable residential units. The State Density Bonus Law provides an exemption for affordable housing units. Specifically, a city cannot compel the provision of more than one space per dwelling unit for studio or one-bedroom units or more than two spaces per dwelling unit for two- or three-bedroom units (California Government Code Section 65915p(1)).

[1] Urban Land Institute. 2020. *Shared Parking*. 3rd ed.

LSA estimated the parking demand for the affordable housing units. The ITE's *Parking Generation*, Fifth Edition,[1] provides information for affordable housing with income limits. For affordable housing in a suburban area, the average peak parking demand ratio is 0.99 space per dwelling unit or 0.54 space per bedroom. For this land use, the upper end of the confidence interval is 1.09 spaces per dwelling unit or 0.82 space per bedroom. These surveyed rates predict higher parking demand for studio and one-bedroom affordable units but lower parking demand for two-bedroom affordable units than the State maximum.

LSA believes that parking demand for the affordable units of the proposed project (including the 15 coliving units, classified as 55 studios) could be accommodated by providing 1.09 parking spaces per studio and one-bedroom dwelling unit and the State maximum 2 parking spaces per two- or three-bedroom dwelling unit.

Total Resident Parking Demand

Table J calculates the anticipated residential parking demand for the 189 proposed residential units based on the available empirical data and the function of the units (i.e., Table J accounts for the parking demand of coliving bedrooms). As Table J shows, a total residential parking demand for 328 parking spaces is anticipated. Of this total, 23 parking spaces would be used by guests and 305 would be used by apartment residents. As mentioned above, most residents would not have assigned parking spaces but would have overnight parking permits, allowing on-site security to distinguish resident vehicles. The anticipated residential parking demand for 328 parking spaces is lower than the BMC rate of 396 parking spaces but accounts for the parking characteristics of affordable housing and the greater efficiency of parking lots without private garages.

Shared Parking

The sections above describe the peak parking demand for the proposed residential development that is one of multiple land uses within the proposed project. Because of different hours of operation and different offsetting parking activities, not all uses at the site require their full allotment of parking spaces at the same time. Logically, the project's apartment residents could patronize the on-site retail and restaurant uses, and the site would not have to simultaneously provide a parking space for the resident as a resident and the resident as a customer. LSA used methodologies found in ULI's *Shared Parking*, Third Edition,[2] to identify the daily variations in parking demand for each of the site's land uses. Applying these methodologies avoids double counting parking demand. The time-of-day factors found in *Shared Parking* are based on empirical studies and results from multiple parking accumulation counts. For all uses other than the residential development, LSA applied the BMC parking requirement. In order to determine an individual land use portion of the shopping center parking requirement, LSA calculated a ratio based on individual land use parking rates.

---

1 Institute of Transportation Engineers. 2019. *Parking Generation*. 5th ed.

2 Urban Land Institute. 2020. *Shared Parking*. 3rd ed.

Table J: Residential Parking Demand

Land Use	Parking Demand Rates per Empirical Data	Project Parking Requirements	
		Units	Required Parking Spaces
Market Rate Studio Unit	1.40 spaces per dwelling unit	14	19.6
Affordable Studio Unit	1.09 spaces per dwelling unit	2	2.2
Market Rate 1-Bedroom Unit	1.40 spaces per dwelling unit	98	137.2
Affordable 1-Bedroom Unit	1.09 spaces per dwelling unit	11	12.0
Market Rate 2-Bedroom Unit	1.9 spaces per dwelling unit	39	74.1
Affordable 2-Bedroom Unit	2.0 spaces per dwelling unit	5	10.0
Market Rate 3-Bedroom Unit	2.8 spaces per dwelling unit	4	11.2
Affordable 3-Bedroom Unit	2.0 spaces per dwelling unit	1	2.0
Coliving Bedrooms (5 3-bedroom and 10 4-bedroom units)	1.09 spaces per bedroom	55	60.0
Total		**189**[1]	**328 (328.3)**
Guest (0.1 space per dwelling unit)			23
Resident			305

[1] Of the 189 proposed dwelling units, 15 coliving units have a total of 55 bedrooms.

Table K identifies that peak parking demand for the site is anticipated to occur in the early evening, when residents have returned to the proposed apartment community. At the time of peak parking demand, the Brea Plaza Shopping Center is estimated to require 966 parking spaces. In the early afternoon, when commercial retail parking demand and office parking demand are near their peak, demand for 965 parking spaces is anticipated.

In addition to typical weekday time-of-day factors, *Shared Parking* includes tables with time-of-day factors on typical weekends and during December, which is usually the busiest time of year for retail shopping centers. *Shared Parking* includes typical weekday and weekend parking rates for several land uses based on empirical data. LSA applied the ratios of weekend-to-weekday parking rates to the weekday peak parking required for each land use in Table K. Then, the weekend time-of-day factors were applied to determine peak weekend parking demand. Table L displays the weekend shared parking calculations. As Table L shows, the peak parking demand is anticipated to occur in the early afternoon with 979 parked cars. Total parking demand in the evening is anticipated to be slightly lower, at 967 parked cars.

Shared Parking includes data in the yearly variation in parking demand for several uses. LSA sought to verify this data with site-specific data. While historic parking surveys were not available, LSA did have access to historic data of sales by month. LSA calculated ratios of December customer demand compared to average customer demand using variation in sales as a proxy for variation in parking demand. These varied very little from the data presented in *Shared Parking*, with slightly higher restaurant demand and slightly lower retail demand during December in the site-specific data. These December factors were applied to the typical peak parking required, and December time-of-day factors were applied. Table M displays the December shared parking calculations. As Table M shows, the peak parking demand is anticipated to occur in the early afternoon with 1,079 parked cars. Total parking demand in the evening is anticipated to be slightly lower, at 1,015 parked cars.

Table K: Future Weekday Time of Day Parking Demand

Brea Plaza Shopping Center Shared Parking Requirements																			
Time-of-Day Factors[1]		**6:00 AM**	**7:00 AM**	**8:00 AM**	**9:00 AM**	**10:00 AM**	**11:00 AM**	**12:00 PM**	**1:00 PM**	**2:00 PM**	**3:00 PM**	**4:00 PM**	**5:00 PM**	**6:00 PM**	**7:00 PM**	**8:00 PM**	**9:00 PM**	**10:00 PM**	**11:00 PM**
Residential	Guest		10%	20%	20%	20%	20%	20%	20%	20%	20%	20%	40%	60%	100%	100%	100%	100%	80%
	Resident	95%	80%	67%	55%	50%	45%	40%	40%	40%	40%	45%	50%	60%	70%	80%	85%	95%	97%
Shopping Center	Customer	1%	5%	15%	35%	60%	75%	100%	100%	95%	85%	85%	85%	90%	80%	65%	45%	15%	5%
	Employee	10%	15%	25%	45%	75%	95%	100%	100%	100%	100%	100%	100%	100%	100%	90%	60%	40%	20%
Grocery Store	Customer	5%	20%	30%	50%	60%	67%	85%	90%	95%	97%	100%	100%	100%	85%	55%	35%	20%	5%
	Employee	20%	30%	40%	80%	90%	100%	100%	100%	100%	100%	100%	100%	80%	50%	35%	20%	20%	20%
Fine/Casual Dining	Customer					15%	40%	75%	75%	65%	40%	50%	75%	95%	100%	100%	100%	95%	75%
	Employee		20%	50%	75%	90%	90%	90%	90%	90%	75%	75%	100%	100%	100%	100%	100%	100%	85%
Fast Food	Customer	5%	10%	20%	30%	55%	85%	100%	100%	90%	60%	55%	60%	85%	80%	50%	30%	20%	10%
	Employee	20%	20%	30%	40%	75%	100%	100%	100%	95%	70%	60%	70%	90%	90%	60%	40%	30%	20%
Office	Visitor		1%	20%	60%	100%	45%	15%	45%	95%	45%	15%	10%	5%	2%	1%			
	Employee	3%	15%	50%	90%	100%	100%	85%	85%	95%	95%	85%	60%	25%	15%	5%	3%	1%	
Medical Office	Visitor			90%	90%	100%	100%	30%	90%	100%	100%	90%	80%	67%	30%	15%			
Time-of-Day Parking Demand	**Peak Parking Required**																		
Apartment Resident	306	291	245	205	168	153	138	122	122	122	122	138	153	184	214	245	260	291	297
Apartment Guest	23	0	2	5	5	5	5	5	5	5	5	5	9	14	23	23	23	23	18
Retail/ Commercial	309	9	22	53	114	195	244	309	309	297	272	272	272	284	260	216	148	62	25
Grocery Store	47	3	10	15	26	31	34	41	43	45	46	47	47	46	38	24	15	9	3
Casual Restaurant	207	0	6	16	23	54	98	160	160	142	94	111	163	198	207	207	207	198	159
Fast Food Restaurant	234	17	27	50	73	135	204	234	234	212	143	130	143	200	190	120	73	50	27
Office	85	8	24	80	83	85	82	80	82	85	82	56	56	32	16	16	16	16	8
Medical Office	11	0	0	10	10	11	11	3	10	11	11	10	9	8	3	2	0	0	0
Total		**328**	**336**	**434**	**502**	**669**	**816**	**954**	**965**	**919**	**775**	**769**	**852**	**966**	**951**	**853**	**742**	**649**	**537**

[1] The time-of-day factors are referenced from the Urban Land Institute's *Shared Parking,* Third Edition (2020).

Table L: Future Weekend Time of Day Parking Demand

Brea Plaza Shopping Center Shared Parking Requirements																			
Time-of-Day Factors[1]		**6:00 AM**	**7:00 AM**	**8:00 AM**	**9:00 AM**	**10:00 AM**	**11:00 AM**	**12:00 PM**	**1:00 PM**	**2:00 PM**	**3:00 PM**	**4:00 PM**	**5:00 PM**	**6:00 PM**	**7:00 PM**	**8:00 PM**	**9:00 PM**	**10:00 PM**	**11:00 PM**
Residential	Guest		20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	40%	60%	100%	100%	100%	100%	80%
	Resident	100%	95%	88%	80%	75%	70%	68%	65%	65%	68%	71%	74%	77%	80%	83%	86%	89%	92%
Shopping Center	Customer	1%	5%	30%	50%	70%	90%	95%	100%	100%	95%	90%	80%	75%	70%	65%	50%	30%	10%
	Employee	10%	15%	40%	75%	85%	95%	100%	100%	100%	100%	100%	95%	85%	80%	75%	65%	45%	15%
Grocery Store	Customer	10%	25%	50%	75%	95%	100%	100%	100%	100%	100%	100%	90%	50%	33%	25%	15%	5%	4%
	Employee	15%	35%	70%	85%	100%	100%	100%	100%	85%	75%	60%	55%	45%	40%	30%	20%	10%	10%
Fine/Casual Dining	Customer					0%	15%	50%	55%	45%	45%	45%	60%	90%	95%	100%	90%	90%	90%
	Employee		20%	30%	60%	75%	75%	75%	75%	75%	75%	75%	100%	100%	100%	100%	100%	100%	85%
Fast Food	Customer	5%	10%	20%	30%	55%	85%	100%	100%	90%	60%	55%	60%	85%	80%	50%	30%	20%	10%
	Employee	15%	20%	30%	40%	75%	100%	100%	100%	95%	70%	60%	70%	90%	90%	60%	40%	30%	20%
Office	Visitor		20%	60%	80%	90%	100%	90%	80%	60%	40%	20%	10%	5%	0%	0%			
	Employee	0%	20%	60%	80%	90%	100%	90%	80%	60%	40%	20%	10%	5%	0%	0%	0%	0%	
Medical Office	Visitor			90%	90%	100%	100%	30%											
Time-of-Day Parking Demand	**Peak Parking Required**																		
Apartment Resident	306	306	291	269	245	230	214	208	199	199	208	217	226	236	245	254	263	272	282
Apartment Guest	23	0	5	5	5	5	5	5	5	5	5	5	9	14	23	23	23	23	18
Retail/ Commercial	343	10	24	110	189	250	312	329	343	343	329	316	285	264	247	230	182	113	38
Grocery Store	47	5	13	25	36	45	47	47	47	46	45	44	40	23	16	12	7	3	2
Casual Restaurant	237	0	7	11	21	27	57	127	137	117	117	117	156	217	227	237	217	217	212
Fast Food Restaurant	239	15	27	51	75	138	208	239	239	217	147	133	147	205	195	123	75	51	27
Office	9	1	1	5	9	9	9	9	9	9	9	8	8	8	8	8	8	5	1
Medical Office	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total		**337**	**368**	**476**	**580**	**704**	**852**	**964**	**979**	**936**	**860**	**840**	**871**	**967**	**961**	**887**	**775**	**684**	**580**

[1] The time-of-day factors are referenced from the Urban Land Institute's *Shared Parking,* Third Edition (2020).

Table M: Future December Time of Day Parking Demand

Brea Plaza Shopping Center Shared Parking Requirements																			
Time-of-Day Factors[1]		**6:00 AM**	**7:00 AM**	**8:00 AM**	**9:00 AM**	**10:00 AM**	**11:00 AM**	**12:00 PM**	**1:00 PM**	**2:00 PM**	**3:00 PM**	**4:00 PM**	**5:00 PM**	**6:00 PM**	**7:00 PM**	**8:00 PM**	**9:00 PM**	**10:00 PM**	**11:00 PM**
Residential	Guest		20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	40%	60%	100%	100%	100%	100%	80%
	Resident	100%	95%	88%	80%	75%	70%	68%	65%	65%	68%	71%	74%	77%	80%	83%	86%	89%	92%
Shopping Center	Customer	1%	5%	10%	35%	60%	85%	100%	100%	100%	100%	90%	80%	65%	60%	55%	50%	35%	15%
	Employee	10%	15%	40%	75%	85%	95%	100%	100%	100%	100%	100%	95%	85%	80%	75%	65%	45%	15%
Grocery Store	Customer	10%	25%	50%	75%	95%	100%	100%	100%	100%	100%	100%	90%	50%	33%	25%	15%	5%	4%
	Employee	15%	35%	70%	85%	100%	100%	100%	100%	85%	75%	60%	55%	45%	40%	30%	20%	10%	10%
Fine/Casual Dining	Customer					0%	15%	50%	55%	45%	45%	45%	60%	90%	95%	100%	90%	90%	90%
	Employee		20%	30%	60%	75%	75%	75%	75%	75%	75%	75%	100%	100%	100%	100%	100%	100%	85%
Fast Food	Customer	5%	10%	20%	30%	55%	85%	100%	100%	90%	60%	55%	60%	85%	80%	50%	30%	20%	10%
	Employee	15%	20%	30%	40%	75%	100%	100%	100%	95%	70%	60%	70%	90%	90%	60%	40%	30%	20%
Office	Visitor		20%	60%	80%	90%	100%	90%	80%	60%	40%	20%	10%	5%	0%	0%			
	Employee	0%	20%	60%	80%	90%	100%	90%	80%	60%	40%	20%	10%	5%	0%	0%	0%	0%	
Medical Office	Visitor			90%	90%	100%	100%	30%	90%	100%	100%	90%	80%	67%	30%	15%			
Time-of-Day Parking Demand	**Peak Parking Required**																		
Apartment Resident	306	306	291	269	245	230	214	208	199	199	208	217	226	236	245	254	263	272	282
Apartment Guest	23	0	5	5	5	5	5	5	5	5	5	5	9	14	23	23	23	23	18
Retail/ Commercial	447	13	31	72	192	291	389	447	447	447	447	411	371	308	286	264	237	165	67
Grocery Store	45	5	12	24	34	43	45	45	45	44	43	42	38	22	15	12	7	3	2
Casual Restaurant	254	0	8	11	23	29	61	137	147	126	126	126	168	232	243	254	232	232	227
Fast Food Restaurant	227	15	26	49	71	131	198	227	227	206	139	126	139	195	185	117	71	49	26
Office	9	1	1	5	9	9	9	9	9	9	9	8	8	8	8	8	8	5	1
Medical Office	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total		**340**	**374**	**435**	**579**	**738**	**921**	**1,078**	**1,079**	**1,036**	**977**	**935**	**959**	**1,015**	**1,005**	**932**	**841**	**749**	**623**

[1] The time-of-day factors are referenced from the Urban Land Institute's *Shared Parking*, Third Edition (2020).

COMPARING PARKING SUPPLY AND DEMAND

In the existing condition, the Brea Plaza Shopping Center has a BMC parking requirement for 909 parking spaces, of which 739 spaces are provided on site. However, it should be noted that if parking demand were calculated individually, the movie theater alone would require 527 parking spaces, which would significantly increase the total parking requirement.

The realistic implication of the proposed project is that the most parking-intensive portion of the Brea Plaza Shopping Center is being eliminated. Table E showed that the replacement land uses have an approximately equivalent parking requirement as the replaced land use. However, the proposed project will construct 258 more parking spaces than exist today. Therefore, the effect of the proposed project will be to bring more balance to the parking supply and demand.

With the proposed project, the BMC parking requirement would increase to 1,289 parking spaces, of which 997 spaces would be provided on site. When considering the proposed project's parking demand management strategies and the effects of shared parking, typical weekday peak parking demand is anticipated to be 966 parking spaces. Typical weekend peak parking demand is anticipated to be 979 parking spaces. It is anticipated that typical weekday and weekend parking demand could be accommodated within the on-site parking supply. Weekend peak parking demand in December is anticipated to be 1,079 parking spaces, which could be accommodated within the flexible parking located within the parking easement. The parking demand generated by the Brea Plaza Shopping Center could be accommodated within the on-site parking supply and, on a peak December weekend, the flexible parking located within the parking easement.

PARKING DEMAND MANAGEMENT STRATEGIES

The sections above demonstrate that the proposed project's parking supply can be less than that determined by straight application of the BMC parking requirements while still providing sufficient parking to satisfy the anticipated parking demand. Limiting parking supply in this manner is consistent with regional planning efforts. For example, Connect SoCal, the 2020–2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) of the Southern California Association of Governments (SCAG), lists "identify ways to 'right size' parking requirements and promote alternative parking strategies" as a strategy for sustainable development.[1] Leveraging technology innovations is another RTP/SCS strategy, which is proposed as part of the proposed project. The proposed project proposes providing a lounge for rideshare drivers and subsidized car sharing for the residents.

Providing a lounge for rideshare drivers helps to ensure the availability of a ride during high-demand times. Because the lounge reduces the time lost waiting for a driver to arrive, the convenience of this alternative to private car ownership is increased. The subsidized car sharing for residents

[1] Southern California Association of Governments. Connect SoCal: The 2020–2045 Regional Transportation Plan/Sustainable Communities Strategy of the Southern California Association of Governments. Page 49. Website: https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal-plan_0.pdf?1606001176 (accessed March 8, 2021).

ensures access to vehicles for purposes not well suited to ridesharing such as longer trips or purchasing bulky items. These project features work together to reduce the need for apartment residents to privately own vehicles. These strategies are supportive of the parking demand calculations presented above. No additional reduction in parking demand has been applied in this analysis because of these strategies.

Limiting parking has benefits to reducing vehicle miles traveled (VMT) and greenhouse gas (GHG) emissions. Mitigation Measure MM-GHG-1 (e) of the RTP/SCS identifies limiting parking supply as a method to encourage alternative transportation modes. In the California Air Pollution Control Officers Association (CAPCOA) publication *Quantifying Greenhouse Gas Mitigation Measures* (CAPCOA manual), strategy PDT-1 identifies a potential VMT and GHG reduction of between 5 and 12.5 percent when reducing parking supply.[1]

The SCAG RTP/SCS mitigation goes further and names unbundling parking costs as a parking management strategy that is particularly effective at reducing travel demand. For an apartment development, unbundling parking would mean charging a base rent for an apartment and an additional a la carte cost per vehicle parking permit. The CAPCOA manual strategy PDT-2 identifies a potential additional VMT reduction of between 2.6 and 13 percent for unbundling parking costs. Allowing unbundled parking costs works to reduce VMT because it reduces parking demand. For example, "Allow for Parking Pricing/Unbundling/Cash-out Requirements" is step 5 in Richard Wilson's book *Parking Reform Made Easy*.[2] Unbundling parking not only reduces VMT and GHG but also is fairer to apartment residents.

Including the price of parking with rent places an unfair burden on renters with lower parking demand. A single parent in a two-bedroom apartment with one car and a group of four adults in a two-bedroom apartment with four cars are charged the same bundled rent-plus-parking cost. This single parent essentially subsidizes the cost of parking for others. Permitting unbundled parking fairly allocates the cost of parking to the generators of parking demand. When multicar households are aware of their parking costs, they can more accurately determine the correct number of cars needed by their household.

On-street parking is not permitted adjacent to the project site. Single-family residential streets with on-street parking are not convenient to the project site, which makes the project site a potentially good location within Brea to demonstrate the ability of unbundled parking to moderate residential parking demand.

Even if full unbundling of parking costs is not possible, strategies to manage the parking demand are still possible. *Parking Reform Made Easy* discusses the effects of reserved versus unreserved parking on parking circulation and the ability to internally share parking spaces.[3] This source points out that a reserved space effectively represents parking demand even when vacant. With fewer assigned

---

1 California Air Pollution Control Officers Association. 2010. *Quantifying Greenhouse Gas Mitigation Measures.*

2 Wilson, Richard. 2013. *Parking Reform Made Easy*. Washington, D.C.: Island Press.

3 Ibid., page 105.

parking spaces, the opportunity is greater to internally share parking resources. *Parking Reform Made Easy* estimates that not reserving residential parking spaces can reduce the number of spaces needed by 10 to 20 percent.[1] Again, this strategy is supportive of the parking demand calculations presented above. No additional reduction in parking demand has been applied in this analysis because of this strategy.

The proposed project's strategy of reducing parking supply through maximizing the shared parking pool aligns with regional goals to support sustainable development and reduce VMT and GHG. Maximizing the shared parking pool includes not providing a sequestered parking area for the residential development. Keeping these spaces unreserved provides flexibility to the development and the residents to consider transportation alternatives.

BICYCLE PARKING

The BMC does not currently quantify bicycle parking requirements, but the travel demand management ordinance does state that bicycle parking should be provided for employees commuting to the site. The proposed project is proposing to provide 22 short-term bicycle parking spaces and 108 long-term bicycle parking spaces. Long-term bicycle parking would be located within an enclosed bicycle locker or in a secure parking garage. Short-term bicycle parking should include anchoring that will allow for residents or visitors to lock up their bicycle frame and one wheel to the secured bike rack. Both types of bicycle parking spaces should be located in areas visible to passing vehicles and/or residents to discourage theft.

The bicycle parking spaces would be available to employees and residents. Existing and planned bicycle infrastructure in Brea further supports bicycle commuting. According to the City's Circulation Element, Associated Road has Class II bicycle lanes and a planned Class I facility.[2] The existing Class II bicycle lanes along Associated Road permit travel to the Brea Trail Class I bicycle path. This path along former Pacific Electric right-of-way facilitates east-west travel through Brea.

BUS STOP

Orange County Transportation Authority (OCTA) Bus Route 153 operates adjacent to the Brea Plaza Shopping Center along Associated Road. Route 153 travels between the Brea Mall and the Anaheim Regional Transportation Intermodal Center (ARTIC), which is a major transit stop served by Metrolink and Amtrak trains as well as high-frequency bus service to employment centers in Anaheim.

In the existing condition, Route 153 has a northbound bus stop immediately adjacent to the Brea Plaza Shopping Center at the northeast corner of Associated Road/Imperial Highway. The nearest southbound bus stop is less convenient. One southbound bus stop is located south of Imperial Highway, requiring riders to cross Imperial Highway. These pedestrian crossings of a major arterial are time consuming and inconvenient to riders and have the potential to add delay to vehicles at the intersection. An additional southbound bus stop is located north of the Brea Plaza Shopping Center near Greenbriar Park.

---

1 Wilson, Richard. 2013. *Parking Reform Made Easy*. Washington, D.C.: Island Press.

2 City of Brea. 2003. Circulation Element.

On August 13, 2020, LSA and the project applicant met with OCTA Bus Operations to discuss the possibility of better integrating bus service into the Brea Plaza Shopping Center and the proposed residential development. OCTA preferred a curb-adjacent bus stop along Associated Road to a potential bus stop internal to the site. OCTA indicated that this stop would not require a concrete pad, as it would be similar to the existing bus stops along Associated Road.

The proposed location for the new bus stop is south of the shopping center's unsignalized driveway with Associated Road. An investigation into this location showed an existing streetlight and telephone pole. LSA considered the dimensions of OCTA buses including locations of front and rear doors as detailed in OCTA's *Bus Stop Safety and Design Guidelines*.[1] The exhibit below illustrates the dimensions of the bus stop and the location necessary to avoid relocation of the streetlight or telephone pole. The exhibit shows that approximately 8 feet would remain between the bus stop and the lane line when a bus is stopped. This is sufficient distance for passenger vehicles to continue south on Associated Road and is no different from the existing bus stops along Associated Road. It should be noted that approximately 165 feet would remain between the southern limit of the bus stop and the beginning of the southbound right-turn lane at Associated Road/Imperial Highway. This distance is sufficient to permit lane changes for vehicles to access the proper lane at the intersection. Therefore, LSA does not anticipate any impacts due to design features as a result of the proposed bus stop.

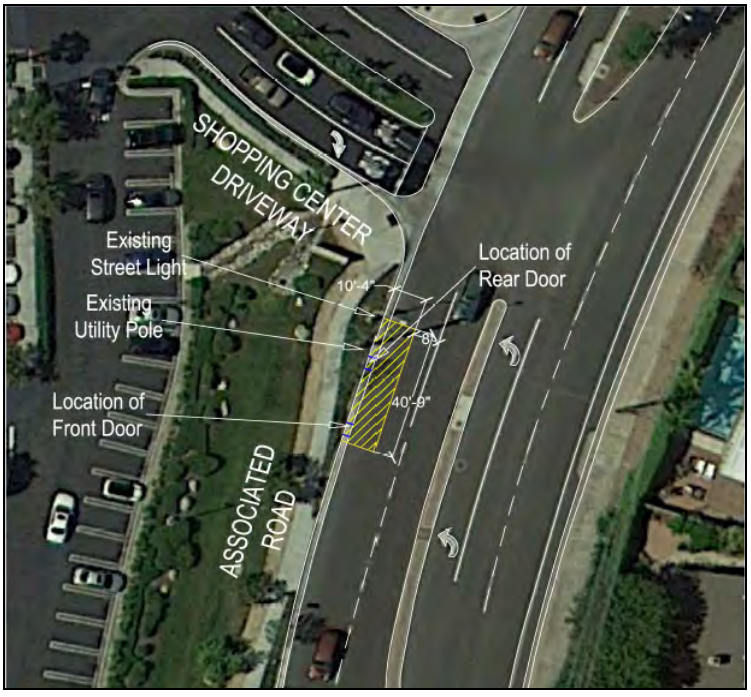


Exhibit 1: The dimensions of the bus stop and the location necessary to avoid relocation of the streetlight or telephone pole

[1] Orange County Transportation Authority. 2004. *Bus Stop Safety and Design Guidelines*.

CONCLUSION

This analysis considered the potential effects to parking demand and supply for the proposed project at the Brea Plaza Shopping Center. The proposed project would replace the existing movie theater and 139 surface parking spaces with 189 residential units, 21,355 sf of office space, and a 397-space parking structure. Of the 189 proposed residential units, 19 would be affordable housing, 15 would be coliving units, and 155 would be traditional market rate apartments.

In the existing condition, the Brea Plaza Shopping Center has a BMC parking requirement for 909 parking spaces, of which 739 spaces are provided on site and the remainder are provided on the adjacent property through a parking easement. However, the BMC parking requirement for the shopping center likely understates the peak parking demand because one use, the movie theater, would require 527 parking spaces if calculated individually.

The BMC parking requirement for the proposed land uses is 46 fewer parking spaces than the 527 parking spaces required for the movie theater. Because the proposed project would also construct 258 more parking spaces than it is replacing, the proposed project would bring greater balance to the parking supply and demand. This parking analysis demonstrated that the project will not rely on the Mercury Insurance parking lot to satisfy typical daily or weekend parking demand.

With the proposed project, the BMC parking requirement would increase to 1,289 parking spaces, of which 997 spaces would be provided on site. However, when considering the proposed project's parking demand management strategies and the effects of shared parking, peak parking demand is anticipated to be 966 on a typical weekday, 979 on a typical weekend, and 1,079 on a December weekend. This peak parking demand could be accommodated within the on-site parking supply and, on a peak December weekend, the flexible parking located within the parking easement.

Parking demand management strategies of the proposed project include providing a lounge for rideshare drivers, subsidizing car sharing for the residents, providing the majority of residential parking in unreserved parking spaces, providing short-term and long-term bicycle parking, and proposing a new bus stop to better serve residents and the shopping center. These parking demand management strategies are included in the SCAG RTP/SCS and have the potential to reduce VMT and GHG emissions in addition to moderating parking demand. LSA appreciates the opportunity to provide its services. If you have any questions, please call me at (949) 553-0666.

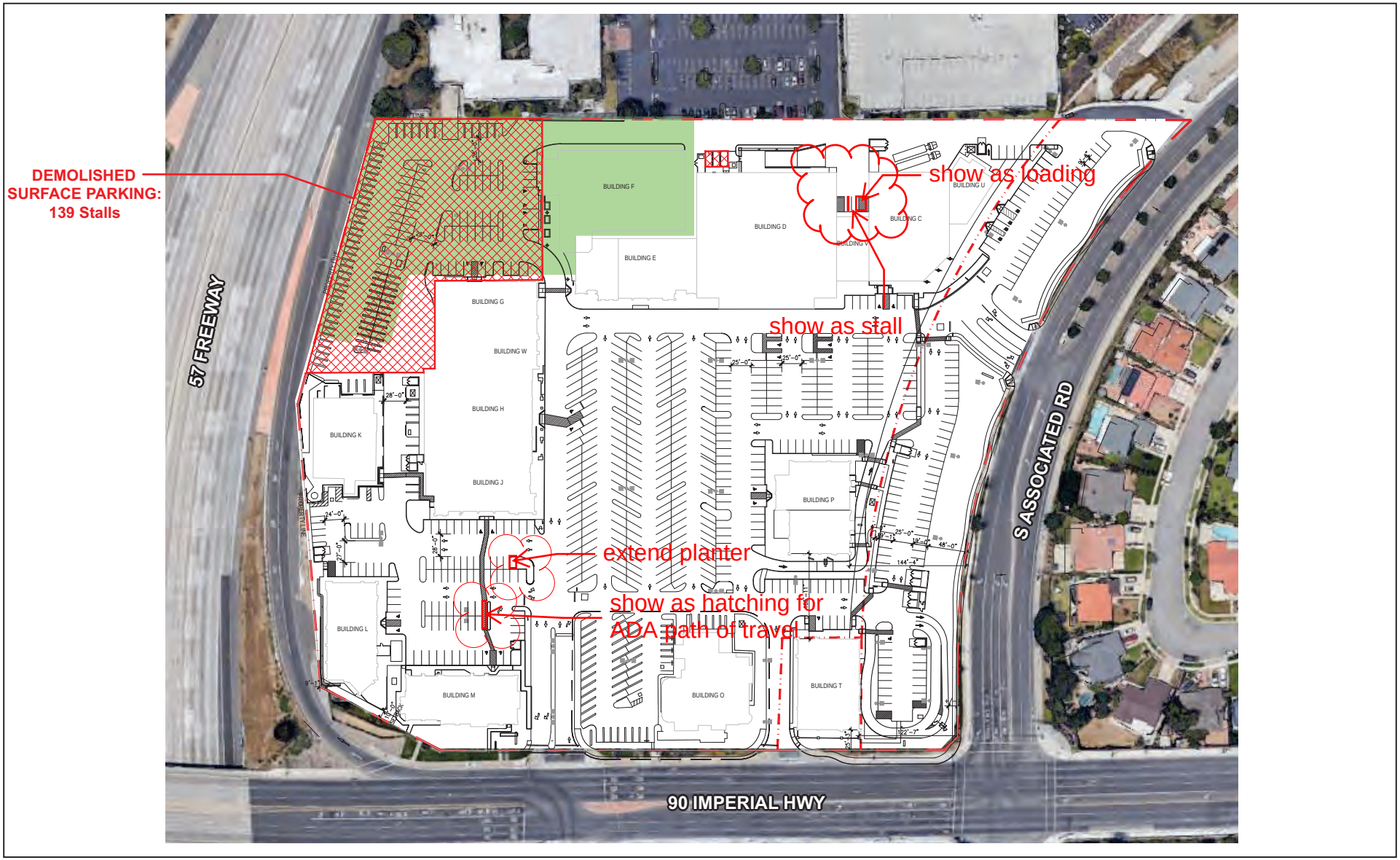
Sincerely,
LSA Associates, Inc.

Arthur Black
Principal Transportation Planner

Attachments: A: Figure 1, Site Plan
B: Parking Supply Survey Data
C: Residential Parking Demand Survey Data

ATTACHMENT A

FIGURE 1: SITE PLAN



LSA

FIGURE 1

Project Area

N

0 90 180

FEET

SOURCE: Architects Orange

I:\BSR1901\G\Site Plan.cdr (4/14/2021)

Brea Plaza Shopping Center

Site Plan

ATTACHMENT B

PARKING SUPPLY SURVEY DATA

Brea Plaza / Mercury Insurance
Brea, CA
Monday, August 24th, 2020

Zone 1				
Regular Spaces	Handicap	Loading	Compact	Total
105	6	2	37	150

Zone 2						
Regular Spaces	Handicap	20 Min.	Fed Ex Emp.	Jared Reserved	Take Out	Total
72	8	13	2	2	3	100

Zone 3				
Regular Spaces	Handicap	20 Min.	Compact	Total
173	2	12	30	217

Zone 4	
Regular Spaces	Handicap	Total
63	8	71

Zone 5				
Regular Spaces	Handicap	20 Min.	Pick Up	Total
136	9	2	6	153

Zone 6					
Regular Spaces	Handicap	20 Min.	Loading	Unmarked	Total
38	4	2	1	~~7~~ 3	~~52~~ 48

Zone 7								
Reserved	Handicap	20 Min.	Loading	Medical	Carpool	Visitor	Employee	Total
79	14	1	2	2	13	14	2	127

Zone 8					
Regular Spaces	Compact	Reserved	Mercury Emp.	Loading	Total
97	17	4	8	1	127

Zone 9	
Regular Spaces	Total
189	189

Zone 10			
Regular Spaces	Handicap	Reserved	Total
447	10	8	465

8
9
7
10
6
1
5
3
2
4
Google

ATTACHMENT C

RESIDENTIAL PARKING DEMAND SURVEY DATA

Prepared by National Data & Surveying Services

Parking Study

Location: Sw Corner Of E Katella Ave & S Westside De Intersection
City: Anaheim,CA

Date: 04/25/2019
Day: Thursday

Area	Space Type	Spaces	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM
1st Floor	Regular	**95**	49	54	61	66	71	76	78	86
	Regular HC	**2**	0	0	0	0	1	1	1	1
	EV	**2**	0	0	1	1	2	2	2	2
	Guest HC	**2**	0	0	0	0	0	0	0	0
2nd Floor	Regular	**115**	32	43	52	58	66	67	71	72
	Regular HC	**3**	0	0	0	0	0	0	0	0
	EV	**2**	0	0	0	0	0	0	0	0
	Guest HC	**1**	0	0	0	0	0	0	0	0
3rd Floor	Regular	**115**	21	23	34	39	40	45	50	50
	Guest HC	**1**	1	1	1	1	1	1	1	1
	EV	**2**	1	1	1	1	1	1	1	1
	Regular HC	**3**	0	0	0	0	0	1	1	1
4th Floor	Regular	**116**	29	34	39	44	51	54	56	56
	Guest HC	**1**	0	0	0	0	0	0	0	0
	EV	**2**	0	1	1	1	1	1	2	2
	Regular HC	**3**	0	0	0	0	0	0	0	0
5th Floor	Regular	**115**	13	15	20	25	29	31	32	32
	HC	**4**	0	0	0	0	0	0	0	0
	EV	**2**	0	0	0	0	0	0	0	0
6th Floor	Regular	**45**	0	0	0	0	0	0	0	0
	Guest	**93**	2	2	2	2	2	2	2	2
	EV	**2**	0	0	0	0	0	0	0	0

Notes **1st floor - 3 Spaces blocked, not included in inventory.**

Prepared by National Data & Surveying Services

Parking Study

Location: Sw Corner Of E Katella Ave & S Westside De Intersection
City: Anaheim,CA

Date: 04/26/2019
Day: Friday

Area	Space Type	Spaces	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM
1st Floor	Regular	**95**	33	51	62	60	64	66	72	74
	Regular HC	**2**	0	1	1	1	2	2	2	2
	EV	**2**	1	1	1	2	2	2	2	2
	Guest HC	**2**	0	0	1	1	1	1	1	1
2nd Floor	Regular	**115**	35	49	55	56	59	64	70	69
	Regular HC	**3**	0	0	0	0	0	1	1	1
	EV	**2**	0	1	1	1	1	2	2	2
	Guest HC	**1**	0	0	0	0	0	0	0	0
3rd Floor	Regular	**115**	25	26	29	39	42	48	50	50
	Guest HC	**1**	0	1	1	1	0	0	1	1
	EV	**2**	0	0	0	0	0	1	1	1
	Regular HC	**3**	0	0	0	0	0	0	0	0
4th Floor	Regular	**116**	31	35	38	43	45	47	49	50
	Guest HC	**1**	0	0	0	0	0	0	0	0
	EV	**2**	1	1	1	1	2	2	2	2
	Regular HC	**3**	0	0	0	0	0	0	0	0
5th Floor	Regular	**115**	16	20	23	25	29	31	33	33
	HC	**4**	0	0	0	0	0	0	0	0
	EV	**2**	0	0	0	0	0	0	0	0
6th Floor	Regular	**45**	0	0	0	0	0	0	0	0
	Guest	**93**	0	0	0	0	0	0	0	0
	EV	**2**	0	0	0	0	0	0	0	0

Notes **1st floor - 3 Spaces blocked, not included in inventory.**

Prepared by National Data & Surveying Services

Parking Study

Location: Sw Corner Of E Katella Ave & S Westside De Intersection
City: Anaheim,CA

Date: 04/27/2019
Day: Saturday

Area	Space Type	Spaces	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM
1st Floor	Regular	**95**	62	64	65	66	71	69	70	71
	Regular HC	**2**	0	1	1	1	1	1	1	1
	EV	**2**	1	1	1	1	1	1	1	1
	Guest HC	**2**	0	0	0	0	1	1	1	1
2nd Floor	Regular	**115**	56	59	61	64	71	75	73	76
	Regular HC	**3**	0	0	0	0	0	0	0	0
	EV	**2**	1	1	0	0	1	1	1	1
	Guest HC	**1**	0	0	0	0	0	0	0	0
3rd Floor	Regular	**115**	31	40	46	43	50	52	57	58
	Guest HC	**1**	1	1	1	1	1	1	1	1
	EV	**2**	2	2	1	0	0	0	0	0
	Regular HC	**3**	0	0	0	0	0	0	0	0
4th Floor	Regular	**116**	35	39	47	50	56	55	59	57
	Guest HC	**1**	0	0	0	0	0	0	0	0
	EV	**2**	1	1	1	1	1	1	1	1
	Regular HC	**3**	0	0	0	0	0	0	0	0
5th Floor	Regular	**115**	15	19	21	21	21	22	24	26
	HC	**4**	0	0	0	0	0	0	0	0
	EV	**2**	1	2	2	2	2	1	1	1
6th Floor	Regular	**45**	0	0	0	0	0	0	0	0
	Guest	**93**	0	0	0	0	0	0	0	0
	EV	**2**	0	0	0	0	0	0	0	0

Notes **1st floor - 3 Spaces blocked, not included in inventory.**

Project Title Baker Block - 125 Baker, Costa Mesa - Parking Lot Survey

Parking Occupancy Survey

Date: Thursday, May 2, 2019

Thursday, May 2, 2019		Inv	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM
Parking Structure	Unmarked Stall	360	134	157	182	191	204	225	238	237
	Handicapped	12	3	4	3	7	4	5	5	4
	Electric	8	2	3	2	4	7	6	8	7
	Motorcycle with car		6	4	5	7	5	7	6	7
	Motorcycle alone		5	2	5	6	4	1	2	2
	Reserved	80	20	27	37	38	43	43	46	47
Office Lot	Guest	5	1	2	2	5	5	5	4	4
	Handicapped	1	0	1	1	0	0	0	1	0
	Total Occupancy	466	171	200	237	258	272	292	310	308
	Total Percent	-	*37%*	*43%*	*51%*	*55%*	*58%*	*63%*	*67%*	*66%*

Project Title Baker Block - 125 Baker, Costa Mesa - Parking Lot Survey

Parking Occupancy Survey

Date: Friday, May 3, 2019

Friday, May 3, 2019		Inv	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM
Parking Structure	Unmarked Stall	360	143	166	186	193	206	216	221	236
	Handicapped	12	2	3	6	4	7	6	7	6
	Electric	8	2	2	4	5	7	6	6	7
	Motorcycle with car		2	2	3	3	3	3	3	2
	Motorcycle alone		5	8	5	8	8	9	8	7
	Reserved	80	25	34	38	38	40	43	44	48
Office Lot	Guest	5	5	5	4	4	6	6	6	5
	Handicapped	1	1	0	0	0	1	1	0	0
	Total Occupancy	466	185	220	246	255	278	290	295	311
	Total Percent	-	*40%*	*47%*	*53%*	*55%*	*60%*	*62%*	*63%*	*67%*

Project Title Baker Block - 125 Baker, Costa Mesa - Parking Lot Survey

Parking Occupancy Survey

Date: Saturday, May 4, 2019

Saturday, May 4, 2019		Inv	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM
Parking Structure	Unmarked Stall	360	178	193	205	203	202	206	222	229
	Handicapped	12	4	2	5	4	4	4	5	6
	Electric	8	5	7	6	7	6	6	7	7
	Motorcycle with car		4	3	2	3	3	5	6	6
	Motorcycle alone		8	5	5	8	6	4	4	2
	Reserved	80	32	31	34	33	37	39	39	41
Office Lot	Guest	5	5	5	5	2	5	5	5	5
	Handicapped	1	0	0	0	0	0	1	0	1
	Total Occupancy	466	236	246	262	260	263	270	288	297
	Total Percent	-	*51%*	*53%*	*56%*	*56%*	*56%*	*58%*	*62%*	*64%*

Prepared by National Data & Surveying Services

Parking Study

Location: Rize Apartments, 1100 Synergy
City: Irvine, CA

Date: 6/27/2019
Day: Thursday

Level	Spaces Type	Space	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM
1	Regular	62	17	19	26	34	45	47	47	48
	Handicap	5	2	2	2	2	2	2	2	2
	Clean Air	9	2	5	2	2	6	5	5	5
	Future Resident	2	1	1	2	2	2	2	2	2
2	Regular	85	35	36	43	52	60	68	66	68
	Handicap	3	1	1	1	1	1	1	1	1
	Clean Air	9	5	5	6	6	5	6	6	6
3	Regular	86	33	40	46	52	54	62	63	63
	Handicap	2	0	0	0	1	1	1	1	1
	Clean Air	9	5	5	5	6	6	9	8	8
4	Regular	86	45	45	52	49	54	54	56	59
	Handicap	2	0	0	0	0	0	0	0	0
	Clean Air	9	2	4	5	4	7	8	8	8
5	Regular	86	33	40	46	45	48	51	51	53
	Handicap	2	0	1	1	0	0	1	0	0
	Clean Air	9	0	3	5	6	6	6	6	6
6	Regular	85	34	37	45	39	41	43	44	44
	Guest	13	4	6	8	8	10	10	11	11

Prepared by National Data & Surveying Services

Parking Study

Location: Rize Apartments, 1100 Synergy
City: Irvine, CA

Date: 6/28/2019
Day: Friday

Level	Spaces Type	Space	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM
1	Regular	62	30	33	41	40	39	44	48	49
	Handicap	5	3	3	3	2	2	2	2	3
	Clean Air	9	5	5	4	3	6	7	8	8
	Future Resident	2	0	2	2	2	2	2	2	2
2	Regular	85	37	44	45	48	50	54	59	57
	Handicap	3	1	0	0	1	1	1	1	1
	Clean Air	9	2	5	5	6	8	8	7	7
3	Regular	86	48	55	57	57	63	66	65	64
	Handicap	2	0	0	0	0	0	0	0	0
	Clean Air	9	2	2	4	5	6	7	8	8
4	Regular	86	45	43	47	45	47	55	59	61
	Handicap	2	1	0	0	0	0	0	0	0
	Clean Air	9	1	3	3	3	4	4	6	6
5	Regular	86	42	44	50	53	50	53	55	60
	Handicap	2	0	0	0	0	0	0	0	0
	Clean Air	9	6	7	7	6	6	6	6	6
6	Regular	85	39	33	41	41	42	47	49	49
	Guest	13	12	13	13	11	12	12	11	11

Prepared by National Data & Surveying Services

Parking Study

Location: Rize Apartments, 1100 Synergy
City: Irvine, CA

Date: 6/29/2019
Day: Saturday

Level	Spaces Type	Space	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM
1	Regular	62	37	36	35	37	41	42	46	47
	Handicap	5	3	2	2	2	3	3	3	3
	Clean Air	9	3	4	6	6	6	6	6	6
	Future Resident	2	2	2	2	2	2	2	2	2
2	Regular	85	45	47	50	52	55	56	54	56
	Handicap	3	1	1	1	1	1	1	1	1
	Clean Air	9	4	5	5	5	6	6	6	6
3	Regular	86	51	53	54	54	54	54	55	55
	Handicap	2	1	1	2	2	2	1	1	1
	Clean Air	9	6	6	7	7	7	7	7	7
4	Regular	86	47	48	50	53	55	58	58	60
	Handicap	2	0	0	0	1	2	2	2	2
	Clean Air	9	5	5	5	5	4	4	4	5
5	Regular	86	45	45	47	49	53	56	58	58
	Handicap	2	0	0	0	0	0	0	0	0
	Clean Air	9	5	5	6	6	6	6	6	6
6	Regular	85	40	40	41	41	44	46	46	47
	Guest	13	12	12	12	12	13	13	13	13

Client Name: Rize Apartments

Officers Name: Climate Free Date: 7/27/2017

Type of Service: [Parking Structure Space #'s] Pages: of

Chief Protective Services
P.O. Box 1806
Corona, CA 92878-1806
1-888-332-4648
PPO# 120156

Time	Remarks
(1) 6 153	(4) 307 241 358
45 151	303 325 439
43 65	300 445 437
42 67	299 446
8	263 351
15	265 352
7	292 353
29	298 355
35	280 357
(2) 113 105	(5) 389 408
141 157	367 406
129 210	364 548
80 159	393 449
81 160	371 546
88 247	380 452
85 163	378 453
86 164	425 543
91	420 456
78	430 540
98	416
69	432
(3) 200 347	(6) 500 476 516
211 344	490 474 536
241 343	491 473 556
223 341	492 472 559
225 262	486 470 512
184	462 520 511
189	485 525 510
190	494 524 507
192	493 522
193	492 524
256	491 533

Del Mesa Park
Costa Mesa, CA
Saturday May 4th, 2019
Parking Adjacent to Park

Time	Manistee Next to Park	Remining Street Park Side	Manistee Across from Park	Remaining Street Across from Park	Total Cars Parked
5:00 AM	20	30	8	15	73
6:00 AM	20	31	8	14	73
7:00 AM	18	30	8	13	69
8:00 AM	19	27	8	13	67
9:00 AM	19	26	8	14	67
10:00 AM	19	26	6	12	63
11:00 AM	17	21	7	10	55
12:00 PM	16	23	7	10	56

Prepared by National Data & Surveying Services

Parking Study

Location: Moon Park on Nevada Avenue
City: Costa Mesa, CA

Date: 04/20/2019
Day: Saturday

Lot	Space Type	Inventory	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM
Lot 002	Regular	8	2	1	1	3	3	2	2
Lot 002	HC	1	0	0	0	0	0	0	0

Prepared by National Data & Surveying Services

Parking Study

Location: Moon Park on Nevada Avenue
City: Costa Mesa, CA

Date: 04/20/2019
Day: Saturday

Segment	Street	From	To	Restriction	Measurement	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM
001N	Nevada Ave	Curve	Lot	Regular	478' 8" ft	14	13	14	12	12	13	13
001S	Nevada Ave	Corner	Curve	Regular	303' 8" ft	10	10	11	11	11	11	10
002S	Nevada Ave	California St.	Corner	Regular	107' 9" ft	6	5	4	5	3	2	2
003E	California St	Hawaii Cir	Lot	Regular	154' 2" ft	3	3	3	2	2	3	3
003W	California St	Lot	Alaska Ave	Regular	376' 1" ft	9	9	8	8	8	9	9

Appendix L Noise Analysis

Appendices

This page intentionally left blank.

LOCAL REGULATIONS AND STANDARDS

NOISE

Studies have identified noise as an environmental pollutant that can have substantial and permanent impacts on human health and general well-being. Not only is noise a health hazard, excessive noise can be a source of annoyance, tension, and discomfort that disrupts everyday activities. Brea aims to substantially reduce noise and its impacts within the urban environment, with a focus on protecting residential neighborhoods, schools, and similar sensitive uses.

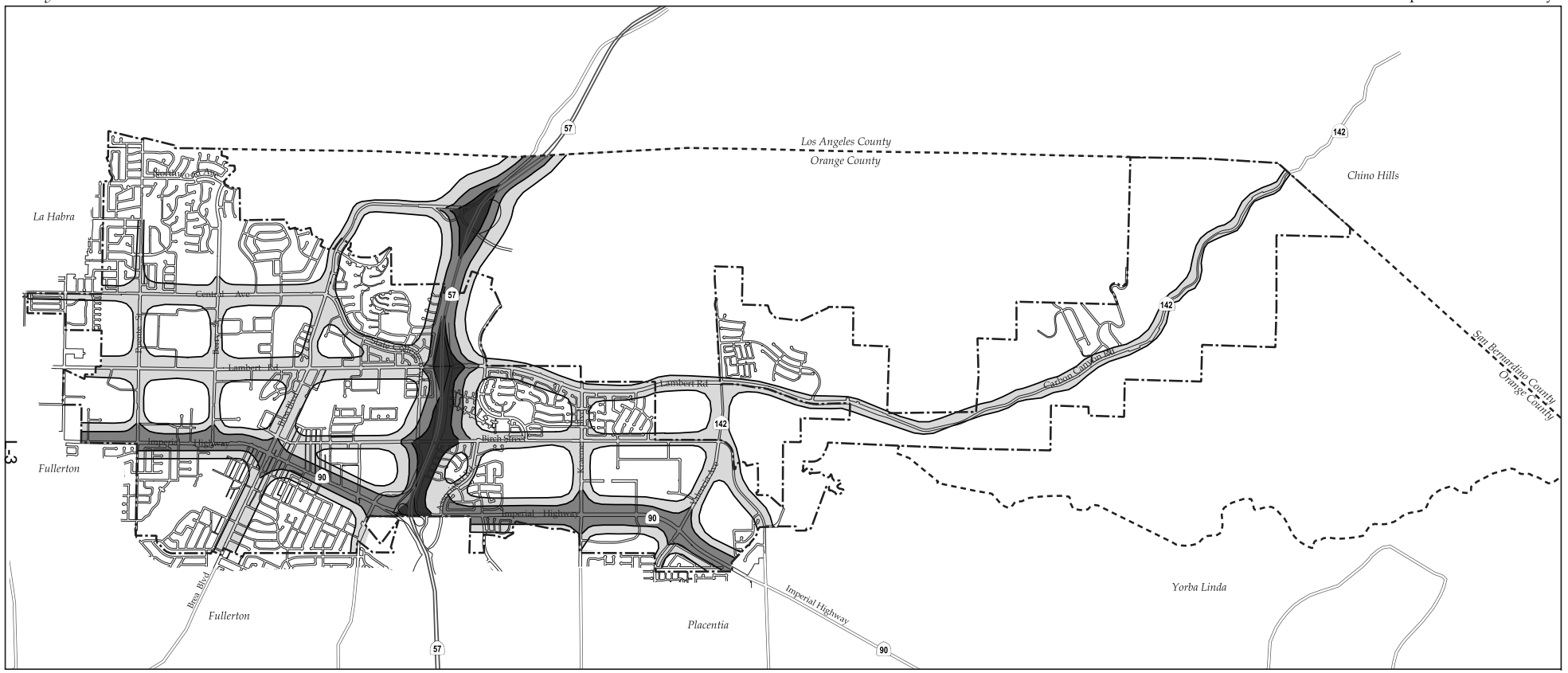
Context

In Brea, street and freeway traffic represent the primary noise sources. Industrial and commercial activity present concerns where adjacent to residential neighborhoods. In addition, mechanical equipment, playgrounds, leaf blowers, and construction equipment are examples of random noise sources that can contribute to neighborhood noise.

Figure PS-5 displays a composite picture of average noise levels in Brea in 2001. As Figure PS-5 illustrates, the loudest noise levels occur along State Highway 57, Imperial Highway, Brea Boulevard, and Valencia Avenue, where truck traffic associated with the Olinda Alpha landfill lumbers past homes and places of business. Lambert Road also experiences loud noise levels due to access to State Highway 57.

Noise and Land Use Compatibility Guidelines

Noise generally is defined as unwanted or intrusive sound. Because noise consists of pitch, loudness, and duration, describing noise with a single unit of measure presents a challenge. The A-weighted decibel scale, or dB(A), has been developed to describe the loudness of a sound or sound environment based on the sensitivity of the human ear. A sound level meter that measures A-weighted decibels has an electrical circuit that allows the meter to have the same sensitivity to sound at different frequencies as the average human ear. Table PS-3 indicates criteria the State has established to reduce adverse noise effects on human health.



Source: Weiland Associates, 2001.

Legend

- City Boundary
- Sphere of Influence

Community Noise Equivalent Level (CNEL) Contours

- Less than 60 CNEL
- 60 to 65 CNEL
- 65 to 70 CNEL
- Greater than 70 CNEL

N
W E
S
City of Brea General Plan

0 3,000 6,000 9,000 12,000 Feet

0 0.5 1 1.5 2 Miles

BREA GENERAL PLAN

Figure PS-5
Noise Contours (2001)

Table PS-3
State Criteria for Minimizing Adverse Noise Effects on Humans

Objective	dB(A) Range
Prevent Hearing Loss	75-80
Prevent Physiological Effects (Other than hearing loss)	65-75
Prevent Speech Interference	50-60
Address People's Subjective Preference for Noise Control	45-50
Prevent Sleep Interruption	35-45

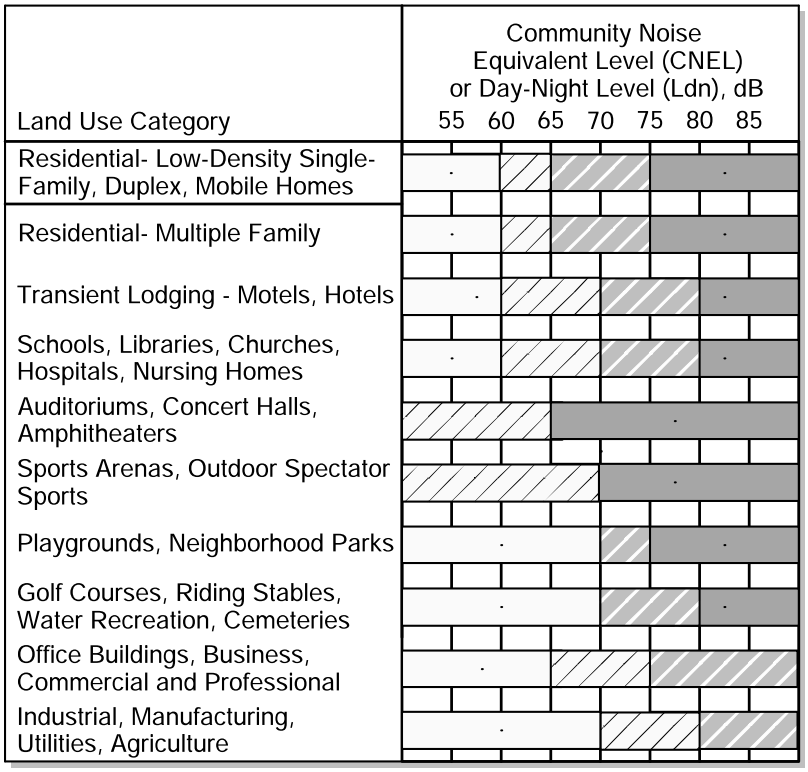
Source: California General Plan Guidelines, 2000.

The dB(A) descriptor only reports noise from a single source or combination of sources at a point in time. To allow a more comprehensive description of a noise environment, federal and State agencies have established noise and land use compatibility guidelines that use averaging approaches to noise measurement. Two measurement scales commonly used in California are the Community Noise Equivalent Level (CNEL) and the day-night level (Ldn). To account for increased human sensitivity at night, the CNEL level includes a 5-decibel penalty on noise during the 7:00 A.M. to 10:00 P.M. time period and a 10-decibel penalty on noise during the 10:00 P.M. to 7:00 A.M. time period. The Ldn level includes only the 10 decibel weighting for late-night noise. These values are nearly identical for all but unusual noise sources.

The City will use land use compatibility standards when planning and making development decisions in order to ensure that noise producers do not adversely affect sensitive receptors.

The City's primary goal with regard to community noise is to minimize the exposure of residents to unhealthful or excessive noise levels to the extent possible. To this end, the noise/land use compatibility guidelines in Figure PS-6, based on cumulative noise criteria for outdoor noise, are used to review development proposals and to identify and mitigation measures necessary to avoid or minimize impacts, including traffic noise impacts, a new use may have on established uses.

Figure PS-6
Noise/Land Use Compatibility



Nature of the noise environment where the CNEL or Ldn level is:

Below 55 dB
Relatively quiet suburban or urban areas, no arterial streets within 1 block, no freeways within 1/4 mile.

55-65 dB
Most somewhat noisy urban areas, near but not directly adjacent to high volumes of traffic.

65-75 dB
Very noisy urban areas near arterials, freeways or airports.

75+ dB
Extremely noisy urban areas adjacent to freeways or under airport traffic patterns. Hearing damage with constant exposure outdoors.

Normally Acceptable
Specified land use is satisfactory, based on the assumption that any buildings are of normal conventional construction, without any special noise insulation requirements

Conditionally Acceptable
New construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features included in design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Normally Unacceptable
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in design.

Clearly Unacceptable
New construction or development should generally not be undertaken.

The Community Noise Equivalent Level (CNEL) and Day-Night Noise Level (Ldn) are measures of the 24-hour noise environment. They represent the constant A-weighted noise level that would be measured if all the sound energy received over the day were averaged. In order to account for the greater sensitivity of people to noise at night, the CNEL weighting includes a 5-decibel penalty on noise between 7:00 p.m. and 10:00 p.m. and a 10-decibel penalty on noise between 10:00 p.m. and 7:00 a.m. of the next day. The Ldn includes only the 10-decibel weighting for late-night noise events. For practical purposes, the two measures are equivalent for typical urban noise environments.

Noise Contours and Noise Impact Areas

The use of noise contours based on the major noise sources can describe the noise environment for the community. Noise contours outline areas of equal noise exposure. Future noise contours have been estimated using information about existing and projected land use development and transportation activity.

The projected noise contours and noise impact areas for Brea are displayed in Figure PS-7. These contours will serve as a guide for land use and development decisions. Contours of 60 dB(A) or greater define noise impact areas. An acoustical analysis must be prepared when noise sensitive land uses are proposed within noise impact areas. The analysis must show that the project is designed to attenuate noise to meet the City's noise standards in order to receive approval. If the project design does not meet the noise standards, mitigation can be recommended in the analysis. If the analysis demonstrates that the noise standards can be met by implementing the mitigation measures, the project can be approved conditioned upon implementation of the mitigation measures.

Transportation Related Noise

Transportation activity is the primary source of noise in Brea. The three major sources of transportation related noise are:

- Traffic on the Orange Freeway (SR-57)
- Commercial truck traffic associated with the Olinda Alpha landfill on Valencia Avenue and Imperial Highway
- Automobile traffic on Brea Boulevard, Brea Canyon Road, Central Avenue, and Lambert Road

Residential neighborhoods bordering the Orange Freeway are subject to loud noise levels. Properties directly adjacent to the freeway can experience decibels as high as 70 to 75 dB(A). Sound attenuation walls, landscaped buffers, and dirt mounds all help to reduce the sound intensity of the freeway. Figure PS-7 illustrates the projected noise contours along the freeway.

Commercial trucks associated with the Olinda Alpha landfill contribute to excessive noise levels via the Orange Freeway, Imperial Highway, and Valencia Avenue to connect with the landfill. Commercial trucks are not permitted to access Valencia Avenue via Lambert Road, minimizing some of the noise impacts to adjacent residential neighborhoods. Olinda Alpha is slated to close in the year 2013; however, the County of Orange is investigating extending the life of the landfill much further.

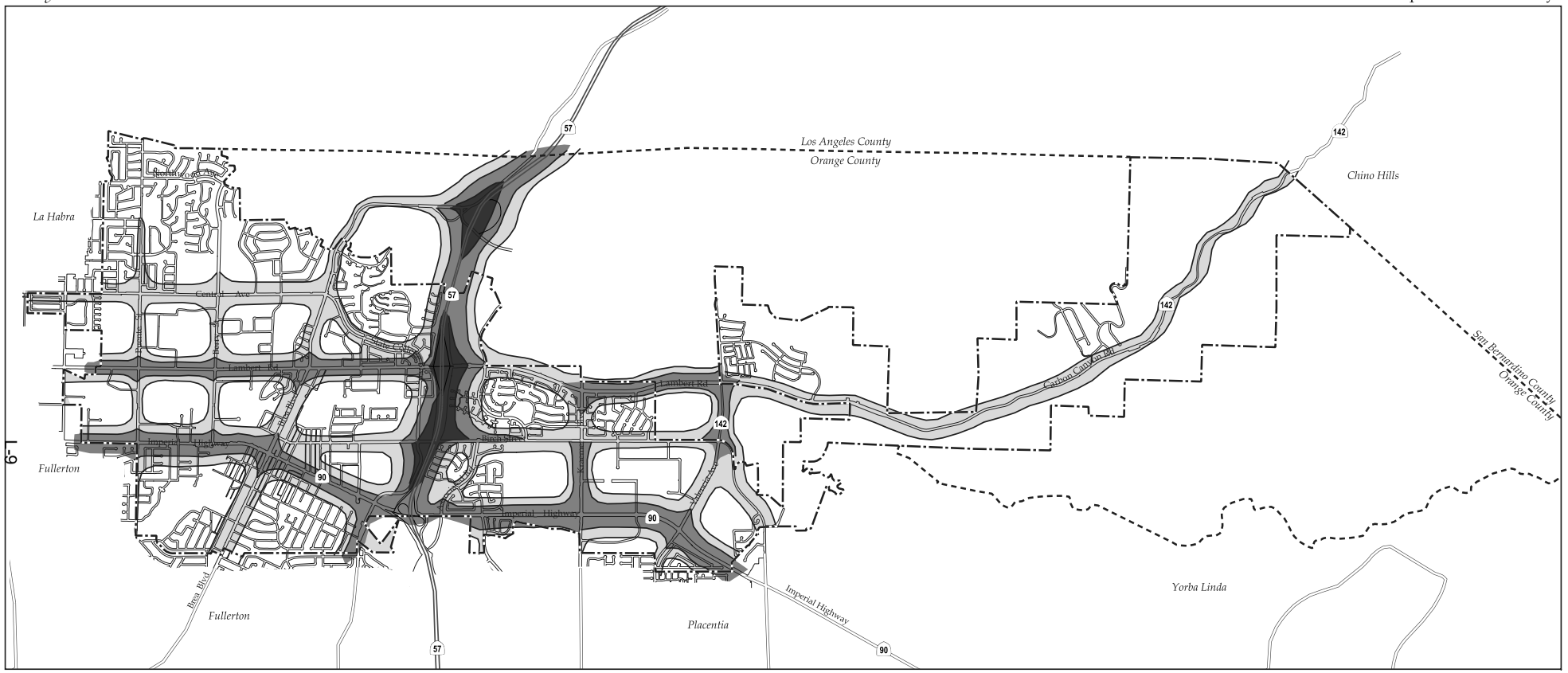
New residential development has been recently constructed at the northeast corner of Valencia Avenue and Carbon Canyon Road just south of the Olinda Alpha landfill entrance. Dense planting of deciduous and evergreen trees as well as a sound attenuation wall were set within the landscaped area to minimize the impacts to residential properties directly abutting Valencia Avenue.

Proposed residential land uses have also been designated for both sides of Valencia Avenue south of Lambert Road/Carbon Canyon Road. Residential, school, and park uses are proposed for the Hartley Research Center. Careful planning and mitigation within these areas will protect these sensitive uses from excessive noise levels.

Noise levels along Brea Boulevard, Brea Canyon Road, Central Avenue, and Lambert Road are above average and can impact sensitive uses adjacent to these streets.

Traffic noise depends primarily on the speed of traffic and the percentage of truck traffic. The primary source of noise from automobiles is high-frequency tire noise, which increases with speed. In addition, trucks and older automobiles produce engine and exhaust noise.

The most efficient and effective means of controlling noise from transportation systems is to reduce noise at the source. However, the City has little direct control over noise produced by transportation sources because State noise regulations preempt local regulations. Because the City cannot control noise at the source, City noise programs focus on reducing the impact of transportation noise at reception sites. During the planning stages of the development process, potential impacts from transportation noise will be identified and mitigation measures will be required as needed to meet City noise standards.



Source: Weiland Associates, 2001.

Legend

- City Boundary
- Sphere of Influence

Community Noise Equivalent Level (CNEL) Contours

- Less than 60 CNEL
- 60 to 65 CNEL
- 65 to 70 CNEL
- Greater than 70 CNEL

N, W, E, S — City of Brea General Plan

0 3,000 6,000 9,000 12,000 Feet

0 0.5 1 1.5 2 Miles

BREA GENERAL PLAN

Figure PS-6
Future Noise Contours

Sound attenuation walls and limits on speed help to shield residential neighborhoods from automobile noise on Imperial Highway.

Non-Transportation Related Noise

When reviewing a proposed industrial, commercial, or public project, noise generation and potential impacts to surrounding development are considered in accordance with CEQA. Specific attention should be given to non-residential proposals adjacent to residential neighborhoods. An acoustical analysis is required for projects that will generate noise potentially affecting sensitive receptors. Where significant impacts are identified, mitigation measures are required. Common mitigation measures that could be applied when reviewing projects include acoustically treated and quiet design: 1) furnaces, 2) fans, 3) motors, 4) compressors, and 5) valves and pumps. The City may also require limited delivery hours and hours of operation to minimize impacts on adjacent residential users or other sensitive receptors.

Goals and Policies

Certain areas of Brea are subject to high levels of noise. This in turn can reduce the quality of life within these neighborhoods. Consideration of noise sources in the planning process and identification of who that noise impacts is an effective method of minimizing the impacts of noise on residents. Areas already impacted by noise can explore different noise attenuation and rehabilitative improvements.

Goal PS-9	Minimize the impact of point source noise and ambient noise levels throughout the community.
Policy PS-9.1	Evaluate the need to require acoustical studies for development proposals that address both direct and indirect, particularly traffic, noise impacts, and require such studies, with appropriate mitigation included, as warranted.
Policy PS-9.2	Ensure that the noise standards set forth in the Municipal Code reflect standards most appropriate for Brea.
Policy PS-9.3	Ensure that acceptable noise levels are maintained near schools, hospitals, convalescent homes, and other noise sensitive areas in accordance with the City's Municipal Code and noise standards contained in the General Plan.
Policy PS-9.4	Employ creative methods of reducing noise pollution in the City.
Policy PS-9.5	Avoid placing high-noise activity centers near residential areas.

Goal PS-2	Minimize the impacts of transportation-related noise.
Policy PS-2.1	Reduce transportation noise by imposing traffic restrictions where necessary.
Policy PS-2.2	Work with the counties of Orange and Los Angeles to include noise mitigation measures in the design of new roadway projects.

Goal PS-3	Minimize noise impacts from sources other than transportation.
Policy PS-3.1	Require the inclusion of noise mitigation measures, techniques, and design features in the planning, design, and construction of future development and redevelopment projects.

Policy PS-3.2 Require that mixed-use structures be designed to prevent transfer of noise and vibration from commercial/retail to residential use.

Policy PS-3.3 Minimize stationary noise sources and noise emanating from construction activities and special events.

Policy PS-3.4 Require that new non-residential development plan delivery areas away from existing residential areas.

Policy PS-3.5 Continue active enforcement to limit commercial and industrial delivery hours adjoining residential areas.

Implementation Guide

See Section XXIII of the Implementation Guide for action programs.

Print

Brea City Code

CHAPTER 8.20: NOISE CONTROL

Section

8.20.010 Declaration of policy

8.20.020 Definitions

8.20.030 Noise level measurement criteria

8.20.040 Designated noise zone

8.20.050 Exterior noise standards

8.20.060 Interior noise standards

8.20.070 Special provisions

8.20.080 Motor vehicle racing

8.20.090 Schools, hospitals and churches

8.20.100 Air conditioning; refrigeration; pool filters and fans

8.20.110 Noise level measurement

8.20.120 Manner of enforcement

§ 8.20.010 DECLARATION OF POLICY.

A. In order to control unnecessary, excessive and annoying sounds emanating from areas of the city, it is hereby declared to be the policy of the city to prohibit such sounds generated from all sources as specified in this chapter.

B. It is determined that certain sound levels are detrimental to the public health, welfare and safety, and contrary to the public interest.

('61 Code, § 7B.1) (Ord. 812, passed - -)

§ 8.20.020 DEFINITIONS.

For the purpose of this chapter, the following definitions shall apply unless the context clearly indicates or requires a different meaning.

AMBIENT NOISE LEVEL. The all-encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding the alleged offensive noise, at the location and approximate time at which a comparison with the alleged offensive noise is to be made.

CUMULATIVE PERIOD. An additive period of time composed of individual time segments which may be continuous or interrupted.

DECIBEL (dB). A unit which denotes the ratio between two (2) quantities which are proportional to power: the number of decibels corresponding to the ratio or two (2) amounts of power is ten (10) times the logarithm to the base ten (10) of this ratio.

DWELLING UNIT. A single unit providing complete, independent living facilities for one (1) or more persons including permanent provisions for living, sleeping, eating, cooking and sanitation.

EMERGENCY MACHINERY, VEHICLE, OR WORK. Any machinery, vehicle or work used, employed or performed in an effort to protect, provide or restore safe conditions in the community or for the citizenry, or work by private or public utilities when restoring utility service.

FIXED NOISE SOURCE. A stationary device which creates sounds while fixed or motionless, including but not limited to industrial and commercial machinery and equipment, pumps, fans, compressors, generators, air conditioners and refrigeration equipment.

GRADING. Any excavating or filling of earth material, or any combination thereof, conducted at a site to prepare said site for construction or other improvements thereon.

IMPACT NOISE. The noise produced by the collision of one mass in motion with a second mass which may be either in motion or at rest.

MOBILE NOISE SOURCE. Any noise source other than a fixed noise source.

NOISE LEVEL. The “A” weighted sound pressure level in decibels obtained by using a sound level meter at slow response with a reference pressure of twenty (20) micronewtons per square meter. The unit of measurement shall be designated as dB(A).

PERSON. A person, firm, association, co-partnership, joint venture, corporation or any entity, public or private in nature.

RESIDENTIAL PROPERTY. A parcel of real property which is developed and used either in part or in whole for residential purposes, other than transient uses such as hotels and motels.

SIMPLE TONE NOISE. A noise characterized by a predominant frequency or frequencies so that other frequencies cannot be readily distinguished.

SOUND LEVEL METER. An instrument meeting American National Standard Institute's Standard S1.4-1971 for Type 1 or Type 2 sound level meters or an instrument and the associated recording and analyzing equipment which will provide equivalent data.

SOUND PRESSURE LEVEL OF A SOUND, IN DECIBELS. Twenty (20) times the logarithm to the base ten (10) of the ratio of the pressure of the sound to a reference pressure, which reference pressure shall be explicitly stated.

('61 Code, § 7B.2) (Ord. 812, passed - -)

§ 8.20.030 NOISE LEVEL MEASUREMENT CRITERIA.

Any noise level measurements made pursuant to the provisions of this chapter shall be performed using a sound level meter as defined in § 8.20.020.

('61 Code, § 7B.3) (Ord. 812, passed - -)

§ 8.20.040 DESIGNATED NOISE ZONE.

The entire territory of the city is hereby designated as “Noise Zone 1.”

('61 Code, § 7B.4) (Ord. 812, passed - -)

§ 8.20.050 EXTERIOR NOISE STANDARDS.

A. The following noise standards, unless otherwise specifically indicated, shall apply to all residential property within a designated noise zone:

NOISE STANDARDS

Noise Zone	*Noise Level*	*Time Period*
1	55 dB(A)	7:00 a.m. - 10:00 p.m.
1	50 dB(A)	10:00 p.m. - 7:00 a.m.

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dB(A).

B. It shall be unlawful for any person at any location within the city to create any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured on any other residential property, to exceed:

1. The noise standard for a cumulative period of more than 30 minutes in any hour; or

2. The noise standard plus five (5) dB(A) for a cumulative period of more than 15 minutes in any hour; or

3. The noise standard plus ten (10) dB(A) for a cumulative period of more than five (5) minutes in any hour; or

4. The noise standards plus fifteen (15) dB(A) for a cumulative period of more than one (1) minute in any hour; or

5. The noise standard plus twenty (20) dB(A) for any period of time.

C. In the event the ambient noise level exceeds any of the first four (4) noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

('61 Code, § 7B.5) (Ord. 812, passed - -)

§ 8.20.060 INTERIOR NOISE STANDARDS.

A. The following interior noise standards, unless otherwise specifically indicated, shall apply to all residential property within a designated noise zone:

INTERIOR NOISE STANDARDS

Noise Zone	*Noise Level*	*Time Period*
1	55 dB(A)	7:00 a.m. - 10:00 p.m.
1	45 dB(A)	10:00 p.m. - 7:00 a.m.

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dB(A).

B. It shall be unlawful for any person at any location within the city to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured on any other residential property, to exceed:

1. The interior noise standard for a cumulative period of more than five (5) minutes in any hour; or

2. The interior noise standard plus five (5) dB(A) for a cumulative period of more than one (1) minute in any hour; or

3. The interior noise standard plus ten (10) dB(A) for any period of time.

C. In the event the ambient noise level exceeds any of the first two (2) noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the third noise limit category the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

('61 Code, § 7B.6) (Ord. 812, passed - -)

§ 8.20.070 SPECIAL PROVISIONS.

The following activities shall be exempted from the provisions of this chapter:

A. Activities conducted on the grounds of any public nursery, elementary, intermediate or secondary school or college.

B. Outdoor gatherings, public dances and shows, provided said events are conducted pursuant to a permit as required by this code.

C. Activities conducted on any park or playground, provided such park or playground is owned and operated by a public entity.

D. Any mechanical device, apparatus or equipment used, related to or connected with emergency machinery, vehicle or work.

E. Noise sources associated with construction, repair, remodeling, or grading of any real property, provided said activities do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday.

F. All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions.

G. Mobile noise sources associated with agricultural operations; provided such operations do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday.

H. Mobile noise sources associated with agricultural pest control through pesticide application, provided that the application is made in accordance with restricted material permits issued by or regulations enforced by the Agricultural Commissioner.

I. Noise sources, associated with the maintenance of real property, provided said activities take place between 7:00 a.m. and 7:00 p.m. on any day.

J. Any activity to the extent regulation thereof has been preempted by state or federal law.

('61 Code, § 7B.7) (Ord. 812, passed - -)

§ 8.20.080 MOTOR VEHICLE RACING.

It shall be unlawful to conduct motor vehicle racing, testing, timing or similar noise-producing activities at raceways, speedways, off-road vehicle courses, drag strips or other similar places, including, but not limited to, the operation of midget race cars, drag cars, motorcycles, off-road vehicles, and specialty automobiles, between the hours of 11:30 p.m. and 7:00 a.m.

('61 Code, § 7B.8) (Ord. 812, passed - -)

§ 8.20.090 SCHOOLS, HOSPITALS AND CHURCHES.

It shall be unlawful for any person to create any noise which causes the noise level at any school, hospital or church while same is in use to exceed the noise limits as specified in § 8.20.050 proscribed for the assigned noise zone in which the school, hospital or church is located, or which noise level unreasonably interferes with the use of such institutions or which unreasonably disturbs or annoys patients in the hospital, provided conspicuous signs are displayed in three (3) separate locations within one-tenth of a mile of the institution indicating the presence of a school, church or hospital.

('61 Code, § 7B.9) (Ord. 812, passed - -)

§ 8.20.100 AIR CONDITIONING; REFRIGERATION; POOL FILTERS AND FANS.

During the five (5) year period following the effective date of this chapter, the noise standards enumerated in §§ 8.20.050 and 8.20.060 shall be increased eight (8) dB(A) where the alleged offensive noise source is an air conditioning, or refrigeration system, fan, or swimming pool filter, or associated equipment which was installed prior to the effective date of this chapter.

('61 Code, § 7B.10) (Ord. 812, passed - -)

§ 8.20.110 NOISE LEVEL MEASUREMENT.

The location selected for measuring exterior noise levels shall be at any point on the affected property. Interior noise measurements shall be made within the affected dwelling unit. The measurement shall be made at a point at least four (4) feet from the wall, ceiling or floor nearest the alleged offensive noise source and may be made with the windows of the affected unit open.

('61 Code, § 7B.11) (Ord. 812, passed - -)

§ 8.20.120 MANNER OF ENFORCEMENT.

A. The Police Department, the Code Enforcement Officer and their duly authorized representatives are directed to enforce the provisions of this chapter.

B. No person shall interfere with, oppose or resist any authorized person charged with the enforcement of this chapter while such person is engaged in the performance of his or her duty.

('61 Code, § 7B.12) (Ord. 812, passed - -)

Print

Brea City Code

§ 20.20.040 VIBRATION.

Every use shall be so operated that the ground vibration inherently and recurrently generated does not cause a displacement of the earth greater than .003 of one (1) inch as measured at the property line of the subject use.

(Ord. 425, passed 10-14-68)

CONSTRUCTION NOISE MODELING

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/19/2021
Case Description: BREA-03.5

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Building/Asphalt Demolition	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0
Flat Bed Truck	No	40		74.3	50.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck	74.3	70.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80.7	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/19/2021
Case Description: BREA-03.5

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Site Prep	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0
Flat Bed Truck	No	40		74.3	50.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck	74.3	70.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80.7	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/19/2021
Case Description: BREA-03.5

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Rough/Fine Grading	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Front End Loader	No	40	79.1	50.0		0.0
Refrigerator Unit	No	100	73.0	50.0		0.0
Front End Loader	No	40	79.1	50.0		0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Refrigerator Unit	73.0	73.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79.1	79.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 05/21/2021
Case Description: BREA-03.5

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Parking Building Construction	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	50.0	0.0
Flat Bed Truck	No	40		74.3	50.0	0.0
Crane	No	16		85.0	50.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck	74.3	70.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	85.0	77.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	79.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 05/21/2021
Case Description: BREA-03.5

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Residential Cosntruction	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	50.0	0.0
Backhoe	No	40		77.6	50.0	0.0
Crane	No	16		80.6	50.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	80.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80.6	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/19/2021
Case Description: BREA-03.5

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Utility Trenching	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	50.0	0.0
Backhoe	No	40		77.6	50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80.7	80.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/19/2021
Case Description: BREA-03.5

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Asphalt Paving	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	50.0	0.0
Roller	No	20		80.0	50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	80.0	73.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80.0	79.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/19/2021
Case Description: BREA-03.5

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Architectural Coating	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	50.0	0.0
Compressor (air)	No	40		77.7	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	77.7	73.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79.1	77.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/19/2021
Case Description: BREA-03.5

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Finish/Landscaping	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	50.0	0.0
Backhoe	No	40		77.6	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79.1	77.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

BREA-03.5 Construction Noise Modeling Attenuation Calculations

	Levels in dBA Leq			
Demolition	**RCNM Reference Noise Level**	**Residence to north**	**Residences to east**	**Greenbriar Park to northeast**
feet	*50*	*660*	*750*	*1,120*
Demolition (asphalt & building)	80	58	56	53
Site Preperation	80	57	56	53
Grading (all site)	79	57	56	52
Building Construction Parking Gar	79	57	56	52
Building Construction Office/Resic	73	50	49	46
Utility Trenching	75	53	52	48
Paving (parking structure)	79	57	55	52
Architectural Coating	78	55	54	50
Finish/Landscaping	77	55	54	50

BREA-03.5 Vibration Damage Attenuation Calculations

		Levels in in/sec PPV	
	Vibration Reference Level	**Commercial (Mercury) to north**	**Residential north**
Distance in feet	**at *25 feet***	*20*	*550*
Clam shovel	0.202	0.282	0.002
Vibratory Roller	0.21	0.293	0.002
Hoe Ram	0.089	0.124	0.001
Large Bulldozer	0.089	0.124	0.001
Caisson Drilling	0.089	0.124	0.001
Loaded Trucks	0.076	0.106	0.001
Jackhammer	0.035	0.049	0.000
Small Bulldozer	0.003	0.004	0.000

BREA-03.5 Vibration Annoyance Attenuation Calculations

Levels in VdB

BSS-13 *Distance in feet*	**Vibration @ 25 ft**	**Residence to north** *660*	**Resiences to east** *750*
Clam shovel	94.0	51	50
Vibratory Roller	94.0	51	50
Hoe Ram	87.0	44	43
Large Bulldozer	87.0	44	43
Caisson Drilling	87.0	44	43
Loaded Trucks	86.0	43	42
Jackhammer	79.0	36	35
Small Bulldozer	58.0	15	14

TRAFFIC NOISE INCREASE CALCULATIONS

BREA-03.5 Brea Plaza

Traffic Noise Calculations

	ADT Volumes				dBA CNEL Increae		
Roadway Segment	Existing No Project	Existing Plus Project	2045 Without Project	2045 With Project	Project Noise Increase	Cumulative Increase	Project Cumulative Contribution
Imperial Highway, west of SR-57 NB Ramps	73,409	72,516	86,609	85,716	-0.1	0.7	0.0
Imperial Highway, between SR-57 NB Ramps and Associated Road	54,650	54,884	61,223	61,457	0.0	0.5	0.0
Imperial Highway, between Associated Road and Castlegate Lane/Placentia Avenue	52,514	52,251	60,178	59,915	0.0	0.6	0.0
Imperial Highway, east of Castlegate Lane/Placentia Avenue	52,689	52,536	59,540	59,387	0.0	0.5	0.0
Associated Road, south of Birch Street	13,595	13,510	14,911	14,826	0.0	0.4	0.0
Birch Street, west of Associated Road	25,204	25,164	28,169	28,129	0.0	0.5	0.0
Birch Street, east of Associated Road	24,697	24,644	27,763	27,710	0.0	0.5	0.0