MAY 2025

FINAL ENVIRONMENTAL IMPACT REPORT

DJT4 PARCEL DELIVERY FACILITY PROJECT

SCH NO. 2023070241

CITY OF BREA
Planning Division
1 Civic Center Circle
Brea, California 92821

CITY of BREA

PREPARED BY

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TABLE OF CONTENTS

PAGE NO.

SECTION 1.0 INTRODUCTION 1-1

SECTION 2.0 RESPONSES TO COMMENTS 2-1

2.1 List of Commenters 2-1

2.2 Topical Responses to Comments 2-2
Topical Response No. 1 – Existing Baseline 2-2
Topical Response No. 2 – Land Use and Zoning 2-3
Topical Response No. 3 – Operational Traffic Noise 2-4

2.3 Individual Responses to Comments 2-6
Comment Letter No. 1 – Ted Gribble 2-7
Comment Letter No. 2 – Edward Tangchitnob 2-10
Comment Letter No. 3 – Susan Perlson 2-13
Comment Letter No. 4 – Brian Leung 2-16
Comment Letter No. 5 – Linda Fini & Larry Pisani 2-19
Comment Letter No. 6 – David Maxey 2-22
Comment Letter No. 7 – Carol Gray 2-46
Comment Letter No. 8 – SCAQMD 2-49
Comment Letter No. 9 – CARE CA 2-51
Comment Letter No. 10 – SCAQMD 2-55
Comment Letter No. 11 – Caltrans, District 12 2-66
Comment Letter No. 12 – City of Chino Hills 2-80
Comment Letter No. 13 – Metropolitan Water District of Southern California 2-83
Comment Letter No. 14 – SAFER 2-118
Comment Letter No. 15 – Sierra Club Angeles Chapter 2-122
Comment Letter No. 16 – International Brotherhood of Teamsters 2-128
Comment Letter No. 17 – CARE CA 2-136

SECTION 3.0 REVISIONS AND CLARIFICATIONS 3-1

SECTION 4.0 REFERENCES 4-1

APPENDICES

Appendix A Traffic Impact Assessment
Appendix B Revised Figures

1.0 INTRODUCTION

The California Environmental Quality Act (CEQA) Guidelines Section 15089 requires the lead agency to prepare a Final Environmental Impact Report (EIR) before approving the Project. Pursuant to CEQA Guidelines Section 15132, the Final EIR shall consist of:

(a) The draft EIR or a revision of the draft.

(b) Comments and recommendations received on the draft EIR either verbatim or in summary.

(c) A list of persons, organizations, and public agencies commenting on the draft EIR.

(d) The responses of the lead agency to significant environmental points raised in the review and consultation process.

(e) Any other information added by the lead agency.

The City of Brea, as the lead agency for the DJT4 Parcel Delivery Facility Project, has prepared the Final EIR, which includes the Draft EIR and its technical appendices, in accordance with CEQA Guidelines. This document provides responses to all comments received on the Draft EIR as well as revisions to the Draft EIR made in response to comments and/or as initiated by the City as the lead agency. These revisions correct, clarify, and amplify the text of the Draft EIR, as appropriate, but do not alter the conclusions of the Draft EIR.

2.0 RESPONSES TO COMMENTS

2.1 LIST OF COMMENTERS

The City of Brea received a total of 17 letters providing comment on the Draft EIR. **Table 2-1** lists the individuals, agencies, and organizations that provided comments on the Draft EIR during the public review period.

Table 2-1
List of Commenters on the Draft EIR

Letter No.	Date	Commenter	Affiliation
Individuals			
1	11/12/2024	Ted Gribble	Resident
2	12/20/2024	Edward Tangchitnob	Resident
3	1/2/2025	Susan Perlson	Resident
4	1/2/2025	Brian Leung	Resident
5	1/3/2025	Linda Fini & Larry Pisani	Resident
6	1/3/2025	David Maxey	Resident
7	1/4/2025	Carol Gray	Resident
Agencies and Organizations			
8	11/20/2024	Evelyn Aguilar Air Quality Specialist, CEQA-IGR	South Coast Air Quality Management District
9	11/22/2024	Sheila M. Sannadan Legal Assistant Adams Broadwell Joseph & Cardozo	Californians Allied for a Responsible Economy
10	12/20/2024	Sam Wang Program Supervisor, CEQA IGR	South Coast Air Quality Management District
11	12/23/2024	Scott Shelley Branch Chief	California Department of Transportation District 12
12	12/23/2024	Nicolas Liguori, AICP Community Development Director	City of Chino Hills
13	12/30/2025	Sean Carlson Team Manager, Environmental Planning	Metropolitan Water District of Southern California

Letter No.	Date	Commenter	Affiliation
14	1/3/2025	Richard Drury Partner Lozeau Drury LLP	Supporters Alliance for Environmental Responsibility
15	1/6/2025	Mike Bressler, Chair of Rio Hondo Group Joan Licari, Chair of San Gabriel Valley Task Force Margee Hills, Member	Sierra Club Angeles Chapter
16	1/6/2025	Andy Lee	International Brotherhood of Teamsters
17	1/6/2025	Aidan P. Marshall Associate Adams Broadwell Joseph & Cardozo	Californians Allied for a Responsible Economy

2.2 TOPICAL RESPONSES TO COMMENTS

The following topical responses have been prepared to address similar comments that have been raised on key topics by multiple commenters during the public review period.

Topical Response No. 1 – Existing Baseline

This topical response addresses comments claiming that the Draft EIR inappropriately utilized an occupied baseline. The California Environmental Quality Act (CEQA) requires that a Draft EIR to include a description of the physical environmental conditions in the vicinity of the project. CEQA Guidelines Section 15125 further explains that “this environmental setting will normally constitute baseline physical conditions by which a lead agency determines whether an impact is significant.” Pursuant to CEQA Guidelines Section 15125, “a lead agency may define existing conditions by referencing historic conditions, or conditions expected when the project becomes operational, or both, that are supported with substantial evidence.”

The Project application was filed with the City on May 31, 2022. At this time, the Project Site was occupied by Bank of America (call center and administrative offices), which operated from approximately June 1997 through December 2022. In addition, the Orange County Transportation Analysis Model (OCTAM), which is used by the City for analyses, includes the Bank of America in the assumptions for the use of the Project Site – specifically, a daily rate of 19,139 trips and a service population of 2,231 persons. Although the existing building is currently mostly vacant, the building could be reoccupied at any time without discretionary action by the City.

Given this information, when determining the baseline, the City, as the lead agency for the Project, determined that the existing baseline condition for the Project should include the existing building as occupied. The City’s discretionary baseline determination is supported by substantial evidence, including the fact that the building can be reoccupied without discretionary approval, Bank of America’s recent historic use/operation of the existing building for 25 years, and the inclusion of the Project Site in the OCTAM.

As such, the use of an occupied baseline for the Draft EIR is consistent with the requirements of CEQA and is appropriate.

Topical Response No. 2 – Land Use and Zoning

This topical response addresses public comments alleging that the Project is not consistent with the Project Site's Light Industrial General Plan and Mixed Use II land use designations or with the requirements of the Light Industrial (M-1) and Mixed-Use II (MU-II) zones because the proposed van loading activities would not be contained within the proposed building where the Light Industrial designation requires operations to be conducted within an enclosed building and because warehousing is not a permitted use within the MU-II zone.

According to the City of Brea General Plan, the Light Industrial designation accommodates industrial uses that are low intensity and contained entirely within buildings. Allowable uses include research and development, light manufacturing and processing, offices, light warehousing and storage, high-technology production, and related uses.[1] Permitted uses within the M-1 zone include ***Automotive, parking lots/structures***, as well as, ***Industrial, limited*** and ***Industrial, minor***, which may include accessory non-industrial uses that provide support to and are clearly incidental to the permitted industrial use.[2] The Mixed Use II designation is intended to provide opportunities for the coordinated development of urban villages that offer a diverse range of complementary land uses in close proximity to one another.[3] Permitted uses within the MU-II zone include ***Automotive, parking lots/structures***.

The northern approximately 24.2-acre portion of the Project Site has a General Plan land use designation of Light Industrial and is zoned M-1, and the southern approximately 7.4-acre portion of the Project Site has a General Plan land use designation of Mixed Use II and is zoned MU-II. The proposed 181,500-square-foot parcel delivery facility would be constructed only within the portion of the Project Site that is designated and zoned for Light Industrial uses. The portion of the Project Site designated as Mixed Use II and zoned MU-II would only contain surface parking and drive aisles.

In accordance with Brea City Code (BCC) Section 20.11.020.C, the Community Development Director has the authority to interpret whether a specific proposed use fits within or is similar to an existing use class as either permitted or conditionally permitted. In this case, the Community Development Director has determined that the Project's proposed warehousing operations qualify as an ***Industrial, minor*** land use, which is defined in BCC Section 20.00.070 as follows:

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1 City of Brea, The City of Brea General Plan, Chapter 2 – Community Development, Adopted August 19, 2003, Page 2-15.

2 Brea City Code, Table 20.11.020A Permitted Land Uses.

3 City of Brea, The City of Brea General Plan, Chapter 2 – Community Development, Adopted August 19, 2003, Page 2-17.

> *"Facilities that consist of the manufacturing, assembling, repairing, testing, processing, warehousing, wholesaling, and research or treatment of goods from fabricated items or raw materials which are lower in intensity, clean and are generally more compatible when located adjacent to commercial areas. All operations are conducted entirely within an enclosed building. This classification does not include, uses that generate excessive noise, fumes, odors or other operating conditions that would impact adjacent land uses, or operations involving large furnaces, plating, or lacquering. Typical uses include the manufacture of clothing, furniture, electronic equipment, novelty items, and toys; cleaning plants; machine shops; powder coating; food processing; and product distribution centers that are 200,000 square feet or smaller."*

As stated above, the ***Industrial, minor*** land use is a permitted-by-right use in M-1 Zone. Although van loading would occur on the exterior of the proposed building, the Project's industrial operational activities (i.e. parcel storage, sorting, etc.) would occur within the 181,500 square foot building, with no permanent outdoor storage or operation. Loading and circulation of delivery vans are incidental to the primary use. The Project is consistent in size, scale, and operation with other existing/previously approved industrial warehousing projects in all industrial-zoned areas of the City, which have bays and loading zones that are logically located on the exterior of the building, resulting in loading activities occurring outdoors as ancillary/temporary activity to support the warehousing operations. Thus, the Project is consistent with the Community Development Director's previous interpretation of warehousing and is aligned with his authority to interpret the BCC, that the van loading is an ancillary/temporary activity of the Project, and that the Project's warehousing operations is consistent with the Light Industrial General Plan land use designation and the M-1 zone.

Topical Response No. 3 – Operational Traffic Noise

This topical response is provided to address public comments related to the methodology and thresholds utilized to analyze traffic noise impacts in the Draft EIR and nighttime noise levels generated by the Project's line-haul trucks.

METHODOLOGY AND SIGNIFICANCE CRITERIA

As discussed in **Section 5.5, Noise**, of the Draft EIR, transportation-source noise levels associated with the Project, including noise generated by the Project's line-haul trucks, were calculated using the Federal Highway Administration (FHWA) Traffic Noise Prediction Model (FHWA-RD-77-108) with traffic volumes identified in the Project's Traffic Impact Assessment (TIA)[4] to determine the noise levels along Project area roadways. Since the City does not regulate noise from transportation sources for all projects, including industrial projects, and does not have noise standards for such sources, the following thresholds recommended by the Federal Interagency Committee on Noise (FICON) are applied:

[4] NV5 Engineers & Consultants. September 23, 2024. Traffic Impact Assessment for Brea Delivery Station.

- If the existing ambient noise levels at existing and future noise-sensitive land uses (e.g. residential, etc.) are less than 60 decibel, A-weighted (dBA) Community Noise Equivalent Level (CNEL) and the project creates a readily perceptible 5 dBA CNEL or greater noise level increase and the resulting noise level would exceed acceptable exterior noise standards, or
- If the existing noise levels range from 60 to 65 dBA CNEL and the project creates a barely perceptible 3 dBA CNEL or greater noise level increase and the resulting noise level would exceed acceptable exterior noise standards, or
- If the existing noise levels already exceed 65 dBA CNEL and the project creates a community noise level increase of greater than 1.5 dBA CNEL.

The 24-hour CNEL metric is a widely accepted standard used in environmental noise assessments under CEQA and aligns with established industry practices. The CNEL rating scale has been developed to analyze the adverse effect of noise on people. Because environmental noise fluctuates over time, the CNEL scale considers that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The CNEL metric provides a comprehensive evaluation of noise exposure by incorporating all traffic noise events over a 24-hour period and applying time-dependent penalties to account for the increased sensitivity to noise during the evening and nighttime hours. Specifically, CNEL includes a 5-decibel (dB) penalty for noise occurring between 7:00 p.m. and 10:00 p.m., and a 10-dB penalty for noise occurring between 10:00 p.m. and 7:00 a.m., reflecting the greater potential for sleep disturbance and reduced ambient noise levels during these hours. These penalties are applied to ensure that nighttime noise is given appropriate consideration in assessing potential impacts on sensitive receptors, such as residential properties.

Some comments received by the City incorrectly applied the City's interior noise standards of 55 dBA during daytime hours (7:00 a.m. to 10:00 p.m.) and 45 dBA during nighttime hours (10:00 p.m. to 7:00 a.m.) to the traffic noise levels. These interior noise standards are specifically intended to regulate noise generated by stationary sources and would apply to such potential Project noise sources as mechanical equipment, loading/unloading activities, and internal (onsite) vehicular circulation. It would be inappropriate to apply such standards to evaluate noise from transportation sources, such as trucks traveling along public roadways, because mobile sources are subject to fluctuating operational patterns and broader regulatory oversight from state and federal agencies. Thus, the FICON noise standards discussed above are applied to the Project's transportation sources as an appropriate methodology for considering the potential impacts of transportation sources.

OFFSITE OPERATIONAL TRAFFIC NOISE LEVELS

As shown in **Table 5.5-7, Project Traffic Noise Levels**, of the Draft EIR, none of the Project area roadway segments would experience an incremental increase of traffic noise in excess of the FICON standards under Existing Plus Project or Future Plus Project conditions. Existing noise levels near the Project Site range from 43.9 to 63.5 dBA CNEL. Therefore, increases due to offsite operational traffic noise levels are limited to 3 dBA or 5 dBA CNEL depending on the existing noise level of the roadway segment. The greatest noise increases would occur along Imperial Highway/State Route (SR) 90 west of Valencia Avenue and along Valencia Avenue/SR

142 between Imperial Highway and La Floresta Drive. These roadway segments would experience increases of up to 2.4 dBA under Existing Plus Project conditions and 2.1 dBA under Future Plus Project conditions, respectively, which would not exceed the FICON standard of 3 dBA CNEL.

NIGHTTIME TRUCK NOISE

Multiple comments received by the City express concern regarding the noise levels generated by the Project's line-haul trucks and the potential for these trucks to disrupt sleep during nighttime hours. As stated in **Chapter 3.0, Project Description**, of the Draft EIR, the Project anticipates up to 31 line-haul trucks during normal daily operations, which would generate a total of 62 one-way truck trips to and from the Project Site. However, daily truck trips would frequently be less than this amount. As discussed above, none of the Project's roadway segments would experience noise level increases that exceed FICON standards. In particular, the roadway segments of Valencia Avenue and Imperial Highway east of Valencia Avenue that traverse residential land uses would experience noise increases of up to 2.2 dBA and 1.5 dBA, respectively, because of the Project. These noise increases would not exceed the FICON standard of 3 dBA CNEL and would be below the level of noise increase that is considered perceptible to the human ear. Moreover, up to 22 of the 31 anticipated line-haul trucks would operate between 10:00 p.m. and 7:00 a.m. Thus, the noise analysis provided in **Section 5.5, Noise**, of the Draft EIR is conservative because it assumed that all 31 line-haul trucks would operate during nighttime hours.

While the public's concerns regarding sleep disturbance and associated health conditions are noted, CEQA does not specifically regulate or assess subjective and individual human responses such as sleep disturbance and anxiety. Instead, CEQA relies on established thresholds set by regulatory agencies, which are based on scientific studies and health-based criteria, to ensure that noise exposure remains within acceptable limits for residential areas, schools, hospitals, and other sensitive land uses. Noise is inherently a cumulative and spatially variable environmental factor. Individual experiences of noise can vary significantly due to factors associated with each person. However, regulatory thresholds and mitigation measures are developed based on broader community-level noise studies, which assess overall exposure patterns and long-term averages rather than isolated instances of noise events. By applying noise standards at the community level, agencies aim to maintain a reasonable quality of life for residents and sensitive receptors while also accommodating necessary infrastructure and transportation functions. This approach ensures that noise abatement efforts are both effective and practical, addressing widespread impacts rather than focusing on site-specific complaints that may not reflect broader environmental conditions.

2.3 INDIVIDUAL RESPONSES TO COMMENTS

A copy of each written and email comment letter received by the City during the public review period are included below. Each comment letter is assigned a reference number, as identified in **Table 2-1**, and individual comments within the body of the letter are delineated and numbered in the left margin. The responses to each numbered comment are provided following the copy of the letter.

COMMENT LETTER NO. 1

From: Ted Gribble [redacted]
Sent: Tuesday, November 12, 2024 10:46 PM
To: Hwang, Joanne
Subject: Draft EIR comments for Amazon DJT4 Parcel Delivery Facility

Hello Joanne,

1 The Draft EIR states multiple times that the proposed project is consistent with the existing M-1 zoning, yet the relevant land uses permitted under M-1, "Industrial, Light" and "Industrial, Minor" both clearly require that "all operations shall be conducted entirely within an enclosed building". Per the various project description sections in the Draft EIR, the loading of the delivery vans, a fundamental part of the facility's operation, will clearly occur outdoors. Any interpretation of the project description and/or zoning code that concludes that loading of the vans does not qualify as an part of the project's operations is flatly incorrect. Many other Amazon facilities do conduct this activity indoors, including the one in Anaheim at old Fry's Electronics building adjacent to Kaiser hospital.

2 If you could forward this second comment to the Planning Commission that would be appreciated:
The Amazon proposal will have the big rigs delivering goods overnight, bringing noisy truck traffic to Imperial Highway and Valencia Avenue. Currently that traffic is very limited in the nighttime hours on Imperial due to normal business operating hours, and almost non-existent on Valencia due to the operating hours of the dump. Now there will be 31 trucks every night while residents along Imperial and Valencia are trying to sleep. If this cannot be stopped, I would at least like for the city to push Amazon to commit to using only electric semi trucks to mitigate some of the noise in this unique situation.

Ted Gribble

Comment Letter No. 1

November 12, 2024
Ted Gribble
[redacted]

RESPONSE TO COMMENT NO. 1-1

The commenter suggests that the Project is not consistent with M-1 zoning because the loading of the vans will occur outdoors. As discussed in **Topical Response No. 2 – Land Use and Zoning**, the Community Development Director, with the authority given per BCC Section 20.11.020.C, has determined that the Project's warehousing operations is an ***Industrial, minor*** land use as defined in BCC Section 20.11.070, which is a permitted-by-right use in the M-1 zone. During the review of the Project, the City did consider the concern regarding van loading activities and the Light Industrial land use designation, but the City also weighed all components of the operations to determine land use consistency. This Project is consistent in size, scale, and operation with other existing/previously approved industrial warehousing projects, which have bays and loading zones that are logically located on the exterior walls/outside of the building, resulting in loading activities occurring outdoors as ancillary/temporary activity to support the warehousing operations. The Project, similar to a warehousing use or a postal delivery office, would have the majority of the operation (i.e., parcel storage, sorting, etc.) occur within the 181,500-square-foot building, with no permanent outdoor storage or operation. The Project is consistent with the City's historic interpretation of warehousing and the Community Development Director's interpretation, which was based on these reasons and facts, including that the van loading is an ancillary/temporary activity, and that the Project's warehousing operations are consistent with the Light Industrial General Plan land use designation and the M-1 zoning. Furthermore, as shown in the **revised Figure 3-5, Conceptual Planting Plan** provided in **Appendix B** to this Final EIR, loading of the delivery vans would be appropriately screened from the public right-of-way. Therefore, the Project is consistent with the Project Site's zoning, and no changes in the Draft EIR are necessary.

RESPONSE TO COMMENT NO. 1-2

The commenter expresses that the Project involves the use of 31 trucks every night while residents along Imperial Highway and Valencia Avenue are trying to sleep. As clarified in **Section 3.0, Revisions and Clarifications to the Draft EIR**, of this Final EIR, up to 22 of the 31 anticipated line-haul trucks would operate between 10:00 p.m. and 7:00 a.m. during normal daily operations. In addition, as discussed in **Topical Response No. 3 – Operational Traffic Noise** and shown in **Table 5.5-7** of the Draft EIR, the Project's increase in traffic noise would not result in an increase in excess of the FICON standards. The roadway segments of Valencia Avenue and Imperial Highway east of Valencia Avenue that traverse residential land uses would experience noise increases of up to 2.2 decibels and 1.5 decibels, respectively, as a result of the Project. However, these noise increases are imperceptible to the human ear. Additionally, the analysis of noise impacts pursuant to CEQA is intended to evaluate potential environmental impacts of a proposed project based on established regulatory thresholds and standards. While it is acknowledged that the commenter has concerns regarding sleep disturbance, CEQA does not specifically regulate or assess subjective and individual human responses such as sleep

disturbance. Instead, CEQA relies on established thresholds set by regulatory agencies, which are based on scientific studies and health-based criteria. The established thresholds ensure that noise exposure remains within acceptable limits for residential areas, schools, hospitals, and other sensitive land uses.

Noise is inherently a cumulative and spatially variable environmental factor. Individual experiences of noise can vary significantly due to factors associated with each person. However, regulatory thresholds and noise controls are developed based on broader community-level noise studies, which assess overall exposure patterns and long-term averages rather than isolated instances of noise events. By applying noise standards at the community level, agencies aim to maintain a reasonable quality of life for the majority of residents and sensitive receptors.

The commenter also requests that the Applicant commit to using only electric semi-trucks to mitigate truck noise. Although it is currently not economically or practically feasible to utilize only electric line-haul trucks, the Applicant would install conduit to all linehaul loading bays to ensure the facility can easily accommodate future electric line-haul trucks. As this issue does not address the adequacy of the Draft EIR, the comment is noted and will be forwarded to the decision-makers for consideration.

COMMENT LETTER NO. 2

From: Edward Tangchitnob[redacted]
Sent: Friday, December 20, 2024 12:57:25 PM
To: Hwang, Joanne <joanneh@ci.brea.ca.us>
Subject: Concern Regarding Noise Pollution and Sleep Hygiene from Proposed Amazon Facility

Dear Joanne Hwang,

I hope you are doing well.

1 I am writing to inform you about my concern regarding the proposed Amazon facility in Brea, as outlined in the Draft Environmental Impact Report (DEIR). My primary concern is the potential impact of noise pollution on the sleep hygiene and overall well-being of residents in the surrounding area, particularly those living closest to the facility. My family has already lived with a significant amount of noise in the morning from trash trucks driving by.

According to the DEIR, the projected truck traffic would result in 31 Amazon trucks passing within 65 to 80 feet of bedroom windows between 10 p.m. and 8 a.m. nightly, with an additional 31 return trips within approximately 115 feet. This frequency translates to up to 62 truck passes every night of the year, which the report itself acknowledges could generate noise levels above 45 dBA—an amount well-documented to disrupt sleep.

2 While the DEIR assesses the impact as "less than significant" using averaged 24-hour noise levels, this approach does not accurately reflect the real-world nighttime disturbances residents would face 365 days a year. A more accurate measure would involve using a sound level meter on one of the affected patios while a truck passes to simulate the experience for residents. I strongly encourage such testing to understand the true impact better.

3 I would like the City of Brea Planning Division to carefully reconsider the findings of the DEIR and take steps to address these concerns before proceeding. Residents' health and quality of life must be prioritized during this decision-making process.

I appreciate your time and consideration of this crucial issue. Please let me know if further details or a conversation would be helpful.

Thank you for your attention.

Best regards,
Edward Tangchitnob, MD, MBA, FACS

[redacted]

[redacted]

[redacted]

Comment Letter No. 2

December 20, 2024
Edward Tangchitnob
[redacted]

RESPONSE TO COMMENT NO. 2-1

This comment introduces concerns regarding the potential impact of the noise on nearby residents' sleep and well-being due to the 31 trucks proposed by the Project that would pass by residences between 10:00 pm and 8:00 am nightly. As clarified in **Section 3.0, Revisions and Clarifications to the Draft EIR**, of this Final EIR, up to 22 of the 31 anticipated line-haul trucks would operate between 10:00 p.m. and 7:00 a.m. during normal daily operations. While it is acknowledged that the commenter has concerns regarding sleep disturbance, CEQA does not specifically regulate or assess subjective and individual human responses such as sleep disturbance. Instead, CEQA relies on established thresholds set by regulatory agencies, which are based on scientific studies and health-based criteria. The established thresholds ensure that noise exposure remains within acceptable limits for residential areas, schools, hospitals, and other sensitive land uses. **Response to Comment No. 2-2**, below provides a detailed explanation of the City's metric for determining the significance of noise impacts. As discussed in **Section 5.5, Noise**, of the Draft EIR, the City does not regulate noise from transportation sources for industrial projects and does not have noise standards for such sources. CEQA Guidelines Section 15064.7 allows lead agencies to use thresholds on a case-by-case basis. As such, for this Project, the thresholds recommended by FICON are utilized. Based on the analysis provided in **Section 5.5, Noise**, of the Draft EIR, Project-generated traffic during operation, including truck traffic, would not result in an increase in traffic noise that would exceed the recommended FICON thresholds.

RESPONSE TO COMMENT NO. 2-2

The commenter is concerned that the use of the 24-hour Community Noise Equivalent Level (CNEL) to represent traffic noise may not accurately capture the real-world disturbances that nearby residents could experience and recommends the use of a sound level meter on a resident's patio. As detailed in **Topical Response No. 3 – Operational Traffic Noise**, while conducting spot measurements on patios during truck pass-bys could provide additional localized data, the CNEL metric is a widely accepted standard used in environmental noise assessments under CEQA and aligns with established industry practices. The City has also utilized the CNEL metric for past EIRs. Furthermore, it should be noted that traffic on local roadways, including truck traffic, contributes to 'community noise.' Community noise varies continuously with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with unidentifiable individual contributors. The background noise level changes throughout a typical day, but does so gradually, depending on distant noise sources such as traffic and atmospheric conditions. Nonetheless, community noise also varies throughout a day due to short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, emergency

vehicle sirens), which are readily identifiable to an individual hearer. These successive additions of sound to the community noise environment vary the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to characterize a community noise environment and evaluate cumulative noise impacts. Roadway traffic noise is a continuous source of community noise and since the flow of traffic constantly varies throughout a day due to short duration single event noise sources, it is infeasible and inappropriate to regulate such noise as a single truck-passing event.

The time-varying characteristic of environmental noise is described using statistical noise descriptors, such as CNEL. The CNEL rating scale has been developed to analyze the adverse effect of noise on people. Because environmental noise fluctuates over time, the CNEL scale considers that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The CNEL metric provides a comprehensive evaluation of noise exposure by incorporating all traffic noise events over a 24-hour period and applying time-dependent penalties to account for the increased sensitivity to noise during the evening and nighttime hours. Specifically, CNEL includes a 5-dB penalty for noise occurring between 7:00 p.m. and 10:00 p.m., and a 10-dB penalty for noise occurring between 10:00 p.m. and 7:00 a.m., reflecting the greater potential for sleep disturbance and reduced ambient noise levels during these hours. As such, these penalties are applied in the Project's analysis to ensure that nighttime noise is given appropriate consideration in assessing potential impacts on sensitive receptors, such as residential properties.

By utilizing CNEL, the analysis accounts for the cumulative effect of noise exposure throughout the day and night rather than focusing on isolated events, as is appropriate when evaluating traffic noise. The Draft EIR also incorporates conservative assumptions and modeling techniques to simulate worst-case scenarios, ensuring that the analysis adequately captures potential noise impacts on the surrounding community.

RESPONSE TO COMMENT NO. 2-3

The commenter requests that the City's Planning Division address their concerns and reconsider the Project's findings before proceeding. This comment is noted and will be forwarded to the decision-makers for consideration.

COMMENT LETTER NO. 3

From: bennet/susan perlson
To: Hwang, Joanne
Subject: DEIR for Amazon Project
Date: Thursday, January 2, 2025 12:17:26 PM

Dear Ms. Hwang,

1 Thank you for sending me the Amazon Project DEIR. I understand that SB743 does not require VMT analysis for the movement of goods and as a result, line-haul trucks were not part of the calculations. Given the project does involve the movement of goods via line-haul trucks, I question why this critical component could not have been included "to be analyzed or mitigated in the determination of transportation impacts". It would have been a considerable gesture given the public interest in this project and the valid concerns about the proximity to La Floresta neighborhoods. Is it possible to still analyze this aspect?

2 I understand that second-floor master bedrooms are in the homes directly alongside Valencia Ave. There are no soundproofing or double-paned windows to lessen the increased traffic noise, lights, and vibrational impacts during operational hours. Who would be responsible for these mitigation measures? If Amazon does proceed with this project, I recommend that they be required to plant mature trees and install soundproof walls along their property lines to improve the aesthetics for all residential neighbors.

Thank you very much for accepting my feedback.

Best regards,

Susan Perlson, retired LCSW
Brea

Comment Letter No. 3

January 2, 2025
Susan Perlson
[redacted]

RESPONSE TO COMMENT NO. 3-1

The commenter acknowledges that Senate Bill 743 does not require a vehicle miles traveled (VMT) analysis for the movement of goods and that line-haul trucks were not included in the Project's VMT calculations. However, the commenter believes line-haul trucks to be critical component that should have been analyzed or mitigated in the determination and of transportation impacts and requests that they be analyzed. As noted by the commenter, the VMT associated with the movement of goods (i.e. trucks) does not need to be included in the Project's CEQA analysis per Senate Bill 743. However, potential impacts due to the proposed line-haul trucks were considered in the Project's TIA, which is included as **Appendix A** to this Final EIR for informational purposes only. The analysis in the TIA included 62 truck trips per day (31 inbound and 31 outbound), which were converted to passenger car equivalent trips at a rate of three automobiles trips to one truck trip per the City of Brea Transportation Impact Analysis Guidelines.

RESPONSE TO COMMENT NO. 3-2

The commenter asserts that there are no soundproofing or double-paned windows to lessen the increased traffic noise, lights, and vibrational impacts during the Project's operational hours for homes with second-floor master bedrooms located along Valencia Avenue and recommends that Amazon be required to plant mature trees and install soundproof walls along their property lines to improve the aesthetics if the Project proceeds.

Regarding traffic noise during operation, **Topical Response No. 3 – Operational Traffic Noise** discusses the methodology and results of the Project's noise analysis. As noted therein, the Project adequately measured traffic noise and concluded that impacts would be less than significant and mitigation would not be required. As noted in **Section 5.5, Noise**, of the Draft EIR, the Project's operational noise would not exceed the City's 55 dBA exterior noise standard for daytime or the 50 dBA exterior noise standard for nighttime at any sensitive receptor location. In addition, Project-generated traffic during operation would not result in an increase in traffic noise along the Project area roadway segments that would exceed the applicable FICON noise standards. Regarding vibration during operation, as noted in **Section 5.5, Noise**, of the Draft EIR, vibration levels generated by the line-haul trucks during Project operations would not exceed the City's standard of 0.003 inches per second peak particle velocity (PPV), and mitigation would not be required. Therefore, the Project's noise and vibrational impacts would be less than significant and mitigation such as the suggested mature trees and soundproof walls would not be required.

Regarding lighting, as discussed in **Chapter 7.0, Other CEQA Considerations**, of the Draft EIR, the Project's proposed lighting would be required to comply with the standards specified in Brea City Code (BCC) Section 20.252.040 and would be reviewed and approved by the City. Considering the existing sources of lighting on the Project Site and in the surrounding vicinity, the amount and intensity of nighttime lighting proposed onsite would not adversely impact the nighttime or daytime views in the area. In addition, the Project would not include highly reflective

building materials or architectural treatments that could cause substantial daytime glare. Therefore, the Project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area, and impacts would be less than significant.

In addition, as described in **Chapter 3.0, Project Description** and **Figure 3-5, Conceptual Planting Plan**, of the Draft EIR, the Project would exceed BCC tree planting requirements by providing 340 parking lot trees, 90 perimeter interior trees, and 395 perimeter street abutting trees, including along Valencia Avenue.

COMMENT LETTER NO. 4

From: Brian Leung [redacted]
Sent: Thursday, January 2, 2025 9:15:54 PM
To: Hwang, Joanne <joanneh@ci.brea.ca.us>
Subject: DJT4 PARCEL DELIVERY FACILITY PROJECT - Questions and Comments

Hi Joanne,

1 I have received the NOA for the Amazon DJT4 EIR Project. I have several questions regarding the trail enhancements being proposed by the Project.

As noted in PDF-TR-2: The Project includes the construction of new alternative pedestrian and bicycle connections between Surveyor Avenue and Valencia Avenue, which would extend The Tracks at Brea network. A separated bikeway and pedestrian walkway will be constructed from the terminus of The Tracks at Brea along the Nasa Street Project frontage to the intersection of Valencia Avenue.

Further, as noted in the EIR, "A related project for a proposed light industrial, warehouse building located at 3200 Nasa Street on the northwest corner of Nasa Street and Surveyor Avenue, will be extending The Tracks at Brea along the Surveyor Avenue frontage. As shown in Figure 3-6, the Project would improve the bike and walkway path by extending The Tracks along the Nasa Street Project frontage to the intersection of Valencia Avenue and Nasa Street."

The comments/questions are as follows:

2 1. Is a rendering or site plan of the 3200 Nasa Project available online? I'd like to see the proposed trail network along the Nasa project.

2. Based on the descriptions provided, it appears that the existing DG trail along the Suzuki Property on Nasa will not used as the main access to the The Tracks at Brea. Instead, pedestrians would cross from Valencia headed westbound, along the Project frontage on Nasa, cross over Surveyor and continue along the 3200 Nasa Project frontage until entering the existing pathway leading to the drainage area within the industrial park. Please refer to my photo below. Can you confirm what will happen to the existing DG trail on the Nasa Street?

3 3. Will the Project install RBBD and painted crosswalks along Nasa, Surveyor. There is truck traffic on Nasa entering the existing warehouse buildings. Visibility is already an issue as trucks will idle and park on Nasa Street during daytime hours

4. Will the Project install Flashing RBBD lights at the Nasa Entrance which is described for "Associates only". Overall, the Project applicant should considering enhancing these pedestrian and vehicle conflict areas. Again, the Trail Network is a heavily used trail during day and night time hours.

4 5. How much in Development Impact Fees is the project contributing?

6. Is there a local hire requirement of the anticipated 800 employees generated by the Project? How will the Project contribute toward housing affordability in the City?

7. Will the City condition the Applicant to repave or slurry seal Nasa Street and Surveyor. The existing road conditions are terrible, with noticeable potholes and gravel from the heavy truck traffic.

5 8. The proposed Project would introduce 800 new employees to the City. The EIR should have included discussion of impacts to public facilities including Fire, Police, and Schools. Even if impacts would be considered less than significant, a significant number of new employees to the City would have an impact on these resources.

6 Thank you for your consideration. Please provide a response with regards to the trail enhancements along the 3200 Nasa Project.

Brian Leung

Comment Letter No. 4

January 2, 2025
Brian Leung
[redacted]

RESPONSE TO COMMENT NO. 4-1

This introductory comment acknowledges receipt of the Notice of Availability (NOA), describes the existing and proposed bicycle and pedestrian features within the Project area, and introduces comments/questions regarding the trail enhancements proposed by the Project. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 4-2

The commenter requests information on the proposed trail network along the related project located at 3200 Nasa Street (3200 Nasa Project or Plan Review No. 2023-08), which the Draft EIR has identified as Related Project No. 1. A Notice of Exemption was filed for this related project with the State Clearinghouse (State Clearing House [SCH] Number 2024070174; https://ceqanet.opr.ca.gov/2024070174). The commenter also requests information regarding the existing trail on Nasa Street and includes a graphic showing a portion of the existing trail at the southwestern portion of the Valencia Avenue and Nasa Street intersection. The 3200 Nasa Project would extend the existing trail along the west side of Surveyor Avenue to the intersection of Surveyor Avenue and Nasa Street. The Project would continue the trail improvements along the north side of Nasa Street to the intersection of Nasa Street and Valencia Avenue. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 4-3

The commenter expresses concerns regarding visibility and safety impacts between pedestrians and vehicles as a result of the Project's truck traffic. The commenter asks if the Project will install RBBD and painted crosswalks along Nasa Street and Surveyor Avenue and flashing RBBD lights at the Project's Nasa Street entrance. The northeast corner of the intersection of Nasa Street and Surveyor Avenue would be reconstructed to provide for a new pedestrian landing and bikeway, thus significantly enhancing the visibility of cross traffic at the intersection for both southbound and westbound approaching vehicles. A new crosswalk from the northwest to the northeast corner would also be provided by another project, thus enhancing pedestrian visibility and safety at the intersection. It is assumed that the term "RBBD" used by the commenter is referring to flashing yellow beacons. Flashing yellow beacons, or lights, cannot be deployed on approaches with stop signs since the yellow flashing lights, which signify "proceed with caution," conflict with the stop sign that requires vehicles to stop. Additionally, a crosswalk or crosswalks cannot be installed across Nasa Street at this time because there are no Americans with Disabilities Act (ADA) accessible access ramps or a continuous sidewalk on the southside of Nasa Street. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 4-4

The commenter questions the Project's development impact fees, local hire requirements, contributions to affordable housing, and road condition improvements. The Project would be required to pay development impact fees (including dispatch, fire, water, sewer, and traffic impact fees) in accordance with City requirements. There are no local hire requirements that apply to the Project, and the Project is not required to either provide or contribute funds to affordable housing as the Project is not a residential project. Lastly, the City will consider the inclusion of a condition of approval for paving improvements on Nasa Street and Surveyor Avenue as deemed appropriate by the City. This comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 4-5

The commenter states that the Project would introduce 800 new employees to the City and that impacts to fire, police, and schools should have been discussed in the Draft EIR. **Section 5.6, Public Services – Fire Protection**, **Section 5.7, Public Services – Police Protection**, and **Chapter 7.0, Other CEQA Considerations** (see page 7-22), of the Draft EIR, analyzed the Project's impacts on fire, police, and schools, respectively, and concluded that such Project impacts would be less than significant. The commenter also alleges that even if impacts would be considered less than significant, a significant number of new employees would have an impact on such public services. However, as detailed in the Draft EIR, the Project would demolish the existing 637,503-square-foot office building and construct a 181,500-square-foot parcel delivery facility, which would result in a less intensive development and a reduced number of employees when compared to baseline conditions. In addition, the Project does not include residential uses and would not generate a residential population on the Project Site that would utilize schools. As such, the Project would not result in significant impacts based on the thresholds of significance contained in Appendix G of the CEQA Guidelines. Furthermore, as noted in the Draft EIR, the City is required by California Constitution Article XIII, Section 35 to provide adequate public safety services, including police and fire protection. Accordingly, the comment is noted, and no additional response is warranted.

RESPONSE TO COMMENT NO. 4-6

This concluding comment requests that the City provide a response regarding the trail enhancements along 3200 Nasa Project. See **Response to Comment No. 4-2** for a description of the proposed trail enhancements. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

COMMENT LETTER NO. 5

January 3, 2025

To: Brea Planning Commission

From: Linda Fini and Larry Pisani

[redacted]

1 We are writing to you to express our concerns about the proposed Amazon fulfillment center on Valencia Avenue replacing the former Bank of America building. We are urging a **no** vote on this facility. We moved to Brea eight years ago and there is an implied promise that the City of Brea will work towards improving the lives of its residents and community. The DEIR is flawed stating there would be no impact on the La Floresta community. The DEIR does not address air or noise pollution and the impact of 62-line haul trucks traveling between 10pm and 8am daily.

Our concerns are focused on quality-of-life issues and the noise and pollution impact on the La Floresta community. The City of Brea states that they are "family" centered and support the welfare of its residents, and this Amazon project is counterintuitive to this stated goal.

2 **Noise Impact on health**: Amazon is expecting to have 62-line haul trucks daily on Valencia Avenue between 10pm and 8am making deliveries to the warehouse. These line-haul trucks will disrupt the sleep of residents and worsen current health conditions such as insomnia, dementia and COPD. Lack of sleep leads to an increase in accidents and exacerbates anxiety and depression. I am both a senior and a healthcare professional and I know firsthand the effect of sleep deprivation on individuals.

Comment Letter No. 5

January 3, 2025
Linda Fini & Larry Pisani
[redacted]

RESPONSE TO COMMENT NO. 5-1

This comment expresses opposition to the Project and asserts that the Draft EIR did not address air or noise pollution and the impact of 62 line-haul trucks traveling between 10:00 p.m. and 8:00 a.m. daily. Contrary to the commenter's assertion, the Draft EIR did evaluate potential air quality and noise impacts associated with the Project's operational activities, including the proposed line-haul trucks. As described in detail in **Chapter 3.0, Project Description**, of the Draft EIR , the Project anticipates the use of up to 31 line-haul trucks daily during normal daily operations, not 62 trucks as stated in the comment. These line-haul trucks would generate a total of 62 one-way truck trips to and from the Project Site over the course of a day. As discussed in **Response to Comment No. 1-2** above, of the 31 line-haul trucks, the Project anticipates that up to 22 line-haul trucks would operate between 10 p.m. and 7 a.m. during normal daily operations. These impacts have been analyzed in accordance with CEQA, the CEQA Guidelines, City of Brea guidance, and the guidance published by oversight and specialty agencies, including the South Coast Air Quality Management District (SCAQMD) and FICON.

Section 5.1, Air Quality, of the Draft EIR, quantified the emissions of criteria pollutants and greenhouse gases (GHG) from mobile sources using the California Emissions Estimator Model (CalEEMod). The model incorporates Project-specific operational details, including the proposed 31 line-haul trucks, which would generate a total of 62 daily truck trips. These 62 daily truck trips were also accounted for in the Project's operational Health Risk Assessment (HRA), which is summarized in **Section 5.1, Air Quality** and discussed in detail in **Appendix B** of the Draft EIR. Additionally, **Section 5.5, Noise**, of the Draft EIR, specifically **Table 5.5-7**, provided an analysis of the noise generated by the proposed line-haul trucks during nighttime hours. The analysis evaluated the potential offsite increase in noise levels along Valencia Avenue, and other key transport routes, and applied the FICON guidelines, which recommend thresholds on a sliding scale based on ambient noise conditions. As concluded in **Section 5.5, Noise**, of the Draft EIR, Project-generated traffic during operation, including truck traffic, would not result in an increase in traffic noise that would exceed the recommended FICON thresholds. The Draft EIR also analyzed the Project's onsite operational noise (see **Table 5.5-6** of the Draft EIR), which accounts for the internal circulation of line-haul trucks as well as other onsite noise producing activities. This was done using the SoundPLAN 3D noise model, which predicts noise propagation from a noise source based on the location, noise level, and frequency spectra of the noise sources as well as the geometry and reflective properties of the local terrain, buildings, and barriers. As concluded in **Section 5.5, Noise**, of the Draft EIR, the Project's onsite operational noise would not exceed the City's 55 dBA exterior noise standard for daytime or the 50 dBA exterior noise standard for nighttime at any sensitive receptor location.

The commenter also incorrectly asserts that the Draft EIR is flawed because it states that there is no impact to the La Floresta community. The Draft EIR does not state that the Project would have no impact on the La Floresta community. Rather, the Draft EIR concludes that the Project's air quality and noise impacts, including impacts to nearby sensitive receptors (i.e., the La Floresta community), would be below established thresholds and, therefore, less than significant. Moreover, the noise analysis provided in **Section 5.5, Noise**, of the Draft EIR is conservative because the analysis assumed that all 31 line-haul trucks would operate during nighttime hours. As clarified in **Section 3.0, Revisions and Clarifications to the Draft EIR**, of this Final EIR, the Project anticipates that up to 22 of the anticipated 31 line-haul trucks would operate between 10:00 pm and 7:00 am during normal daily operations.

RESPONSE TO COMMENT NO. 5-2

The commentor incorrectly states that Amazon is expecting to have 62 line-haul trucks on Valencia Avenue making deliveries daily between 10:00 p.m. and 8:00 a.m. and is concerned that these line-haul trucks will disrupt the sleep of residents and worsen current health conditions. As explained above in **Response to Comment No. 5-1**, the Project anticipates the use of up to 31 line-haul trucks daily, resulting in 62 one-way truck trips during normal daily operations. In addition, as clarified in **Section 3.0, Revisions and Clarifications to the Draft EIR**, of this Final EIR, the Project anticipates that up to 22 of the 31 anticipated line-haul trucks would operate between 10:00 p.m. and 7:00 a.m. during normal daily operations. As such, the Project provides a conservative analysis of nighttime noise because the noise analysis in **Section 5.5, Noise**, of the Draft EIR assumed that all 31 line-haul trucks would operate during nighttime hours.

While the commenter's concerns regarding sleep disturbance and associated health conditions are noted, CEQA does not specifically regulate or assess subjective and individual human responses such as sleep disturbance and anxiety. Instead, CEQA relies on established thresholds set by regulatory agencies, which are based on scientific studies and health-based criteria, to ensure that noise exposure remains within acceptable limits for residential areas, schools, hospitals, and other sensitive land uses. Noise is inherently a cumulative and spatially variable environmental factor. Individual experiences of noise can vary significantly due to factors associated with each person. However, regulatory thresholds and mitigation measures are developed based on broader community-level noise studies, which assess overall exposure patterns and long-term averages rather than isolated instances of noise events. By applying noise standards at the community level, agencies aim to maintain a reasonable quality of life for the majority of residents and sensitive receptors while also accommodating necessary infrastructure and transportation functions. This approach ensures that noise abatement efforts are both effective and practical, addressing widespread impacts rather than focusing on site-specific complaints that may not reflect broader environmental conditions.

COMMENT LETTER NO. 6

From: David Maxey
To: Hwang, Joanne
Cc: Newton, Jessica; Killebrew, Jason
Subject: DJT4 Parcel Delivery Facility Project: DEIR Comments/Questions
Date: Friday, January 3, 2025 5:18:56 PM

Joanne,

Corrected to include: "DJT4 Parcel Delivery Facility Project" in the subject line.

Best,

Dave Maxey
[redacted]

From: David Maxey
Sent: Friday, January 3, 2025 5:11 PM
To: Hwang, Joanne <joanneh@ci.brea.ca.us>
Cc: Newton, Jessica <jessican@ci.brea.ca.us>; Killebrew, Jason <jasonk@ci.brea.ca.us>
Subject: Proposed Amazon Project: DEIR Comments/Questions

Joanne,

Following are my comments and questions related to the DEIR for the proposed Amazon project at 275 Valencia Avenue:

Aesthetics - Inconsistency with General Plan

Comments:

1 1. In the “Project Description” the 180 van loading spaces are described as “ancillary”. Ancillary or not, the daily loading of 345 delivery vans outside the building is not an incidental activity. Therefore, it is difficult to understand how this proposed project was deemed to be consistent with the Light Industrial land use designation, considering that a major aspect of the overall operation (van loading) would not be contained entirely, or even partially, within the building.

2 2. The cover page of the DEIR includes an illustration of the front of the facility along Valencia Avenue. It shows that the delivery van loading areas on each side of the warehouse would be visible from the sidewalk and street, and the short wall along the sidewalk would not screen these areas from view.
To my knowledge there is no facility in any Light Industrial (M-1) zone in Brea that would be analogous to this proposed use in both scope and function. The proposed very large canopies

(84,842 square feet) over the delivery vehicle loading areas make the Project's structures dissimilar to the existing light industrial development surrounding the Project Site. This is contrary to what is stated in the NOP, dated July 13, 2023.

If the Planning Commission or, on appeal, the City Council not rule that this proposed project is inconsistent with the Light Industrial land use designation, it is requested that the design of the facility be revised to screen the view of the van loading activity from Valencia Avenue, the sidewalks on either side of Valencia Avenue, and from any residence directly adjacent to Valencia Avenue.

References Related to Comments Above (Aesthetics – Inconsistency with General Plan)

2
(continued)

1. In the DEIR "Appendix A – Notice of Preparation…", dated July 13, 2023, pages 4-5 (DEIR pages 7-8), includes the following:

   "EFFECTS FOUND NOT TO BE SIGNIFICANT:"

   "As detailed below, it is determined that the Project's effects related to the environmental topics listed below would not be significant based on the Project's environmental setting and development characteristics. Therefore, no further analysis of these topics in the EIR is warranted."

   "AESTHETICS: The Project Site is located in an urbanized area within the City of Brea. According to Figure CR-4 Scenic Resources, in Chapter 4: Community Resources of the City of Brea General Plan (General Plan), there are no prominent ridgelines, view corridors, or scenic viewpoints identified within the Project area. Therefore, the Project would not have a substantial adverse effect on a scenic vista."

   "In addition, the Project's structures would be similar to the existing light industrial development surrounding the Project Site, which include research and development, light manufacturing and processing, offices, light warehousing and storage, high technology production, and other related uses. As such, the Project would not significantly alter the character of the Project Site or surrounding area. In addition, the proposed parcel delivery facility, ancillary office, and parking uses are consistent with the General Plan Light Industrial and Mixed Use II land use designations as well as the M-1 and MU-II zones, and the Project has been designed to comply with all applicable General Plan goals, objectives, and policies; zoning regulations; and community design guidelines. Therefore, the Project would not conflict with applicable zoning and other regulations governing scenic quality."

   "Based on the above, the Project would result in no impacts or less than significant impacts related to aesthetics and further analysis of this topic is not warranted in the EIR."

2. Section "1.2 Project Description" – page 1 (DEIR page 50):

2 (continued)

"The Project would also provide 1,065 parking spaces (consisting of 304 automobile spaces, 757 delivery van spaces, and four trailer spaces), 180 ancillary van loading spaces, and 13 Utility Tractor Rig loading spaces to serve facility operations. The proposed facility would be centrally located on the site with loading areas and vehicle parking would surround the facility."

3. General Plan - Chapter 2 Community Development

   Commercial and Industrial Categories - Light Industrial (page 2-15):

   "The Light Industrial designation accommodates industrial uses that are low intensity and contained entirely within buildings."

Air Quality and Greenhouse Gas Emissions Assessment

Comments:

3 1. The number of line-haul truck trips generated is characterized as both "maximum" and "approximately" in different sections of the DEIR. In other sections referring to the number of vehicles there is no designation of either "maximum", "approximate", or "average".

4 2. The Trip Table (DEIR page 2127) in Appendix F: VMT Assessment, Attachment A – Tenant Specified Trip Schedule, shows 3 to 6 hourly truck trips between the hours of 10:00 p.m. and 7:00 a.m. every day. A note under this table states: "The table does not match the the values in Table 6 in the report precisely. The Table 6 values have been modified per the request of the City of Brea to account for trips that may occur during the peak hour which are not anticipated in the user-supplied trip table" I could not find the "Table 6" referred to in this note.

Questions:

5 1. What is the correct characterization for the number of line-haul trucks and delivery vans, "maximum", "approximate", or "average"?

   2. Are the 345 delivery vans shown in the DEIR a "maximum", "approximate", or "average" number?

6 3. How would the number of line-haul trucks and delivery vehicle numbers be monitored and enforced after project implementation? What are the consequences if these numbers increase later?

7 4. Does the Air Quality impact analysis include weighting factors for the line-haul trucks and delivery vans, since these vehicles generate more emissions than a typical passenger vehicle?

8

5. If the number of line-haul trucks and/or delivery vans shown in the DEIR are anything other than “maximum”, how many additional vehicles would be likely during peaks (e.g., Prime Days, Black Friday, Cyber Monday, holiday season)?

9

6. Where is the “Table 6” referred to in the note under the Trip Table on page 2127 of the DEIR?

References Related to Comments/Questions Above (Air Quality and Greenhouse Gas Emissions)

10

1. Air Quality and Greenhouse Gas Emissions Assessment - 2.3.2 Methodology page 22 (page 71 of DEIR):

   "The VMT Report estimates that the Project’s maximum daily vehicle generation would consist of 62 heavy duty truck trips, 1,152 passenger car trips, and 690 van trips."

2. Noise and Vibration Impact Assessment page 2 (page 2037 of DEIR) under "1.2 Project Description":

   "In addition, it is anticipated that the Project Site would receive 31-line haul trucks delivering packages each day, between the hours of 10:00 p.m. to 8:00 a.m."

3. Appendix F - VMT Assessment - C. Project Trip Generation (page 2116 of DEIR)

   "Starting at 9:50 AM and ending at 11:10 AM, 345 delivery vans will load and depart from the delivery station at a rate of up to 90 vans per 20 minutes to facilitate a regulated traffic flow into the surrounding area."

   "For the Project, approximately 31 line-haul trucks are expected to deliver packages to the Project Site each day. The line haul trucks will primarily arrive at the Project Site between the hours of 10:00 PM and 8:00 AM."

4. Appendix F – VMT Assessment - Attachment A – Tenant Specified Trip Schedule - Trip Table (page 2127 of DEIR)

   See comment 2 above.

Comment:

11

Improvements to the Tracks at Brea trail are mentioned in the DEIR, but some details are not specified.

Questions:

1. Will the improvements to the Tracks at Brea include a decomposed granite path with the

same width specifications as the current trail?

2. Will the improvements to the Tracks at Brea include safety barriers between the trail and traffic on Surveyor and Nasa, which would be the main route for delivery vehicles?

3. Will the improvements to the Tracks at Brea include flashing lights at the cross walks on Surveyor and Nasa?

4. Will the improvements to the Tracks at Brea include any lighting in addition to streetlights on Surveyor and Nasa?

References Related to Comment/Questions Above (Air Quality and Greenhouse Gas Emissions)

11 (continued)

1. 3.3.3.2 Consistency with Applicable Plan, Policy, or Regulation of an Agency Adopted for the Purpose of Reducing the Emissions of Greenhouse Gases - page 69 (DEIR page 118)

   "2022 Scoping Plan"

   "The Project would also include short-term and long-term bike parking spaces as well as connectivity improvements to The Tracks at Brea. Currently, the trail ends near the northwest corner of the Project Site and resumes further down Imperial Highway away from the Project Site. The Project would improve the bike and walkway path, extending The Tracks at Brea along the Nasa Street Project frontage to the intersection of Valencia and Nasa Street. The proposed path would move south along Surveyor Avenue, wrap around Nasa Street and continue east to Valencia Avenue."

2. The Site Plan on DEIR page 2147 shows the Tracks at Brea trail extension with cross walks.

Noise and Vibration Impact Assessment

Comments:

12

1. One of the prominent noise metrics used in the DEIR Noise and Vibration Impact Assessment is Community Noise Equivalent Level (CNEL), which is a weighted 24-hour average level of sound. However, CNEL averaging is misleading as it applies to the overnight traffic noise impact anticipated with up to 62 daily line-haul truck trips. Certain residents (see items 2, 3 and 5 below) are likely to have their sleep interrupted up to 31-62 times for 365 nights a year. Yet, the DEIR declares the noise impact to be less than significant, and no mitigation measure(s) deemed to be necessary.

13

2. A factor is also included in this metric, "…100 feet (East/West) from Centerline of Roadway". This is a common factor used in EIRs. However, it is misleading in context with the residences above the soundwall along Valencia between Imperial and La Floresta/Nasa, as some of those units are as close as 85 feet from the centerline, meaning the noise impact would be greater

13 (continued)

than shown at 100 feet for CNEL, possibly to the point of being significant and in the range considered "Normally Unacceptable". Also, the CNEL metric doesn't take into consideration brief, sleep-interrupting, peaks of noise that are likely to occur up to 62 times overnight. In addition, the sound sources (line haul trucks) would be even closer than 85 feet to these residences up to 31 times per night.

14

3. The Brea Noise Ordinance includes an interior noise standard/limit of 55 dBA during nighttime hours (10:00 p.m. - 7:00 a.m.) for "any period of time". Depending on the source of data, large diesel trucks emit 84-87 dBA at approximately 70 feet, which is within the distance the Amazon trucks would be traveling from the exterior walls of many of the upper Alterra units along Valencia between La Crescenta and Nasa. When these trucks hit 87 dBA or more, which is quite possible, they would likely exceed the interior noise standard. Further the nighttime exterior standard is 70 dBA for "any period of time", which means both standards will likely be exceeded each time an Amazon line haul truck passes by northbound on Valencia up to 31 times overnight.

15

4. Currently, none of the facilities in the Light Industrial zone adjacent to the La Floresta community receive large truck deliveries between 10:00 p.m. and 6:00 a.m., based on observations and direct contact with all but one of these facilities (no response was received from Amore Pacific after several contact attempts).

16

5. To more accurately assess the likely impacts from 10:00 p.m. to 6:00 a.m. to the residents in the units above the soundwall between La Crescenta and La Floresta/Nasa, we propose using a sound level meter on a patio of one these units (we have at least one volunteer for this) in the evening while an Amazon line haul truck drives by on this section of Valencia Avenue in the northbound center lane.

   With respect to the projected line haul truck traffic noise impact on certain residents overnight, the DEIR assessment is inadequate. The above suggested measurement, along with the use of the City of Brea noise ordinance standards, would likely reveal the noise impact to be significant and at least warrant mitigation measure(s).

Questions:

17

1. Even if the Brea Noise Ordinance standards are not enforced for transportation sources, why are they not a valid measure of noise impact and used in the DEIR as suggested in the Brea General Plan and the NOP from July 13, 2023?

18

2. Will the EIR be improved to more accurately assess the overnight noise impact on the residents in the units above the soundwall along Valencia between Imperial and La Floresta/Nasa and if not, why?

References Related to the Comments/Questions Above (Noise and Vibration Impact)

1. Noise and Vibration Impact Assessment pages 5-6 (pages 2040-2041 of DEIR) under "2.1.2 Sound Propagation and Attenuation":

   "In general, barriers contribute to decreasing noise levels only when the structure breaks the "line of sight" between the source and the receiver."

   "The exterior-to-interior reduction of newer residential units is generally 30 dBA or more."

2. NOP pages 3-4 (pages 6-7 of DEIR) under "Noise":

   "The EIR will evaluate short-term and long-term noise and vibration impacts from the construction and operation of the Project and whether ambient noise levels in the Project vicinity would increase in excess of the City's established noise standards. If noise impacts are deemed to be potentially significant, the EIR will identify mitigation measures to reduce or avoid such impacts to less than significant levels if feasible."

3. Noise and Vibration Impact Assessment page 8 (page 2043 of DEIR) under "2.1.4 Human Response to Noise":

   "Noise levels above 45 dBA at night can disrupt sleep."

19

4. Under Chapter 6 Public Safety - Noise - Noise Contours and Noise Impacts (page 6-58), of the Brea General Plan, it states:

   "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."

5. Under Chapter 6 Public Safety - Noise – Transportation Related Noise (page 6-59), of the Brea General Plan, it states:

   "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."

6. 2024 CEQA Statute & Guidelines – Appendix G Environmental Checklist Form – Page 354 – XIII. Noise. Would the project result in:

   "a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise

19 (continued)

ordinance, or applicable standards of other agencies?"

Comment:

There appears to be some erroneous information included in section 4.1.3 of the DEIR. FICON issued a report in 1992 that led to the formation of the Federal Interagency Committee on Aviation Noise (FICAN), which in turn eventually led to a report from the FAA in 2000. While the 1992 FICON report mentioned traffic noise, the FAA report in 2000 focused on aviation-related noise. Research found that no evidence that "2000 FICON" exists.

Question:

20 Unless evidence of the existence of "2000 FICON" can be provided, will this section please be corrected to be more accurate?

Reference Related to the Comment/Question Above (Noise and Vibration Impact)

Noise and Vibration Impact Assessment page 17 (page 2052 of DEIR) under "4.1.3 Federal Interagency Committee on Noise (FICON)":

"The 2000 FICON findings provide guidance as to the significance of changes in ambient noise levels due to transportation noise sources. FICON recommendations are based on studies that relate aircraft and traffic noise levels to the percentage of persons highly annoyed by the noise."

Comment:

Omitted from section 4.3.1 of the DEIR is "Goal PS-10 Minimize the impacts of transportation related noise." Also omitted under this goal is "Policy PS-10.1 Reduce transportation noise by imposing traffic restrictions where necessary." Both are included in the City of Brea General Plan chapter on Public Safety, as are the goals and policies included in the DEIR.

Question:

Why was Goal PS-10 and Policy PS-10.1 omitted from this section?

21

Reference Related to the Comment/Question Above (Noise and Vibration Impact)

Noise and Vibration Impact Assessment page 19 (page 2054 of DEIR) under "4.3.1 City of Brea General Plan Public Safety Chapter":

Goals and policies from the Brea General Plan are cited in this section, including:

"Goal PS-9 Minimize the impact of point source noise and ambient noise levels throughout the

21 (continued)

community."

and

"Goal PS-11 Minimize noise impacts from sources other than transportation."

Comment:

Some information in section 5.3.2 of the DEIR seems to be at odds with the General Plan and as previously shown, FICON data was primarily related to aviation noise. Just because the City of Brea does not regulate noise from transportation sources, this does not mean the DEIR should be inconsistent with the General Plan.

Reference Related to the Comment Above (Noise and Vibration Impact)

22

Noise and Vibration Impact Assessment page 19 (page 2054 of DEIR) under "Impact Analysis - 5.3.2 Would the Project Result in a Substantial Permanent Increase in Ambient Noise Levels in Excess of City Standards During Operations?":

"The City of Brea does not regulate noise from transportation sources for industrial projects and does not have noise standards for such sources. As such, the thresholds recommended by FICON will be used in this analysis."

Comment:

Some info under Table 5-4, Modeled Operational Noise Levels (pages 2066-2067 of the DEIR), appears to be inaccurate, as residence "1", like all other Alterra units adjacent to Valencia between La Crescenta and La Floresta/Nasa, has an outdoor patio that is above the masonry wall and has a direct line-of-site of the Valencia street-surface. Even if the Alterra units south of residence "1" are not directly adjacent to the Project Site, they would be impacted by the noise of up to 31 nightly trips of line haul trucks passing within ~60-80 feet. The modeled operational noise for "nighttime activity" does not appear to take into consideration the true impact that these line haul trucks would have on the sleep patterns of the residents adjacent to this route, some of whom are sensitive receptors.

23

Reference Related to the Comment Above (Noise and Vibration Impact)

Noise and Vibration Impact Assessment pages 31-32 (pages 2066-2067 of DEIR) under "Table 5-4. Modeled Operational Noise Levels":

Residence "1" in this table refers to the Alterra building on the southeast corner of Valencia and La Floresta. On the next page it states:

23 (continued)

"It is noted that some of the residences fronting Valencia Avenue adjacent to the Project Site are two-story homes and the masonry wall is not tall enough to shield these second stories, thus no noise-reducing benefit is inherent to the second story portion of these homes. However, none of these residences have outdoor use areas, such as balconies, on the second story."

Additional Comments

24

1. As suggested in a previous comment, if a more relevant measure of nighttime noise is used for those residents who live above the soundwall along Valencia Avenue, and the City Noise Ordinance standards are used, it is likely to result in a projected significant impact for those residents. Mitigation measures for such impacts could include:
    - Limiting delivery hours to 6:00 a.m. – 10:00 p.m.
    - Use of EV line-haul trucks only during the hours of 10:00 p.m. – 6:00 a.m.
    - A negotiated easement with the property owner(s) to the south to allow use of the driveway connecting Imperial and Surveyor, bypassing the need to use Valencia for line-haul trucks during the hours of 10:00 p.m. – 6:00 a.m.

25

2. Data on the negative health and quality of life impacts of sleep disturbances from noise are well-documented. Links to resources are included in the "Additional References" below.

26

3. It is true that a benefit of the proposed facility would be a reduction in the current distance traveled by delivery vans throughout the region. However, some Brea residents would suffer from frequent and regular sleep disturbances if the line haul trucks are allowed to travel on Valencia Avenue overnight. The nonspecific benefit of reduced regional delivery van traffic should not outweigh the potential health and welfare impact on the affected Brea residents who are vulnerable to the overnight noise that would be generated by Amazon line haul truck traffic. The DEIR, as written, doesn't adequately account for this impact.

Additional References

27

1) Federal Aviation Administration – Aviation Noise Abatement Policy 2000
Https://www.federalregister.gov/documents/2000/08/24/00-21638/aviation-noise-abatement-policy-2000

2) The El Toro Info Site (Archive) – Putting 65 CNEL in Perspective
Http://archives.ocgov.com/eltoroairportorg/issues/65cnel.html

3) National Academies – Transportation Research Board – Vehicle Noise Sources and Noise-Suppression Potential
Https://trid.trb.org/View/40119

4) Science Direct – A community noise survey in Southwest Detroit and the value of supplemental metrics for truck noise
Https://www.sciencedirect.com/science/article/abs/pii/S0013935121003583

27
(continued)

5) Federal Highway Administration – Highway Traffic Noise Analysis and Abatement Policy and Guidance
Https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide04.cfm
6) Sleep Foundation – How Noise Can Affect Your Sleep Satisfaction
Https://www.sleepfoundation.org/noise-and-sleep
7) National Institutes of Health – Environmental noise and sleep disturbances: A threat to health?
Https://pubmed.ncbi.nlm.nih.gov/26483931/
8) National Institutes of Health - Effect of Sleep Disturbances on Quality of Life, Diabetes Self-Care Behavior, and Patient-Reported Outcomes
Https://pmc.ncbi.nlm.nih.gov/articles/PMC4755460/
9) Acoustics Today – Highway Traffic Noise
Https://acousticstoday.org/wp-content/uploads/2018/08/Highway-Traffic-Noise-Judith-L.-Rochat.pdf
10) California Department of Transportation | Caltrans – Traffic Noise Analysis Protocol
Https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/traffic-noise-protocol-april-2020-a11y.pdf
11) Sound Pressure Level (SPL) Distance Attenuation Calculator
https://www.omnicalculator.com/physics/distance-attenuation

Dave Maxey
[redacted]

Comment Letter No. 6

January 3, 2025
David Maxey
[redacted]

RESPONSE TO COMMENT NO. 6-1

The commenter questions the use of "ancillary" to describe the van loading spaces and states that daily loading is not an incidental activity. The commenter also suggests that the Project is not consistent with the Project Site's Light Industrial land use designation due to the van loading activities. However, as discussed in **Topical Response No. 2 – Land Use and Zoning**, the Community Development Director, with the authority given per BCC Section 20.11.020.C, determined that the Project's warehousing operations qualify as an ***Industrial, minor*** land use as defined in BCC Section 20.00.070, which is a permitted-by-right use in the M-1 zone. During the review of the Project, the City did consider the concern regarding van loading activities and the Light Industrial land use designation, but the City also weighed all components of the operations to determine land use consistency. This Project is consistent in size, scale, and operation with other existing/previously approved industrial warehousing projects, which have bays and loading zones that are logically located on the exterior walls/outside of the building, resulting in loading activities occurring outdoors as ancillary/temporary activity to support the warehousing operations. The Project, similar to a warehousing use or a postal delivery office, would have the majority of the operation (i.e., parcel storage, sorting, etc.) occur within the 181,500-square-foot building, with no permanent outdoor storage or operation. The Project is consistent with the City's historic interpretation of warehousing and the Community Development Director's interpretation, which was based on these reasons and facts, including that the van loading is an ancillary/temporary activity, and that the Project's warehousing operations are consistent with the Light Industrial General Plan land use designation and the M-1 zoning.

RESPONSE TO COMMENT NO. 6-2

As with the comment above, this comment asserts that the Project is not consistent with the Project Site's Light Industrial land use designation. The commenter is referred to **Response to Comment No. 6-1** for a detailed response. This comment also states that the Project's structures are dissimilar to the existing surrounding light industrial development and requests a redesign of the Project to screen the van loading activity from public view along Valencia Avenue. A list of references to specific text from the Draft EIR is also provided. The Project would install 60-inch box Camphor trees along Valencia Avenue to screen the proposed facility from public view. In addition, 36-inch box Coast Live Oak trees and 24-inch box Brisbane Box trees would be interspersed in front and behind the Camphor trees to offer more comprehensive screening.

RESPONSE TO COMMENT NO. 6-3

The commenter states that the Draft EIR characterizes the number of line-haul truck trips as "maximum," "approximately", or "average" in some instances but does not use such descriptors in other instances. The Project's transportation impacts were analyzed based on the maximum number of trucks and vans expected at the Project Site during a normal day of operations. As disclosed in the Draft EIR, the Project would have up to 31 line-haul trucks and 345 delivery vans operating at the Project Site daily during normal operations. The City Traffic Engineer has reviewed these quantities and found them to be a reasonable metric by which to determine the Project's transportation impacts under CEQA. As noted by the commenter, there are discrete times of the year (e.g. the holidays and Prime Days) when trucks and vans may exceed their normal operating quantities. These operational increases are limited to those discrete time periods and are, therefore, not indicative of the Project's environmental impacts, as defined by CEQA. However, in response to the comment and for informational purposes only, during these limited times, peak operations could see a maximum of 54 line-haul trucks and 562 delivery vans per day.

RESPONSE TO COMMENT NO. 6-4

The commenter refers to discrepancy in reference to a "Table 6" in Attachment A of **Appendix F: VMT Assessment** to the Draft EIR (i.e., PDF page 2127 of the Draft EIR Appendices file). The reference to Table 6 refers to a table in the TIA, not the VMT Assessment. The reference is made to help clarify the differences in assumptions between the TIA and VMT Assessment. Revisions have been made to Attachment A of the VMT Assessment to clarify that Table 6 is provided in the TIA. See **Section 3.0, Revisions and Clarifications to the Draft EIR**, of this Final EIR.

RESPONSE TO COMMENT NO. 6-5

The commenter asks for the correct characterization (i.e., maximum, approximately, or average) for the number of line-haul trucks and delivery vans. As stated in **Response to Comment No. 6-3**, the Project's transportation impacts were analyzed based on a maximum of 31 line-haul trucks and 345 delivery vans expected at the Project Site during a normal day of operations. The City Traffic Engineer has reviewed these quantities and found them to be a reasonable metric by which to determine the Project's transportation impacts under CEQA. Nonetheless, these normal operational truck and van numbers could be exceeded during discrete times of the year (e.g. the holidays and Prime Days) and the Project would be required to comply with a condition of approval that would limit peak operations to a maximum of 54 line-haul trucks and 562 delivery vans.

RESPONSE TO COMMENT NO. 6-6

The commenter requests an explanation of how the number of line-haul trucks and delivery vehicle numbers will be monitored and enforced after Project implementation. The commenter also asks about the consequences of increasing such truck and van numbers. As stated in **Response to Comment No. 6-3 and Response to Comment No. 6-5**, the Project's transportation impacts were analyzed based on the maximum of 31 line-haul trucks and 345 delivery vans expected at the Project Site during a normal day of operations. The Project would be required to comply with a condition of approval that would limit the truck and delivery van numbers during peak operations. A dispatch log may be requested by and provided to the City to verify that the approved maximum vehicle numbers are not exceeded.

RESPONSE TO COMMENT NO. 6-7

The commenter asks if the Project's air quality impact analysis included weighting factors for the line-haul trucks and delivery vans, since such vehicles generate more emissions than a typical passenger vehicle. The analysis in **Section 5.1, Air Quality**, of the Draft EIR does account for the differences in emission rates between line-haul trucks, delivery vans, and typical passenger vehicles. The analysis utilized CalEEMod, which accounts for vehicle-specific emission factors based on fuel type, vehicle class, and operational characteristics.[5]

RESPONSE TO COMMENT NO. 6-8

The commenter asks for the number of additional vehicles required during peak events (e.g., Prime Days, Black Friday, Cyber Monday, holiday season) if the number of line-haul trucks and/or delivery vans shown in the Draft EIR are anything other than "maximum". As stated in **Response to Comment No. 6-5**, the Project's transportation impacts were analyzed based on the maximum number of 31 line-haul trucks and 345 delivery vans expected at the Project Site during a normal day of operations. However, during discrete times of the year (e.g. the holidays and Prime Days) when trucks and vans may exceed their normal operating quantities, the Project would be required to comply with a condition of approval that would limit truck and delivery van numbers.

RESPONSE TO COMMENT NO. 6-9

Similar to Comment No. 6-4, this commenter refers to discrepancy in reference to a "Table 6" in Attachment A of **Appendix F: VMT Assessment** to the Draft EIR (i.e., PDF page 2127 of the Draft EIR Appendices file). As stated in **Response to Comment No. 6-4**, the reference refers to a table in the TIA, not the VMT Assessment, and is made to help clarify the differences in assumptions between the TIA and VMT analysis. Revisions have been made to Attachment A of the VMT Assessment to clarify that Table 6 is provided in the TIA. See **Section 3.0, Revisions and Clarifications to the Draft EIR**, of this Final EIR.

RESPONSE TO COMMENT NO. 6-10

This comment consists of a list of textual references from the Draft EIR. Specific comments related to such references are provided above in Comment Nos. 6-5 through 6-9 and the corresponding responses are provided in **Response to Comment No. 6-5** through **Response to Comment No. 6-9**. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 6-11

The commenter requests additional information regarding the type/width of trail improvements and the provision of safety barriers, flashing lights at crosswalks, and lighting along The Tracks at Brea trail and cites specific text from the Draft EIR for context. It should be noted that the 3200 Nasa Project would be extending the bikeway component of The Tracks at Brea from its current terminus mid-block on Surveyor Avenue to the Surveyor Avenue and Nasa Street intersection by providing an off-street concrete sidewalk and asphalt bike path along the westside of Surveyor

[5] ICF in collaboration with Sacramento Metropolitan Air Quality Management District, Fehr & Peers, STI, and Ramboll. April 2022. CalEEMod California Emissions Estimator Model User Guide Version 2022.1, Pages 40-42.

Avenue. The Project would then extend that off-street concrete sidewalk and asphalt bike path from the Nasa Street and Surveyor Avenue intersection to the signalized intersection of Valencia Avenue and Nasa Street along the northside of Nasa Street. Yellow flashing lights, or beacons, for pedestrians and/or bicycles would not be provided at the Surveyor Avenue and Nasa Street crossing, since that crossing is controlled by a stop sign. Flashing yellow lights, which signify "proceed with caution", conflict with stop signs and thus cannot both be deployed at the same crossing. Since the extension of the bikeway component of The Tracks at Brea would be an off-street facility, safety barriers are not needed or advisable since vehicular and bike traffic would not be immediately adjacent but separated by curb, gutter, and a sidewalk. The final details of the proposed The Tracks at Brea extension would be reviewed during the City's review of Project's construction documents during the permit review process.

RESPONSE TO COMMENT NO. 6-12

The commenter is concerned about the use of the 24-hour CNEL methodology to assess noise impacts and asserts that traffic noise from up to 62 daily line-haul truck trips would interrupt residents' sleep up to 31-62 times each night. The commenter questions the Draft EIR's conclusion that noise impacts would be less than significant and that no mitigation measures are necessary. As discussed in **Response to Comment No. 2-2** and **Topical Response No. 3 – Operational Traffic Noise**, the CNEL metric is a widely accepted standard used in environmental noise assessments under CEQA and aligns with established industry practices. Moreover, the City has utilized the CNEL metric in past EIRs. The CNEL rating scale has been developed to analyze the adverse effects of noise on people. Because environmental noise fluctuates over time, the CNEL scale considers that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The CNEL metric provides a comprehensive evaluation of noise exposure by incorporating all traffic noise events over a 24-hour period and applying time-dependent penalties to account for the increased sensitivity to noise during the evening and nighttime hours. Specifically, CNEL includes a 5-dB penalty for noise occurring between 7:00 p.m. and 10:00 p.m., and a 10-dB penalty for noise occurring between 10:00 p.m. and 7:00 a.m., reflecting the greater potential for sleep disturbance and reduced ambient noise levels during these hours. As such, these penalties are applied in the Project's analysis to ensure that nighttime noise is given appropriate consideration in assessing potential impacts on sensitive receptors, such as residential properties. By utilizing CNEL, the analysis accounts for the cumulative effect of noise exposure throughout the day and night rather than focusing on isolated events, as is appropriate when evaluating traffic noise. The Draft EIR also incorporates conservative assumptions and modeling techniques to simulate worst-case scenarios, ensuring that the analysis adequately captures potential noise impacts on the surrounding community.

Furthermore, it should be noted that, as clarified in **Section 3.0, Revisions and Clarifications to the Draft EIR**, of this Final EIR, the anticipated maximum number of line-haul trucks between 10:00 p.m. and 7:00 a.m. during normal daily operations is up to 22 rather than 31 trucks. As such, the Project provides a conservative analysis of nighttime noise because the noise analysis in **Section 5.5, Noise**, of the Draft EIR assumed that all 31 line-haul trucks would operate during nighttime hours.

As discussed in **Response to Comment No. 5-2**, CEQA does not specifically regulate or assess subjective and individual human responses such as sleep disturbance. Instead, CEQA relies on established thresholds set by regulatory agencies, which are based on scientific studies and health-based criteria, to ensure that noise exposure remains within acceptable limits for residential areas, schools, hospitals, and other sensitive land uses. Regulatory thresholds and mitigation measures are developed based on broader community-level noise studies, which assess overall exposure patterns and long-term averages rather than isolated instances of noise events. By applying noise standards at the community level, agencies aim to maintain a reasonable quality of life for residents and sensitive receptors while also accommodating necessary infrastructure and transportation functions. This approach ensures that noise abatement efforts are both effective and practical, addressing widespread impacts rather than focusing on site-specific complaints that may not reflect broader environmental conditions.

RESPONSE TO COMMENT NO. 6-13

The commenter claims that some residences are as close as 85 feet from the centerline of the roadway and that the noise impact would be greater and potentially significant when compared to the Draft EIR's analysis, which utilized a distance of 100 feet from the centerline. The commenter also asserts that the CNEL metric does not consider the brief, sleep-interrupting, peaks of noise that would occur overnight, which the commenter suggests would be closer than 85 feet to some residences.

As discussed in **Topical Response No. 3 – Operational Traffic Noise**, the transportation-source noise levels associated with the Project were calculated using the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108), a widely accepted tool for evaluating roadway noise impacts, along with trip generation rates from the TIA. Noise levels were analyzed using the CNEL metric, which incorporates penalties for evening and nighttime noise to account for increased sensitivity during these periods. To address the commenter's concern regarding distance from the centerline, roadway noise levels for the segment of Valencia Avenue between Imperial Highway and La Floresta Drive were calculated for a distance of 85 feet from the roadway centerline using the FHWA Traffic Noise Prediction Model. The calculated traffic noise levels at 85 feet are 64.8 dBA CNEL under existing conditions and 67.0 dBA CNEL under Existing Plus Project conditions. As detailed on page 5.5-5 of **Section 5.5, Noise**, of the Draft EIR, when existing traffic noise levels range from 60 to 65 dBA CNEL, a significant impact would occur if the Project creates an increase of 3 dBA CNEL or more. In this case, when accounting for a distance of 85 feet from the roadway centerline, the Project would result in a noise increase of 2.2 dBA CNEL (67.0 dBA – 64.8 dBA = 2.2 dBA), which is below the established threshold. Therefore, the Project would not result in significant traffic noise impacts at 85 feet.

The commenter also raises concerns regarding the CNEL metric and its applicability to analyzing brief, sleep-interrupting noise events from line-haul truck operations. Refer to **Response to Comment No. 6-12** above for the response to these concerns.

RESPONSE TO COMMENT NO. 6-14

The commenter provides an interpretation of the interior and exterior noise standards in the Brea Noise Ordinance. The commenter alleges that it is possible for the Project's trucks to emit noise levels of 87 dBA or more, which would likely exceed the interior noise standard of 55 dBA during nighttime hours, as well as the nighttime exterior standard of 70 dBA each time an Amazon line-haul truck passes by northbound on Valencia. However, the comment incorrectly characterizes the noise standards in the Brea Noise Ordinance. As stated on page 5.5-8 of **Section 5.5, Noise**, of the Draft EIR, per BCC Section 8.20.060, the interior noise standard is 55 dBA during daytime hours (7:00 a.m. to 10:00 p.m.) and 45 dBA during nighttime hours (10:00 p.m. to 7:00 a.m.). The City's interior noise standards of 55 dBA during the daytime and 45 dBA during the nighttime are specifically intended to regulate noise generated by stationary sources located within the Project Site such as mechanical equipment, loading/unloading activities, and internal (onsite) vehicular circulation. These standards establish fixed noise level limits applicable to sources under the City's jurisdiction and control. However, it is not appropriate to apply such standards to evaluate noise from transportation sources, such as trucks traveling along public roadways, because mobile sources are subject to fluctuating operational patterns and broader regulatory oversight from state and federal agencies.

In addition, as discussed in **Section 5.5, Noise**, of the Draft EIR, the City does not regulate noise from transportation sources for industrial projects and does not have noise standards for such sources. CEQA Guidelines Section 15064.7 allows lead agencies to use thresholds on a case-by-case basis. As such, for this Project, the thresholds recommended by FICON are utilized. Based on the analysis provided in **Section 5.5, Noise**, of the Draft EIR, Project-generated traffic during operation, including truck traffic, would not result in an increase in traffic noise that would exceed the recommended FICON thresholds.

As shown in **Table 5.5-7** in **Section 5.5, Noise**, of the Draft EIR, exterior noise as a result of vehicle traffic on Valencia Avenue, which would travel adjacent to residential land uses, would range from 58.4 dBA CNEL to 64.7 dBA CNEL under Existing Plus Project conditions. The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows.[6] The exterior-to-interior reduction of newer residential units is generally 30 dBA or more.[7] Using the more conservative reduction of 20 dBA, the interior noise as a result of transportation noise on Valencia Avenue under Existing Plus Project conditions would range from 38.4 dBA CNEL to 44.7 dBA CNEL, which would be below the City's nighttime interior noise standard of 45 dBA. Furthermore, as clarified in **Section 3.0, Revisions and Clarifications to the Draft EIR**, of this Final EIR, the anticipated maximum number of line-haul trucks between 10:00 p.m. and 7:00 a.m. during normal operation conditions is up to 22 rather than 31 trucks. As such, the Project provides a conservative analysis of nighttime noise because the noise analysis in **Section 5.5, Noise**, of the Draft EIR assumed that all 31 line-haul trucks would operate during nighttime hours.

[6] Caltrans. 2002. California Airport Land Use Planning Handbook.

[7] FTA. May 2006. Transit Noise and Vibration Impact Assessment, Final Report.

RESPONSE TO COMMENT NO. 6-15

The commenter states that none of the facilities in the Light Industrial zone adjacent to the La Floresta community currently receive large truck deliveries between 10:00 p.m. and 6:00 a.m., based on observations and direct contact with all but one of these facilities. Operation of the Project's proposed parcel delivery facility would comply with all applicable regulations specified in the BCC. This comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 6-16

The commenter proposes that the Project measure the noise level at one of the residential patios (i.e., above the soundwall and along Valencia Avenue between La Crescenta Drive and La Floresta Drive/Nasa Street) in the evening while an Amazon line-haul truck drives by in the northbound center lane. The commenter also asserts that the Draft EIR noise impact analysis with respect to the projected line-haul truck traffic is inadequate and that using their suggested methodology would reveal significant noise impacts and require mitigation.

As previously detailed in **Response to Comment No. 2-2**, while conducting spot measurements on patios during truck pass-bys could provide additional localized data, the CNEL metric is a widely accepted standard used in environmental noise assessments. Moreover, the City has utilized the CNEL metric in past EIRs. The Draft EIR for the Project follows CEQA guidelines, which require the evaluation of potential environmental impacts using standard methodologies and best available data. CEQA does not mandate lead agencies to conduct site-specific testing that replicates operational conditions in this manner. Instead, CEQA analysis relies on established noise modeling techniques that are widely accepted for environmental assessments.

Roadway traffic noise is a continuous source of community noise and since the flow of traffic constantly varies throughout a day due to short duration single event noise sources, it is infeasible and inappropriate to regulate such noise as a single truck-passing event as this misrepresents impacts to the community. The CNEL metric provides a comprehensive evaluation of noise exposure by incorporating all traffic noise events over a 24-hour period and applying time-dependent penalties to account for the increased sensitivity to noise during the evening and nighttime hours. Specifically, CNEL includes a 5-dB penalty for noise occurring between 7:00 p.m. and 10:00 p.m., and a 10-dB penalty for noise occurring between 10:00 p.m. and 7:00 a.m., reflecting the greater potential for sleep disturbance and reduced ambient noise levels during these hours. As such, these penalties are applied in the Project's analysis to ensure that nighttime noise is given appropriate consideration in assessing potential impacts on sensitive receptors, such as residential properties.

The commenter's concerns regarding sleep disturbance and associated health conditions are acknowledged; however, as discussed in **Response to Comment No. 6-12**, CEQA does not specifically regulate or assess subjective and individual human responses such as sleep disturbance and anxiety. Instead, CEQA relies on established thresholds set by regulatory agencies, which are based on scientific studies and health-based criteria, to ensure that noise exposure remains within acceptable limits for residential areas, schools, hospitals, and other sensitive land uses.

RESPONSE TO COMMENT NO. 6-17

The commenter would like an explanation as to why the Brea Noise Ordinance standards were not utilized in the Draft EIR's noise analysis as a measure of noise impact for transportation sources.

As discussed above in **Response to Comment No. 6-14** and as referenced on page 5.5-8 of **Section 5.5, Noise**, of the Draft EIR, the City's Noise Ordinance is intended to regulate stationary, non-transportation noise sources, such as mechanical equipment, loading/unloading activities, and internal (onsite) vehicular circulation. These standards establish fixed noise level limits applicable to sources under the City's jurisdiction and control. For instance, the Noise Ordinance limits stationary onsite noise sources as experienced at residential land uses to an exterior standard of 55 dBA; however, as shown on **Table 5.5-2** in **Section 5.5, Noise**, of the Draft EIR the existing ambient (i.e., community) noise in the vicinity ranges from 61.0 dBA to 76.0 dBA without the Project. Thus, it can be seen that applying a stationary, non-transportation noise standard to a community noise generator such as traffic lacks the complexity necessary to effectively evaluate traffic noise, as the existing ambient noise environment is already louder than the City's stationary standard. It would be further inappropriate to apply such standards to evaluate noise from transportation sources, such as trucks traveling along public roadways, because mobile sources are subject to fluctuating operational patterns and broader regulatory oversight from state and federal agencies. As discussed in **Topical Response No. 3 – Operational Traffic Noise**, to assess the potential noise impacts of transportation sources, the Draft EIR employs the FICON guidelines, which are widely recognized and applied in environmental noise assessments, particularly for projects involving mobile sources. The FICON methodology is considered appropriate because it accounts for differing existing ambient conditions and human perception of noise changes by using a sliding scale to evaluate noise impacts. In addition, the methodology provides a scientifically based threshold system and framework for assessing noise significance based on detailed research and studies conducted by federal agencies such as the Federal Aviation Administration, the Department of Transportation, and the FHWA.

RESPONSE TO COMMENT NO. 6-18

The commenter believes that the EIR can be improved to more accurately assess the overnight noise impact on residents that are located above the soundwall along Valencia Avenue between Imperial Highway and La Floresta Drive/Nasa Street. The commenter asks if such an assessment will be conducted and would like an explanation if it will not be conducted. The commenter is referred to **Topical Response No. 3 – Operational Traffic Noise** and **Response to Comment No. 6-12** through **Response to Comment No. 6-17** for discussions related to the accuracy and validity of the Draft EIR's nighttime noise impact methodology and assessment. Based on the reasons provided above, no revisions to the Draft EIR are necessary.

RESPONSE TO COMMENT NO. 6-19

This comment consists of a list of textual references from the Draft EIR. Specific comments related to such references are provided above in Comment Nos. 6-12 through 6-18 and the corresponding responses are provided in **Response to Comment No. 6-12** through **Response to Comment No. 6-18**. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 6-20

The commenter states that "2000 FICON" does not exist and is requesting revisions to the Section 4.1.3 of the Draft EIR. It should be clarified that the commenter is referring to **Appendix E: Noise and Vibration Impact Assessment** to the Draft EIR (specifically PDF page 2051 of the Draft EIR Appendices file). The commenter is correct regarding the typographical error and the text is revised from “2000 FICON” to “1992 FICON” as shown in **Section 3.0, Revisions and Clarifications to the Draft EIR**, of this Final EIR.

RESPONSE TO COMMENT NO. 6-21

The commenter suggests that Goal PS-10 and Policy PS-10.1 of the City of Brea General Plan – Public Safety Chapter were omitted from Section 4.3.1 of the Draft EIR. It should be clarified that the commenter is referring to **Appendix E: Noise and Vibration Impact Assessment** to the Draft EIR (specifically PDF page 2053 of the Draft EIR Appendices file). While the Goal PS-10 and Policy PS-10.1 are not included in **Appendix E**, Goal PS-10 and Policy PS-10.1 are included on page 5.5-7 of **Section 5.5, Noise**, of the Draft EIR. However, for consistency, as shown in **Section 3.0, Revisions and Clarifications to the Draft EIR**, of this Final EIR, Goal PS-10 and Policy PS-10.1 have been added to **Appendix E**.

RESPONSE TO COMMENT NO. 6-22

The commenter claims that information in Section 5.3.2 of the Draft EIR conflicts with the General Plan and that FICON data is primarily related to aviation noise. It should be clarified that the commenter is referring to Section 5.3.2 of **Appendix E: Noise and Vibration Impact Assessment** to the Draft EIR (specifically PDF page 2061 of the Draft EIR Appendices file). The commenter also asserts that just because the City does not regulate noise from transportation sources does not mean that the Draft EIR should be inconsistent with the General Plan.

However, based on the analysis in the Draft EIR, the Project does not conflict with the City’s General Plan. In the absence of City transportation noise standards, the Draft EIR utilized FICON standards. While the FICON guidelines were originally developed for assessing airport noise impacts, their applicability extends to a broad range of transportation noise analyses due to their comprehensive approach to evaluating community noise exposure. FICON emphasizes cumulative noise exposure over single-event noise levels, reinforcing that noise regulations are designed to protect communities as a whole rather than individual receptors.

Furthermore, a key component of FICON’s methodology is its sliding scale approach, which evaluates noise increases in the context of existing ambient conditions. This ensures that areas with lower baseline noise levels, where even small increases may be perceptible, are assessed differently from areas with higher ambient noise, where the same increase may be less noticeable. This nuanced approach provides a more accurate representation of potential community noise impacts. While the FICON 1992 guidance was originally developed to assess impacts associated with changes in aviation noise, the sliding scale thresholds it presents for evaluating the significance of noise increases have been widely applied in California for evaluating traffic noise impacts under CEQA. The rationale is based on human response to changes in noise exposure, which is applicable regardless of the noise source. The FICON sliding scale is used by numerous lead agencies and recognized in environmental noise technical guidance because it allows for a

context-sensitive assessment of significance whereby smaller noise increases may be significant in already noisy environments, and larger increases are needed to be considered significant in quiet areas. For example, FICON thresholds are applied as a standard practice to virtually all project analyses in unincorporated Riverside County. Recent examples in Riverside County include the Cajalco Commerce Center Draft EIR[8], the Thermal Ranch Specific Plan Project Draft EIR,[9] and the Arroyo Vista Project Draft EIR.[10] Nearer to the Project, the Brea Gaslight Square Redevelopment Project Draft EIR[11] in the City of Brea and the Sherbeck Field Improvements Project EIR[12] in the City of Fullerton employed the FICON standard. The FICON framework accounts for variations in noise levels throughout the day, incorporating both peak-hour traffic and nighttime sensitivity to provide a comprehensive assessment. Moreover, FICON's noise impact thresholds are based on community response to changes in noise levels rather than the specific characteristics of a noise source. Since community reactions to noise—whether from aircraft, highways, or rail—depend primarily on overall exposure rather than the nature of the source, FICON provides a consistent, science-based approach to evaluating perceptibility and disruption. As a result, its methodology is well-suited for assessing highway traffic noise impacts under CEQA.

Additionally, the use of the FICON standards is considered conservative relative to thresholds used by other agencies in the State of California. For example, the California Department of Transportation (Caltrans) requires a project-related traffic noise level increase of 12 dB for a finding of significance, and the California Energy Commission considers project-related noise level increases between 5 to 10 dB significant, depending on local factors. Therefore, the use of the FICON standards, which set the threshold for significant noise impacts as low as 1.5 dB, provides a very conservative approach to impact assessment.

RESPONSE TO COMMENT NO. 6-23

The commenter alleges that the information provided in **Table 5-4, Modeled Operational Noise Levels**, of the Draft EIR is inaccurate because, as with Residence 1, other Alterra units adjacent to Valencia Avenue between La Crescenta Drive and La Floresta Drive/Nasa Street (i.e., south of Residence 1) have outdoor patios that are located above the masonry wall and have a direct line-of-site to the Valencia Avenue street surface. It should be clarified that the commenter is referring to **Table 5-4** in **Appendix E: Noise and Vibration Impact Assessment** to the Draft EIR (specifically on PDF page 2065 of the Draft EIR Appendices file). The commenter also claims that the residents south of Residence 1 would be impacted by the noise of up to 31 nightly trips of

[8] Riverside County Planning Department. July 11, 2024. Cajalco Commerce Center Draft Environmental Impact Report SCH No. 2023060799.

[9] Riverside County Planning Department. November 2024. Thermal Ranch Specific Plan Project Draft Environmental Impact Report SCH No. 2023050624.

[10] Riverside County Planning Department. March 4, 2025. Arroyo Vista Tentative Tract Map No. 38510 Draft Environmental Impact Report SCH No. 2023030118.

[11] City of Brea. January 25, 2023. Brea Gaslight Square Redevelopment Project Draft Environmental Impact Report SCH No. 2022060598.

[12] Fullerton College. May 2019. Sherbeck Field Improvements Project Draft Environmental Impact Report SCH No. 2018041025.

line-haul trucks passing within an alleged distance of 60-80 feet. As such, the commenter asserts that that the modeled operational noise for "nighttime activity" does not consider the impact of the trucks on the residents' sleep patterns.

As described on page 5.5-8 of **Section 5.5, Noise**, of the Draft EIR, the nearest sensitive receptors to the Project Site include residences across Valencia Avenue located approximately 116 feet from the Project Site. **Table 5-4** identified by the commenter specifically presents the onsite operational noise generated by the Project such as loading dock activities and internal vehicle movements within the Project Site. These noise levels do not account for transportation noise from vehicles traveling on adjacent roadways, as the analysis of offsite noise sources follows a different methodology and regulatory framework. Evaluating noise impacts separately for stationary (onsite) and transportation (offsite) sources is a standard CEQA analysis practice, as jurisdictions typically establish distinct noise standards for each category to ensure a comprehensive and regulatory-compliant analysis. In addition, onsite and offsite noise sources affect the noise environment in different manners and largely affect different receptors. The commenter's concern appears to be primarily related to the line-haul truck operations on Valencia Avenue, which constitute an offsite transportation noise source. Therefore, **Table 5-4** is not applicable to this comment.

Moreover, up to 22 of the 31 anticipated line-haul trucks would operate between 10:00 p.m. and 7:00 a.m. during normal daily operations. Thus, the noise analysis provided in **Section 5.5, Noise**, of the Draft EIR is conservative because it assumed that all 31 line-haul trucks would operate during nighttime hours. As discussed in **Topical Response No. 3 – Operational Traffic Noise**, to assess the potential noise impacts of transportation sources, the Draft EIR employs the FICON guidelines, which are widely recognized and applied in environmental noise assessments, particularly for projects involving mobile sources. **Table 5-3, Proposed Project Predicted Traffic Noise Levels** in **Appendix E** (specifically PDF pages 2062-2063 of the Draft EIR Appendices file) and the corresponding **Table 5.5-7, Project Traffic Noise Levels** on page 5.5-25 of the Draft EIR compare projected offsite roadway noise levels as a result of the Project to the thresholds recommended by FICON. It is important to note that the values in **Table 5-3** and **Table 5.5-7** represent a conservative assessment, as they do not account for noise reduction provided by the existing sound wall, which would further reduce potential impacts. The analysis confirms that none of the roadway segments in the Project vicinity would experience an incremental increase in traffic noise exceeding FICON standards. These standards provide a well-established framework for assessing noise significance, grounded in detailed research and studies conducted by federal agencies. Additionally, as discussed in **Response to Comment No. 6-12,** CEQA relies on objective thresholds and factual data to assess potential impacts, rather than subjective concerns such as individual sleep disruption. The analysis applies the CNEL noise metric, which incorporates penalties for nighttime noise to reflect increased sensitivity during evening and overnight hours, ensuring that potential impacts on sensitive receptors are appropriately accounted for in accordance with regulatory standards. As such, the Project's modeled operational noise for "nighttime activity" is adequately analyzed in the Draft EIR.

RESPONSE TO COMMENT NO. 6-24

The commenter refers to a previous comment in which they suggest that the Project will likely result in a significant impact to residents who live above the soundwall along Valencia Avenue if a different measure of nighttime noise and the City's Noise Ordinance standards are utilized. The commenter is referred to **Topical Response No. 3 – Operational Traffic Noise** and **Response to Comment No. 6-16** through **Response to Comment No. 6-18** and **Response to Comment No. 6-23** for responses to the commenter's claim that such impacts would be significant.

The commenter also proposes three possible mitigation measures, which include: (1) limiting delivery hours to 6:00 a.m. to 10:00 p.m.; (2) using electric vehicle (EV) line-haul trucks only during 10:00 p.m. to 6:00 a.m.; and (3) negotiating easement with the property owner(s) to the south to allow use of the driveway connecting Imperial Highway and Surveyor Avenue, bypassing the need to use Valencia Avenue for line-haul trucks during the hours of 10:00 p.m. to 6:00 a.m. As demonstrated on pages 5.5-23 through 5.5-27 of **Section 5.5, Noise**, of the Draft EIR, the Project's noise impacts do not exceed established significance thresholds and no mitigation is necessary.

RESPONSE TO COMMENT NO. 6-25

The commenter states that data on the negative health and quality of life impacts from sleep disturbances from noise are well-documented and provides links to resources in Comment No. 6-27. As noted in **Response to Comment No. 6-16**, the commenter's concerns regarding sleep disturbance and associated health conditions are acknowledged. However, as discussed therein, CEQA does not specifically regulate or assess subjective and individual human responses such as sleep disturbance. Nevertheless, the references provided by the commenter have been reviewed and will be forwarded to the decision makers for consideration. While they are not incorporated directly into the Draft EIR, the Project is required to comply with applicable noise regulations.

RESPONSE TO COMMENT NO. 6-26

The commenter acknowledges that the Project would result in the benefit of reduced travel distance by delivery vans throughout the region. However, the commenter reiterates the claim that residents would suffer from frequent and regular sleep disturbances if the line-haul trucks are allowed to travel on Valencia Avenue overnight. The commenter suggests that the aforementioned benefit of the Project should not outweigh the potential health and welfare impact on residents and that the Draft EIR did not adequately account for such impact.

The commenter is referred to **Topical Response No. 3 – Operational Traffic Noise** for further discussion of nighttime operational noise. As noted, only up to 22 of the 31 anticipated line-haul trucks would operate between 10:00 p.m. and 7:00 a.m. during normal daily operations. Thus, the noise analysis provided in **Section 5.5, Noise**, of the Draft EIR is conservative because it assumed that all 31 line-haul trucks would operate during nighttime hours.

While the public's concerns regarding sleep disturbance and associated health conditions are noted, CEQA does not specifically regulate or assess subjective and individual human responses such as sleep disturbance and anxiety. Instead, CEQA relies on established thresholds set by regulatory agencies, which are based on scientific studies and health-based criteria, to ensure that noise exposure remains within acceptable limits for residential areas, schools, hospitals, and other sensitive land uses. Noise is inherently a cumulative and spatially variable environmental factor. Individual experiences of noise can vary significantly due to factors associated with each person. However, regulatory thresholds and mitigation measures are developed based on broader community-level noise studies, which assess overall exposure patterns and long-term averages rather than isolated instances of noise events. By applying noise standards at the community level, agencies aim to maintain a reasonable quality of life for residents and sensitive receptors while also accommodating necessary infrastructure and transportation functions. This approach ensures that noise abatement efforts are both effective and practical, addressing widespread impacts rather than focusing on site-specific complaints that may not reflect broader environmental conditions.

The commenter is further referred to **Response to Comment No. 6-12**, **Response to Comment No. 6-18**, and **Response to Comment No. 6-23**, above for responses to these concerns.

RESPONSE TO COMMENT NO. 6-27

The comment consists of a list of additional references as introduced in Comment No. 6-25. As such, the commenter is referred to **Response to Comment No. 6-25**.

COMMENT LETTER NO. 7

From: [redacted]
To: Hwang, Joanne
Cc: Carol Gray
Subject: DJT4 Parcel Delivery Facility Project
Date: Saturday, January 4, 2025 9:21:34 AM

---

1 This e-mail is a request to deny the proposed Amazon facility located at 275 Valencia Ave. As it is, I'm woken up every single day between 5:30-6:00 am from the long line of trucks waiting for the landfill to open. Then I deal with truck noise the whole day. My unit is one of several with a direct line of sight to Valencia Ave. where these trucks line up and travel six days a week. The primary bedrooms and balcony's of the Alterra condo's face Valencia and are above the top of the sound wall along Valencia.

I suffer from asthma and high blood pressure and my health is definitely impacted by the truck noise on Valencia. It's been proven that sleep deprivation leaves you vulnerable to respiratory infections like the cold and flu and can make chronic lung infections, like mine, much worse.

2 The noise impact analysis in the DEIR uses a standard that averages sound levels over a 24-hour period and shows a less than significant impact. However, this is a misleading way to measure the real-world noise impact my neighbors and I would be subjected to from Amazon trucks 7 nights a week, 365 nights a year. I would welcome a real-world test by using a sound level meter on my balcony while an Amazon truck drives by. This would be the only true measure of noise impact for the most affected residents.

3 According to the projected truck traffic in the DEIR, there would be 31 of these loud trucks passing within about 65 feet of my bedroom window between 10 pm and 8 am. There are also 31 return truck trips projected in the DEIR during those same hours passing within about 115 feet. The DEIR states "Noise levels above 45 dBA at night can disrupt sleep". Based on data I've seen about how much noise is generated by these trucks at various distances, my sleep could be disrupted up to 62 times between 10 pm and 8 am every day of the year.

4 I doubt anyone would be okay with up to 62 sleep disturbances per night. Amazon should not be allowed to improve their bottom line at the expense of my health and welfare and that of my neighbors.

Thank You,

Carol Gray
[redacted]

Comment Letter No. 7

January 4, 2025
Carol Gray
[redacted]

RESPONSE TO COMMENT NO. 7-1

The introductory comment expresses the commenter's opposition to the Project. The commenter is concerned about noise from the trucks that line Valencia Avenue between 5:30 a.m. and 6:00 a.m. to access the landfill (i.e., the Olinda Alpha Landfill, which is located 1.1 miles north of the Project Site at 1942 Valencia Avenue). The commenter asserts that truck noise on Valencia Avenue causes sleep deprivation, which allegedly impacts respiratory health such as that of the commenter. The commenter also observes that the bedrooms and balconies of certain residences facing Valencia Avenue are located above the existing sound wall. This introductory comment expresses concerns with certain existing conditions and noise, in general, but does not specifically address the potential impacts of the Project or the adequacy of the Draft EIR. Accordingly, the comment is noted and will be forwarded to the decision-makers for consideration.

RESPONSE TO COMMENT NO. 7-2

The comment disputes the Draft EIR's methodology for analyzing noise impacts and finds the Draft EIR's less-than-significant impact conclusion to be misleading. The commenter asserts that using a sound level meter on the commenter's balcony would be the only accurate method of determining noise impact of Amazon trucks on residents. However, as discussed above in **Response to Comment No. 2-2,** while conducting spot measurements on balconies during truck pass-bys could provide additional localized data, the CNEL metric is a widely accepted standard used in environmental noise assessments under CEQA and aligns with established industry practices. Roadway traffic noise is a continuous source of community noise and since the flow of traffic constantly varies throughout a day due to short duration single event noise sources, it is infeasible and inappropriate to regulate such noise as a single truck-passing event. The CNEL metric provides a comprehensive evaluation of noise exposure by incorporating all traffic noise events over a 24-hour period and applying time-dependent penalties to account for the increased sensitivity to noise during the evening and nighttime hours. Specifically, CNEL includes a 5-dB penalty for noise occurring between 7:00 p.m. and 10:00 p.m., and a 10-dB penalty for noise occurring between 10:00 p.m. and 7:00 a.m., reflecting the greater potential for sleep disturbance and reduced ambient noise levels during these hours. As such, these penalties are applied in the Project's analysis to ensure that nighttime noise is given appropriate consideration in assessing potential impacts on sensitive receptors, such as residential properties. By utilizing CNEL, the analysis accounts for the cumulative effect of noise exposure throughout the day and night rather than focusing on isolated events, as is appropriate when evaluating traffic noise. The Draft EIR also incorporates conservative assumptions and modeling techniques to simulate worst-case scenarios, ensuring that the analysis adequately captures potential noise impacts on the surrounding community. Therefore, the Draft EIR adequately analyzed noise impacts.

RESPONSE TO COMMENT NO. 7-3

The commenter asserts that 31 Project trucks would pass by approximately 65 feet of the commenter's window and that 31 return trips would pass by within 115 feet between 10:00 p.m. and 8:00 a.m. The commenter believes that these trips will cause 62 instance of sleep disturbance each day of the year. The commenter also cites the Draft EIR's statement that "[n]oise levels above 45 dBA at night can disrupt sleep". However, this statement refers to interior nighttime noise thresholds established for stationary noise sources by the City, which does not apply to transportation noise. As discussed in **Topical Response No. 3 – Operational Traffic Noise**, the transportation-source noise levels associated with the Project were calculated using the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) coupled with the FICON guidelines, which are widely recognized and applied in environmental noise assessments, particularly for projects involving mobile sources. The FICON methodology is considered appropriate because it accounts for ambient conditions by using a sliding scale to evaluate noise impacts. As shown in **Table 5.5-7** in **Section 5.5, Noise**, of the Draft EIR, the Project would not result in an increase in traffic noise in excess of the FICON standards. As also shown therein, exterior noise as a result of vehicle traffic on Valencia Avenue and along residential land uses would range from 58.4 dBA CNEL to 64.7 dBA CNEL under the existing plus Project scenario. As discussed in **Response to Comment No. 6-14** above, with the application of the more conservative exterior-to-interior reduction of 20 dBA with closed windows, the interior noise as a result of transportation noise on Valencia Avenue under Existing Plus Project conditions would range from 38.4 dBA CNEL to 44.7 dBA CNEL, which would be below the City's nighttime interior noise standard of 45 dBA and well as the noise level that could disrupt sleep. Furthermore, as clarified in **Section 3.0, Revisions and Clarifications to the Draft EIR**, of this Final EIR, and discussed in **Topical Response No. 3 – Operational Traffic Noise**, the anticipated maximum number of line-haul trucks between 10:00 p.m. and 7:00 a.m. during normal operating conditions is 22 rather than 31 trucks during normal daily operations. The Draft EIR assumption of 31 trucks per night was included as a conservative analysis of nighttime noise.

RESPONSE TO COMMENT NO. 7-4

The commenter expresses concern regarding the number of sleep disturbances per night. The commenter believes that Amazon should not be allowed to operate at the expense of people's health and welfare. This comment reflects similar concerns as those listed above. As such, the commenter is referred to **Response to Comment No. 7-2** and **Response to Comment No. 7-3**. This comment is noted and will be forwarded to the decision-makers for consideration.

COMMENT LETTER NO. 8

From: Evelyn Aguilar <eaguilar@aqmd.gov>
Sent: Wednesday, November 20, 2024 4:35 PM
To: Hwang, Joanne <joanneh@ci.brea.ca.us>
Cc: Sam Wang <swang1@aqmd.gov>
Subject: Technical Data Request: Proposed DJT4 Parcel Delivery Facility Project

Dear Joanne Hwang,

South Coast AQMD staff received the Notice of Availability of a Draft Environmental Impact Report (NOA/DEIR) for the **Proposed DJT4 Parcel Delivery Facility Project** (South Coast AQMD Control Number: ORC241106-09). Staff is currently in the process of reviewing the NOA/DEIR. The public commenting period is from 11/6/2024 – 1/6/2024.

Upon review of the files provided as part of the public review period, I was able to access the Draft EIR and Appendices on the City's website.

Please provide an electronic copy of any live modeling and emission calculation files (complete data files, not summaries) that were used to quantify the air quality impacts from construction and/or operation of the Proposed Project as applicable, including the following:

1

- CalEEMod Input Files (.csv and .json files);
- Live EMFAC output files;
- Any emission calculation file(s) (live version of excel file(s); no PDF) used to calculate the Project's emission sources (i.e. truck operations);
- AERMOD Input and Output files, including AERMOD View file(s) (.isc);
- HARP Input and Output files and/or cancer risk calculation files (live version of excel file(s); no PDF) used to calculate cancer risk, and chronic and acute hazards from the Project;
- Any other files related to post-processing done outside of AERMOD to calculate pollutant-specific concentrations (if applicable).

You may send the above-mentioned files via a Dropbox link in which they may be accessed and downloaded by South Coast AQMD staff by **12/4/24**. Without all files and supporting documentation, South Coast AQMD staff will be unable to complete a review of the air quality analyses in a timely manner. Any delays in providing all supporting documentation will require additional time for review beyond the end of the comment period.

If you have any questions regarding this request, please feel free to contact me.

Thank you,

Evelyn Aguilar
Air Quality Specialist, CEQA-IGR
Planning, Rule Development & Implementation
South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765
Phone: 909-396-3148
E-mail: eaguilar@aqmd.gov
Hours of operation:
Tuesday - Friday 7:00 AM to 5:30 PM

South Coast AQMD

Cleaning the air that we breathe……™

Comment Letter No. 8

November 20, 2024
Evelyn Aguilar, Air Quality Specialist, CEQA-IGR
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
eaquilar@aqmd.gov
909-396-3148

RESPONSE TO COMMENT NO. 8-1

The commenter acknowledges the receipt of the NOA of the Draft EIR for the DJT4 Parcel Delivery Facility Project and confirms that Draft EIR and appendices are available on the City's website. The commenter requests that the City provide SCAQMD staff with any live modeling and emissions calculation files in order to complete their review of the air quality analyses in a timely manner within the public commenting period.

All available files requested by the commenter were provided to SCAQMD by the City via email on November 25, 2024. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

COMMENT LETTER NO. 9

From: Lorrie J. LeLe <ljlele@adamsbroadwell.com>
Sent: Friday, November 22, 2024 5:27 PM
To: Killebrew, Jason <jasonk@ci.brea.ca.us>; Brea Planning <planner@ci.brea.ca.us>; City ClerksGroup <CityClerksGroup@ci.brea.ca.us>; Hwang, Joanne <joanneh@ci.brea.ca.us>
Cc: Sheila M. Sannadan <ssannadan@adamsbroadwell.com>
Subject: Request for Immediate Access to Documents Referenced in the Draft Environmental Impact Report – DJT4 Parcel Delivery Facility Project (7624)

On behalf of Californians Allied for a Responsible Economy, we submit the attached request for immediate access to documents referenced in the Draft EIR regarding the DJT4 Parcel Delivery Facility Project.

1 Please respond to Sheila Sannadan – ssannadan@adamsbroadwell.com

Thank you,

Lorrie LeLe
Legal Assistant
Adams Broadwell Joseph & Cardozo
520 Capitol Mall, Suite 350
Sacramento, CA 95814
ljlele@adamsbroadwell.com | Phone: 916. 444.6201 Ext. 10 | Fax: 916.444.6209 |

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TEL: (916) 444-6201
FAX: (916) 444-6209

November 22, 2024

Via U.S. Mail and Email
Jason Killebrew
Community Development Director
City of Brea
1 Civic Center Circle
Brea, CA 92821
Emails: jasonk@cityofbrea.net; Planner@cityofbrea.net

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

Via Email Only
Joanne Hwang, City Planner
Email: joanneh@cityofbrea.net

Re: Request for Immediate Access to Documents Referenced in the Draft Environmental Impact Report – DJT4 Parcel Delivery Facility Project (SCH No. 2023070241)

Dear Mr. Killebrew, Ms. Harris-Neal, and Ms. Hwang:

2 We are writing on behalf of Californians Allied for a Responsible Economy ("CARE CA") to request ***immediate access*** to any and all documents referenced, incorporated by reference, and relied upon in the Draft Environmental Impact Report ("DEIR"), prepared for the DJT4 Parcel Delivery Facility Project (SCH No. 2023070241) ("Project"), proposed by Ware Malcomb representing Amazon.com Services LLC ("Applicant"). *This request excludes a copy of the DEIR. This request also excludes any documents that are currently available on the City of Brea website*.[1]

The Project proposes to demolish the existing three-story 637,503-square-foot (SF) closed Bank of America office building and surface parking lot to construct a 181,500 SF single-story parcel delivery facility. This would consist of 163,350 SF of warehouse space and 18,150 SF of ancillary office space, on an approximate 31.6-

[1] https://www.ci.brea.ca.us/166/Projects-in-Process November 22, 2024.

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acre site. The Project is located at 275 Valencia Avenue on Assessor Parcel Numbers 320-233-17, 320- 301-11, and 320-301-12 in the City of Brea, Orange County, California.

Our request for ***immediate access*** to all documents referenced in the DEIR is made pursuant to the California Environmental Quality Act ("CEQA"), which requires that all documents referenced, incorporated by reference, and relied upon in an environmental review document be made available to the public for the entire comment period.[2]

2 (continued)

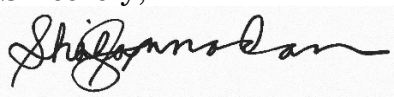
Please use the following contact information for all correspondence:

U.S. Mail
Sheila M. Sannadan
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080-7037

Email
ssannadan@adamsbroadwell.com

If you have any questions, please call me at (650) 589-1660 or email me at ssannadan@adamsbroadwell.com. Thank you for your assistance with this matter.

Sincerely,



Sheila M. Sannadan
Legal Assistant

SMS:ljl

[2] *See* Public Resources Code § 21092(b)(1) (stating that "all documents referenced in the draft environmental impact report" shall be made "available for review"); 14 Cal. Code Reg. § 15087(c)(5) (stating that all documents incorporated by reference in the EIR . . . shall be readily accessible to the public"); see also *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 442, as modified (Apr. 18, 2007) (EIR must transparently incorporate and describe the reference materials relied on in its analysis); *Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3rd 818, 831 ("[W]hatever is required to be considered in an EIR must be in that formal report. . ."), internal citations omitted.

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Comment Letter No. 9

November 22, 2024
Californians Allied for a Responsible Economy
c/o Sheila M. Sannadan, Legal Assistant
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 100
South San Francisco, CA 94080-7037
ssannadan@adamsbroadwell.com
650-589-1660

RESPONSE TO COMMENT NO. 9-1

This comment is an email from the law firm of Adams Broadwell Joseph & Cardozo, transmitting a request from Californians Allied for a Responsible Economy (CARE CA) for immediate access to documents referenced in the Draft EIR for the DJT4 Parcel Delivery Facility Project. All files requested by the commenter were provided to Adams Broadwell Joseph & Cardozo by the City via email on November 25 and December 13, 2024. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 9-2

This comment states that the request for immediate access to all documents referenced, incorporated by reference, and relied upon in the Draft EIR prepared for the DJT4 Parcel Delivery Facility Project is made on behalf of CARE CA. The commenter provides a brief summary of the Project and states that the request for immediate access is made pursuant to CEQA. The commenter also provides the contact information for all correspondence.

As noted above, all files requested by the commenter were provided to the commenter by the City via email on November 25 and December 13, 2024. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

COMMENT LETTER NO. 10

From: Evelyn Aguilar <eaguilar@aqmd.gov>
Sent: Friday, December 20, 2024 5:38:42 PM
To: Hwang, Joanne <joanneh@ci.brea.ca.us>
Cc: Sam Wang <swang1@aqmd.gov>
Subject: South Coast AQMD Staff's Comments on the DEIR for the Proposed DJT4 Parcel Delivery Facility Project (SCH No. 2023070241)

Dear Joanne Hwang,

1 Attached are South Coast AQMD staff's comments on the Draft Environmental Impact Report (DEIR) for the Proposed DJT4 Parcel Delivery Facility Project (South Coast AQMD Control Number: ORC241106-09). Please contact me if you have any questions regarding these comments.

Thank you,

Evelyn Aguilar
Air Quality Specialist, CEQA-IGR
Planning, Rule Development & Implementation
South Coast Air Quality Management District
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Phone: 909-396-3148
E-mail: eaguilar@aqmd.gov
Hours of operation:
Tuesday - Friday 7:00 AM to 5:30 PM

South Coast AQMD

Cleaning the air that we breathe……™

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
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SENT VIA E-MAIL:
joanneh@cityofbrea.net
Joanne Hwang, City Planner
Brea City Hall – 3rd Floor
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December 20, 2024

Draft Environmental Impact Report (DEIR) for the Proposed DJT4 Parcel Delivery Facility Project (Proposed Project) (SCH No. 2023070241)

South Coast Air Quality Management District (South Coast AQMD) staff appreciate the opportunity to review the above-mentioned document. The City of Brea is the California Environmental Quality Act (CEQA) Lead Agency for the Proposed Project. To provide context, South Coast AQMD staff (Staff) has provided a brief summary of the project information and prepared the following comments.

South Coast AQMD Staff's Summary of Project Information in the DEIR

2 The Proposed Project consists of demolishing an existing 637,503 square-foot (sq ft) office building and surface parking lot to construct and operate a 181,500 sq ft parcel delivery facility on an approximately 31.6-acre site.[1] The parcel delivery facility will consist of 163,350 sq ft of warehouse and storage space and 18,150 sq ft of ancillary office space. Once in operation, the Proposed Project would include 1,065 vehicle parking spaces (304 automobile spaces, 757 delivery van spaces, and four line-haul truck trailer spaces), 180 ancillary van spaces (90 loading spaces and 90 staging spaces), and 13 Utility Tractor Rig loading spaces. The Proposed Project is expected to generate a maximum of 2,098 vehicle trips per day (1,049 vehicles inbound plus 1,049 vehicles outbound), which includes 62 truck trips (31 trucks inbound plus 31 trucks outbound).[2] The project is located at 275 Valencia Avenue, City of Brea, California 92823.[3] The nearest sensitive receptors, consisting of residences that are part of a master-planned mixed-use community, are located approximately 116 feet east of the Proposed Project site.[4, 5] Construction is anticipated to begin in the second quarter of 2025 and is expected to last approximately 24 months.[6, 7]

South Coast AQMD Staff's Comments

[1] Draft Environmental Impact Report for the Proposed DJT4 Parcel Delivery Facility Project (DEIR). 1.0 Executive Summary, p. 1-1 & 1-2.
[2] DEIR. 5.1 Air Quality, p. 5.1-24 & 5.1-33.
[3] *Ibid*. 7.0 Other CEQA Considerations, p. 7-14.
[4] *Ibid*. 5.1 Air Quality, p. 5.1-19.
[5] *Ibid*. 5.5 Noise, p. 5.5-9.
[6] *Ibid*. 3.0 Project Description, p. 3-24.
[7] *Ibid*. Appendices, Appendix B: Air Quality and Greenhouse Gas Emissions Assessment – CalEEMod Output File for Air Quality Emissions and Greenhouse Gas Emissions, PDF p. 165 of 2,391.

Cumulative Impacts During Operation

South Coast AQMD staff is primarily concerned with the cumulative air quality impacts resulting from increased concentrations of air toxics in the region. Pursuant to CEQA Guidelines Section 15126.2(a), which requires an analysis of direct, indirect, and cumulative impacts, South Coast AQMD has initiated a public process to develop additional guidance for evaluating cumulative air quality impacts from increased concentrations of air toxics for CEQA projects. As of the date on this comment letter, six public working group meetings (WGMs) have been held to develop this proposed cumulative impact policy. For general information on WGMs #1 through #6 and to gain familiarity with this developing policy, please visit South Coast AQMD's webpage at https://www.aqmd.gov/home/rules-compliance/ceqa/ceqa-policy-development-(new).

Based on the DEIR, the Proposed Project involves the construction of a 181,500 sq ft parcel delivery facility, which includes 163,350 sq ft of warehouse space on an approximately 31.6-acre site.[8] The Environmental Setting section of the DEIR also notes that on July 1, 2024, the Lead Agency approved Project PR 2023-08, described as a "light industrial warehouse building at 3200 Nasa Street … on a site currently developed as a surface parking lot."[9] This approved project is located immediately west of the Proposed Project site. Upon review of the Notice of Exemption (NOE) filed for Project PR 2023-08, Staff notes that it consists of a 56,000 sq ft warehouse building, deemed categorically exempt from CEQA under a Class 32 Categorical Exemption (Section 15332).[10] For context, Figure 1 provides a screenshot from the DEIR which illustrates the location of approved Project PR 2023-08 in relation to the Proposed Project site. Although Project PR 2023-08 is categorically exempt from CEQA, the combined development of approved Project PR 2023-08 and the Proposed Project would result in approximately 219,350 sq ft of warehouse space in the immediate area. Per CEQA Guidelines Section 15065(a)(3), a project may have "possible environmental effects that are individually limited but cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects."

3

Additionally, Staff's review of aerial photographs identified existing warehouses and/or light industrial facilities located to the north and west of the Proposed Project site. Primary regional access to the Proposed Project site and nearby facilities is provided, in part, by Imperial Highway/State Route (SR) 90, which lies approximately 1,150 feet south of the Proposed Project site and serves as a designated truck route. Furthermore, the intersection of Valencia Avenue and SR 90, which will be used by trucks serving the Proposed Project, is located approximately 390 feet from sensitive receptors, which includes a residential neighborhood.

Given the aforementioned, Staff recommends that, at minimum, the Lead Agency perform a qualitative analysis in the DEIR for the Proposed Project in order to disclose the potential cumulative impacts from air toxics in consideration by listing all surrounding past, present, and probable future projects. The Lead Agency is also encouraged to perform a more detailed and

[8] DEIR. 1.0 Executive Summary, p. 1-1 & 1-2.
[9] *Ibid*. 4.0 Environmental Setting, p. 4-9.
[10] NOE for Plan Review No. 2023-08 & Tree Permit No. 2023-01: 3200 Nasa Street Warehouse. Accessed here: https://ceqanet.opr.ca.gov/2024070174

3
(continued)

robust quantitative analysis of cumulative air toxics; this analysis should evaluate the potential health risk implications for sensitive receptors in the surrounding area and disclose the findings in the Final EIR.

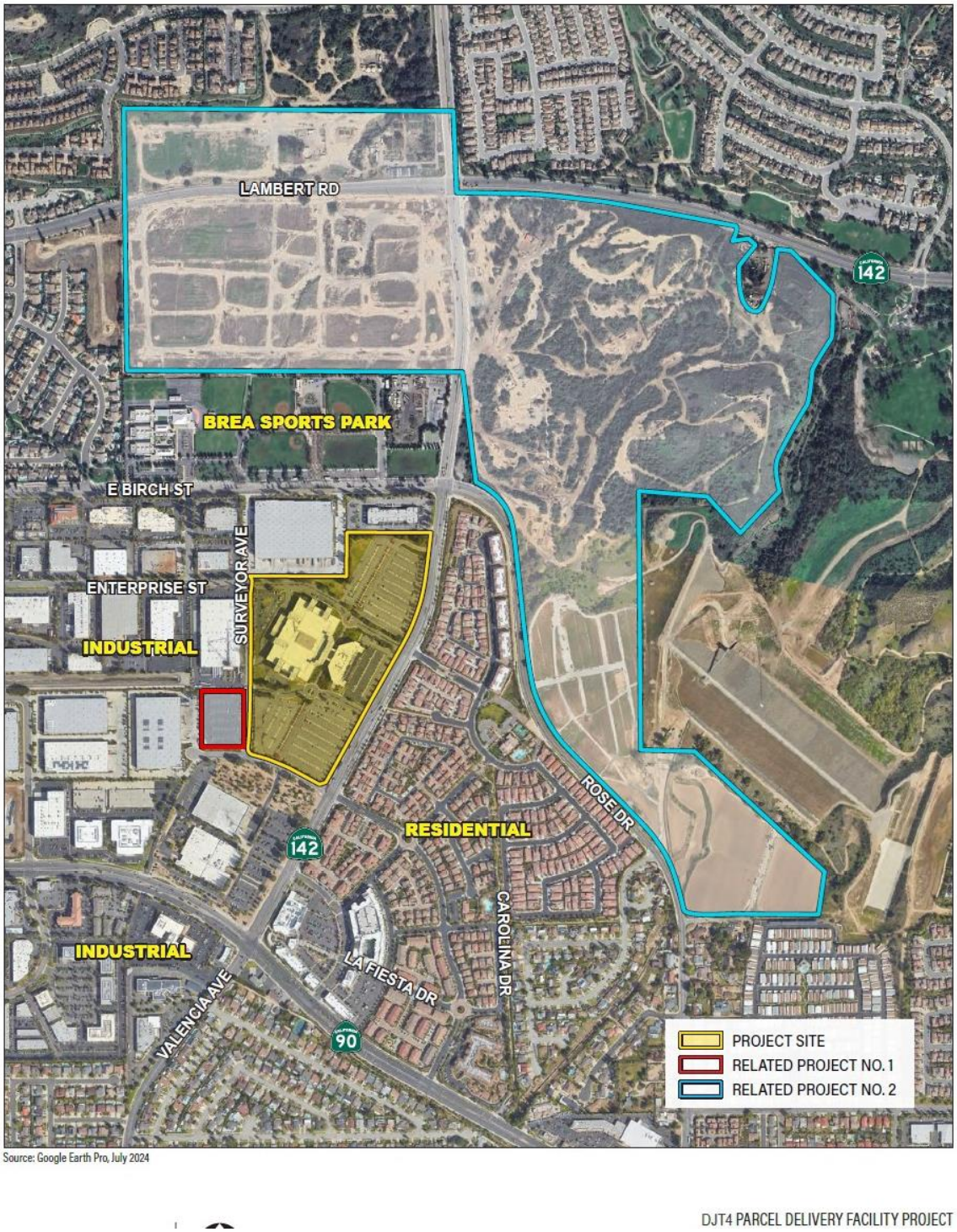

Figure 1: Screenshot from DEIR, 4.0 Environmental Setting, p. 4-11. Related Project No. 1 (Project PR 2023-08), a light industrial warehouse building of 56,000 sq ft adjacent to the Proposed Project, was approved by the City of Brea on July 1, 2024

Unrealistic Baseline Assumptions

According to the DEIR, the CEQA baseline for the Proposed Project is defined as the existing office building on the site, assumed to be occupied by Bank of America.[11] Bank of America vacated the building in December 2022, several months prior to the Lead Agency filing the Notice of Preparation (NOP) on July 13, 2023.[12] According to CEQA Guidelines Section 15125(a), "an EIR [Environmental Impact Report] must include a description of the physical environmental conditions in the vicinity of the project. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant… Generally, the lead agency should describe physical environmental conditions as they exist at the time the notice of preparation is published..." The DEIR argues that because the building could be reoccupied at any time without discretionary approval, it is reasonable to assume continued operation by Bank of America for the Proposed Project baseline.[13] However, this baseline assumption is inconsistent with CEQA Guidelines, as the building was unoccupied at the time of the NOP filing.

4

Relying on an incorrect and unrealistic baseline compromises the accuracy of the DEIR's air quality analysis, including the operational regional significance analysis, localized significance analysis, and greenhouse gas emissions assessments. For example, the incorrect baseline includes trips from the prior Bank of America office use, which is 4,818 daily vehicle trips.[14] The Proposed Project is expected to generate 2,098 daily vehicle trips. The DEIR therefor states that the Net Daily Trips is -2,720. For context, Figure 2 provides a screenshot from the DEIR of how the net daily trips was arrived at for the Proposed Project. This results in an underestimation of the Proposed Project's estimated air quality emissions.[15, 16, 17] To ensure the accuracy of the air quality analysis, Staff recommends the baseline condition be recalculated to reflect the building's unoccupied status at the time of the NOP filing.

[11] DEIR. 5.8 Transportation, p. 5.8-17.
[12] *Ibid*. 1.0 Executive Summary, p. 1-4.
[13] *Ibid*. 5.8 Transportation, p. 5.8-17.
[14] *Ibid*. 5.8 Transportation, Table 5.8-1 Daily Trips Generated by Proposed Use, p. 5.8-11.
[15] *Ibid*. 5.1 Air Quality, Table 5.1-7 Operations-Related Emissions (Regional Significance Analysis), p. 5.1-33.
[16] *Ibid*. 5.1 Air Quality, Table 5.1-9 Operations-Related Emissions (Localized Significance Analysis), p. 5.1-37.
[17] *Ibid*. 5.3 Greenhouse Gas Emissions, Table 5.3-3 Operations-Related GHG Emissions, p. 5.3-24.

4 (continued)

Table 5.8-1
Daily Trips Generated by Proposed Use

Vehicle Type	Number of Vehicles[1]	Daily Trips
Existing Baseline Condition (Bank of America)		
Employee Personal Vehicles	1,447	4,818
DJT4 Parcel Delivery Facility		
Employee Personal Vehicles[2]	576	1,152
Delivery Vans[3]	345	690
Flex Private Carrier Vehicles[4]	97	194
Line-Haul Trucks	31	62
Total	*1,049*	*2,098*
	Net Daily Trips	**-2,720**

Notes:
1. Based on information provided by the Project Applicant.
2. Associates, managers, dispatchers, and delivery van drivers would drive their personal vehicles to and from the Project Site.
3. Delivery van drivers would drive company vans to delivery locations then back to the Project Site at the end of their work shift.
4. Flex drivers would drive personal vehicles to the Project Site to pick up packages for delivery but would not return to the Project Site.

Source: NV5 Engineers & Consultants. September 3, 2024. Vehicle Miles Traveled (VMT) Analysis for Brea Delivery Station. Table 1.

Figure 2: Screenshot from DEIR, 5.8 Transportation, Table 5.8-1, p. 5.8-11. Incorrect baseline assumes office building is currently in operation and therefore currently generates 4,818 daily vehicle trips

Warehouse Cold Storage Land Use and the Associated Emissions from Transport Refrigeration Units (TRU)

5

The project description in the DEIR does not specify whether the Proposed Project includes allocating warehouse land for cold storage. Cold storage warehouses typically utilize more trucks and trailers equipped with TRUs compared to those without cold storage. Therefore, it is recommended that the Lead Agency revise the project description in the Final EIR to clarify if cold storage would be a part of the Proposed Project, and additionally, the Final EIR should provide an estimate for the number of TRU trucks and trailers that would be involved in the operation of the warehouses with cold storage. If TRUs are planned to be used, the Lead Agency should also update the emissions calculations in the Final EIR to include the emissions from the TRUs in addition to the those from truck operation.

South Coast AQMD Air Permits and Role as a Responsible Agency

6

If implementation of the Proposed Project would require the use of new stationary and portable sources, including but not limited to emergency generators, fire water pumps, boilers, spray booths, etc., air permits from South Coast AQMD will be required and the role of South Coast AQMD would change from a Commenting Agency to a Responsible Agency under CEQA. In addition, if South Coast AQMD is identified as a Responsible Agency, per CEQA Guidelines Section 15086, the Lead Agency is required to consult with South Coast AQMD. Furthermore, CEQA Guidelines Section 15096 sets forth specific procedures for a Responsible Agency,

including making a decision on the adequacy of the CEQA document for use as part of evaluating the applications for air permits. For these reasons, the Final EIR should include a discussion about any new stationary and portable equipment requiring South Coast AQMD air permits and identify South Coast AQMD as a Responsible Agency for the Proposed Project.

6 (continued)

The Final EIR should also include calculations and analyses for construction and operation emissions for the new stationary and portable sources, as this information will also be relied upon as the basis for the permit conditions and emission limits for the air permit(s). Please contact South Coast AQMD's Engineering and Permitting staff at (909) 396-3385 for questions regarding what types of equipment would require air permits. For more general information on permits, please visit South Coast AQMD's webpage at: http://www.aqmd.gov/home/permits.

Conclusion

7

As set forth in California Public Resources Code Section 21092.5(a) and CEQA Guidelines Section 15088(a-b), the Lead Agency shall evaluate comments from public agencies on the environmental issues and prepare a written response at least 10 days prior to certifying the Final EIR. As such, please provide South Coast AQMD written responses to all comments contained herein at least 10 days prior to the certification of the Final EIR. In addition, as provided by CEQA Guidelines Section 15088(c), if the Lead Agency's position is at variance with recommendations provided in this comment letter, detailed reasons supported by substantial evidence in the record to explain why specific comments and suggestions are not accepted must be provided.

Thank you for the opportunity to provide comments. South Coast AQMD staff is available to work with the Lead Agency to address any air quality questions that may arise from this comment letter. Please contact Evelyn Aguilar, Air Quality Specialist, at eaguilar@aqmd.gov should you have any questions.

Sincerely,

Sam Wang

Sam Wang
Program Supervisor, CEQA IGR
Planning, Rule Development & Implementation

SW:EA
ORC241106-09
Control Number

Comment Letter No. 10

December 20, 2024
Sam Wang, Program Supervisor, CEQA IGR
Planning, Rule Development & Implementation
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
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RESPONSE TO COMMENT NO. 10-1

This comment is an email transmitting SCAQMD staff comments on the Draft EIR for the DJT4 Parcel Delivery Facility Project. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 10-2

This introductory comment states that the City of Brea is the CEQA lead agency for the DJT4 Parcel Delivery Facility Project and provides a summary of the project information contained in the Draft EIR. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 10-3

This comment states that SCAQMD staff is primarily concerned with the cumulative air quality impacts resulting from the increased concentration of air toxics in the region. A Health Risk Assessment for Project operations was prepared consistent with all SCAQMD guidelines currently in place. In 2022, the SCAQMD initiated a public process to update existing SCAQMD guidance related to evaluating cumulative air quality impacts from increased concentrations of air toxics. Since 2022, SCAQMD has held six Working Group (WG) meetings to develop additional guidance for analyzing such potential impacts during a project's operation. The first two WG meetings focused on Information Gathering and Analysis as well as the Initial Objective and Scope of the WGs. The third WG meeting was specific to the Initial Objective and Scope of the WGs and pushed into the Conceptual/Potential Cumulative Health Risk Assessment protocols. WG meetings #4 and #5 focused only the Conceptual/Potential Cumulative Health Risk Assessment protocols. WG meeting #6 (WG 6), held in November of 2024, refined the proposed the Conceptual/Potential Cumulative Health Risk Assessment protocols based on public comments. The result of WG 6 was a draft process/analysis flow diagram which is intended to be used to inform the drafting of a planned Draft Guidance Document for conducting Cumulative Health Risk Assessments in the South Coast Air Basin. Step 1 of the WG 6 flow diagram is to determine the background cancer risk affecting the Project area via the SCAQMD Multiple Air Toxics Exposure Study (MATES). Per the MATES V Data Visualization Tool, the Project area has a background excess cancer risk of 415 in one million, which is higher than 37 percent of the population living

in the South Coast Air Basin.[13] Per WG 6, areas experiencing a background excess cancer risk in the 37th percentile would result in a drop of the Cancer Risk Threshold from 10 in one million to 7 in one million. Step 2 of the WG 6 flow diagram is to determine if there are 951 daily heavy-duty truck trips or more that would traverse the truck route to the freeway with Existing + Project + Future volumes. If there are more than 951 heavy duty truck trips, then the Cancer Risk Threshold would again drop from 7 in one million to 5 in one million. Step 3 of WG 6 is to determine if the Project is located in a SB 535 disadvantaged community or an AB 617 community. If the project is within such an area, then the threshold would be reduced further to 3 in one million. Although SCAQMD has not yet adopted final thresholds, the analysis of the Project provided below is compliant with the WG 6 draft version of the thresholds available at the time of Draft EIR publication.

As shown in **Table 2-10** on page 42 of the Project's Air Quality and Greenhouse Gas Emissions Assessment, which is provided as **Appendix B** to the Draft EIR, the Project Operational Cancer Risk is 1.02 in one million. The Project area currently experiences a background excess cancer risk in the 37th percentile. Thus, in the case that there would be 951 or more truck trips traveling the route from the Project Site to the freeway under Existing + Project + Future conditions AND in the case that the site is located in a disadvantaged community, the Project would still be under the adjusted health risk threshold of 3 in one million. It is noted though that actual number of truck trips under Existing + Project + Future conditions is not known. However, as noted, even if truck trips were assumed to be equal to or greater than 951, the Project would still be well within the WG 6 Cancer Risk Threshold. Additionally, it is further noted that the Brea is NOT identified as an SB 535 or AB 617 Disadvantaged Community by the California Environmental Protection Agency or California Air Resources Board, respectively.[14,15] In conclusion, consideration of the SCAQMD's Conceptual/Potential Cumulative Health Risk Assessment protocols further validates the Draft EIR's determination that the Project's direct, indirect, and cumulative impacts related to air toxics are less than significant.

RESPONSE TO COMMENT NO. 10-4

This comment claims that the baseline assumption utilized in the Draft EIR, which assumed the occupation and operation of the existing building by Bank of America, is inconsistent with CEQA Guidelines because the building was unoccupied at the time of the filing of the Project's Notice of Preparation (NOP). The comment states that relying on an incorrect and unrealistic baseline compromises the adequacy of the Draft EIR's air quality analysis and provides the Project's calculation of daily trips as an example that would lead to an underestimation of the Project's

[13] South Coast Air Quality Management District. n.d. MATES V Data Visualization Tool. Accessed February 7, 2025. https://experience.arcgis.com/experience/79d3b6304912414bb21ebdde80100b23/page/Main-Page/?views=Cancer-Risk%2CClick-the-map-to-see-data#data_s=id%3AdataSource_105-a5ba9580e3aa43508a793fac819a5a4d%3A469.

[14] California Environmental Protection Agency. 2002. SB 535 Disadvantaged Communities (2022 Update) web application. Accessed February 2, 2025. https://experience.arcgis.com/experience/1c21c53da8de48f1b946f3402fbae55c/page/SB-535-Disadvantaged-Communities/.

[15] South Coast Air Quality Management District. n.d. AB 617 Communities webpage. Accessed February 7, 2025. https://www.aqmd.gov/nav/about/initiatives/environmental-justice/ab617-134/ab-617-community-air-monitoring/communities.

estimated air emissions. Thus, SCAQMD recommends that the baseline condition be recalculated to reflect the building's unoccupied status at the time of the NOP filing to ensure the accuracy of the air quality analysis.

As discussed in **Topical Response No. 1 – Existing Baseline**, CEQA Guidelines Section 15125 authorizes the City, as the lead agency for this Project, to define the existing baseline by referencing historic conditions if it is supported with substantial evidence. The Project application was filed with the City on May 31, 2022. At this time, the Project Site was occupied by Bank of America (call center and administrative offices), which operated from approximately June 1997 through December 2022. The City's determination that the existing baseline condition for the Project includes the occupancy of the existing building by Bank of America is supported by substantial evidence consisting of Bank of America's recent historic use/operation of the existing building for 25 years, the ability for the building to be reoccupied for the same use, and the inclusion of the Project Site in the OCTAM. As such, the Project description and baseline assumed in the Draft EIR is adequate and the Draft EIR's calculation of daily trips is correct. The Draft EIR does not underestimate the Project's air quality emissions and the air quality analysis provided in the Draft EIR is accurate.

RESPONSE TO COMMENT NO. 10-5

This comment states that the project description in the Draft EIR does not specify whether the Project includes allocating warehouse land for cold storage and recommends that the City revise the project description to clarify if cold storage would be included. The comment also suggests that the Final EIR provide an estimate for the number of Transport Refrigeration Units (TRU) trucks and trailers that would be involved in the operation of the warehouses with cold storage and that the emissions calculations be updated to include emissions from the TRUs.

The Project does not include cold storage and would not involve trucks or trailers equipped with TRUs. As such, the project description does not contain any mention of cold storage of TRUs. No revisions to the project description or updates to emissions calculations related to cold storage or TRUs are necessary in the Final EIR. The project description provided in the Draft EIR is accurate and adequate. Thus, the emissions calculations in the Draft EIR are accurate, as is the Draft EIR's related impact analysis.

RESPONSE TO COMMENT NO. 10-6

This comment states that air permits from SCAQMD will be required if the Project would require the use of new stationary and portable sources (including but not limited to emergency generators, fire water pumps, boilers, spray booths, etc.), which would change the role of SCAQMD from a Commenting Agency to a Responsible Agency under CEQA. The comment also states that the Final EIR should include calculations and analyses for construction and operational emissions from any new stationary and portable sources and that SCAQMD should be identified as a Responsible Agency.

The Project does not propose the use of back-up generators, fire water pumps, boilers, spray booths, or other new stationary or portable air toxic sources. Therefore, calculations and analyses for emissions from new stationary and portable sources need not be included in the Final EIR and SCAQMD is not a Responsible Agency under CEQA.

RESPONSE TO COMMENT NO. 10-7

This concluding comment requests that the City provide SCAQMD written responses to all comments contained in SCAQMD's comment letter at least 10 days prior to the certification of the Final EIR. The City will provide written responses to all comments contained in SCAQMD's letter in accordance with California Public Resources Code (PRC) Section 21092.5(a) and CEQA Guidelines Section 15088. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no additional response is warranted.

COMMENT LETTER NO. 11

California Department of Transportation

DISTRICT 12
1750 East 4th Street, Suite 100 | SANTA ANA, CA 92705
(657) 328-6000 | FAX (657) 328-6522 TTY 711
https://dot.ca.gov/caltrans-near-me/district-12

December 23, 2024

Ms. Joanne Hwang
City Planner
City of Brea
1 Civic Center Circle.
3rd Floor
Brea, CA. 92805

File: LDR/CEQA
SCH: 2023070241
12-ORA-2023-02678
SR 142 PM: R1.169
SR 90 PM: R0.762

Dear Ms. Hwang,

1 Thank you for including the California Department of Transportation (Caltrans) in the review of the Draft Environmental Impact Report (DEIR) for the DJT4 Parcel Delivery Facility Project. The Project would demolish the existing 637,503-square-foot office building and surface parking lot to construct a 181,500-square-foot parcel delivery facility, consisting of 163,350 square feet of warehouse space and 18,150 square feet of ancillary office space, on a 31.52-acre site. The proposed facility would be a single-story building with a maximum height of 44 feet and FAR of 0.14. The Project would provide 1,064 vehicle parking spaces (consisting of 305 automobile spaces, 755 delivery van spaces, and four trailer truck spaces), 180 van loading spaces (90 loading spaces and 90 staging spaces), and 14 Utility Tractor Rig loading spaces to serve facility operations. The proposed facility would be generally located in the center of the Project Site and flanked by loading areas and surrounded by vehicle parking. The Project building would be located entirely within the M-1 zone, and surface parking and drive aisles would be located within the M-1 and MU-II zoned portion of the Project Site. The Project would operate 24 hours per day, 7 days per week to support delivery of packages to customer locations. The Applicant anticipates approximately 25 line haul trucks delivering packages to the Project Site each day, primarily between the hours of 10:00 p.m. to 8:00 a.m. The packages are removed from the line haul trucks, sorted by delivery routes, placed onto movable racks, and staged for dispatch. Delivery service Partner (DSP) and Amazon Flex drivers would work shifts between the hours of 9:20 a.m. and 9:10 p.m. to deliver customer packages. Amazon associates and managers would be assigned shifts to support and supervise delivery operations. Employee shifts and departure windows for delivery drivers are designed to alleviate impacts during rush hour periods. The Applicant anticipates that on a daily basis, there would be a total of 224 associates, managers, and dispatchers who work within the proposed facility; 312 van drivers; and 80 Flex drivers.1 In order to fulfill the operational need, the Applicant anticipates that a maximum of 800 workers would be hired at the proposed facility.

1 (continued) The Project is located at 275 Valencia Avenue on Assessor Parcel Numbers 320-233-17, 320301-11, and 320-301-12 (Project Site) in the City of Brea. Primary regional access to the Project Site is provided via Imperial Highway/State Route (SR) 90 approximately 0.2 miles to the south of the Project Site and Carbon Canyon Road/SR 142 approximately 0.4 miles to the north of the Project Site. Local access to the Project Site is provided via Valencia Avenue, Surveyor Avenue, E. Birch Street, and Enterprise Street.

State Routes 90 and 142 are both owned and operated by Caltrans. Therefore, Caltrans is a responsible agency on this project, and has the following comments:

2 1. Consider providing discussion of existing transit route services for all such as local, intracounty, and/or interregional bus services within the nearby proposed project location including the regional connectivity into the rail services provided by Metrolink and Amtrak Pacific Surfliner.

3 2. Encourage the use of transit among future visitors, and workers of the development. Increasing multimodal transportation will lead to a reduction to congestion, Vehicle Miles Traveled, and improve air quality.

4 3. Provide adequate wayfinding signage and related amenities for transit stops where needed within the project vicinity.

5 4. The proposed project is located near local and regional bikeways. With these features in mind, consider providing secure bicycle parking facilities. For bicycle parking best practices, refer to APBP's Essentials of Bike Parking guide. (https://www.apbp.org/assets/docs/EssentialsofBikeParking_FINA.pdf)

6 5. 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 providing secure bicycle parking, pedestrian-oriented LED lighting, wayfinding signage, and comfortable connections to nearby active transportation and/or transit facilities. Complete Streets improvements also promote regional connectivity, improve air quality, reduce congestion, promote improved first-/last-mile connections, and increase safety for all modes of transportation. Continue to incorporate Complete Streets in project development.

7 6. Consider incorporating electric charging infrastructure that provides trucks or transport refrigeration units access to power without running their engines, thus reducing GHG and heat emissions.

8 7. Operations involving truck staging will need adequate truck parking onsite for pick-ups/drop offs. Internal site circulation may impact adjacent road operations.

9 8. Please provide well-lit loading docks and parking spots to improve safety.

10 9. Delivery areas need to be clearly marked so delivery drivers are easily seen by either on-street traffic or delivery yard employees, other truck drivers, or warehouse operations (such as forklifts).

11 10. Existing weight restrictions on the State Highway System (SHS) off or on ramps of freight routes can impact truck routing efficiency. Identification of alternate routes to and from the facility or site may be needed.

12 11. Identify any potential pedestrian or bicycling conflict points to, from, or within the project site.

13 12. Site entrance and exit points must accommodate the design vehicle movements.

14 13. The project site should provide enough truck height clearances for trucks to maneuver without any issues while loading and unloading cargo.

15 14. Consider including zero or near zero emissions infrastructure or electric shore power infrastructure for truck drivers and cargo handling equipment can reduce GHG and heat emissions.

16 15. Please coordinate with the local/regional Travel Demand Manager to ensure workers can travel to warehouse/distribution center without needing personal vehicles can reduce air pollution and roadway congestion.

17 16. Consider Installing bicycle parking for workers to encourage active transportation, especially in areas supported by transit.

18 17. Please provide electric charging stations for personal vehicle use to encourage adoption of electric or hybrid vehicles.

19 18. Consider installing on-site, overnight parking for truckers with safe, well-lit lots so truckers can rest. Also consider including restrooms, lighting, trash facilities, drinking water, showers, and food or vending machines.

20 19. Please provide Incident Response Plans showing critical entrances available for emergency personnel. Plans should also include alternative local roads and highways, so roadways do not become congested during an emergency.

21 20. Please consider leveraging strategic investments to maintain and modernize a multimodal freight transportation system with innovative approaches, including advanced technology to optimize integrated network efficiency, improve travel time reliability, and achieve sustainable congestion reduction.

22 21. Please conduct a new traffic study based on the existing traffic volume data from 2024/2025 and use the proposed trip generation numbers. Traffic patterns are different now than when the Bank of America building was occupied before 2020.

22. Traffic analysis does not include the requested LOS and queueing analysis based on the comments from the submitted LDR GTS #12-ORA-2023-02330. See below for the comments:

    a. Based on routine surveillance, EB Route 90 to NB142, the left turn pocket has been known to reach its capacity. With the increase in vehicular traffic from the proposed project, there is a concern that vehicular queues will extend past the existing storage left turn capacity and block the through-lane on Route 90. Therefore, an operational and safety analysis for the subject intersection is requested.
    b. The Traffic Impact Study (TIS) should identify the proposed project's near-term and long-term potential safety and operational impacts on or adjacent to any existing or proposed state facilities, for example:
       - Route 142 and Birch St / N Rose Dr.
       - Route 142 and Lambert Rd
       - Route 142 and Nasa St/La Floresta Dr., and
       - Route 142 and La Entrada Dr.

23 23. Please complete a LOS and queuing analysis per the City of Brea General plan, at the following intersections. Check the storage length of all turn pockets and ensure adequacy:
    a. SR-90 and SR-142
    b. SR-142 and Birch St / N Rose Dr.
    c. SR-142 and Lambert Rd
    d. SR-142 and Nasa St/La Floresta Dr., and
    e. SR-142 and La Entrada Dr.
       i. Verify which of these locations need lane reassignment, updated traffic signal timing/phasing, or turn lane extensions
       ii. Look into active transportation & transit circuity at these locations and in between the intersections for any mitigation factors

21. Please use OC CMP report as well as local agency guidance to help with the analysis of these intersections, and OCTAM projected volumes.

24 22. Appendix F-VMT, Attachment A-Tenant Specific Trip Schedule; the addition of trucks at the noted time in the table could impact storage length with existing truck movements. Please study existing truck patterns and determine if these new line trucks will impact the storage length for the LT lane.

25 23. Any work performed within Caltrans right-of-way (R/W) will require discretionary review and approval by Caltrans and an encroachment permit will be required for any work within the Caltrans R/W prior to construction. Prior to submitting to Caltrans Permit's branch, applicant should fill out Applicant's Checklist to Determine Applicable Review Process (QMAP List) Form TR-0416 to determine if project oversight/coordination with Caltrans Project Manager is needed. Applicant must submit a signed Standard Encroachment Permit application form TR-0100 along with a deposit payable to Caltrans. Deposit amount will be dependent on when the application is submitted. Public corporations are legally exempt from encroachment permit fees. However, contractors working for public corporations are not exempt from fees. Please note that all utility work should be disclosed prior to permit submittal, and utility companies are to apply for separate permits for their corresponding work.

26 Caltrans' mission is to provide a safe and reliable transportation network that serves all people and respects the environment. Please continue to coordinate with Caltrans for any future developments that could potentially impact State transportation facilities. If you have any questions, please do not hesitate to contact Julie Lugaro at Julie.lugaro@dot.ca.gov.

Sincerely,

Julie Lugaro
Julie Lugaro (Dec 23, 2024 16:13 PST)

for
Scott Shelley
Branch Chief,
Local Development Review/Climate Change/Transit Grants
Caltrans, District 12

Comment Letter No. 11

December 23, 2024
California Department of Transportation District 12
Julie Lugaro, Associate Transportation Planner for Scott Shelley, Branch Chief
1750 East 4th Street, Suite 100
Santa Ana, CA 92705
julie.lugaro@dot.ca.gov
657-328-6000

RESPONSE TO COMMENT NO. 11-1

This introductory comment acknowledges receipt of the Draft EIR for review by Caltrans and summarizes the Project's proposed components and the Project Site's primary and regional access routes. The comment also states that as State Routes 90 and 142 are both owned and operated by Caltrans, Caltrans is a responsible agency on the Project. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 11-2

The commenter requests that the EIR consider providing discussion of existing transit route services, such as bus services (local, intra-county, and/or interregional) near the Project Site. **Section 5.8, Transportation**, of the Draft EIR, and **Section C.4** of the Project's TIA, which is referenced in the Draft EIR and included as **Appendix A** to this Final EIR, provides a discussion of transit service within the Project vicinity. As stated therein, the City is served by Orange County Transportation Authority (OCTA) bus stations and other local transit. No bus or transit facilities exist within a half-mile of the Project Site. Bus service was provided in this area in the past, and a bus turnout exists immediately adjacent to the Project Site at the intersection of Valencia Avenue and La Entrada Drive. However, there is not currently OCTA bus service that stops at the existing bus stop. The nearest active bus stop is over one mile from the Project Site located on E Birch Street and S. Kraemer Boulevard. The stop is serviced by OCTA Route 129.

The commenter also requests that the EIR consider providing discussion of existing transit route services with regional connectivity to the rail services provided by Metrolink and Amtrak Pacific Surfliner. Passengers can travel to and from the Project Site and the nearest Metrolink and Amtrak stations in the City of Fullerton via use of OCTA Route 129 and transfers via OCTA Routes 26, 30, 37, 38, 57, 43, 123, and 143.[16] The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

[16] Orange County Transportation Authority (OCTA), Trip Planner, https://www.octa.net/getting-around/trip-planner/trip-planner/#.

RESPONSE TO COMMENT NO. 11-3

The commenter requests that the Project encourage use of transit among future visitors and workers because increasing multimodal transportation will lead to a reduction to congestion, VMT, and improve air quality. As described above and in **Section 5.8, Transportation**, of the Draft EIR, bus service was provided in this area in the past, and a bus turnout exists immediately adjacent to the Project Site at the intersection of Valencia Avenue and La Entrada Drive. While there is no existing OCTA bus service that stops at the existing bus stop, the City of Brea has been in discussions with OCTA to return service along Valencia Avenue. As described in **Section 5.8, Transportation**, of the Draft EIR, and **Section C.4** of the Project's TIA, which is referenced in the Draft EIR and included as **Appendix A** to the Final EIR, the Project would retain and lengthen the bus turnout in anticipation of return of service to the area. As also described in **Section 5.8, Transportation**, of the Draft EIR, pursuant to **Project Design Feature PDF-TR-1**, the Project would incorporate a Transportation Demand Management plan, which would support the reduction of vehicle trips and VMT to and from the Project Site. This project design feature includes: Guaranteed Ride Home programs – ride-share and taxi rides for employees who carpool but need to leave work unexpectedly; carpool program promotions – typically Waze Carpool unless there is a local alternative; carpool parking – designated preferred parking spaces for carpool vehicles; bike racks/employee bike lockers; showers; and a designated employee transportation coordinator. In addition, the Project would provide flexible use of public rights-of-way by providing pedestrian and bicycle connections between Surveyor Avenue and Valencia Avenue. **Pursuant to Project Design Feature PDF-TR-2**, the Project would construct a separated bikeway and pedestrian walkway to extend The Tracks at Brea along the Nasa Street Project frontage to the intersection of Valencia Avenue. Therefore, the Project would encourage the use of transit and multimodal transportation.

RESPONSE TO COMMENT NO. 11-4

The commenter requests that the Project provide adequate wayfinding signage and related amenities for transit stops where needed within the Project vicinity. As discussed in **Response to Comment No. 11-2**, no bus or transit facilities currently exist within a half-mile of the Project Site. The nearest active bus stop is over one mile from the Project Site located on E Birch Street and S. Kraemer Boulevard. As transit service is not available within a reasonable distance of the Project Site under existing conditions, providing wayfinding signage onsite would not be necessary. However, as discussed in **Response to Comment No. 11-3**, a bus turnout exists immediately adjacent to the Project Site at the intersection of Valencia Avenue and La Entrada Drive, and the City of Brea has been in discussions with OCTA to return service along Valencia Avenue. The Project would retain and lengthen the bus turnout in anticipation of return of service to the area and wayfinding signage would be provided for the relevant transit line pursuant to applicable City and OCTA requirements at that time.

RESPONSE TO COMMENT NO. 11-5

The commenter states that as the Project is located near local and regional bikeways, the Project should consider providing secure bicycle parking facilities. The comment includes a reference to bicycle parking best practices of the Association of Pedestrian and Bicycle Professionals' (APBP) Essentials of Bike Parking guide. As described in **Chapter 3.0, Project Description**, of the Draft EIR, the Project would provide short-term and long-term bicycle parking spaces near the building frontage along Valencia Avenue. As described in **Section 5.8, Transportation**, of the Draft EIR, and pursuant to **Project Design Feature PDF-TR-1**, the Project would also provide bicycle racks, employee bicycle lockers, and showers to employees as part of the proposed Transportation Demand Management plan. The Project would provide secure bicycle lockers onsite, which is consistent with the APBP's Essentials of Bike Parking guidance for long-term bicycle parking.

RESPONSE TO COMMENT NO. 11-6

The commenter describes Caltrans' support of Complete Streets' designs and request that the Project continue to incorporate Complete Streets in the Project. The Project would incorporate such features, including pedestrian and bicycle facilities that are safe and comfortable for users. Specifically, the Project would provide bicycle parking spaces near the building frontage along Valencia Avenue and include improvements to The Tracks at Brea, a localized portion of the regional Orange County Loop trail network adjacent to the Project Site. Currently, the trail ends near the northwest corner of the Project Site and resumes further down Imperial Highway away from the Project Site. Pursuant to **Project Design Feature PDF-TR-2**, the Project would improve the bike and walkway path by constructing a separated bikeway and pedestrian walkway to extend The Tracks at Brea along the Nasa Street Project frontage to the intersection of Valencia Avenue to connect the existing gap in The Tracks at Brea trail. As described in **Chapter 3.0, Project Description**, of the Draft EIR, the Project would also install freestanding pole lighting to illuminate The Tracks at Brea connection adjacent to the Project Site. Additionally, the Project would provide lighting within the site in compliance with the BCC and other applicable regulations. Security lighting would be provided at all times for the safety of employees and van drivers, and monument identification signs would be provided at all employee and truck entrances and would provide directional wayfinding for anyone onsite. Furthermore, as described in **Section 5.8, Transportation**, of the Draft EIR, and in **Response to Comment No. 11-3**, the Project would retain and lengthen the existing bus turnout at the intersection of Valencia Avenue and La Entrada Drive in anticipation of return of service to the area. As such, the Project would integrate design features of Complete Streets, including multimodal connectivity, shared mobility, accessibility and safety. Therefore, the Project would promote regional connectivity, air quality improvements, congestion reduction, and first-/last-mile connections.

RESPONSE TO COMMENT NO. 11-7

The commenter requests that the Project incorporate electric charging infrastructure that provides trucks or transport refrigeration units access to power without running their engines. While the Project would not utilize transport refrigeration units, the Project would install conduits to all line-haul loading bays to ensure the facility can easily accommodate future electric line-haul trucks. As this issue does not address the adequacy of the Draft EIR, the comment is noted and will be forwarded to the decision-makers for consideration.

RESPONSE TO COMMENT NO. 11-8

The commenter requests that the Project incorporate adequate truck parking onsite for pick-ups/drop-offs as internal site circulation may impact adjacent road operations. As shown in **Figure 3-7** and described in **Chapter 3.0, Project Description**, of the Draft EIR, the Project would provide 13 Utility Tractor Rig (line-haul) loading/parking spaces and four (4) trailer spaces to the west of the proposed building. The Project would also provide designated van fleet parking to the north and south of the proposed building, and a total of 345 delivery vans would be parked on-site overnight. As such, adequate truck and van parking is provided onsite for the planned operations.

RESPONSE TO COMMENT NO. 11-9

The commenter requests that the Project provide well-lit loading docks and parking spots to improve safety. As described in **Chapter 3.0, Project Description**, of the Draft EIR, the Project would provide on-site lighting, including at loading bays and in parking areas, in compliance with the BCC and other applicable regulations. Security lighting would be provided at all times for the safety of employees and van drivers, and monument identification signs would be provided at all employee and truck entrances.

RESPONSE TO COMMENT NO. 11-10

The commenter requests that delivery areas be clearly marked so delivery drivers are easily seen by either on-street traffic or delivery yard employees, other truck drivers, or warehouse operations. The Project design would provide clearly marked delivery areas. Conceptual signage details are provided as part of the Applicant's entitlement package and would be reviewed as part of a separate comprehensive master sign program requirement for the Project.

RESPONSE TO COMMENT NO. 11-11

The commenter states that existing weight restrictions on the State Highway System (SHS) off- or on-ramps of freight routes can impact truck routing efficiency, and identification of alternate routes to and from the proposed facility or site may be needed. Line-haul trucks are expected to have a gross vehicle weight rating of approximately 33,000 pounds and would only use roads designated by the City as truck routes.

RESPONSE TO COMMENT NO. 11-12

The commenter requests that any potential pedestrian or bicycling conflict points to, from, or within the Project Site should be identified. However, the Project has been designed to reduce pedestrian and bicycling conflicts, and all pedestrian and bicycle paths are identified on the site plan as well as the Project's TIA, which is referenced in the Draft EIR and included as **Appendix A** to this Final EIR. As described in **Section 5.8, Transportation**, of the Draft EIR, under existing conditions, sidewalks are limited along the Project frontage and surrounding area, and a trail and pedestrian connection between Surveyor Avenue and Valencia Avenue is needed. The Project would improve accessibility and safety by constructing a separated bikeway and pedestrian walkway to extend The Tracks at Brea along the Nasa Street Project frontage to the intersection of Valencia Avenue to connect the existing gap in The Tracks at Brea trail. In addition, as described in **Chapter 3.0, Project Description**, of the Draft EIR, the Project would reduce

potential conflicts by providing freestanding pole lighting to illuminate The Tracks at Brea connection adjacent to the Project Site. The Project would also improve pedestrian accessibility by providing a pedestrian sidewalk along the street frontage of Valencia Avenue and Nasa Street linking to La Floresta. Furthermore, potential conflicts would be reduced with the provision of monument identification signs for directional wayfinding, and all proposed signage would be compliant with the BCC and submitted for City review and approval during the plan check process.

RESPONSE TO COMMENT NO. 11-13

The commenter states that site entrance and exit points must accommodate the design vehicle movements. As discussed in the TIA and illustrated in the Turning Exhibit provided in the TIA (see Appendix A – Site Plan/Scoping Memorandum of the TIA), the various entry and egress points for the Project Site have been analyzed to ensure that they can accommodate the proposed line haul trucks and delivery vans. For informational purposes only, the TIA is included as **Appendix A** to this Final EIR.

Further, as discussed in **Chapter 3.0, Project Description**, of the Draft EIR, and illustrated in **Figure 3-3** therein, the Project would include predetermined circulation patterns that would separate circulation paths for trucks, delivery vans, and associate vehicles. The truck circulation would begin on the west side of the Project Site, utilizing the ingress/egress on Surveyor Avenue, and wrap around to the west end of the proposed building where the truck parking is located. The truck area would have a dedicated turning area and would not cross pathways with the associate circulation. Truck traffic would exit the Project Site and travel south onto Surveyor Avenue, east onto Nasa Street, and south onto Valencia Avenue. Therefore, trucks would only enter and exit the Project Site at points that have been confirmed to accommodate those vehicle types.

For delivery vans, there would be two separate circulation paths that end on the north and south end of the building where the van parking is located. The first delivery van pathway would begin on the north end of the Project Site via the ingress along Valencia Avenue and would move along the northern portion of the site, ultimately wrapping around and lining up along the north face of the structure for queueing and loading during dispatch. The second delivery van pathway would utilize one of the access points on Surveyor Avenue, wrapping around a portion of the proposed parking lot, and lining up near the southern end of the proposed building for queueing and loading during dispatch. These two delivery van circulation pathways would not intersect with the truck or associate circulation patterns. Therefore, delivery vans would only circulate through entrances and exits that have been confirmed to accommodate those vehicle types.

RESPONSE TO COMMENT NO. 11-14

The commenter states that the Project Site should provide sufficient truck height clearances for trucks to maneuver without any issues while loading and unloading cargo. As discussed in **Chapter 3.0, Project Description**, of the Draft EIR, the Project is currently undergoing plan review pursuant to BCC Section 20.408.040, Plan Review Procedure, the purpose of which is to enable responsible city departments to review development proposals for conformity with applicable provisions of this code and all requirements of law, and would be further reviewed via the permit plan check process. Accordingly, the Project would provide the appropriate height clearances for trucks, including those set forth in BCC 20.08.040, Off-Street Parking and Loading.

RESPONSE TO COMMENT NO. 11-15

The commenter requests consideration of including zero or near zero emissions infrastructure or electric shore power infrastructure for truck drivers and cargo handling equipment, which can reduce GHG and heat emissions. As previously discussed in **Response to Comment No. 11-7**, the Project would install conduits to all line-haul loading bays to ensure the facility can easily accommodate future electric line-haul trucks. Furthermore, as detailed in **Section 5.3, Greenhouse Gas Emissions,** of the Draft EIR, Project impacts related to GHG emissions were determined to be less than significant.

RESPONSE TO COMMENT NO. 11-16

The commenter requests for Project coordination with the local/regional Travel Demand Manager to ensure workers can travel to warehouse/distribution center without needing personal vehicles to reduce air pollution and roadway congestion. As discussed in **Section 5.8, Transportation**, of the Draft EIR, pursuant to **Project Design Feature PDF-TR-1**, the Project would incorporate a Transportation Demand Management plan, which would support the reduction of vehicle trips and VMT to and from the Project Site. The plan would include: Guaranteed Ride Home programs – ride-share and taxi rides for employees who carpool but need to leave work unexpectedly; carpool program promotions – typically Waze Carpool unless there is a local alternative; carpool parking – designated preferred parking spaces for carpool vehicles; bike racks/employee bike lockers; showers; and a designated employee transportation coordinator. The Applicant's onsite commuter services coordinator would provide information, coordination, and connection to OCTA OC Rideshare services to actively promote alternatives to single-use automobiles.

RESPONSE TO COMMENT NO. 11-17

The commenter requests consideration of providing bicycle parking for workers to encourage active transportation. As previously discussed in **Response to Comment No. 11-5**, the Project would provide short-term and long-term bicycle parking spaces near the building frontage along Valencia Avenue. Pursuant to **Project Design Feature PDF-TR-1**, the Project would also provide bicycle racks, employee bicycle lockers, and showers as part of the proposed Transportation Demand Management plan. As such, the Project would provide bicycle facilities to encourage active transportation.

RESPONSE TO COMMENT NO. 11-18

The commenter requests that electric charging stations for personal vehicle use be provided to encourage adoption of electric or hybrid vehicles. As described in **Chapter 3.0, Project Description**, of the Draft EIR, the Project would provide EV charging stations and EV-readiness. Specifically, the Project would provide approximately 18 associate vehicle parking spaces with electrical charging stations and 46 associate vehicle parking spaces with conduits to accommodate the potential installation of electric charging stations. As the Project would be consistent with the City's EV parking requirements, the Project would support the use electric or hybrid vehicles by associates.

RESPONSE TO COMMENT NO. 11-19

The commenter requests consideration of providing on-site, overnight parking for truckers with safe, well-lit lots so truckers can rest. The commenter also requests consideration of providing restrooms, lighting, trash facilities, drinking water, showers, and food/vending machines. Overnight truck parking at the Project Site would be prohibited. However, onsite services such as restrooms, drinking water, and food/vending machines would be available to the drivers.

RESPONSE TO COMMENT NO. 11-20

The commenter requests that Incident Response Plans be provided to show critical emergency entry points. The commenter notes that such plans should include alternative local roads and highways, so roadways do not become congested during an emergency. Emergency vehicles and personnel can access the Project Site via several points. Along Valencia Avenue, there is access to the north side of the proposed building via a driveway on Valencia Avenue, north of La Entrada Drive. From the south, there is one access point along Nasa Street, and one on the west side of Surveyor Avenue that provides quick access to the south and west sides of the proposed building. Further, there is another access point along Surveyor Avenue at the intersection with Enterprise Street. These referenced access points and drive aisles have been designed to accommodate emergency vehicles. As emergency vehicles enter and exit the Project Site, Valencia Avenue would serve as the primary point for most situations. However, depending on emergency personnel needs, Enterprise Street, via Voyager Avenue or Ranger Street can be utilized as an alternative route from Birch Street. In the event of an emergency necessitating the evacuation of employees from the Project Site, employees would travel in their personal vehicles south on Valencia Avenue to connect to Imperial Highway. If required, employees could also utilize the alternative route via Enterprise Steet.

Finally, as discussed in **Section 5.6, Fire Protection,** and **Section 5.7, Police Protection,** of the Draft EIR, in the event of temporary sidewalk/lane closures, the Applicant would be required to submit a traffic control plan and encroachment permit application to the City's Public Works Department to ensure that sufficient emergency vehicle access is maintained at all times. In addition, as required by the Public Works Department, Brea Fire and Police Departments would be notified prior to the day on which work, traffic detours, and/or street closures are scheduled to be performed on a public right-of-way. Therefore, emergency access to the Project Site along Valencia Avenue, Nasa Street, and Surveyor Avenue would be maintained.

RESPONSE TO COMMENT NO. 11-21

The commenter requests that the leveraging of strategic investments be considered in order to maintain and modernize a multimodal freight transportation system with innovative approaches (i.e., advanced technology to optimize integrated network efficiency, improve travel time reliability, and achieve sustainable congestion reduction). The commenter is referred to **Response to Comment No. 1-2**, **Response to Comment No. 11-18**, and **Response to Comment No. 17-25** for further detail on the Project's inclusion of infrastructure for EV trucks and vans. These strategic investments would allow the Project to accommodate a modernized multimodal transportation system, as suggested by the commenter.

RESPONSE TO COMMENT NO. 11-22

The commenter requests that a new traffic study be conducted based on traffic volume data from 2024/2025 and the use of proposed trip generation numbers. The commenter suggests that traffic patterns are different now than when the Bank of America building was occupied before 2020.

The TIA was initiated at the time of site consideration, prior to the formal submittal of the application, and the data used was current at the time. Based on population estimates from the United States Census Bureau, the City of Brea has increased in population by 2.5 percent from 2020 to 2023 (the most recent year available).[17] The populations of nearby Cities of Yorba Linda and La Habra have decreased by 3.2 and 3.4 percent, respectively.[18, 19] Combined, the population in the area has decreased by about 2 percent in recent years. Therefore, the change in population would be minimal, and the traffic volume data used in the TIA (see **Appendix A** to this Final EIR) are considered sufficient for the Project's analysis.

Regarding the use of the proposed trip generation in the Draft EIR, the estimated trip count for the Project Site is derived from other similar parcel delivery stations. A trip generation study was conducted of several similar operations in California in 2021 and found that while there are variations in the times, the daily volumes are very close to the predicted volume. This information was provided to the City's Traffic Engineer, who instructed the Applicant's transportation analysts to use a higher value for the AM peak hour but agreed with the results of the trip generation study.

RESPONSE TO COMMENT NO. 11-23

The commenter states that the Project's traffic analysis does not include the requested level of service (LOS) and queueing analysis based on the comments from the submitted LDR GTS #12-0RA-2023-02330 and specific intersections per the City of Brea General Plan. The commenter also requests that the Orange County Congestion Management Plan report and local agency guidance be utilized in the intersection analysis and volume projections. The TIA, which is provided for informational purposes as **Appendix A** to this Final EIR, was prepared for the Project and included a LOS analysis, queuing analysis, and delay calculations for the Existing Year (2022), Opening Year (2027) without Project Traffic, and Opening Year (2027) with Project Traffic. The study underwent extensive review by the City's Traffic Engineer to ensure compliance with the guidelines and standard practices and procedures. The following locations were approved by the City's Traffic Engineer for inclusion in the TIA:

1. Valencia Avenue / Imperial Highway
2. Valencia Avenue / Nasa Street – La Floresta Drive
3. Valencia Avenue / La Entrada Drive

[17] United States Census Bureau. n.d. QuickFacts, Brea city, California. Accessed April 14, 2025. https://www.census.gov/quickfacts/breacitycalifornia.

[18] United States Census Bureau. n.d. QuickFacts, Yorba Linda city, California. Accessed April 14, 2025. https://www.census.gov/quickfacts/yorbalindacitycalifornia.

[19] United States Census Bureau. n.d. QuickFacts, Brea city, California. Accessed April 14, 2025. https://www.census.gov/quickfacts/lahabracitycalifornia.

4. Valencia Avenue / E Birch Street – N Rose Drive
5. Valencia Avenue / E Lambert Road - Carbon Canyon Road
6. Enterprise Street / Voyager Avenue
7. E Birch Street / Voyager Avenue
8. E Birch Street / Ranger Street
9. Surveyor Avenue / Nasa Street
10. All Project Site driveways.

RESPONSE TO COMMENT NO. 11-24

The commenter refers to **Attachment A, Tenant Specific Trip Schedule**, of **Appendix F: VMT Assessment** to the Draft EIR and states that the Project's addition of trucks at the noted time in the schedule may impact storage length with existing truck movements. The commenter requests a study of existing truck patterns to determine if the proposed line trucks will impact the storage length for the LT lane. The intersections that were included in the TIA were each studied during the peak hours of the day. Trucks are included in the analysis as a percentage of overall traffic volume and used to determine likely queue lengths. Queue lengths are reported as a 95th percentile value, which means that the queue lengths reported are not likely to be exceeded 95 percent of the time.

RESPONSE TO COMMENT NO. 11-25

The commenter notes that any work performed within Caltrans right-of-way will require discretionary review and approval by Caltrans, and an encroachment permit will be required for any work within the Caltrans right-of-way prior to construction. The Project, as designed, would require an encroachment permit to work within the Caltrans right-of-way along Valencia Avenue. The Applicant understands the review process described in this comment and will comply with Caltrans for any encroachment.

RESPONSE TO COMMENT NO. 11-26

This concluding comment requests that coordination with Caltrans continue for any future development projects that could potentially impact State Transportation facilities. The comment is noted and will be forwarded to the decision-makers for consideration.

COMMENT LETTER NO. 12

From: Nicholas Liguori <nliguori@chinohills.org>
Sent: Monday, December 23, 2024 2:54 PM
To: Hwang, Joanne <joanneh@ci.brea.ca.us>
Subject: DJT4 Parcel Delivery Project - EIR Comments

1 Hi Joanne, please find attached comments from the City of Chino Hills regarding the above project. I could not find the TIA with the project documents so could not review the trip distribution to see if there were any potential impacts, so we just made a general comment. If I could take a look at that, I will follow-up. Thank you, have a nice holiday season.

-Nick

Nicholas Liguori, AICP | Director
Community Development Department

City of Chino Hills
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December 23, 2024

Joanne Hwang, City Planner
City of Brea – Planning Division
Brea City Hall – 3rd Floor
1 Civic Center Circle
Brea, CA 92821

Subject: DJT4 Parcel Delivery Facility Project – Draft EIR (State Clearinghouse No. 2023070241)

Dear Ms. Hwang:

Thank you for forwarding the Notice of Availability to the City of Chino Hills for the DJT4 Parcel Delivery Facility Project, which consists of the demolition of an existing 637,503-square foot office building and the construction and operation of a 181,500-square foot parcel delivery facility at 275 Valencia Avenue. Staff has reviewed the Draft Environmental Impact Report (State Clearinghouse No. 2023070241) prepared for the project. Of particular interest to the City of Chino Hills is Section 5.8 Transportation.

2 Policy CD-11.2 of the Community Development Chapter of the City of Brea General Plan requires the establishment of Level of Service goals for designated City streets and the evaluation of new development to ensure that it maintains these service levels. The Draft EIR references a Traffic Impact Assessment for the Brea Delivery Station prepared by NV5 Engineers & Consultants, but the assessment is not included in the Appendices to the Draft EIR. Additionally, the Draft EIR does not include substantive discussion of the project's trip distribution. Study intersections and roadway segments are not identified and the evaluation of the project's direct and cumulative impacts to those intersections and segments is not discussed. The City of Chino Hills is most interested in understanding the project's contribution of vehicle trips to Carbon Canyon Road and its intersections, which could impact the already challenging traffic conditions of Carbon Canyon Road.

The City of Chino Hills looks forward to the opportunity to review this information as the project progresses.

Sincerely

Nicholas Liguori, AICP
Community Development Director

Sent via Email to joanneh@cityofbrea.net

City Council: Art Bennett ▪ Brian Johsz ▪ Ray Marquez ▪ Cynthia Moran ▪ Peter J. Rogers

Comment Letter No. 12

December 23, 2024
City of Chino Hills
Nicolas Liguori, AICP, Community Development Director
14000 City Center Drive
Chino Hills, CA 91709
nliguori@chinohills.org
909-364-2600

RESPONSE TO COMMENT NO. 12-1

This comment is an email transmitting comments on the Draft EIR for the DJT4 Parcel Delivery Facility Project from City of Chino Hills. The email also states that a general comment was provided because the commenter was unable to review the trip distribution for the Project to determine if there were any potential impacts. See **Response to Comment No. 12-2** regarding the Project's trip distribution information. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 12-2

This comment briefly summarizes the Project and states that the City of Chino Hills has particular interest in **Section 5.8, Transportation**, of the Draft EIR. The commenter states that although the Draft EIR references a TIA for the Project, the TIA was not included in the appendices to the Draft EIR. The commenter also notes that the Draft EIR does not contain a substantive discussion of the Project's trip distribution, identification of study intersections and roadway segments, or an evaluation of the Project's direct and cumulative impacts to intersections and roadway segments. The commenter expresses the City of Chino Hills' interest in the Project's contribution of vehicle trips to Carbon Canyon Road and its intersections and requests the opportunity to review this information.

Pursuant to Senate Bill 743, Section 21099 of CEQA, and Section 15064.3 of the CEQA Guidelines, the primary metric to evaluate transportation is now VMT and a project's effect on automobile delay is not an environmental impact germane to CEQA. As such, the TIA was not included as an appendix to the Draft EIR and any relevant information contained in the TIA that is necessary to conduct the VMT analysis was included in the VMT Assessment, which was provided as **Appendix F** to the Draft EIR. However, in response to the City of Chino Hills' interest in the Project's trip distribution and vehicle trips on Carbon Canyon Road, the TIA is included as **Appendix A** to this Final EIR for informational purposes only.

COMMENT LETTER NO. 13

From: Ditmar,Jolene M <JDitmar@mwdh2o.com>
Sent: Monday, December 30, 2024 6:14:16 PM
To: Hwang, Joanne <joanneh@ci.brea.ca.us>
Cc: Morrison,Michelle J <MMorrison@mwdh2o.com>; Florence,Liz <EFlorence@mwdh2o.com>
Subject: Metropolitan Comments: DJT4 Parcel Delivery Facility Project

Hello Joanne Hwang,

1 Please see the attached Draft Environmental Impact Report comments from the Metropolitan Water District of Southern California regarding the City of Brea DJT4 Parcel Delivery Facility Project. We appreciate the opportunity to provide comments.

Have a wonderful rest of the holiday season!

Best,

Jolene Ditmar (she/her)
Associate Environmental Specialist
Environmental Planning Section
The Metropolitan Water District of Southern California
Email: JDitmar@mwdh2o.com Phone: 562-756-1560

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THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

12/30/2024 **EMAIL**

Joanne Hwang, City Planner
City of Brea – Planning Division
Brea City Hall
Brea Civic & Cultural Center
1 Civic Center Circle, 3rd Floor
Brea, CA 92821

Dear Ms. Hwang:

Draft Environmental Impact Report for the DJT4 Parcel Delivery Facility Project

2 The Metropolitan Water District of Southern California (Metropolitan) has reviewed the Draft Environmental Impact Report for the DJT4 Parcel Delivery Facility Project. The project proposes to demolish the existing Bank of America office building and parking lot on an approximately 31.6-acre site and construct a single-story, 181,500-square-foot parcel delivery facility for 24-hour daily operation. The site would include 163,350 square feet of warehouse space, 18,150 square feet of ancillary office space, 1,065 surface vehicle parking spaces, 180 ancillary van loading spaces, 13 Utility Tractor Rig loading spaces, various sustainability features, and 24-hour security lighting.

3 Metropolitan owns and operates facilities within and adjacent to the proposed Project Area. As shown on the attached map, Metropolitan's Lower Feeder, an approximately 96-inch inside-diameter pipeline, is located along La Entrada Drive within the street easement right-of-way within the Project Area. Figure 3-5 of the Draft Environmental Impact Report depicts this easement. Metropolitan is concerned with potential impacts to its facility and rights-of-way that may result from implementation of the proposed Project.

Metropolitan must be allowed to maintain its rights-of-way and access to its facilities and properties at all times, in order to repair and maintain the condition of those facilities. In order to avoid potential conflicts with Metropolitan's rights-of-way, we require that any design plans for any activity in the area of Metropolitan's pipelines or facilities be submitted for our review and written approval. Metropolitan will not permit procedures that could subject the pipes to excessive vehicle, impact or vibratory loads. Any future design plans associated with this Project should be submitted to the attention of Metropolitan's Substructures Team. Approval of the

Project should be contingent on Metropolitan's approval of design plans for portions of the proposed Project that could impact its facilities.

Detailed prints of drawings of Metropolitan's pipelines and rights-of-way may be obtained by contacting Metropolitan's Substructures Team at EngineeringSubstructures@mwdh2o.com. To assist the City of Brea in preparing plans that are compatible with Metropolitan's facilities and rights-of-way, enclosed is a copy of the "Guidelines for Improvements and Construction Projects Proposed in the Area of Metropolitan's Facilities and Rights-of-Way." Please note that Metropolitan's facilities and rights-of-way must be fully shown and identified as Metropolitan's on all designs or plans submitted.

3 (continued)

Metropolitan requests that the City of Brea avoid any potential impacts that may occur to the Lower Feeder due to implementation of the proposed Project where applicable, and propose mitigation measures to offset any potential impacts. It will also be necessary for the City of Brea to consider Metropolitan's Lower Feeder in its project planning.

Metropolitan encourages projects within its service area to include water conservation measures. While Metropolitan continues to build new supplies and develop means for more efficient use of current resources, projected population and economic growth will increase demands on the current system. Water conservation, reclaimed water use, and groundwater recharge programs are integral components to regional water supply planning. Metropolitan supports mitigation measures such as using water efficient fixtures, drought tolerant landscaping, and reclaimed water to offset any increase in water use associated with the proposed Project.

We appreciate the opportunity to provide input to your planning process and look forward to receiving future plans and documentation for this Project. If we can be of further assistance, please contact Jolene Ditmar at (213) 217-6184 or at jditmar@mwdh2o.com.

Very truly yours,

Digitally signed by Sean Carlson

Sean Carlson
Team Manager, Environmental Planning

JD: dp
S:\External Reviews\External Reviews\Comment Letters\2024-Comment Letters\Brea_DJT4 Parcel Delivery Facility Project_NOA DEIR

Enclosures:

1) Location Map of Metropolitan's Lower Feeder within the Project Area
2) Guidelines for Improvements and Construction Projects Proposed in the Area of Metropolitan's Facilities and Rights-of-Way

Lower Feeder Pipeline
& Easement
DJT4 Parcel Delivery
Facility Project Area
Surveyor Ave
Nasa St
E Birch St
Valencia Ave
Image © 2024 Airbus
Google Earth
Imagery Date: 2/27/2024 33°54'57.92" N 117°51'02.97" W elev 0 ft eye alt 2539 ft

Guidelines for Improvements and Construction Projects Proposed in the Area of Metropolitan's Facilities and Rights-of-Way

5

July 2018

Prepared By:
The Metropolitan Water District of Southern California
Substructures Team, Engineering Services
700 North Alameda Street
Los Angeles, California 90012

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Additional Copies: To obtain a copy of this document, please contact the Engineering Services Group, Substructures Team.

Disclaimer

Metropolitan assumes no responsibility for the accuracy of the substructure information herein provided. The user assumes responsibility for verifying substructure locations before excavating and assumes all liability for damage to Metropolitan's facilities as a result of such excavation. Additionally, the user is cautioned to conduct surveys and other field investigations as deemed prudent, to assure that project plans are correct. The appropriate representative from Metropolitan must be contacted at least two working days, before any work activity in proximity to Metropolitan's facilities.

It generally takes 30 days to review project plans and provide written responses. Metropolitan reserves the right to modify requirements based on case-specific issues and regulatory developments.

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Table of Contents

1.0 GENERAL INFORMATION 1
1.1 Introduction 1
1.2 Submittal and Review of Project Plans/Utilities and Maps 1
1.3 Identification of Metropolitan's Facilities and Rights-of-Way 3

2.0 General Requirements 3
2.1 Vehicular Access 3
2.2 Fences 3
2.3 Driveways and Ramps 3
2.4 Walks, Bike Paths, and Trails 3
2.5 Clear Zones 4
2.6 Slopes 4
2.7 Structures 4
2.8 Protection of Metropolitan Facilities 4
2.9 Potholing of Metropolitan Pipelines 4
2.10 Jacked Casings or Tunnels 4

3.0 Landscaping 5
3.1 Plans 5
3.2 Drought-Tolerant Native and California Friendly Plants 5
3.3 Trees 5
3.4 Other Vegetation 6
3.5 Irrigation 6
3.6 Metropolitan Vehicular Access 6

4.0 General Utilities 6
4.1 Utility Structures 6
4.2 Utility Crossings 6
4.3 Longitudinal Utilities 7
4.4 Underground Electrical Lines 7
4.5 Fiber Optic Lines 7
4.6 Overhead Electrical and Telephone Lines 7
4.7 Sewage Disposal Systems 7
4.8 Underground Tanks 8

5.0 Specific Utilities: Non-Potable Utility Pipelines 8

6.0 Cathodic Protection/Electrolysis Test Stations 8
6.1 Metropolitan Cathodic Protection 8
6.2 Review of Cathodic Protection Systems 8

7.0 Drainage 9
7.1 Drainage Changes Affecting Metropolitan Rights-of-Way 9
7.2 Metropolitan's Blowoff and Pumpwell Structures 9

8.0 Grading and Settlement 9

Table of Contents

8.1 Changes in Cover over Metropolitan Pipelines 9
8.2 Settlement 9

9.0 Construction Equipment 10
9.1 Review of Proposed Equipment 10
9.2 Equipment Restrictions 10
9.3 Vibratory Compaction Equipment 10
9.4 Equipment Descriptions 10

10.0 Excavations Close to Metropolitan Facilities 11
10.1 Shoring Design Submittal 11
10.2 Shoring Design Requirements 11

11.0 Support of Metropolitan Facilities 11
11.1 Support Design Submittal 11
11.2 Support Design Requirements 11

12.0 Backfill 12
12.1 Metropolitan Pipeline Not Supported 12
12.2 Metropolitan Pipeline Partially Exposed 12
12.3 Metropolitan Cut and Cover Conduit on Colorado River Aqueduct (CRA) 12

13.0 Piles 13
13.1 Impacts on Metropolitan Pipelines 13
13.2 Permanent Cast-in-place Piles 13

14.0 Protective Slabs for Road Crossings Over Metropolitan Pipelines 13

15.0 Blasting 13

16.0 Metropolitan Plan Review Costs, Construction Costs and Billing 14
16.1 Plan Review Costs 14
16.2 Cost of Modification of Facilities Performed by Metropolitan 14
16.3 Final Billing 14

17.0 Street Vacations and Reservation of Easements for Metropolitan 14

18.0 Metropolitan Land Use Guidelines 14

19.0 Compliance with Environmental Laws and Regulations 15

20.0 Paramount Rights / Metropolitan's Rights within Existing Rights-of-Way 17

21.0 Disclaimer and Information Accuracy 17

Table of Contents

Table 1: General Guidelines for Pipeline Separation between Metropolitan's Pipeline[1] and Sanitary Sewer[2] or Hazardous Fluid Pipeline[3] 18

Table 2: General Guidelines for Pipeline "Separation between Metropolitan's Pipeline[1] and Storm Drain and/or Recycled Water[2] 19

Table 3: General Guidelines for Pipeline "Separation[1] between Metropolitan's Pipeline and Recycled Water[2,4] Irrigationsm, ... 20

Figure 1: AASHTO H-20 Loading 21

Figure 2: Drawing SK-1 22

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1.0 GENERAL INFORMATION

Note: Underground Service Alert at 811 must be notified at least two working days before excavating in proximity to Metropolitan's facilities.

1.1 Introduction

These guidelines provide minimum design and construction requirements for any utilities, facilities, developments, and improvements, or any other projects or activities, proposed in or near Metropolitan Water District of Southern California (Metropolitan) facilities and rights-of-way. Additional conditions and stipulations may also be required depending on project and site specific conditions. Any adverse impacts to Metropolitan's conveyance system, as determined by Metropolitan, will need to be mitigated to its satisfaction.

All improvements and activities must be designed so as to allow for removal or relocation at builder or developer expense, as set forth in the paramount rights provisions of Section 20.0. Metropolitan shall not be responsible for repair or replacement of improvements, landscaping or vegetation in the event Metropolitan exercises its paramount rights powers.

1.2 Submittal and Review of Project Plans/Utilities and Maps

Metropolitan requires project plans/utilities be submitted for all proposed activities that may impact Metropolitan's facilities or rights-of-way. Project plans shall include copies of all pertinent utilities, sewer line, storm drain, street improvement, grading, site development, landscaping, irrigation and other plans, all tract and parcel maps, and all necessary state and federal environmental documentation. Metropolitan will review the project plans and provide written approval, as it pertains to Metropolitan's facilities and rights-of-way. Written approval from Metropolitan must be obtained, prior to the start of any activity or construction in the area of Metropolitan's facilities or rights-of-way. Once complete project plans and supporting documents are submitted to Metropolitan, it generally takes 30 days to review and to prepare a detailed written response. Complex engineering plans that have the potential for significant impacts on Metropolitan's facilities or rights-of-way may require a longer review time.

Project plans, maps, or any other information should be submitted to Metropolitan's Substructures Team at the following mailing address:

Attn: Substructures Team
The Metropolitan Water District of Southern California
700 North Alameda St.
Los Angeles, CA 90012

General Mailing Address: P.O. Box 54153
Los Angeles, CA 90054-0153

Email: EngineeringSubstructures@mwdh2o.com

For additional information, or to request prints of detailed drawings for Metropolitan's facilities and rights-of-way, please contact Metropolitan's Substructures Team at 213-217-7663 or EngineeringSubstructures@mwdh2o.com.

1.3 Identification of Metropolitan's Facilities and Rights-of-Way

Metropolitan's facilities and rights-of-way must be fully shown and identified as Metropolitan's, with official recording data, on the following:

A. All applicable plans

B. All applicable tract and parcel maps

Metropolitan's rights-of-ways and existing survey monuments must be tied dimensionally to the tract or parcel boundaries. Metropolitan's Records of Survey must be referenced on the tract and parcel maps with the appropriate Book and Page.

2.0 General Requirements

2.1 Vehicular Access

Metropolitan must have vehicular access along its rights-of-way at all times for routine inspection, patrolling, operations, and maintenance of its facilities and construction activities. All proposed improvements and activities must be designed so as to accommodate such vehicular access.

2.2 Fences

Fences installed across Metropolitan's rights-of-way must include a 16-foot-wide gate to accommodate vehicular access by Metropolitan. Additionally, gates may be required at other specified locations to prevent unauthorized entry into Metropolitan's rights-of-way.

All gates must accommodate a Metropolitan lock or Knox-Box with override switch to allow Metropolitan unrestricted access. There should be a minimum 20-foot setback for gates from the street at the driveway approach. The setback is necessary to allow Metropolitan vehicles to safely pull off the road prior to opening the gate.

2.3 Driveways and Ramps

Construction of 16-foot-wide commercial-type driveway approaches is required on both sides of all streets that cross Metropolitan's rights-of-way. Access ramps, if necessary, must be a minimum of 16 feet wide.

There should be a minimum 20-foot setback for gates from the street at the driveway approach. Grades of ramps and access roads must not exceed 10 percent; if the slope of an access ramp or road must exceed 10 percent due to topography, then the ramp or road must be paved.

2.4 Walks, Bike Paths, and Trails

All walkways, bike paths, and trails along Metropolitan's rights-of-way must be a minimum 12-foot wide and have a 50-foot or greater radius on all horizontal curves if also used as Metropolitan's access roads. Metropolitan's access routes, including all walks and drainage facilities crossing the access routes, must be constructed to American Association of State Highway and Transportation Officials (AASHTO) H-20 loading standards (see Figure 1). Additional requirements will be placed on equestrian trails to protect the water quality of Metropolitan's pipelines and facilities.

2.5 Clear Zones

A 20-foot-wide clear zone is required to be maintained around Metropolitan's manholes and other above-ground facilities to accommodate vehicular access and maintenance. The clear zone should slope away from Metropolitan's facilities on a grade not to exceed 2 percent.

2.6 Slopes

Cut or fill slopes proposed within Metropolitan's rights-of-way must not exceed 10 percent. The proposed grade must not worsen the existing condition. This restriction is required to facilitate Metropolitan use of construction and maintenance equipment and allow uninhibited access to above-ground and below-ground facilities.

2.7 Structures

Construction of structures of any type is not allowed within the limits of Metropolitan's rights-of-way to avoid interference with the operation and maintenance of Metropolitan's facilities and possible construction of future facilities.

Footings and roof eaves of any proposed buildings adjacent to Metropolitan's rights-of-way must meet the following criteria:

A. Footings and roof eaves must not encroach onto Metropolitan's rights-of-way.

B. Footings must not impose any additional loading on Metropolitan's facilities.

C. Roof eaves must not overhang onto Metropolitan's rights-of-way.

Detailed plans of footings and roof eaves adjacent to Metropolitan's rights-of-way must be submitted for Metropolitan's review and written approval, as pertains to Metropolitan's facilities.

2.8 Protection of Metropolitan Facilities

Metropolitan facilities within its rights-of-way, including pipelines, structures, manholes, survey monuments, etc., must be protected from damage by the project proponent or property owner, at no expense to Metropolitan. The exact location, description and method of protection must be shown on the project plans.

2.9 Potholing of Metropolitan Pipelines

Metropolitan's pipelines must be potholed in advance, if the vertical clearance between a proposed utility and Metropolitan's pipeline is indicated to be 4 feet or less. A Metropolitan representative must be present during the potholing operation and will assist in locating the pipeline. Notice is required, a minimum of three working days, prior to any potholing activity.

2.10 Jacked Casings or Tunnels

A. General Requirements

Utility crossings installed by jacking, or in a jacked casing or tunnel under/over a Metropolitan pipeline, must have at least 3 feet of vertical clearance between the outside diameter of the pipelines and the jacked pipe, casing, or tunnel. The actual

cover over Metropolitan's pipeline shall be determined by potholing, under Metropolitan's supervision.

Utilities installed in a jacked casing or tunnel must have the annular space between the utility and the jacked casing or tunnel filled with grout. Provisions must be made for grouting any voids around the exterior of the jacked pipe, casing, or tunnel.

B. Jacking or Tunneling Procedures

Detailed jacking, tunneling, or directional boring procedures must be submitted to Metropolitan for review and approval. The procedures must cover all aspects of operation, including, but not limited to, dewatering, ground control, alignment control, and grouting pressure. The submittal must also include procedures to be used to control sloughing, running, or wet ground, if encountered. A minimum 10-foot clearance must be maintained between the face of the tunneling or receiving pits and outside edges of Metropolitan's facility.

C. Shoring

Detailed drawings of shoring for jacking or receiving pits must be submitted to Metropolitan for review and written-approval. (See Section 10 for shoring requirements).

D. Temporary Support

Temporary support of Metropolitan's pipelines may be required when a utility crosses under a Metropolitan pipeline and is installed by means of an open trench. Plans for temporary support must be reviewed and approved in writing by Metropolitan. (See Section 11, Supports of Metropolitan Facilities).

3.0 Landscaping

3.1 Plans

All landscape plans must show the location and limits of Metropolitan's right-of-way and the location and size of Metropolitan's pipeline and related facilities therein. All landscaping and vegetation shall be subject to removal without notice, as may be required by Metropolitan for ongoing maintenance, access, repair, and construction activities. Metropolitan will not be financially responsible for the removal of any landscaping and vegetation.

3.2 Drought-Tolerant Native and California Friendly Plants

Metropolitan recommends use of drought-tolerant native and California Friendly® plants (excluding sensitive plants) on proposed projects. For more information regarding California Friendly® plants refer to www.bewaterwise.com.

3.3 Trees

Trees are generally prohibited within Metropolitan's rights-of-way as they restrict Metropolitan's ability to operate, maintain and/or install new pipeline(s) located within these rights-of-way. Metropolitan will not be financially responsible for the removal and replacement of any existing trees should they interfere with access and any current or future Metropolitan project located within the right-of-way.

3.4 Other Vegetation

Shrubs, bushes, vines, and groundcover are generally allowed within Metropolitan's rights-of-way. Larger shrubs are not allowed on Metropolitan fee properties; however, they may be allowed within its easements if planted no closer than 15 feet from the outside edges of existing or future Metropolitan facilities. Only groundcover is allowed to be planted directly over Metropolitan pipeline, turf blocks or similar is recommended to accommodate our utility vehicle access. Metropolitan will not be financially responsible for the removal and replacement of the vegetation should it interfere with access and any current or future Metropolitan project.

3.5 Irrigation

Irrigation systems are acceptable within Metropolitan's rights-of-way, provided valves and controllers are located near the edges of the right-of-way and do not interfere with Metropolitan vehicular access. A shutoff valve should also be located along the edge of the right-of-way that will allow the shutdown of the system within the right-of-way should Metropolitan need to do any excavation. No pooling or saturation of water above Metropolitan's pipeline and right-of-way is allowed. Additional restrictions apply to non-potable water such as Recycled Water and are covered on Table 3 of Page 20.

3.6 Metropolitan Vehicular Access

Landscape plans must show Metropolitan vehicular access to Metropolitan's facilities and rights-of-way and must be maintained by the property owner or manager or homeowners association at all times. Walkways, bike paths, and trails within Metropolitan's rights-of-way may be used as Metropolitan access routes. (See Section 2.4, Walks, Bike Paths, and Trails).

4.0 General Utilities

Note: For non-potable piping like sewer, hazardous fluid, storm drain, disinfected tertiary recycled water and recycled water irrigation see Table 1 through Table 3.

4.1 Utility Structures

Permanent utility structures (e.g., manholes, power poles, pull boxes, electrical vaults, etc.) are not allowed within Metropolitan's rights-of-way. Metropolitan requests that all permanent utility structures within public streets be placed as far from its pipelines and facilities as practical, but not closer than 5 feet from the outside edges of Metropolitan facilities.

Note: Non-potable utility pipelines are an exception to the 5-foot minimum clearance. Non-potable utility pipelines should have 10 feet of separation.

4.2 Utility Crossings

Metropolitan requests a minimum of 1 foot of vertical clearance between Metropolitan's pipeline and any utility crossing the pipeline. Utility lines crossing Metropolitan's pipelines must be as perpendicular to the pipeline as possible. Cross-section drawings, showing proposed locations and elevations of utility lines and locations of Metropolitan's pipelines and limits of rights-of-way, must be submitted with utility plans, for all

crossings. Metropolitan's pipeline must be potholed under Metropolitan's supervision at the crossings (See Section 2.9).

4.3 Longitudinal Utilities

Installation of longitudinal utilities is generally not allowed along Metropolitan's rights-of-way. Within public streets, Metropolitan requests that all utilities parallel to Metropolitan's pipelines and appurtenant structures (facilities) be located as far from the facilities as possible, with a minimum clearance of 5 feet from the outside edges of the pipeline.

Note: Non-potable utility pipelines are an exception to the 5-foot minimum clearance. Non-potable utility pipelines should have 10 feet of separation (for more information See Table 1 on Page 18).

4.4 Underground Electrical Lines

Underground electrical conduits (110 volts or greater) which cross a Metropolitan's pipeline must have a minimum of 1 foot of vertical clearance between Metropolitan's pipeline and the electrical lines. Longitudinal electrical lines, including pull boxes and vaults, in public streets should have a minimum separation of 5 feet from the edge of a Metropolitan pipeline or structures.

4.5 Fiber Optic Lines

Fiber optic lines installed by directional boring require a minimum of 3 feet of vertical clearance when boring is over Metropolitan's pipelines and a minimum of 5 feet of vertical clearance when boring is under Metropolitan's pipelines. Longitudinal fiber optic lines, including pull boxes, in public streets should have a minimum separation of 5 feet from the edge of a Metropolitan pipelines or structures. Potholing must be performed, under Metropolitan's supervision, to verify the vertical clearances are maintained.

4.6 Overhead Electrical and Telephone Lines

Overhead electrical and telephone lines, where they cross Metropolitan's rights-of-way, must have a minimum 35 feet of clearance, as measured from the ground to the lowest point of the overhead line. Overhead electrical lines poles must be located at least 30 feet laterally from the edges of Metropolitan's facilities or outside Metropolitan's right-of-way, whichever is greater.

Longitudinal overhead electrical and or telephone lines in public streets should have a minimum separation of 10 feet from the edge of a Metropolitan pipelines or structures where possible.

4.7 Sewage Disposal Systems

Sewage disposal systems, including leach lines and septic tanks, must be a minimum of 100 feet from the outside limits of Metropolitan's rights-of-way or the edge of its facilities, whichever is greater. If soil conditions are poor, or other adverse site-specific conditions exist, a minimum distance of 150 feet is required. They must also comply with local and state health code requirements as they relate to sewage disposal systems in proximity to major drinking water supply pipelines.

4.8 Underground Tanks

Underground tanks containing hazardous materials must be a minimum of 100 feet from the outside limits of Metropolitan's rights-of-way or edge of its facilities, whichever is greater. In addition, groundwater flow should be considered with the placement of underground tanks down-gradient of Metropolitan's facilities.

5.0 Specific Utilities: Non-Potable Utility Pipelines

In addition to Metropolitan's general requirements, installation of non-potable utility pipelines (e.g., storm drains, sewers, and hazardous fluids pipelines) in Metropolitan's rights-of-way and public street rights-of-way must also conform to the State Water Resources Control Board's Division of Drinking Water (DDW) regulation (Waterworks Standards) and guidance for separation of water mains and non-potable pipelines and to applicable local county health code requirements. Written approval is required from DDW for the implementation of alternatives to the Waterworks Standards and, effective December 14, 2017, requests for alternatives to the Waterworks Standards must include information consistent with: DDW's Waterworks Standards Main Separation Alternative Request Checklist.

In addition to the following general guidelines, further review of the proposed project must be evaluated by Metropolitan and requirements may vary based on site specific conditions.

A. Sanitary Sewer and Hazardous Fluids (General Guideline See Table 1 on Page 18)

B. Storm Drain and Recycled Water (General Guideline See Table 2 on Page 19)

C. Irrigation with Recycled Water (General Guideline See Table 3 on Page 20)

D. Metropolitan generally does not allow Irrigation with recycled water to be applied directly above its treated water pipelines

E. Metropolitan requests copies of project correspondence with regulating agencies (e.g., Regional Water Quality Control Board, DDW); regarding the application of recycled water for all projects located on Metropolitan's rights-of-way

6.0 Cathodic Protection/Electrolysis Test Stations

6.1 Metropolitan Cathodic Protection

Metropolitan's existing cathodic protection facilities in the vicinity of any proposed work must be identified prior to any grading or excavation. The exact location, description, and type of protection must be shown on all project plans. Please contact Metropolitan for the location of its cathodic protection stations.

6.2 Review of Cathodic Protection Systems

Metropolitan must review any proposed installation of impressed-current cathodic protection systems on pipelines crossing or paralleling Metropolitan's pipelines to determine any potential conflicts with Metropolitan's existing cathodic protection system.

7.0 Drainage

7.1 Drainage Changes Affecting Metropolitan Rights-of-Way

Changes to existing drainage that could affect Metropolitan's rights-of-way require Metropolitan's approval. The project proponent must provide acceptable solutions to ensure Metropolitan's rights-of-way are not negatively affected by changes in the drainage conditions. Plans showing the changes, with a copy of a supporting hydrology report and hydraulic calculations, must be submitted to Metropolitan for review and approval. Long term maintenance of any proposed drainage facilities must be the responsibility of the project proponent, City, County, homeowner's association, etc., with a clear understanding of where this responsibility lies. If drainage must be discharged across Metropolitan's rights-of-way, it must be carried across by closed conduit or lined open channel and must be shown on the plans.

7.2 Metropolitan's Blowoff and Pumpwell Structures

Any changes to the existing local watercourse systems will need to be designed to accommodate Metropolitan's blowoff and pumpwell structures, which periodically convey discharged water from Metropolitan's blowoff and pumping well structures during pipeline dewatering. The project proponents' plans should include details of how these discharges are accommodated within the proposed development and must be submitted to Metropolitan for review and approval. Any blowoff discharge lines impacted must be modified accordingly at the expense of the project proponent.

8.0 Grading and Settlement

8.1 Changes in Cover over Metropolitan Pipelines

The existing cover over Metropolitan's pipelines must be maintained unless Metropolitan determines that proposed changes in grade and cover do not pose a hazard to the integrity of the pipeline or an impediment to its maintenance capability. Load and settlement or rebound due to change in cover over a Metropolitan pipeline or ground in the area of Metropolitan's rights-of-way will be factors considered by Metropolitan during project review.

In general, the minimum cover over a Metropolitan pipeline is 4 feet and the maximum cover varies per different pipeline. Any changes to the existing grade may require that Metropolitan's pipeline be potholed under Metropolitan's supervision to verify the existing cover.

8.2 Settlement

Any changes to the existing topography in the area of Metropolitan's pipeline or right-of-way that result in significant settlement or lateral displacement of Metropolitan's pipelines are not acceptable. Metropolitan may require submittal of a soils report showing the predicted settlement of the pipeline at 10-foot intervals for review. The data must be carried past the point of zero change in each direction and the actual size and varying depth of the fill must be considered when determining the settlement. Possible settlement due to soil collapse, rebound and lateral displacement must also be included.

In general, the typical maximum allowed deflection for Metropolitan's pipelines must not exceed a deflection of 1/4-inch for every 100 feet of pipe length. Metropolitan may require additional information per its Geotechnical Guidelines. Please contact Metropolitan's Substructures Team for a copy of the Geotechnical Guidelines.

9.0 Construction Equipment

9.1 Review of Proposed Equipment

Use of equipment across or adjacent to Metropolitan's facilities is subject to prior review and written approval by Metropolitan. Excavation, backfill, and other work in the vicinity of Metropolitan's facilities must be performed only by methods and with equipment approved by Metropolitan. A list of all equipment to be used must be submitted to Metropolitan a minimum of 30 days before the start of work.

A. For equipment operating within paved public roadways, equipment that imposes loads not greater than that of an AASHTO H-20 vehicle (see Figure 1 on Page 21) may operate across or adjacent to Metropolitan's pipelines provided the equipment operates in non-vibratory mode and the road remains continuously paved.

B. For equipment operating within unpaved public roadways, when the total cover over Metropolitan's pipeline is 10 feet or greater, equipment imposing loads no greater than those imposed by an AASHTO H-20 vehicle may operate over or adjacent to the pipeline provided the equipment is operated in non-vibratory mode. For crossings, vehicle path shall be maintained in a smooth condition, with no breaks in grade for 3 vehicle lengths on each side of the pipeline.

9.2 Equipment Restrictions

In general, no equipment may be used closer than 20 feet from all Metropolitan above-ground structures. The area around the structures should be flagged to prevent equipment encroaching into this zone.

9.3 Vibratory Compaction Equipment

Vibratory compaction equipment may not be used in vibratory mode within 20 feet of the edge of Metropolitan's pipelines.

9.4 Equipment Descriptions

The following information/specifications for each piece of equipment should be included on the list:

A. A description of the equipment, including the type, manufacturer, model year, and model number. For example, wheel tractor-scraper, 1990 Caterpillar 627E.

B. The empty and loaded total weight and the corresponding weight distribution. If equipment will be used empty only, it should be clearly stated.

C. The wheel base (for each axle), tread width (for each axle), and tire footprint (width and length) or the track ground contact (width and length), and track gauge (center to center of track).

10.0 Excavations Close to Metropolitan Facilities

10.1 Shoring Design Submittal

Excavation that impacts Metropolitan's facilities requires that the contractor submit an engineered shoring design to Metropolitan for review and acceptance a minimum of 30 days before the scheduled start of excavation. Excavation may not begin until the shoring design is accepted in writing by Metropolitan.

Shoring design submittals must include all required trenches, pits, and tunnel or jacking operations and related calculations. Before starting the shoring design, the design engineer should consult with Metropolitan regarding Metropolitan's requirements, particularly as to any special procedures that may be required.

10.2 Shoring Design Requirements

Shoring design submittals must be stamped and signed by a California registered civil or structural engineer. The following requirements apply:

A. The submitted shoring must provide appropriate support for soil adjacent to and under Metropolitan's facilities.

B. Shoring submittals must include detailed procedures for the installation and removal of the shoring.

C. Design calculations must follow the Title 8, Chapter 4, Article 6 of the California Code of Regulations (CCR) guidelines. Accepted methods of analysis must be used.

D. Loads must be in accordance with the CCR guidelines or a soils report by a geotechnical consultant.

E. All members must be secured to prevent sliding, falling, or kickouts.

Metropolitan's pipelines must be located by potholing under Metropolitan's supervision before the beginning construction. Use of driven piles within 20 feet of the centerline of Metropolitan's pipeline is not allowed. Piles installed in drilled holes must have a minimum 2-foot clearance between Metropolitan's pipeline and the edge of the drilled hole, and a minimum of 1-foot clearance between any part of the shoring and Metropolitan's pipeline.

11.0 Support of Metropolitan Facilities

11.1 Support Design Submittal

If temporary support of a Metropolitan facility is required, the contractor shall submit a support design plan to Metropolitan for review and approval a minimum of 30 days before the scheduled start of work. Work may not begin until the support design is approved in writing by Metropolitan. Before starting design, the design engineer should consult with Metropolitan regarding Metropolitan's requirements.

11.2 Support Design Requirements

Support design submittals must be prepared, stamped, and signed by a California registered civil or structural engineer. The following requirements apply:

A. Support drawings must include detailed procedures for the installation and removal of the support system.

B. Design calculations must follow accepted practices, and accepted methods of analysis must be used.

C. Support designs must show uniform support of Metropolitan's facilities with minimal deflection.

D. The total weight of the facility must be transferred to the support system before supporting soil is fully excavated.

E. All members must be secured to prevent sliding, falling, or kickouts.

12.0 Backfill

12.1 Metropolitan Pipeline Not Supported

In areas where a portion of Metropolitan pipeline is not supported during construction, the backfill under and to an elevation of 6 inches above the top of the pipeline must be one-sack minimum cement sand slurry. To prevent adhesion of the slurry to Metropolitan's pipeline, a minimum 6-mil-thick layer of polyethylene sheeting or similar approved sheeting must be placed between the concrete support and the pipeline.

12.2 Metropolitan Pipeline Partially Exposed

In areas where a Metropolitan pipeline is partially exposed during construction, the backfill must be a minimum of 6 inches above the top of the pipeline with sand compacted to minimum 90 percent compaction.

12.3 Metropolitan Cut and Cover Conduit on Colorado River Aqueduct (CRA)

In areas where a Metropolitan cut and cover conduit is exposed, the following guidelines apply:

A. No vehicle or equipment shall operate over or cross the conduit when the cover is less than 3 feet.

B. Track-type dozer with a gross vehicle weight of 12,000 lbs or less may be used over the conduit when the cover is a minimum of 3 feet.

C. Wheeled vehicles with a gross vehicle weight of 8,000 lbs or less may operate over the conduit when the cover is a minimum of 4 feet.

D. Tracked dozer or wheeled vehicle should be used to push material over the conduit from the side.

E. Tracked dozer or wheeled vehicle should gradually increase cover on one side of the conduit and then cross the conduit and increase cover on the other side of the conduit. The cover should be increased on one side of the conduit until a maximum of 2 feet of fill has been placed. The cover over the conduit is not allowed to be more than 2 feet higher on one side of the conduit than on the other side.

F. The cover should be gradually increased over the conduit until the grade elevations have been restored.

13.0 Piles

13.1 Impacts on Metropolitan Pipelines

Pile support for structures could impose lateral, vertical and seismic loads on Metropolitan's pipelines. Since the installation of piles could also cause settlement of Metropolitan pipelines, a settlement and/or lateral deformation study may be required for pile installations within 50 feet of Metropolitan's pipelines. Metropolitan may require additional information per its Geo-technical Guidelines for pile installation. Please contact Metropolitan's Substructures Team for a copy of the Geotechnical Guidelines.

13.2 Permanent Cast-in-place Piles

Permanent cast-in-place piles must be constructed so that down drag forces of the pile do not act on Metropolitan's pipeline. The pile must be designed so that down drag forces are not developed from the ground surface to springline of Metropolitan's pipeline.

Permanent cast-in-place piles shall not be placed closer than 5 feet from the edge of Metropolitan's pipeline. Metropolitan may require additional information per its Geo-technical Guidelines for pile installation. Please contact Metropolitan's Substructures Team for a copy of the Geotechnical Guidelines.

14.0 Protective Slabs for Road Crossings Over Metropolitan Pipelines

Protective slabs must be permanent cast-in-place concrete protective slabs configured in accordance with Drawing SK-1 (See Figure 2 on Page 22).

The moments and shear for the protective slab may be derived from the American Association of State Highway and Transportation Officials (AASHTO). The following requirements apply:

A. The concrete must be designed to meet the requirements of AASHTO

B. Load and impact factors must be in accordance with AASHTO. Accepted methods of analysis must be used.

C. The protective slab design must be stamped and signed by a California registered civil or structural engineer and submitted to Metropolitan with supporting calculations for review and approval.

Existing protective slabs that need to be lengthened can be lengthened without modification, provided the cover and other loading have not been increased.

15.0 Blasting

At least 90 days prior to the start of any drilling for rock excavation blasting, or any blasting in the vicinity of Metropolitan's facilities, a site-specific blasting plan must be submitted to Metropolitan for review and approval. The plan must consist of, but not be limited to, hole diameters, timing sequences, explosive weights, peak particle velocities (PPV) at Metropolitan pipelines/structures, and their distances to blast locations. The PPV must be estimated based on a site-specific power law equation. The power law equation provides the peak particle velocity versus the scaled distance and must be calibrated based on measured values at the site.

16.0 Metropolitan Plan Review Costs, Construction Costs and Billing

16.1 Plan Review Costs

Metropolitan plan reviews requiring 8 labor hours or less are generally performed at no cost to the project proponent. Metropolitan plan reviews requiring more than 8 labor hours must be paid by the project proponent, unless the project proponent has superior rights at the project area. The plan review will include a written response detailing Metropolitan's comments, requirements, and/or approval.

A deposit of funds in the amount of the estimated cost and a signed letter agreement will be required from the project proponent before Metropolitan begins or continues a detailed engineering plan review that exceeds 8 labor hours.

16.2 Cost of Modification of Facilities Performed by Metropolitan

Cost of modification work conducted by Metropolitan will be borne by the project proponent, when Metropolitan has paramount/prior rights at the subject location.

Metropolitan will transmit a cost estimate for the modification work to be performed (when it has paramount/prior rights) and will require that a deposit, in the amount of the estimate, be received before the work will be performed.

16.3 Final Billing

Final billing will be based on the actual costs incurred, including engineering plan review, inspection, materials, construction, and administrative overhead charges calculated in accordance with Metropolitan's standard accounting practices. If the total cost is less than the deposit, a refund will be made; however, if the cost exceeds the deposit, an invoice for the additional amount will be forwarded for payment.

17.0 Street Vacations and Reservation of Easements for Metropolitan

A reservation of an easement is required when all or a portion of a public street where Metropolitan facilities are located is to be vacated. The easement must be equal to the street width being vacated or a minimum 40 feet. The reservation must identify Metropolitan as a "public entity" and not a "public utility," prior to recordation of the vacation or tract map. The reservation of an easement must be submitted to Metropolitan for review prior to final approval.

18.0 Metropolitan Land Use Guidelines

If you are interested in obtaining permission to use Metropolitan land (temporary or long term), a Land Use Form must be completed and submitted to Metropolitan for review and consideration. A nonrefundable processing fee is required to cover Metropolitan's costs for reviewing your request. Land Use Request Forms can be found at:

http://mwdh2o.com/PDF_Doing_Your_Business/4.7.1_Land_Use_Request_form_revised.pdf

The request should be emailed to RealEstateServices@mwdh2o.com,or contact the Real Property Development and Management (RPDM) Group at (213) 217-7750.

After the initial application form has been submitted, Metropolitan may require the following in order to process your request:

A. A map indicating the location(s) where access is needed, and the location & size (height, width and depth) of any invasive subsurface activity (boreholes, trenches, etc.).

B. The California Environmental Quality Act (CEQA) document(s) or studies that have been prepared for the project (e.g., initial study, notice of exemption, Environmental Impact Report (EIR), Mitigated Negative Declaration (MND), etc.).

C. A copy of an ACORD insurance certification naming Metropolitan as an additional insured, or a current copy of a statement of self-insurance.

D. Confirmation of the legal name of the person(s) or entity(ies) that are to be named as the permittee(s) in the entry permit.

E. Confirmation of the purpose of the land use.

F. The name of the person(s) with the authority to sign the documents and any specific signature title block requirements for that person or any other persons required to sign the document (i.e., legal counsel, Board Secretary/Clerk, etc.).

G. A description of any vehicles that will have access to the property. The exact make or model information is not necessary; however, the general vehicle type, expected maximum dimensions (height, length, width), and a specific maximum weight must be provided.

Land use applications and proposed use of the property must be compatible with Metropolitan's present and/or future use of the property. Any preliminary review of your request by Metropolitan shall not be construed as a promise to grant any property rights for the use of Metropolitan's property.

19.0 Compliance with Environmental Laws and Regulations

As a public agency, Metropolitan is required to comply with all applicable environmental laws and regulations related to the activities it carries out or approves. Consequently, project plans, maps, and other information must be reviewed to determine Metropolitan's obligations pursuant to state and federal environmental laws and regulations, including, but not limited to:

A. California Environmental Quality Act (CEQA) (Public Resources Code 21000-21177) and the State CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 1500-15387)

B. Federal Endangered Species Act (ESA) of 1973, 16 U.S.C. §§ 1531, et seq.

C. California Fish and Game Code Sections 2050-2069 (California ESA)

D. California Fish and Game Code Section 1602

E. California Fish and Game Code Sections 3511, 4700, 5050 and 5515 (California fully protected species)

F. Federal Migratory Bird Treaty Act (MBTA), 16 U.S.C. §§ 703-712

G. Federal Clean Water Act (including but not limited to Sections 404 and 401) 33 U.S.C. §§ 1342, 1344)

H. Porter Cologne Water Quality Control Act of 1969, California Water Code §§ 13000-14076.

I. Title 22, California Code of Regulations, Chapter 16 (California Waterworks Standards), Section 64572 (Water Main Separation)

Metropolitan may require the project applicant to pay for any environmental review, compliance and/or mitigation costs incurred to satisfy such legal obligations.

20.0 Paramount Rights / Metropolitan's Rights within Existing Rights-of-Way

Facilities constructed within Metropolitan's rights-of-way shall be subject to the paramount right of Metropolitan to use its rights-of-way for the purpose for which they were acquired. If at any time Metropolitan or its assigns should, in the exercise of their rights, find it necessary to remove or relocate any facilities from its rights-of-way, such removal and replacement or relocation shall be at the expense of the owner of the facility.

21.0 Disclaimer and Information Accuracy

Metropolitan assumes no responsibility for the accuracy of the substructure information herein provided. The user assumes responsibility for verifying substructure locations before excavating and assumes all liability for damage to Metropolitan's facilities as a result of such excavation. Additionally, the user is cautioned to conduct surveys and other field investigations as you may deem prudent, to assure that your project plans are correct. The relevant representative from Metropolitan must be called at least two working days, before any work activity in proximity to Metropolitan's facilities.

It generally takes 30 days to review project plans and provide written responses. Metropolitan reserves the right to modify requirements based on case-specific issues and regulatory developments.

Table 1: General Guidelines for Pipeline Separation between Metropolitan's Pipeline[1] and Sanitary Sewer[2] or Hazardous Fluid Pipeline[3]

Pipeline Crossings	Metropolitan requires that sanitary sewer and hazardous fluid pipelines that cross Metropolitan's pipelines have special pipe construction (no joints) **and** secondary containment[4]. This is required for the full width of Metropolitan's rights-of-way or within 10 feet tangent to the outer edges of Metropolitan's pipeline within public streets. Additionally, sanitary sewer and hazardous fluid pipelines crossing Metropolitan's pipelines must be perpendicular and maintain a minimum 1-foot vertical clearance between the top and the bottom of Metropolitan's pipeline and the pipe casing. These requirements apply to all sanitary sewer crossings regardless if the sanitary sewer main is located below or above Metropolitan's pipeline.
Parallel Pipeline	Metropolitan generally does not permit the installation of longitudinal pipelines along its rights-of-way. Within public streets, Metropolitan requires that all parallel sanitary sewer, hazardous fluid pipelines and/or non-potable utilities be located a minimum of 10 feet from the outside edges of Metropolitan's pipelines. When 10-foot horizontal separation criteria cannot be met, longitudinal pipelines require special pipe construction (no joints) **and** secondary containment[4].
Sewer Manhole	Sanitary sewer manholes are not allowed within Metropolitan's rights-of-way. Within public streets, Metropolitan requests manholes parallel to its pipeline be located a minimum of 10 feet from the outside edges of its pipelines. When 10 foot horizontal separation criteria cannot be met, the structure must have secondary containment[5].

Notes:

[1] *Separation distances are measured from the outer edges of each pipe.*

[2] *Sanitary sewer requirements apply to all recycled water treated to less than disinfected tertiary recycled water (disinfected secondary recycled water or less).* Recycled water definitions are included in Title 22, California Code of Regulations, Chapter 3 (Water Recycling Criteria), Section 60301.

[3] *Hazardous fluids include e.g., oil, fuels, chemicals, industrial wastes, wastewater sludge, etc.*

[4] *Secondary Containment for Pipeline - Secondary containment consists of a continuous pipeline sleeve (no joints). Examples acceptable to Metropolitan include welded steel pipe with grout in annular space and cathodic protection (unless coated with non-conductive material) and High Density Polyethylene (HDPE) pipe with fusion-welded joints.*

[5] *Secondary Containment for Structures – Secondary containment consists of external HDPE liner or other approved method.*

Table 2: General Guidelines for Pipeline Separation between Metropolitan's Pipeline[1] and Storm Drain and/or Disinfected Tertiary Recycled Water[2]

Pipeline Crossings	Metropolitan requires crossing pipelines to be special pipe construction (no joints) or have secondary containment[3] within 10-feet tangent to the outer edges of Metropolitan's pipeline. Additionally, pipelines crossing Metropolitan's pipelines must be perpendicular and maintain a minimum 1-foot vertical clearance.
Parallel Pipeline	Metropolitan generally does not permit the installation of longitudinal pipelines along its rights-of-way. Within public streets, Metropolitan requests that all parallel pipelines be located a minimum of 10 feet from the outside edges of Metropolitan's pipelines. When 10-foot horizontal separation criteria cannot be met, special pipe construction (no joints) or secondary containment[3] are required.
Storm Drain Manhole	Permanent utility structures (e.g., manhole. catch basin, inlets) are not allowed within Metropolitan's rights-of-way. Within public streets, Metropolitan requests all structures parallel to its pipeline be located a minimum of 10 feet from the outside edges of its pipelines. When 10 foot horizontal separation criteria cannot be met, the structure must have secondary containment[4].

Notes:

[1] *Separation distances are measured from the outer edges of each pipe.*

[2] *Disinfected tertiary recycled water as defined* in Title 22, California Code of Regulations, Chapter 3 (*Water Recycling Criteria*), Section 60301.

[3] *Secondary Containment for Pipeline - Secondary containment consists of a continuous pipeline sleeve (no joints). Examples acceptable to Metropolitan include welded steel pipe with grout in annular space and cathodic protection (unless coated with non-conductive material) and High Density Polyethylene (HDPE) pipe with fusion-welded joints.*

[4] *Secondary Containment for Structures – Secondary containment consists of external HDPE liner or other approved method.*

Table 3: General Guidelines for Pipeline Separation[1] between Metropolitan's Pipeline and Recycled Water[2,4] Irrigations

Pressurized recycled irrigation mainlines	• Crossings - must be perpendicular and maintain a minimum 1-foot vertical clearance. Crossing pressurized recycled irrigation mainlines must be special pipe construction (no joints) or have secondary containment[3] within 10-feet tangent to the outer edges of Metropolitan's pipeline. • Longitudinal - must maintain a minimum 10-foot horizontal separation and route along the perimeter of Metropolitan's rights-of-way where possible.
Intermittently Energized Recycled Water Irrigation System Components	• Crossings - must be perpendicular and maintain a minimum 1-foot vertical clearance. Crossing irrigation laterals within 5-feet tangent to the outer edges of Metropolitan's pipeline must be special pipe construction (no joints) or have secondary containment[3]. • Longitudinal – must maintain a minimum 5-foot horizontal separation between all intermittently energized recycled water irrigation system components (e.g. irrigation lateral lines, control valves, rotors) and the outer edges of Metropolitan's pipeline. Longitudinal irrigation laterals within 5-feet tangent to the outer edges of Metropolitan's pipeline must be special pipe construction (no joints) or have secondary containment[3].
Irrigation Structures	Irrigation structures such as meters, pumps, control valves, etc. must be located outside of Metropolitan's rights-of-way.
Irrigation spray rotors near Metropolitan's aboveground facilities	Irrigation spray rotors must be located a minimum of 20-foot from any Metropolitan above ground structures with the spray direction away from these structures. These rotors should be routinely maintained and adjusted as necessary to ensure no over-spray into 20-foot clear zones.
Irrigations near open canals and aqueducts	Irrigation with recycled water near open canals and aqueducts will require a setback distance to be determined based on site-specific conditions. Runoff of recycled water must be contained within an approved use area and not impact Metropolitan facilities. Appropriate setbacks must also be in place to prevent overspray of recycled water impacting Metropolitan's facilities.

Notes:

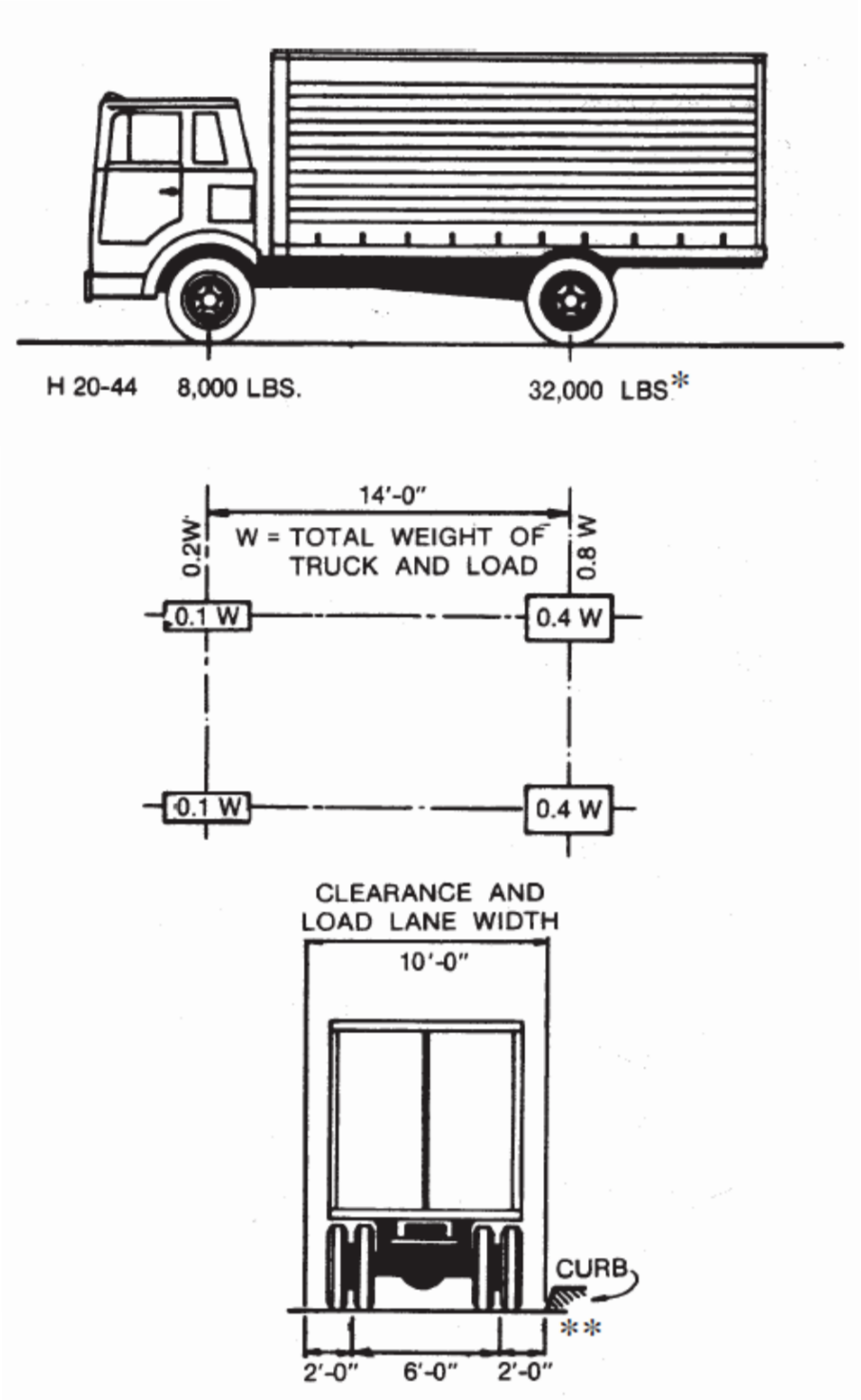
[1] *Separation distances are measured from the outer edges of each pipe.*

[2] *Requirements for recycled water irrigation apply to all levels of treatment of recycled water for non-potable uses.* Recycled water definitions are included in Title 22, California Code of Regulations, Chapter 3 (*Water Recycling Criteria*), Section 60301.

[3] *Secondary Containment for Pipeline - Secondary containment consists of a continuous pipeline sleeve (no joints). Examples acceptable to Metropolitan include welded steel pipe with grout in annular space and cathodic protection (unless coated with non-conductive material) and High Density Polyethylene (HDPE) pipe with fusion-welded joints.*

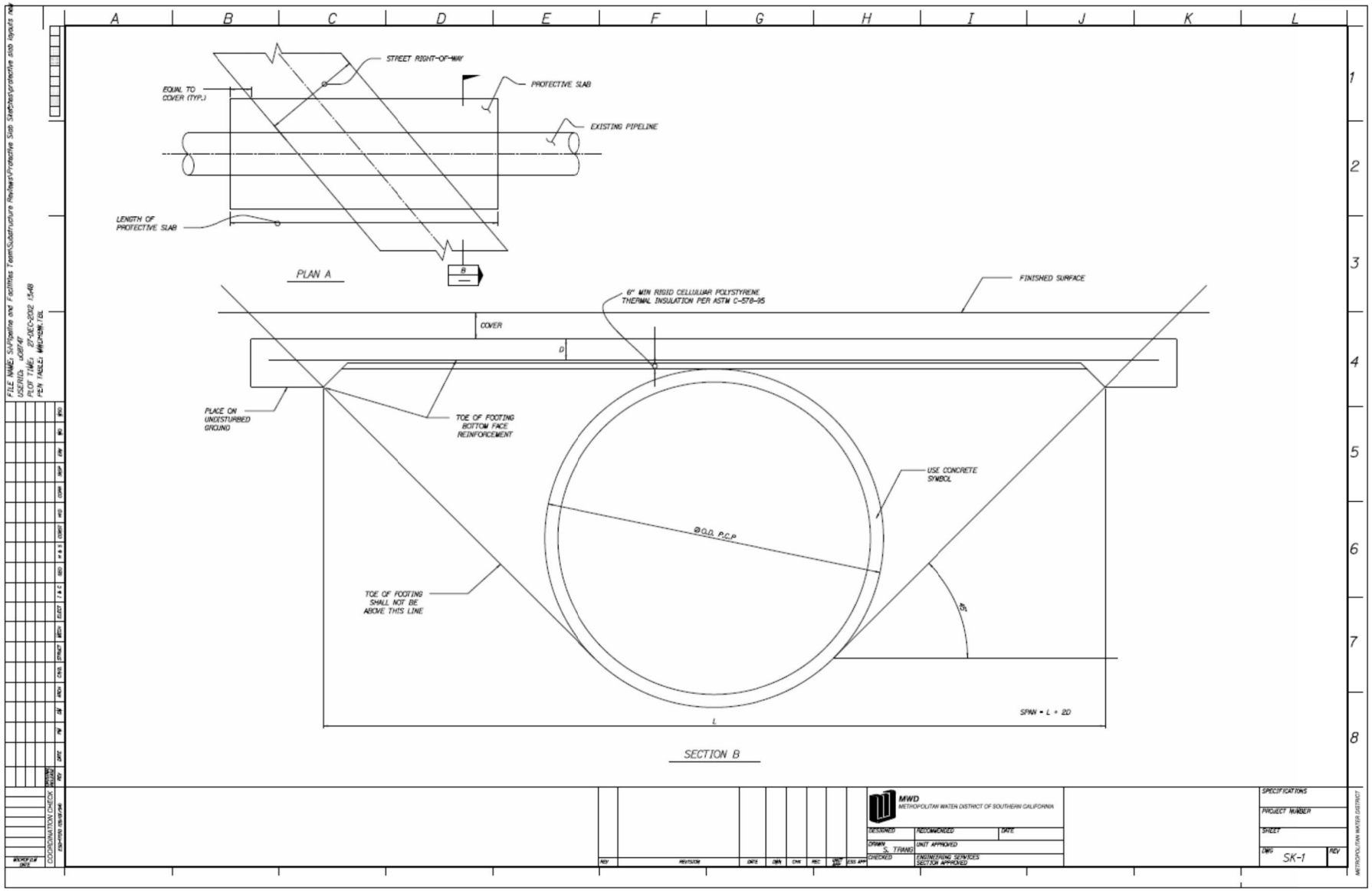
[4] *Irrigation with recycled water shall not be applied directly above Metropolitan's treated water pipelines.*

Figure 1: AASHTO H-20 Loading



Note: The H loadings consist of a two-axle truck or the corresponding lane loadings as illustrated above. The H loadings are designated "H" followed by a number indicating the gross weight in tons of the standard truck.

Figure 2: Drawing SK-1



Comment Letter No. 13

December 30, 2025
Metropolitan Water District of Southern California
Sean Carlson, Team Manager, Environmental Planning
700 North Alameda Street
Los Angeles, California 90012
213-217-6000

RESPONSE TO COMMENT NO. 13-1

This comment is an email transmitting comments on the Draft EIR for the DJT4 Parcel Delivery Facility Project from the Metropolitan Water District of Southern California (MWD). The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 13-2

This is an introductory comment briefly summarizing the project description. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 13-3

This comment states that MWD owns and operates an approximately 96-inch inside-diameter pipeline located along La Entrada Drive within the Project area identified as MWD's Lower Feeder. MWD expresses concern with the Project's potential to impact the Lower Feeder and MWD rights-of-way (ROW) and requests that the City avoid any potential impacts where applicable and propose mitigation measures to offset impacts. The comment also states that MWD requires designs plans for any activity within the area of MWD's pipelines or facilities to be submitted for review and written approval prior to the City's approval of the Project.

The Applicant submitted the Project plans to MWD for review in 2023. MWD reviewed the submitted plans and provided a list of comments and requirements in a letter dated April 13, 2023 from Francisco Flores (Manager, Substructures Team) of MWD to Noah Ramos (Senior Project Manager) of Ware Malcomb. As stated in the letter, no resubmittal of the Project plans are required provided that all of the requirements stated in the April 13, 2023 letter are complied with during the design and construction phase of the Project. The Applicant will comply with all requirements stated in the April 13, 2023 letter and will submit revised plans if additional improvements and/or utilities are proposed for MWD review and approval prior to the start of construction.

RESPONSE TO COMMENT NO. 13-4

A map showing the location of MWD's Lower Feeder pipeline and easement within the Project area is provided for reference. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 13-5

A copy of MWD's *Guidelines for Improvements and Construction Projects Proposed in the Area of Metropolitan's Facilities and Rights-of-Ways* is provided for reference. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

COMMENT LETTER NO. 14

From: Leslie Reider <leslie@lozeaudrury.com>
Sent: Friday, January 3, 2025 11:32:31 AM
To: Hwang, Joanne <joanneh@ci.brea.ca.us>
Cc: Richard Drury <richard@lozeaudrury.com>; Madeline Dawson <madeline@lozeaudrury.com>; Chase Preciado <Chase@lozeaudrury.com>
Subject: Comment on Draft Environmental Impact Report, DJT4 Parcel Delivery Facility Project

Dear Ms. Hwang,

1 Attached please find comments submitted on behalf of Supporters Alliance for Environmental Responsibility ("SAFER") regarding the Draft Environmental Impact Report prepared for the DJT4 Parcel Delivery Facility Project (SCH 2023070241).

If you could please confirm receipt of this email and the attached comments, it would be greatly appreciated. Thank you for your assistance.

Best,
--
Leslie Reider
Legal Assistant
Lozeau | Drury LLP
1939 Harrison Street, Suite 150
Oakland, California 94612
(510) 836-4200
(510) 836-4205 (fax)
leslie@lozeaudrury.com

LOZEAU DRURY LLP
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richard@lozeaudrury.com

Via Email

January 3, 2025

Joanne Hwang, City Planner
Planning Division
Community Development Department
City of Brea
1 Civic Center Circle
Brea, CA 92821
joanneh@cityofbrea.net

Re: Comment on Draft Environmental Impact Report, DJT4 Parcel Delivery Facility Project (SCH 2023070241)

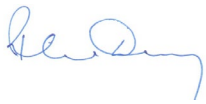
Dear Ms. Hwang:

2 This comment is submitted on behalf of Supporters Alliance for Environmental Responsibility ("SAFER") regarding the Draft Environmental Impact Report ("DEIR") prepared for the DJT4 Parcel Delivery Facility Project (SCH 2023070241), which proposes the demolition of an existing 637,503-square-foot former Bank of America office building and surface parking lot to construct a 181,500-square-foot parcel delivery facility intended to be used as a 24/7 Amazon "last-mile" delivery warehouse, consisting of 163,350 square feet of warehouse and storage space and 18,150 square feet of ancillary office space. located at 275 Valencia Avenue on Assessor Parcel Numbers 320-233-17, 320-301-11, and 320-301-12 in the City of Brea. ("Project").

3 SAFER is concerned that the DEIR fails as an informational document, fails to describe all project impacts, fails to discuss inconsistencies with air quality and other policies intended to reduce Project impacts (including the California Air Resource Board, Air Quality and Land Use Handbook), fails to adequately analyze impacts on nearby residences, and fails to impose all feasible mitigation measures to reduce the Project's impacts. SAFER requests that the Community Development Department address these shortcomings in a revised draft environmental impact report ("RDEIR") and recirculate the RDEIR prior to considering approvals for the Project.

SAFER reserves the right to supplement these comments during the administrative process. *Galante Vineyards v. Monterey Peninsula Water Management Dist*., 60 Cal. App. 4th 1109, 1121 (1997).

Sincerely,



Richard Drury
Lozeau Drury LLP

Comment Letter No. 14

January 3, 2025
Supporters Alliance for Environmental Responsibility
c/o Richard Drury, Partner
Lozeau Drury LLP
1939 Harrison Street, Ste. 150
Oakland, CA 94612
richard@lozeaudrury.com
510-836-4200

RESPONSE TO COMMENT NO. 14-1

This comment is an email from the law firm of Lozeau Drury LLP submitting comments on the Draft EIR for the DJT4 Parcel Delivery Facility Project on behalf of Supporters Alliance for Environmental Responsibility (SAFER). The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 14-2

This introductory comment states that the comment letter is submitted on behalf of SAFER and briefly summarizes the project description. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 14-3

This comment alleges that the Draft EIR fails as an informational document, fails to describe all project impacts, fails to discuss inconsistencies with air quality and other policies intended to reduce project impacts, fails to adequately analyze impacts on nearby residences, and fails to impose all feasible mitigation measures to reduce the project's impacts. This comment conveys SAFER's request for the City's Community Development Department to address the shortcomings of the Draft EIR in a Revised Draft EIR and recirculate the Revised Draft EIR prior to considering approvals for the Project. However, the comment presents no information explaining, or evidence supporting, the alleged Draft EIR's inconsistencies or inadequacies. Moreover, the comment does not identify any specific impact analysis that would require substantial changes to the Draft EIR or present any information that meets any of the criteria for recirculation of the Draft EIR. Accordingly, the comment is noted, and no additional response is warranted.

This comment also states that SAFER reserves the right to supplement these comments during the administrative process. No additional comments from SAFER have been received as of the preparation of this Final EIR. No further response is warranted.

COMMENT LETTER NO. 15

From: Joan Licari [redacted]
Sent: Monday, January 6, 2025 2:15 PM
To: Hwang, Joanne <joanneh@ci.brea.ca.us>
Subject: Sierra Club Comments on Proposed Brea CADJT4 Parcel Delivery Facility Project (State Clearinghouse No. 2023070241)

Dear Ms. Hwang:

1 The Sierra Club respectfully submits the attached comments for the Amazon CADJT4 Parcel Delivery Facility Project (State Clearinghouse No. 2023070241).

Sincerely,

Joan Licari, D.Env. (Doctorate, U.C.L.A., Environmental Science and Engineering)
Chair, San Gabriel Valley Task Force
Angeles Chapter of Sierra Club

Sierra Club Angeles Chapter
3250 Wilshire Blvd. #1106
Los Angeles, CA 90010
213-387-4287

To: Ms. Joanne Hwang, City Planner,
City of Brea – Planning Division
joanneh@cityofbrea.net

From: Rio Hondo Group, Angeles Chapter of Sierra Club
San Gabriel Valley Task Force, Angeles Chapter of Sierra Club

January 6, 2025

Regards: Comments on Draft Environmental Impact Report for the DJT4 Parcel Delivery Facility Project (State Clearinghouse No. 2023070241)

To Whom it may concern:

The Rio Hondo Group of the Angeles Chapter of Sierra Club was contacted by concerned local Brea residents who expressed concerns about environmental impacts of the proposed Amazon JT4 Parcel Delivery Facility proposed for the eastern edge of Brea. The San Gabriel Valley Task Force of the Angeles Chapter of Sierra Club works with the Rio Hondo Group to analyze environmental impacts of projects in the area of the Angeles Chapter of Sierra Club in the Orange and Los Angeles Counties.

The Project

2 The proposed DJT4 Parcel Delivery Facility Project will demolish the existing 637,503-square-foot office building and surface parking lot to construct an 181,500-square-foot parcel delivery facility, consisting of 163,350 square feet of warehouse and storage space and 18,150 square feet of ancillary office space, on an approximate 31.6-acre site. The proposed facility would be a single-story building with a maximum height of 56 feet (including architectural projects) and floor area ratio of approximately 0.14:1. The Project would provide 1,065 vehicle parking spaces (consisting of 304 automobile spaces, 757 delivery van spaces, and four [4] line-haul truck trailer spaces), 180 ancillary van loading spaces (90 loading spaces and 90 staging spaces), and 13 Utility Tractor Rig loading spaces to support facility operations.

The proposed facility would be generally located in the center of the Project Site and flanked by loading areas and surrounded by vehicle parking. The Project building would be located entirely within the Light Industrial (M-1) zone, and surface parking and drive aisles would be located within the Light Industrial (M-1) and Mixed-Use II (MU-II) zoned portion of the Project Site.

The proposed development is similar to light industrial activities currently surrounding the site. However, traffic patterns, noise levels, air pollution, emissions of greenhouse gases will be definitely change both during construction activities and later operations. These changes must be fully analyzed in the FEIR.

2 (continued)

The proposed site is presently surrounded on three sides by light industrial and extensive surface parking areas similar to the existing light industrial development surrounding most of the Project Site, which includes research and development, light manufacturing and processing, offices, light warehousing and storage, high-technology production, and other related uses.

The La Floresta master-planned mixed-use community will be exposed to project activities along Valencia Ave. Block wall fencing separates La Floresta from the proposed project area along Valencia Ave. The Proposed Project is expected to generate a maximum of 2,098 vehicle trips per day (1,049 vehicles inbound plus 1,049 vehicles outbound) that includes an anticipated 62 truck trips (31 trucks inbound plus 31 trucks outbound). Operations will occur 24 hours a day. (DEIR)

La Floresta community is located in close proximity to the project, approximately 116 feet to east. Construction is anticipated to begin in the second quarter of 2025 and is expected to last approximately 24 months.

Concerns that must be addressed fully include air quality, noise, and traffic:

3

1. The impacts of previous activities prior to shutting down of the now-closed Bank of America facility must be compared to those anticipated from the traffic, noise, and air quality impacts predicted from the proposed project.

   This will include increases in truck and van traffic into and out of the Amazon Facility.

3 (continued) Will air quality be increased in the region or lessened by more efficient deliveries by Amazon? Will there be local and/or regional impacts? Valencia Ave. is also a route traveled by trucks to a nearby landfill. These air quality, traffic, and noise impacts must be fully analyzed.

4 2. On-site vegetation is limited to ornamental landscaping. The DEIR indicates the "Project Site is located within an urbanized area surrounded by light industrial uses…. Therefore, candidate, sensitive, or special status species; riparian habitat or other sensitive natural communities; state or federally-protected wetlands; and established native resident or migratory wildlife corridors do not exist on the Project Site. (DEIR)

There should be an evaluation of landscaping planned to maximize the use of local native species to minimize noise levels, air quality impacts of the project, noise levels to residents of the nearby planned community, and limit needs for water. Species chosen can also provide for breeding grounds for native flora and fauna.

5 We thank you for providing this opportunity to comment on this proposed project.

Sincerely,

Mike Bressler, Chair of Rio Hondo Group
Angeles Chapter of Sierra Club
[redacted]

Joan Licari, Chair of San Gabriel Valley Task Force
Angeles Chapter of Sierra Club
[redacted]

Margee Hills, Brea resident
Sierra Club and Rio Hondo Group member

Comment Letter No. 15

January 6, 2025
Sierra Club Angeles Chapter
Mike Bressler, Chair of Rio Hondo Group
Joan Licari, Chair of San Gabriel Valley Task Force
Margee Hills, Brea resident & Sierra Club and Rio Hondo Group member
3250 Wilshire Boulevard, #1106
Los Angeles, CA 90010

RESPONSE TO COMMENT NO. 15-1

This comment is an email transmitting comments on the Draft EIR for the DJT4 Parcel Delivery Facility Project from the Sierra Club. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

RESPONSE TO COMMENT NO. 15-2

This comment briefly introduces the Rio Hondo Group and the San Gabriel Valley Task Force of the Angeles Chapter of the Sierra Club and summarizes the project description and existing conditions provided in the Draft EIR. The comment states that the Project's construction and operational activities will change the traffic patterns, noise levels, air pollution, and GHG emissions in the area and that such changes must be fully analyzed in the Draft EIR. This comment also alleges that the La Floresta community will be exposed to Project activities along Valencia Avenue. However, the comment does not provide specific reasons or substantial evidence to demonstrate that changes to the environment resulting from Project implementation are not adequately analyzed in the Draft EIR. Project impacts related to air quality, GHG, noise, and transportation, including impacts to the La Floresta community, are fully analyzed respectively in **Section 5.1, Air Quality**, **Section 5.3, Greenhouse Gas Emissions**, **Section 5.5, Noise**, and **Section 5.8, Transportation,** of the Draft EIR.

RESPONSE TO COMMENT NO. 15-3

This comment states that the impacts of the previous activities on the Project Site prior to the shutting down of the Bank of America facility must be compared to the anticipated traffic, noise, and air quality impacts anticipated from the Project, including increases in truck and van traffic in and out of the Project Site. The commenter questions whether air quality impacts would be increased in the region or lessened by more efficient deliveries and whether there will be local or regional impacts. The commenter also notes that Valencia Avenue is a route traveled by trucks to the nearby landfill. Regarding truck and van traffic into and out of the Project, **Section 5.8, Transportation,** of the Draft EIR identifies the net change in vehicle trips that would result from the Project and evaluates impacts in terms of VMT per SB 743 and Section 15064.3 of the CEQA Guidelines. Transportation impacts were found to be less than significant. As discussed in detail in **Section 5.1, Air Quality**, of the Draft EIR, the baseline condition considered for the air quality analysis assumes the occupancy and operation of the existing building on the Project Site by Bank of America. **Table 5.1-7** and **Table 5.1-9** in **Section 5.1, Air Quality**, of the Draft EIR compares the air emissions generated by the Project's vehicle trips (including personal vehicles, vans, and trucks) to the emissions generated by the Bank of America vehicle trips. As concluded

in **Section 5.1, Air Quality**, of the Draft EIR, the Project's regional and localized air pollutant emissions would be less than significant. **Section 5.5, Noise**, of the Draft EIR considers the existing noise environment of the Project area, which includes the noise generated by trucks traveling on Valencia Avenue to the Brea Olinda landfill, and compares it to the future noise environment with Project-generated noise levels. As concluded in **Section 5.5, Noise**, of the Draft EIR, the Project would not generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of established standards and the Project's construction and operational noise impacts would be less than significant.

RESPONSE TO COMMENT NO. 15-4

This comment asserts that the Draft EIR should include an evaluation of landscaping planned to maximize the use of local native species to minimize noise levels, air quality impacts of the Project, noise levels to residents of the nearby planned community, and limit need for water. As concluded in **Section 5.1, Air Quality** and **Section 5.5, Noise**, of the Draft EIR, the Project's construction and operational air pollutant emissions and construction and operational noise impacts would be less than significant. Therefore, no measures to reduce air quality impacts or noise levels are required. However, as stated in **Chapter 3.0, Project Description**, of the Draft EIR, the Project would provide drought tolerant landscaping and water-efficient irrigation to limit the need for water on the Project Site. All plant selections would comply with the guidelines set forth by Brea Fire Department and the Orange County Fire Authority. All plants would be noninvasive and commonly used in this geographic area.

RESPONSE TO COMMENT NO. 15-5

This concluding comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted, and no further response is required.

COMMENT LETTER NO. 16

From: Andy Lee <alee@teamster.org>
Sent: Monday, January 6, 2025 9:20 AM
To: Hwang, Joanne <joanneh@ci.brea.ca.us>; Hwang, Joanne <joanneh@ci.brea.ca.us>
Subject: DJT4 Parcel Delivery Facility Project - DEIR Comments

Dear Ms. Hwang,

1 Printed below and attached are comments submitted by the International Brotherhood of Teamsters (IBT) regarding the Draft EIR for the DJT4 Parcel Delivery Facility Project. Please reply to this email so I know it was received. Thank you.

Andy Lee
(213) 442-9233
alee@teamster.org

TO: Joanne Hwang
City Planner
Planning Division
City of Brea
joanneh@cityofbrea.net

RE: Draft Environmental Impact Report for DJT4, SCH#2023070241

Dear Ms. Hwang,

Please find below comments submitted on behalf of the International Brotherhood of Teamsters (IBT), regarding the draft environmental impact report ("DEIR") circulated for the project known as "DJT4," the proposed approximately 182,000 square foot "last mile" delivery warehouse and related developments ("the Project"). The Project requires numerous permits and approvals from the City of Brea ("the City"), including at least the following: a Plan Review for a M-1 and MU-II zone, specifically Plan Review No. 2022-09; a Vesting Tentative Parcel Map, specifically Vesting Tentative Parcel Map, No. 2022-193; and "other discretionary and ministerial permits and approvals," as yet undefined in the publicly circulated materials. (DEIR at 1-2). The Project contemplates redevelopment of a former office building at 275 Valencia Avenue, APNs 320-233-17, 320-301-11, and 320-301-12 ("the Site").

I. Nature of the Project

The Project entails the redevelopment of a three-story office building and replacing it with a last-mile parcel delivery facility. (DEIR at 1-1). The general details of the Project are found in the DEIR, Section 1.2.2. The totality of the Project is to develop a last-mile parcel delivery use, with the necessary supports to do so, i.e., parking, loading spaces, pick-up lanes, etc. (DEIR at 1-2). According to the DEIR's Project Description, there are no other uses contemplated for, or entailed in the redevelopment of, this site.

2

II. Project Objectives

The California Environmental Quality Act ("CEQA") requires that an EIR state clearly the actual objectives of the Project. This "statement of objectives," is particularly important because it guides the decision-makers and the public as to the potential for feasible mitigation measures and project alternatives. 14 Cal. Code Reg. Sec. 15124 subd. (b). The stated objectives for the Project are all rooted in the successful development of a parcel delivery logistics facility and the alleged, associated economic advantages. (DEIR at 1-3). The sole exception is one objective to "[e]ncourage cyclist and pedestrian safety in the City [of Brea]." (DEIR at 1-3).

III. Land Use and CEQA Compliance

The Project as it is proposed and described in the application materials and draft EIR conflicts with, or undermines, a variety of land use requirements and CEQA compliance requirements. These are detailed in this Section, below.

A. The Proposed Use is not Compatible with the Existing General Plan Designation

The City of Brea General Plan designates the Site for "Light Industrial" use. (City of Brea General Plan ("BGP"), at 2-15). The Light Industrial use designation, "accommodates industrial uses that are low intensity and contained entirely within buildings. Allowable uses include research and development, light manufacturing and processing, offices, light warehousing and storage, high-technology production, and related uses. Other uses determined to be compatible may also be allowed. Public and private hiking trails and related facilities can be established within the Light Industrial designation." (*Id.*)

3

A city's general plan is the "constitution" for future development. *Lesher Commc'ns, Inc. v. City of Walnut Creek*, 52 Cal. 3d 531, 540 (1990). Enactments that are "vertically" inconsistent with the general plan are void, including subdivision approvals such as vesting tentative maps. The Subdivision Map Act (§§ 66410–66499.37 (the Map Act)) is the primary regulatory control over the subdivision of real property in California, and the authority to approve "vesting" tentative maps comes from the Map Act. Cal. Gov't Code § 66498.1. The Map Act is designed to promote orderly community developments and lists a number of circumstances that require denial of a map, including inconsistency with an

applicable general plan (§ 66474, subd. (b)); *see Carson Harbor Vill., Ltd. v. City of Carson*, 239 Cal. App. 4th 56, 63 (2015).

A city has broad discretion to interpret its own general plan, and in particular to make determinations of consistency. *Anderson First Coalition v. City of Anderson*, 130 Cal. App. 4th 1173, 1192 (2005). However, that discretion is not unlimited. *Families Unafraid v. County of El Dorado,* 62 Cal. App. 4th 1332, 1341 (1998). The determination of consistency must be reasonable–must be based on some kind of objective evidence, or resolving some ambiguity. *See e.g., Orange Citizens for Parks & Recreation v. Superior Court,* 2 Cal. 5th 141, 152, 157 (2016) (lack of ambiguity in the adopted general plan negated trial court's deference to extrinsic considerations in approving a project's consistency).

Here there is similarly no ambiguity. The BGP's definition of the Light Industrial use, and the classification of the Site as being for Light Industrial use, are unambiguous. As stated above, the Light Industrial classification is reserved for uses which are contained "*entirely within* buildings." In the City's zoning code, the word building is not separately defined, but "includes the word structure," and the word "structure" is keyed to the International Building Code definition (Brea Municipal Code ("BMC") Section 20.00.070)[1], which is "that which is built or constructed."

Even with this broad definition of a building, it is evident that the proposed activity of the Project is not "contained entirely within" a building, if those words are to have any meaning. A key function of a last-mile delivery warehouse–in fact, its defining trait–is the *constant* loading of parcels into commercial vehicles, and those commercial vehicles then leaving to deliver those vehicles, and then again returning to the property when deliveries have been completed.

3 (cont.)

The fact that the key work of the facility will be conducted *outside* of the building or structure is not only common sense; it is actually a key assumption used in the preparation of the DEIR. For example, in conducting the acoustic and noise analysis, the engineering firm describes a source of noise: "area sources were placed over the proposed van loading areas as well as the line haul truck stalls *located directly adjacent to the proposed building.*" (DEIR Appendix E at 23) (emphasis added). In other words, the DEIR itself acknowledges that a source of noise specific to the proposed Project will not happen *within* the building, but "adjacent to" the building.

The Conceptual Site Plan contained in the DEIR makes this conclusion even more plain. The Site Plan shows three different types of circulation: those of line trucks ("trailer circulation"), those of delivery vans, and those of "associates." (DEIR Figure 3-3). The differentiation is clear: the "associate" circulation is where the employees will drive their personal vehicles when they get to work. The trailers are the goods being delivered to the warehouse. These are both types of activity that could, reasonably, be absorbed into the concept of a "warehouse." However, the third classification is *unique to this type of use*; that is, it is not typical of "warehouses," that there will be lanes suited to nearly 100 commercial vans waiting to be loaded with goods, with operations going on 24 hours a day and seven days a week. The Conceptual Site Plan labels these areas as "45 van loading," on each side of the building, and the map shows that these vans will be getting loaded as much as 80-84 feet away from the building itself. *Id*. Notably, there are two more (unlabeled) seeming staging areas, with room for what seems like an additional 90 delivery vehicles, whether those commercial vans or personal vehicles (i.e., the so-called "Flex Drivers") is not clear. These staging areas are about 106 feet away from the building.

The Gross Floor Area of "the building" does not include the van staging areas (or the additional van staging areas); if it did, it would add *at least* 120,000 square feet to the gross floor area. Any projections extending to the staging areas are merely projections, not parts of "the building" in which the activity is enclosed or contained.[2]

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[1] According to the International Building Code, a Building is "Any structure utilized or intended for supporting or sheltering any occupancy."

[2] See e.g., the International Building Code's definition for Building Area in Chapter 2: "The area included within surrounding exterior walls, or exterior walls and fire walls, exclusive of vent shafts and courts. Areas of the building not provided with surrounding walls shall be included in the building area if such areas are included with the horizontal projection of the *roof or floor above*." (emphasis added)

It may be a reasonable interpretation of the BGP's definition of Light Industrial uses that it is presumed that a warehouse will receive shipments from semi trucks, and will have its employees driving into the parking lot. These would be *incidental* to the function of those warehouses; after all it would be pointless to have a warehouse without deliveries or employees. However, the consistent and constant loading and of commercial vehicles at all hours is core to the use at issue here.

It must be presumed that the City chose its words carefully when creating the definition of a Light Industrial use, as opposed to the General Industrial use, which is the higher intensity definition, and excludes the qualifier "contained entirely within buildings." The General Industrial use is limited to areas where "disturbances will not impact residential neighborhoods, schools, and similar uses." (BGP at 2-15). The purpose and intent of bifurcating the industrial uses is self-evident: light industrial uses can be developed nearer to residential neighborhoods *because* the uses allowable there are "contained entirely within buildings." The General Industrial designation is meant for places where *distance* protects residential neighborhoods etc.; the Light Industrial designation can be placed closer to such places, *because* those uses are "contained within" buildings: rather than distance, it is on-site "containment," that protects residential areas.

3 (cont.)

Relevantly, the BGP's definition of "General Industrial," includes as an allowable use "warehousing and storage," the same language from the Light Industrial definition with the word "light" omitted. In other words, the BGP contemplates different types of warehousing and storage; some "light," where, presumably, the activity is "contained *entirely* within buildings," the other language omitted from the General Industrial definition.

The fact that the DEIR openly acknowledges that the operation of the Project requires the core activity of the proposed use to happen *outside* of the building or structure means that there is an unambiguous and direct conflict between the Vesting Tentative Map subdivision and the General Plan. This contradiction compels the rejection of that Vesting Tentative Map proposal and cannot underlie the adoption of a DEIR, since there is a General Plan inconsistency. The City is therefore compelled to not adopt the DEIR and reject the Vesting Tentative Map application.

B. <u>The City Must Identify the Outstanding Discretionary Permissions</u>

A DEIR is supposed to be related to the discretionary approvals being sought. *San Diego Navy Broadway Complex Coal. v. City of San Diego*, 185 Cal.App.4th 924, 938 (2010). The DEIR as proposed seems to purport to adopt this DEIR not only for the identified discretionary approvals, but also for "future" discretionary and ministerial approvals that are not identified. The "touchstone" question for environmental review is whether the agency "can shape the project," to address environmental impacts. *Id* at 934. Discretion triggers the applicability of CEQA to a project; however, environmental review must be related to the discretion that the agency can exercise. An EIR is inherently deficient as informational document where it is not even disclosed what discretionary authority may be exercised in the future over what element of the project–indeed, without knowing what discretionary approvals the applicant may seek in the future, it is not even clear how the Project may change. Adopting the DEIR prior to disclosing these things creates a momentum against further environmental review that may be necessary while avoiding needed disclosures. The City should modify the DEIR to make clear that these additional discretionary permissions will require further environmental review, or disclose the nature of those permissions so that the decision-makers and public and be adequately informed of the potential impacts of the Projects.

4

C. <u>The Project Description and Related Assumptions are Legally Inadequate</u>

At a very basic level, the DEIR is not compliant with CEQA because it includes as a baseline assumption the actual continued operation of the Bank of America office building, which was vacated several months before the filing of a Notice of Preparation ("NOP"). The DEIR's rationale for this is unavailing; the fact that the building could be "reoccupied," (DEIR at 5.8-17) does not mean that the City can base its analysis on conditions that do not exist. *See* 14 CCR § 15125(a).

5

The City's rationale may be more appropriate for the alternatives analysis, where other lawfully permitted uses of a given site can be used to determine whether a proposed project is superior to potential alternatives. That is often done in EIRs, because the entire purpose of an alternative analysis is speculation based on reasonable potential uses for the property, particularly uses that are legally permitted and do not require discretionary approvals by the lead agency or a

third-party agency. *See* There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason. 14 CCR § 15126.6; *see also Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553*; Laurel Heights Improvement Association v. Regents of the University of California* (1988) 47 Cal.3d 376).

An EIR must include a description of the physical environmental conditions in the vicinity of the project, "as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced . . . . This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant." Section 15126.2 provides that in assessing the impact of a proposed project on the environment, "the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area *as they exist at the time the notice of preparation is published*, or where no notice of preparation is published, at the time environmental analysis is commenced." (emphasis added).

5 (cont.) It is widely accepted in the relevant case law that that the significance of a project's impacts cannot be measured unless the EIR first establishes the actual physical conditions on the property. *Save Our Peninsula Comm. v. Monterey Cty. Bd. of Supervisors*, 87 Cal. App. 4th 99, 125 (2001) (internal citations omitted).

In the present matter, the non-existent continued operation of the discontinued use allows the DEIR to determine that there will be a net *decrease* in vehicle trips. (DEIR at Table 5.8-1).

The purpose of CEQA is clearly thwarted where the lead agency can look at speculative future events to set the baseline against which the *actual proposed change to the environment* will be weighed. It would naturally mean that a lead agency could simply make the baseline the most intensive possible use, rather than the actual conditions, and thereby minimize the actual impacts of a proposed project. The DEIR thwarts the purpose of CEQA and should not be adopted on those grounds.

D. Substantial Evidence Supports the Need for a Robust Air Quality Cumulative Impacts Analysis

In the environmental setting description, the City acknowledges that the Site is surrounded by light industrial and warehousing uses, and that a nearly 60,000 square foot warehouse was recently approved, *without* environmental review, on an abutting site.

6 The DEIR however contains no analysis looking at the the cumulative and incremental impact of the Project alongside the approved 56,000 foot facility or the other existing or potential facilities nearby. Given the City's willingness to use the "reoccupation" of the Bank of America office building as the environmental baseline because no discretionary permission is necessary for that reoccupation, it is bewildering why the actually approved abutting project, and likely projects in the light industrial designated areas within less than a half mile from the Site, were not considered alongside the Project.

Particularly given that the City deems a high-intensity warehouse use like the Project a "light industrial" use, there is certainly a fair argument that significant cumulative impacts will result from the development of the Project alongside the neighboring warehouse and other reasonably foreseeable light industrial uses so nearby–all of them near to sensitive receptors in the residential neighborhoods to the east, south, and northwest of the Site. *See* 14 CCR § 15065(a)(3).

IV. Conclusion

7 For the foregoing reasons, the City of Brea should decline to adopt the DEIR, and should reject the application for a Vesting Tentative Map No. 2022-193.

Comment Letter No. 16

January 6, 2025
International Brotherhood of Teamsters
Andy Lee
alee@teamster.org
213-442-9233

RESPONSE TO COMMENT NO. 16-1

This comment is an email transmitting comments from the International Brotherhood of Teamsters (IBT) on the Draft EIR for the DJT4 Parcel Delivery Facility Project. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted and no further response is required.

RESPONSE TO COMMENT NO. 16-2

This introductory comment states that comments are submitted on the behalf of IBT, briefly summarizes the project description and project objectives, and claims that the Project conflicts with, or undermines, a variety of land use requirements and CEQA compliance requirements. Specific reasons for why the commenter believes the Project conflicts with land use and CEQA requirements are detailed in the subsequent comments and responses to these comments are provided below under **Response to Comment No. 16-3** through **Response to Comment No. 16-5**.

RESPONSE TO COMMENT NO. 16-3

The commenter alleges that the Project is not compatible with the Project Site's existing Light Industrial General Plan land use designation because the constant loading of parcels into commercial vehicles would be conducted outside of the proposed building. Due to this alleged direct conflict with the General Plan, the commenter believes that the City is compelled to not adopt the Draft EIR and to reject the Vesting Tentative Map application.

As discussed in detail in **Topical Response No. 2 – Land Use and Zoning**, BCC Section 20.11.020.C grants the Community Development Director the authority to interpret whether a specific proposed use fits within or is similar to an existing use class as either permitted or conditionally permitted. Here, the Community Development Director has previously determined that the Project's proposed warehousing operations qualifies as an ***Industrial, minor*** land use, which is permitted by right in the M-1 zone. In addition, since the Project's industrial operational activities (i.e. parcel storage, sorting, etc.) would occur within the proposed building and no permanent outdoor storage or operation is proposed, the Community Development Director has determined that van loading is an ancillary/temporary activity of the Project and that the Project's warehousing operations is consistent with the Light Industrial General Plan land use designation and the M-1 zone. This determination is consistent with the City's historic interpretation of warehousing and with existing/previously approved industrial warehousing projects that have loading activities occurring outdoors as ancillary/temporary activity to support the warehousing operations.

RESPONSE TO COMMENT NO. 16-4

The commenter claims that the Draft EIR is deficient because it does not identify future discretionary approvals. Page 3-24 in **Chapter 3.0, Project Description**, of the Draft EIR identifies all approvals known by the lead agency that are needed to permit, construct, and operate the Project. These approvals include Plan Review approval, a Vesting Tentative Parcel Map, and other discretionary and ministerial permits and approvals that may be deemed necessary, including, but not limited to, temporary street closure permits, grading permits, excavation permits, foundation permits, building permits, sign permits, and tree removal permits. The environmental evaluation in the Draft EIR considers the entirety of the Project, including these approvals, and there are no elements of the Project that have not been evaluated. Consideration of potential future Project changes would be too speculative to evaluate, as no potential changes have been identified and no such changes are known to the lead agency. Therefore, contrary to the commenter's claim, the Draft EIR is not deficient and no further response is warranted.

RESPONSE TO COMMENT NO. 16-5

The commenter alleges that the Project description and related assumptions in the Draft EIR are legally inadequate because the Draft EIR includes as a baseline assumption that the actual continued operation of the Bank of America office building, which allows the Draft EIR to determine that there will be a net decrease in vehicle trips. As discussed in **Topical Response No. 1 – Existing Baseline**, CEQA Guidelines Section 15125 authorizes the City, as the lead agency for this Project, to define the existing baseline by referencing historic conditions if it is supported with substantial evidence. The City's determination that the existing baseline condition for the Project includes the occupancy of the existing building by Bank of America is supported by substantial evidence consisting of Bank of America's recent historic use/operation of the existing building for 25 years, the ability for the building to be reoccupied for the same use, and the inclusion of the Project Site in the OCTAM. As such, the Project description and baseline assumed in the Draft EIR is adequate and the Draft EIR's determination that there will be a net decrease in vehicle trips is valid. See also **Response to Comment No. 17-5** and **Response to Comment No. 17-30** below.

RESPONSE TO COMMENT NO. 16-6

The commenter claims that the air quality cumulative analysis in the Draft EIR does not discuss the incremental impact of the Project alongside an approved 56,000-square-foot facility or other existing or potential facilities nearby. As discussed in detail on page 5.1-41 in **Section 5.1, Air Quality**, of the Draft EIR, the approach to assessing cumulative air quality impacts is based on the SCAQMD 2022 Air Quality Management Plan (AQMP) forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal Clean Air Act (CAA) and California Clean Air Act. The Project use is assumed by the forecast and therefore would not conflict with the 2022 AQMP, which aims to bring the South Coast Air Basin (SCAB) into attainment for all criteria pollutants, as it supports the goals of the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) to reduce VMT and associated GHG emissions. In addition, the SCAQMD recommends that any given project's potential contribution to cumulative impacts be assessed using the same significance criteria as for project-specific impacts. Therefore, individual projects that do not generate operational or construction emissions that exceed the SCAQMD's daily thresholds for Project-specific impacts would also not cause a

cumulatively considerable increase in emissions for those pollutants for which the air basin is in nonattainment. The incremental impact of the Project would not be considered to have a significant, adverse air quality impact. As discussed in **Section 5.1, Air Quality**, of the DEIR, the Project would contribute particulate matter (PM) and ozone (O_3) precursors to the area during construction and operation. However, Project emissions would be less than the emissions from the existing baseline condition. Emissions during Project construction and operation would not exceed the SCAQMD regional or localized thresholds. Thus, the Project would not contribute substantially to an existing or projected air quality violation and Project emissions would not be potentially cumulatively considerable. See also **Response to Comment No. 10-3** for a discussion of cumulative air quality health risk impacts.

RESPONSE TO COMMENT NO. 16-7

This concluding comment states that the City should decline to adopt the Draft EIR and should reject the application for a Vesting Tentative Map No. 2022-193. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted and no further response is required.

COMMENT LETTER NO. 17

From: Alisha C. Pember <apember@adamsbroadwell.com>
Sent: Monday, January 6, 2025 4:57 PM
To: Hwang, Joanne <joanneh@ci.brea.ca.us>
Cc: Aidan P. Marshall <amarshall@adamsbroadwell.com>
Subject: Comments on the Draft Environmental Impact Report for the DJT4 Parcel Delivery Facility Project (SCH No. 2023070241)

Good afternoon,

Please find attached **Comments on the Draft Environmental Impact Report for the DJT4 Parcel Delivery Facility Project (SCH No. 2023070241)** and **Exhibits A-B**.

We are also providing a Dropbox link containing supporting
1 references: https://www.dropbox.com/scl/fo/x93ml48x4tacilojjxo0k/AL8aerX4fPukSwUOQZytNy4?rlkey=99ck5jaame985ey4zrlpaykll&st=q0gac065&dl=0

A hard copy of our Comments and Exhibits A-B will go out via U.S. Mail.

If you have any questions, please contact Aidan Marshall.

Thank you.

Alisha Pember

Alisha C. Pember
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January 6, 2025

Via Email and Overnight Mail
Joanne Hwang, City Planner
City of Brea – Planning Division
1 Civic Center Circle, 3rd Floor
Brea, CA 92821
Email: joanneh@cityofbrea.net

Re: Comments on the Draft Environmental Impact Report for the DJT4 Parcel Delivery Facility Project (SCH No. 2023070241)

Dear Ms. Hwang:

We are writing on behalf of Californians Allied for a Responsible Economy ("CARE CA") regarding the Draft Environmental Impact Report ("DEIR") prepared by the City of Brea ("City") for the DJT4 Parcel Delivery Facility Project (SCH No. 2023070241) ("Project"), proposed by Ware Malcomb representing Amazon.com Services LLC ("Applicant").

2 The Project proposes to demolish the existing three-story 637,503-square-foot (sf) Bank of America office building and surface parking lot to construct a 181,500 sf single-story parcel delivery facility.[1] This would consist of 163,350 sf of warehouse space and 18,150 sf of ancillary office space, on an approximate 31.6-acre site. The Project site has two land use designations under the City of Brea General Plan – Light Industrial (M-1) and Mixed-Use II (MU-II).[2] The Project is located at 275 Valencia Avenue on Assessor Parcel Numbers 320-233-17, 320- 301-11, and 320-301-12 in the City of Brea, Orange County, California.

We reviewed the DEIR with the assistance of transportation expert Norm Marshall[3] and noise expert Deborah Jue.[4]

[1] DEIR, pg. 1-1.
[2] DEIR, pg. 1-2.
[3] Mr. Marshall's technical comments and curricula vitae are attached hereto as **Exhibit A**.
[4] Ms. Jue's technical comments and curricula vitae are attached hereto as **Exhibit B**.

printed on recycled paper

3 The Project cannot be approved under the currently proposed entitlements or Project design because the Project is inconsistent with zoning and the City's General Plan. The Project's warehouse building is proposed to be located on a portion of the site zoned Light Industrial.[5] However, the warehouse's ancillary parking facilities are proposed on a portion of the site designated as Mixed Use II.[6] Under the City's Zoning and Development Code ("Zoning Code"), warehousing uses are prohibited on mixed-use sites.[7] This includes parking. The Project therefore proposes an industrial warehouse use on a site zoned for mixed-use development, in violation of the plain language of the Zoning Code.[8] The Project therefore results in significant land use inconsistencies which the DEIR does not disclose, and which may require a General Plan amendment or zoning change.[9]

4 The DEIR also ignores the purpose of the Project site's mixed-use zoning – the Project site is one of six sites that were rezoned to implement the 2021-2029 Housing Element.[10] The Housing Element identifies "introduction of workforce housing on Amazon's 31-acre warehouse site" as a "high priority" city action to implement the Housing Element.[11] The DEIR to disclose the Project's direct and numerous conflicts with the Housing Element.[12] Despite the calls in the General Plan and Zoning Code for the Project site to include residential/mixed-use development, the DEIR fails to consider the inclusion of workforce housing, even as a project alternative. The DEIR fails to meet the California Environmental Quality Act's ("CEQA")[13] informational requirements by failing to disclose these significant land use impacts, and failing to consider a reasonable range of Project alternatives. The proposed Project also fails to comply with the Zoning Code or General Plan and may require revisions to the Project application to seek additional permits to allow the proposed non-conforming uses.

5 The DEIR' fails to support its analysis of environmental impacts with substantial evidence. The DEIR finds that the Project would have a less than significant VMT impact, and would screen out of a full VMT analysis, because the

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[5] DEIR, p. 3-7.
[6] DEIR, p. 3-7.
[7] City of Brea Development Code, Title 20 (Zoning Code), Section 20.258.010.
[8] Zoning Code, Table 20.11.020.A.
[9] The DEIR incorrectly found land use and planning to be "effects not found to be significant." DEIR, p. 7-9.
[10] Staff Report, re: Agenda Item 17 – General Plan Amendment No. 2021- 02 And Zone Change No. 2021- 01 (10/18/2022).
[11] Brea General Plan, pg. 3-189.
[12] CEQA Guidelines section 15125(d).
[13] PRC § 21100 et seq.

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5 (continued) Project would generate less than 100 net daily trips (-2,720 net trips).[14] But the DEIR reaches this conclusion by greatly overestimating trips from the existing Bank of America office, underestimating the trips that would be generated by the Project, and improperly assuming that the Project would not result in new delivery van and FLEX driver trips, who would purportedly be diverted from existing Amazon facilities.

6 The DEIR fails to adequately analyze the Project's noise impacts because its analysis relies on four 15-minute measurements.[15] These measurements are too short-term to reflect existing conditions, and do not reflect quieter nighttime conditions. As such, the DEIR fails to adequately analyze noise disturbances that would be caused by the Project's 24/7 operations. The DEIR also fails to adequately analyze potentially significant air quality and energy impacts.

7 As a result of its shortcomings, the DEIR lacks substantial evidence to support its conclusions, violates CEQA's disclosure and analytical requirements, and fails to properly mitigate the Project's significant environmental impacts. CARE CA urges the City to remedy the deficiencies in the DEIR by preparing a legally adequate revised DEIR and recirculating it for public review and comment.[16] CARE CA reserves the right to provide supplemental comments at any and all later proceedings related to this Project.[17]

I. STATEMENT OF INTEREST

8 CARE CA is an unincorporated association of individuals and labor organizations that may be adversely affected by the potential public and worker health and safety hazards, and the environmental impacts of the Project. The coalition includes Brea residents Brett Messer, Bobby Perez, and Matthew Stone, the District Council of Ironworkers and Southern California Pipe Trades DC 16, along with their members, their families, and other individuals who live and work in Brea and in Orange County.

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[14] DEIR, pg. 5.8-16, 17
[15] DEIR, Appendices PDF, pg. 2047.
[16] We reserve the right to supplement these comments at later hearings on this Project. Gov. Code § 65009(b); Public Resources 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.
[17] Gov. Code § 65009(b); PRC § 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.

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8 (continued)

CARE CA advocates for protecting the environment and the health of their communities' workforces. CARE CA seeks to ensure a sustainable construction industry over the long-term by supporting projects that offer genuine economic and employment benefits, and which minimize adverse environmental and other impacts on local communities. CARE CA members live, work, recreate, and raise their families in the City of Brea and surrounding communities. Accordingly, they would be directly affected by the Project's environmental and health and safety impacts. Individual members may also work on the Project itself. They will be first in line to be exposed to any health and safety hazards that exist onsite.

In addition, CARE CA has an interest in enforcing environmental laws that encourage sustainable development and ensure a safe working environment for its members. Environmentally detrimental projects can jeopardize future jobs by making it more difficult and more expensive for business and industry to expand in the region, and by making the area less desirable for new businesses and new residents. Indeed, continued environmental degradation can, and has, caused construction moratoriums and other restrictions on growth that, in turn, reduce future employment opportunities.

II. THE PROJECT CONFLICTS WITH THE SITE'S LAND USE DESIGNATION

A. The DEIR Fails to Disclose the Project's Land Use Inconsistencies in the Mixed-Use Zoning District

9

The Project site has two land use designations under the City of Brea General Plan – Light Industrial (M-1) and Mixed-Use II (MU-II).[18] Warehousing is a prohibited use in a mixed-use zoning district under the City of Brea Zoning Code,[19] yet the DEIR claims that the Project is consistent with the mixed-use zoning because the only Project components located in the mixed-use zone are surface parking and drive aisles.[20] Specifically, the Project proposes to locate van parking and associate parking in the southern part of the site zoned MU-II.[21] The warehouse building and additional parking would be located in the M-1 zone.[22] The DEIR claims that the warehouse's parking can be developed in a mixed-use zone because "MU-II zoning permits a mix of commercial, residential, and parking

[18] DEIR, pg. 1-2.
[19] City of Brea Development Code, Title 20 (Zoning Code), Section 20.258.010.
[20] DEIR, pg. 1-3.
[21] DEIR, pg. 3-21 (Figure 3-7 – Parking Exhibit), pg. 4-3 (Figure 4-1 - Land Use Designations for the Project Site and Vicinity).
[22] *Id.*

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uses."[23] Accordingly, the DEIR states that the Project would not include a General Plan Amendment or zone change to the Project Site.[24] But the DEIR's approach violates the plain language and goals of the Zoning Code, which prohibits warehousing activities in mixed-use zones.[25]

Table 20.11.020.A ("Permitted Land Uses Table") of the Zoning Code provides that parking facilities incidental to a warehouse are considered industrial uses prohibited in a mixed-use district.[26] Table 20.11.020.A provides that "Industrial, Minor" uses are prohibited in the MU-II district. Section 20.00.070 ("Definitions") classifies "product distribution centers that are 200,000 square feet or smaller" as an "Industrial, Minor" use. The 181,500-square-foot parcel delivery facility proposed by the Project thus meets the description of an "Industrial, Minor" use. Table 20.11.020.A, under "Special Provisions," states that "Industrial, Minor" "**[m]ay include accessory non-industrial uses (e.g. administrative offices, cafeterias, auditorium, recreation area) that provides support to and are clearly incidental to the permitted industrial use**." Because the Project's parking spaces and drive aisles provide support to and are admittedly incidental to the parcel hub, these uses would qualify as Industrial Minor uses which the Code prohibits in the MU-II district.

9 (continued)

The City's prohibition on warehousing in mixed-use districts is reiterated in other sections of the Zoning Code. Section 20.258.010(A)(2) ("Mixed-Use Zoning Districts"), which sets forth permitted uses in the MU-II zone, calls for development of integrated, complementary uses, and prohibits warehousing uses:

> a. This zoning district provides opportunities for the coordinated development of urban villages that offer a diverse range of complementary land uses in close proximity to one another. Either vertical or horizontal integration of uses is allowed, with an emphasis on tying together the uses with appropriate pedestrian linkages. Residential densities at the higher end of the scale will be allowed for developments that clearly integrate uses.
>
> b. The Mixed-Use II designation applies to larger properties that would benefit from a coordinated, integrated approach to development. Development densities and intensities at the upper end of the stated range will only be allowed for those projects that include public and/or private educational facilities, as well as functional and attractive public open space

[23] *Id.* at 3-7.
[24] *Id.* at 7-24.
[25] Zoning Code, Section 20.258.010.
[26] Section 20.11.020, Table 20.11.020.A.

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> amenities. **Land uses specifically prohibited within the Mixed-Use II designation include the manufacturing and processing of goods and materials, and any warehousing.** Public and private walkways and related facilities may be established within the Mixed-Use II designation. [emphasis added].

Section 20.258.030(A)(3) (Specific Development Standards For All Mixed-Use Projects), further requires that a stand-alone nonresidential project is only permitted in an MU-II zone when it is planned and designed as an integrated element of a larger mixed-use development area: "[i]n MU-II (Mixed-Use II) zoning districts, both vertical and/or horizontal integration of nonresidential and residential uses shall be allowed; 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."[27]

9 (continued)

Here, the Project's warehousing parking spaces and drive aisles proposed in the MU-II zone violate Section 20.258.010(A)(2)'s explicit prohibition of "warehousing" in the MU-II district. Parking facilities which store warehouse delivery vans and warehouse employee vehicles are a component of warehousing operations. Drive aisles facilitating movement of delivery trucks are also a component of warehousing. Therefore, Section 20.258.010(A)(2) prohibits these uses in the MU-II district.

Further, the parking facilities proposed in the MU-II zone appear to violate Sections 20.258.010(A)(2) and 20.258.030(A)(3) because a warehouse parking lot is not a complementary use integrated with the adjacent MU-II-zoned parcels. As shown below, the MU-II-zoned parcel on the Project site is adjacent to an MU-II-zoned area developed by La Floresta, a master-planned horizontal mixed-use comprised of single-family residential, multi-family residential, and commercial uses.[28]

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[27] Section 20.258.030(A)(1) defines integration and provides examples.
[28] DEIR pg. 4-3 (Figure 4-1), 4-5.

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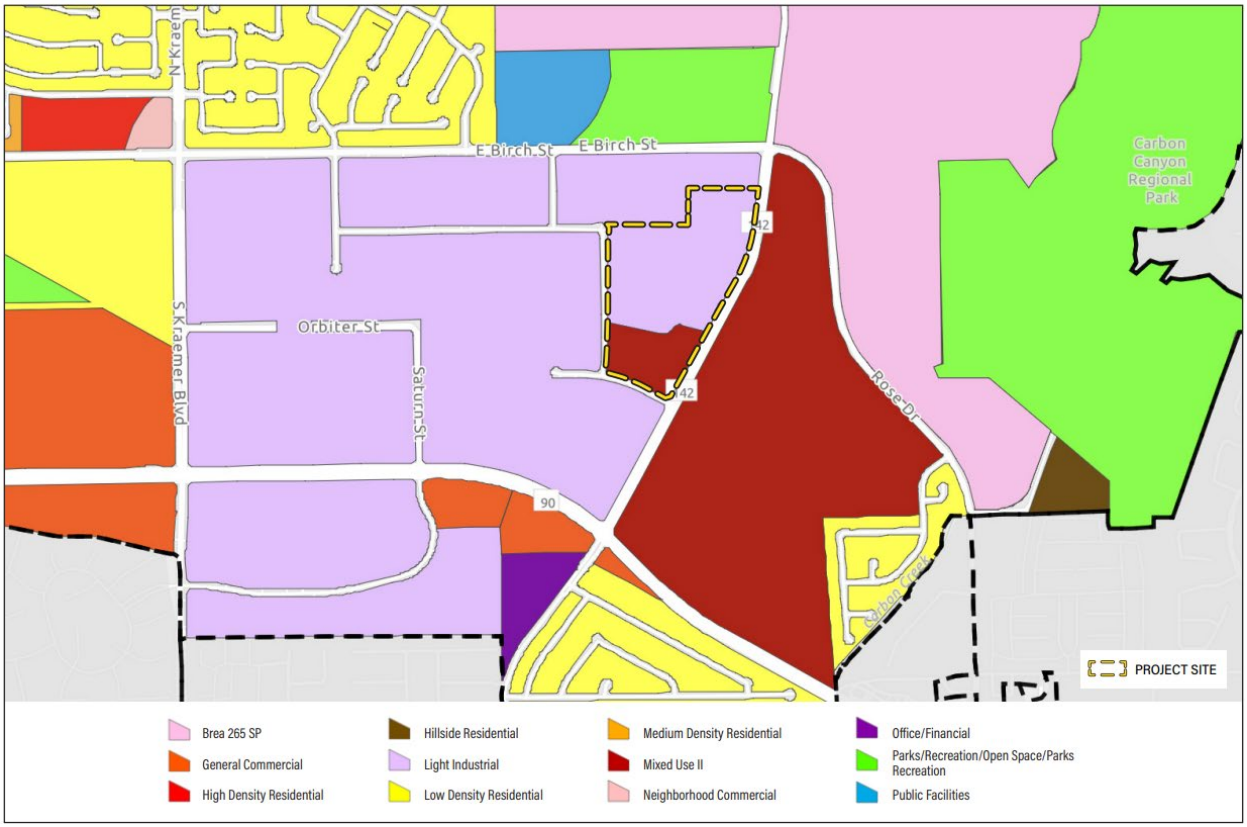
(continued)



The warehouse parking lot proposed by the Project is not integrated with the rest of the MU-II zone because it does not service residential, retail, or commercial uses in La Floresta – the parking lot would be limited to delivery vans and the vehicles of warehouse employees.[29] Because no aspect of the Project's design indicates it would be vertically or horizontally integrated with the adjacent mixed-use community, the Project is not a use permitted by Section 20.258.010(A)(2). The Project also may not be approved in its current form pursuant to Section 20.258.030(A)(3) because the Project proposes a stand-alone nonresidential project that is not planned or designed as an integrated element of a larger mixed-use development area.

Moreover, a warehouse parking lot is not considered a complementary use in an urban village. Agency guidance recommends siting warehouses far away from residential uses due to health risk, air quality, noise, and transportation impacts. The California Air Resources Board ("CARB") recommends siting warehouse facilities so that their property lines are at least 1,000 feet from the property lines

[29] DEIR, pg. 3-21 (Figure 3-7 – Parking Exhibit), pg. 4-3 (Figure 4-1 - Land Use Designations for the Project Site and Vicinity).

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of the nearest sensitive receptors.[30] The Attorney General's warehouse guidance also recommends a 1,000 foot buffer.[31] California Assembly Bill ("AB") 98 includes a requirement, beginning in 2026, that warehouses "[l]ocate truck loading bays a minimum of 300 feet from the property line of the nearest sensitive receptor to the nearest truck loading bay opening using a direct straight-line method."[32] Thus, warehouse uses are not a complementary use permitted in an MU-II district under Section 20.258.010(A)(2). The DEIR lacks any discussion of these zoning inconsistencies.

9 (continued)

The Project is also inconsistent with the General Plan. The General Plan contains language stating that a warehouse and incidental parking facilities are not permitted land uses in the MU-II district. Table C ("Land Use") of the General Plan's Housing Element Sites Inventory states that land uses allowed in the MU-II district include "[s]ingle-family dwellings, townhomes, high-density multi-family dwellings, public facilities, retail uses, restaurants, office uses."[33] The delivery van and warehouse associate parking uses proposed by the Project are not included in this list and are incongruous with the other uses on the list. Thus, the Project's parking facilities are prohibited in the MU-II district.

In sum, as currently proposed, the Project is inconsistent with the Zoning Code and General Plan and may require additional entitlements, including a General Plan Amendment and zone change. The DEIR incorrectly states that the Project does not require these additional approvals.[34] The DEIR is therefore deficient for failing to discuss or mitigate these land use inconsistencies. The Project

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[30] CARB, Air Quality and Land Use Handbook: A Community Health Perspective (April 2005), pg. 3, available at https://www.aqmd.gov/docs/default-source/ceqa/handbook/california-air-resources-board-air-quality-and-land-use-handbook-a-community-health-perspective.pdf; *see* CARB, Concept Paper for the Freight Handbook (December 2019), available at https://ww2.arb.ca.gov/sites/default/files/2020-03/2019.12.12%20-%20Concept%20Paper%20for%20the%20Freight%20Handbook_1.pdf.

[31] State of California Department of Justice, Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act (updated September 2022), available at https://oag.ca.gov/system/files/media/warehouse-best-practices.pdf

[32] https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240AB98; *see* Board of Supervisors Policy F-3, "Good Neighbor" Policy for Logistics and Warehouse/Distribution Uses", available at https://rivcocob.org/sites/g/files/aldnop311/files/migrated/wp-content-uploads-2020-01-Good-Neighbor-Policy-F-3-Final-Adopted.pdf ("Warehouse/distribution facilities should be generally designed so that truck bays and loading docks are a minimum of 300 feet, measured from the property line of the sensitive receptor to the nearest dock door using a direct straight-line method.").

[33] General Plan, Housing Element, Housing Element Sites Inventory, Table C, available at https://www.cityofbrea.gov/DocumentCenter/View/17370/Brea_HCD_site_inventory_spreadsheet_-_REVISED__Final_Web.

[34] DEIR, pg. 7-24.

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9 (continued) application must be revised to include all necessary approvals, and the DEIR must be revised and recirculated to address the Project's land use inconsistencies.[35]

III. CEQA LEGAL BACKGROUND

CEQA requires public agencies to analyze the potential environmental impacts of their proposed actions in an EIR.[36] "The foremost principle under CEQA is that the Legislature intended the act to be interpreted in such manner as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language."[37]

10 CEQA has two primary purposes. First, CEQA is designed to inform decisionmakers and the public about the potential significant environmental effects of a project.[38] "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.'"[39] 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."[40] As the CEQA Guidelines explain, "[t]he EIR serves not only to protect the environment but also to demonstrate to the public that it is being protected."[41]

Second, CEQA requires public agencies to avoid or reduce environmental damage when "feasible" by requiring consideration of environmentally superior alternatives and adoption of all feasible mitigation measures.[42] The EIR serves to provide agencies and the public with information about the environmental impacts

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[35] CEQA Guidelines, Section 15124 (d)(B) (the project description shall include "[a] list of permits and other approvals required to implement the project").
[36] PRC § 21100.
[37] *Laurel Heights Improvement Assn. v. Regents of Univ. of Cal ("Laurel Heights I")* (1988) 47 Cal.3d 376, 390 (internal quotations omitted).
[38] Pub. Resources Code § 21061; CEQA Guidelines §§ 15002(a)(1); 15003(b)-(e); *Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, 517 ("[T]he basic purpose of an EIR is to provide public agencies and the public in general with detailed information about the effect [that] a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; and to indicate alternatives to such a project.").
[39] *Citizens of Goleta Valley,* 52 Cal.3d at p. 564 (quoting *Laurel Heights I*, 47 Cal.3d at 392).
[40] *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810; *see also Berkeley Keep Jets Over the Bay v. Bd. of Port Comm'rs.* (2001) 91 Cal.App.4th 1344, 1354 ("*Berkeley Jets*") (purpose of EIR is to inform the public and officials of environmental consequences of their decisions *before* they are made).
[41] CEQA Guidelines § 15003(b).
[42] CEQA Guidelines § 15002(a)(2), (3); *see also Berkeley Jets*, 91 Cal.App.4th at 1354; *Citizens of Goleta Valley*, 52 Cal.3d at p. 564.

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of a proposed project and to "identify ways that environmental damage can be avoided or significantly reduced."[43] If the project will have a significant effect on the environment, the agency may approve the project only if it finds that it has "eliminated or substantially lessened all significant effects on the environment" to the greatest extent feasible and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns."[44]

10 (continued)

While 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."[45] As the courts have explained, 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."[46] "The ultimate inquiry, as case law and the CEQA guidelines make clear, is whether the EIR includes enough detail 'to enable who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project.'"[47]

IV. THE DEIR'S ENVIRONMENTAL SETTING DISCUSSION IS INADEQUATE

11

The DEIR fails to adequately describe the environmental setting against which the Project's environmental impacts are to be measured. This contravenes the fundamental purpose of the environmental review process, which is to determine whether there is a potentially substantial, adverse change compared to the existing setting.[48] CEQA requires that a lead agency include a description of the physical environmental conditions, or "baseline," in the vicinity of the project as they exist at

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[43] CEQA Guidelines § 15002(a)(2).
[44] PRC § 21081(a)(3), (b); CEQA Guidelines §§ 15090(a), 15091(a), 15092(b)(2)(A), (B); *Covington v. Great Basin Unified Air Pollution Control Dist*. (2019) 43 Cal.App.5th 867, 883.
[45] *Berkeley Jets*, 91 Cal.App.4th at p. 1355 (emphasis added) (quoting *Laurel Heights I*, 47 Cal.3d at 391, 409, fn. 12).
[46] *Berkeley Jets*, 91 Cal.App.4th at p. 1355; *see also San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 722 (error is prejudicial if the failure to include relevant information precludes informed decision making and informed public participation, thereby thwarting the statutory goals of the EIR process); *Galante Vineyards*, 60 Cal.App.4th at p. 1117 (decision to approve a project is a nullity if based upon an EIR that does not provide decision-makers and the public with information about the project as required by CEQA); *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 946 (prejudicial abuse of discretion results where agency fails to comply with information disclosure provisions of CEQA).
[47] *Sierra Club,* 6 Cal.5th at p. 516 (quoting *Laurel Heights I*, 47 Cal.3d at 405).
[48] CEQA Guidelines § 15063(d).

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11 (continued)

the time environmental review commences.[49] As the courts have repeatedly held, the impacts of a project must be measured against the "real conditions on the ground."[50] The description of the environmental setting constitutes the "baseline" physical conditions against which the lead agency assesses the significance of a project's impacts.[51] An environmental setting is required "to give the public and decision makers the most accurate and understandable picture practically possible of the project's likely near-term and long-term impacts.[52]

12

A. The DEIR Overestimates Trip Generation from the Existing Use

The DEIR masks the Project's net generation of daily vehicle trips by overestimating trips generated by the previous use, a Bank of America call center. The DEIR estimates that the existing use generated 4,818 trips per day.[53] This estimate was reached by applying an average rate of 3.33 daily trips per employee per day. The DEIR falsely states that applying an average daily trip rate reaches a lower, more conservative estimate of the number of trips compared to the Institute of Transportation Engineers ("ITE") Trip Generation fitted curve equation.[54] Mr. Marshall calculates that use of the fitted curve equation results in 3,908 daily trips, which is 910 fewer trips per day than estimated in the DEIR.[55] Further, Mr. Marshall shows that the ITE Trip Generation Manual recommends use of the fitted curve equation in situations like this.[56] Thus, use of the "average rate" to analyze trip generation from the existing use underestimates trips.

The Project's inaccurate assessment of baseline conditions violates CEQA's requirement that an EIR include an accurate description of the environmental

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[49] CEQA Guidelines § 15125(a); *Communities for a Better Environment v. South Coast Air Quality Management Dist.* (2010) 48 Cal. 4th 310, 321.
[50] *Communities for a Better Environment v. South Coast Air Quality Management Dist.* (2010) 48 Cal. 4th 310, 321.; *Save Our Peninsula Com. V. Monterey County Bd. Of Supervisors* (2001) 87 Cal.App.4th 99, 121-22; *City of Carmel-by-the-Sea v. Bd. Of Supervisors of Monterey County* (986) 183 Cal.App.3d 229, 246.
[51] CEQA Guidelines § 15125(a); *Communities for a Better Environment v. South Coast Air Quality Management Dist.*, 48 Cal. 4th at 321.
[52] CEQA Guidelines § 15125(a).
[53] DEIR, pg. 5.8-7
[54] DEIR, Appendix F, Appendices PDF pg. 2118. As background, most land uses contained in the ITE Trip Generation Manual list two methods for calculating trip rates – the "fitted curve" and the "average rate." In comparing the fitted curve and average rate, the fitted curve looks at the "best fit" through the data points and the average rate is a weighted linear relationship between trips and the independent variable.
[55] Marshall Comments, pg. 2.
[56] *Id.* at 2.

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12 (continued)

setting. Baseline information on which a lead agency relies must be supported by substantial evidence.[57] Here, the DEIR's assessment of existing conditions is not supported by substantial evidence because it misapplies ITE trip generation methodology. The consequence of this inaccurate baseline is that the Project's impacts are masked by the existing use's overestimated vehicle trips. This inadequate baseline vitiates the Project's assessment of impacts relating to the number of trips generated, such as air quality, GHGs, and traffic noise.[58] The DEIR must be revised and recirculated to include a baseline supported by substantial evidence.

B. The DEIR's Description of Ambient Noise Levels is Not Supported by Substantial Evidence

The DEIR fails to accurately establish the environmental setting because the DEIR improperly relies on short-term ambient noise measurements. The DEIR also fails to conduct validation measurements for its traffic noise model.

13

Ms. Jue observes that the DEIR fails to conduct any long-term measurements and relies on four short-term measurement locations consisting of one 15-minute measurement per location. These short-term measurements may not be reflective of actual existing conditions because 15 minutes comprises only 1% of a 24-hour period, and environmental noise can vary widely throughout the day (perhaps +/- 10 dBA or more for areas with intermittent local traffic).[59] The DEIR's assessment of baseline noise levels is not supported by substantial evidence because the DEIR fails to provide evidence of how typical these measurements were for the rest of the daytime and nighttime conditions. Further, the DEIR's reliance on short-term measurements does not meet the standards of the Federal Transit Administration's Transit Noise and Vibration Impact Assessment Manual[60] ("FTA Manual"), which is referred to in the DEIR's noise analysis. The FTA Manual recommends a minimum of three one-hour Leq noise measurements to estimate the 24-hour Ldn/CNEL.[61] In

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[57] *CBE v. SCAQMD, supra,* 48 Ca.4th at 321 (stating "an agency enjoys the discretion to decide […] exactly how the existing physical conditions without the project can most realistically be measured, subject to review, as with all CEQA factual determinations, for support by substantial evidence"); *see Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 435.
[58] Marshall Comments, pg. 4-5.
[59] Jue Comments, pg. 2.
[60] https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf
[61] Jue Comments, pg. 2.

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sum, the DEIR fails to provide a description, supported by substantial evidence, of the "real conditions on the ground."[62]

A related issue is that the DEIR fails to include nighttime ambient noise measurements. The 15-minute measurements were taken between 10:37 a.m. and 12:00 p.m., so do not reflect quieter nighttime conditions.[63] Without measurement of nighttime ambient noise, it is impossible to evaluate the increase in noise over existing conditions.

13 (continued)

The DEIR's description of existing traffic noise is also not supported by substantial evidence. The DEIR characterizes absolute noise levels from existing traffic based on an outdated traffic model – FHWA Noise Prediction Model (FHWA-RD-77-108). Ms. Jue explains that state of the art traffic modeling uses the Traffic Noise Model ("TNM") with the most current revision 3.2.[64] The DEIR provides no evidence to tie its absolute values to existing measured conditions. Ms. Jue observes that the DEIR fails to include validation measurements to verify that the model is accurate. Caltrans acknowledges that a validated TNM model may fall within +/- 3 dBA of the measured result, which undermines attempts to use modeled-only results for absolute noise characterization of the ambient condition.[65]

The DEIR must be revised and recirculated to include an updated environmental setting that accurately reflects existing conditions.

V. THE PROJECT DESCRIPTION IS INADEQUATE

14

The DEIR does not meet CEQA's requirements because it fails to include an accurate and complete Project description, rendering the entire analysis inadequate. California courts have repeatedly held that "an accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient EIR."[66] CEQA requires that a project be described with enough particularity that its impacts can be assessed.[67] Without a complete project description, the environmental analysis under CEQA is impermissibly limited, thus minimizing the

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[62] *Save Our Peninsula Com. v. Monterey Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 121-22; *City of Carmel-by-the Sea v. Bd. of Supervisors* (1986) 183 Cal.App.3d 229, 246.
[63] DEIR, Appendices PDF, pg. 2046.
[64] Jue Comments, pg. 3
[65] *Id.*
[66] *Stopthemillenniumhollywood.com v. City of Los Angeles* (2019) 39 Cal.App.5th 1, 17; *Communities for a Better Environment v. City of Richmond* ("*CBE v. Richmond*") (2010) 184 Cal.App.4th 70, 85–89; *County of Inyo v. City of Los Angeles* (3d Dist. 1977) 71 Cal.App.3d 185, 193.
[67] 14 CCR § 15124; *see, Laurel Heights I, supra,* 47 Cal.3d 376, 192-193.

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project's impacts and undermining meaningful public review.[68] Accordingly, a lead agency may not hide behind its failure to obtain a complete and accurate project description.[69]

CEQA Guidelines section 15378 defines "project" to mean "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment."[70] "The term "project" refers to the activity which is being approved and which may be subject to several discretionary approvals by governmental agencies. The term project does not mean each separate governmental approval."[71] Courts have explained that a complete description of a project must "address not only the immediate environmental consequences of going forward with the project, but also all "*reasonably foreseeable* consequence[s] of the initial project."[72] "If a[n]…EIR…does not adequately apprise all interested parties of the true scope of the project for intelligent weighing of the environmental consequences of the project, informed decision-making cannot occur under CEQA and the final EIR is inadequate as a matter of law."[73]

14 (continued)

A. Use of Back-Up Generators is a Reasonably Foreseeable Consequence of the Project

The DEIR's discussion of the Project's air quality and health risk impacts fails to describe the reasonably foreseeable use of back-up generators. The DEIR's CalEEMod analysis of criteria air pollutants fails to include emissions from backup generators,[74] and the DEIR's quantitative and qualitative discussion of health risk impacts fails to disclose use of back-up generators. The use of backup generators is a reasonably foreseeable activity during Project operation due to the prevalence of power safety shutoffs, extreme heat events, and other emergencies which lead to temporary losses of power.

In *East Oakland Stadium Alliance v. City of Oakland*,[75] the Court of Appeal upheld an EIR's analysis of emissions from backup generators. The EIR's analysis assumed that generators would operate for 50 hours of testing and maintenance

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[68] *Id.*
[69] *Sundstrom v. County of Mendocino* ("*Sundstrom*") (1988) 202 Cal.App.3d 296, 311.
[70] CEQA Guidelines § 15378.
[71] *Id.*, § 15378(c).
[72] *Laurel Heights I,* 47 Cal. 3d 376, 398 (emphasis added); *see also Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal. 4th 412, 449-50.
[73] *Riverwatch v. Olivenhain Municipal Water Dist.* (2009) 170 Cal. App. 4th 1186, 1201.
[74] DEIR, Appendices, PDF pg. 70 (Proposed Project CalEEMod Outputs)
[75] (2023) 889 Cal. App. 5th 1226.

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annually, while allocating no time for actual emergency use. In discussing the lead agency's duty to analyze backup generator emissions, the Court stated that "if the annual need for emergency generator use is reasonably foreseeable, the EIR was not entitled to disregard such use merely because it would occur at unpredictable times."[76] The Court explained that use of a generator was reasonably foreseeable because, "[a]s noted in the EIR, some parts of the Bay Area are subject to predictable, sustained power outages undertaken to reduce the risk of fire."[77] Thus, "[t]he EIR was required to make neither a generally applicable nor a worst-case assumption; rather it was required to make a reasonable estimate of likely annual use of the generators at the project site."[78]

14 (continued)

Here, as in *East Oakland Stadium Alliance*, backup generator emissions are a reasonably foreseeable consequence of the Project due to increasingly common Public Safety Power Shutoff ("PSPS") events and extreme heat events ("EHE"). EHEs are defined as periods where in the temperatures throughout California exceed 100 degrees Fahrenheit.[79] From January 2019 through December 2019, Southern California Edison reported 158 of their circuits underwent a PSP event.[80] In Los Angeles County, two circuits had 4 PSPS events during that period, lasting an average of 35 to 38 hours. The total duration of the PSPS events lasted between 141 hours to 154 hours in 2019. According to the California Public Utilities Commission ("CPUC") de-energization report[81] in October 2019, there were almost 806 PSPS events that impacted almost 973,000 customers (~7.5% of households in California). The California Air Resources Board estimates that with 973,000 customers impacted by PSPS events in October 2019, approximately 125,000 back-up generators were used by customers to provide electricity during power outages.[82] The widespread use of back-up generators to adapt to PSPS and EHE events suggests that back-up generators are a reasonably foreseeable consequence of the Project. In addition to emergency use, any generators included in the Project would be operated for routine testing.

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[76] *Id.* at 1252.
[77] *Id.* at 1253.
[78] *Id.*
[79] Governor of California. 2021. Proclamation of a state of emergency. June 17, 2021.
[80] SCAQMD. 2020. Proposed Amendment To Rules (PARS) 1110.2, 1470, and 1472. Dated December 10, 2020. http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1110.2/1110-2_1470_1472/par1110-2_1470_wgm_121020.pdf?sfvrsn=6.
[81] https://www.cpuc.ca.gov/deenergization/ as cited in CARB, 2020. Potential Emission Impact of Public Safety Power Shutoff (PSPS), Emission Impact: Additional Generator Usage associated With Power Outage.
[82] California Air Resources Board, Emission Impact: Additional Generator Usage Associated with Power Outage (January 30, 2020), available at https://ww2.arb.ca.gov/resources/documents/emissions-impact-generator-usage-during-psps.

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14 (continued)

Generators can emit criteria air pollutants, greenhouse gases, and toxic air contaminants. This equipment commonly relies on fuels such as natural gas or diesel,[83] and thus can significantly impact public health through diesel particulate matter ("DPM") emissions.[84] This equipment can emit significant amounts of NOx, sulfur dioxides ("SO2"), particulate matter ("PM10"), carbon dioxide ("CO2"), carbon monoxide ("CO"), volatile organic compounds ("VOC"), particulate matter less than 10 microns ("PM_{10}"), PM less than 2.5 microns ("$PM_{2.5}$"), and air toxins such as DPM.[85] The DEIR's omission of an impact analysis for an onsite generator system thus results in an underestimation of the Project's air quality, greenhouse gas, and health risk impacts.

VI. THE DEIR FAILS TO DISCLOSE, ANALYZE AND MITIGATE POTENTIALLY SIGNIFICANT IMPACTS

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An EIR must fully disclose all potentially significant impacts of a Project and implement all feasible mitigation to reduce those impacts to less than significant

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[83] SCAQMD, Fact Sheet on Emergency Backup Generators, http://www.aqmd.gov/home/permits/emergency-generators ("Most of the existing emergency backup generators use diesel as fuel").

[84] California Air Resources Board, Emission Impact: Additional Generator Usage Associated with Power Outage (January 30, 2020), available at https://ww2.arb.ca.gov/resources/documents/emissions-impact-generator-usage-during-psps (showing that generators commonly rely on gasoline or diesel, and that use of generators during power outages results in excess emissions); California Air Resources Board, Use of Back-up Engines for Electricity Generation During Public Safety Power Shutoff Events (October 25, 2019), available at https://ww2.arb.ca.gov/resources/documents/use-back-engines-electricity-generation-during-public-safety-power-shutoff ("When electric utilities de-energize their electric lines, the demand for back-up power increases. This demand for reliable back-up power has health impacts of its own. Of particular concern are health effects related to emissions from diesel back-up engines. Diesel particulate matter (DPM) has been identified as a toxic air contaminant, composed of carbon particles and numerous organic compounds, including over forty known cancer-causing organic substances. The majority of DPM is small enough to be inhaled deep into the lungs and make them more susceptible to injury. Much of the back-up power produced during PSPS events is expected to come from engines regulated by CARB and California's 35 air pollution control and air quality management districts (air districts)").

[85] University of California, Riverside Bourns College of Engineering—Center for Environmental Research and Technology, Air Quality Implications Of Backup Generators In California, (March 2005), pg. 8, available at https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=84c8463118e4813a117db3d768151a8622c4bf6b; South Coast AQMD, Fact Sheet on Emergency Backup Generators ("Emissions of Nitrogen Oxides (NOx) from diesel-fired emergency engines are 200 to 600 times greater, per unit of electricity produced, than new or controlled existing central power plants fired on natural gas. Diesel-fired engines also produce significantly greater amounts of fine particulates and toxics emissions compared to natural gas fired equipment."), available at http://www.aqmd.gov/home/permits/emergency-generators#Fact2.

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levels. The lead agency's significance determination with regard to each impact must be supported by accurate scientific and factual data.[86] An agency cannot conclude that an impact is less than significant unless it produces rigorous analysis and concrete substantial evidence justifying the finding.[87]

Even when the substantial evidence standard is applicable to agency decisions to certify an EIR and approve a project, reviewing courts will not '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.'"[88]

15 (continued)

Moreover, the failure to provide information required by CEQA is a failure to proceed in the manner required by CEQA.[89] Challenges to an agency's failure to proceed in the manner required by CEQA, such as the failure to address a subject required to be covered in an EIR or to disclose information about a project's environmental effects or alternatives, are subject to a less deferential standard than challenges to an agency's factual conclusions.[90] In reviewing challenges to an agency's approval of an EIR based on a lack of substantial evidence, the court will "determine de novo whether the agency has employed the correct procedures, scrupulously enforcing all legislatively mandated CEQA requirements."[91]

Additionally, CEQA requires agencies to commit to all feasible mitigation measures to reduce significant environmental impacts.[92] In particular, the lead agency may not make required CEQA findings, including finding that a project impact is significant and unavoidable, unless the administrative record demonstrates that it has adopted all feasible mitigation to reduce significant environmental impacts to the greatest extent feasible.[93]

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[86] CEQA Guidelines § 15064(b).
[87] *Kings Cty. Farm Bur. v. Hanford* (1990) 221 Cal.App.3d 692, 732.
[88] *Berkeley Jets*, 91 Cal.App.4th at 1355.
[89] *Sierra Club v. State Bd. Of Forestry* (1994) 7 Cal.4th 1215, 1236.
[90] *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 435.
[91] *Id., Madera Oversight Coal., Inc. v. County of Madera* (2011) 199 Cal. App. 4th 48, 102.
[92] CEQA Guidelines § 15002(a)(2).
[93] PRC § 21081(a)(3), (b); CEQA Guidelines §§ 15090, 15091; *Covington v. Great Basin Unified Air Pollution Control Dist*. (2019) 43 Cal.App.5th 867, 883.

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A. The DEIR Fails to Analyze Inconsistencies with the Housing Element

The Project is inconsistent with the Housing Element of the Brea General Plan because it proposes to construct a parcel hub warehouse on a mixed-use site specifically identified in the Housing Element as a site with strong potential for residential development.[94] CEQA Guidelines section 15125(d) requires that an environmental impact report "discuss any inconsistencies between the proposed project and applicable general plans, specific plans and regional plans."[95] "Such regional plans include, but are not limited to … regional housing allocation plans."[96] Here, the DEIR fails to include any analysis of the Project's inconsistency with the Housing Element, in violation of CEQA.

16 The Regional Housing Needs Assessment is the California State-required process that seeks to ensure cities and counties plan for enough housing in their Housing Element cycle to accommodate all economic segments of the community.[97] Accordingly, the Housing Element of the City's General Plan identifies the City's housing conditions and needs, evaluates the City's ability to meet its Regional Housing Needs Allocation ("RHNA"), establishes the goals, objectives, and policies of the City's housing strategy, and provides an array of programs to create mixed-income neighborhoods across the City. The City's 6th Cycle 2021-2029 Housing Element update was adopted on November 21, 2021, and identifies sites with strong potential for residential development in order to meet the City's housing goals.[98] The Project site – 275 Valencia Avenue – is discussed at length in the Housing Element as a site with strong potential for residential development within the planning period (2021-2029).[99] The Housing Element explains that the site's "development will contribute to the City's 6th cycle housing growth needs and RHNA buffer":

> City staff have identified several additional sites with strong potential for residential development within the planning period. However, due to the requirements under AB 1398 to complete any necessary rezoning within one year of the start of the planning period (October 15, 2022), these sites have not been included in Brea's Housing Element sites inventory. Nonetheless, as

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[94] City of Brea General Plan, Housing Element, pg. 3-129, available at https://www.cityofbrea.gov/DocumentCenter/View/13950/Chapter-3---Housing-Element-2022---6th-Cycle.
[95] *See also Golden Door Properties, LLC v. County of San Diego* (2020) 50 Cal. App. 5th 467, 543.
[96] *Id.*
[97] Cal. Gov. Code Section 65580 – 65589.9; *see* Brea General Plan, pg. 3-68.
[98] https://www.cityofbrea.gov/1701/6th-Cycle-Housing-Element-Update.
[99] City of Brea General Plan, Housing Element, pg. 3-129.

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(continued)

> their development will contribute to the City's 6th cycle housing growth needs and RHNA buffer, they are briefly described below, with site maps and more detailed descriptions included in Appendix D.
>
> 275 Valencia Avenue
> This 31-acre site is developed with a 600,000 square foot office building and was utilized by Bank of America as a regional office and call center. Amazon has recently purchased the site and has indicated the existing building would be demolished for development of an approximate 180,000 square foot industrial warehouse building, consuming less than five acres of the site and allowing ample space for additional development. With the launch of Amazon's $2 billion Housing Equity Fund in 2021 with the goal of creating 20,000 affordable units for its workforce, the provision of housing on the site is closely aligned with the company's mission. Given the site's proximity to the La Floresta Master Plan community directly to the east across Valencia Avenue, the City recognizes the potential for residential units towards the southerly portion of this site, just north of Nasa Street. The Mercury Village Apartments, referenced in this Housing Element, is evidence of the trend in Brea of converting Light Industrial land use to High-Density residential uses.[100]

Per the figure below, the Housing Element identifies 7 acres on the Project site for residential development with a net unit potential of 75.[101]

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[100] *Id.*
[101] General Plan, Housing Element, PDF pg. 326, available at https://www.cityofbrea.gov/DocumentCenter/View/13950/Chapter-3---Housing-Element-2022---6th-Cycle.

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16
(continued)

Additional Potential Site
(Not Included in Housing Element Sites Inventory)
275 Valencia Avenue

Site Acreage: 31 acres (7 acres for residential) **Current Zoning:** M-1 **Proposed Zoning:** MU-II **Net Unit Potential:** 75	**Description of Site and Factors Supporting Development:** This 31-acre site is developed with a 600,000 square foot office building and was utilized by Bank of America as a regional office and call center. Amazon has recently purchased the site and has indicated the existing building would be demolished for development of an approximate 180,000 square foot industrial warehouse building, consuming less than five acres of the site and allowing ample space for additional development. With the launch of Amazon's $2 billion Housing Equity Fund in 2021 with the goal of creating 20,000 affordable units for its workforce, the provision of housing on the site is closely aligned with the company's mission. Given the site's proximity to the La Floresta Master Plan community directly to the east across Valencia Avenue, the City recognizes the potential for residential units towards the southerly portion of this site just north of Nasa Street, generally outlined in yellow on the exhibit. The Mercury Village Apartments, referenced in this Housing Element, is evidence of the trend in Brea of converting Light Industrial land use to High-Density residential uses.

As shown above, the Housing Element proposed changing the prior zoning of the Project site from M-1 to MU-II. This rezoning was implemented by General Plan Amendment (GPA) No. 2021-02 and Zone Change (ZC) No. 2021-01.[102] The Project site is one of six sites that were rezoned to implement the Housing Element.[103]

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[102] Brea City Council Meeting Agenda, 11/15/2022, Agenda Item 20, available at https://agenda.ci.brea.ca.us/agenda_publish.cfm?id=&mt=ALL&get_month=11&get_year=2022&dsp=agm&seq=3939&rev=0&ag=1081&ln=30178&nseq=3944&nrev=0&pseq=&prev=#ReturnTo30178, https://agenda.ci.brea.ca.us/agenda_publish.cfm?id=&mt=ALL&get_month=11&get_year=2022&dsp=agm&seq=3939&rev=0&ag=1081&ln=30178&nseq=3944&nrev=0&pseq=&prev=#.

[103] Staff Report, re: Agenda Item 17 – General Plan Amendment No. 2021- 02 And Zone Change No. 2021- 01 (10/18/2022).

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The Project is inconsistent with the Housing Element because although part of the Project site was rezoned to a mixed-use district to accommodate residential development, the Project proposes no housing units. The Housing Element explains that residential development on this site would help the City meet its RHNA requirements, but this Project hinders this goal by developing a warehouse parking lot on the site, preventing residential development on the parcel during the planning period. The City's Annual Progress Report ("APR") for 2023[104] states that of the 2,365-unit RHNA allocation for the 2021-2029 planning period, 2,340 units have yet to be approved.[105] Because the required 2,365 units for the planning period have not yet been developed, removal of a desirable site for residential development hinders this goal. The DEIR's failure to analyze this inconsistency violates CEQA.

16 (continued)

The DEIR also fails to analyze the Project's inconsistency with goals and policies in the Housing Element regarding the provision of adequate housing sites. Goal 3.0 provides: "[p]rovide adequate housing sites through appropriate land use, zoning, and specific plan designations to accommodate Brea's share of regional housing growth needs."[106] Policy 3.4 provides "[e]xplore opportunities to integrate housing in underutilized commercial centers, and to reuse excess or obsolete commercial buildings for housing." The Project is inconsistent with Policy 3.4 because the City implemented Policy 3.4 by rezoning the Project site to MU-II for the stated purpose of having Amazon construct workforce housing. By not proposing any residential units, the Project is inconsistent with Policy 3.4. The Project is also inconsistent with policies pursuant to Goal 2.0 (provision of new affordable housing)[107] by proposing industrial development of an MU-II-zoned site.

The DEIR also fails to analyze the Project's inconsistency with the Housing Element's Affirmatively Furthering Fair Housing ("AFFH") program. AB 686 (2017) requires that all Housing Elements due on or after January 1, 2021 must contain an Assessment of Fair Housing ("AFH"), consistent with the federal Affirmatively Furthering Fair Housing ("AFFH") Final Rule of July 16, 2015.[108] This AFFH section must include (1) a summary of fair housing issues in the jurisdiction; (2) a summary of available fair housing data including contributing factors to fair

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[104] Government Code Section 65400 requires jurisdictions to report on the annual progress towards meeting the RHNA during the calendar year, as well as on the status of implementation programs identified in the Housing Element.
[105] General Plan Annual Progress Report for 2023 (March 5, 2024), pg. 2, available at https://bebrea.com/DocumentCenter/View/15385/Brea_City_2023_GP-APR.
[106] General Plan, Housing Element, pg. 3-164.
[107] *Id.* at pg. 3-163 ("Goal 2.0: Assist in the provision of adequate housing to meet the needs of the community. Establish a balanced approach to meeting housing needs that includes the needs of both renter and owner households.").
[108] Brea General Plan, pg. 3-4.

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housing issues; (3) analysis of Housing Element sites in relation to AFFH; and, (4) an AFFH program that includes meaningful actions.[109] The 2021-2029 Housing Element's AFH identifies "Affordable Housing throughout Brea, including High and Highest Resource areas, to promote housing mobility" as a "High Priority" fair housing issue.[110] The associated "City Action" for this issue states, in part: "[p]ursue the introduction of workforce housing on Amazon's 31-acre warehouse site in eastern Brea."[111] Here, the Project does not propose workforce housing and is therefore inconsistent with a City Action identified to address a High Priority fair housing issue. The DEIR fails as an informational document because it fails to disclose this inconsistency with the AFFH program.

16 (continued)

The siting of the Project in relation to sensitive receptors is also inconsistent with the Housing Element. The Housing Element states that residential development is desirable on this site due to the site's proximity to the La Floresta Master Plan community,[112] but the Project instead proposes a stand-alone industrial use that is neither integrated nor compatible with the neighboring residential community.

In sum, by proposing an industrial project on a mixed-use site intended to help meet the City's RHNA requirements, without providing workforce housing, the Project is inconsistent with the Housing Element. This inconsistency is a significant impact under CEQA pursuant to CEQA Guidelines Section 15125(d). The DEIR also violates Section 15125(d)'s informational requirements by failing to include any discussion of the Project site's inconsistencies with numerous Housing Element policies. These informational failures preclude informed public participation and decision-making because a reader is left unaware that the Project proposes a nonresidential development on a site rezoned in order to meet the City's RHNA requirements.[113] The DEIR must be revised and recirculated.

B. The DEIR Fails to Analyze a Reasonable Range of Alternatives

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The DEIR violates CEQA by failing to analyze a Project alternative addressing the Project's Housing Element inconsistencies. CEQA requires public agencies to avoid or reduce environmental damage when "feasible" by requiring consideration of environmentally superior alternatives and adoption of all feasible

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[109] *Id.*
[110] *Id.* at 3-189.
[111] *Id.*
[112] *Id.* at pg. 3-129.
[113] *See Golden Door, supra,* 50 Cal. App. 5th at 505, 548.

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mitigation measures.[114] The CEQA Guidelines require an EIR to describe a reasonable range of alternatives to the proposed project, or to its location, that would feasibly attain most of the project's basic objectives while reducing or avoiding any of its significant effects.[115] Here, the DEIR analyzes three alternatives: (1) No Project, (2) Reduced Project, and (3) Adaptive Reuse of Existing Building.[116] This range of alternatives does not address any of the Project's numerous conflicts with the Housing Element, which are significant impacts under CEQA.[117] None of the three identified alternatives consider the provision of housing on the MU-II portion of the Project site.

The DEIR must be revised to include an alternative that includes workforce housing on the MU-II portion of the Project site. CEQA Guidelines Section 15126.6 lists factors which should be considered when selecting a reasonable range of alternatives: "[a]mong the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts."

17 (continued)

An alternative that includes workforce housing would meet the Project's basic objectives of building a parcel hub warehouse.[118] The 2021-2029 Housing Element states that development of an approximate 180,000 square foot industrial warehouse building would consume less than five acres of the site and allow ample space for additional development.[119] Thus, development of workforce housing on the mixed-use portion of the site would not obstruct the Project's objective. The Housing Element further demonstrates that workforce housing would achieve the Applicant's affordable housing objectives: "[w]ith the launch of Amazon's $2 billion Housing Equity Fund in 2021 with the goal of creating 20,000 affordable units for its workforce, the provision of housing on the site is closely aligned with the company's mission."[120] The DEIR states that development of the Project site with residential uses would not meet the objectives related to the development of a parcel delivery facility, regional demands for good delivery services, or reduce the distances traveled for good delivery.[121] The DEIR also states that residential uses would not meet Objective 7 (attract new businesses to the City of Brea and thereby

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[114] Pub Res C §§21002, 21002.1(a), 21100(b)(4), 21150; CEQA Guidelines § 15002(a)(2), (3); *see also Berkeley Jets*, 91 Cal.App.4th at 1354; *Citizens of Goleta Valley*, 52 Cal.3d at p. 564.
[115] 14 Cal Code Regs §15126.6(a).
[116] DEIR, pg. i.
[117] CEQA Guidelines Section 15125(d)
[118] DEIR, pg. 1-3.
[119] General Plan, Housing Element, pg. 3-129.
[120] *Id.*
[121] DEIR, pg. 6-4.

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maintain a jobs-housing balance in the area that will reduce the need for members of the local workforce to commute outside the area for employment).[122] However, the DEIR's reasoning fails because it does not consider a project design that includes both a parcel delivery facility and residential component, without which the Project remains inconsistent with the General Plan Housing Element and Zoning Code.

An alternative that includes workforce housing may be feasible. The Housing Element suggests that the 31-acre Project site could accommodate both a 5-acre parcel hub and workforce housing.[123] Evidence in the DEIR suggests that the Project proposes excess parking spaces that could be reduced in order to accommodate workforce housing. For example, the DEIR states that the Project would support 345 van drivers, but the Project includes 757 delivery van spaces.[124] Regarding financing, the Housing Element suggests that funding for workforce housing could be available through Amazon's $2 billion Housing Equity Fund.[125]

17 (continued)

An alternative that reduces parking and includes workforce housing would address the Project's conflict with the Housing Element, and potentially avoid a significant impact. The Housing Element AFFH program provides that workforce housing on the Project site is part of the plan to address a high priority fair housing issue. Developing workforce housing on the MU-II portion of the site would also increase integration and compatibility with the La Floresta Master Plan community, a concern identified in the Housing Element.[126]

In sum, the DEIR fails to analyze a reasonable range of alternatives. The DEIR must be revised to analyze an alternative that provides workforce housing on the MU-II portion of the Project site, as called for in the Housing Element.

C. The DEIR Fails to Adequately Analyze and Mitigate Potentially Significant Transportation Impacts

18

1. The DEIR Underestimates Trips Generated by the Project

In addition to overestimating trips generated by the previous use, the DEIR underestimates the trips that would be generated by the Project itself. The DEIR estimates trip generation for the proposed facility based on a "Tenant Specified Trip

[122] *Id.*, pg. 6-2.
[123] *Id.*
[124] DEIR, pg. 1-2, 3-1.
[125] City of Brea General Plan, Housing Element, pg. 3-129.
[126] *Id.*

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Schedule."[127] Mr. Marshall observes that the DEIR underestimates trips by (1) failing to account for employee mid-day trips and employee drop off and pick up trips, and (2) assuming a number of delivery vans than is less than half the number of delivery van parking spaces.[128]

Specifically, the DEIR underestimates personal vehicle trips by assuming that each employee will make 2 trips per day, with a total of 1,152.[129] Mr. Marshall explains that the actual average trip rate per employee would be higher because some employees will make mid-day trips out and back, and some employees will be dropped off and picked up.[130] If the 3.33 average trips per employee rate applied in the DEIR to the previous use is applied to the proposed use, the result would be 1,918 personal vehicle trips per day, which is 766 more than assumed in the DEIR.[131] The DEIR's assumption that employees would not make mid-day trips is not supported by substantial evidence and is inconsistent with trip generation rates in the ITE Trip Generation Manual.[132] Courts have held that an EIR's project description must accurately describe the project in order to serve as the foundation for a complete and instructive EIR.[133] Here, the DEIR's inaccurate description of the personal vehicle trips generated by the Project precludes accurate disclosure of the Project's impacts.

18 (continued)

The DEIR also underestimates the trips made by van delivery drivers. Mr. Marshall observes that the DEIR proposes twice as many delivery van spaces (757) as van drivers (345), suggesting that the facility is being designed for a higher level of activity than is analyzed.[134] Mr. Marshall calculates that if there were 757 delivery vans making one trip in and out trip out per day, this would add 824 delivery van daily trips above the 690 trips estimated in the DEIR.[135] Greater numbers of delivery van drivers would add additional personal trips to the 1,152 estimated in the DEIR.

The DEIR's underestimation of the van delivery drivers generated by the Project is a failure to provide an accurate project description. Courts have explained that a complete description of a project must "address not only the immediate environmental consequences of going forward with the project, but also all

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[127] DEIR, Appendices PDF, pg. 2126.
[128] Marshall Comments, pg.
[129] DEIR, Appendices PDF, pg. 70.
[130] Marshall Comments, pg. 3.
[131] *Id.*
[132] *Id.*
[133] *County of Inyo v City of Los Angeles* (1977) 71 CA3d 185, 199.
[134] Marshall Comments, pg. 3.
[135] *Id.*

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"reasonably foreseeable consequence[s] of the initial project."[136] Courts have held that an EIR must include an analysis of the environmental effects of future expansion or other action if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects.[137]

18 (continued)

In *San Joaquin Raptor Rescue Ctr. v County of Merced*, an EIR indicated that a mining expansion project could have a peak capacity of 550,000 tons per year, but the EIR's analysis analyzed production levels of only 260,000 tons per year based on "assurances elsewhere that there would be no increase in production."[138] The Court held that the EIR's project description was inadequate, and that a recirculated EIR must disclose impacts associated with a peak capacity of 550,000 tons.[139] Here, although the DEIR states the Project would entail 345 delivery vans per day, its design can accommodate 757. It is reasonably foreseeable that a warehouse that can accommodate 757 delivery van spaces may host more than 345 delivery vans per day. And an increase in delivery van trips would increase the air quality, GHG, noise, and transportation impacts of the Project. As in *San Joaquin Raptor Rescue Ctr.*, the DEIR must analyze the greater number of delivery van drivers made possible by the Project's parking facilities.

2. The DEIR Improperly Takes Credit for Trips from Existing Amazon Facilities

19

The DEIR finds that the Project would result in negative delivery van and FLEX driver VMT compared to existing conditions by assuming that the Project would reduce delivery van and FLEX trips to five existing Amazon delivery stations.[140] This assumption is not supported by any evidence in the record. The DEIR does not analyze the possibility that an increase in delivery stations would support or induce greater delivery van and FLEX trips in the region. Mr. Marshall explains that the development of the Project would support an increase in total deliveries.[141]

Even if the Project could result in a short-term net reduction in trips made to other Amazon facilities, the DEIR fails to consider that overall Amazon delivery

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[136] *Laurel Heights I, supra,* 47 Cal. 3d 376, 398 (emphasis added); *see also Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova, supra*, 40 Cal. 4th at 449-50.
[137] *Laurel Heights Improvement Ass'n v Regents of Univ. of Cal.* (1988) 47 C3d 376.
[138] *San Joaquin Raptor Rescue Ctr. v County of Merced* (2007) 149 CA4th 645.
[139] *Id.* at 657.
[140] DEIR, Appendices PDF, pg. 2123.
[141] Marshall Comments, pg. 4.

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19 (continued)

trips are expected to increase in the region, eventually resulting in new vehicle trips to the Project. The volume of packages passing through Amazon's logistics network has increased each year.[142] Amazon's U.S. package volume increased 15.7% from 2022 to 2023.[143] From 2021 to 2022, Amazon Logistics' package volume grew 6.25%.[144] From 2018 to 2023, package volumes increased at a 49.1% compound annual growth rate.[145] This evidence demonstrates that the overall number of delivery trips made to the Project and the five existing delivery stations referenced in the DEIR is expected to increase. This evidence is not contradicted by any evidence in the DEIR. Therefore, the DEIR's assumption that the Project would result in negative delivery van and FLEX driver VMT is unfounded and masks the Project's transportation impacts.

Because the DEIR fails to support its assumption with substantial evidence, the DEIR's VMT analysis must be revised.

20

3. The Project Would Have a Potentially Significant, Unmitigated VMT Impact

The DEIR finds that the Project would have a less than significant VMT impact, and would screen out of a full VMT analysis, because the Project would generate less than 100 net daily trips (-2,720 net trips).[146] The DEIR reaches this conclusion by overestimating trips from the existing Bank of America office, underestimating the trips that would be generated by the Project, and improperly assuming that delivery van and FLEX trips would correspond to a net reduction from existing Amazon facilities.

When these errors are corrected, Mr. Marshall calculates that the Project would result in greater than 100 net daily trips. Mr. Marshall calculates that the Project would generate 4,450 trips per day, which is 542 more trips than the 3,908 trips from the existing use.[147] As no other screening criteria are applicable to the

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[142] CapitalOne Shopping Research, Amazon Logistics Statistics (Last updated: October 8, 2024), https://capitaloneshopping.com/research/amazon-logistics-statistics/; *see* Supplychaindive.com, Amazon leapfrogs UPS and 4 other takeaways from a top shipping index (April 17, 2024), https://www.supplychaindive.com/news/amazon-ups-4-other-takeaways-from-shipping-index-pitney-bowes/713329/;
[143] *Id.*
[144] *Id.*
[145] *Id.*
[146] DEIR, pg. 5.8-16, 17
[147] Marshall Comments, pg.

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Project,[148] the DEIR thus lacks substantial evidence to conclude the Project screens out of a VMT analysis.

The DEIR concludes that the VMT generated by the proposed parcel delivery use would be 19,842 less than the VMT generated by the existing baseline condition (Bank of America), and thus have a less than significant impact.[149] Mr. Marshall recalculated the Project's VMT with the DEIR's errors corrected, reflected in the table below.[150]

20 (continued)

revised Table 4	count	trips	prior VMT	new VMT	notes
	Previous Land Use				
Bank of America	1,447	3,909	34,790	-	reduced in proportion to trips
	Delivery Station				
Personal vehicles	990	2,742	-	57,308	add non-commute trips, increase vans to 757
delivery vans		1,514		27,441	remove credit, increase vans to 757
FLEX	97	194		1,758	remove credit
Total	673	2,036		86,506	
	Difference from previous			51,716	

As shown above, ***Mr. Marshall calculates that daily VMT would be 51,716 higher than the previous use***. This number must be compared to VMT significance criteria in a revised and recirculated EIR.

D. The DEIR Fails to Adequately Analyze and Mitigate Potentially Significant Air Quality Impacts

1. The DEIR Improperly Compresses Analysis of the Project's Unmitigated and Mitigated Impacts

21

The DEIR finds that the Project's construction activities would result in less-than-significant emissions of criteria air pollutants and would not result in a significant health risk impact due to implementation of Project Design Feature ("PDF") PDF-AQ-1.[151] The DEIR's CalEEMod analysis of the Project's emissions and the health risk analysis both incorporate PDF-AQ-1 into the analysis of the Project's unmitigated impacts. As a result, the DEIR does not analyze the Project's unmitigated emissions from a typical construction fleet. This approach violates CEQA's requirements that an EIR analyze the Project's unmitigated impacts and separately identify binding mitigation.

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[148] DEIR, pg. 5.8-16.
[149] DEIR, pg. 5.8-17.
[150] Marshall Comments, pg.
[151] DEIR, pg. 5.1-26.

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In *Lotus v. Department of Transportation*, an EIR prepared by the California Department of Transportation contained measures to help minimize potential stress on redwood trees during highway construction, such as restorative planting, invasive plant removal, watering, and use of an arborist and specialized excavation equipment.[152] The Court of Appeal held that the EIR improperly compressed the analysis of impacts and mitigation measures into a single issue because the EIR did not designate the measures as mitigation and concluded that because of the measures, no significant impacts were anticipated.[153] The Court explained that a significance determination must be made independent of mitigation first, then mitigation can be incorporated, and the effectiveness of those measures can be evaluated.[154] "Absent a determination regarding the significance of the impacts to the root systems of the old growth redwood trees, it is impossible to determine whether mitigation measures are required or to evaluate whether other more effective measures than those proposed should be considered."[155]

21
(continued)

CEQA caselaw, including *Citizens for Environmental Responsibility v. State ex rel. 14th District Agricultural Association*,[156] *Berkeley Hills Watershed Coalition v. City of Berkeley*,[157] and *Berkeley Hillside Preservation v. City of Berkeley*[158] provides that in order to be considered a design feature, a measure cannot be taken "mitigate or offset the alleged adverse environmental impacts" of the Project.[159]

Here, the DEIR's approach violates the principles articulated in *Lotus* by assuming Tier 4 Final equipment in its analysis of the Project's unmitigated impacts. There is no evidence in the DEIR that a requirement to use Tier 4 Final equipment is unrelated to mitigation of environmental impacts or otherwise preexists the Project. PDF-AQ-1's sole purpose is to mitigate or offset emissions from construction activities. By compressing the analysis of unmitigated and mitigated impacts, the DEIR fails to disclose the Project's potential effects on public health and the environment. The City must revise the EIR to disclose the Project's

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[152] (2014) 223 Cal.App.4th 645, 658 (compression of mitigation measures into project design without acknowledging potentially significant impact if effects were not mitigated violates CEQA).
[153] *Id.* at 656.
[154] *Id.* at 654–656.
[155] *Id.* at 656.
[156] (2015) 242 Cal.App.4th 555.
[157] (2019) 31 Cal.App.5th 880
[158] (2015) 241 Cal.App.4th 943.
[159] *Berkeley Hills Watershed, supra,* 31 Cal.App.5th 880 (holding that measures were not "mitigation measures" because they were developed as part of the project design to meet building code requirements for properties located in seismic zones and address preexisting conditions on the site as opposed to being "proposed subsequent actions by the project's proponent to mitigate or offset the alleged adverse environmental impacts" of the project).

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21 (continued)

significant impacts resulting from construction emissions and include use of Tier 4 Final equipment as a binding mitigation measure in the MMRP.[160]

E. The DEIR Fails to Adequately Evaluate Potentially Significant Noise Impacts

1. The DEIR's Construction Noise Significance Threshold is Unsupported by Substantial Evidence

22

Appendix G of the CEQA Guidelines provides that the Project would cause a significant noise impact if it would result in "[g]eneration of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies."[161] For this project, the DEIR provides that construction noise under 80 dBA would be less than significant.[162] The DEIR sources the 80 dBA threshold from the Federal Transit Administration's ("FTA") Transit Noise And Vibration Impact Assessment Manual.[163] But the DEIR violates CEQA by failing to also identify a significance threshold for the increase in noise over ambient levels.

California courts have held that "the lead agency should consider both the increase in noise level and the absolute noise level associated with a project".[164] The courts have held that reliance on a maximum noise level as the sole threshold of significance for noise impacts violates CEQA because it fails to consider whether the magnitude of changes in noise levels is significant.[165] In *Keep our Mountains Quiet v. County of Santa Clara*,[166] neighbors of a wedding venue sued over the County of Santa Clara's failure to prepare an EIR for a proposed project to allow use permits for wedding and other party events at a residential property abutting an open space preserve. Neighbors and their noise expert contended that previous events at the facility had caused significant noise impacts that reverberated in neighbors' homes

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[160] *Id.* at 651-52. (mitigation measures must be incorporated directly into the EIR to be enforceable).
[161] DEIR, Appendices PDF, pg. 2056.
[162] DEIR, Appendices PDF, pg. 2059, 2060.
[163] *Id.*; Federal Transit Administration, Transit Noise And Vibration Impact Assessment Manual, September 2018, pg. 179, available at https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf.
[164] *Keep Our Mountains Quiet v. County of Santa Clara* (2015) 236 Cal.App.4th 714, 733; see *King and Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814, 894 (citing *Keep Our Mountains Quiet*).
[165] *King & Gardiner Farms, LLC,* 45 Cal.App.5th at 865.
[166] *Keep our Mountains Quiet v. County of Santa Clara* (2015) 236 Cal.App.4th 714.

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and disrupted the use and enjoyment of their property.[167] The County's EIR relied on the noise standards set forth in its noise ordinance as its thresholds for significant noise exposure from the project, deeming any increase to be insignificant so long as the absolute noise level did not exceed those standards.[168] The Court examined a long line of CEQA cases which have uniformly held that conformity with land use regulations is not conclusive of whether or not a project has significant noise impacts[169] in holding that the County's reliance on the project's compliance with noise regulations did not constitute substantial evidence supporting the County's finding of no significant impacts.[170]

22 (continued)

In *King and Gardiner Farms, LLC v. County of Kern*,[171] the Court of Appeal cited *Keep our Mountains Quiet* and decisions cited therein when it rejected the use of a single "absolute noise level" threshold of significance (construction and operational noise impacts were only deemed significant if they exceeded 65 dBA CNEL) on the grounds that the sole use of such a threshold fails to consider the magnitude or severity of increases in noise levels attributable to the project in different environments. The Court explained the lead agency failed to "refer to evidence showing why the magnitude of an increase was irrelevant in determining the significance of a change in noise."[172] As stated in the DEIR itself:

> The recent Fifth District of Appeal decision in *King and Gardiner Farms, LLC v. County of Kern* et al. 45 Cal.App.5th 814, 17 held that the use of an absolute noise threshold for evaluating all ambient noise impacts violated CEQA because it did not provide a "complete picture" of the noise impacts that may result from implementation of the ordinance. As such, the Proposed Project's construction noise is estimated and then added to the average daily ambient noise level in the Project Area as determined by the baseline noise survey conducted by ECORP Consulting (see Table 3-1).[173]

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[167] *Id.* at 724.
[168] *Id.* at 732.
[169] *Id., citing Citizens for Responsible & Open Government v. City of Grand Terrace* (2008) 160 Cal.App.4th 1323, 1338; *Oro Fino Gold Mining Corp. v. County of El Dorado* (1990) 225 Cal.App.3d 872, 881–882; *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1416 (project's effects can be significant even if "they are not greater than those deemed acceptable in a general plan"); *Environmental Planning & Information Council v. County of El Dorado* (1982) 131 Cal.App.3d 350, 354, ("CEQA nowhere calls for evaluation of the impacts of a proposed project on an existing general plan").
[170] *Id.* at 732-734; see also *King & Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814, 893, as modified on denial of rehearing (Mar. 20, 2020).
[171] *King and Gardiner Farms, LLC, supra,* 45 Cal.App.5th 814.
[172] *Id.* at 894.
[173] DEIR, Appendices PDF, pg. 2059.

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Here, although the DEIR acknowledges that the use of an absolute noise threshold for evaluating all ambient noise impacts violates CEQA, the DEIR still evaluates the Project's construction noise impacts using a single 80 dBA threshold. As in *King and Gardiner Farms*, the DEIR's current threshold fails to consider the increase in noise and absolute noise level, without referring to any evidence showing why these metrics are irrelevant in determining the significance of a change in noise.

22 (continued)

Substantial evidence demonstrates that the increase in noise is relevant in determining the significance of a noise impact. The FTA Manual cited by the DEIR states that "[p]roject construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use."[174] A single 80 dBA threshold does not account for the existing noise environment. Figure 3-6 of the FTA Manual presents data from case studies showing that reactions to increases in noise between 5 to 10 dBA above existing levels vary from "widespread complaints" to "threats of legal action."[175] Increases in noise of 20 dBA over existing levels typically results in "vigorous action." These responses to noise increases are caused because "[o]n average, each A-weighted sound level increase of 10 dB corresponds to an approximate doubling of subjective loudness."[176] The DEIR's noise study itself states that "[a]n increase of 5 dBA is typically considered substantial."[177] An EIR must be prepared that applies a legally adequate construction noise threshold.

1. Construction Noise Impacts are Potentially Significant

Construction noise impacts are potentially significant because they would result in noticeable increases over ambient levels.[178] The DEIR calculates that noise levels at sensitive receptors would increase to 72.2 dBA during demolition and 73.5 dBA during site preparation and grading.[179] These are increases over the 68.7 dBA average ambient noise level calculated in the DEIR. The actual increases over ambient conditions may be greater than disclosed in the DEIR, as the DEIR relies on short-term ambient noise measurements that may not be reflective of actual conditions. Further, by comparing construction noise impacts to an *average* of the measured ambient levels at different sensitive receptor locations, the DEIR's analysis may underestimate noise impacts at sensitive receptors with lower-than-

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[174] FTA Manual, September 2018, pg. 179.
[175] *Id.* at 18, Figure 3-6 (Community Reaction to New Noise, Relative to Existing Noise in a Residential Urban Environment)
[176] FTA Manual, September 2018, pg. 206.
[177] DEIR, Appendices PDF, pg. 2042.
[178] DEIR, Appendices PDF, pg. 2042.
[179] DEIR, Appendices PDF, pg. 2060.

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average ambient noise levels.[180] Therefore, construction noise impacts are likely greater than disclosed in the DEIR.

This DEIR does not identify a significance threshold that reflects the significance of the increase in noise, but the DEIR's noise study states that a 3 dBA noise increase would be perceptible and an increase of 5 dBA is typically considered substantial."[181] The DEIR discloses a 4.8 dBA increase in noise during site preparation and grading, which may be higher when the flaws in the noise analysis are corrected. For example, construction noise impacts may exceed 5 dBA at sensitive receptors with ambient noise levels less than the average calculated in the DEIR. Receptor location #3 (Northern corner of Adelante and Paseo Drive 61), was measured to have a 61 dBA existing noise level, which is significantly lower than the DEIR's 68.7 dBA average.[182] An increase in noise to 73.5 dBA during site preparation and grading would exceed 5 dBA. Thus, the DEIR must be revised to adequately analyze this potentially significant impact.

22 (continued)

2. Noise from Nighttime Truck Trips Is Potentially Significant

The Project would generate nighttime truck trips that would result in potentially significant sleep disturbance impacts. However, such impacts are not fully evaluated in the DEIR. The DEIR finds that nighttime noise impacts from truck traffic would be less than significant because the Project would not exceed the Municipal Code's 50 dBA leq nighttime exterior noise standard.[183] Ms. Jue explains that compliance with this noise standard does not demonstrate that individual nighttime truck trips would not result in sleep disturbances. Specifically, the City's noise standards, which use the metric "dBA Leq," refer to an *average* sound level over a designated period. Ms. Jue explains that a standard relying on *hourly* leq would not reflect the significance of noise from *individual* trucks passing by sensitive receptors.[184] An indoor Lmax noise level of 45 dBA from a single truck has an approximately 10% chance of disturbing sleep.[185] Ms. Jue explains that the maximum noise received in a bedroom from a truck pass by could be on the order of

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[180] DEIR, Appendices PDF, pg. 2047.
[181] DEIR, Appendices PDF, pg. 2042.
[182] DEIR, Appendices PDF, pg. 2047.
[183] DEIR, Appendices PDF, pg. 2064.
[184] Jue Comments, pg. 3.
[185] Basner, "WHO Environmental Noise Guidelines for the European Region: A Systematic Review on Environmental Noise and Effects on Sleep," Figure 4, available at https://pubmed.ncbi.nlm.nih.gov/29538344/.

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55 dBA.[186] The probability of disturbing sleep increases by about 13% for each truck pass by.[187]

As explained above, "the lead agency should consider both the increase in noise level and the absolute noise level associated with a project".[188] And courts have held that conformity with land use regulations is not conclusive of whether or not a project has significant noise impacts.[189] Here, Ms. Jue provides evidence demonstrating that the DEIR's 50 dBA leq threshold does not address noise impacts from individual trucks. And because the DEIR failed to include nighttime ambient noise measurements, it is impossible for the public to calculate the increase over ambient levels.[190]

23 (continued)

The Project's sleep disturbance impacts are potentially significant. With 62 daily line-haul truck trips, this Project would result in sleep disturbances if these trips are made at night.[191] As such, sleep disturbance impacts from this Project's operations are potentially significant, and the DEIR's finding that impacts would be less than significant is not supported by substantial evidence. The DEIR must be revised to analyze the full scope of noise impacts generated by the Project.

3. The DEIR Fails to Analyze Impacts from Rooftop Mechanical Equipment

24

The DEIR's operational noise analysis lacks analysis of rooftop mechanical equipment.[192] Ms. Jue observes that refrigeration and HVAC equipment are typically required for this type of facility, but the DEIR fails to include a discussion on what stationary equipment would be required for this Project.[193] Ms. Jue

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[186] Jue Comments, pg. 3
[187] *Id.*
[188] *Keep Our Mountains Quiet v. County of Santa Clara* (2015) 236 Cal.App.4th 714, 733; see *King and Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814, 894 (citing *Keep Our Mountains Quiet*).
[189] *Keep our Mountains Quiet v. County of Santa Clara*, (2015) 236 Cal.App.4th 714*, citing Citizens for Responsible & Open Government v. City of Grand Terrace* (2008) 160 Cal.App.4th 1323, 1338; *Oro Fino Gold Mining Corp. v. County of El Dorado* (1990) 225 Cal.App.3d 872, 881–882; *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1416 (project's effects can be significant even if "they are not greater than those deemed acceptable in a general plan"); *Environmental Planning & Information Council v. County of El Dorado* (1982) 131 Cal.App.3d 350, 354 ("CEQA nowhere calls for evaluation of the impacts of a proposed project on an existing general plan"); *King & Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814, 893, as modified on denial of rehearing (Mar. 20, 2020).
[190] Jue Comments, pg. 2.
[191] Jue Comments, pg. 3.
[192] DEIR, Appendices PDF, pg. 2063-64.
[193] Jue Comments, pg. 4.

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24 (continued)

calculates that a warehouse of this size could require 90 25-ton HVAC units. Stationary equipment including HVAC would be operated 24/7.[194] If the Project includes refrigeration, refrigeration would also be 24/7. Based on available online published manufacturer sound data, the typical sound power level from a 25-ton packaged rooftop HVAC unit is 95 dBA. Ms. Jue calculates that, ignoring shielding, the noise from 90 of these units would be about 54 dBA at a distance of 250 ft, which could potentially exceed the local noise limit of 50 dBA for the nighttime period.[195] This noise could also combine with noise from the Project's line-haul trucks, contributing to sleep disturbance. The potentially significant noise impacts from the Project's stationary equipment must be analyzed in a revised EIR.

F. The DEIR Fails to Include Sufficient Investigation into Energy Conservation Measures

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The DEIR fails to include sufficient investigation into energy conservation measures that might be available or appropriate for the Project, in violation of CEQA. The DEIR concludes that operational energy impacts of the Project would be less than significant because the buildings would be designed and constructed in accordance with the State's Title 24 guidelines and regulations.[196] However, compliance with Title 24 regulations alone does not support a conclusion that energy impacts are less than significant, and the DEIR fails to sufficiently consider energy conservation measures like solar facilities, use of alternate fuel sources, or passive energy efficiency measures to ensure the Project's energy consumption would not be wasteful, inefficient, or unnecessary. This lack of analysis violates CEQA.

CEQA requires an environmental document to discuss mitigation measures for significant environmental impacts, including "measures to reduce the wasteful, inefficient, and unnecessary consumption of energy."[197] The CEQA Guidelines require discussion of energy conservation measures when relevant, and provide examples in Appendix F:[198]

1) Potential measures to reduce wasteful, inefficient and unnecessary consumption of energy during construction, operation, maintenance and/or

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[194] *Id.*
[195] *Id.*
[196] DEIR, pg. 5.2-15
[197] Pub. Resources Code, § 21100(b)(3); *Tracy First v. City of Tracy* (2009) 177 Cal.App.4th 912, 930.
[198] 14 Cal. Code Regs., § 15126.4(a)(1)(C) (stating "'Energy conservation measures, as well as other appropriate mitigation measures, shall be discussed when relevant.").

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removal. The discussion should explain why certain measures were incorporated in the project and why other measures were dismissed.

2) The potential of siting, orientation, and design to minimize energy consumption, including transportation energy, increase water conservation and reduce solid waste.
3) The potential for reducing peak energy demand.
4) Alternate fuels (particularly renewable ones) or energy systems.
5) Energy conservation which could result from recycling efforts.

25 (continued)

Courts have rejected CEQA documents that fail to include adequate analysis investigation into energy conservation measures that might be available or appropriate for a project.[199] In *California Clean Energy Commission v. City of Woodland* ("*CCEC*"),[200] the Court of Appeal reviewed an EIR for a shopping center on undeveloped agricultural land. Similar to the DEIR here, the EIR in *CCEC* concluded that, due to the proposed project's compliance with Title 24 guidelines and regulations, the project would be expected to have a less-than-significant impact regarding the wasteful, inefficient, or unnecessary consumption of energy. But the lead agency's EIR did not include discussion regarding the different renewable energy options that might be available or appropriate for the project. The Court held "the City's EIRs failed to comply with the requirements of Appendix F to the Guidelines by not discussing or analyzing renewable energy options."[201] The lead agency argued that compliance with the Building Code sufficed to address energy impact concerns for the project.[202] But the Court explained:

> Although the Building Code addresses energy savings for components of a new commercial construction, it does not address many of the considerations required under Appendix F of the CEQA Guidelines… These considerations include whether a building should be constructed at all, how large it should be, where it should be located, whether it should incorporate renewable energy resources, or anything else external to the building's envelope. Here, a requirement that Gateway II comply with the Building Code does not, by itself, constitute an adequate assessment of mitigation measures that can be taken to address the energy impacts during construction and operation of the project.[203]

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[199] *Ukiah Citizens for Safety First v. City of Ukiah* (2016) 248 CA4th 256; *Spring Valley Lake Ass'n v. City of Victorville* (2016) 248 CA4th 91.
[200] (2014) 225 CA4th 173.
[201] *Id.* at 213.
[202] *Id.* at 210, 211.
[203] *CECC* (2014) 225 CA4th 173, 213.

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The Supreme Court of California agreed with the *CCEC* court's decision in *League to Save Lake Tahoe Mtn. Area Preservation Found. v County of Placer*, holding that even projects that find a less-than-significant energy impact must "discuss whether any renewable energy features could be incorporated into the project."[204] In *Save Lake Tahoe*, the Court considered an EIR for a land use specific plan and rezoning to permit residential and commercial development and preserve forest land near Truckee and Lake Tahoe. The EIR did not consider whether it was feasible to power the project on 100 percent renewable electrical energy or some lesser percentage, nor evaluate strategies for reducing reliance on fossil fuels, increasing reliance on renewable resources, reducing peak loads, and reducing the impacts of relying on remote generation facilities. The lead agency reasoned that this analysis was not required because energy impacts would be less than significant. Citing CEQA Guidelines Section 15126.2, subdivision (b) and the decision in *CCEC*, the Court held that when an EIR analyzes the project's energy use to determine if it creates significant effects, it should discuss whether any renewable energy features could be incorporated into the project. The Court found that the EIR violated CEQA for not discussing whether the project could increase its reliance on renewable energy sources to meet its energy demand.

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(continued)

Here, the DEIR lacks analysis of energy consumption measures in violation of CEQA Guidelines Appendix F. The DEIR states that the Project would comply with Title 24 requirements regarding installation of energy efficient appliances and lighting, a solar-ready roof, EV charging stations, EV capable stalls, and low-flow water fixtures.[205] But the DEIR fails to adequately analyze energy consumption-reducing measures in excess of the Title 24 mandatory standards.

For example, the DEIR fails to evaluate the feasibility of meeting voluntary Tier 1 or 2 standards described in Appendix A5, Nonresidential Voluntary Measures, of the 2022 California Green Building Standards Code. These standards include consumption measures addressing many different aspects of nonresidential developments. CALGreen Sections A5.106.5.1.1 and A5.106.5.1.2 call for increased number of designated parking spaces for any combination of low-emitting, fuel-efficient, and carpool/van pool vehicles. Tier 1 standards require 35% of spaces to be reserved for clean air vehicles, and Tier 2 standards require 50%. CALGreen Section A5.106.5.3 calls for an increased number of EV capable spaces. The number of EV capable spaces required by these sections depends on the total number of spaces.[206] Tier 1 standards require large projects with 201 or more parking spaces to provide 30% EV capable spaces, and Tier 2 standards require 45% to be EV

[204] (2022) 75 CA5th 63, 167–68.
[205] DEIR, pg. 5.2-18.
[206] CALGreen, Table A5.106.5.3.1 Tier 1

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capable.[207] CALGreen Section A5.203.1.2 sets energy budgets that are less than permitted by the mandatory Title 24 energy standards.[208] CALGreen Section A5.303.2.3 calls for reductions in water consumption by require plumbing fixtures and fixture fittings that would reduce the use of potable water by 12%, in the case of Tier 1 standards, and 20%, in the case of Tier 2.[209]

The DEIR fails to analyze which aspects of the Project could support solar facilities, such as rooftop, parking lot, or ground-level solar photovoltaics. Solar canopies over a portion or all of the 1,949-stall surface parking lot could offset operational energy consumption, but this measure is not considered in the DEIR. The DEIR's analysis must address considerations such as the technical and economic feasibility of installing solar facilities on the Project site, the potential size of the Project's solar zone, and the potential magnitude of mitigation provided by installing solar facilities. The DEIR also fails to analyze what energy storage facilities can be constructed on the 31-acre Project site.

25 (continued)

The DEIR also fails to evaluate the extent to which mobile source energy consumption could be reduced during Project operations through electric vehicle charging infrastructure (above what is required by existing regulations). The DEIR states that the Project would provide two charging stations above what is required by existing regulations, but the DEIR does not demonstrate that this number of stations would meaningfully reduce energy consumption or represents the maximum stations feasible for a Project of this size (1,949 total parking spaces).[210] As shown above, Tier 2 measures would require the Project to install chargers for 33 percent of all EV capable spaces, demonstrating that greater numbers of EV spaces and stations are feasible.[211]

The DEIR also fails to evaluate the effectiveness and feasibility of shortening permissible idling times for construction equipment and delivery trucks accessing the Project site. The DEIR states that the Project would comply with regulations requiring a five-minute maximum idling time,[212] but fails to consider a three-

[207] Table A5.106.5.3.1, A5.106.5.3.2.
[208] CALGreen Sections A5.203.1.2.1, A5.203.1.2.2.
[209] CALGreen Sections A5.303.2.3.1, A5.303.2.3.2
[210] DEIR, pg. 5.2-11.
[211] Section A5.106.5.3.2 (Tier 2 standards require large projects with 201 or more parking spaces to provide 45% to be EV capable. 33% of Tier 1 standards would require 30% of the total spaces to be EV capable.), *see* CALGreen Section A5.106.5.1.2 (Tier 2 standards require 50% of spaces to be reserved for clean air vehicles, and Tier 1 standards require 35%); *see*
[212] DEIR, pg. 5.2-16.

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minute idling time for construction equipment and trucks, as recommended in the Attorney General's warehouse guidance.[213]

25 (continued)

In sum, the DEIR's energy analysis fails adequately analyze measures to reduce the wasteful, inefficient, and unnecessary consumption of energy, and fails to meaningfully address Appendix F's considerations of whether a building should be constructed at all, how large it should be, where it should be located, whether it should incorporate renewable energy resources, or anything else external to the building's envelope.[214] This analysis must be provided in a revised and recirculated EIR.

G. The DEIR Fails to Adequately Disclose, Analyze and Mitigate the Project's Cumulative Impacts

26

An EIR must evaluate a cumulative impact if the project's incremental effect combined with the effects of other projects is "cumulatively considerable."[215] This determination is based on an assessment of the project's incremental impacts "viewed in connection with the effects of past project, the effects of other current projects, and the effects of probable future projects."[216] Proper cumulative impact analysis is vital because "the full environmental impact of a proposed project cannot be gauged in a vacuum. One of the most important environmental lessons that has been learned is that environmental damage often occurs incrementally from a variety of small sources. These sources appear insignificant when considered individually, but assume threatening dimensions when considered collectively with other sources with which they interact."[217]

1. The DEIR's Cumulative Air Emissions Analysis Does Not Comply with CEQA or Attorney General Warehouse Guidance

The DEIR fails to adequately analyze the significance of the Project's cumulative air quality emissions. The DEIR asserts that, under SCAQMD guidance, any exceedance of a project-level threshold for criteria pollutants also is considered to be a cumulatively-considerable effect, while air pollutant emissions that fall below applicable project-level thresholds are not considered cumulatively-

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[213] State of California Department of Justice, Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act (updated September 2022), pg. 8, 9.
[214] *Ukiah Citizens for Safety First v. City of Ukiah* (2016) 248 CA4th 256, 264.
[215] CEQA Guidelines § 15130(a).
[216] *Id.,* §§ 15065(a)(3), 15355(b).
[217] *Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98, 114.

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26 (continued)

considerable.[218] The DEIR concludes that this Project's emissions of criteria air pollutants would be less-than-significant because they would not exceed the project-level thresholds.[219] The DEIR's analysis of cumulative health risks is flawed for the same reason as the air quality analysis. The DEIR reasons that health risk impacts from exposure to toxic air contaminants during construction and operation would be less than significant because project-level thresholds would not be exceeded.[220] This approach is inadequate because it fails to analyze the Project's cumulative effects with the existing and proposed development surrounding the Project site, shown in the table below.[221]

[218] DEIR, pg. 5.1-41.
[219] *Id.*
[220] DEIR, pg. 5.1-22.
[221] DEIR, pg. 4-11, Table 4-3.

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26
(continued)

The DEIR's approach has been rejected by the courts for failing to comply with CEQA's requirement that a project mitigate impacts that are "cumulatively considerable."[222] The leading case on this issue is *Kings County Farm Bureau v. City of Hanford*.[223] In *Kings County*, the city prepared an EIR for a 26.4-megawatt coal-fired cogeneration plant. Notwithstanding the fact that the EIR found that the project region was out of attainment for PM_{10} and ozone, the city failed to incorporate mitigation for the project's cumulative air quality impacts from project

[222] PRC § 21083(b)(2); 14 CCR § 15130; *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal. App. 3d 692, 719-21.
[223] *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal. App. 3d 692 ("Kings County"); *see also, Friends of Oroville v. City of Oroville* (2013) 219 Cal. App. 4th 832, 841-42.

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emissions because it concluded that the Project would contribute "less than one percent of area emissions for all criteria pollutants."[224] The city reasoned that, because the project's air emissions were small in ratio to existing air quality problems, that this necessarily rendered the project's "incremental contribution" minimal under CEQA. The court rejected this approach, finding it "contrary to the intent of CEQA," and that "[t]he EIR improperly focused upon the individual project's relative effects and omitted facts relevant to an analysis of the collective effect this and other sources will have upon air quality."[225]

26 (continued)

This DEIR's analysis is similarly flawed because it improperly focuses upon the individual project's relative effects and omits facts relevant to an analysis of the collective effect this and other sources will have upon air quality. For example, the DEIR does not evaluate the significance of the combined emissions from construction of the Project and the neighboring related projects on residences along Valencia Road and Rose Drive. These residences would be flanked on both sides by large projects emitting TACs during construction and operation. These combined emissions may result in significant health risks. These potentially significant cumulative health risks are unanalyzed in the DEIR, in violation of CEQA and the principles articulated in *Kings County*.

In addition to violating CEQA, the approach used in the DEIR also directly conflicts with the recent Attorney General guidance document setting forth best practices for evaluating the environmental impacts of warehouse projects like this one under CEQA.[226] With respect to cumulative air quality and GHG emissions analysis, the Attorney General's guidance states that best practices include "[w]hen analyzing cumulative impacts, thoroughly considering the project's incremental impact in combination with past, present, and reasonably foreseeable future

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[224] *Kings County, supra,* at 719.

[225] *Id.* at 721; *see also People of the State of California v. City of Fontana,* Case No. CIVSB2121829, Petition for Writ of Mandate, available at https://climatecasechart.com/wp-content/uploads/case-documents/2021/20210723_docket-CIVSB2121829_petition-for-writ-of-mandate.pdf ("The MND's cumulative air quality impact analysis does not account for—or even acknowledge—the multitude of other warehouses near the Project. Rather than consider the environmental setting within which the Project will be situated, the MND simply states that the Project will not result in a cumulatively considerable increase in emissions because the Project's individual air quality impacts will be less than significant. The MND even applies this reasoning to its analysis of health impacts from localized emissions, despite making no attempt to determine or disclose the severity of the existing health impacts from localized emissions in the community")

[226] *Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act* (Updated September 2022), available at https://oag.ca.gov/system/files/media/warehouse-best-practices.pdf .

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projects, *even if the project's individual impacts alone do not exceed the applicable significance threshold* [emphasis added]."[227]

26 (continued)

In sum, the DEIR's cumulative air quality impacts analysis fails to comply with CEQA. The City must prepare a revised EIR that properly evaluates and mitigates such impacts.

VII. CONCLUSION

27

For the reasons discussed above, the DEIR for the Project is inadequate under CEQA. It must be revised to provide legally adequate analysis of, and mitigation for, all of the Project's potentially significant impacts. These revisions will necessarily require that the DEIR be recirculated for additional public review. Until the DEIR has been revised and recirculated, as described herein, the City may not lawfully approve the Project.

Thank you for your consideration of these comments. Please include them in the record of proceedings for the Project.

Sincerely,

Aidan P. Marshall

Attachments
APM:acp

[227] *Id.*, pg. 7.

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EXHIBIT A

794 Sawnee Bean Road
Thetford Center VT 05075

Norman Marshall, President
(802) 356-2969

nmarshall@smartmobility.com

January 3, 2025

Aidan P. Marshall
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

Subject: Amazon DJT4 Parcel Delivery Facility

Dear Mr. Marshall,

I have reviewed trip generation and vehicle miles traveled (VMT) impacts of the proposed Amazon DJT4 Parcel Delivery Facility in the City of South Brea Draft Environmental Impact Report ("DEIR") dated November 2024. I make the following findings:

1) The DEIR overestimates trip generation from the previous use by failing to properly apply the trip generation equation. The corrected number is 3,908 trips per day.
2) The DEIR underestimates trip generation from the proposed use by:
   a. failing to account for employee mid-day trips and employee drop off and pick up trips, and
   b. assuming a number of delivery vans than is less than half the number of delivery van parking spaces – it is conservative to assume that all these spaces will eventually be used.
3) With these changes, estimated trip generation from the proposed project increases to 4,450 daily trips, i.e. 542 <u>more</u> trips per day than the previous use – versus the DEIR's assertion than the proposed project would generate fewer trips.
4) The DEIR improperly omits delivery van and Flex VMT.
5) When delivery van and Flex VMT is included, and trip generation is adjusted, the project is estimated to generate 51,716 <u>more</u> daily VMT than the previous use – versus the DEIR's assertion that the proposed project would generate fewer trips.
6) The trip generation and VMT estimates should be corrected, and significant VMT impacts should be mitigated.

28

The DEIR Overestimates Trip Generation from the Previous Use – The DEIR compares estimated trip generation from the previous use of a Bank of America office building to estimated trip generation from the proposed Amazon facility. The DEIR describes the previous use as a "637,503-square-foot closed Bank of America office building and surface parking lot." (DEIR, p. 1-1) The DEIR also states: "According to City records, the building operated with at least 1447 employees." (DEIR, Appendix F, Appendices PDF p. 2118 of 2391)

Trip generation for the previous use is estimated using data from the Institute of Transportation Engineers ("ITE") *Trip Generation* for Category 710, General Office Building. The DEIR applied the average rate of 3.33 daily trips per employee per day, resulting in an estimate of 4,818 trips per day. (DEIR, p. 5.8-7) The DEIR falsely states: "Average trip rate used per person was lower than the ITE Trip Generation fitted curve equation, which equates to a more conservative number of trips." (DEIR, Appendix F, Appendices PDF p. 2120 of 2391) In fact, applying the equation results in a lower number of daily trips. 3,908, or 910 fewer trips per day.

29

ITE guidance states:

> The recommended approach for using information from Trip Generation Manual data pages to estimate trip generation for a study site is based on the following statements:
>
> - The value of the independent variable for the study site must be within the range of data included to use the data plot;
> - When the data plot has at least 20 data points and a fitted curve equation are provided, the fitted curve equation should be used;
> - A fitted curve equation with an R^2 of at least 0.75 is appropriate to use because it indicates the recommended acceptable level of correlation between trips generated by a site and the value measured for an independent variable . . .[1]

All three of these criteria are met for Category 710, General Office Building:

- The number of employees, 1,447, is within the data range of 0 to 3,000.
- The fitted curve equation is based on 52 studies, which is more than the 20 minimum required to apply the curve.
- The fitted curve equation R^2 is 0.86 which exceeds the minimum required of 0.75.

Therefore, ITE guidance is to apply the fitted curve equation in this case.

The DEIR Likely Underestimates Trip Generation from the Proposes Use – The DEIR states:

> The Project would provide 1,065 surface vehicle parking spaces (consisting of 304 automobile spaces, 757 delivery van spaces, and 4 line-haul truck trailer spaces), 180 ancillary van loading spaces (90 loading spaces and 90 staging spaces), and 13 Utility Tractor Rig loading spaces to support facility operations. . .
>
> The Applicant anticipates that on a daily basis, there would be a total of 231 associates, managers, and dispatchers who work within the facility; 345 van drivers; and 97 Flex drivers. In order to fulfill the operational need, the Applicant anticipates that a

30

[1] Institute of Transportation Engineers. Trip Generation Handbook, 3rd Edition (2017), Chapter 4, p. 27.

maximum of 800 workers would be hired at the facility; however, the total daily workers onsite would not exceed 673 workers. (DEIR, p. 1-2)

The DEIR estimates trip generation for the proposed facility based on a "Tenant Specified Trip Schedule." (DEIR, Appendices, p. 2126 of 2391) A table showing the estimated daily trip generation is reproduced here from DEIR Appendices, p. 2124 of 2391.

Table 4: Project VMT Results

Traffic	Personnel Count	Daily Trips	Prior Daily VMT	New Site Daily VMT	Diff. between New Use and Prior Use Daily VMT
Previous Land Use					
Bank of America Bldg	1447[2]	4,818	42,880	0	-42,880
Delivery Station					
Personal Vehicle	576	1,152	0	24,076	24,076
Delivery Vans	n/a[1]	690	13,416	12,506	-910
FLEX	97	194	1,886	1,758	-128
Total Delivery Station	*673*	*2,036*	*15,302*	*38,340*	*23,038*
				Differential VMT	-19,842

[1]Delivery van personnel count is 345. The driver's personal trip count is included in the personal vehicle value for the purpose of determining service population.

30 (continued)

The numbers in the table don't add up:

- The table assumes that each employee will make 2 trips per day, but the average trip rate per employee actually will be higher than 2.0 because some employees will make mid-day trips out and back, and some employees will be dropped off and picked up. If the 3.33 average trips per employee rate applied in the DEIR to the previous use is applied to the proposed use, the result is 1,918 personal vehicle trips per day, i.e. 766 more than assumed in the DEIR.

- The DEIR excerpt gives 345 van drivers, but more than twice as many delivery van spaces, 757. It appears that the facility is being designed for a higher level of activity than is analyzed, and operations are likely to change over the coming years. If there were 757 delivery vans making one trip in and out trip out per day, this would add 824 delivery van daily trips above the 690 trips estimated in the DEIR.

- Furthermore, these additional delivery van drivers would add additional personal trips. Even at a rate of only two trips per day per driver (one in and one out), this would add another 824 daily trips.

- Adding these three adjustments to the 2036 daily trips estimated in the DEIR (866 more daily personal trips for 576 Amazon employees, 824 more daily delivery van trips, and 824 more daily delivery driver personal trips), the resulting total is 4,450 trips per day.

- This total is greater than the 3909 daily trips per day estimated for the previous use when correctly applying the ITE equation. Therefore, it cannot be assumed that the proposed facility will generate fewer trips than the previous use.

30 (continued)

- Even this higher number may underestimate daily trips with the proposed facility because more Flex drivers could be deployed without adding parking.

31

The DEIR Improperly Omits Delivery Van and Flex VMT – As shown in the table copied above the DEIR assumes that employee commute VMT will be new to this project, but that delivery van and FLEX VMT will be a net reduction from existing operations from other Amazon facilities because of slightly shorter routing. The DEIR states:

> The total existing VMT associated with current operations at the five existing delivery stations does not include new employee trips because those employees are static and will not be replaced. That is, Project will have its own employees, which will not be taken from the current employment of the surrounding delivery stations. (DEIR, Appendices, PDF p. 2123 of 2391)

The DEIR acknowledges that the proposed facility would represent growth in Amazon's overall employment in the area. Total deliveries can be assumed to grow in proportion to employment. This increase in total deliveries will increase delivery van and Flex VMT in the area, and this increase must be accounted for somewhere. It should be included in the DEIR VMT estimate.

32

The DEIR Underestimates Net Project VMT - As documented above, the DEIR overestimates trip generation from the previous land use and its related VMT, underestimates trip generation from the proposed land use and its related VMT, and improperly omits delivery van and FLEX VMT. These three issues combine for a large discrepancy in the estimated net project VMT.

The table below illustrates how these corrections would affect project VMT.

revised Table 4	count	trips	prior VMT	new VMT	notes
	Previous Land Use				
Bank of America	1,447	3,908	34,781	-	reduced in proportion to trips
	Delivery Station				
Personal vehicles	990	2,742	-	57,308	add non-commute trips, increase vans to 757
delivery vans		1,514		27,441	remove credit, increase vans to 757
FLEX	97	194		1,758	remove credit
Total	673	2,036		86,506	
	Difference from previous			51,725	

The DEIR table reproduced above shows daily VMT 19,842 lower than the previous use, but the corrected table here shows daily VMT 51,725 higher than the previous use.

The VMT analysis should be revised with proper accounting of delivery van and FLEX VMT and more realistic assumptions throughout. The revised VMT estimate should be tested against the City's VMT significance thresholds (DEIR Appendices, p. 2121). f there are significant VMT impacts, they must be mitigated.

33

The Air Quality Analysis Should be Redone with Updated Trip Generation and VMT Numbers - The table below is reproduced from DEIR Appendices, p. 169 of 2391.

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Unrefrigerated Warehouse-No Rail	1,346	1,346	1,346	491,291	23,555	23,555	23,555	8,597,601
General Office Building	690	690	690	251,853	12,007	12,007	12,007	4,382,472
Parking Lot	62.1	62.1	62.1	22,663	3,229	3,229	3,229	1,178,459

33 (continued)

In the table, the first two rows represent the 2,036 daily trips estimated in the DEIR. These numbers should be increased. The 62 daily trips in the third row represent trucks (31 trips in and 31 out). This number should be checked as to whether it is just one scenario or a maximum value as operations evolve. The VMT numbers should be adjusted to match the revised trip generation estimates.

Sincerely,

Norman L. Marshall

Norman L. Marshall

Resume

NORMAN L. MARSHALL, PRESIDENT

nmarshall@smartmobility.com

EDUCATION:

Master of Science in Engineering Sciences, Dartmouth College, Hanover, NH, 1982
Bachelor of Science in Mathematics, Worcester Polytechnic Institute, Worcester, MA, 1977

PROFESSIONAL EXPERIENCE: (37 Years, 23 at Smart Mobility, Inc.)

Norm Marshall helped found Smart Mobility, Inc. in 2001. Prior to this, he was at RSG for 14 years where he developed a national practice in travel demand modeling. He specializes in analyzing the relationships between the built environment and travel behavior and doing planning that coordinates multi-modal transportation with land use and community needs.

Regional Land Use/Transportation Scenario Planning

Portland Area Comprehensive Transportation System (PACTS) – the Portland Maine Metropolitan Planning Organization. Updating regional travel demand model with new data (including AirSage), adding a truck model, and multiclass assignment including differentiation between cash toll and transponder payments.

Loudoun County Virginia Dynamic Traffic Assignment – Enhanced subarea travel demand model to include Dynamic Traffic Assignment (Cube). Model being used to better understand impacts of roadway expansion on induced travel.

34

Vermont Agency of Transportation-Enhanced statewide travel demand model to evaluate travel impacts of closures and delays resulting from severe storm events. Model uses innovate Monte Carlo simulations process to account for combinations of failures.

California Air Resources Board – Led team including the University of California in $250k project that reviewed the ability of the new generation of regional activity-based models and land use models to accurately account for greenhouse gas emissions from alternative scenarios including more compact walkable land use and roadway pricing. This work included hands-on testing of the most complex travel demand models in use in the U.S. today.

Climate Plan (California statewide) – Assisted large coalition of groups in reviewing and participating in the target setting process required by Senate Bill 375 and administered by the California Air Resources Board to reduce future greenhouse gas emissions through land use measures and other regional initiatives.

Chittenden County (2060 Land use and Transportation Vision Burlington Vermont region) – led extensive public visioning project as part of MPO's long-range transportation plan update.

Flagstaff Metropolitan Planning Organization – Implemented walk, transit and bike models within regional travel demand model. The bike model includes skimming bike networks including on-road and off-road bicycle facilities with a bike level of service established for each segment.

Chicago Metropolis Plan and Chicago Metropolis Freight Plan (6-county region)— developed alternative transportation scenarios, made enhancements in the regional travel demand model, and used the enhanced

model to evaluate alternative scenarios including development of alternative regional transit concepts. Developed multi-class assignment model and used it to analyze freight alternatives including congestion pricing and other peak shifting strategies.

Municipal Planning

City of Grand Rapids – Michigan Street Corridor – developed peak period subarea model including non-motorized trips based on urban form. Model is being used to develop traffic volumes for several alternatives that are being additional analyzed using the City's Synchro model

City of Omaha - Modified regional travel demand model to properly account for non-motorized trips, transit trips and shorter auto trips that would result from more compact mixed-use development. Scenarios with different roadway, transit, and land use alternatives were modeled.

City of Dublin (Columbus region) – Modified regional travel demand model to properly account for non-motorized trips and shorter auto trips that would result from more compact mixed-use development. The model was applied in analyses for a new downtown to be constructed in the Bridge Street corridor on both sides of an historic village center.

City of Portland, Maine – Implemented model improvements that better account for non-motorized trips and interactions between land use and transportation and applied the enhanced model to two subarea studies.

City of Honolulu – Kaka'ako Transit Oriented Development (TOD) – applied regional travel demand model in estimating impacts of proposed TOD including estimating internal trip capture.

34 (continued)

City of Burlington (Vermont) Transportation Plan – Led team that developing Transportation Plan focused on supporting increased population and employment without increases in traffic by focusing investments and policies on transit, walking, biking and Transportation Demand Management.

Transit Planning

Regional Transportation Authority (Chicago) and Chicago Metropolis 2020 – evaluated alternative 2020 and 2030 system-wide transit scenarios including deterioration and enhance/expand under alternative land use and energy pricing assumptions in support of initiatives for increased public funding.

Capital Metropolitan Transportation Authority (Austin, TX) Transit Vision – analyzed the regional effects of implementing the transit vision in concert with an aggressive transit-oriented development plan developed by Calthorpe Associates. Transit vision includes commuter rail and BRT.

Bus Rapid Transit for Northern Virginia HOT Lanes (Breakthrough Technologies, Inc and Environmental Defense.) – analyzed alternative Bus Rapid Transit (BRT) strategies for proposed privately-developing High Occupancy Toll lanes on I-95 and I-495 (Capital Beltway) including different service alternatives (point-to-point services, trunk lines intersecting connecting routes at in-line stations, and hybrid).

Roadway Corridor Planning

I-30 Little Rock Arkansas – Developed enhanced version of regional travel demand model that integrates TransCAD with open source Dynamic Traffic Assignment (DTA) software, and used to model I-30 alternatives. Freeway bottlenecks are modeled much more accurately than in the base TransCAD model.

South Evacuation Lifeline (SELL) – In work for the South Carolina Coastal Conservation League, used Dynamic Travel Assignment (DTA) to estimate evaluation times with different transportation alternatives in coastal South Caroline including a new proposed freeway.

Hudson River Crossing Study (Capital District Transportation Committee and NYSDOT) – Analyzing long term capacity needs for Hudson River bridges which a special focus on the I-90 Patroon Island Bridge where a microsimulation VISSIM model was developed and applied.

PUBLICATIONS AND PRESENTATIONS (partial list)

DTA Love: Co-leader of workshop on Dynamic Traffic Assignment at the June 2019 Transportation Research Board Planning Applications Conference.

Forecasting the Impossible: The Status Quo of Estimating Traffic Flows with Static Traffic Assignment and the Future of Dynamic Traffic Assignment. *Research in Transportation Business and Management* 2018.

Assessing Freeway Expansion Projects with Regional Dynamic Traffic Assignment. Presented at the August 2018 Transportation Research Board Tools of the Trade Conference on Transportation Planning for Small and Medium Sized Communities.

34 (continued)

Vermont Statewide Resilience Modeling. With Joseph Segale, James Sullivan and Roy Schiff. Presented at the May 2017 Transportation Research Board Planning Applications Conference.

Assessing Freeway Expansion Projects with Regional Dynamic Traffic Assignment. Presented at the May 2017 Transportation Research Board Planning Applications Conference.

Pre-Destination Choice Walk Mode Choice Modeling. Presented at the May 2017 Transportation Research Board Planning Applications Conference.

A Statistical Model of Regional Traffic Congestion in the United States, presented at the 2016 Annual Meeting of the Transportation Research Board.

MEMBERSHIPS/AFFILIATIONS

Associate Member, Transportation Research Board (TRB)

Member and Co-Leader Project for Transportation Modeling Reform, Congress for the New Urbanism (CNU)

EXHIBIT B

WILSON IHRIG
ACOUSTICS, NOISE & VIBRATION

CALIFORNIA
WASHINGTON
NEW YORK

WI #24-001.63

January 3, 2025

Aidan P. Marshall Esquire
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, California 94080

SUBJECT: Amazon DJT4 Project Draft EIR, Comments on the Noise and Vibration Analysis

Dear Mr. Marshall,

Per your request, I have reviewed the subject matter documents for the Amazon DJT4 Parcel Delivery Project (Project) Draft Environmental Impact Report (DEIR) in the City of Brea, California. The DEIR includes a Noise and Vibration Impact Assessment as Appendix E (Noise Assessment). The project would demolish existing structures and construct a single-story building.

35 Wilson Ihrig, Acoustical Consultants, has practiced exclusively in the field of acoustics since 1966. During our 58 years of operation, we have prepared hundreds of noise studies for Environmental Impact Reports and Statements. We have one of the largest technical laboratories in the acoustical consulting industry. We also utilize industry-standard acoustical programs such as Roadway Construction Noise Model (RCNM), SoundPLAN, and CADNA. In short, we are well qualified to prepare environmental noise studies and review studies prepared by others.

Adverse Effects of Noise[1]

Noise-Induced Hearing Loss. If a person is repeatedly exposed to loud noises, he or she may experience noise-induced hearing impairment or loss. In the United States, both the Occupational Health and Safety Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH) promote standards and regulations to protect the hearing of people exposed to high
36 levels of industrial noise.

Speech Interference. Another common problem associated with noise is speech interference. In addition to the obvious issues that may arise from misunderstandings, speech interference also leads to problems with concentration fatigue, irritation, decreased working capacity, and automatic stress reactions. For complete speech intelligibility, the sound level of the speech should be 15 to 18 dBA higher than the background noise. Typical indoor speech levels are 45 to 50 dBA at 1 meter, so any noise above 30 dBA begins to interfere with speech intelligibility. The common reaction to higher

[1] More information on these and other adverse effects of noise may be found in *Guidelines for Community Noise*, eds B Berglund, T Lindvall, and D Schwela, World Health Organization, Geneva, Switzerland, 1999. (https://www.who.int/docstore/peh/noise/Comnoise-1.pdf)

background noise levels is to raise one's voice. If this is required persistently for long periods of time, stress reactions and irritation will likely result.

Sleep Disturbance. Noise can disturb sleep by making it more difficult to fall asleep, by waking someone after they are asleep, or by altering their sleep stage, e.g., reducing the amount of rapid eye movement (REM) sleep. Noise exposure for people who are sleeping has also been linked to increased blood pressure, increased heart rate, increase in body movements, and other physiological effects. Not surprisingly, people whose sleep is disturbed by noise often experience secondary effects such as increased fatigue, depressed mood, and decreased work performance.

36 (continued)

Cardiovascular and Physiological Effects. Human's bodily reactions to noise are rooted in the "fight or flight" response that evolved when many noises signaled imminent danger. These include increased blood pressure, elevated heart rate, and vasoconstriction. Prolonged exposure to acute noises can result in permanent effects such as hypertension and heart disease.

Impaired Cognitive Performance. Studies have established that noise exposure impairs people's abilities to perform complex tasks (tasks that require attention to detail or analytical processes), and it makes reading, paying attention, solving problems, and memorizing more difficult. Therefore, there are standards for classroom background noise levels, which is why offices and libraries are designed to provide quiet work environments. One societal change brought about by the COVID-19 pandemic is that many people now routinely work and learn from home, and this has given rise to more noise complaints from loud daytime activities such as construction work.

Errors and Omissions

The DEIR and Noise Assessment contains several errors and lacks several items. Several of these items are explored in more detail following this list:

1. Baseline conditions are not properly established. Fifteen minutes constitutes only 1% of a 24-hour period. Furthermore, as the project would be operated 24/7 and the existing nighttime noise has not been established, there is no basis to evaluate how changes to the nighttime noise environment could impact sleep disturbance.

37

2. The Noise Assessment lacks proper documentation of its basis of analysis for truck and loading dock noise. It cites a reference study but does not provide the actual noise levels or descriptions of the reference loading dock activity as evidence that the cited study is relevant. The citation is not readily available on the internet as cited, and thus it is not apparent that the referenced report is adequate. Nighttime trucks would cause significant impacts on sleep.

3. Refrigeration and HVAC equipment are typically required for this type of facility which would be operated 24/7, but no discussion is included.

4. The DEIR lacks any discussion of what backup generators would be installed; they are typically used for this type of facility. The City of Brea's definition of "Emergency Machinery, Vehicle, or Work" in Section 8.20.020 does not appear to apply to a private business's need to operate a backup generator during a managed power outage.[2]

[2] https://codelibrary.amlegal.com/codes/brea/latest/brea_ca/0-0-0-61596

Item #1 Baseline Conditions are Not Properly Established

The noise analysis of the DEIR contains no long-term measurements and relies on four short-term measurement locations consisting of one 15-minute measurement per location. The 15 minutes comprises only 1% of a 24-hour period, and the noise analysis relies on these short-term measurements without any discussion of how typical these data were for the rest of the daytime and nighttime conditions. There is no evidence provided that the time selected for noise measurements is representative of the rest of the day or even of worst case (quietest conditions). Environmental noise can vary widely throughout the day (perhaps +/- 10 dBA or more for areas with intermittent local traffic).

38 The noise analysis refers to the Federal Transit Administration's Transit Noise and Vibration Impact Assessment Manual[3] (FTA Manual). This document contains procedures for determining existing noise and recommends a minimum of three one-hour Leq noise measurements to estimate the 24-hour Ldn/CNEL. The three one-hour measurements are meant to include three distinct timeframes: peak-hour roadway traffic, midday, and nighttime.

Furthermore, the Noise Assessment asserts absolute noise levels from existing traffic based on noise modeling with the older FHWA Noise Prediction Model (FHWA-RD-77-108). State of the art traffic modeling uses the Traffic Noise Model (TNM) with the most current revision 3.2. The DEIR provides no evidence to tie these absolute values back to existing measured conditions. There are no validation measurements provided in the Noise Assessment that verify that the model is accurate within industry expectations. Caltrans acknowledges that a validated TNM model may fall within +/- 3 dBA of the measured result[4], which undermines attempts to use modeled-only results for absolute noise characterization of the ambient condition.

Item #2 Nighttime Trucks Would Cause Significant Impacts On Sleep

Noise from truck operations at night can cause sleep disturbance. An indoor **Lmax** noise level of 45 dBA from a single truck has an approximately 10% chance of disturbing sleep as shown in Figure 1[5]. The Noise Assessment indicates that the indoor **hourly Leq** would reach almost 39 dBA at Receptor
39 1 (Table 5-4). With 62 daily line-haul truck passby (DEIR Table 5.8-1), if these trucks only operate during nighttime, per the scenarios discussed in the noise analysis, the maximum noise received in a bedroom from a passby could be on the order of 55 dBA which increases the probability of disturbing sleep to about 13% **for each truck passby.** Reliance on the hourly Leq as the significance threshold is inadequate to assess the significance of truck noise on sleep disturbance. Noise mitigation

[3] https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

[4] Caltrans Technical Noise Supplement (2013). Page 4-8: "TNM cannot account for all the variables present in the real world. It uses relatively simple algorithms to approximate physical processes that are complex in nature. TNM for projects involving existing roadways should always be validated for accuracy by comparing measured sound levels to modeled sound levels using traffic data collected during the measurement. If modeled sound levels do not match measured sound levels within ±3 dB the model parameters should be reviewed and adjusted if necessary to ensure that they accurately represent actual site conditions. If the measurements and model results are still not in agreement, the model should be calibrated." https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf

[5] Basner, "WHO Environmental Noise Guidelines for the European Region: A Systematic Review on Environmental Noise and Effects on Sleep," Figure 4 is a review of sleep study results where road noise such as trucks caused study participants to waken or shift from a deeper sleep state to a light sleep state (S1).

measures could include operational conditions such as prohibiting line-haul trucks during nighttime hours or routing nighttime line-haul trucks away from residential areas (e.g., north to Rich Street and north along Valencia Avenue), or off-site mitigation in the form of new windows and mechanical ventilation for bedrooms affected by the nighttime line-haul operations.

39 (continued)

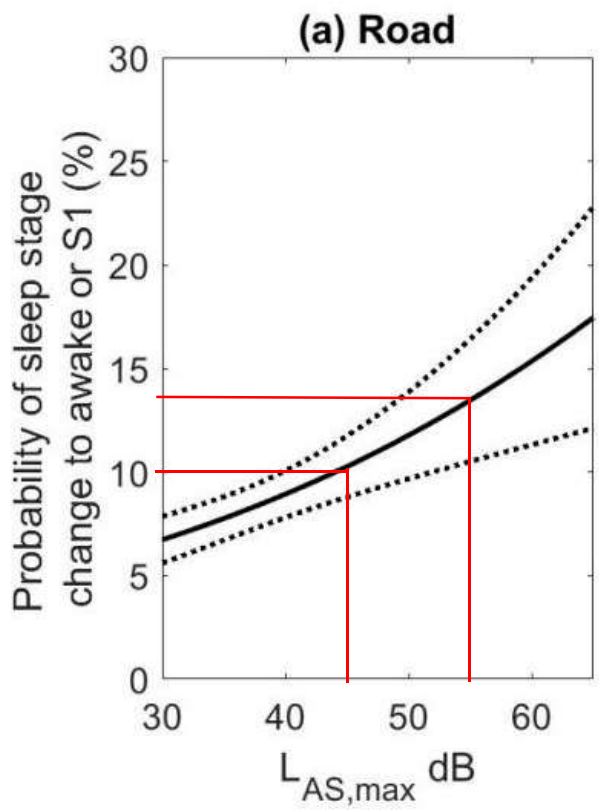


Figure 1 From Basner (2018), Figure 4 Probability of Sleep Disturbance

Item #3 Mechanical Equipment Noise Levels Would Be Potentially Significant

40

The DEIR noise analysis lacks analysis of rooftop mechanical equipment which would operate 24/7. Guidance for HVAC design and warehouses indicates that the air exchange rate is typically on the order of 6 to 30 changes per hour based on a number of factors defined by ANSI/ASHRAE.[6] Assuming 181,500 sq. ft. combined warehouse and office space with a 50 ft ceiling height, the cubic volume would be over 9 million cu. ft. An HVAC unit provides 1 ton of cooling per 350 to 400 CFM, and since the minimum air flow requirement in cubic feet per minute (CFM) requires 6 air changes per hour (ACH) the minimum cooling tons required would be 2,250 for a warehouse or 90 25-ton HVAC units. Based on available online published manufacturer sound data, the typical sound power level from a 25-ton packaged rooftop HVAC unit is 95 dBA.[7] Ignoring shielding, at a distance of 250 ft, the noise

[6] https://www.sdcexec.com/warehousing/design-build/article/22043713/robovent-8-considerations-in-warehouse-ventilation-design

[7] Trane Product Catalog for Packaged Rooftop Air Conditioners Voyager™, page 22. https://www.trane.com/content/dam/Trane/Commercial/lar/Peru/Manuales/Voyager-II/RT-PRC028Y-EN_Catalog.pdf

40 (continued) from 90 of these units would be about 54 dBA, which could potentially exceed the local noise limit of 50 dBA for the nighttime period. Additionally, it is possible that the nighttime noise environment would increase compared to the existing conditions, generating a new noise environment compounded with the line-haul trucks that contributes to sleep disturbance.

Conclusions

41 The noise analysis for DEIR contains substantial omissions and errors. Correcting these issues would identify that the Project would generate additional significant noise impacts and warrant additional mitigation measures to manage the anticipated impacts and full disclosure of any impacts that would remain significant.

Please feel free to contact me with any questions on this information.

Very truly yours,

WILSON IHRIG

Signer ID: IDIQFOL113...

Deborah A. Jue, INCE-USA
Principal

WILSON IHRIG
ACOUSTICS, NOISE & VIBRATION

DEBORAH JUE

Principal

Since joining Wilson Ihrig in 1990, Ms. Jue has been involved in with many projects from environmental assessments and entitlements, through design development, construction documents and construction administration support. As an acoustical consultant, she has provided noise measurement, analysis and recommendations to control noise and vibration both at the interior of the project and at the neighboring properties. She has authored many reports concerning compliance with the requirements of California Noise Insulation Standards, Title 24, local Noise Elements, environmental assessments and Federal noise criteria, and is well aware of the additional design and construction technique requirements to achieve industry standards. Ms. Jue has authored or provided input for many environmental documents and technical studies in accordance with NEPA and California's CEQA regulations, most of them related to surface transportation, and she gives presentations to public officials when necessary to explain construction noise problems, noise mitigation goals, and noise control methods. She can develop construction noise and vibration criteria to address vibration damage potential to nearby buildings and sensitive structures, and vibration annoyance or disruption potential for occupants of nearby buildings.

Education

- M.S. in Mechanical Engineering, University of California, Berkeley, 1998
- B.S. in General Engineering: Acoustics, Stanford University, 1988

Professional Associations (Member)

- American Society of Mechanical Engineers
- Acoustical Society of America
- National Council of Acoustical Consultants
- Institute of Noise Control Engineering
- WTS
- Transportation Research Board, AEP80 Standing Committee Member (2021-2024)

Research and Published Papers

- ACRP Report 175, ACRP 07-14, *Improving Intelligibility of Airport Terminal Public Address Systems*
- NCHRP 25-25, *Current Practices to Address Construction Vibration and Potential Effects to Historic Buildings Adjacent to Transportation Projects*
- *Transportation Research Record*, V. 2502, "Considerations to Establish Ground-Borne Noise Criteria to Define Mitigation for Noise-Sensitive Spaces"

Relevant Experience

- California High Speed Rail Caltrain Corridor EIR/EIS, San Francisco to San Jose
- UC Berkeley Northgate Hall A/V Renovations, Berkeley
- MacArthur Station, *long-term construction noise and vibration monitoring*, Oakland
- Safeway @ Claremont & College, *HVAC noise and construction noise monitoring*, Oakland
- ACTC I-80/Ashby, *interchange traffic noise analysis*, Berkeley and Emeryville
- ACTC I-680 Express Lanes, *traffic noise analysis*, Contra Costa County, CA
- Chase Arena, *construction noise and vibration monitoring*, San Francisco

Comment Letter No. 17

January 6, 2025
Californians Allied for a Responsible Economy
c/o Aidan P. Marshall, Associate
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 100
South San Francisco, CA 94080-7037
amarshall@adamsbroadwell.com
650-589-1660

RESPONSE TO COMMENT NO. 17-1

This comment is an email transmitting comments on the Draft EIR for the DJT4 Parcel Delivery Facility Project. The comment also provides a Dropbox link containing supporting references. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted and no further response is required.

RESPONSE TO COMMENT NO. 17-2

This introductory comment states that the comment letter submitted by Adams Broadwell Joseph & Cardozo is written on behalf of CARE CA. The comment briefly summarizes the Project and states that the Draft EIR was reviewed with the assistance of Norm Marshall (transportation) and Deborah Jue (noise). The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted and no further response is required.

RESPONSE TO COMMENT NO. 17-3

The commenter claims that the Project is inconsistent with the Project Site's zoning and with the City's General Plan because the Project proposes an industrial warehouse use on a site zoned for mixed use development and would result in significant land use consistencies that are not disclosed in the Draft EIR. As stated on page 3-8 in **Chapter 3.0, Project Description**, of the Draft EIR, the proposed warehouse building would be located entirely within the Light Industrial designated and M-1 zoned portion of the Project Site, which permits warehouse uses. Only surface parking and drive aisles would be located in the Mixed Use II designated and MU-II zoned portion of the Project Site. As discussed in **Topical Response No. 2 – Land Use and Zoning**, permitted uses within the MU-II zone include parking lots. Therefore, the Project is consistent with the General Plan land use designations and zoning for the Project Site.

RESPONSE TO COMMENT NO. 17-4

The commenter alleges that the Draft EIR fails to disclose the Project's conflicts with the Housing Element because the Draft EIR does not consider the inclusion of workforce housing. As disclosed in **Chapter 3.0, Project Description**, of the Draft EIR, the southern approximately 7.4-acre portion of the Project Site is designated Mixed Use II and zoned MU-II. Although the MU-II portion of the Project Site was rezoned as a result of the 2021-2029 Housing Element, the subject area of the Project Site is not one of the City's Housing Opportunity Sites and is only listed as an additional site that has future potential for housing. The Project Site is not needed to meet the City's Regional Housing Needs Allocation (RHNA) obligation, and as such, the Project does not

have an impact on the City's compliance with the Housing Element. In addition, in identifying the provision of affordable housing throughout Brea as a high priority, the Housing Element provides for a number of potential action items that the City could consider, which includes exploring introduction of workforce housing on the Project Site. However, this potential action item does not mandate the City to require introduction of workforce housing on the Project Site. Moreover, although the introduction of workforce housing on the Project Site is not being proposed at this time, the potential for future housing within the MU-II portion of the Project Site remains possible for future development. Therefore, contrary to the commenter's allegation, the Project does not conflict with the City's Housing Element.

The commenter also claims that the Draft EIR fails to consider a reasonable range of alternatives because it does not include workforce housing as an alternative. CEQA Guidelines Section 15126.6(a) states that an EIR should evaluate "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project" and that an EIR "need not consider every conceivable alternative to a project." Accordingly, the Draft EIR evaluated three alternatives, including the required "no project" alternative. Furthermore, as discussed on page 6-4 of **Chapter 6.0, Alternatives**, of the Draft EIR, development of residential uses on the Project Site was considered and rejected as an alternative because it would not attain the basic Project objectives.

RESPONSE TO COMMENT NO. 17-5

The commenter claims that the Draft EIR fails to support the VMT analysis with substantial evidence by overestimating trips from the Bank of America use, underestimating Project trips, and improperly assuming that the Project would not result in new delivery van and Flex driver trips. As stated on page 7 of **Appendix F: VMT Assessment** (PDF page 2118 of the Draft EIR Appendices file) to the Draft EIR, OCTAM's regional traffic modeling assumes the occupancy of the former Bank of America site. The VMT per capita used to account for the Bank of America site is based on the OCTAM model. The VMT analysis for the Project intentionally reduced the potential VMT for the Bank of America site by assuming a lower trip generation (number of employees) than the OCTAM model. The OCTAM model used to create a baseline of trips for the Project Site assumed a very high daily trip rate of 19,139 trips for the Bank of America site with a service population of 2,231 (see Attachment C – VMT Screening Tool Output of **Appendix F: VMT Assessment** to the Draft EIR). However, for the purposes of a conservative analysis, the VMT analysis for the Project assumed only 1,447 employees and a trip generation of 4,818 trips based on City records, which showed that the Bank of America building operated with at least 1,447 employees. Therefore, the trip generation for the Bank of America site utilized in the VMT analysis are approximately 25 percent of the trip generation assumed by the OCTAM model. The number of Project trips used in the VMT analysis for the Project is conservative and based on the trip generation of other similarly-sized parcel delivery facilities rather than the Institute of Transportation Engineers (ITE) trip generation rates. The traffic volume for a warehouse use per the *Institute of Transportation Engineers Trip Generation, 11th Edition* would be 6.5 times less than what was used in the VMT analysis for the Project. Thus, the Project's trip generation is greater when compared to the trip generation for a warehouse use using nationally published trip generation rates and the Project's VMT analysis does not underestimate Project trips. In addition, the Draft EIR does not improperly assume that the Project would not result in new delivery van

and Flex driver trips. As stated on page 3-11 in **Chapter 3.0, Project Description**, of the Draft EIR, there would be a total of 345 van drivers and 97 Flex drivers on a daily basis. As shown in **Table 5.8-1** on page 5.8-11 in **Section 5.8, Transportation**, of the Draft EIR, the 345 van drivers would generate 690 daily trips and the 97 Flex drivers would generate 194 daily trips to and from the Project Site. Therefore, the VMT analysis in the Draft EIR does not overestimate trips from the Bank of America use, underestimate Project trips, or improperly assume that the Project would not result in new delivery van and Flex driver trips.

RESPONSE TO COMMENT NO. 17-6

The commenter claims that the Draft EIR fails to adequately analyze the Project's noise impacts caused by the Project's 24/7 operations because its analysis relies on four 15-minute measurements, which are too short-term to reflect existing conditions and do not reflect quieter nighttime conditions. The Draft EIR includes four 15-minute noise measurements, which were conducted to establish representative baseline noise levels that reflect the existing conditions in the Project area during the daytime (see **Table 5.5-2** on page 5.5-9 in **Section 5.5, Noise**, of the DEIR). The 15-minute baseline noise measurements were primarily utilized to analyze how anticipated construction noise levels would influence the existing noise environment in the Project area. As the City prohibits construction activity between 7:00 p.m. and 7:00 a.m., Monday through Saturday, and at any time on Sundays or federal holidays, these measurements appropriately reflect the conditions during permitted construction hours. Because construction activities are restricted to daytime hours, daytime noise measurements are both relevant and sufficient for evaluating the potential impacts of construction noise on the surrounding area. It is noted that these 15-minute measurements are not the only identifier of existing ambient noise in the vicinity of the Project Site. The predominate noise source in the Project area is transportation noise and **Table 5.5-3** on page 5.5-13 in **Section 5.5, Noise**, of the Draft EIR shows the calculated transportation noise levels from various roadway segments in the Project area under existing conditions while **Table 5.5-7** on page 5.5-25 shows the calculated transportation noise levels from various roadway segments in the Project area under existing conditions and predicted Existing Plus Project conditions, in the 24-hour CNEL noise metric. This was done using the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108), which is an industry-standard tool for evaluating roadway noise impacts, coupled with trip generation rates from the Project's TIA. The CNEL metric provides a comprehensive evaluation of noise exposure by incorporating all traffic noise events over a 24-hour period and applying time-dependent penalties to account for the increased sensitivity to noise during the evening and nighttime hours. Specifically, CNEL includes a 5-dBA penalty for noise occurring between 7:00 p.m. and 10:00 p.m., and a 10-dBA penalty for noise occurring between 10:00 p.m. and 7:00 a.m., reflecting the greater potential for sleep disturbance and reduced ambient noise levels during these hours. Thus, the Draft EIR does present a representative characterization of the existing ambient noise environment through a series of short term noise measurements and the calculation of existing traffic noise.

The commenter also asserts that the Draft EIR fails to adequately analyze potentially significant air quality and energy impacts but does not provide specific examples or evidence to support this assertion. Therefore, this comment is noted and no further response is necessary.

RESPONSE TO COMMENT NO. 17-7

The commenter urges the City to revise the Draft EIR and recirculate it for public review because the Draft EIR allegedly lacks substantial evidence to support its conclusions, violates CEQA's disclosure and analytical requirements, and fails to properly mitigate the Project's significant environmental impacts. Responses to specific claims made by the commenter regarding the Draft EIR's deficiencies are provided above in **Response to Comment No. 17-3** through **Response to Comment No. 17-6**.

RESPONSE TO COMMENT NO. 17-8

This comment provides background information on CARE CA and provides its statement of interest. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted and no further response is required.

RESPONSE TO COMMENT NO. 17-9

The commenter claims that the Draft EIR fails to disclose the Project's land use inconsistencies in the MU-II zoning district and the General Plan because the Project's warehousing parking spaces and drive aisles are prohibited in the MU-II zone. As discussed in **Topical Response No. 2 – Land Use and Zoning**, the Community Development Director, with the authority given per BCC Section 20.11.020.C has determined that the Project includes ***Industrial, minor*** and ***Automotive, parking lots/structures*** land uses as defined in BCC Section 20.00.070, which are permitted-by-right uses in M-1 and MU-II zones, respectively. The Project's warehousing use itself is wholly located within the portion of the Project Site that has the Light Industrial land use designation, and the portion of the site that has Mixed Use II designation consists of surface parking, which is a permitted use in MU-II zone, the zone that implements the Mixed Use II General Plan land use designation. As such, it was the Community Development Director's determination, based on those reasons and facts, and aligned with his decision authority, that the Project's surface parking and drive aisles are consistent with the Mixed Use II land use designation of the Project Site.

The commenter also states that the California Air Resources Board and the Attorney General's warehouse guidance recommend a 1,000-foot buffer from the property lines of the nearest sensitive receptors when siting warehouse facilities. As stated in the Attorney General's warehouse guidance document, the listed warehouse siting and design considerations are examples of suggested best practices and do not "relieve lead agencies' responsibility under CEQA to conduct a project-specific analysis of the project's impacts."[20] In the case of the Project, the City, as the lead agency for the Project, conducted a project-specific air quality analysis (see **Section 5.1, Air Quality**, of the DEIR), which determined that Project construction and operational emissions would not exceed the SCAQMD regional or localized thresholds and the Project's air quality impacts would be less than significant.

[20] Rob Bonta, Attorney General, State of California Department of Justice. Updated September 2022. Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act. Page 7.

RESPONSE TO COMMENT NO. 17-10

This comment provides a summary of the CEQA requirements. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted and no further response is required.

RESPONSE TO COMMENT NO. 17-11

The commenter claims that the Draft EIR's environmental setting discussion is inadequate and that the Draft EIR fails to adequately describe the environmental setting against which the Project's environmental impacts are to be measured. However, since the commenter does not provide specific examples or evidence to support this claim, this comment is noted and no further response is necessary. Please see **Topical Response No. 1 – Existing Baseline** for a discussion of the occupied baseline utilized in the Draft EIR.

RESPONSE TO COMMENT NO. 17-12

The commenter claims that the Draft EIR utilized an inaccurate baseline because it overestimates the trips generated by the previous Bank of America use and that the Draft EIR falsely states that applying an average daily trip rate reaches a lower, more conservative estimate of the number of trips compared to ITE trip generation fitted curve equation. According to the commenter the fitted curve equation should be used to calculate trips rather than the average rate. Please refer to **Response to Comment No. 17-29** below for a detailed explanation of why the average rate was appropriately used in the Draft EIR. In addition, please see **Topical Response No. 1 – Existing Baseline** for a discussion of the appropriate use of an occupied baseline in the Draft EIR.

RESPONSE TO COMMENT NO. 17-13

The commenter alleges that the Draft EIR fails to accurately establish the environmental setting because it improperly relies on short-term ambient noise measurements. As discussed in **Response to Comment No. 17-6** above, the Draft EIR includes four 15-minute noise measurements, which were conducted to establish representative baseline noise levels that reflect the existing conditions in the Project area during the daytime. Since the predominate noise source in the Project area is transportation noise, the noise analysis in the Draft EIR also calculated transportation noise levels from various roadway segments in the Project area under existing conditions in the 24-hour CNEL noise metric using the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108). The CNEL metric provides a comprehensive evaluation of noise exposure by incorporating all traffic noise events over a 24-hour period and applying time-dependent penalties to account for the increased sensitivity to noise during the evening and nighttime hours. Specifically, CNEL includes a 5-dBA penalty for noise occurring between 7:00 p.m. and 10:00 p.m., and a 10-dBA penalty for noise occurring between 10:00 p.m. and 7:00 a.m., reflecting the greater potential for sleep disturbance and reduced ambient noise levels during these hours. Thus, the Draft EIR does present a representative characterization of the existing ambient noise environment through a series of short term noise measurements and the calculation of existing traffic noise.

The commenter also claims that the FHWA Noise Prediction Model (FHWA-RD-77-108) is an outdated traffic model and that the Draft EIR fails to conduct validation measurements for its traffic noise model. The FHWA Noise Prediction Model (FHWA-RD-77-108) is an established and widely

accepted model for use preparing transportation noise analyses, particularly under CEQA. Its use is consistent with industry standards and CEQA requirements. While the commenter notes that the Traffic Noise Model (TNM) is the most current model available, it is important to clarify that the FHWA Noise Prediction Model (FHWA-RD-77-108) remains a valid tool for estimating traffic noise levels and CEQA does not mandate the use of a specific traffic noise model. The Draft EIR employs the FHWA Noise Prediction Model (FHWA-RD-77-108) because it has been extensively vetted and is recognized for its reliability in evaluating transportation noise impacts. TNM is a model that is required by Caltrans for projects where Caltrans is the lead agency and is not required for CEQA projects that do not involve Caltrans approvals. The same is true regarding the requirement to validate modeling results with validation measurements. Additionally, CEQA does not require absolute precision in modeling results but instead requires that analyses be supported by substantial evidence and use methods that are widely accepted in the field. The Draft EIR fulfills these requirements.

RESPONSE TO COMMENT NO. 17-14

The commenter alleges that the Draft EIR's Project description is inadequate because it fails to include the use of back-up generators as a reasonably foreseeable consequence of the Project and the Draft EIR's omission of an onsite generator system in its analyses results in an underestimation of the Project's air quality, GHG, and health risk impacts. The Draft EIR's Project description, CalEEMod results, and health risk assessment did not include the use of back-up generators because the Project does not propose the use of back-up generators. During short durations of power failure, site operations would cease until power can be properly restored. During longer-term power outages potentially caused by a natural disaster, the Project would obtain a building permit to rent an AQMD certified backup generator that would only be on site and utilized during the time period of the power outage. Once power is properly restored, the temporary back-up generator would be removed from the Project Site.

RESPONSE TO COMMENT NO. 17-15

This comment states that CEQA requires an EIR to fully disclose all potentially significant impacts of a project and implement all feasible mitigation to reduce those impacts to less than significant levels. The comment does not specifically address the adequacy of the Project's Draft EIR. Accordingly, the comment is noted and no further response is required.

RESPONSE TO COMMENT NO. 17-16

The commenter claims that the Project is inconsistent with the Housing Element because (1) the Project does not propose any housing units even though a portion of the Project Site was rezoned to a mixed-use district to accommodate residential housing, and (2) the Project proposes a stand-alone industrial use despite the Project Site's proximity to the La Floresta Master Plan community. As discussed above in **Response to Comment No. 17-4**, although the MU-II portion of the Project Site was rezoned as part of the 2021-2029 Housing Element, the subject area of the Project Site is not one of the City's Housing Opportunity Sites and is only listed as an additional site that has future potential for housing due to its proximity to the La Floresta Master Plan community. The Project Site is not needed to meet the RHNA obligation and, as such, the Project does not have an impact on the City's compliance with the Housing Element. In addition, in identifying the provision of affordable housing throughout Brea as a high priority, the Housing Element provides

for a number of potential action items that the City could consider, which includes exploring introduction of workforce housing on the Project Site. However, this potential action item does not mandate the City to require introduction of workforce housing on the Project Site. Moreover, although the introduction of workforce housing on the Project Site is not being proposed at this time, the potential for future housing within the MU-II portion of the Project Site remains as is since the improvements to the subject area are limited to the related parking facilities and do not include any significant permanent building. Therefore, the Project is not inconsistent with the City's Housing Element.

The commenter also states that the Draft EIR fails to analyze the Project's inconsistency with goals and policies in the Housing Element and with the Affirmatively Furthering Fair Housing (AFFH) program. As discussed on page 7-20 in **Chapter 7.0, Other CEQA Considerations**, of the Draft EIR, the Project is consistent with the General Plan land use designation and zoning regulations for the Project Site. Since no residential uses are proposed for the Project Site, the Draft EIR did not include a discussion of General Plan goals and policies related to the provision of housing, including goals and policies contained in the Housing Element. Additionally, as stated above, although pursuing the introduction of workforce housing on the Project Site is listed as a potential action item in the Housing Element's AFFH analysis, the City is not required to implement this action item and the Project would not preclude pursuing the introduction of workforce housing on the site in the future. Therefore, the Project is not inconsistent Housing Element or the AFFH program.

RESPONSE TO COMMENT NO. 17-17

The commenter claims that the Draft EIR fails to analyze a reasonable range of alternatives because it does not include an alternative that provides workforce housing on the MU-II zoned portion of the Project Site that would address the Project's inconsistency with the Housing Element. As discussed in **Response to Comment No. 17-4** and **Response to Comment No. 17-16** above, the Project is consistent with the Housing Element. Thus, a workforce housing alternative to address an inconsistency with the Housing Element is not necessary.

The commenter also asserts that workforce housing would achieve the Applicant's affordable housing objective and that the inclusion of workforce housing is physically and financially feasible on the Project Site. The Project objectives stated on page 3-7 in **Chapter 3.0, Project Description**, of the Draft EIR do not include an affordable housing objective. Additionally, the commenter's assertions that workforce housing could be accommodated on the Project Site by reducing parking spaces and that funding for workforce housing could be available through Amazon's $2 billion Housing Equity Fund are speculative and not based on evidence. CEQA Guidelines Section 15126.6(a) states that an EIR should evaluate "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project" and that an EIR "need not consider every conceivable alternative to a project." The three alternatives evaluated in the Draft EIR meet the requirements of CEQA Guidelines Section 15126.6. Therefore, the Draft EIR evaluated a reasonable range of alternatives pursuant to CEQA requirements and the inclusion of an alternative with workforce housing in the Draft EIR is not warranted.

RESPONSE TO COMMENT NO. 17-18

The commenter alleges that the Draft EIR underestimates trips by (1) failing to account for employee mid-day trips and employee drop off and pick up trips, and (2) assuming a number of delivery vans that is less than half the number of delivery van parking spaces; therefore, the Draft EIR fails to provide an accurate Project description. Refer to **Response to Comment No. 17-30** below for an explanation of the Project's estimate trip count, which is based on data provided by the Applicant and is derived from other similar parcel delivery operations. Additionally, the commenters claim that delivery van trips should be calculated based on the number of delivery van parking spaces is speculative and not supported by operational data. Based on the information provided in **Response to Comment No. 17-30**, the Draft EIR does not underestimate trips and the Project description provided in the Draft EIR is accurate.

RESPONSE TO COMMENT NO. 17-19

The commenter asserts that the Draft EIR improperly takes credit for trips from existing Amazon facilities by assuming that the Project would reduce delivery van and Flex trips to five existing Amazon delivery stations and that the Project would result in negative delivery van and Flex driver VMT. The commenter further alleges that the Project would increase the overall number of delivery trips in the region. Refer to **Response to Comment No. 17-31** below for a discussion of the Project's delivery van and Flex trips. In addition, the commenter's assertion that the Project would increase the overall number of delivery trips in the region is speculative because it assumed an unsubstantiated future customer base increase. There are a finite number of deliveries within a region. Adding additional delivery centers reduces the number of deliveries from any one location and also reduces the distance traveled by each delivery center. For the Project, the new parcel delivery facility would be locating trips that are already associated with the existing customer base closer to the customers. Therefore, the Project would result in reductions of both trips and distance traveled within the region.

RESPONSE TO COMMENT NO. 17-20

The commenter claims that the Project would have a potentially significant unmitigated VMT impact and that the Project's daily VMT would be 51,716 higher than the previous use based on calculations provided by Mr. Marshall. Refer to **Response to Comment No. 17-32** below for a discussion of the Project's VMT calculations. As detailed in **Response to Comment No. 17-32**, the Project's VMT would not be higher than the Bank of America use and the Project would not result in a significant VMT impact.

RESPONSE TO COMMENT NO. 17-21

The commenter claims that the Draft EIR does not analyze the Project's unmitigated emissions from a typical construction fleet because it assumes the use of Tier 4 Final equipment in the Project's unmitigated impacts. As stated by the U.S. Environmental Protection Agency, construction engines manufactured after 2014 are required to meet Tier 4 Final air quality standards, which represent the most stringent emissions standards for non-road diesel engines. According to information provided by the Applicant, the general contractor for the Project would be required to ensure that all construction equipment is model year 2017 or newer. Since all construction equipment used for the Project would be model year 2017 or newer, and engines

manufactured after 2014 meet Tier 4 final standards, the emissions analysis conducted using CalEEMod appropriately assumed Tier 4 equipment.

RESPONSE TO COMMENT NO. 17-22

The commenter alleges that the Draft EIR evaluates construction noise using the Federal Transit Administration's (FTA) 80 dBA threshold and fails to consider the increase in noise over ambient levels. The commenter also claims that construction noise impacts may be potentially significant due to noticeable increases over ambient noise levels. The construction noise analysis in the Draft EIR was conducted using a worst-case scenario approach, which assumes that all construction equipment operates simultaneously at the highest usage percentage. This conservative methodology ensures that the analysis accounts for maximum potential noise levels, even though actual noise levels during construction would likely be lower due to factors such as staggered equipment use, work breaks, and varying construction phases. Additionally, construction noise is temporary and would cease upon Project completion. Unlike operational noise, which can be long-term, construction noise is short-term and intermittent, occurring only during designated work hours in compliance with City noise regulations. Furthermore, as an urban area, the City's regularly experiences construction activity, making such noise a normal part of the community's noise environment.

Project construction noise impacts are analyzed on pages 5.5-17 through 5.5-19 in **Section 5.5, Noise**, of the DEIR, consistent with CEQA Guidelines Appendix G standards that requires an analysis of whether the Project would generate substantial temporary increases in ambient noise levels in the vicinity of the Project in excess of standards established by the City of Brea. The City does not promulgate a numeric threshold pertaining to the noise associated with construction. This is due to the fact that construction noise is temporary, short term, intermittent in nature, and would cease on completion of the Project. However, the BCC Section 8.20.070 exempts construction noise, provided that the activities do not occur between the hours of 7:00 p.m. to 7:00 a.m., Monday through Saturday or any time on Sundays or federal holidays. In order to remain compliant with the City's regulations, the Project would be required to follow these construction guidelines.

In addition to this comparison of Project construction to City construction noise standards, the Draft EIR calculates Project construction noise and compares the results to the recommended FTA construction noise standard contained in its *Transit Noise and Vibration Impact Assessment Manual*. Modeled construction noise is then added to an estimation of the ambient noise level generally experienced under current conditions in order to disclose actual sound levels that would be present with the addition of construction noise to the existing noise environment. As shown in **Table 5.5-5** on page 5.5-19 in **Section 5.5, Noise**, of the DEIR, Project construction noise would result in an increase of 1.8 dBA[21] over the general existing noise environment currently experienced in the Project area and Project construction noise combined with existing ambient noise would not exceed the FTA threshold during any Project construction phase.

[21] Exterior construction noise level of during the Site Preparation and Grading phase at the closest noise sensitive receptor is 70.5 dBA. The average ambient noise level is 68.7 dBA.

70.5 dBA – 68.7 dBA = 1.8 dBA

RESPONSE TO COMMENT NO. 17-23

The commenter asserts that noise from nighttime truck trips is potentially significant, resulting in sleep disturbances, and that such impacts are not fully evaluated in the Draft EIR. The comment references the City's 50 dBA L_{eq} nighttime exterior noise standard and connects it to offsite nighttime truck trips. However, this standard is intended to regulate stationary (onsite) noise sources, such as mechanical equipment, loading/unloading activities, and internal (onsite) vehicular circulation. These standards establish fixed noise level limits applicable to sources under the City's jurisdiction and control. Refer to **Response to Comment No. 6-17** and **Response to Comment No. 6-23** for a detailed discussion of the differences between stationary (onsite) noise standards and offsite transportation noise standards. Also refer to **Topical Response No. 3 – Operational Traffic Noise** for a discussion of the appropriate method for analyzing noise from transportation sources, including noise generated by trucks. In addition, as shown on **Table 5.5-7** in **Section 5.5, Noise**, of the Draft EIR, the Project's increase in traffic noise would not result in an increase in excess of the FICON standards. The roadway segments of Valencia Avenue and Imperial Highway east of Valencia Avenue that traverse residential land uses would experience noise increases of up to 2.2 decibels and 1.5 decibels, respectively, as a result of the Project. Moreover, the maximum interior noise as a result of a truck pass-by would not be 55 dBA, which increases the probability of sleep disturbance to approximately 13 percent, as alleged by the commenter. As discussed in **Response to Comment No. 17-39** in a response to a similar comment (Comment No. 17-39), Receptor 1, which represents a residential use east of the Project Site, would experience exterior noise levels of almost 39 dBA during the nighttime from the proposed onsite activities on the Project Site. Applying the more conservative exterior-to-interior noise reduction with closed windows, Receptor 1 would experience interior noise levels of 18.5 dBA L_{eq} during the nighttime as a result of operations on the Project Site. According to the Figure 1 provided by the commenter in Comment No. 17-39, noise levels this low would not result in sleep disruption. Therefore, the interior noise impacts as a result of the Project would be below the levels associated with significant disruption.

RESPONSE TO COMMENT NO. 17-24

The commenter claims that the Draft EIR fails to analyze the Project's potentially significant impacts from rooftop mechanical equipment, including refrigeration and heating, ventilation, and air conditioning (HVAC) equipment. The Project does not include cold storage and thus would not involve refrigeration. As discussed in detail in **Response to Comment No. 17-40**, the estimated number of rooftop HVAC units and their associated noise levels presented in the comment is speculative and based on broad assumptions. While the specific make and model of the HVAC units are unknown, similar commercial-grade HVAC rooftop units typically generate noise levels of 69.5 dBA at a distance of 10 feet.[22] Noise from a point source, such as an HVAC unit, attenuates by 6 dBA for every doubling of distance. At 250 feet the HVAC units would result in noise levels of approximately 41.5 dBA at the nearby residences which is below the City's daytime and nighttime exterior noise standards. In addition, the rooftop HVAC systems would be installed at a significant elevation above ground level and noise from the rooftop HVAC units would propagate outward, spreading in multiple directions rather than just along the ground, which would result in

[22] Carrier. (2022). WeatherMaker® single package heat pump rooftop (7.5 to 12.5 nominal tons): Product data. Carrier Corporation.

additional geometric spreading, leading to a faster drop-off in noise compared to ground-level noise sources. Additionally, modern rooftop mechanical equipment often includes noise attenuation features, such as acoustic barriers, sound enclosures, parapet, and low-noise fan designs, which further reduce environmental noise impacts. Therefore, the Project's noise impacts from rooftop mechanical equipment would be less than significant.

RESPONSE TO COMMENT NO. 17-25

The commenter asserts that the Draft EIR fails to include sufficient investigation into energy conservation measures because it does not discuss whether any renewable energy features could be incorporated into the Project. The commenter cites *League to Save Lake Tahoe v. County of Placer* (2022) 75 Cal.App.5th 63, 167-168, which the commenter alleges requires lead agencies to investigate whether any renewable energy features could be incorporated into a project. The project in the *League to Save Lake Tahoe v. County of Placer* case would develop 760 residential units and 6.6 acres of commercial uses on a 1,430-acre site in a largely undeveloped area that would require significant infrastructure improvements to extend utilities to that site. There is a significant difference between the energy considerations of a large-scale specific plan project that would develop lower-density residential and commercial uses on an expansive greenfield site in rural Placer County and that of a parcel delivery facility project on 31.6-acre site in an urbanized area of Southern California. The Project would develop a site that is less than 2.2 percent of the land area that would be developed by the *League to Save Lake Tahoe v. County of Placer* project. Additionally, the Project Site is located in an urbanized area currently served by Southern California Edison (SCE), and extension of utilities would not be required for the Project. As noted in **Section 5.2, Energy**, of the Draft EIR, per California's Renewable Portfolio Standards, SCE is required to procure 44 percent of its energy from renewable sources by the end of 2024, 52 percent by the end of 2027, 60 percent of total procurement by 2030, and 100 percent of total procurement by 2045. Thus, the Project would utilize renewable energy resources. In addition, although the Project is only required to provide a solar-ready roof, the Project would be conditioned to install renewable energy systems/technologies prior to final occupancy, including but not limited to solar panels.

The commenter correctly states that the Project would install energy efficient appliances and lighting, a solar-ready roof, EV charging stations, EV capable stalls, and low-flow water fixtures in compliance with the 2022 Title 24 Building Energy Efficiency Standards (Title 24) and the 2022 California Green Building Standards Code (CALGreen Code). As stated in **Section 5.2, Energy**, of the Draft EIR, the Project would also provide two additional EV charging stations in excess of the regulatory requirements. However, the commenter asserts that the Draft EIR violates the requirements of CEQA Guidelines Appendix F because it fails to evaluate a variety of measures to reduce the Project's energy consumption in excess of Title 24 and to demonstrate that the number of EV charging stations provided by the Project would meaningfully reduce the Project's energy consumption or represents the maximum stations feasible for the Project. CEQA Guidelines Section 15126(b) states that the analysis of a project's energy impacts should "include the project's energy use for all project phases and components, including transportation-related energy, during construction and operation. In addition to building code compliance, other relevant considerations may include, among others, the project's size, location, orientation, equipment use and any renewable energy features that could be incorporated into the project." CEQA Guidelines Appendix F provides a list of energy impact possibilities and potential conservation measures that

should be considered in the EIR if applicable or relevant to a project but may not apply. PRC Section 21100(b)(3) requires EIRs to discuss measures to reduce wasteful, inefficient, and unnecessary consumption of energy. Neither the CEQA Guidelines nor PRC specifically require the Draft EIR to evaluate the measures to reduce the Project's energy consumption in excess of Title 24 or to demonstrate that the Project's EV charging stations would meaningfully reduce the Project's energy consumption or that they represent the maximum stations feasible for the Project. Thus, the Draft EIR correctly concludes that the Project would not cause wasteful, inefficient, and unnecessary consumption of energy.

The commenter also claims that the Draft EIR fails to consider a three-minute idling time for construction equipment and trucks as recommended in the Attorney General warehouse guidance document. As stated in the Attorney General's warehouse guidance document, this is an example measure to mitigate air quality and GHG impacts from the construction and operation of the Project. The air quality and GHG analyses conducted for the Project (see **Section 5.1, Air Quality**, and **Section 5.3, Greenhouse Gas Emissions**, of the DEIR, respectively) determined that the Project's air quality and GHG impacts would be less than significant. As such, no mitigation measures are required.

RESPONSE TO COMMENT NO. 17-26

The commenter claims that the Draft EIR fails to adequately disclose, analyze, and mitigate the Project's cumulative impacts because it does not analyze the Project's cumulative effects with the existing and proposed development surrounding the Project Site. Refer to **Response to Comment No. 16-6** for a discussion of the Project's cumulative air quality analysis. As discussed therein, based on SCAQMD issued methodology, a project's potential contribution to cumulative impacts is assessed using the same significance criteria as the criteria for project-specific impacts. That significance criteria considers the cumulative conditions of the South Coast Air Basin and the more localized source receptor areas. Therefore, individual projects that do not generate operational or construction emissions that exceed the SCAQMD's daily thresholds for project-specific impacts would also not cause a cumulatively considerable increase in emissions for those pollutants for which the air basin is in nonattainment and therefore would not be considered to have a significant, adverse air quality impact. As discussed in **Section 5.1, Air Quality**, of the DEIR, Project construction and operational emissions would not exceed the SCAQMD regional or localized thresholds. Thus, the Project would not contribute substantially to an existing or projected air quality violation and Project emissions would not be potentially cumulatively considerable. In addition, as discussed in **Response to Comment No. 10-3,** an analysis of the Project was conducted using the SCAQMD's proposed Conceptual/Potential Cumulative Health Risk Assessment protocols and thresholds, which further validates that the Draft EIR's determination that the Project's direct, indirect, and cumulative impacts related to air toxics and health risk would be less than significant.

The commenter also claims that the Draft EIR directly conflicts with the Attorney General's warehouse guidance document, which sets forth best practices for evaluating the environmental impacts of warehouse projects, which includes thoroughly considering the project's incremental impact in combination with past, present, and reasonably foreseeable future projects. These best practices are examples and do not "relieve lead agencies' responsibility under CEQA to conduct a project-specific analysis of the project's impacts." In the case of the Project, the City, as the lead

agency for the Project, conducted a project-specific air quality analysis (see **Section 5.1, Air Quality**, of the DEIR) consistent with SCAQMD's methodology. As determined in **Section 5.1, Air Quality**, the Project's air quality impacts would be less than significant. In addition, **Chapter 4.0, Environmental Setting**, of the Draft EIR includes a list of related development projects and a list of projects located east of State Route 57 that have been approved and/or constructed in the last 15 years has been added in **Section 3.0, Revisions and Clarifications to the Draft EIR**, of this Final EIR. The air quality analysis and conclusions in this EIR consider the full cumulative scenario, including all related projects and the cumulative air quality conditions.

RESPONSE TO COMMENT NO. 17-27

This concluding comment states that the Draft EIR is inadequate and must be revised and recirculated for the reasons discussed above. Responses to all issue and concerns identified by the commenter are provided in **Response to Comment No. 17-3** through **Response to Comment No. 17-26**, **Response to Comment No. 17-29** through **Response to Comment No. 17-33**, and **Response to Comment No. 17-38** through **Response to Comment No. 17-40**. Based on these responses to comments, the Draft EIR analyzes all potentially significant impacts of the Project and identifies adequate mitigation for such impacts. There is no new significant information that would require recirculation of the Draft EIR. This comment is noted and will be forwarded to the decision-makers for consideration.

RESPONSE TO COMMENT NO. 17-28

This comment states that the commenter has reviewed the trip generation and VMT impacts of the Project and summarizes the commenter's findings. Detailed responses to these findings are provided in **Response to Comment No. 17-29** through **Response to Comment No. 17-33.**

RESPONSE TO COMMENT NO. 17-29

The commenter states that the Draft EIR overestimates trip generation from the prior Bank of America use by failing to properly apply the ITE trip generation fitted curve equation, which would result in 3,908 trips per day. The VMT analysis in the Draft EIR used the average trip generation rate to estimate traffic from the prior Bank of America use because it is embedded in the regional model to determine VMT for individual parcels. The OCTAM model assumes a building size of 647,503 square feet, a total trip generation of 19,139 trips per day, a service population of 2,231, and a VMT per person of 76.4. (NOCC+ output in Attachment C – VMT Screening Tool Output of **Appendix F: VMT Assessment** to the Draft EIR). While these numbers make up the existing estimate of VMT in the model, they were nonetheless conservatively reduced for a VMT screening analysis. Of particular note, the 19,139 trips seemed high for a general office building so the VMT analysis was adjusted accordingly. Specifically, if the building size were used to determine trip generation, there would be 6,910 trips (using average rates). If a 2,231 employee count was used, the value would be 7,429 trips. Instead, a conservative employee count of 1,447 (based on City records, which showed that the Bank of America building operated with at least 1,447 employees) was used for a total of 4,818 trips.

The commenter also asserts that the Draft EIR falsely states that applying an average daily trip rate reaches a lower, more conservative estimate of the number of trips compared to ITE trip generation fitted curve equation. Please note that the footnote under **Table 3** in **Appendix F:**

VMT Assessment incorrectly stated that the average rate value was lower that the fitted curve value. This is corrected in **Section 3.0, Revisions and Clarifications to the Draft EIR**, of this Final EIR. Although the fitted curve equation would result in a lower trip generation, as stated above, the average trip generation rate was used to estimate traffic from the prior Bank of America use because it is embedded in the OCTAM model.

RESPONSE TO COMMENT NO. 17-30

The commenter claims that the Draft EIR likely underestimates trip generation from the proposed use because some employees will make mid-day trips, the number of parking spaces for delivery vans is more than the 345 daily vans anticipated, and there could be more Flex drivers deployed than anticipated. As stated in **Appendix F: VMT Assessment** to the Draft EIR, the estimated trip count for the Project site is based on data provided by the Applicant, which was derived from other similar parcel delivery stations. A trip generation study was conducted of several similar operations in California in 2021 and found that while there are variations on the times, the daily volumes are very close to the predicted volume. This information was provided to the City's Traffic Engineer, who instructed the Applicant's transportation analysts to use a higher value for the AM peak hour and agreed with the results of the trip generation study.

Additionally, the trip generation study focused on the beginning of shift and end-of-shift trips since those can be estimated more directly, while the number of employees, if any, that may drive off-site during mid-day breaks is too speculative. With respect to van parking, additional spaces are provided to ensure adequate parking for delivery drivers as they park their personal vehicles and begin their shifts in a delivery van. Further, the additional parking alleviates the minimal time periods when more deliveries may be necessary than normal operations (e.g., holidays and Prime Days). Finally, regarding Flex drivers, the provided quantity is not expected to increase since only a certain number of Flex deliveries may be processed at the facility.

RESPONSE TO COMMENT NO. 17-31

The commenter alleges that the Draft EIR improperly omits delivery van and Flex VMT. The VMT analysis for the Project concluded that the Project is screened out from further analysis because the previous Bank of America use generated more VMT than the Project's estimated VMT. The VMT screening analysis was reviewed and approved by the City's Traffic Engineer. As an additional analysis, the regional impact of the delivery operations was also evaluated. The VMT is based on the employee count multiplied by the average VMT per employee based on the OCTAM model. This accounts for all trips associated with employee travel. The Project anticipates 576 employees and the average VMT per employee for the Project Site's Traffic Analysis Zone (TAZ) is 41.8 vehicle miles per day based on the OCTAM model (see page 10 of **Appendix F: VMT Assessment** [PDF page 2121 of the Draft EIR Appendices file] for the calculation methodology for employee VMT). The delivery operations (vans and Flex drivers) of the proposed parcel delivery facility would result in a total of 14,264 VMT per day. As stated in the Draft EIR, the new parcel delivery station proposed by the Project would absorb trips from surrounding delivery stations. Therefore, the regional savings of adding a facility to the delivery network was applied to the calculation of the Project's net VMT, resulting in 910 fewer delivery van VMT and 128 fewer Flex VMT. However, even if VMT reductions were not applied, the new VMT for the Project Site of 38,340 VMT per day would still be less than the VMT for the Bank of America use

of 42,880 VMT per day and only a fraction of the 170,448 VMT per day accounted for in the OCTAM model. Attachment C of the VMT Assessment shows the output of North Orange County Collaborative (NOCC+) VMT Traffic Study Screening Tool, which is a subset of the OCTAM model, and was provided by the City of Brea. The service population trips included in the model for Parcel Numbers 320-233-17, 320-301-11, 320-301-12 is 2,231 with a VMT per service population of 76.4, which multiplies to 170,448 VMT per day.

RESPONSE TO COMMENT NO. 17-32

The commenter claims that the Draft EIR underestimates net Project VMT by overestimating trip generation and related VMT from the Bank of America use, underestimating trip generation and related VMT from the Project, and improperly omitting delivery van and Flex VMT. As discussed in **Response to Comment No. 17-29** through **Response to Comment No. 17-31**, the Draft EIR does not overestimate trip generation from the Bank of America use, underestimate trip generation from the Project, or improperly omit delivery van and Flex VMT. The VMT used in the screening for the Bank of America use is based on a service population of 1,447 employees even though the NOCC+ screening tool assumes 2,231 employees. The calculated VMT is based on a daily trip count of 4,818 trips per day (per ITE Trip Generation, 11th Ed.) multiplied by an average of 8.9 vehicle miles from the OCTAM model for a total of 42,880 VMT. The VMT for the Project is based on an employee count of 576 multiplied by an average employee VMT of 41.8 vehicle miles per day, again based on the OCTAM model for a total of 24,076 VMT. The delivery operations (vans and Flex drivers) of the proposed facility generate 14,264 VMT. Therefore, the Project would result in 38,340 VMT per day. If the regional savings of adding a new facility to the delivery network is applied to the VMT results, the Project would generate a VMT of 23,038 VMT per day. As shown, the Project VMT with and without the regional VMT savings would still be less than the VMT for the Bank of America use. Based on the above, the Draft EIR does not underestimate the net Project VMT.

RESPONSE TO COMMENT NO. 17-33

The commenter asserts that the air quality analysis should be redone with updated trip generation and VMT numbers. As discussed in **Response to Comment No. 17-29** through **Response to Comment No. 17-32**, the trip generation and VMT numbers utilized in the Draft EIR are valid. Therefore, the numbers do not need to be updated in the air quality analysis.

RESPONSE TO COMMENT NO. 17-34

This comment provides the resume for Norman L. Marshall. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted will be forwarded to the decision-makers for consideration.

RESPONSE TO COMMENT NO. 17-35

This comment states that the commenter has reviewed the Draft EIR for the Project, including the Noise Assessment, and provides some background information on Wilson Ihrig. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted and no further response is required.

RESPONSE TO COMMENT NO. 17-36

This comment provides information on the adverse effects of noise, including noise-induced hearing loss, speech interference, sleep disturbance, cardiovascular and physiological effects, and impaired cognitive performance. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted and no further response is required.

RESPONSE TO COMMENT NO. 17-37

This comment summarizes the items that the commenter believes are incorrect or inadequate in the Draft EIR and Noise Assessment. Detailed responses to these items are provided in **Response to Comment No. 17-38** through **Response to Comment No. 17-40.**

RESPONSE TO COMMENT NO. 17-38

The commenter alleges that the baseline conditions in the Draft EIR are not properly established because the noise analysis contains no long-term measurements and relies on four short-term measure locations consisting of one 15-minute measurement per location. Detailed responses related to the short-term baseline noise measurements and the proper characterization of the baseline ambient noise environment are provided in **Response to Comment No. 17-6** and **Response to Comment No. 17-13** above.

RESPONSE TO COMMENT NO. 17-39

The commenter asserts that nighttime truck operations would cause sleep disturbance and states that an indoor L_{max} noise level of 45 dBA from a single truck has an approximately 10 percent chance of disturbing sleep. The comment also incorrectly states that **Table 5-4** on page 31 of **Appendix E: Noise and Vibration Impact Assessment** (PDF page 2065 of the Draft EIR Appendices file) to the Draft EIR indicates that the indoor hourly L_{eq} would reach almost 39 dBA at Receptor 1. The commenter further alleges that the maximum noise experienced in a bedroom from a truck pass-by could be on the order of 55 dBA, which increases the probability of sleep disturbance to approximately 13 percent. However, **Table 5-4** presents modeled operational noise levels specifically associated with onsite activities on the Project Site and does not address offsite transportation noise levels. The commenter's statement that the indoor hourly L_{eq} would reach almost 39 dBA at Receptor 1 is incorrect because the noise levels in **Table 5-4** represent exterior noise levels, not interior noise levels. Considering the more conservative exterior-to-interior noise reduction of 20 dBA, Receptor 1 would experience interior noise levels of 28.5 dBA L_{eq} during the daytime and 18.5 dBA L_{eq} during the nighttime as a result of operations on the Project Site. According to Figure 1 provided by the commenter, noise levels this low would not result in sleep disruption. Therefore, the analysis in the Draft EIR demonstrates that interior noise impacts at Receptor 1 would be below levels associated with significant disruption.

Additionally, the Project is located in a highly developed area with numerous truck-generating uses, where roadways, including Valencia Avenue, already accommodate truck traffic. The Project does not introduce a new type of noise source to the area but rather contributes incrementally to the existing truck traffic.

RESPONSE TO COMMENT NO. 17-40

The commenter states that the Draft EIR noise analysis lack analysis of rooftop mechanical equipment, which would operate 24/7, and that mechanical equipment noise levels would be potentially significant. The estimated number of rooftop HVAC units and their associated noise levels presented in the comment is speculative and based on broad assumptions that do not account for site-specific factors, actual HVAC design, or operational conditions of the Project. The number, size, and sound levels of rooftop mechanical equipment can vary significantly depending on several factors, including energy efficiency requirements, climate control needs, and technological advancements in HVAC design. While it is true that industrial warehouses require mechanical ventilation and air exchange, the specific HVAC system selection depends on a variety of factors, including the internal heat load, operational hours, warehouse occupancy, and local climate conditions. HVAC design is also subject to California Energy Code (Title 24), which promotes energy efficiency and often results in fewer and quieter units than assumed in this comment. While the specific make and model of these units are unknown, similar commercial-grade HVAC rooftop units typically generate noise levels of 69.5 dBA at a distance of 10 feet.[23] Noise from a point source, such as an HVAC unit, attenuates by 6 dBA for every doubling of distance. Using the 250 feet distance referenced in the comment, the HVAC units would result in noise levels of approximately 41.5 dBA at the nearby residences which is below the City's daytime (55 dBA) and nighttime (50 dBA) exterior noise standards. It is noted that the rooftop HVAC systems for the proposed warehouse would be installed at a significant elevation above ground level. The noise would propagate outward from the rooftop HVAC unit, spreading in multiple directions rather than just along the ground. This results in additional geometric spreading, leading to a faster drop-off in noise compared to ground-level noise sources. Additionally, modern rooftop mechanical equipment often includes noise attenuation features, such as acoustic barriers, sound enclosures, parapets, and low-noise fan designs, which further reduce environmental noise impacts.

RESPONSE TO COMMENT NO. 17-41

This concluding comment states the noise analysis for the Draft EIR contains substantial omissions and errors that, when corrected, would identify additional significant noise impacts and warrant additional mitigation measures. Detailed responses to omissions and errors alleged by the commenter are provided above in **Response to Comment No. 17-38** through **Response to Comment No. 17-40**. The Project would not result in any new or additional significant noise impacts beyond those discussed in the Draft EIR and no additional mitigation measures are necessary. This comment is noted and will be forwarded to the decision-makers for consideration.

RESPONSE TO COMMENT NO. 17-42

This comment provides the resume for Deborah Jue. The comment does not address the adequacy of the Draft EIR. Accordingly, the comment is noted and will be forwarded to the decision-makers for consideration.

[23] Carrier. (2022). WeatherMaker® single package heat pump rooftop (7.5 to 12.5 nominal tons): Product data. Carrier Corporation.

3.0 REVISIONS AND CLARIFICATIONS

This section identifies minor revisions and clarifications to the Draft EIR in response to public comments received and/or as initiated by the City. The changes provide clarification and minor corrections for the Draft EIR but do not alter the analysis or conclusions of the document.

Changes were made to the Draft EIR sections and pages as noted below and are identified with revision marks (underline for new text and strike-through for deleted text).

Chapter 1.0, Executive Summary

The discussion in the first full paragraph on page 1-2 is revised and clarified as follows:

> The Project would operate 24 hours per day, 7 days per week to support delivery of packages to customer locations. The Applicant anticipates up to ~~a maximum of~~ 31 line haul trucks delivering packages to the Project Site each day during normal operations~~, primarily between the hours of 10:00 p.m. to 8:00 a.m~~. Of the 31 anticipated line haul trucks, only up to 22 would operate between 10:00 p.m. and 7:00 a.m. during normal daily operations.

Chapter 3.0, Project Description

The discussion in the first paragraph on page 3-8 is revised as follows:

> The Project would demolish the existing 637,503-square-foot office building and surface parking lot to construct a 181,500-square-foot parcel delivery facility, consisting of 163,350 square feet of warehouse and storage space and 18,150 square feet of ancillary office space, on an approximate 31.6-acre site. The proposed facility would be a single-story building with a maximum height of ~~56 feet~~ 50 feet, 4 inches (including architectural ~~projects~~projections) and FAR of approximately 0.14:1.

The discussion in the second paragraph on page 3-8 is revised and clarified as follows:

> The proposed facility would absorb portions of service areas that are currently covered by existing delivery stations in order to reduce the distance traveled by delivery vans throughout the region. Most delivery trips are within 10 to 20 miles of the delivery stations. The Project would operate 24 hours per day, 7 days per week to support delivery of packages to customer locations. The Applicant anticipates up to ~~a maximum of~~ 31 line haul trucks delivering packages to the Project Site each day during normal operations~~, primarily between the hours of 10:00 p.m. to 8:00 a.m~~. Of the 31 anticipated line-haul trucks, only up to 22 would operate between 10:00 p.m. and 7:00 a.m. during normal daily operations.

The discussion in the third full paragraph on page 3-11 is revised as follows:

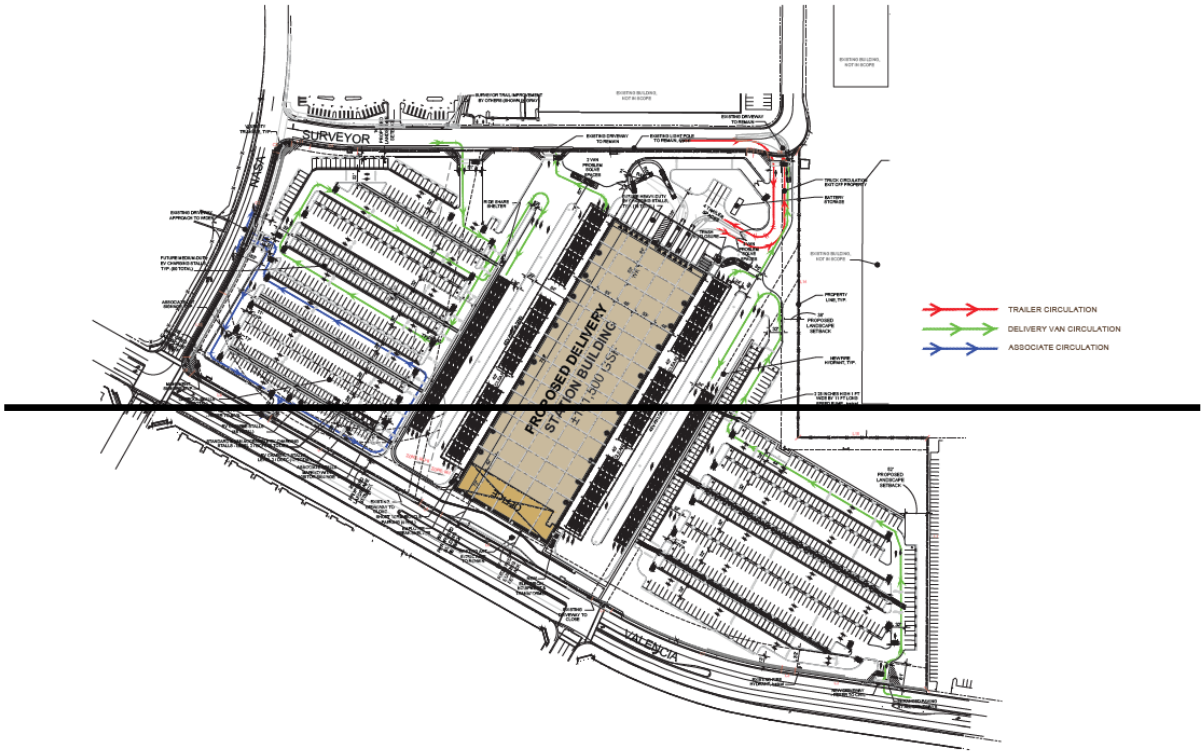
> The Project design would be ~~designed~~ consistent with other delivery parcel facilities of the Amazon brand and complementary to buildings in the area. As shown in Figure 3-4, the proposed building would include tones of ~~blue~~beige, brown, and white~~, and gray~~, as well

as varying materials (i.e., metal, wood, and glass) to provide a modern façade. In consideration of the residential community to the east of Valencia Avenue, the Project would place its line haul truck loading/docking area and truck circulation route on the western portion of the Project Site to face other industrial uses.

The discussion in the last partial paragraph on page 3-11 is revised as follows:

The BCC also requires tree planting for parking lot trees (1 tree per 5 stalls), perimeter trees interior to the property line (1 tree per 25 linear feet in the MU-II zone and 1 tree per 30 linear feet in the M-1 zone), and perimeter trees abutting streets (1 tree per 25 linear feet in portion of the Project zoned MU-II Zone and 1 tree per 30 linear feet in the portion of the Project zoned M1). Required trees may be grouped or clustered and shall be in additional to required ground cover and shrub material. Thus, the Project would be required to provide a minimum of 214 parking lot trees, 52 perimeter interior trees, and 133 perimeter street-abutting trees. As shown in Figure 3-5, the Project would exceed such requirements by providing ~~286~~ 340 parking lot trees, ~~82~~ 90 perimeter interior trees, and ~~152~~ 395 perimeter street abutting trees. The proposed trees would provide more comprehensive screening of the proposed facility and loading areas from public view. The Project would provide approximately 323,744 square feet of landscaping, including perimeter landscaping and maintained landscaped areas throughout the site. In addition, 27 existing ~~mature perimeter~~ trees would be protected in place; however, ~~46 mature London Plane street-adjacent trees along Valencia Avenue and Nasa Street~~ 398 existing trees would be removed as part of the Project ~~to provide a pedestrian sidewalk along the street frontage~~.

Figure 3-3, Conceptual Site Plan, on page 3-9 is revised as follows:



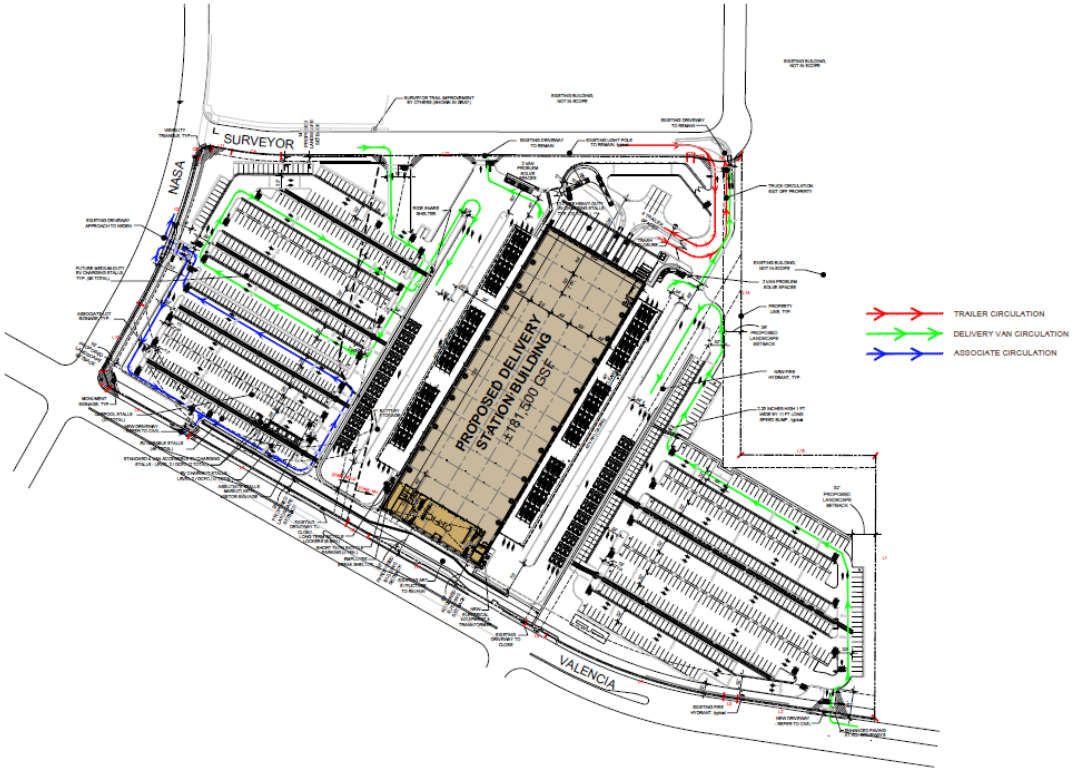
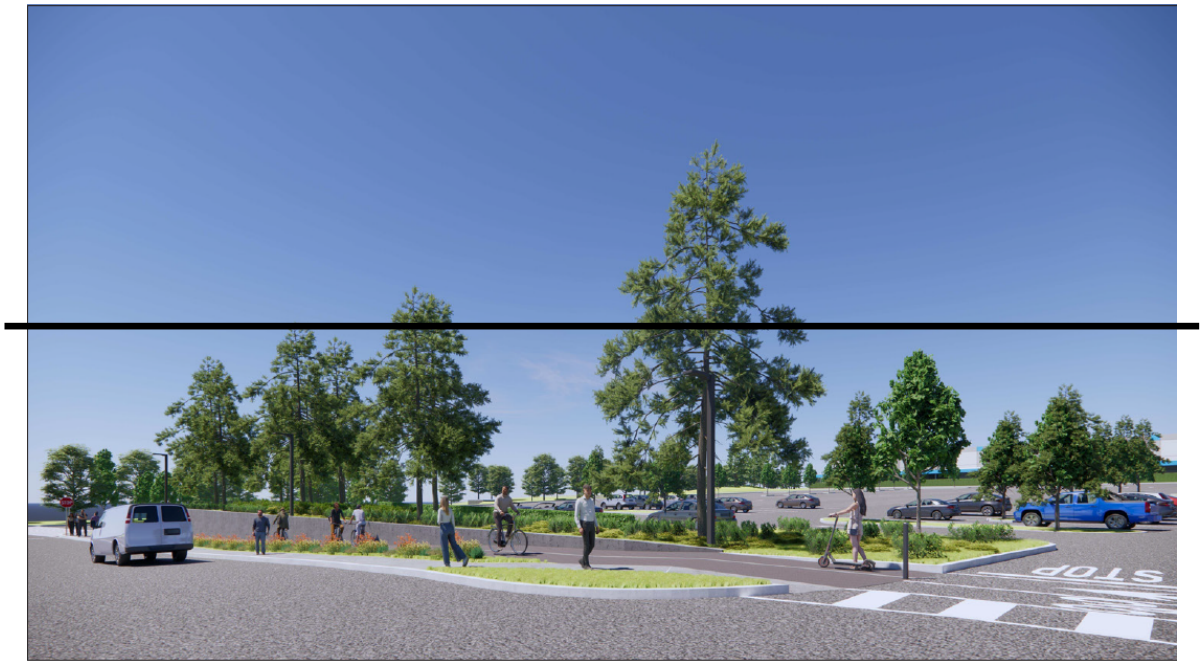


Figure 3-4, Valencia Avenue View, on page 3-13 is revised as follows:

Figure 3-5, Conceptual Planting Plan, on page 3-15 is revised as follows:

Figure 3-6, Nasa Street View, on page 3-19 is revised as follows:



The revised figures shown above are provided in **Appendix B** to this Final EIR.

Chapter 4.0, Environmental Setting

The discussion on page 4-9 is clarified as follows:

> As shown in **Figure 4-3**, two related development projects have been identified within the vicinity of the Project Site for inclusion in the cumulative impact analysis for this EIR:
>
> - **Related Project No. 1** is identified by the City as PR 2023-08 and proposes a light industrial, warehouse building at 3200 Nasa Street on the northwest corner of Nasa Street and Surveyor Avenue on a site that is currently developed as a surface parking lot. This development is located immediately west of the Project Site and was approved on July 1, 2024.
> - **Related Project No. 2** consists of the Brea 265 Specific Plan development on a 262-acre site generally bounded by Lambert Road/Carbon Canyon Road to the north, Carbon Canyon Regional Park to the east, Birch Street and Rose Drive to the south, and residential uses to the west. The Brea 265 Specific Plan proposes up to 1,100 residential units, parks and recreational amenities, open space, and right-of-way improvements. This development is located north and northeast of the Project Site.
>
> <u>In addition, the cumulative impacts consider the following projects that are located east of State Route 57 and have been approved and/or constructed in the last 15 years: 2830 Orbiter Street (79,937-square-foot warehouse); 3170 E. Nasa Street (108,352-square-foot manufacturing use, 95,680-square-foot warehouse, and 155,326-square-foot warehouse); 3300 E. Birch Street (425,878-square-foot warehouse); 3025 E. Imperial Highway (64,481-square-foot warehouse); 2700 E. Imperial Highway (100,431-square-foot self-</u>

storage facility); 2929 E. Imperial Highway (131,500-square-foot); and 2727 E. Imperial Highway (120,550-square-foot industrial building).

A conceptual project located northeast of the Project Site at 3350 E. Birch Street, which proposes the demolition of an existing office building and construction of an 86,145-square-foot warehouse building, was submitted to the City with a request for preliminary comments. However, any project that requests preliminary plan review is not considered an active project and is not included in the cumulative impact analysis.

Section 5.1, Air Quality

The discussion in the first full paragraph on page 5.1-24 is revised as follows:

Operational air pollutant emissions were based on the site acreage, building dimensions, and the Project's maximum daily vehicle generation, which would consist of 62 heavy duty truck trips, 1,346 passenger car trips, and 690 van trips during normal operations. The average van trip length was taken from the Project's VMT Report (refer to **Appendix F** of this Draft EIR). The average truck trip length is calculated at 52 miles, which represents the average distance between the Project Site and the Port of Los Angeles/Long Beach, the Project Site and the Banning Pass, the Project Site and the San Diego County line, the Project Site and the Cajon Pass, and the Project Site and downtown Los Angeles, consistent with SCAQMD recommendation for calculating heavy-duty truck emissions.

The discussion in the first partial paragraph on page 5.1-29 is revised as follows:

surface parking lot to construct a 181,500-square-foot parcel delivery facility, consisting of 163,350 square feet of merchandise warehouse and storage space and 18,150 square feet of ancillary office space, on a 31.6-acre site. The proposed facility would be a single-story building with a maximum height of ~~56 feet~~ 50 feet, 4 inches (including architectural projects) and FAR of approximately 0.14:1. Therefore, the Project is consistent with the General Plan land use designation.

The discussion in the first paragraph on page 5.1-40 is revised as follows:

The Project is anticipated to result in 2,098 daily trips, which would consist of a maximum of 62 daily heavy-duty truck trips, 1,346 daily passenger car trips, and 690 daily van trips during normal operations. Thus, the Project would not generate traffic volumes at any intersection of more than 100,000 vehicles per day or 44,000 vehicles per hour, and there is no likelihood of the Project traffic exceeding CO values.

Section 5.2, Energy

The discussion in the first paragraph on page 5.2-16 is revised as follows:

Pursuant to the EPCA, the NHTSA is responsible for establishing additional vehicle standards and for revising existing standards. Compliance with federal fuel economy standards is not determined for each individual vehicle model. Rather, compliance is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the United States. The Project would generate maximum 2,098 daily trips consisting of 1,346 passenger vehicle trips, 690 delivery van trips, and 62

line-haul truck trips during normal operations.[14] The delivery vans would use gasoline but would have a lower mile per gallon efficiency rate than passenger vehicles. The line-haul trucks would use diesel with a lower mile per gallon efficiency rate and longer trip lengths, but would be required to comply with CARB's ATCM, which would restrict drivers from idling the vehicle's primary diesel engine longer than five minutes. As indicated in **Table 5.2-3**, the Project gasoline consumption would be 67,299 gallons less than existing baseline conditions; however, the Project would consume 184,134 gallons of diesel. The Project would result in a net operational fuel consumption (gasoline and diesel) of approximately 116,835 gallons of automotive fuel per year, which would increase Orange County's automotive fuel consumption by 0.0088 percent. Thus, the Project would not substantially increase the Orange County's annual automotive fuel consumption. Additionally, the Project would shorten the length of delivery trips by absorbing some service areas that are located closer to the Project Site than to the other existing delivery stations that currently serve these service areas, thereby reducing the distance traveled by delivery vans across all delivery stations. Therefore, the Project would not result in excessive operational fuel consumption (Topic 2).

Section 5.3, Greenhouse Gas Emissions

The discussion in the last partial paragraph on page 5.3-21 is revised as follows:

GHG emissions were modeled using CalEEMod, version 2022.1. As described above, CalEEMod is a statewide land use emissions computer model designed to quantify potential GHG emissions associated with both construction and operations from a variety of land use projects. Project construction-generated GHG emissions are calculated using a combination of CalEEMod model defaults for Orange County and information provided by the Project proponent, specifically the demolition square footage, construction of new square footage, construction equipment employed during each phase of construction, the construction schedule, and the amount of soil material that would be exported from the site. Operational air pollutant emissions were based on the site acreage, building dimensions, and the Project's maximum daily vehicle generation would consist of 62 daily heavy-duty truck trips, 1,346 daily passenger car trips, and 690 daily van trips during normal operations. The

The last row of Table 5.3-4 on page 5.3-27 is revised as follows:

Developed Lands	
Increase urban forestry investment by 200% above current levels and utilize tree watering that is 30% less sensitive to drought.	**Consistent.** The Project would exceed City tree planting requirements by providing 340~~286~~ parking lot trees, 90~~82~~ perimeter interior trees, and 395~~152~~ perimeter street abutting trees. The Project would provide approximately 323,744 square feet of landscaping, including perimeter landscaping and maintained landscaped areas throughout the site. The Project would also comply with the City's water efficient landscape requirements and would provide drought tolerant landscaping and water-efficient irrigation via a drip irrigation system utilizing a Smart Controller to moderate water use. As such, the Project would be consistent with this action.

The last row of Table 5.3-5 on page 5.3-30 is revised as follows:

Promote a Green Region		
• Support development of local climate adaptation and hazard mitigation plans, as well as project implementation that improves community resiliency to climate change and natural hazards • Support local policies for renewable energy production, reduction of urban heat islands and carbon sequestration • Integrate local food production into the regional landscape • Promote more resource efficient development focused on conservation, recycling and reclamation • Preserve, enhance and restore regional wildlife connectivity • Reduce consumption of resource areas, including agricultural land • Identify ways to improve access to public park space	Green Region, Urban Greening, Greenbelts and Community Separators.	**Consistent.** As described above, the Project would be solar-ready and would be required to comply with the most current and applicable Title 24 standards and California Building Code, which would help reduce energy consumption and GHG emissions. The Project would support the reduction of the urban heat island effect by exceeding City tree planting requirements and providing 340~~286~~ parking lot trees, 90~~82~~ perimeter interior trees, and 395~~152~~ perimeter street abutting trees. The Project would provide approximately 323,744 square feet of landscaping, including perimeter landscaping and maintained landscaped areas throughout the site. The Project would also comply with the City's water efficient landscape requirements and would provide drought tolerant landscaping and water-efficient irrigation via a drip irrigation system utilizing a Smart Controller to moderate water use. In addition, the Project would comply with the City's solid waste reduction programs, which are designed to comply with federal, state, and local statutes and regulations related to solid waste. Therefore, the Project would be consistent with this reduction strategy.

Section 5.4, Hazards and Hazardous Materials

The California Department of Forestry and Fire Protection (CAL FIRE) provided an updated Fire Hazard Severity Zone map for the City in March 2025. Therefore, the discussion on pages 5.4-22 to 5.4-23 is revised as follows to reflect the most up-to-date information:

> The Project Site is located in an urbanized area within the City and is surrounded by existing industrial, office, and residential development. According to the California Department of Forestry and Fire Protection~~ Fire Hazard Severity Zone Viewer and the Orange County State Responsibility Area Fire Hazard Severity Zones map~~, the northern portion of the Project Site is ~~not~~ located within a Moderate Fire Hazard Severity Zone, a High Fire Hazard Severity Zone, or Very High Fire Hazard Severity Zone.[10,~~11~~] ~~As such, the Project would not expose people or structures to wildland fire risks within a Very High Fire Hazard Severity Zone.~~ However,~~ according to the Brea Fire Hazard Severity Zone map, the northern portion of the Project Site is located within a High Fire Severity Zone.[~~12~~] The~~ the Project would be required to comply with the provisions of the California Building Code, California Fire Code, and the Brea City Code, which would ensure adequately rated construction and that adequate fire protection and detection systems would be installed in the proposed building. Therefore, with compliance with regulatory requirements, the Project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires and impacts would be less than significant.

[10] California Department of Forestry and Fire Protection (CAL FIRE). ~~Updated April 19, 2024. Fire Hazard Severity Zone (FHSZ) Viewer. Accessed September 6, 2024. https://hub-calfire-forestry.hub.arcgis.com/apps/CALFIRE-Forestry::fire-hazard-severity-zone-viewer/explore.~~March 24, 2025. City of Brea – Orange County. Local Responsibility Area Fire Hazard Severity Zones.

~~[11] CAL FIRE. November 21, 2022. Orange County State Responsibility Area Fire Hazard Severity Zones.~~

~~[12] City of Brea. n.d. Brea Fire Hazard Severity Zone Map. Accessed October 17, 2024. https://brea.maps.arcgis.com/apps/webappviewer/index.html?id=214f6ec3db2848258b1c988d297015d3.~~

The references on page 5.4-24 are revised as follows:

~~Brea, City of. n.d. Brea Fire Hazard Severity Zone Map. Accessed October 17, 2024. https://brea.maps.arcgis.com/apps/webappviewer/index.html?id=214f6ec3db2848258b1c988d297015d3.~~

Brea, City of. Adopted August 19, 2003. City of Brea General Plan, Chapter 1 Introduction.

Brea, City of. Amended 2021. City of Brea General Plan, Chapter 6 Public Safety.

California Code of Regulations, Section 66260.10.

California Department of Forestry and Fire Protection. ~~Updated April 19, 2024. Fire Hazard Severity Zone Viewer. Accessed September 6, 2024. https://hub-calfire-forestry.hub.arcgis.com/apps/CALFIRE-Forestry::fire-hazard-severity-zone-viewer/explore.~~ March 24, 2025. City of Brea – Orange County. Local Responsibility Area Fire Hazard Severity Zones.

~~California Department of Forestry and Fire Protection. November 21, 2022. Orange County State Responsibility Area Fire Hazard Severity Zones.~~

Section 5.5, Noise

The discussion in the last paragraph on page 5.5-16 is clarified as follows:

Groundborne vibration levels associated with up to 31 line haul trucks[7] that would deliver packages to the Project Site during ~~the~~ normal daily operations ~~of the Project~~ were calculated using the following FTA equation:

[Adjusted Speed PPV = 20log (speed/speed reference [30 mph])

The estimated vibration levels from the line haul trucks traveling at different speeds were then compared to the City's standard of 0.003 inches per second PPV.

[7] Of the 31 anticipated line-haul trucks, only up to 22 would operate between 10:00 p.m. and 7:00 a.m. during normal daily operations.

The text in the operational impacts discussion on page 5.5-28 is clarified as follows:

Project operations would not include the use of any stationary equipment that would result in excessive vibration levels. However, the Project would accommodate ~~a maximum of~~ up to 31 line haul trucks, which would result in 62 heavy-duty truck trips a day during normal operations.[12]

[12] Of the 31 anticipated line-haul trucks, only up to 22 would operate between 10:00 p.m. and 7:00 a.m. during normal daily operations.

Section 5.6, Public Services—Fire Protection

CAL FIRE provided an updated Fire Hazard Severity Zone map for the City in March 2025. Therefore, the discussion in the first full paragraph on page 5.6-5 is revised as follows to reflect the most up-to-date information:

> According to the California Department of Forestry and Fire Protection (CAL FIRE)~~ Fire Hazard Severity Zone Viewer[7] and the Orange County State Responsibility Area Fire Hazard Severity Zones map~~[8], the southern portion of the Project Site is not located in a fire hazard severity zone~~Very High Fire Hazard Severity Zone (VHFHSZ)~~; however, the northern portion of the Project Site is located in a Moderate Fire Hazard Severity Zone (MFHSZ), a High Fire Hazard Severity Zone (HFHSZ), or a Very High Fire Hazard Severity Zone (VHFHSZ). ~~The Project Site is also not located in an area of concern for emergency evacuation access according to the City's General Plan.[9] However, according to the Brea Fire Hazard Severity Zone map, the northern portion of the Project Site is located within a High Fire Severity Zone (HFSZ).[10]~~
>
> [7] California Department of Forestry and Fire Protection (CAL FIRE). ~~Updated April 19, 2024. Fire Hazard Severity Zone (FHSZ) Viewer. Accessed September 6, 2024. https://hub-calfire-forestry.hub.arcgis.com/apps/CALFIRE-Forestry::fire-hazard-severity-zone-viewer/explore.~~March 24, 2025. City of Brea – Orange County. Local Responsibility Area Fire Hazard Severity Zones.
>
> ~~[8] CAL FIRE. November 21, 2022. Orange County State Responsibility Area Fire Hazard Severity Zones.~~
>
> ~~[9] City of Brea. Amended 2021. City of Brea General Plan, Chapter 6 Public Safety. Figure 10.~~
>
> ~~[10] City of Brea. n.d. Brea Fire Hazard Severity Zone Map. Accessed October 17, 2024. https://brea.maps.arcgis.com/apps/webappviewer/index.html?id=214f6ec3db2848258b1c988d297015d3.~~

CAL FIRE provided an updated Fire Hazard Severity Zone map for the City in March 2025. Therefore, the discussion in the first full paragraph on page 5.6-10 is revised as follows to reflect the most up-to-date information:

> In addition, it should be noted that as described above and in Section 7.0, Other CEQA Considerations, the northern portion of the Project Site is ~~not~~ located in a MFHSZ, a HFHSZ, or a VHFHSZ[19]~~,[20] or an area of concern for emergency evacuation access according to the City's General Plan,[21] but the northern portion of the Project Site is located in a HFSZ according to the Brea Fire Hazard Severity Zone map.[22]~~
>
> [19] CAL FIRE. ~~Updated April 19, 2024. Fire Hazard Severity Zone (FHSZ) Viewer. Accessed September 6, 2024. https://hub-calfire-forestry.hub.arcgis.com/apps/CALFIRE-Forestry::fire-hazard-severity-zone-viewer/explore.~~March 24, 2025. City of Brea – Orange County. Local Responsibility Area Fire Hazard Severity Zones.
>
> ~~[20] CAL FIRE. November 21, 2022. Orange County State Responsibility Area Fire Hazard Severity Zones.~~
>
> ~~[21] City of Brea. Amended 2021. City of Brea General Plan, Chapter 6 Public Safety. Figure 10.~~
>
> ~~[22] City of Brea. n.d. Brea Fire Hazard Severity Zone Map. Accessed October 17, 2024. https://brea.maps.arcgis.com/apps/webappviewer/index.html?id=214f6ec3db2848258b1c988d297015d3.~~

The reference on page 5.6-14 is revised as follows:

~~Brea, City of. n.d. Brea Fire Hazard Severity Zone Map. Accessed October 17, 2024. https://brea.maps.arcgis.com/apps/webappviewer/index.html?id=214f6ec3db2848258b1c988d297015d3.~~

The references on page 5.6-15 are revised as follows:

~~California Department of Forestry and Fire Protection. November 21, 2022. Orange County State Responsibility Area Fire Hazard Severity Zones.~~

California Department of Forestry and Fire Protection. ~~Updated April 19, 2024. Fire Hazard Severity Zone Viewer. Accessed September 6, 2024. https://hub-calfire-forestry.hub.arcgis.com/apps/CALFIRE-Forestry::fire-hazard-severity-zone-viewer/explore.~~ March 24, 2025. City of Brea – Orange County. Local Responsibility Area Fire Hazard Severity Zones.

Section 5.8, Transportation

The text in Table 5.8-1 on page 5.8-11 is clarified as follows:

Table 5.8-1
Daily Trips Generated by Proposed Use

Vehicle Type	Number of Vehicles[1]	Daily Trips
Existing Baseline Condition (Bank of America)		
Employee Personal Vehicles	1,447	4,818
DJT4 Parcel Delivery Facility		
Employee Personal Vehicles[2]	576	1,152
Delivery Vans[3]	345	690
Flex Private Carrier Vehicles[4]	97	194
Line-Haul Trucks[5]	31	62
Total	*1,049*	*2,098*
	Net Daily Trips	**-2,720**

Notes:
1. Based on information provided by the Project Applicant.
2. Associates, managers, dispatchers, and delivery van drivers would drive their personal vehicles to and from the Project Site.
3. Delivery van drivers would drive company vans to delivery locations then back to the Project Site at the end of their work shift.
4. Flex drivers would drive personal vehicles to the Project Site to pick up packages for delivery but would not return to the Project Site.
5. The Applicant anticipates up to 31 line haul trucks delivering packages to the Project Site each day during normal operations. Of the 31 anticipated line-haul trucks, only up to 22 would operate between 10:00 p.m. and 7:00 a.m. during normal daily operations.

Source: NV5 Engineers & Consultants. September 3, 2024. Vehicle Miles Traveled (VMT) Analysis for Brea Delivery Station. Table 1.

Chapter 7.0, Other CEQA Considerations

The discussion in the first paragraph on page 7-10 is revised as follows:

> The Project would demolish an existing 60-foot-tall, three-story office building containing approximately 637,503 square feet of floor area and a 1,949-stall surface parking lot and construct a 181,500-square-foot parcel delivery facility, consisting of 163,350 square feet of warehouse space and 18,150 square feet of ancillary office space, on a 31.6-acre site. The proposed facility would be a single-story building with a maximum height of ~~56 feet~~ 50 feet, 4 inches and a FAR of approximately 0.14. As such, the Project would replace the existing office uses with a substantially smaller single-story building structure, resulting in less development intensity. In addition, the Project's structures would be similar to the existing light industrial development surrounding the Project Site, which include research and development, light manufacturing and processing, offices, warehousing and storage, logistics, high-technology production, and other related uses. As such, the Project would not significantly alter the character of the Project Site or surrounding area. In addition, the proposed parcel delivery facility, ancillary office, and parking uses are consistent with the General Plan Light Industrial and Mixed Use II land use designations as well as the Light Industrial (M-1) and Mixed-Use II (MU-II) zones. The Project would comply with the property development standards for the M-1 and MU-II zones as specified in Brea City Code (BCC) Sections 20.252.040 and 20.258.020, respectively. These standards limit the maximum building height to 60 feet and include requirements for landscaping, setback buffers and tree planting. Specifically, the Project would not exceed the maximum height limit of 60 feet and would provide minimum landscape setback buffers of 20 feet for the front yard, 8 feet for the perimeter side yard, 5 feet for the interior side yard, and 8 feet for the rear yard. The Project would also exceed tree planting requirements by providing 340~~286~~ parking lot trees, 90~~82~~ perimeter interior trees, and 395~~152~~ perimeter street abutting trees and would provide approximately 323,744 square feet of landscaping, including perimeter landscaping and maintained landscaped areas throughout the site. Therefore, the Project would not conflict with applicable zoning and other regulations governing scenic quality and impacts would be less than significant.

The discussion in the second full paragraph on page 7-13 is revised as follows:

> The Project Site is fully developed and does not contain candidate, sensitive, or special status species or any habitat that would support protected species. On-site vegetation is limited to ornamental landscaping. The Project would require the removal of 46 mature London Plane street-adjacent trees along Valencia Avenue and Nasa Street to provide a pedestrian sidewalk along the street frontage; however, none of these trees are protected trees defined in the City's Tree Preservation Ordinance (BCC Chapter 20.74, Section 20.74.020). Moreover, the Project would provide 340~~286~~ parking lot trees, 90~~82~~ perimeter interior trees, and 395~~152~~ perimeter street abutting trees in compliance with the property development standards for the M-1 and MU-II zones as specified in BCC Sections 20.252.040 and 20.258.020, respectively. Therefore, the Project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, and no impacts would occur.

The footnote on page 7-17 is revised as follows:

[21] Ware Malcomb. Revised ~~April 5,~~ July 19, 2024. County of Orange/Santa Ana Region Priority Project Water Quality Management Plan (WQMP), Project Name: DJT4, 275 Valencia Avenue, Brea, CA 92823.

The footnote on page 7-19 is revised as follows:

[27] Ware Malcomb. Revised ~~January 5, 2023~~July 19, 2024. County of Orange/Santa Ana Region Priority Project Water Quality Management Plan (WQMP), Project Name: DJT4, 275 Valencia Avenue, Brea, CA 92823. Page 5.

CAL FIRE provided an updated Fire Hazard Severity Zone map for the City in March 2025. Therefore, the discussion on page 7-26 is revised as follows to reflect the most up-to-date information:

According to the California Department of Forestry and Fire Protection (CalFire)~~ Fire Hazard Severity Zone Viewer[42] and the Orange County State Responsibility Area Fire Hazard Severity Zones map[43]~~, the northern portion of the Project Site is ~~not~~ located within a Moderate Fire Hazard Severity Zone, a High Fire Hazard Severity Zone, or a Very High Fire Hazard Severity Zone (VHFHSZ). ~~The Project Site is also not located in a VHFHSZ or an area of concern for emergency evacuation access according to the City's General Plan.[44]~~ However, the~~The~~ Project would be required to comply with the provisions of the Brea Fire Code (BCC Chapter 16.04), which incorporates by reference the California Fire Code. Compliance with the Brea Fire Code would ensure that access for emergency vehicles would be maintained during construction and operation and fire protection systems would be installed in the proposed building. Therefore, the Project would result in less than significant impacts related to wildfire and further analysis is not warranted in this Draft EIR.

[42] California Department of Forestry and Fire Protection (CAL FIRE). ~~n.d. FHSZ Viewer. Accessed July 15, 2024. https://egis.fire.ca.gov/FHSZ/~~March 24, 2025. City of Brea – Orange County. Local Responsibility Area Fire Hazard Severity Zones.

~~[43] CAL FIRE. June 15, 2023. Orange County State Responsibility Area Fire Hazard Severity Zones.~~

~~[44] City of Brea. Amended 2021. City of Brea General Plan, Chapter 6 Public Safety. Figures 9 and 10.~~

The references on page 7-27 are revised as follows:

California Department of Forestry and Fire Protection. ~~November 21, 2022. Orange County State Responsibility Area Fire Hazard Severity Zones.~~ March 24, 2025. City of Brea – Orange County. Local Responsibility Area Fire Hazard Severity Zones.

~~California Department of Forestry and Fire Protection. n.d. FHSZ Viewer. Accessed July 15, 2024. https://egis.fire.ca.gov/FHSZ/~~

The reference on page 7-28 is revised as follows:

Ware Malcomb. Revised ~~April 5,~~ July 19, 2024. County of Orange/Santa Ana Region Priority Project Water Quality Management Plan (WQMP), Project Name: DJT4, 275 Valencia Avenue, Brea, CA 92823.

Chapter 8.0, Bibliography

The references on page 8-5 are revised as follows:

~~Brea, City of. n.d. Brea Fire Hazard Severity Zone Map. Accessed October 17, 2024. https://brea.maps.arcgis.com/apps/webappviewer/index.html?id=214f6ec3db2848258b1c988d297015d3.~~

Brea, City of. Adopted August 19, 2003. City of Brea General Plan, Chapter 1 Introduction.

Brea, City of. Amended 2021. City of Brea General Plan, Chapter 6 Public Safety.

California Code of Regulations, Section 66260.10.

~~California Department of Forestry and Fire Protection. November 21, 2022. Orange County State Responsibility Area Fire Hazard Severity Zones.~~

California Department of Forestry and Fire Protection. ~~Updated April 19, 2024. Fire Hazard Severity Zone Viewer. Accessed September 6, 2024. https://hub-calfire-forestry.hub.arcgis.com/apps/CALFIRE-Forestry::fire-hazard-severity-zone-viewer/explore.~~ March 24, 2025. City of Brea – Orange County. Local Responsibility Area Fire Hazard Severity Zones.

The references on page 8-7 are revised as follows:

~~Brea, City of. n.d. Brea Fire Hazard Severity Zone Map. Accessed October 17, 2024. https://brea.maps.arcgis.com/apps/webappviewer/index.html?id=214f6ec3db2848258b1c988d297015d3.~~

Brea, City of. n.d. Engineering Reference Documents. Public Works Encroachment Permit General Conditions and Traffic Control General Notes. Accessed September 6, 2024. https://www.ci.brea.ca.us/1215/Engineering-Reference-Documents.

Brea, City of. n.d. Our Department. Accessed September 6, 2024. https://www.ci.brea.ca.us/297/Our-Department.

Brea, City of. n.d. Station & Apparatus Information. Accessed September 6, 2024. https://www.ci.brea.ca.us/302/Station-Apparatus-Information.

~~California Department of Forestry and Fire Protection. November 21, 2022. Orange County State Responsibility Area Fire Hazard Severity Zones.~~

California Department of Forestry and Fire Protection. ~~Updated April 19, 2024. Fire Hazard Severity Zone Viewer. Accessed September 6, 2024. https://hub-calfire-forestry.hub.arcgis.com/apps/CALFIRE-Forestry::fire-hazard-severity-zone-viewer/explore.~~ March 24, 2025. City of Brea – Orange County. Local Responsibility Area Fire Hazard Severity Zones.

The reference on page 8-11 is revised as follows:

Ware Malcomb. Revised ~~April 5,~~ July 19, 2024. County of Orange/Santa Ana Region Priority Project Water Quality Management Plan (WQMP), Project Name: DJT4, 275 Valencia Avenue, Brea, CA 92823.

Appendix E, Noise and Vibration Impact Assessment

The text in Subsection 4.1.3 on page 17 is revised as follows:

The ~~2000~~ 1992 FICON findings provide guidance as to the significance of changes in ambient noise levels due to transportation noise sources.

The text in Subsection 4.3.1 on page 19 is revised as follows:

Goal PS-10: Minimize the impacts of transportation-related noise.

Policy PS-10.1: Reduce transportation noise by imposing traffic restrictions where necessary.

Appendix F, VMT Assessment

The text on page 8 of the VMT Assessment is revised as follows:

Table 3: Bank of America (Prior Use) Trip Generation

Land Use	Number of Employees[1]	Avg. Rate / Person[2]	Daily Trips
General Office (Land Use Code 710)	1,447	3.33 trips/person	4,818

[1] From City of Brea historical records, and other sources, actual employee population for Bank of America has been purported to be over 2000 employees

[2] ~~Average trip rate used per person was lower than the ITE Trip Generation fitted curve equation, which equates to a more conservative number of trips.~~ Although the ITE Generation fitted curve equation would result in a lower trip generation, the average trip generation rate was used to estimate traffic from the prior Bank of America use because it is embedded in the OCTAM model.

The note to the table in Attachment A of the VMT Assessment is revised as follows:

The table does not match the ~~the~~ values in Table 6 in the ~~report~~ Traffic Impact Assessment precisely. The Table 6 values in the Traffic Impact Assessment have been modified per the request of the City of Brea to account for trips that may occur during the peak hour which are not anticipated in the user-supplied trip table.

4.0 REFERENCES

Brea, City of. August 19, 2003. City of Brea General Plan, Chapter 2 Community Development.

Brea, City of. 2021. City of Brea General Plan, Chapter 6 Public Safety.

Brea, City of. January 25, 2023. Brea Gaslight Square Redevelopment Project Draft Environmental Impact Report SCH No. 2022060598.

Brea, City of. Brea City Code. Table 20.11.020A Permitted Land Uses.

California Department of Forestry and Fire Protection. March 24, 2025. City of Brea – Orange County. Local Responsibility Area Fire Hazard Severity Zones.

California Department of Transportation. 2002. California Airport Land Use Planning Handbook.

California Environmental Protection Agency. 2002. SB 535 Disadvantaged Communities (2022 Update) web application. Accessed February 2, 2025. https://experience.arcgis.com/experience/1c21c53da8de4 8f1b946f3402fbae55c/page/SB-535-Disadvantaged-Communities/.

Carrier Corporation. 2022. WeatherMaker® single package heat pump rooftop (7.5 to 12.5 nominal tons): Product data.

Federal Transit Administration. May 2006. Transit Noise and Vibration Impact Assessment, Final Report.

Fullerton College. May 2019. Sherbeck Field Improvements Project Draft Environmental Impact Report SCH No. 2018041025.

ICF in collaboration with Sacramento Metropolitan Air Quality Management District, Fehr & Peers, STI, and Ramboll. April 2022. CalEEMod California Emissions Estimator Model User Guide Version 2022.1.

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Orange County Transportation Authority. Trip Planner. Accessed February 12, 2025. https://www.octa.net/getting-around/trip-planner/trip-planner/#.

Riverside County Planning Department. July 11, 2024. Cajalco Commerce Center Draft Environmental Impact Report SCH No. 2023060799.

Riverside County Planning Department. November 2024. Thermal Ranch Specific Plan Project Draft Environmental Impact Report SCH No. 2023050624.

Riverside County Planning Department. March 4, 2025. Arroyo Vista Tentative Tract Map No. 38510 Draft Environmental Impact Report SCH No. 2023030118.

Rob Bonta, Attorney General, State of California Department of Justice. Updated September 2022. Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act.

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South Coast Air Quality Management District. n.d. MATES V Data Visualization Tool. Accessed February 7, 2025. https://experience.arcgis.com/experience/79d3b6304912414bb21ebdde80100b23/page/Main-Page/?views=Cancer-Risk%2CClick-the-map-to-see-data#data_s=id%3AdataSource_105-a5ba9580e3aa43508a793fac819a5a4d%3A469.

United States Census Bureau. n.d. QuickFacts, Brea city, California. Accessed April 14, 2025. https://www.census.gov/quickfacts/lahabracitycalifornia.

United States Census Bureau. n.d. QuickFacts, Yorba Linda city, California. Accessed April 14, 2025. https://www.census.gov/quickfacts/yorbalindacitycalifornia.

APPENDIX A:
TRAFFIC IMPACT ASSESSMENT

TRAFFIC IMPACT ASSESSMENT FOR

Brea Delivery Station

DATE:
September 23, 2024

LOCATION:
Brea, California

PREPARED FOR:
City of Brea

PREPARED BY:
NV5 Engineers & Consultants 15092
Avenue of Science, Suite 200
San Diego, CA 92128

nv5.com

Executive Summary

The applicant is proposing to demolish an existing 637,503-square-foot office building, and adjacent surface parking lot, and then construct a 181,500-square-foot parcel delivery facility, consisting of 163,350 square feet of warehouse space and 18,150 square feet of ancillary office space, delivery van queuing area, and surface parking lots (Project). The new e-commerce delivery station would be developed on a 31.6-acre parcel along Valencia Avenue in Brea, California (Project Site). Figure 1 depicts the Project Site location in the City of Brea (City). This traffic impact assessment has been prepared to adhere to the City's Transportation Impact Analysis Guidelines, dated September 2020 (TIA Guidelines).

The existing vacant building on the Project Site was recently occupied by Bank of America (BofA) and used as a commercial office building. The Project is consistent with the Project Site's land use designation and zoning, under the City's General Plan and Zoning code, of light industrial and mixed use. The site plan for the Project is provided in Appendix A.

Two existing driveways along Valencia Avenue are proposed to be closed. Access to the Project Site will be provided by six driveways located along Valencia Avenue (two), Nasa Street (one), and Surveyor Avenue (three). The driveways are anticipated to operate efficiently as side street stop-controlled intersections. The operations for the Project are unique, with peak operations occurring mostly outside of standard peak commuting hours (7:00 – 9:00 AM; 4:00 – 6:00 PM) to avoid impacts to the local roadway network and increase efficiency of Project Site operations. Per the 24-hour schedule provided by the end-user, a total of 2,222 daily *passenger car equivalent* trips are expected.[1]

Based on consultation with the City, 4-5% percent of the daily traffic from the Project was assumed to occur during the AM peak hours to provide a conservative estimate for Project operations. As a result, the analysis evaluates the potential impacts of a Project that would generate 98 trips (48 entering, 50 exiting) during the AM peak hour and 123 trips (83 entering, 40 exiting) during the PM peak hour. The Project is anticipated to be complete by 2027.

An analysis of the Project, pursuant to the TIA Guidelines, determined that the Project cannot be screened out from a vehicle-miles traveled (VMT) analysis for purposes of California Environmental Quality Act (CEQA) review because the Project does not meet the following criteria: transit priority areas screening, low VMT-generating areas screening, or project type screening. Thus, NV5 completed an assessment using VMT per service population in combination with delivery van and truck VMT to compare the Project VMT.

[1] Passenger Car Equivalents account for the effects of tractor-trailers; one tractor-trailer equals three autos. The actual expected daily volume is 2,098 vehicle.

The Project will support nearby delivery stations and is anticipated to shorten the length of delivery trips, which has been considered in the analysis. Moreover, the prior BofA use and occupancy on the Project Site was considered when calculating the Project's comparative VMT. The result of the analysis is that the Project will have no net increase in VMT over the prior use. The VMT memorandum is provided in Appendix B.

As part of local transportation requirements, the TIA Guidelines require level of service (LOS) assessment for the Project, and this traffic assessment includes an LOS analysis accordingly. However, note that the LOS analysis is for lead agency consideration of the Project, but is not the required method of analysis to measure potential environmental impacts under CEQA.

Per consultation with the City Traffic Engineer, the traffic impact assessment includes LOS analysis in the Existing (2022), Existing Plus Project (2022), Opening Year (2027), and Opening Year Plus Project (2027) scenarios. Analyses were completed at the following intersections utilizing Synchro 12 software:

1. Valencia Avenue / Imperial Highway
2. Valencia Avenue / Nasa Street – La Floresta Drive
3. Valencia Avenue / La Entrada Drive
4. Valencia Avenue / E Birch Street – N Rose Drive
5. Valencia Avenue / E Lambert Road - Carbon Canyon Road
6. Enterprise Street / Voyager Avenue
7. E Birch Street / Voyager Avenue
8. E Birch Street / Ranger Street
9. Surveyor Avenue / Nasa Street
10. Project Driveway 1 (D1) / Valencia Avenue
11. Project Driveway 2 (D2) / Valencia Avenue
12. Project Driveway 3 (D3) / Nasa Street
13. Project Driveway 4 (D4) / Surveyor Avenue
14. Project Driveway 5 (D5) / Surveyor Avenue
15. Project Driveway 6 (D6) / Surveyor Avenue

Summary of Levels of Service by Analysis Period

#	Intersection	Level of Serivce (Delay)							
		Existing Yr No-Build		Existing Yr Build		Opening Yr No-Build		Opening Yr-Build	
		AM	PM	AM	PM	AM	PM	AM	PM
1	Valencia Ave / Imperial Hwy[1]	D (38.7)	D (42.5)	D (38.6)	D (42.7)	D (38.1)	D (41.9)	D (38)	D (42.2)
2	Valencia Ave / Nasa St – La Floresta Dr[1]	C (33.4)	C (29.9)	C (33.9)	C (28.7)	C (33.7)	C (27.7)	D (38.2)	C (30.2)
3	Valencia Ave / La Entrada Dr[1]	A (2.6)	A (3.2)	A (2.6)	A (3.2)	A (2.5)	A (3.2)	A (2.4)	A (2.9)
4	Valencia Ave / E Birch St – N Rose Dr[1]	F (83.7)	F (118.9)	F (83.2)	F (118.6)	F (86.1)	F (130.1)	F (85.6)	F (129.9)

#	Intersection	Level of Serivce (Delay)							
		Existing Yr No-Build		Existing Yr Build		Opening Yr No-Build		Opening Yr-Build	
		AM	PM	AM	PM	AM	PM	AM	PM
5	Valencia Ave / E Lambert Rd - Carbon Canyon Rd[1]	E (69.5)	E (57.1)	E (73.2)	E (59.8)	E (72.8)	E (65.6)	E (76.7)	E (68.5)
6	Enterprise St / Voyager Ave[2]	A (9.6)	A (9.4)	A (9.8)	A (9.4)	A (9.7)	A (9.5)	A (9.9)	A (9.5)
7	E Birch St / Voyager Ave[1]	C (28.3)	C (25.6)	C (27.8)	C (25.6)	C (27.7)	C (24.5)	C (27.3)	C (24.5)
8	E Birch St / Ranger St[1]	C (30.5)	C (27.9)	C (30.5)	C (27.9)	C (29.7)	C (27.2)	C (29.6)	C (27.2)
9	Surveyor Ave / Nasa St[2]	A (9.1)	A (9.1)	A (9.3)	A (9.1)	A (9.3)	A (9.5)	A (9.6)	A (9.6)
10	Project Dwy 1 / Valencia Ave[2]	-	-	A (0)	A (0)	-	-	A (0)	A (0)
11	Project Dwy 2 / Valencia Ave[2]	-	-	A (0)	A (9.6)	-	-	A (0)	A (9.7)
12	Project Dwy 3 / Nasa St[2]	-	-	A (0)	A (9.3)	-	-	A (0)	A (9.5)
13	Project Dwy 4 / Surveyor Ave[2]	-	-	A (7.4)	A (0)	-	-	A (7.4)	A (0)
14	Project Dwy 5 / Surveyor Ave[2]	-	-	A (9.3)	A (0)	-	-	A (9.3)	A (0)
15	Project Dwy 6 / Surveyor Ave[2]	-	-	A (0)	A (0)	-	-	A (0)	A (0)

#	Intersection	Level of Serivce (ICU)							
		Existing Yr No-Build		Existing Yr Build		Opening Yr No-Build		Opening Yr-Build	
		AM	PM	AM	PM	AM	PM	AM	PM
1	Valencia Ave / Imperial Hwy[1]	A (0.455)	A (0.446)	A (0.458)	A (0.459)	A (0.495)	A (0.490)	A (0.499)	A (0.502)
2	Valencia Ave / Nasa St – La Floresta Dr[1]	A (0.296)	A (0.302)	A (0.301)	A (0.309)	A (0.323)	A (0.334)	A (0.328)	A (0.341)
3	Valencia Ave / La Entrada Dr[1]	A (0.251)	A (0.243)	A (0.251)	A (0.246)	A (0.268)	A (0.261)	A (0.267)	A (0.264)
4	Valencia Ave / E Birch St – N Rose Dr[1]	B (0.672)	E (0.949)	B (0.68)	E (0.951)	C (0.707)	F (1.003)	C (0.715)	F (1.006)
5	Valencia Ave / E Lambert Rd - Carbon Canyon Rd[1]	A (0.582)	A (0.554)	A (0.595)	A (0.561)	B (0.626)	A (0.598)	B (0.638)	B (0.606)
7	E Birch St / Voyager Ave[1]	A (0.304)	A (0.314)	A (0.309)	A (0.314)	A (0.327)	A (0.334)	A (0.330)	A (0.334)
8	E Birch St / Ranger St[1]	A (0.337)	A (0.343)	A (0.337)	A (0.358)	A (0.352)	A (0.364)	A (0.359)	A (0.364)

Based on intersection capacity analysis results utilizing Highway Capacity Manual (HCM) 7th Edition methodology, all study area intersections operate at an acceptable LOS D or better under the Existing, Existing Plus Project, Opening Year, and Opening Year Plus Project scenarios, with the exception of the intersections of Valencia Avenue / E Birch Street – N Rose Drive (INT 4) and Valencia Avenue / E Lambert Road – Carbon Canyon Road (INT 5). These intersections operate at LOS F and E, respectively, during both peak hours in all scenarios. Increases to delay upon the introduction of Project traffic does not exceed the applicable City thresholds and thus the Project is not deemed to have an effect on traffic operations based upon HCM analysis.

The Valencia Avenue / E Birch Street – N Rose Drive intersection also operates at an Intersection Capacity Utilization (ICU) LOS F during the PM peak hour under all analysis scenarios. As the addition

of Project traffic does not exceed City thresholds, the Project is considered to not have an effect on traffic operations within the study area per ICU analysis.

The City considers the need for potential project-related improvements based on the impacts of Project-generated traffic on the road network. The TIA Guidelines state that an effect on traffic operations occurs if the project causes one or more study intersections that operate at LOS D or better to degrade to LOS E or F; for intersections already operating at LOS E a change in control delay of 4 seconds and for intersections operating at F a change in control delay of 2 seconds shall be considered unacceptable and cause an effect on traffic operations. Also, per City guidance, an increase in ICU at a signalized intersection by 0.020 or greater if the intersection is expected to operate at LOS E or F

All driveways perform at LOS A or better, indicating minimal delays when entering and exiting the Project Site. As increases to delay and ICU caused by the addition of Project traffic at each intersection does not exceed the City applicable thresholds, the Project is not deemed to have an overall effect on traffic operations and thus, improvements are not required.

The 95th percentile queues exceed storage lengths provided at the intersection of Valencia Avenue / E Lambert Road - Carbon Canyon Road along the northbound left and right turn movements during the PM peak hour in all analysis scenarios. As the addition of Project traffic is responsible for less than 2% of the northbound approach volumes, Project related improvements are not recommended at this intersection.

TABLE OF CONTENTS

Executive Summary i
A. Introduction 1
A.1. Project Overview 1
A.2. Site Location 3
A.3. Site Access Analysis 3
A.4. Study Area 6
B. Analysis Approach and Methodology 8
B.1. Level of Service Methodology, Thresholds and Study Scenarios 8
B.2. Project Analysis Requirements 9
C. Existing Conditions (2022) 11
C.1. Existing Traffic Volumes 11
C.2. Existing Conditions Traffic Analysis 11
C.3. Bicycle and Pedestrian Facilities 14
C.4. Transit Service 16
D. Project Traffic 18
D.1. Project Description 18
D.2. Trip Generation 18
D.3. Project Trip Distribution and Assignment 19
D.4. Parking and Circulation 20
E. Existing Plus Project Conditions (2022) 29
E.1. Existing Plus Project Traffic Analysis 29
F. Opening Year Conditions (2027) 32
F.1. Background Ambient Growth 32
F.2. Cumulative Projects 32
F.3. Opening Year Traffic Analysis 32
G. Opening Year Plus Project Conditions (2027) 35
G.1. Opening Year Plus Project Traffic Analysis 35
H. Safety Review 38
H.1. Queue Comparison 38
H.2. Collision Statistics 40
I. Findings and Recommendations 41
I.1. Recommended Improvements 42

LIST OF TABLES

Table 1: HCM Methodology LOS Criteria for Intersections 8
Table 2: ICU Methodology LOS Criteria for Signalized Intersections 9
Table 3: Existing Conditions (2022) HCM Intersection Capacity Summary 11
Table 4: Existing Conditions (2022) Intersection Capacity Utilization Summary 11
Table 5: Project Trip Generation 18
Table 6: Project Trip Generation 19
Table 7: Existing Plus Project Conditions (2022) HCM Intersection Capacity Summary 29
Table 8: Existing Plus Project Conditions (2022) Intersection Capacity Utilization Summary 29
Table 9: Opening Year Conditions (2027) HCM Intersection Capacity Summary 33
Table 10: Opening Year Conditions (2027) Intersection Capacity Utilization Summary 33
Table 11: Opening Year Plus Project Conditions (2027) HCM Intersection Capacity Summary 35
Table 12: Opening Year Plus Project Conditions (2027) Intersection Capacity Utilization Summary . 35
Table 13: Queue Comparison 38
Table 14: Collision Severity Summary 40
Table 15: Collision Type Summary 40

LIST OF FIGURES

Figure 1: Service Area Map 3
Figure 2: Vicinity Map 4
Figure 3: Site Plan 5
Figure 4: Project Study Area 7
Figure 5: Existing (2022) Traffic Volumes 13
Figure 6: Existing and Proposed Bike Facilities 15
Figure 7: Existing Sidewalk and Sidewalk Gaps 16
Figure 8: Existing Transit 17
Figure 9: Service Area Map 20
Figure 10: Project Primary Trips 22
Figure 11: Passenger Vehicle Trip Distribution 23
Figure 12: Passenger Vehicle Primary Trips 24
Figure 13: Van Trip Distribution 25
Figure 14: Van Primary Trips 26
Figure 15: Truck Trip Distribution 27
Figure 16: Truck Primary Trips 28
Figure 17: Existing Plus Project (2022) Traffic Volumes 31
Figure 18: Opening Year (2027) Traffic Volumes 34
Figure 19: Opening Year (2027) Plus Project Traffic Volumes 37

TECHNICAL APPENDIX

Appendix A: Site Plan and Scoping Memorandum
Appendix B: Vehicle Miles Traveled Memorandum
Appendix C: Site Specific Trip Generation
Appendix D: Existing Traffic Counts
Appendix E: Synchro Analysis Reports
Appendix F: Intersection Capacity Utilization Reports
Appendix G: Background Growth & Cumulative Projects
Appendix H: Crash Data

A. Introduction

The applicant is proposing to demolish an existing 637,503-square-foot office building, and adjacent surface parking lot, and then construct a 181,500-square-foot parcel delivery facility, consisting of 163,350 square feet of warehouse space and 18,150 square feet of ancillary office space, delivery van queuing area, and surface parking lots (Project). The new delivery station would be developed on a 31.52-acre parcel along Valencia Avenue in Brea, California (Project Site). Figure 1 indicates the approximate location of the Project Site in the City of Brea (City). The Project's site plan is provided in Appendix A.

NV5 Inc., prepared this traffic impact assessment to determine the expected amount of traffic added to the adjacent roadway network due to the Project and identify any improvements that may be required to alleviate capacity or queuing issues resulting from the addition of Project traffic to the roadway network. In addition, per the City of Brea Transportation Impact Analysis Guidelines published on September 2020, (TIA Guidelines) NV5 analyzed potential impacts from Vehicle Miles Travelled (VMT) and determined that the Project cannot be screened out from VMT analysis because the Project does not meet the following criteria: transit priority areas screening, low VMT-generating areas screening, or project type screening. Therefore, this report also contains a VMT analysis of the Project.

This report was developed for the City's consideration and is based on the Project characteristics in scoping agreement and assignments for the truck, van, and car trips. The Project Site and surrounding roadway network were inspected to obtain an existing inventory of roadway geometry, traffic control, and surrounding land uses. Existing traffic conditions were determined by obtaining intersection turning movement counts (TMCs) at key locations in the vicinity of the Project Site during the weekday morning and evening peak hours.

- Project generated trips were assigned to the local roadway network based on existing local and regional land uses.
- Capacity analyses were conducted for: Existing (2022), Existing Plus Project (2022), Opening Year (2027), and Opening Year (2027) Plus Project scenarios throughout the study area.
- Potential improvements were identified to alleviate any operational deficiencies, if necessary.

A.1. Project Overview

The Project will construct a 181,500 square foot delivery station, with a targeted build-out date of 2027. The Project Site's current zoning (Light Industrial and Mixed Use) permits the proposed use. The delivery station will serve as a package sorting and loading facility and will provide 13 line-haul truck docks and 1,067 parking stalls serving 306 personal vehicles, 757 delivery vans and 4 line-haul trucks. While delivery vans will park onsite overnight, trucks are not anticipated to park overnight. See Attachment A for the Project's location and site plan.

Delivery stations operate 24/7 to support delivery of packages to customer locations between 10:00 AM and 9:00 PM. There will be 160 associates, 49 managers, and 36 support personnel support this

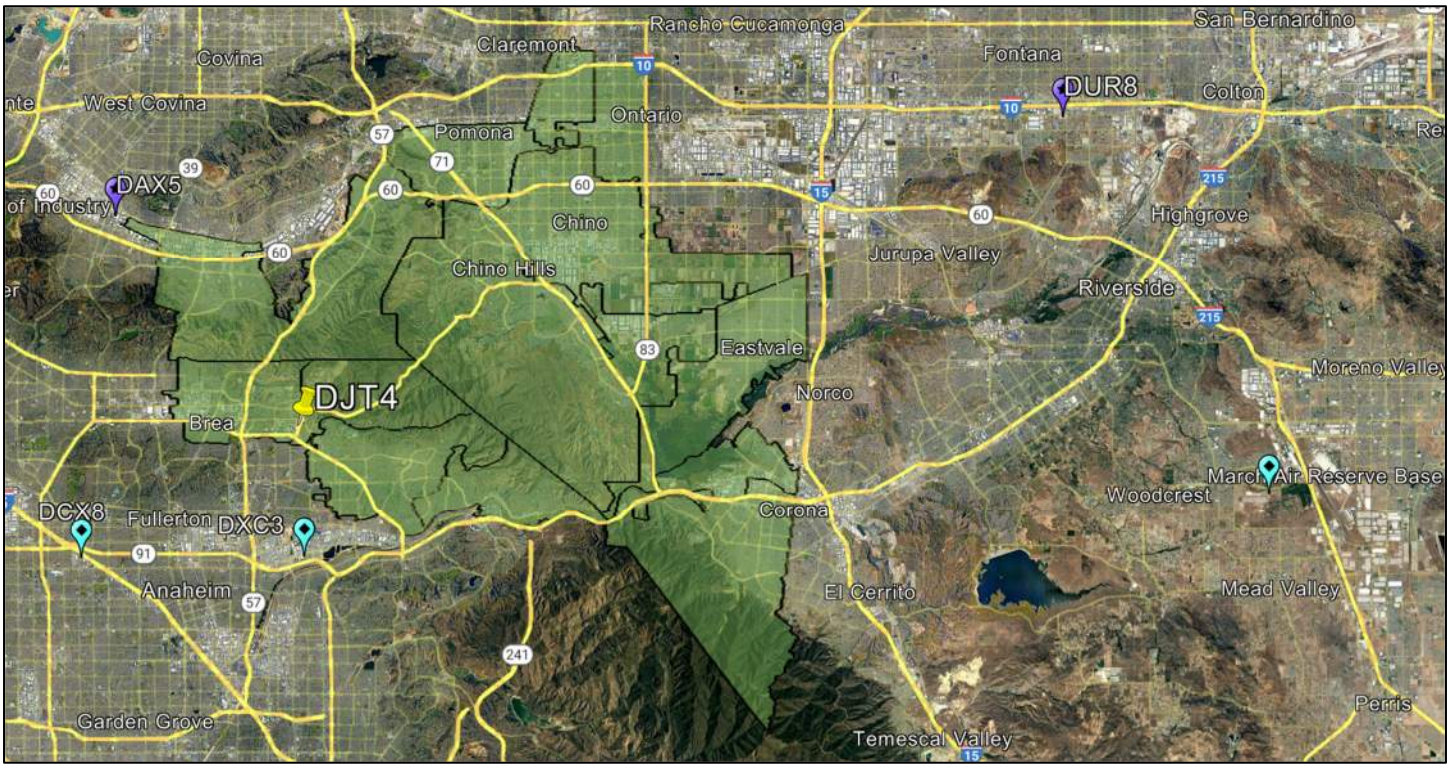
operation. The operations are designed to minimize the potential for traffic impacts during rush hour periods.

The delivery drivers arrive at the delivery station around 9:20 AM. Starting at 9:50 AM and ending at 11:10 AM, 345 delivery vans will load and depart from the delivery station at a rate of up to 90 vans per 20 minutes to facilitate a regulated traffic flow into the surrounding area. The first wave of delivery vans leaves at 10:10am. The departure window is designed to minimize impact on rush hour periods. Approximately 8-10 hours after dispatch, delivery routes are completed, and the vans return to the station between 8:10 PM and 9:50 PM. The drivers park the delivery vans onsite and leave using a personal vehicle or other mode of transport.

At the proposed delivery station, approximately 31 line-haul trucks are expected to deliver packages to the delivery station each day. The line-haul trucks will primarily arrive at the site between the hours of 10:00 PM and 8:00 AM. Trucks enter the site via Nasa Street and Surveyor Avenue on the west side of the building, traveling north from Valencia Avenue, (Note, this is the only permitted truck route to/from the site.) Once trucks are unloaded, the trucks continue to the next delivery station and do not return to the site. The customer packages are sorted by address groupings, assigned to the delivery routes, placed onto movable racks, and staged for dispatch.

This report analyzes potential operational impacts of the Project on the surrounding existing and future roadway networks. The report also documents and discloses the major inputs and assumptions behind trip generation, trip distribution, trip assignments, and future roadways, as well as provides recommendations for certain infrastructure improvements. National Data & Surveying Services (NDS) collected turning movement counts (TMCs) for the applicable study intersections on October 6, 2022, during the windows of 7:00 – 9:00 AM and 4:00 – 6:00 PM to establish existing peak hour volumes. Traffic counts are provided in Appendix D. The expected service area for the new delivery station is shown in Figure 1.

Figure 1: Service Area Map



A.2. Site Location

The Project Site is bounded by Valencia Avenue to the east, Nasa Street to the south, and Surveyor Avenue to the west. The General Plan identifies the surrounding land uses in the area as light industrial, mixed use, business parks, and residential. Figure 2 illustrates the Project Site location within the city. The site plan is provided in Figure 3 and in Appendix A.

A.3. Site Access Analysis

Access to the Project Site is provided by six existing driveways, with separate driveways serving passenger vehicles, delivery vans, and line-haul trucks.

Passenger vehicles: Two of the existing driveways on the Project Site are dedicated to passenger vehicles: one along Nasa Street (D3) and the other at an existing driveway along Valencia Avenue (D2). While the existing driveway along Valencia Avenue will be right-out only, the existing driveway along Nasa Street will provide full access. Driveway 2 should be designed such that inbound movements are restricted. The curb radii for these driveways can accommodate a passenger vehicle; the turning movements are shown on the site civil plans and in Appendix A.

Delivery vans: Four of the existing driveways on the Project Site will be utilized by delivery vans on Surveyor Avenue and Valencia Avenue. Vans will enter an existing driveway on Surveyor Avenue (D4) and Valencia Avenue (D1) and will park onsite overnight. Once delivery shifts begin, vans will queue on both sides of the building to load packages. Once loaded, vans will exit the Project Site utilizing

the other two existing driveways along Surveyor Avenue (D5, D6). The curb radii for these can accommodate delivery vans – as shown on the civil site plans in Appendix A.

Line-haul trucks: Line-haul trucks will enter and exit the Project Site via an existing driveway on Surveyor Avenue (D6). The curb radius for this driveway can accommodate WB-67 trucks. Truck turning templates are shown on the site plan in Appendix A.

Two existing driveways will be permanently closed under the new site layout. The driveway connecting to the intersection of Valencia Avenue / La Entrada Drive and the driveway directly south of said intersection will be closed. The closure will require modification of the curb, gutter sidewalk, median, traffic signal and traffic controls. Driveways are indicated on the site plan illustrated in Figure 3. A full-size site plan is provided in Appendix A.

Figure 2: Vicinity Map

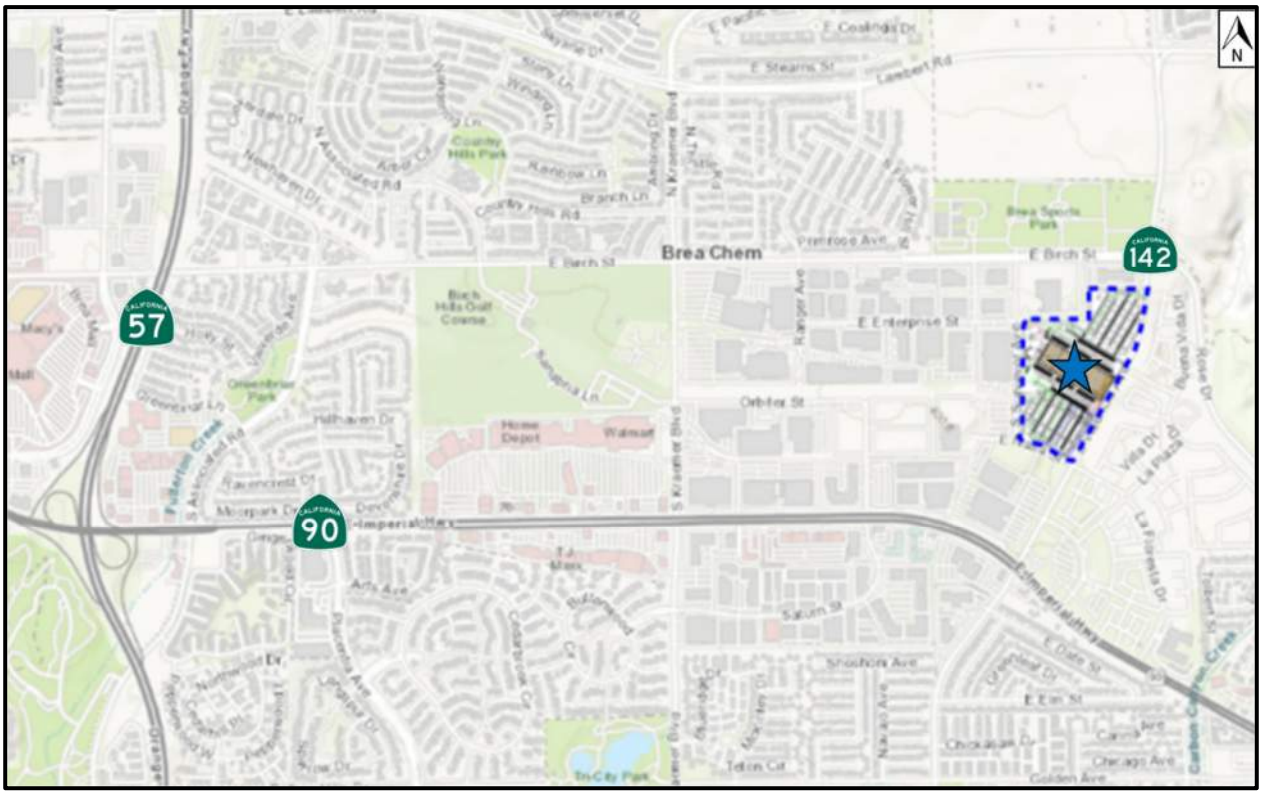
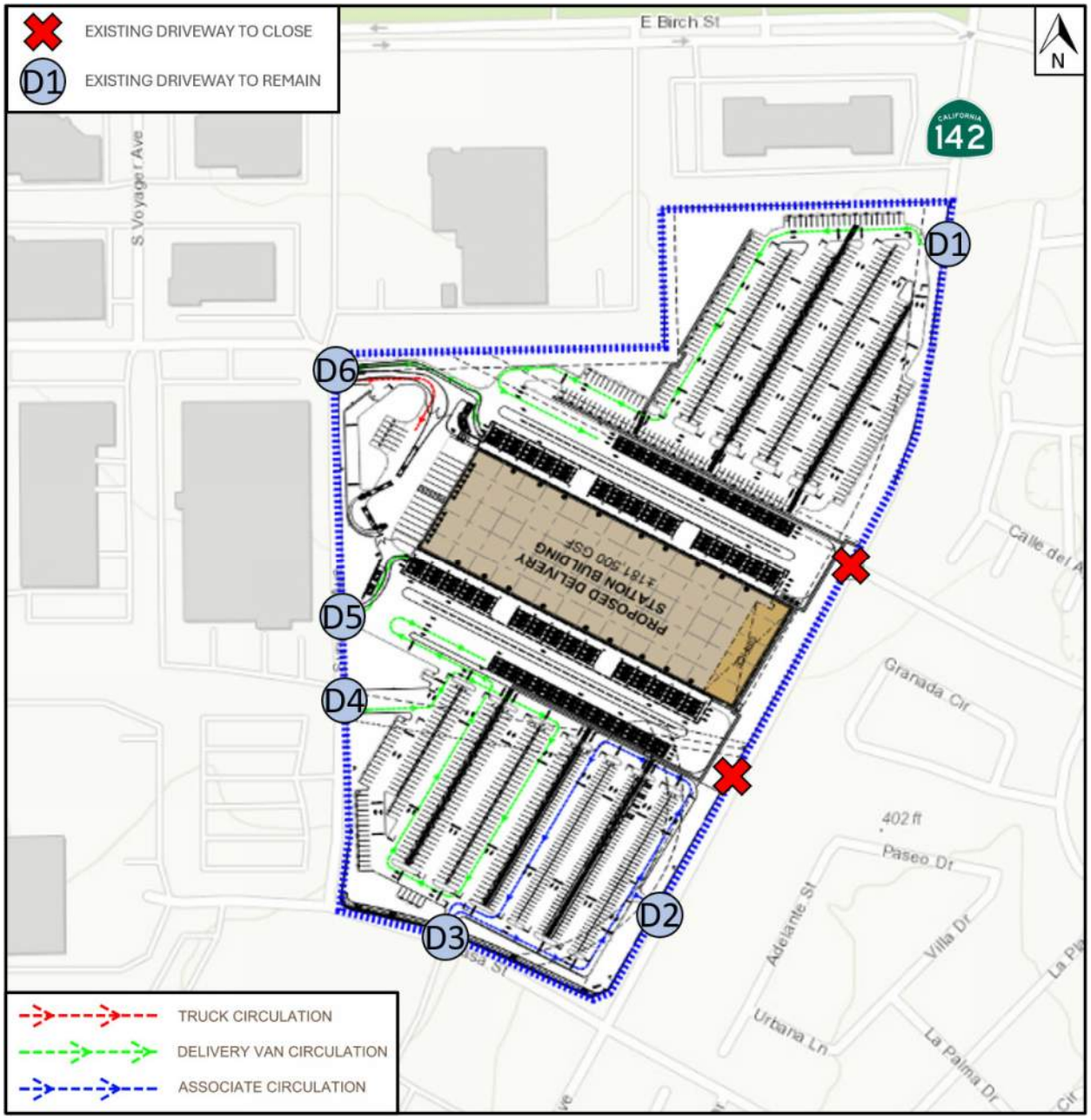


Figure 3: Site Plan



It is important to note that closure of the two driveways on Valencia Avenue will require coordination with Caltrans. The site plan includes modifications of the curb & gutter, sidewalk, and median. The traffic signal at Valencia Avenue and La Entrada Drive will also require modification as a result of the driveway opposite La Entrada Drive closing.

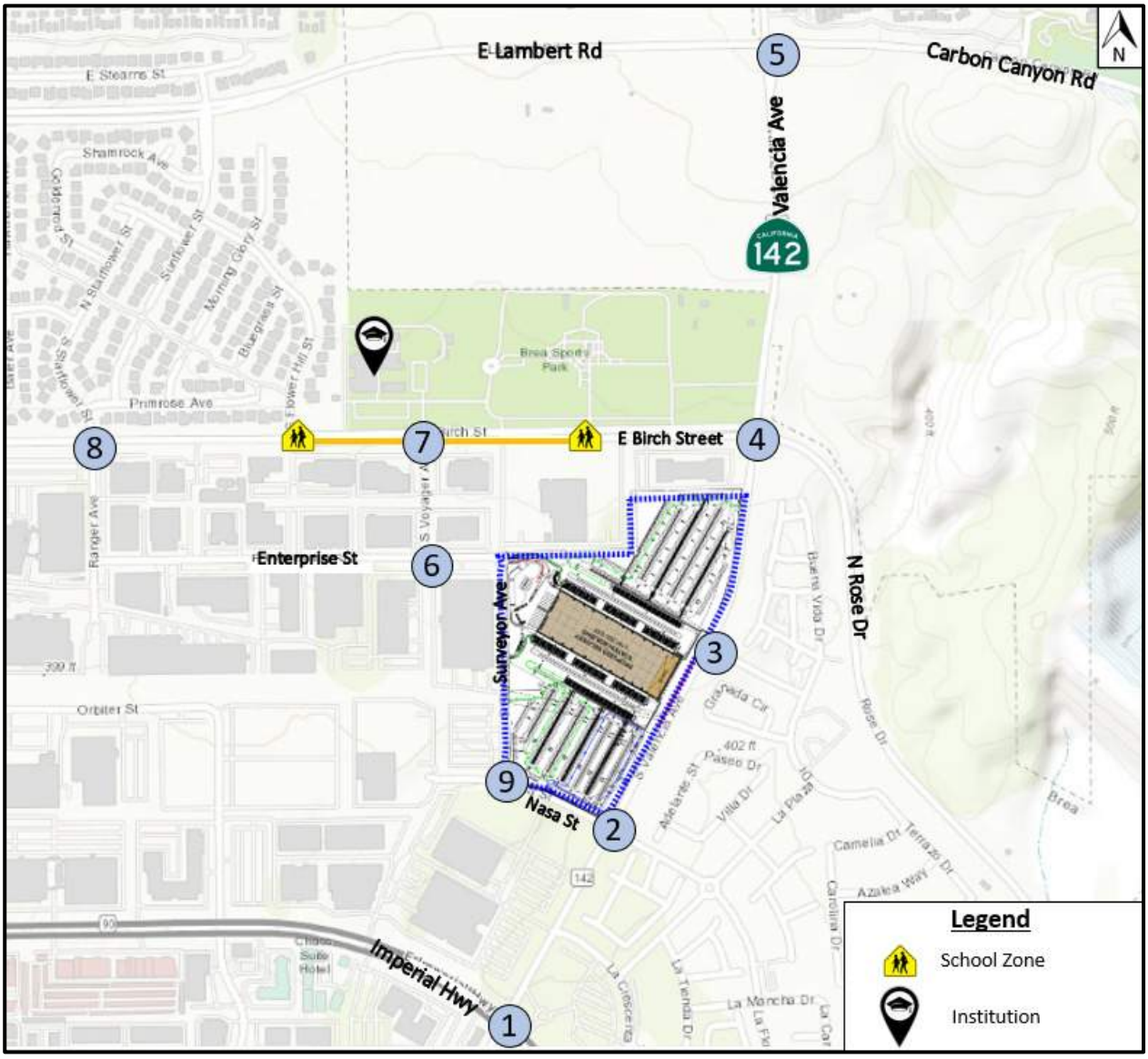
A.4. Study Area

This traffic assessment analyzes potential operational and level of service deficiencies that could result from the addition of traffic from the Project onto the local circulation system. The study area contains intersections that Project traffic may use. Based on discussions with City staff, and traffic modeling methodologies, the following nine intersections and six driveways were analyzed:

1. Valencia Avenue / Imperial Highway
2. Valencia Avenue / Nasa Street – La Floresta Drive
3. Valencia Avenue / La Entrada Drive
4. Valencia Avenue / E Birch Street – N Rose Drive
5. Valencia Avenue / E Lambert Road - Carbon Canyon Road
6. Enterprise Street / Voyager Avenue
7. E Birch Street / Voyager Avenue
8. E Birch Street / Ranger Street
9. Surveyor Avenue / Nasa Street
10. Project Driveway 1 (D1) / Valencia Avenue
11. Project Driveway 2 (D2) / Valencia Avenue
12. Project Driveway 3 (D3) / Nasa Street
13. Project Driveway 4 (D4) / Surveyor Avenue
14. Project Driveway 5 (D5) / Surveyor Avenue
15. Project Driveway 6 (D6) / Surveyor Avenue

The project study area is illustrated in Figure 4.

Figure 4: Project Study Area



B. Analysis Approach and Methodology

This section summarizes the analysis approach and methodology used to evaluate the study intersections associated with the Project. The analysis is consistent with the TIA Guidelines. Senate Bill 743 (SB743) became effective in July 2020 and changed the law regarding how traffic impacts are analyzed. A key element of SB743 is the elimination of auto delay, level of service (LOS) and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts of a project under the California Environmental Quality Act (CEQA). The City may still require a transportation impact analysis based on LOS and related criteria, as part of project approvals, but such analysis is not required per the law as part of the CEQA process. Also, SB743 instituted a new method for analyzing traffic impacts for CEQA purposes, known as VMT, which is explained in Section B.2 below and applies to the Project.

B.1. Level of Service Methodology, Thresholds and Study Scenarios

The traffic assessment includes LOS and intersection capacity utilization (ICU) analysis for the Existing Conditions (2022) , Existing Plus Project Conditions (2022) , Opening Year (2027) , and Opening Year (2027) Plus Project scenarios. LOS was determined at the study area intersections during AM and PM peak hours. The analysis in each of the scenarios for the study was performed using the traffic analysis software Synchro 12, which was the latest analysis software available at the time the Project was scoped with the City. Signal timing in all analysis scenarios reflect provided signal timing plans. Average vehicular delays (in seconds) are calculated and reported as LOS as defined by the Highway Capacity Manual (HCM) 7th Edition. Table 1 displays the LOS criteria for unsignalized and signalized intersections.

Table 1: HCM Methodology LOS Criteria for Intersections

Level of Service (LOS)	Unsignalized Intersection Delay (sec/veh)	Signalized Intersection Delay (sec/veh)	Description
A	≤10	≤10	Little or no delay
B	>10 and ≤15	>10 and ≤20	Short traffic delays
C	>15 and ≤25	>20 and ≤35	Average traffic delays
D	>25 and ≤35	>35 and ≤55	Long traffic delays
E	>35 and ≤50	>50 and ≤80	Very long traffic delays
F	>50	>80	Severe congestion

The need for potential project-related improvements is assessed based upon impacts of Project traffic on the road network. A significant impact is deemed to occur if project traffic causes:

- An intersection already operating at LOS D or better to degrade to LOS E or F;
- A change in delay of 4+ seconds at any intersection already operating at LOS E;
- A change in delay of 2+ seconds at any intersection already operating at LOS F.

In addition to HCM capacity analysis, ICU was also analyzed at the signalized study area intersections during AM and PM peak hours. The ICU technique estimates the volume/capacity ratio (V/C) 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. Note that ICU methodology assumes uniform traffic distribution per intersection approach lane and optimal signal timing. The ICU value translates to a LOS estimate, which is a relative measure of the intersection performance. The ICU value is the sum of the critical V/C 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 LOS have been defined along with the corresponding ICU value range and are shown in Table 2.

Table 2: ICU Methodology LOS Criteria for Signalized Intersections

Level of Service (LOS)	ICU Value (V/C)	Description
A	≤0.600	Excellent. Intersection has no congestion.
B	0.601 to 0.700	Very good. Intersection has very little congestion.
C	0.701 to 0.800	Good. Intersection has no major congestion.
D	0.801 to 0.900	Fair. Intersection normally has no congestion.
E	0.901 to 1.000	Poor. Intersection is on the verge of congested conditions.
F	>1.000	Failure. Intersection is over capacity and congested.

The TIA Guidelines state that an effect on traffic operations occurs if the project causes one or more study intersections that operate at LOS D or better to degrade to LOS E or F; for intersections already operating at LOS E a change in control delay of 4 seconds and for intersections operating at F a change in control delay of 2 seconds shall be considered unacceptable and cause an effect on traffic operations. Also, per City guidance, an increase in ICU at a signalized intersection by 0.020 or greater if the intersection is expected to operate at LOS E or F

ICU calculations use a lane capacity of 1,700 vehicles per hour (vph) for through and turn lanes in accordance with Orange County's 2023 Congestion Mitigation Plan (CMP) guidance. A clearance adjustment factor of 0.05 was added to each calculation.

B.2. Project Analysis Requirements

As noted above, changes to the CEQA Guidelines were adopted in December 2018, which required all lead agencies to adopt VMT as a replacement for automobile delay-based LOS as the measure for identifying transportation impacts for land use projects. This statewide mandate went into effect July 1, 2020. The TIA Guidelines outline the shift in analysis methodologies to VMT and include local transportation analysis requirements. The TIA Guidelines outline scenarios in which a project is screened out from VMT analysis, however, the Project does not screen out because it: is not within a transit priority area; it is not within a low VMT-generating area; and it is not qualified project type listed in the TIA Guidelines. Therefore, NV5 analyzed the potential VMT impacts of the Project in this report.

NV5 completed a VMT assessment using VMT per service population in combination with delivery van and truck VMT to compare the Project VMT. The results show that the Project VMT is less than the VMT accounted for in the Orange County Transportation Authority Model (OCTAM) for the prior

land use on the Project Site, which was a Bank of America (BofA) office building. Therefore, there is no net increase in VMT as a result of the Project. The VMT memorandum is provided in Appendix B.

C. Existing Conditions (2022)

C.1. Existing Traffic Volumes

Turning movement counts were collected on October 6, 2022, from 7:00 – 9:00 AM and 4:00 – 6:00 PM to establish existing peak hour volumes and conditions.

C.2. Existing Conditions Traffic Analysis

Tables 3 and 4 present the Existing Conditions peak hour intersection operational analysis. Existing traffic volumes are illustrated on Figure 5. Existing traffic counts are provided in Appendix D. Synchro analysis worksheets are provided in Appendix E. ICU calculation sheets are provided in Appendix F.

Table 3: Existing Conditions (2022) HCM Intersection Capacity Summary

ID	Intersection	AM		PM	
		LOS	Delay	LOS	Delay
1	Valencia Avenue / Imperial Highway[1]	D	38.7	D	42.5
2	Valencia Avenue / Nasa Street – La Floresta Drive[1]	C	33.4	C	29.9
3	Valencia Avenue / La Entrada Drive[1]	A	2.6	A	3.2
4	Valencia Avenue / E Birch Street – N Rose Drive[1]	**F**	**83.7**	**F**	**118.9**
5	Valencia Avenue / E Lambert Road - Carbon Canyon Road[1]	**E**	**69.5**	**E**	**57.1**
6	Enterprise Street / Voyager Avenue[2]	A	9.6	A	9.4
7	E Birch Street / Voyager Avenue[1]	C	28.3	C	25.6
8	E Birch Street / Ranger Street[1]	C	30.5	C	27.9
9	Surveyor Avenue / Nasa Street[2]	A	9.1	A	9.1

[1] Existing Traffic Signal, LOS based on average for the intersection, delay in seconds/vehicle
[2] Stop Control Intersection, LOS reported for worst controlled approach, delay in seconds/vehicle

Table 4: Existing Conditions (2022) Intersection Capacity Utilization Summary

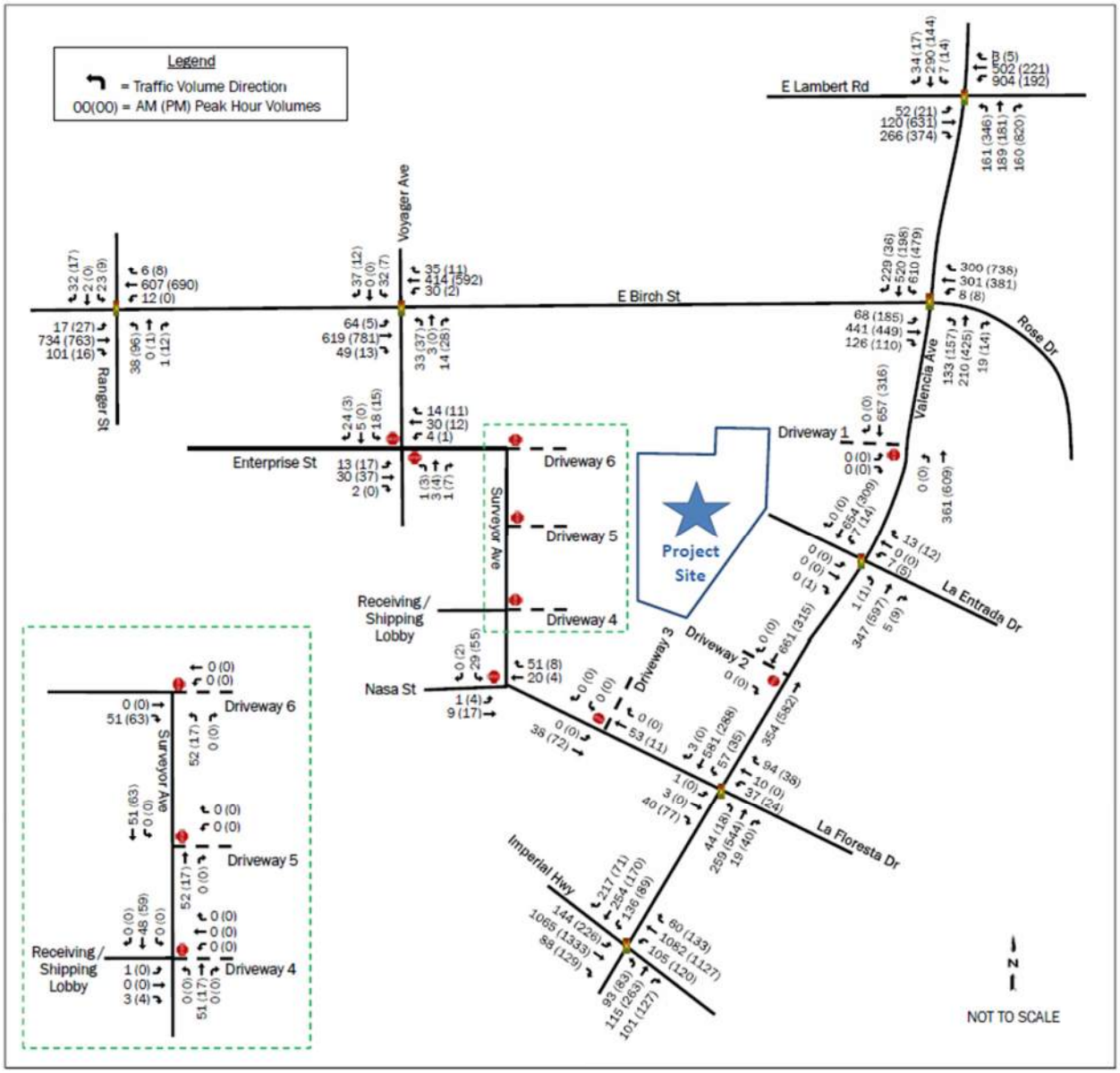
ID	Intersection	AM		PM	
		LOS	ICU	LOS	ICU
1	Valencia Avenue / Imperial Highway[1]	A	0.459	A	0.449
2	Valencia Avenue / Nasa Street – La Floresta Drive[1]	A	0.297	A	0.302
3	Valencia Avenue / La Entrada Drive[1]	A	0.251	A	0.243
4	Valencia Avenue / E Birch Street – N Rose Drive[1]	B	0.672	E	0.949
5	Valencia Avenue / E Lambert Road - Carbon Canyon Road[1]	A	0.582	A	0.554
7	E Birch Street / Voyager Avenue[1]	A	0.305	A	0.314
8	E Birch Street / Ranger Street[1]	A	0.337	A	0.343

[1] Existing Traffic Signal, LOS based on average for the intersection, delay in seconds/vehicle

As shown in Table 3, the study intersections operate at a satisfactory LOS D or better during both the AM and PM peak hours, with the exception of the Valencia Avenue / E Birch Street – N Rose Drive and Valencia Avenue / E Lambert Road – Carbon Canyon Road intersections, which operate at LOS F and E, respectively, during both peak hours.

Table 4 shows that the Valencia Avenue / E Birch Street – N Rose Drive intersection operates at a LOS E in the PM peak hour based on ICU analysis; all other intersections operate at an acceptable ICU during both peak hours.

Figure 5: Existing (2022) Traffic Volumes



C.3. Bicycle and Pedestrian Facilities

Existing bicycle and pedestrian facilities were documented. Bicycle facilities can be classified into one of the following four categories:

- Class I Bike Path: Off-street bike paths within exclusive right-of-way.
- Class II Bike Lane: Striped on-road bike lanes adjacent to the outside travel lane on preferred corridors for biking.
- Class III Bike Route: Shared on-road facility, usually delineated by signage. Bikeway facilities are limited near the project site.
- Class IV Protected Bike Lane / Cycle Track: Separated bike facility that includes a physical barrier separating the bike lane from the travel lanes.

The Brea Connecting the Core Active Transportation Plan adopted in January 2020 identifies The Tracks as a two-way multi-use path running east to west through the Brea Core Plan Area. The Tracks is approximately four miles in length and consists of a paved bikeway and separate pedestrian pathway on previous railroad facilities. The Tracks provides separate facilities for bicyclists and pedestrians to travel through the central part of the City before terminating on the west side of Surveyor Avenue adjacent to the project site. Class II bike lanes are present on both sides of Surveyor Avenue from The Tracks terminus to Nasa Street. No bike lanes exist north of The Tracks terminus. Class II bike lanes are present on both sides of Nasa Street from Surveyor Avenue to Valencia Avenue. Sidewalk is present along the west side of Surveyor Avenue to The Tracks. A pathway is located along the south of Nasa Street though utility obstructions are present. Limited sidewalk is provided along the project frontage and surrounding area.

Construction of the Project will eliminate existing privately provided vehicle, bicycle, and pedestrian connections between Surveyor Avenue and Valencia Avenue. As part of the improvements for the Project and for the new industrial building in the northwest corner of Nasa Street and Surveyor Avenue, the connection from The Tracks to Valencia will be reestablished. This will maintain safe circulation and access for pedestrians and bicycles. A separated bikeway will be constructed along the Project Site perimeter from the terminus of The Tracks to Valencia Avenue. The bike path is shown on the site plan in Appendix A. Figure 6 illustrates the existing and proposed bike facilities within the study area. Figure 7 illustrates the existing sidewalk and sidewalk gaps within the study area.

Figure 6: Existing and Proposed Bike Facilities

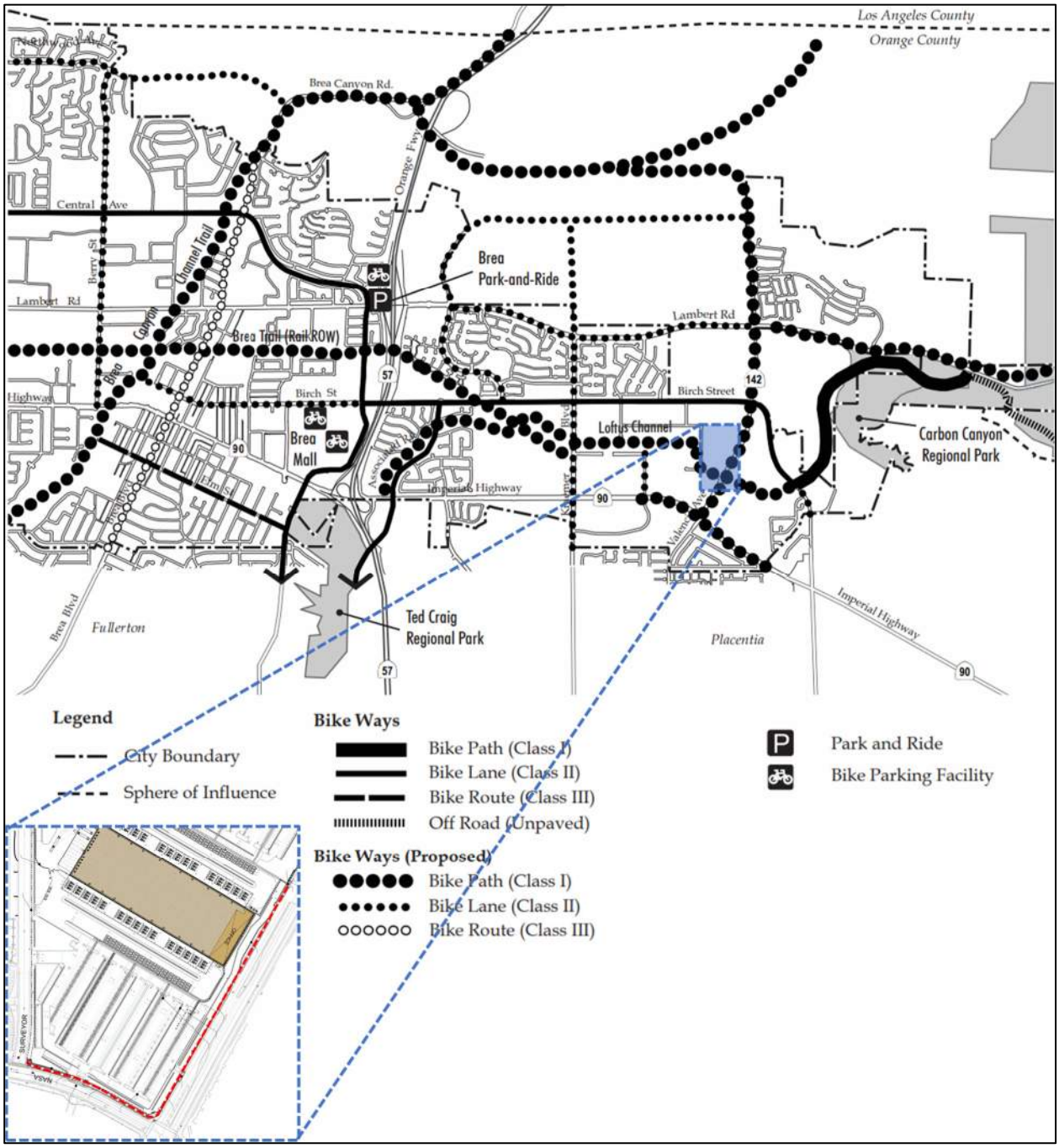
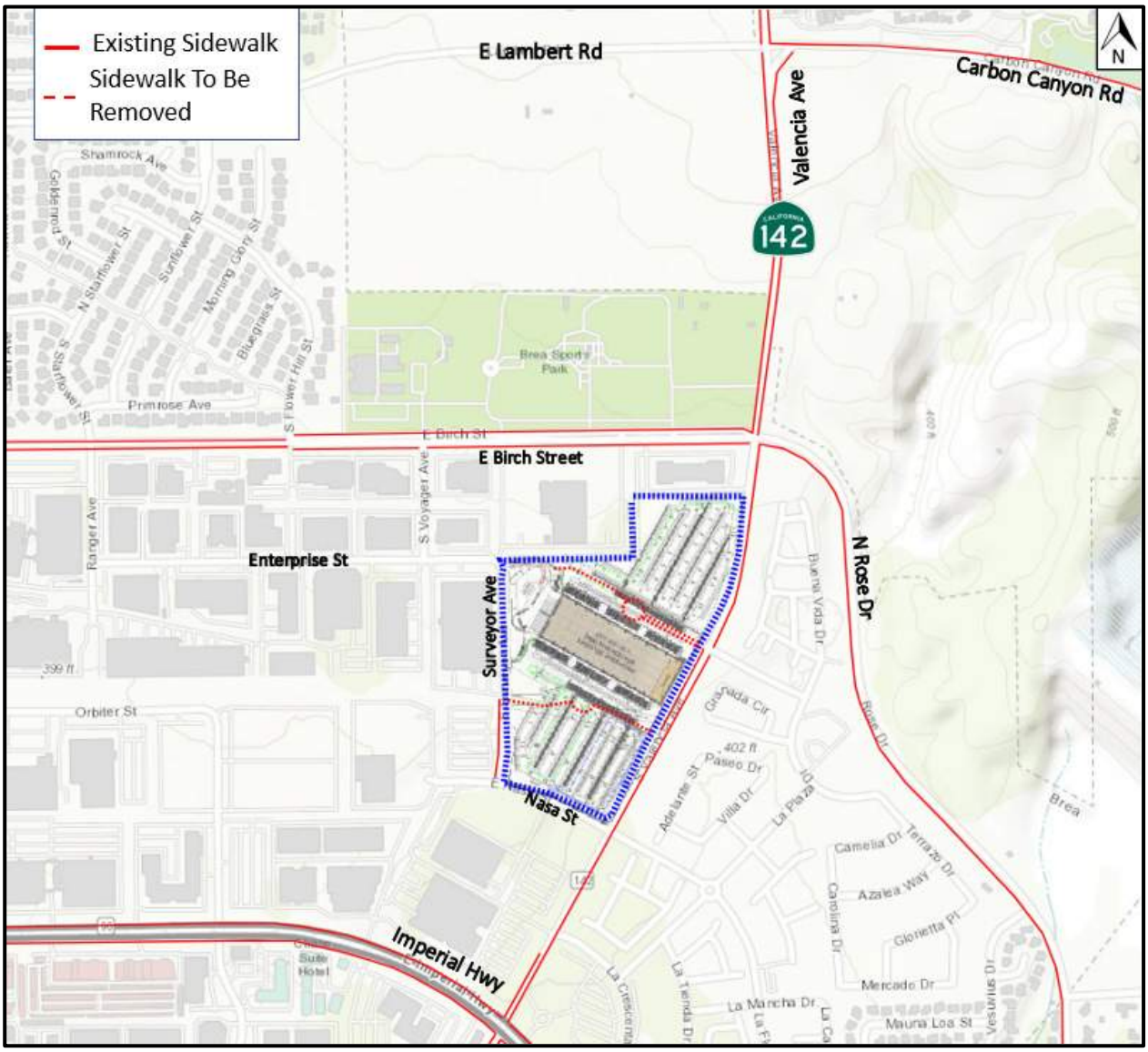


Figure 7: Existing Sidewalk and Sidewalk Gaps

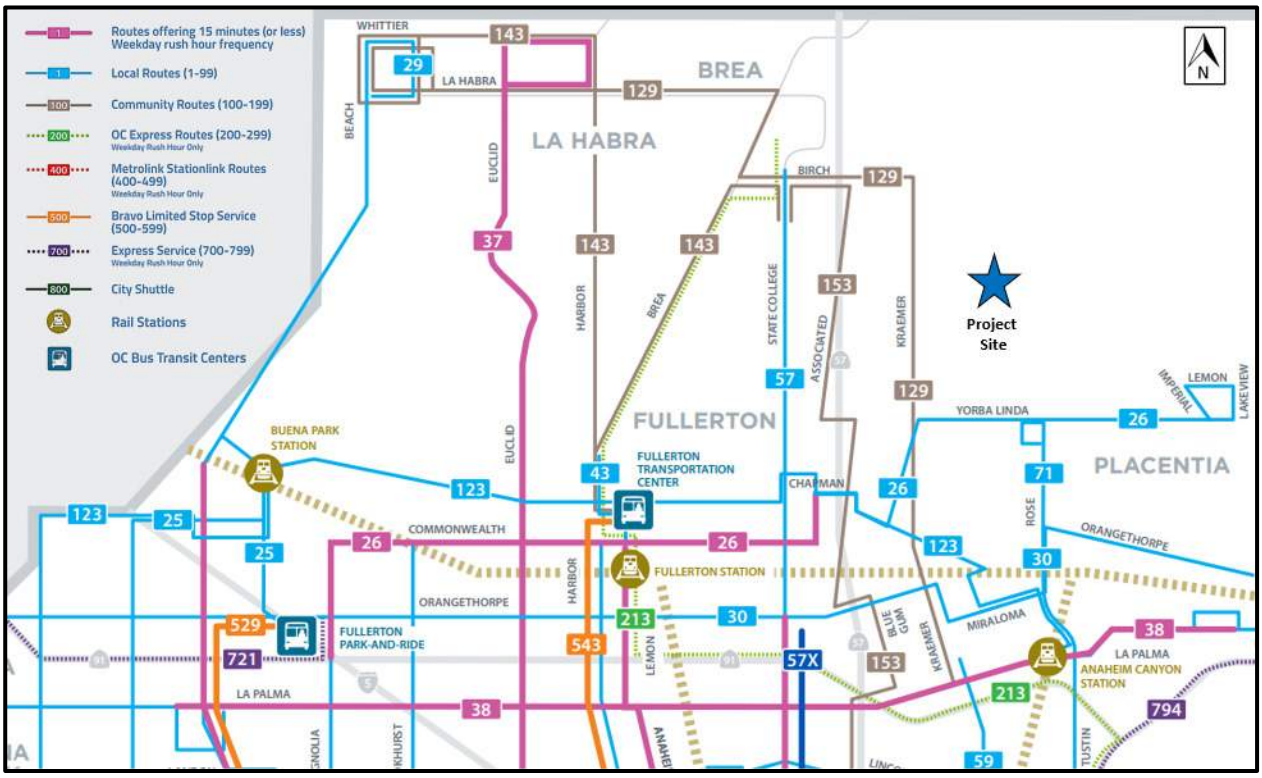


C.4. Transit Service

The City is served by Orange County Transportation Authority (OCTA) bus stations and other local transit. No bus or transit facilities exist within a half mile of the Project Site. Bus service was provided in this area in the past, and a bus turnout exists immediately adjacent to the Project Site at the intersection of Valencia Avenue / La Entrada Drive. The Project retains and lengthens this bus turnout in anticipation of a return of service to the area. Transit service is included in the City's General Plan.

The nearest active bus stop is over one mile from the Project Site located on E Birch Street and S Kraemer Boulevard. The stop is serviced by OCTA Route 129. Existing transit near the study area is illustrated in Figure 8.

Figure 8: Existing Transit



D. Project Traffic

This section describes the Project, forecasted trip generation, trip distribution, and trip assignments on the adjacent roadway network.

D.1. Project Description

The proposed delivery station will occupy a 31.52-acre lot and is consistent with the land use designation in the Brea Zoning and Regulations. The Project will replace an existing office building with a 181,500 square foot delivery station, serving as a package sorting and loading facility.

D.2. Trip Generation

The operations for the Project are unique and do not generate trips in the same manner as comparable warehouse/distribution land uses. The typical procedure for determining future trips for a development is to use Trip Generations, 11th ed., ITE (2021). This compendium of studies is published periodically to provide estimates for many land uses. However, a delivery station is not among those in the report.[2] Therefore, as discussed below, this report uses a higher trip generation rate (compared to ITE) for the Project that provides a more accurate and conservative analysis.

In order to accurately reflect the Project operations, a 24-hour schedule for passenger cars, trucks, and vans accessing the Project Site was provided to NV5 and the City by the expected user, based on its expected operations, and was used to generate daily and peak hour trips. Peak operations of the Project are typically, and intentionally, scheduled to occur outside of standard commuting peak hours. The standard community peak hours in the City are 7:00 – 9:00 AM and 4:00 – 6:00 PM on a typical weekday. The peak Project trip generation occurs mostly outside of the commuting peak hours to minimize impacts to the local roadway network and increase efficiency of Project Site operations. The current schedule does not show any entering or exiting van trips during AM peak commuting hours. The site-specific trip generation source document is provided in Appendix C, and was approved for use in this report by the City Traffic Engineer.

Table 5: Project Trip Generation

Land Use	Source	Trip Type	Daily	AM Peak Hour[1]			PM Peak Hour		
				In	Out	Total	In	Out	Total
Delivery Station	User Data	Autos	1,346	12	0	12	80	40	120
		Vans	690	0	0	0	0	0	0
		Trucks	62	0	2	2	0	1	1
Total Trips Per User Supplied Data			**2,098**	**12**	**2**	**14**	**80**	**41**	**121**

[2] The building would be a "warehouse" use, which is ITE Land Use 150. A warehouse with 181,500 sq. ft. would produce 326 daily trips, 45 AM trips and 48 PM trips.

Table 5 above summaries the trip generation data for the Project Site per the source information provided in Appendix C. In addition, as directed by the City Traffic Engineer, 4-5% of the daily traffic from the Project was assumed to occur during the AM peak hours to provide a conservative estimate for Project operations. As a result, Table 6 below shows the estimated Project trips based on the site-specific operations modified per City request. Truck trips have been converted to passenger car equivalent (PCE) trips for the analysis using a rate of 3.0 times the raw volume. The Project is expected to generate a total of 2,222 (after accounting for the truck factor). The Project will generate 98 trips (48 entering, 50 exiting) during the AM peak hour and 123 trips (83 entering, 40 exiting) during the PM peak hour as summarized in Table 6. The user-supplied trip generation data, modified to account for passenger-car equivalents, and adjusted per the City's request to allocate a percentage of the total Project trips into the commuting AM Peak Hours presented in Table 6 below. Figures 10 through 16 identify the trip distribution and assignment.

Table 6: Project Trip Generation

Land Use	Source	Trip Type	Daily	AM Peak Hour[1]			PM Peak Hour		
				In	Out	Total	In	Out	Total
Delivery Station	User Data	Car	1,346	12	0	12	80	40	120
		Van	690	33	44	77	0	0	0
		Truck (PCE)[2]	186	3	6	9	3	0	3
Total Trips (PCE)[2]			**2,222**	**48**	**50**	**98**	**83**	**40**	**123**

[1] Project van and truck trips modified so that the total AM peak hour trips are between 4% and5% of the daily volumes

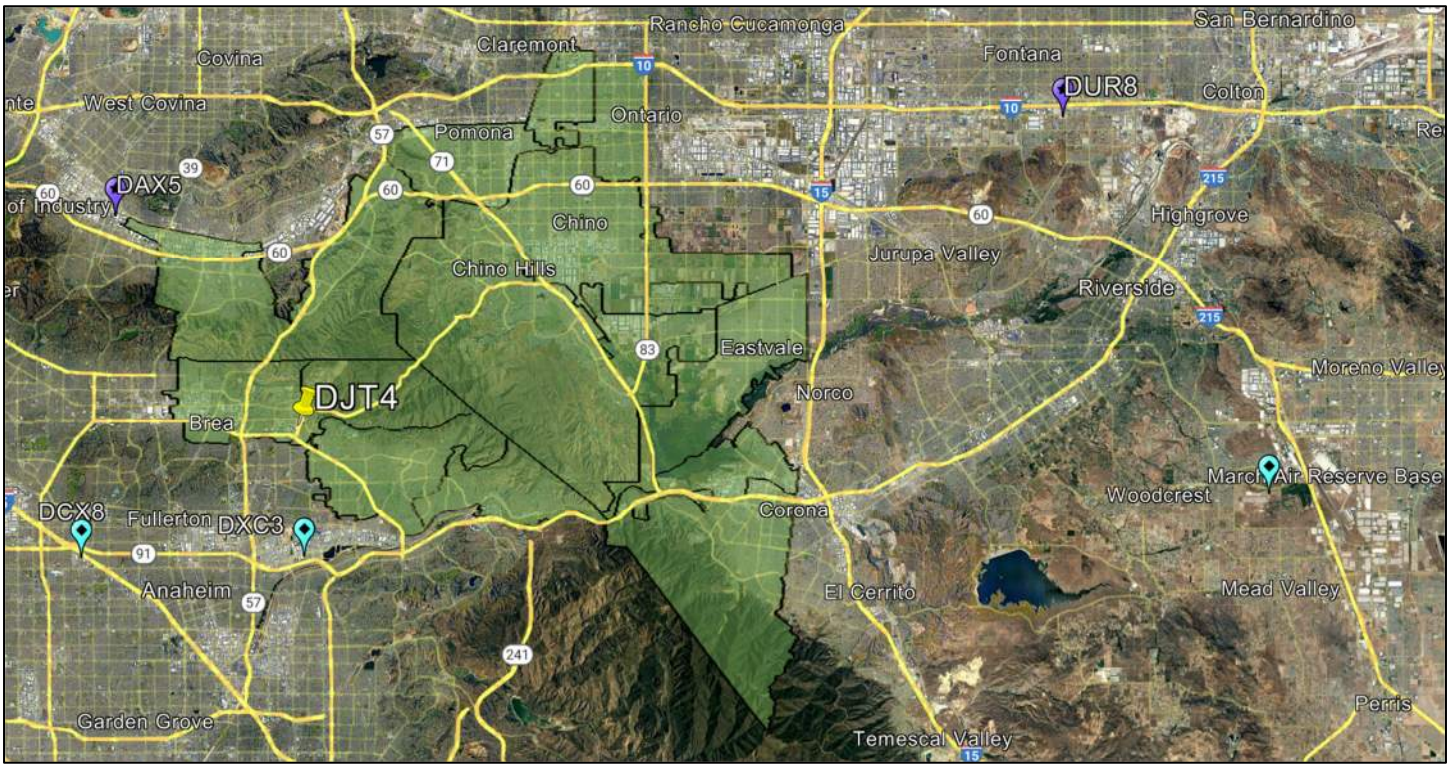
[2] PCE rate of 3.0 applied to tractor trailer trucks.

D.3. Project Trip Distribution and Assignment

Project traffic distribution is expected to vary depending on the type of vehicle and roadway access. Line-haul trucks entering the Project Site come from different origins, but those exiting the Project Site are bound for larger warehouses and sort centers as well. The employees entering and exiting the Project Site are considered typical commuter home-to-work and work-to-home trips.

The directional distributions and assignments of Project trips are based on the existing land use and anticipated service area for the proposed delivery station. Different site users are expected to have separate trip distribution patterns and have thus been split between passenger trips, delivery vehicles and line-haul trucks. All users are expected to enter and exit along the same route. The following discusses the overall trip distribution; note that access restrictions, location of driveways and internal circulation onsite affects distributions near the Project Site. The expected service area for the Project is shown in Figure 9.

Figure 9: Service Area Map



Passenger cars: Employees are expected to primarily travel to and from Valencia Avenue (80% from the south, and 20% from the north). Of the 80% traveling to and from the south, an estimated 40% will continue along Valencia Avenue, while the remaining 40% is expected to split to the east and west along Imperial Highway. The 20% of site trips traveling to and from the north are expected to utilize E Lambert Road to travel west.

Delivery vans: Of the van trips generated, approximately 60% are expected to travel to and from the Project Site using Carbon Canyon Road (35%) and E Lambert Road (25%). Approximately 35% of deliveries are expected to travel to/from Imperial Highway, while the remaining 5% is anticipated to travel along E Birch Street to/from the west.

Line-haul trucks: Trucks will travel along Valencia Road to utilize Imperial Highway, as it is the primary truck route in the study area. Trucks are expected to split nearly evenly along Imperial Highway, with 40% traveling to/from the east, and the remaining 60% traveling west. No trucks will use Carbon Canyon Road.

D.4. Parking and Circulation

The Project Site provides more parking than required to ensure that City code is satisfied and that peak season operational needs of the Project are accommodated onsite. Among the spaces provided are 64 total EV stalls including 46 EV capable and 18 EV charging stations.

Passenger cars: Project employees will enter the site utilizing Driveway 3 located on Nasa Street to access the employee parking area and exit the site utilizing Driveway 2 or Driveway 3. There are 306 parking spaces provided onsite for personal vehicles.

Delivery vans: Van parking is provided on both sides of the building totaling 757 parking spaces. Vans will be parked onsite overnight. Once delivery shifts begin, vans will queue on both sides of the building to load packages. A total of four rescue spaces are provided near the loading area for vans to utilize. Vans will exit the site utilizing Driveway 5 and Driveway 6. Vans will return utilizing Driveway 1 and Driveway 4. All delivery van spaces are available for the drivers' personal vehicles.

Line-haul trucks: Trucks will enter and exit the Project Site utilizing Driveway 6. Four trailer parking spaces and 13 dock-high loading bays are provided. Note, line-haul trucks deliver sorted packages to the Project Site from nearby regional sort center warehouses, unload, and continue on their route.

Figure 10: Project Primary Trips

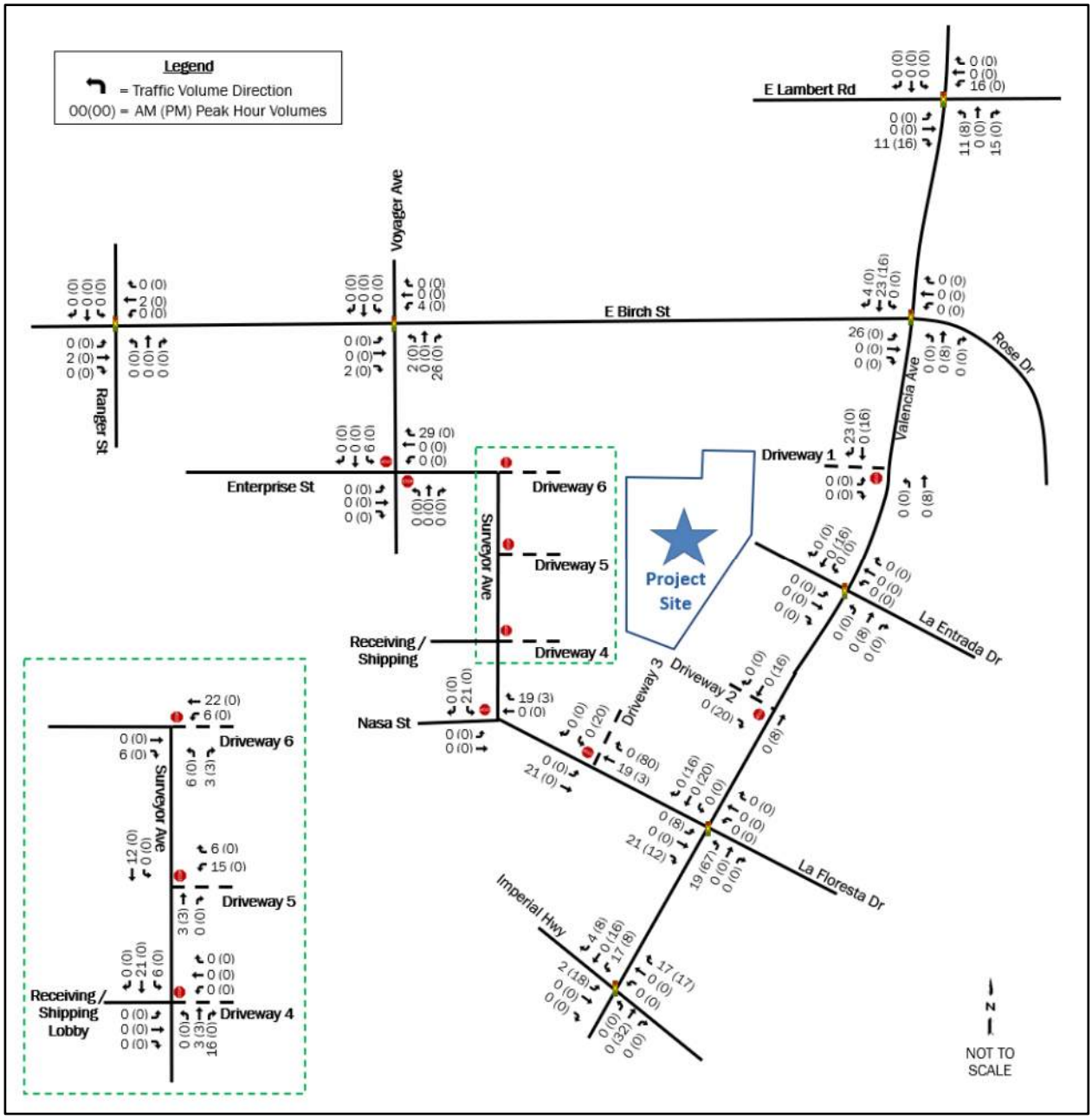


Figure 11: Passenger Vehicle Trip Distribution

Figure 12: Passenger Vehicle Primary Trips

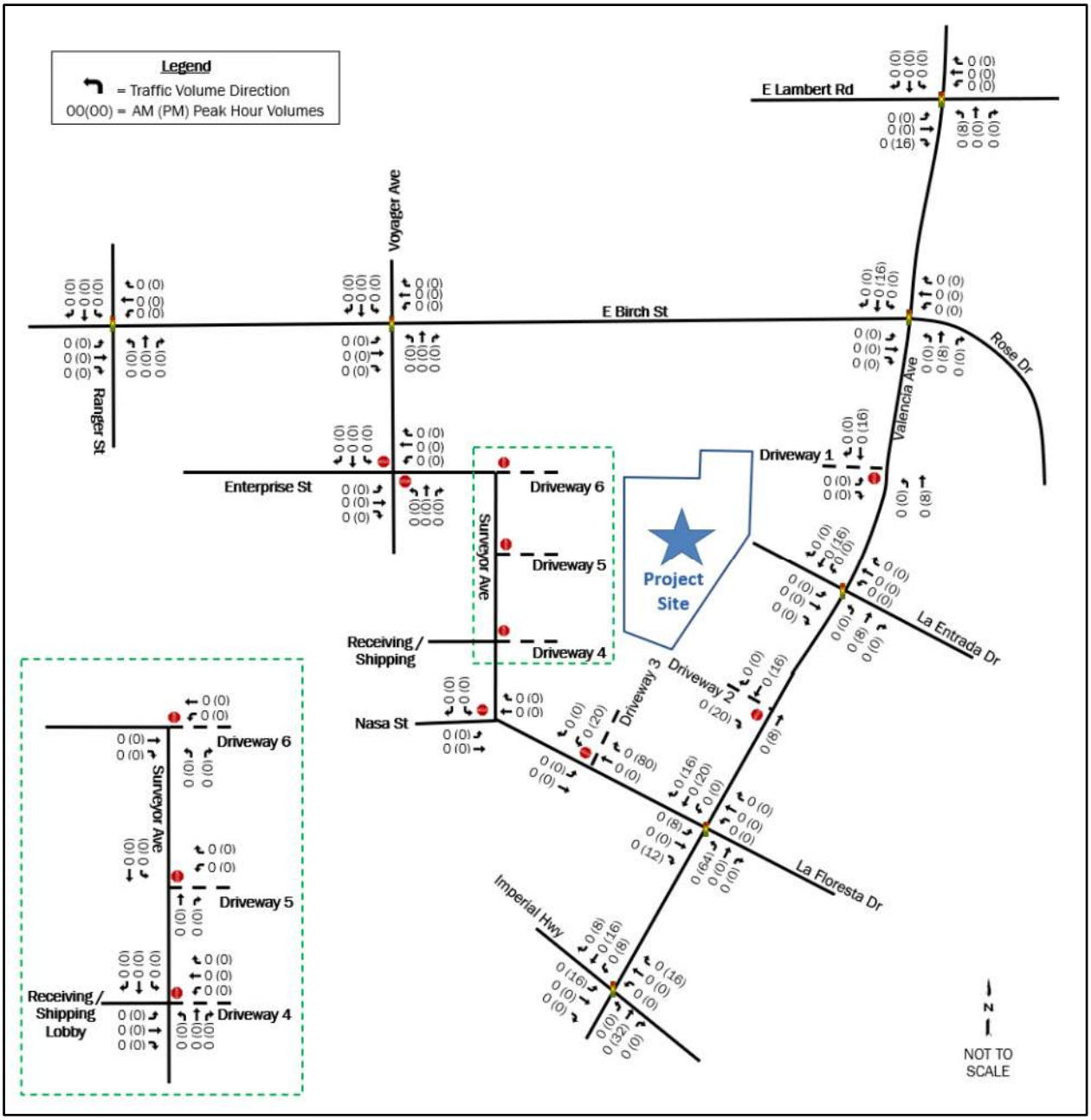


Figure 13: Van Trip Distribution

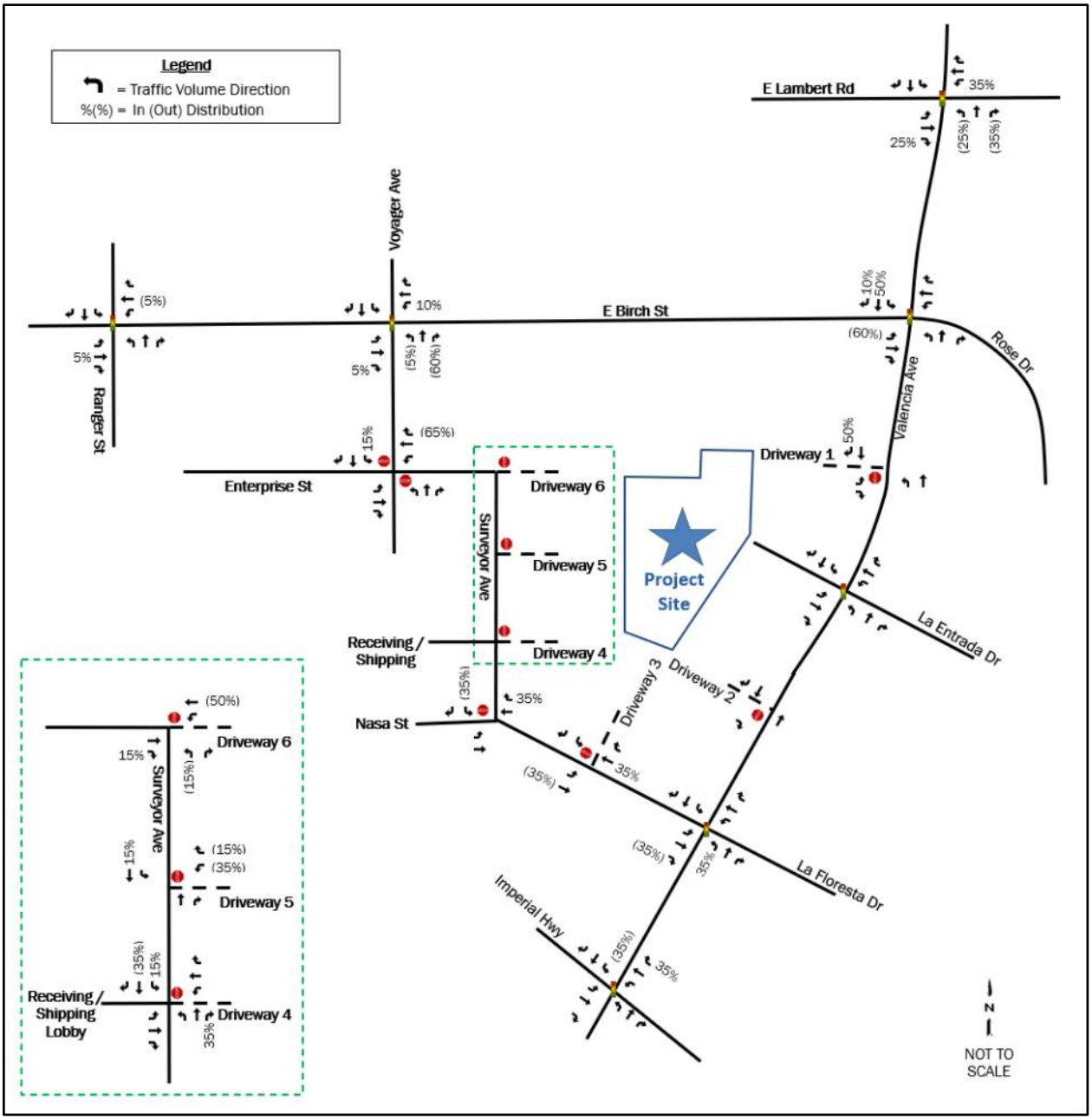


Figure 14: Van Primary Trips

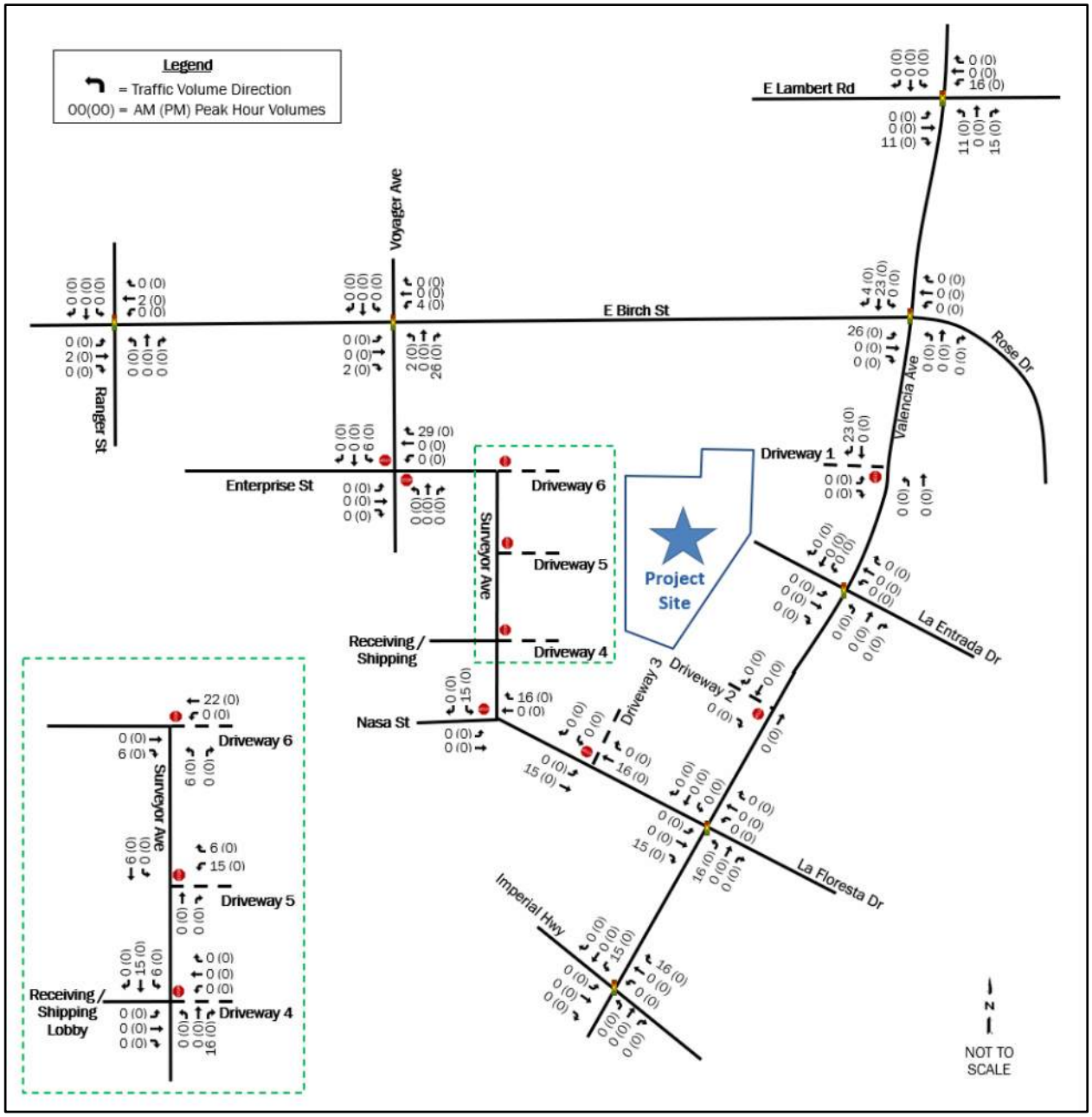


Figure 15: Truck Trip Distribution

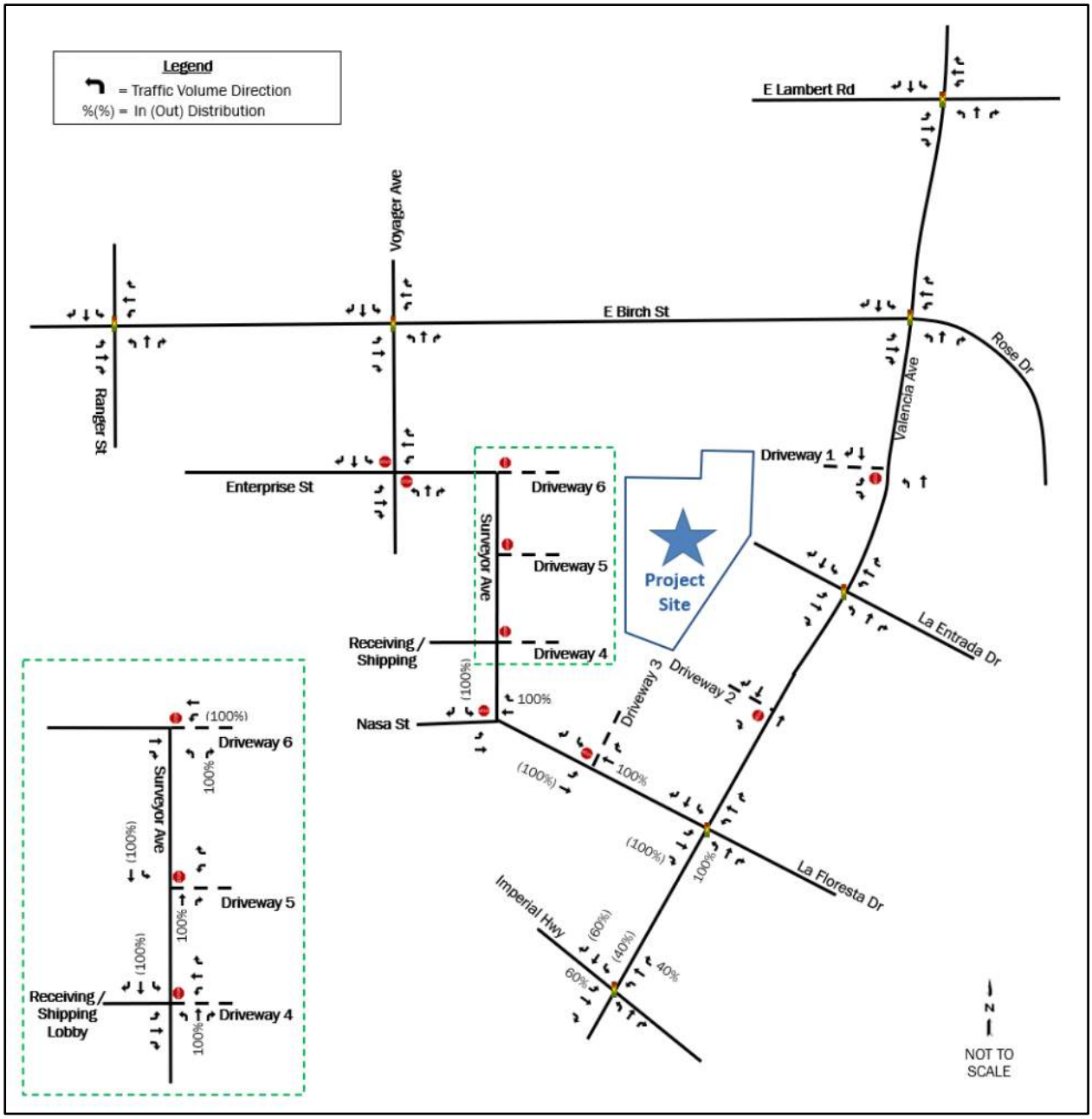
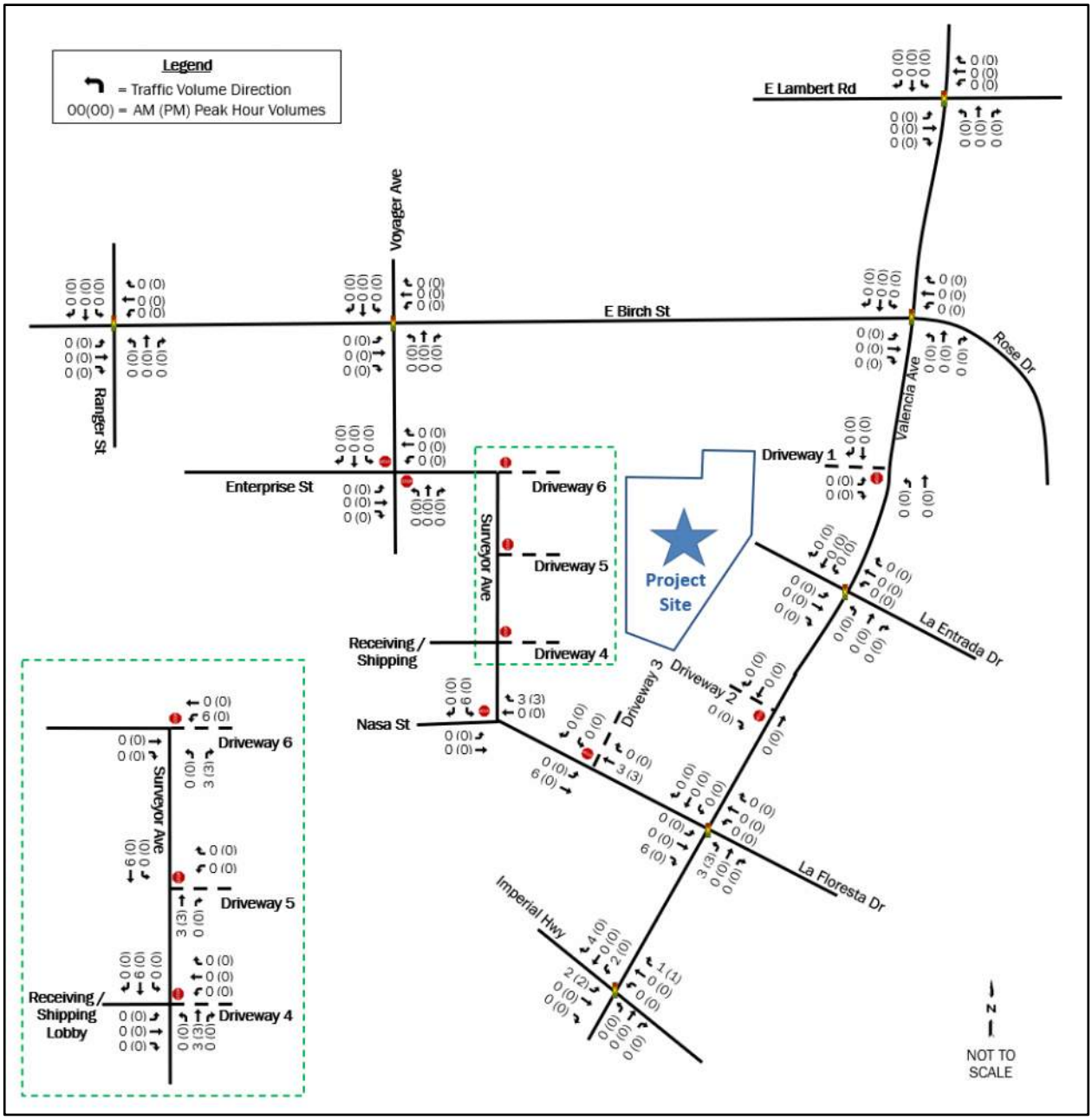


Figure 16: Truck Primary Trips



E. Existing Plus Project Conditions (2022)

The Existing Plus Project Conditions scenario consists of existing traffic volumes and traffic created by the Project without the consideration of future growth of traffic.

E.1. Existing Plus Project Traffic Analysis

The results of the Existing Plus Project Conditions intersection capacity analyses are demonstrated in Tables 7 and 8 and evaluate the volumes illustrated in Figure 17. Synchro analysis worksheets are provided in Appendix E. ICU calculation sheets are included in Appendix F.

Table 7: Existing Plus Project Conditions (2022) HCM Intersection Capacity Summary

ID	Intersection	AM		PM		Exceed LOS Threshold
		LOS	Delay	LOS	Delay	
1	Valencia Avenue / Imperial Highway[1]	D	38.6	D	42.7	NO
2	Valencia Avenue / Nasa Street – La Floresta Drive[1]	C	33.9	C	28.7	NO
3	Valencia Avenue / La Entrada Drive[1]	A	2.6	A	3.2	NO
4	Valencia Avenue / E Birch Street – N Rose Drive[1]	**F**	**83.2**	**F**	**118.6**	NO
5	Valencia Avenue / E Lambert Road - Carbon Canyon Road[1]	**E**	**73.2**	**E**	**59.8**	NO
6	Enterprise Street / Voyager Avenue[2]	A	9.8	A	9.4	NO
7	E Birch Street / Voyager Avenue[1]	C	27.8	C	25.6	NO
8	E Birch Street / Ranger Street[1]	C	30.5	C	27.9	NO
9	Surveyor Avenue / Nasa Street[2]	A	9.3	A	9.1	NO
10	Project Driveway 1 / Valencia Avenue[2]	A	0.0	A	0.0	NO
11	Project Driveway 2 / Valencia Avenue[2]	A	0.0	A	9.6	NO
12	Project Driveway 3 / Nasa Street[2]	A	0.0	A	9.3	NO
13	Project Driveway 4 / Surveyor Avenue[2]	A	7.4	A	0.0	NO
14	Project Driveway 5 / Surveyor Avenue[2]	A	9.3	A	0.0	NO
15	Project Driveway 6 / Surveyor Avenue[2]	A	0.0	A	0.0	NO

[1] Existing Traffic Signal, LOS based on average for the intersection, delay in seconds/vehicle

[2] Stop Control Intersection, LOS reported for worst controlled approach, delay in seconds/vehicle

Table 8: Existing Plus Project Conditions (2022) Intersection Capacity Utilization Summary

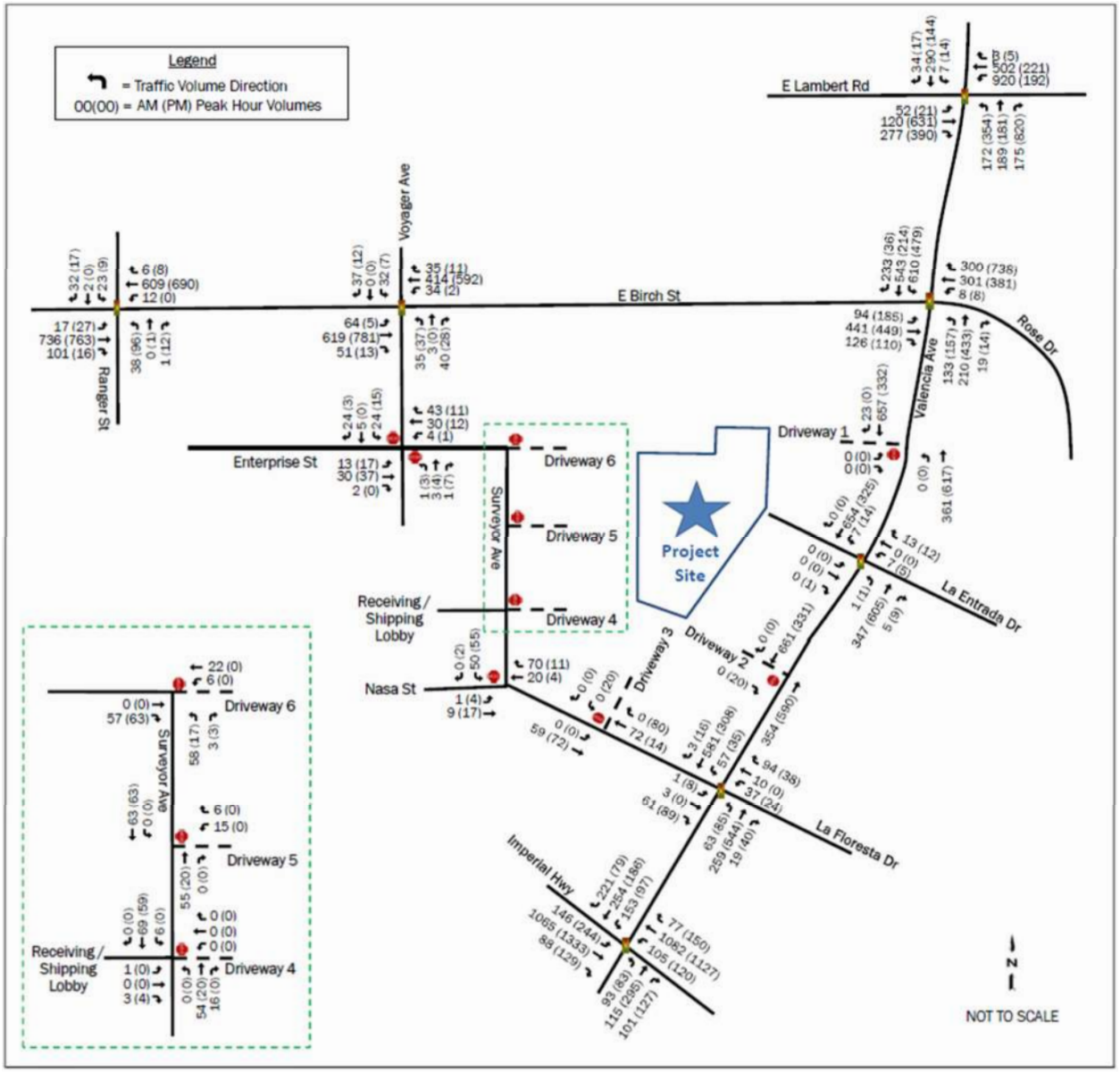
ID	Intersection	AM		PM		Exceed LOS Threshold[2]
		LOS	Delay	LOS	Delay	
1	Valencia Avenue / Imperial Highway[1]	A	0.462	A	0.462	NO
2	Valencia Avenue / Nasa Street – La Floresta Drive[1]	A	0.303	A	0.309	NO
3	Valencia Avenue / La Entrada Drive[1]	A	0.251	A	0.246	NO
4	Valencia Avenue / E Birch Street – N Rose Drive[1]	B	0.680	E	0.951	NO
5	Valencia Avenue / E Lambert Road - Carbon Canyon Road[1]	A	0.595	A	0.561	NO
7	E Birch Street / Voyager Avenue[1]	A	0.310	A	0.314	NO
8	E Birch Street / Ranger Street[1]	A	0.337	A	0.343	NO

[1] Existing Traffic Signal, LOS based on average for the intersection, delay in seconds/vehicle

[2] Threshold is exceeded if there is an increase of 0.02 or more and LOS is E or F

As shown in Table 7, the study intersections operate at a satisfactory LOS D or better during both peak hours except for intersections 4 and 5, which operate at LOS F and E, respectively. Both intersections operate at the same LOS in Existing Conditions. Delays do not increase at the Valencia Avenue / E Birch Street – N Rose Drive intersection by over two seconds, the threshold identified by TIA Guidelines for intersections operating at an existing LOS F. Similarly, the Valencia Avenue / E Lambert Road – Carbon Canyon Road intersection does not exceed the allowed four second increase in delay between Existing and Existing Plus Project conditions. Table 8 shows all intersections operate at an acceptable ICU, with the exception of the Valencia Avenue / E Birch Street – N Rose Drive intersection; note that this intersection also operates at LOS E in Existing Conditions in the PM peak hour, and Project traffic increases the ICU by 0.002 during the PM peak hour, well short of the 0.020 threshold identified by the City. The addition of Project traffic does not increase the intersections' delays and ICU results above the thresholds in the TIA Guidelines.

Figure 17: Existing Plus Project (2022) Traffic Volumes



F. Opening Year Conditions (2027)

To evaluate Project opening year future traffic conditions, existing traffic volumes were grown over three years and combined with the estimated traffic generated by nearby future developments approved by the City. Discussions of each growth source are included below. Appendix G includes figures showing the expected traffic growth as a result of background/ambient growth and cumulative projects within the study area.

F.1. Background Ambient Growth

The Project's buildout year of 2027 was determined to represent the Opening Year analysis scenario. Background traffic growth estimates between 2022 and 2027 have been calculated using an ambient traffic growth factor of 1% per year per the TIA Guidelines. This factor is intended to include future unidentified development in the study area and to account for regular growth in traffic volumes due to development outside the study area.

F.2. Cumulative Projects

In addition to standard background growth, several cumulative projects were identified using the City's planning website and coordination with the City Traffic Engineer. The following projects are located within a two-mile radius of the Project Site and have been included in Opening Year traffic volumes:

- Brea Mall Mixed-Use Project
- Brea Plaza
- Extra Space Self Storage
- Starbucks with Drive-Thru
- Western Realco
- Brea 265 Specific Plan
- Brea Regional Animal Hospital
- Industrial Building at 2727 E. Imperial Highway
- Industrial Building in NW quadrant of Nasa Street / Surveyor Avenue intersection

Though the Brea 265 Specific Plan project is a phased development with anticipated completion of 2035, the details of phasing were unavailable and therefore, for a conservative analysis, this report assumed the Brea 265 Specific Plan project would be complete by 2027. The 1% compound annual growth rate previously discussed is consistent with the approved Brea 265 Specific Plan Draft EIR. A list of projects and associated details including location, description, daily, and AM/PM peak hour trips is provided in Appendix G.

F.3. Opening Year Traffic Analysis

The results of the Opening Year (2027) intersection capacity analyses are demonstrated in Tables 9 and 10 and reflect the volumes illustrated in Figure 18. Synchro analysis worksheets are provided in Appendix E; ICU calculation sheets are included in Appendix F.

Table 9: Opening Year Conditions (2027) HCM Intersection Capacity Summary

ID	Intersection	AM		PM	
		LOS	Delay	LOS	Delay
1	Valencia Avenue / Imperial Highway[1]	D	38.1	D	41.9
2	Valencia Avenue / Nasa Street – La Floresta Drive[1]	C	33.7	C	27.7
3	Valencia Avenue / La Entrada Drive[1]	A	2.5	A	3.2
4	Valencia Avenue / E Birch Street – N Rose Drive[1]	**F**	**86.1**	**F**	**130.1**
5	Valencia Avenue / E Lambert Road - Carbon Canyon Road[1]	**E**	**72.8**	**E**	**65.6**
6	Enterprise Street / Voyager Avenue[2]	A	9.7	A	9.5
7	E Birch Street / Voyager Avenue[1]	C	27.7	C	24.5
8	E Birch Street / Ranger Street[1]	C	29.7	C	27.2
9	Surveyor Avenue / Nasa Street[2]	A	9.3	A	9.5

[1] Existing Traffic Signal, LOS based on average for the intersection, delay in seconds/vehicle

[2] Stop Control Intersection, LOS reported for worst controlled approach, delay in seconds/vehicle

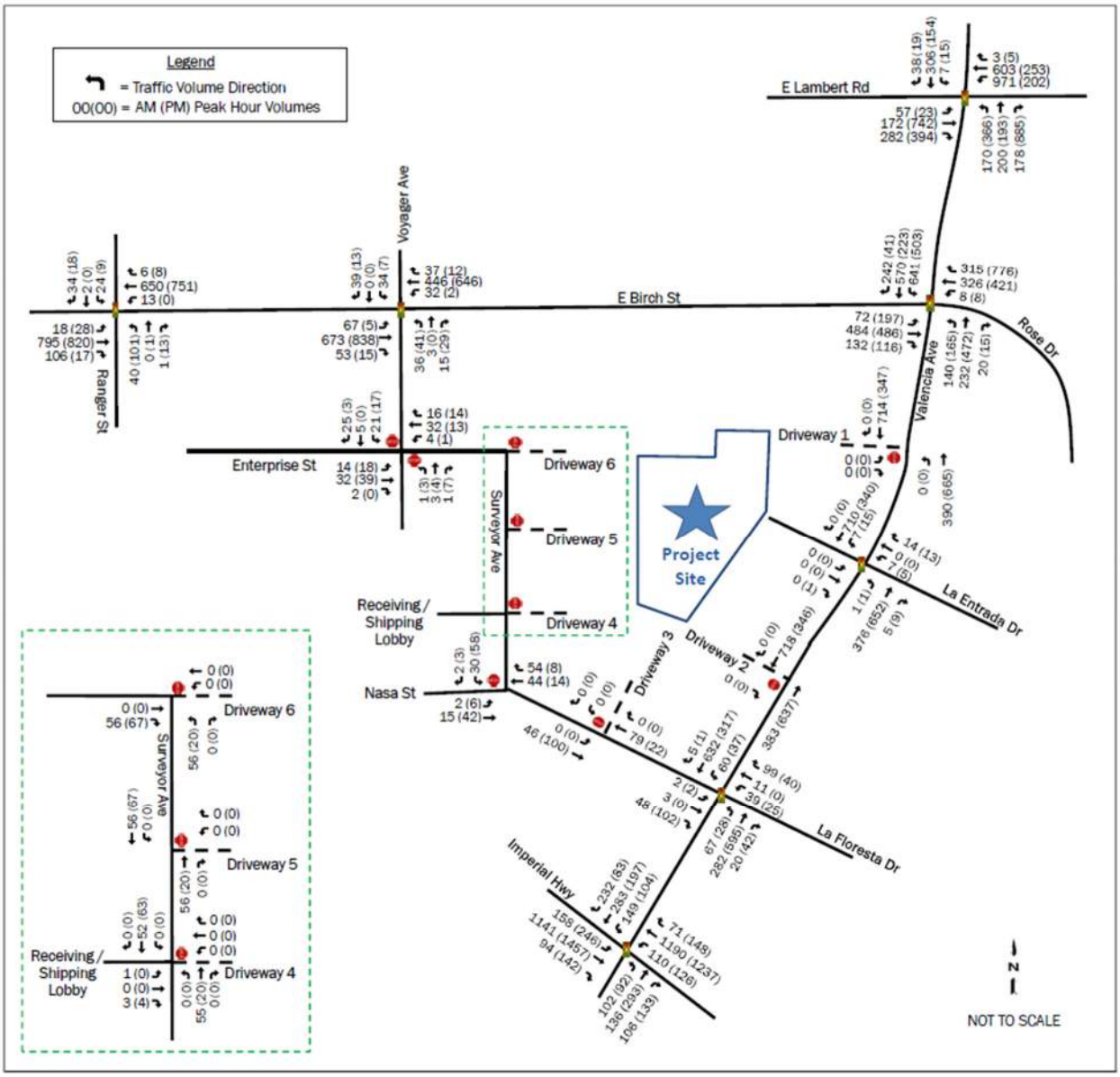
Table 10: Opening Year Conditions (2027) Intersection Capacity Utilization Summary

ID	Intersection	AM		PM	
		LOS	ICU	LOS	ICU
1	Valencia Avenue / Imperial Highway[1]	A	0.495	A	0.490
2	Valencia Avenue / Nasa Street – La Floresta Drive[1]	A	0.323	A	0.334
3	Valencia Avenue / La Entrada Drive[1]	A	0.268	A	0.261
4	Valencia Avenue / E Birch Street – N Rose Drive[1]	C	0.707	F	1.003
5	Valencia Avenue / E Lambert Road - Carbon Canyon Road[1]	B	0.626	A	0.598
7	E Birch Street / Voyager Avenue[1]	A	0.327	A	0.334
8	E Birch Street / Ranger Street[1]	A	0.358	A	0.364

[1] Existing Traffic Signal, LOS based on average for the intersection, delay in seconds/vehicle

As shown in Table 9, the study intersections operate at a satisfactory LOS D or better during both the AM and PM peak hours, except for intersections 4 and 5, which operate with LOS F and E respectively. Table 10 shows that all intersections except Valencia Avenue / E Birch Street – N Rose Drive operate at an acceptable ICU, which continues to operate at LOS E during the PM peak hour. While the addition of background traffic growth and cumulative projects is expected to increase delays, changes from Existing Conditions are not expected to occur.

Figure 18: Opening Year (2027) Traffic Volumes



G. Opening Year Plus Project Conditions (2027)

This section provides a summary of operations at the study area intersections in 2027 upon completion of the Project. Opening Year and Project traffic volumes have been combined to generate Opening Year Plus Project Conditions.

G.1. Opening Year Plus Project Traffic Analysis

The results of the Opening Year Plus Project intersection capacity analyses are demonstrated in Tables 11 and 12. Figure 19 illustrates the Opening Year Plus Project traffic volumes. Synchro analysis worksheets are provided in Appendix E. ICU calculation sheets are provided in Appendix F.

Table 11: Opening Year Plus Project Conditions (2027) HCM Intersection Capacity Summary

ID	Intersection	AM		PM		Exceed LOS Threshold
		LOS	Delay	LOS	Delay	
1	Valencia Avenue / Imperial Highway[1]	D	38.0	D	42.2	NO
2	Valencia Avenue / Nasa Street – La Floresta Drive[1]	D	38.2	C	30.2	NO
3	Valencia Avenue / La Entrada Drive[1]	A	2.4	A	2.9	NO
4	Valencia Avenue / E Birch Street – N Rose Drive[1]	**F**	**85.6**	**F**	**129.9**	NO
5	Valencia Avenue / E Lambert Road - Carbon Canyon	**E**	**76.7**	**E**	**68.5**	NO
6	Enterprise Street / Voyager Avenue[2]	A	9.9	A	9.5	NO
7	E Birch Street / Voyager Avenue[1]	C	27.3	C	24.5	NO
8	E Birch Street / Ranger Street[1]	C	29.6	C	27.2	NO
9	Surveyor Avenue / Nasa Street[2]	A	9.6	A	9.6	NO
10	Project Driveway 1 / Valencia Avenue[2]	A	0.0	A	0.0	NO
11	Project Driveway 2 / Valencia Avenue[2]	A	0.0	A	9.7	NO
12	Project Driveway 3 / Nasa Street[2]	A	0.0	A	9.5	NO
13	Project Driveway 4 / Surveyor Avenue[2]	A	7.4	A	0.0	NO
14	Project Driveway 5 / Surveyor Avenue[2]	A	9.3	A	0.0	NO
15	Project Driveway 6 / Surveyor Avenue[2]	A	0.0	A	0.0	NO

[1] Existing Traffic Signal, LOS based on average for the intersection, delay in seconds/vehicle

[2] Stop Control Intersection, LOS reported for worst controlled approach, delay in seconds/vehicle

Table 12: Opening Year Plus Project Conditions (2027) Intersection Capacity Utilization Summary

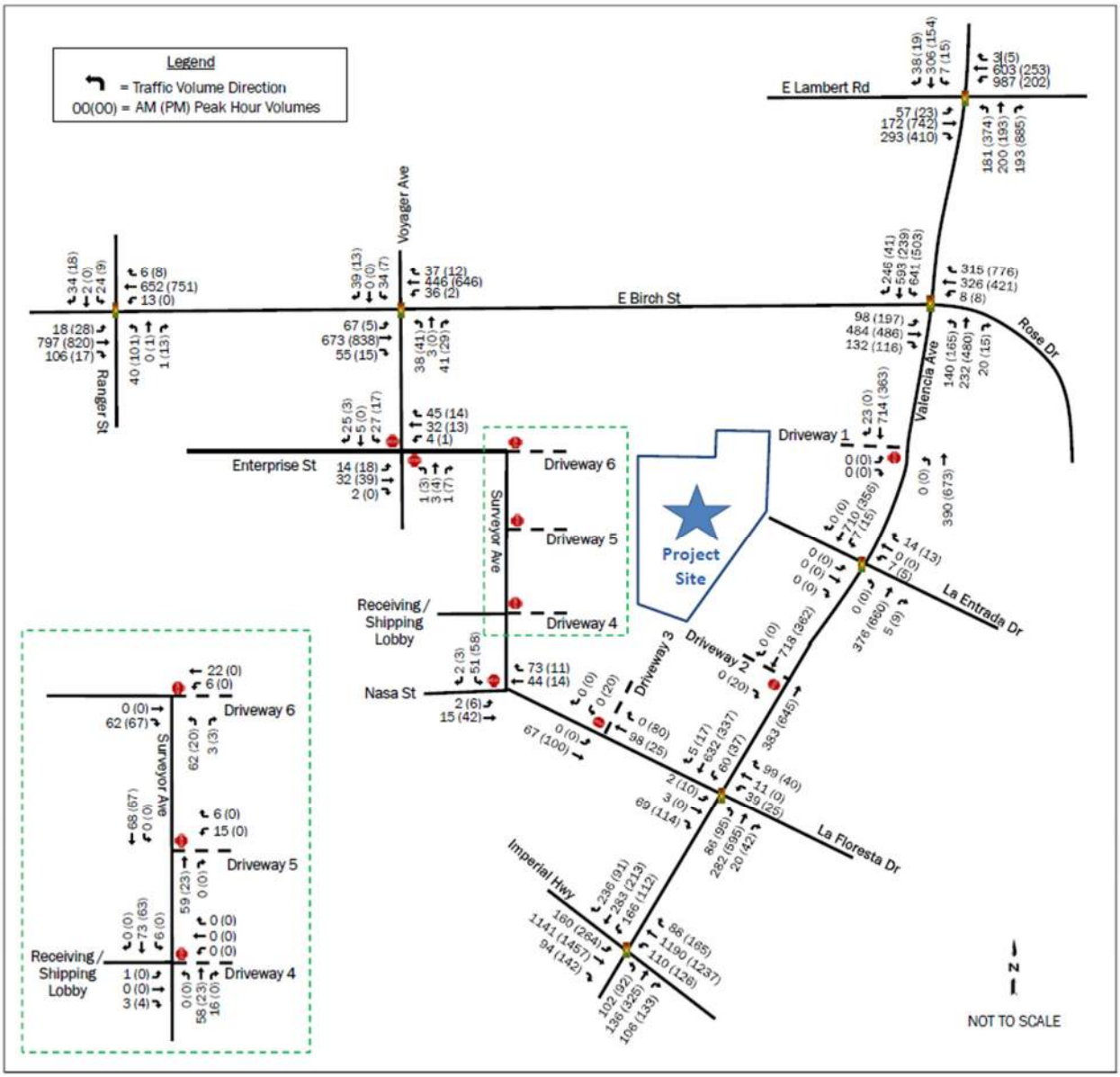
ID	Intersection	AM		PM		Exceed LOS Threshold
		LOS	ICU	LOS	ICU	
1	Valencia Avenue / Imperial Highway[1]	A	0.499	A	0.502	NO
2	Valencia Avenue / Nasa Street – La Floresta Drive[1]	A	0.328	A	0.341	NO
3	Valencia Avenue / La Entrada Drive[1]	A	0.267	A	0.264	NO
4	Valencia Avenue / E Birch Street – N Rose Drive[1]	C	0.715	F	1.006	NO
5	Valencia Avenue / E Lambert Road - Carbon Canyon	B	0.638	B	0.606	NO
7	E Birch Street / Voyager Avenue[1]	A	0.33	A	0.334	NO
8	E Birch Street / Ranger Street[1]	A	0.359	A	0.364	NO

[1] Existing Traffic Signal, LOS reported for worst controlled approach, delay in seconds/vehicle

As shown in Table 11, the study intersections operate at a satisfactory LOS D or better during both the AM and PM peak hours, except at intersections 4 and 5, which will continue to operate at LOS F and E, respectively. Delays increase by less than 2 and 4 seconds at intersections 4 and 5, respectively, indicating that site traffic would not be considered to have an effect on traffic operations pursuant to the TIA Guidelines.

Table 12 shows all intersections operate at an acceptable ICU except for the intersection of Valencia Avenue / E Birch Street – N Rose Drive. This intersection operates at LOS F during the PM peak hour and previously operated at LOS E in Opening without project Conditions. The addition of site traffic will increase the intersection ICU by 0.003, well below the City's threshold of 0.020 and therefore would not be considered to have an effect on traffic operations.

Figure 19: Opening Year (2027) Plus Project Traffic Volumes



H. Safety Review

H.1. Queue Comparison

A queuing analysis was conducted for signalized intersections for all analysis scenarios. The storage lengths are based on the 95th percentile methodology which is the queue length that is not likely to be exceed 95% of the time. Table 13 displays the comparison.

Table 13: Queue Comparison

Intersection	Existing Storage Length (feet)	95th Percentile Queue Lengths (feet)							
		Existing Conditions		Existing Plus Project		Opening Year (2027)		Opening Year (2027) Plus Project	
		AM	PM	AM	PM	AM	PM	AM	PM
Valencia Avenue / Imperial Highway									
EB Left	190	101	146	101	156	108	157	109	165
WB Right	185	0	24	3	37	0	34	11	47
SB Left	250	89	75	98	64	95	75	106	81
SB Right	185	40	2	29	3	42	4	44	5
Valencia Avenue / Nasa Street – La Floresta Drive									
EB Left	-	5	0	5	25	9	12	9	30
NB Left	175	43	m16	56	61	60	m24	72	69
Valencia Avenue / E Birch Street – N Rose Drive									
EB Left	190	57	#144	74	#144	61	#158	78	#158
Valencia Avenue / E Lambert Road - Carbon Canyon Road									
WB Left	625	428	#157	434	#157	469	#169	480	#169
NB Left	300	228	m419	243	m430	242	m432	#256	m443
NB Right	120	112	773	120	772	121	m838	129	m838
E Birch Street / Voyager Avenue									
WB Left	140	45	8	49	8	47	8	50	8
NB Left	125	29	32	31	32	32	36	34	36

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.
Note: Red indicates queues are expected to exceed provided storage length.
For dual turn lanes length is provided for a single lane.

As shown in Table 13, the intersection of Valencia Avenue / E Lambert Road - Carbon Canyon Road has two movements that exceed the provided storage length in all scenarios during the PM peak hour. Storage capacity is based on 95th percentile queues as seen in Appendix E. The remaining study intersections have queues that are adequately accommodated by the provided lane storage. Per the TIA Guidelines, the storage capacity review only applies to intersections at LOS E or F. The scenarios and intersection/approach with storage deficiencies include the following:

<u>Existing Conditions</u>

- <u>Valencia Avenue / E Lambert Road - Carbon Canyon Road</u>
    - Northbound Left Turn Lane: PM Peak Hour
    - Northbound Right Turn Lane: PM Peak Hour

Existing Plus Project Conditions

- Valencia Avenue / E Lambert Road - Carbon Canyon Road
    - Northbound Left Turn Lane: PM Peak Hour
    - Northbound Right Turn Lane: PM Peak Hour
    - Project Contribution to Northbound Traffic = 0.6%

Opening Year (2027) Conditions

- Valencia Avenue / E Lambert Road - Carbon Canyon Road
    - Northbound Left Turn Lane: PM Peak Hour
    - Northbound Right Turn Lane: PM Peak Hour

Opening Year (2027) Plus Project Conditions

- Valencia Avenue / E Lambert Road - Carbon Canyon Road
    - Northbound Left Turn Lane: PM Peak Hour
    - Northbound Right Turn Lane: PM Peak Hour
    - Project Contribution to Northbound Traffic = 0.6%

The addition of Project traffic contributes eight (8) northbound left vehicles in the PM peak hour while contributing 15 northbound right vehicles in the AM peak hour at the intersection of Valencia Avenue / E Lambert Road - Carbon Canyon Road. Project traffic constitutes less than 2% of the northbound approach volumes. As shown in Table 13, the queues for both northbound turn lanes currently exceed the provided storage lengths, and thus the storage deficiency is considered an existing issue unrelated to the Project. The Project's contributes a relatively minor increase to the queue lengths (i.e., less than 1 vehicle) and therefore project-related improvements at the intersection are not recommended.

H.2. Collision Statistics

Collision data was provided by the Statewide Integrated Traffic Records System (SWITRS) database from 2017 through 2022. History and collision types were reviewed to identify potential improvements that could enhance the safety at the study intersections. Out of the 70 collisions that have occurred at the study intersections, only one collision resulted in a fatality at the intersection of Valencia Avenue/ E Lambert Road – Carbon Canyon Road that was due to driving under the influence. All other collisions were noted as less than severe. Valencia Avenue at Imperial Highway reported the largest number of total collisions with 65% of collisions at this location categorized as broadside collisions. The collision types and severity are typical for what would be expected at the study intersections and therefore no mitigation is recommended. Tables 14 and 15 summarize collision severity and type for the study intersections. Collision data is provided in Appendix H.

Table 14: Collision Severity Summary

ID	Intersection	Property Damage Only	Injury	Severe	Fatality	Total
1	Valencia Avenue/Imperial Highway	27	15	0	0	42
2	Valencia Avenue/Nasa Street – La Floresta Drive	2	0	0	0	2
4	Valencia Avenue/E Birch Street – N Rose Drive	7	3	0	0	10
5	Valencia Avenue/E Lambert Road – Carbon Canyon Road	9	4	0	1	14
6	Enterprise Street/Voyager Avenue	0	2	0	0	2
	Total	**45**	**24**	**0**	**1**	**70**

Table 15: Collision Type Summary

ID	Intersection	Not Stated	Head On	Sideswipe	Rear End	Broadside	Overturned	Other	Total
1	Valencia Avenue/Imperial Highway	1	1	14	7	10	9	0	**42**
2	Valencia Avenue/Nasa Street – La Floresta Drive	0	0	1	1	0	0	0	**2**
4	Valencia Avenue/E Birch Street – N Rose Drive	0	0	3	1	2	0	4	**10**
5	Valencia Avenue/E Lambert Road – Carbon Canyon Road	0	0	5	6	3	0	0	**14**
6	Enterprise Street/Voyager Avenue	0	0	1	1	0	0	0	**2**
	Total	**1**	**1**	**24**	**16**	**15**	**9**	**4**	**70**

I. Findings and Recommendations

Existing Conditions (2022)

- All intersections perform at an overall LOS D or better with the exception of the intersections of Valencia Avenue / E Birch Street – N Rose Drive and Valencia Avenue / E Lambert Road – Carbon Canyon Road. These intersections operate at LOS F and E, respectively, during both AM and PM peak hours.
- The Valencia Avenue / E Birch Street – N Rose Drive intersection operates at ICU LOS F during the PM peak hour.
- Existing 95th percentile queues exceed the storage lengths provided at the intersection of Valencia Avenue / E Lambert Road – Carbon Canyon Road along the northbound left and right movements during the PM peak hour.

Existing Plus Project Conditions (2022)

- All intersections continue to perform at an overall LOS D or better except for the intersections of Valencia Avenue / E Birch Street – N Rose Drive and Valencia Avenue / E Lambert Road – Carbon Canyon Road. These intersections operate at LOS F and E, respectively, during both AM and PM peak hours. Neither intersection exceeds the associated delay thresholds upon the addition of project traffic when compared to Existing Conditions.
- Valencia Avenue / E Birch Street – N Rose Drive operates at ICU LOS F during the PM peak hour. The intersection does not exceed the threshold upon the addition of project traffic.
- All project driveways operate at LOS A.
- The 95th percentile queues continue to exceed the storage lengths provided at the intersection of Valencia Avenue / E Lambert Road – Carbon Canyon Road along the northbound left and right movements during the PM peak hour. The site has a minimal impact on queuing.

Opening Year Conditions (2027)

- All intersections perform at an overall LOS D or better except for the intersections of Valencia Avenue / E Birch Street – N Rose Drive and Valencia Avenue / E Lambert Road – Carbon Canyon Road. These intersections operate at LOS F and E, respectively, during both AM and PM peak hours.
- The Valencia Avenue / E Birch Street – N Rose Drive intersection operates at ICU LOS F during the PM peak hour.
- The 95th percentile queues exceed the storage lengths provided at the intersection of Valencia Avenue / E Lambert Road – Carbon Canyon Road along the northbound left and right movements during the PM peak hour.

Opening Year Plus Project Conditions (2027)

- All intersections perform at an overall LOS D or better apart from the intersections of Valencia Avenue / E Birch Street – N Rose Drive and Valencia Avenue / E Lambert Road – Carbon Canyon Road. These intersections operate at LOS F and E, respectively, during both peak hours, but do not exceed the associated thresholds when comparing Opening Year and Opening Year Plus Project delays.
- Valencia Avenue / E Birch Street – N Rose Drive operates at ICU LOS F during the PM Peak Hour. When compared to Opening Year Conditions, the intersection's ICU does not increase by more than 0.020.
- Each project driveway operates at LOS A.
- The 95th percentile queues exceed the storage lengths provided at the intersection of Valencia Avenue / E Lambert Road – Carbon Canyon Road along the northbound left and right movements during the PM peak hour.

I.1. Recommended Improvements

Per the TIA Guidelines, a project is deemed to have an effect on traffic operations if the project causes:

- One or more study intersections operating at LOS D or better to degrade to LOS E or F;
- Intersections already operating at LOS E to experience a change in control delay of 4+ seconds;
- Intersections already operating at LOS F to experience a change in control delay of 2+ seconds.

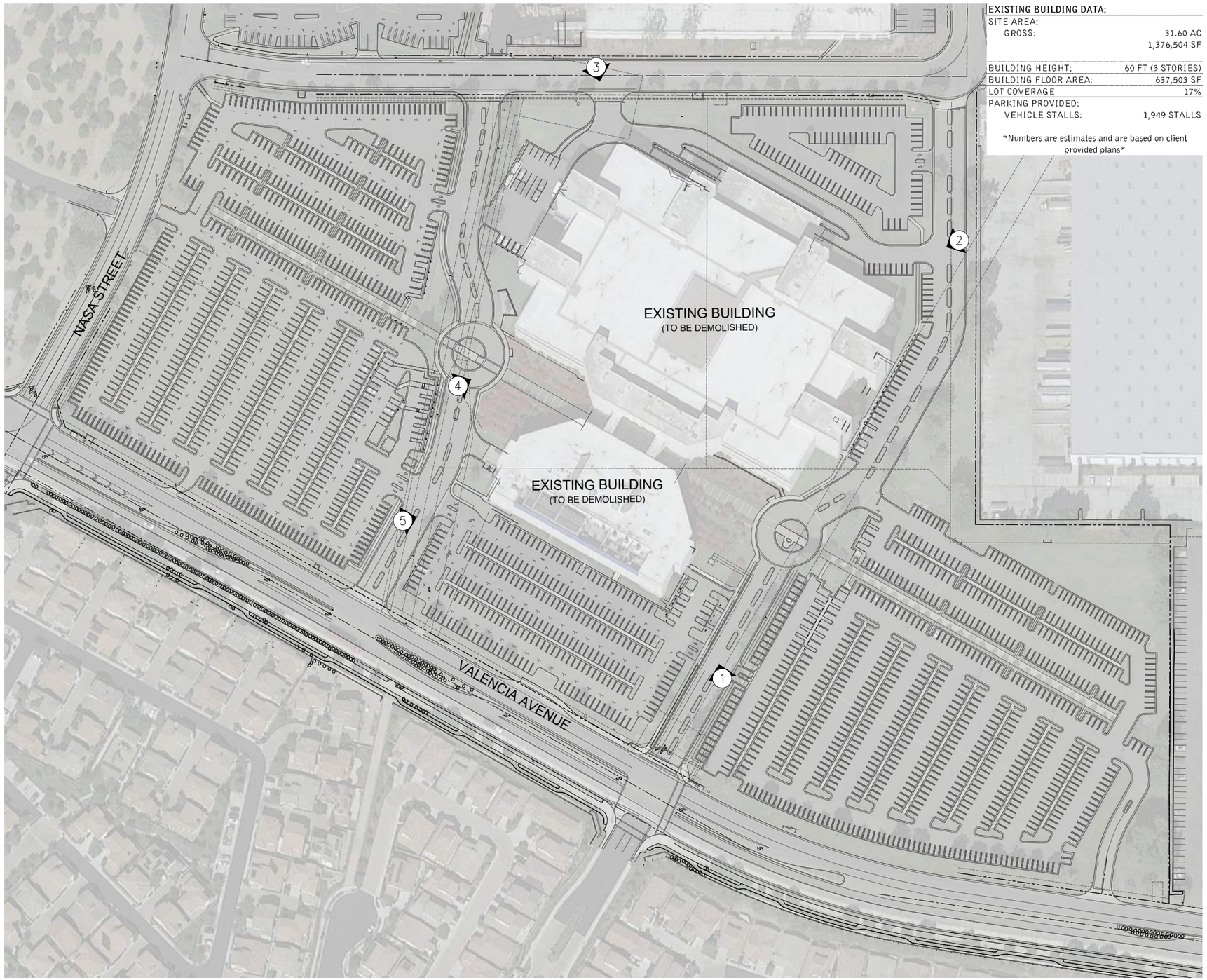
As the introduction of Project traffic does not exceed these thresholds at any of the study intersections, improvements to study intersections are not recommended at this time.

Nonetheless, the following recommendations could be implemented to improve surrounding pedestrian and transportation infrastructure:

- Provide pedestrian sidewalk and bicycle connections from Surveyor Avenue to Valencia Avenue to replace connections lost by creating a closed project campus;
- Modify curb, gutter, sidewalk, median, traffic controls, and traffic signal on Valencia Avenue to close the two existing driveways);
- Modify and extend bus stop cutout on Valencia Avenue south of La Entrada Drive.

APPENDIX

Appendix A – Site Plan / Scoping Memorandum



EXISTING BUILDING DATA:

SITE AREA:	
GROSS:	31.60 AC
	1,376,504 SF
BUILDING HEIGHT:	60 FT (3 STORIES)
BUILDING FLOOR AREA:	637,503 SF
LOT COVERAGE	17%
PARKING PROVIDED:	
VEHICLE STALLS:	1,949 STALLS

Numbers are estimates and are based on client provided plans

EXISTING PHOTO 1

EXISTING PHOTO 2

EXISTING PHOTO 3

EXISTING PHOTO 4

EXISTING PHOTO 5

1" = 60'

0 30 60 150 300

NORTH

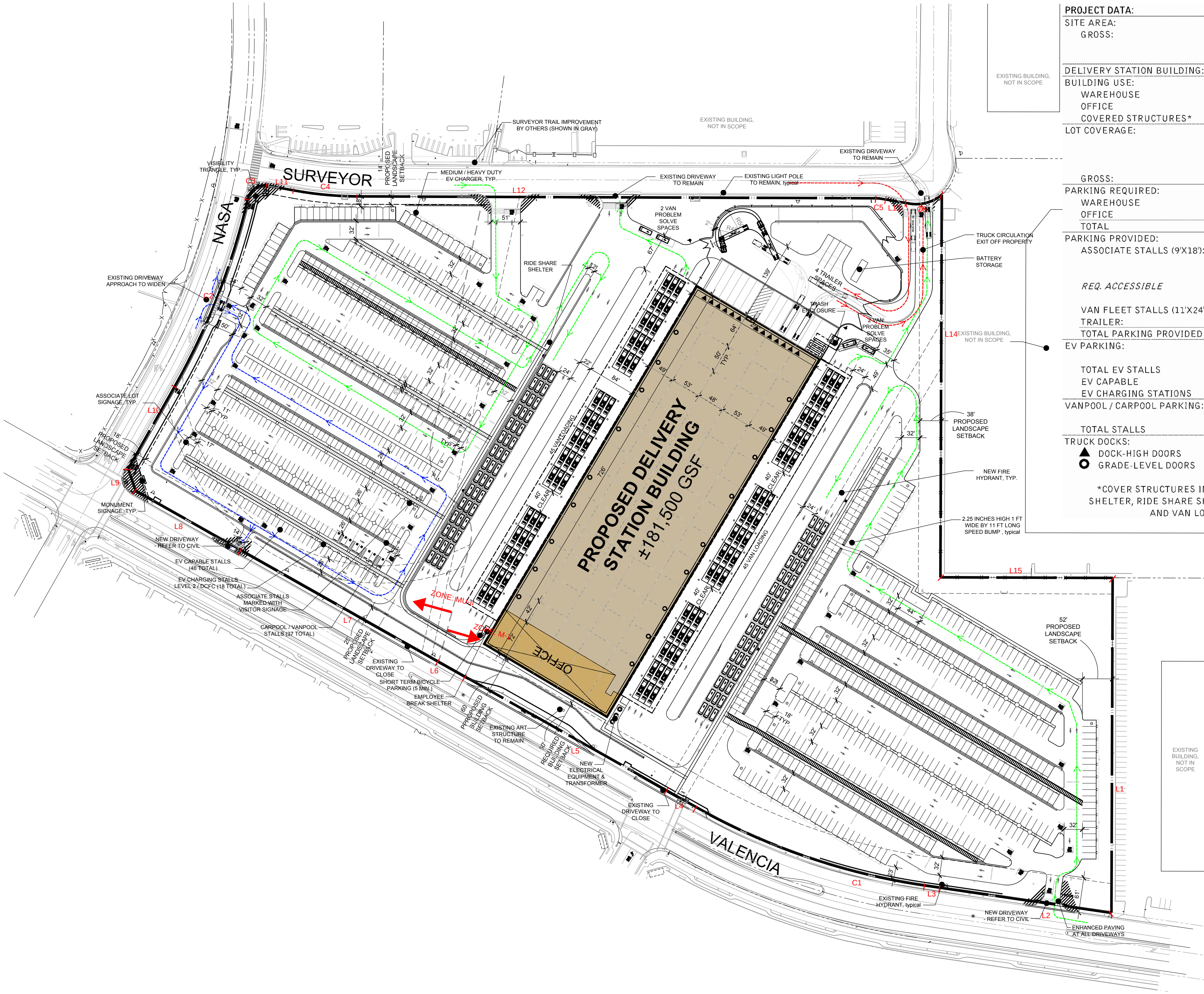
Existing Site Plan

275 Valencia Ave.
Brea, CA 92823

WARE MALCOMB

IRV21-5032-00
05.17.2022

SHEET
2



PROJECT DATA:

SITE AREA:			
GROSS:			31.60 AC
			1,376,504 SF
DELIVERY STATION BUILDING:			181,500 SF
BUILDING USE:			
WAREHOUSE			163,350 SF
OFFICE		@ 10%	18,150 SF
COVERED STRUCTURES*			84,842 SF
LOT COVERAGE:			266,342 SF
		÷	1,376,504 SF
	PROVIDED		19.3%
	ALLOWED		50.0%
GROSS:			
PARKING REQUIRED:			
WAREHOUSE		1/1000 SF	163 STALLS
OFFICE		1/250 SF	73 STALLS
TOTAL			236 STALLS
PARKING PROVIDED:			
ASSOCIATE STALLS (9'X18'):			306 STALLS
			@1.69/1000 SF
		REQUIRED	PROVIDED
REQ. ACCESSIBLE		*8 STALLS*	*8 STALLS*
VAN FLEET STALLS (11'X24'):			757 STALLS
TRAILER:			4 STALLS
TOTAL PARKING PROVIDED			1,067 STALLS
EV PARKING:			
		REQUIRED	PROVIDED
TOTAL EV STALLS		62 STALLS	64 STALLS
EV CAPABLE		46 STALLS	46 STALLS
EV CHARGING STATIONS		16 STALLS	18 STALLS
VANPOOL / CARPOOL PARKING:			
		REQUIRED	PROVIDED
TOTAL STALLS		37 STALLS	37 STALLS
TRUCK DOCKS:			
▲ DOCK-HIGH DOORS			13
○ GRADE-LEVEL DOORS			18

*COVER STRUCTURES INCLUDE EMPLOYEE BREAK SHELTER, RIDE SHARE SHELTER, TRASH ENCLOSURE, AND VAN LOADING CANOPY

DEVELOPMENT STANDARDS:

ZONING:			M-1; MU-II
FAR:			2.0:1
MAX. HEIGHT:	M-1	MU-II	
AREA:	1,054,452 SF	322,052 SF	
	60 FT	60 FT	56 FT
BUILDING SETBACKS:			
	REQUIRED	REQUIRED	PROVIDED
FRONT (VALENCIA):	50 FT	0 FT	60 FT
SIDE (NASA):	10 FT	10 FT	689 FT
SIDE (INTERIOR):	0 FT	0 FT	210 FT
REAR (SURVEYOR):	10 FT	10 FT	152 FT
LANDSCAPE SETBACKS:			
	REQUIRED	REQUIRED	PROVIDED
FRONT (VALENCIA):	20 FT	20 FT	20 FT
SIDE (NASA):	8 FT	8 FT	32 FT
SIDE (INTERIOR):	5 FT	5 FT	36 FT
REAR (SURVEYOR):	8 FT	8 FT	14 FT
PARKING SETBACK			
FRONT:			15 FT
SIDE:			15 FT

LANDSCAPE REQUIREMENTS
1 TREE PER 5 VEHICLE SPACES
1 TREE PER 25 LINEAL FEET ABUTTING STREETS.

OFF-STREET PARKING:	
STANDARD:	9X18
ADA:	9X19
ADA VAN:	12X18
TRAILER:	12X55
DRIVE AISLE:	28 FT
FIRE LANE:	26 FT
OVERHANG:	2 FT
TREE WELL:	5 FT

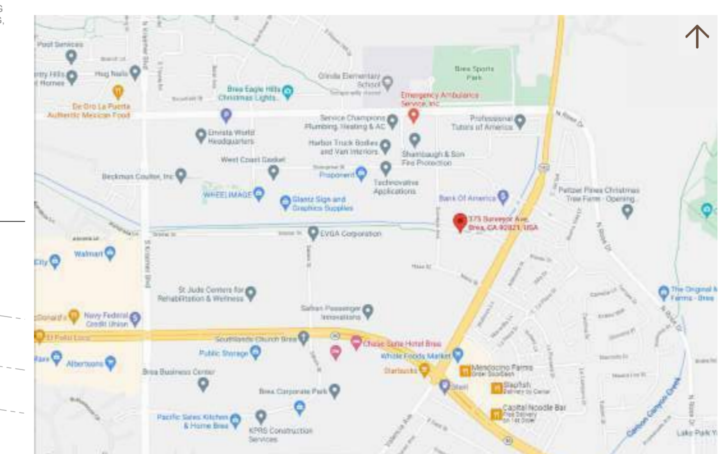
LINE TABLE

LINE #	DIRECTION	LENGTH
L1	S89°53'51"E	583.36'
L2	S00°15'09"W	303.06'
L3	S08°12'58"W	25.93'
L4	S29°21'09"W	58.98'
L5	S29°21'14"W	403.81'
L6	S29°21'23"W	52.58'
L7	S29°21'09"W	394.07'
L8	S29°21'09"W	211.50'
L9	S71°20'23"W	40.36'
L10	N60°28'31"W	166.00'
L11	N10°16'16"E	46.82'
L12	N00°06'30"E	903.20'
L13	N04°45'04"E	50.00'
L14	S89°53'51"E	666.53'
L15	N00°06'09"E	300.01'

CURVE TABLE

CURVE #	RADIUS	DELTA	LENGTH
C1	1150.00'	21°06'06"	423.50'
C2	1230.00'	16°21'07"	351.04'
C3	30.00'	87°16'11"	45.69'
C4	630.00'	10°09'46"	111.75'
C5	45.00'	9°38'18"	7.57'
C6	70.00'	49°44'27"	60.77'

TRAILER CIRCULATION
DELIVERY VAN CIRCULATION
ASSOCIATE CIRCULATION



1" = 60'
0 30 60 150 300
NORTH

REV 12

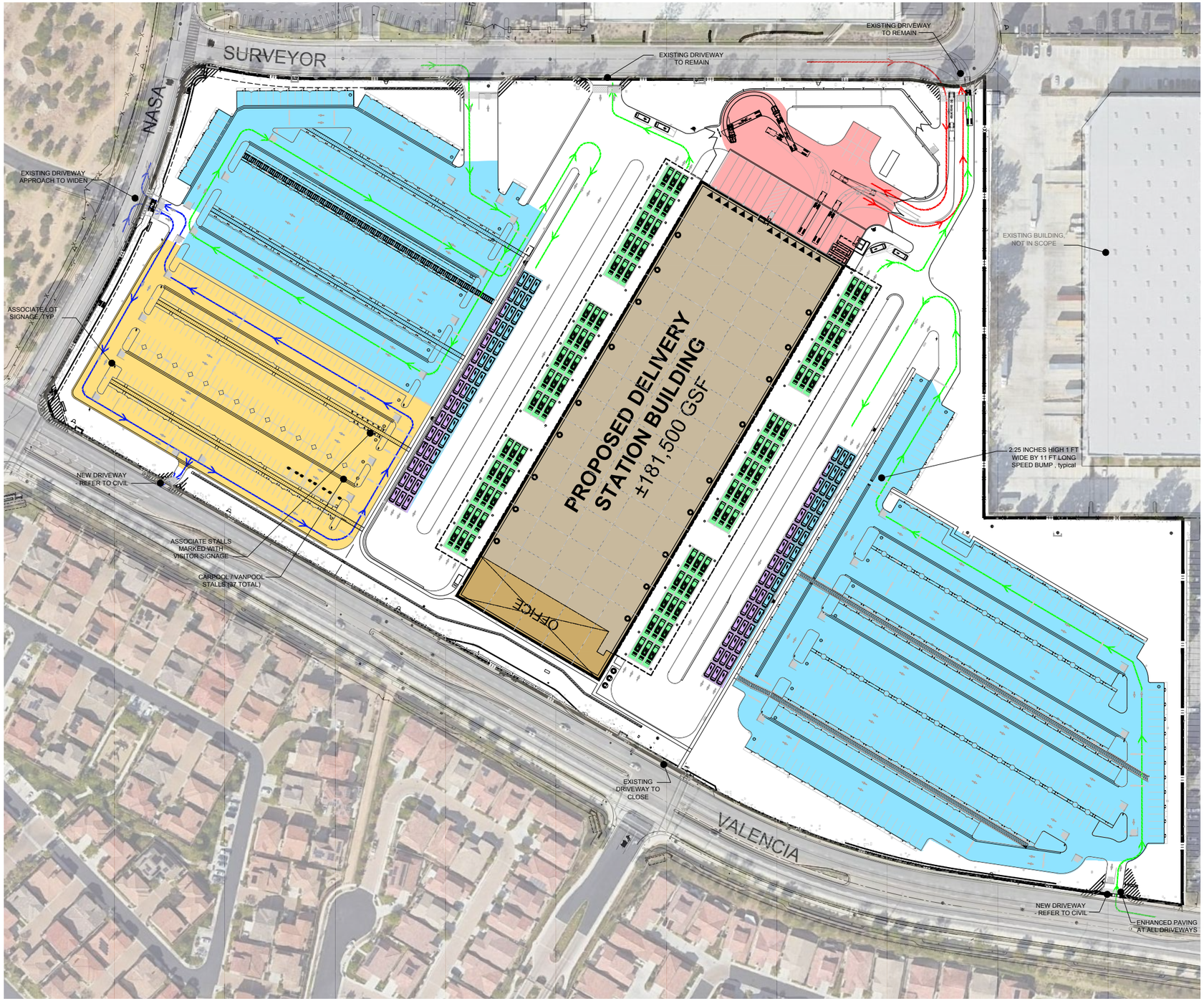
Site Plan

275 Valencia Ave.
Brea, CA 92823

WARE MALCOMB

IRV21-5032-00
07.10.2023

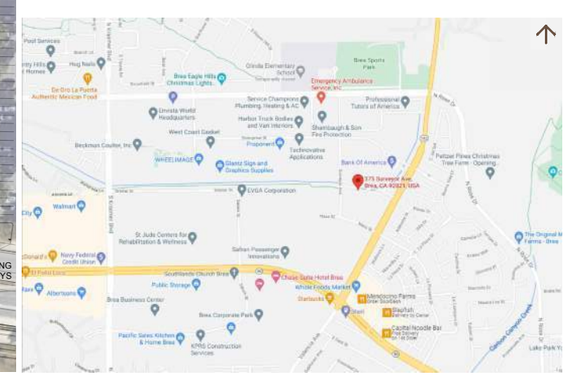
SHEET
3



CATEGORY	PROVIDED
ASSOCIATE LOT	
TOTAL ASSOCIATE LOT PARKING	306
ADA PARKING	8
EV CHARGING ADA PARKING	2
EV CAPABLE PARKING	46
EV CHARGING PARKING	16
CARPOOL / VANPOOL PARKING	37
VAN LOT	
TOTAL VAN PARKING (11'X24')	757
LOADING & STAGING AREA	
VAN STAGING SPACES*	90
VAN LOADING SPACES	90
TRUCK YARD	
LOADING DOCK SPACES	13
TRAILER PARKING SPACES (INCL. HOSTLER)	4
*VAN STAGING ALSO REFERRED TO AS VAN QUEUEING	

VISITOR PARKING NOTE:

THIS SITE IS NOT INTENDED TO BE PUBLIC FACILITY, HOWEVER, IS NOT GATED OR A CONTROLLED ACCESS CAMPUS. SIGNAGE IDENTIFIED ON THIS PLAN WILL PROVIDE WAYFINDING FOR RARE/ERRANT VISITORS TO PARK IN SELECT IDENTIFIED ASSOCIATED PARKING STALLS.



1" = 60'

0 30 60 150 300

NORTH

REV 11

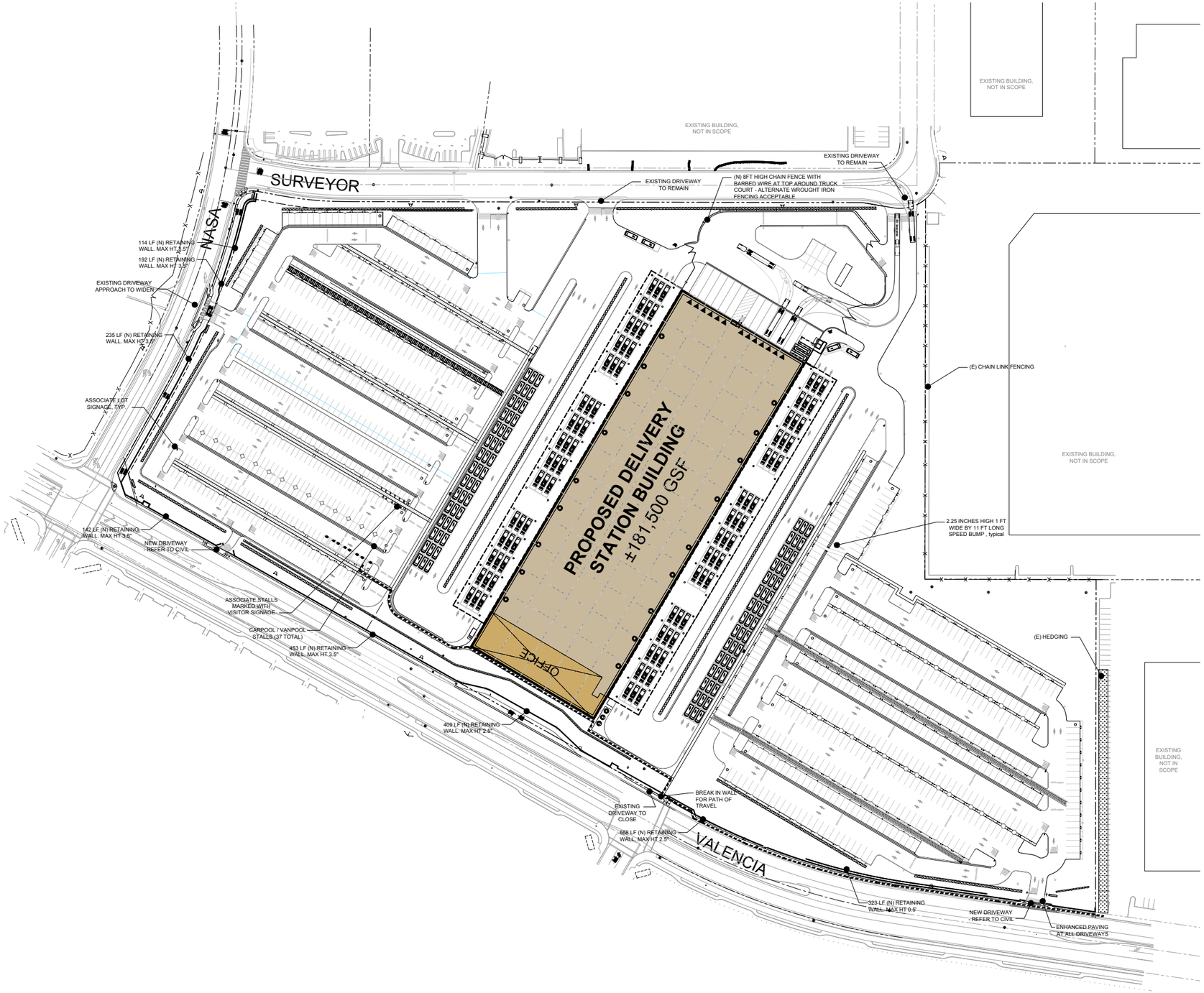
Parking Exhibit

275 Valencia Ave.
Brea, CA 92823

WARE MALCOMB

IRV21-5032-00
07.14.2023

SHEET
5



LEGEND

- ACCESSIBLE PATH OF TRAVEL
- MIN. 3FT TALL HEDGE TO SCREEN PARKING. REFER TO LANDSCAPE DRAWINGS
- MIN. 7FT TALL HEDGE TO SCREEN BUILDING. REFER TO LANDSCAPE DRAWINGS
- RETAINING WALL (HEIGHT PER PLAN). FINISH TO BE SPLIT FACE CMU OR APPROVED EQUAL
- X — EXISTING CHAIN LINK FENCING TO REMAIN

1" = 60'

0 30 60 150 300

NORTH

REV 11

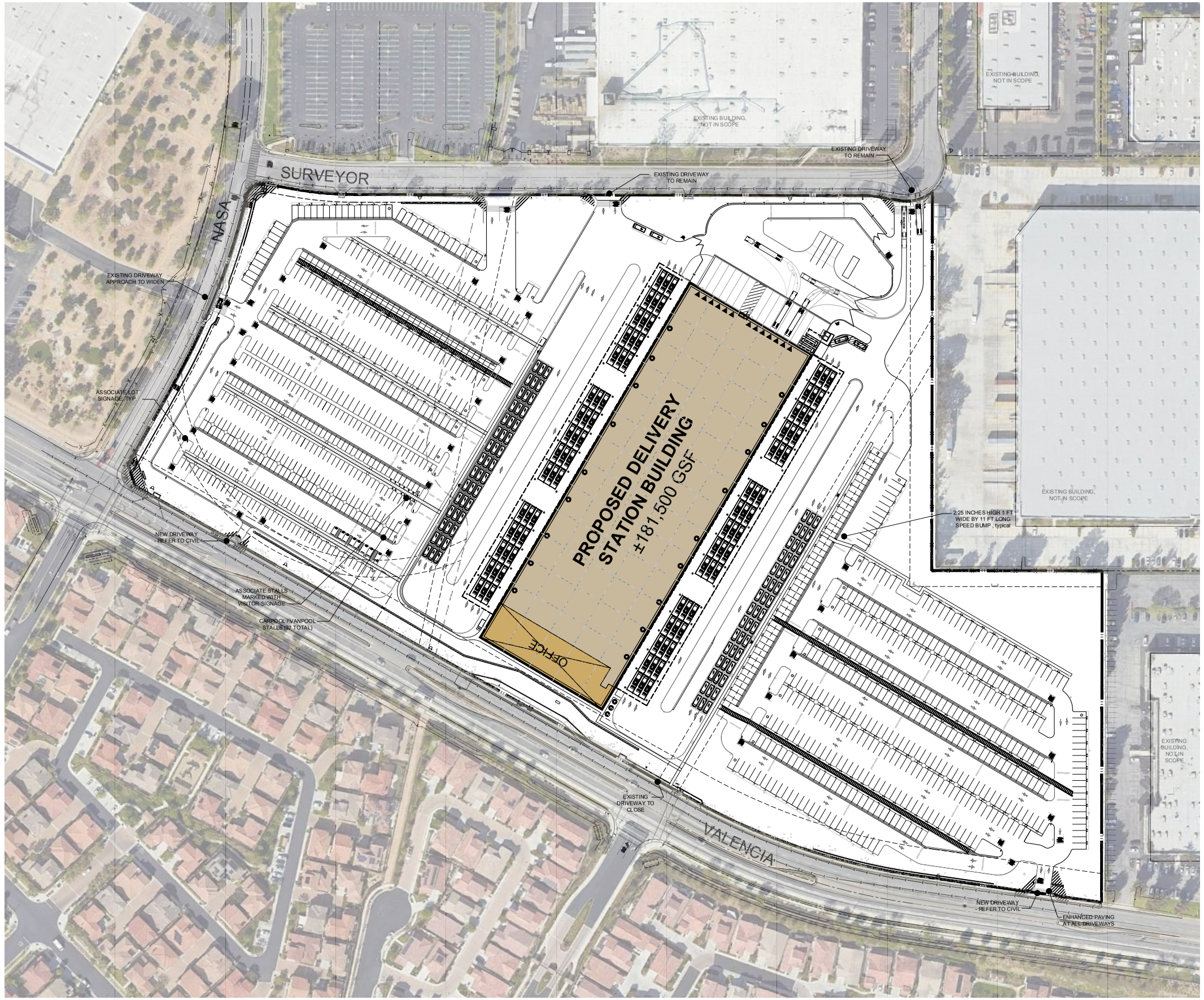
Pedestrian Access / Fencing and Retaining Wall Plan

275 Valencia Ave.
Brea, CA 92823

WARE MALCOMB

IRV21-5032-00
07.14.2023

SHEET
6



1" = 60'

0 30 60 150 300

NORTH

REV 12

Area Plan

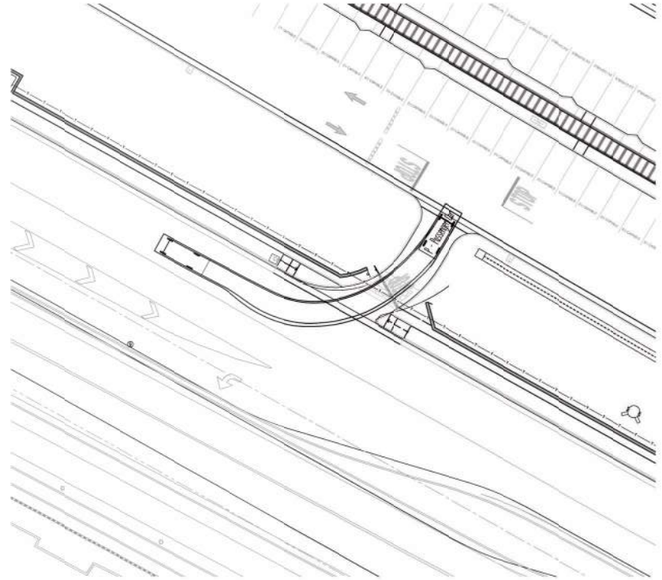
275 Valencia Ave.
Brea, CA 92823

WARE MALCOMB

IRV21-5032-00
07.10.2023

SHEET
3

NASA ENTRY (3)
SCALE: 1" = 20'-0"



VALENCIA ENTRY (2)
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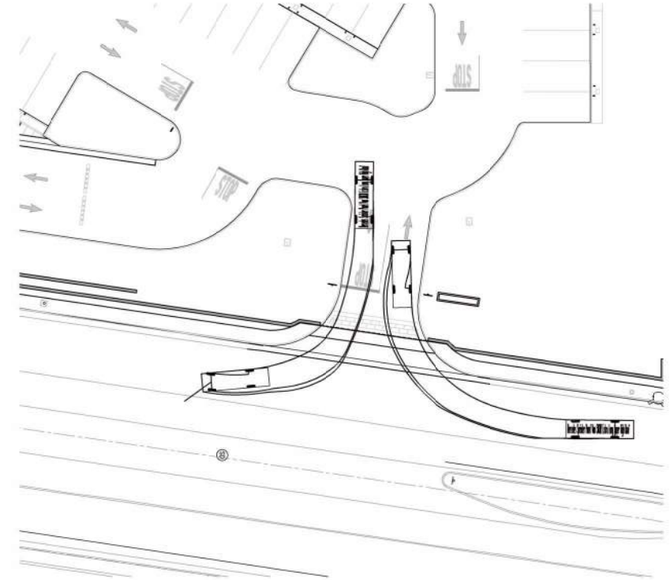

VALENCIA ENTRY (1)
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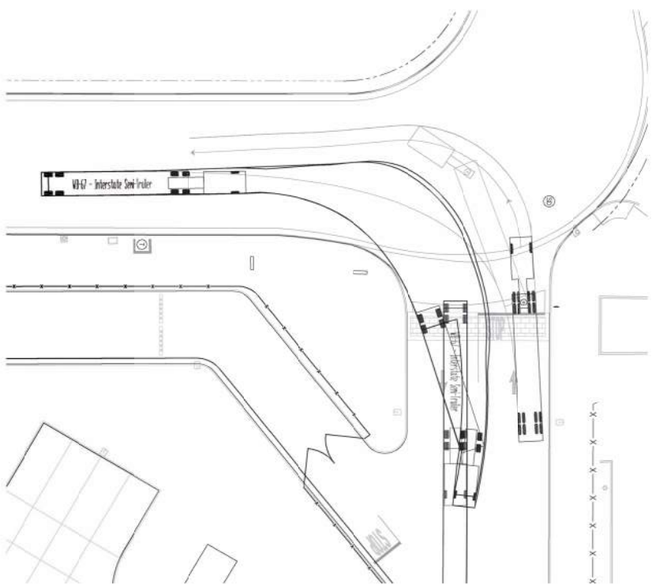

SURVEYOR ENTRY (6)
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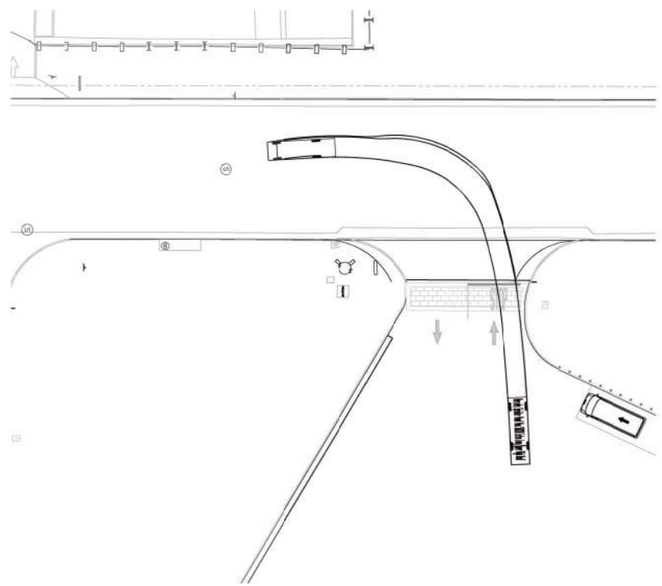

SURVEYOR ENTRY (5)
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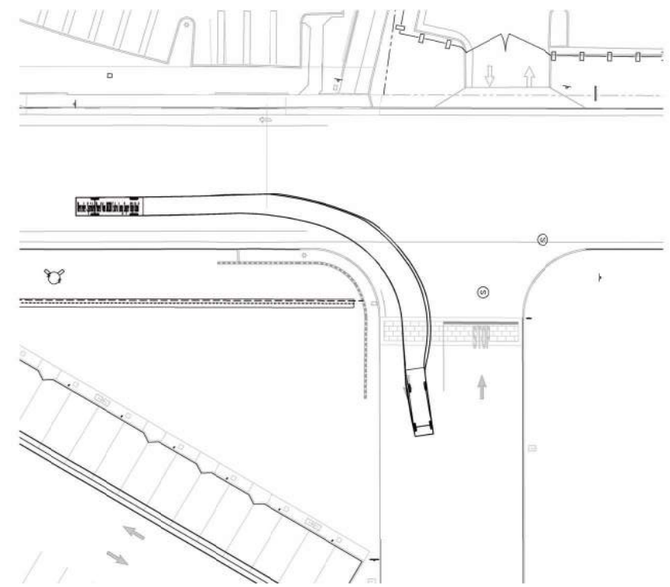


SURVEYOR ENTRY (4)
SCALE: 1" = 20'-0"

1" = 20'
0 10 20 40 100

NORTH

REV 11

Turning Exhibit

275 Valencia Ave.
Brea, CA 92823

WARE MALCOMB

IRV21-5032-00
02.03.2024

SHEET
1

SCOPING DOCUMENT

To: City of Brea, CA

From: Courtney Armusewicz, MCP (courtney.armusewicz@NV5.com)
CC: John Karnowski, PTOE, AICP (john.karnowski@NV5.com)

Date: September 23, 2022

Re: Delivery Station
for 275 Valencia Avenue
Brea, CA 92823

NV5 proposes the following scope of work for the Vehicle Miles Traveled (VMT) analysis and Transportation Impact Analysis report and for the proposed delivery station located at 275 Valencia Avenue in Brea, California.

Project Description

The project site is currently a developed 31.52-acre lot. The existing building will be replaced with a 181,500 SF delivery station. The delivery station will serve as a package sorting and loading facility. Access to the site will be provided via six driveways located along Valencia Avenue (two), Nasa Street (one), and Surveyor Avenue (three). Two existing driveways along Valencia Avenue are proposed to be closed. The site will provide 13-line haul truck docks and 1,091 parking stalls consisting of 329 personal vehicle stalls, 756 van storage stalls and 6-line haul truck stalls. Delivery vans will park onsite overnight. Trucks are not anticipated to park overnight. See Attachment A for the project's location and site plan.

Delivery stations operate 24/7 to support delivery of packages to at customer locations between 11:00 AM and 9:00 PM. Approximately 108 employees and 21 managers support this operation. The shift structure is designed between 2:00 AM and 1:00 PM to mitigate traffic impacts during rush hour periods. Additionally, there will be approximately 27 managers and dispatchers supervising the delivery operations, arriving at 6:00 AM and departing at 2:30 PM followed by another shift of dispatchers arriving at 1:30 PM and departing at 10:00 PM.

The delivery employees arrive at the delivery station at 9:20 AM. Starting at 9:50 AM and ending at 11:10 AM, 282 delivery vans will load and depart from the delivery station at a rate of 90 vans every 20 minutes to facilitate a regulated traffic flow into the surrounding area. The first wave of delivery vans leaves at 10:10am. The departure window is designed to minimize impact on rush hour periods. Approximately 8-10 hours after dispatch, delivery routes are completed, and the vans return to the station between 7:10 PM and 9:10 PM. The drivers park the delivery van onsite and leave using a personal vehicle.

At the proposed delivery station, approximately 25-line haul trucks delivering packages to the delivery station each day are anticipated. Trucks will primarily arrive between the hours of 10:00 PM to 8:00 AM. Once trucks are unloaded, the trucks continue to the next delivery station and do not return to the site. The customer packages are sorted, assigned to the delivery routes, placed onto movable racks and staged for dispatch.

Project Trip Generation

The operations for the proposed project are unique. Peak operations occur outside of standard peak hours (7-9AM, 4-6PM) to avoid impacts to the local roadway network and increase efficiency of site operations. As a result, the following table shows the expected project trips based on the site-specific operations. The proposed delivery station is expected to generate a total of 1,786 trips per day (9 AM, 121 PM). See Attachment B for the proposed traffic schedule.

Table 1: Project Trip Generation

Land Use	Source	Trip Type	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Delivery Station	User Data	Car	1,172	0	0	0	80	40	120
		Van	564	0	0	0	0	0	0
		Truck	50	1	2	3	1	0	1
		Truck (PCE)	150	3	6	9	3	0	3
		Total Trips	**1,786**	**1**	**2**	**3**	**81**	**40**	**121**
		Total Trips (PCE)	**1,886**	**3**	**6**	**9**	**83**	**40**	**123**

Notes:
Passenger Car Equivalent (PCE) rate of 3.0
Based on user specified schedule, see Attachment B

Parking and Circulation

Delivery station employees will enter the site utilizing the Driveway 3 located on Nasa Street to access the employee parking area and exist the site utilizing Driveway 2 or Driveway 3. Approximately 329 parking spaces are provided onsite for personal vehicles. Vans will be parked onsite overnight. Once delivery shifts begin, vans will queue on both sides of the building to load packages. A total of 4 rescue spaces are provided for vans to utilize in case of an emergency in order to avoid delays in operation. Vans will exit the site utilizing Driveway 5 and Driveway 6. Vans will return utilizing Driveway 1 and Driveway 4. Van parking is provided on both sides of the building totaling 756 parking spaces. Line haul trucks will enter and exit the site utilizing Driveway 6, trucks do not return to the site. Driveways are indicated on the site plan.

Project Trip Distribution and Assignment

Project traffic distribution would vary depending on the type of vehicle and roadway access. Line haul trucks entering the site come from different origins, but those exiting the site are bound for larger warehouses and sort centers as well. The employees entering and exiting the site are considered typical commuter home-to-work and work-to-home trips.

The directional distributions and assignments of new project trips are based on the existing land use and anticipated service area for the proposed delivery station. Trip distribution may be refined once traffic counts are collected, and travel patterns observed. Employees are expected to travel to and from Valencia Avenue (75% from the south, and 25% from the north). From the van trips generated, approximately 55% are expected to travel to and from the project site using E Lambert Road - Carbon Canyon Road (35% to and from the east and 25% to and from the west) and approximately 35% are expected to travel to/from Imperial Highway (35% to and from the east). The remaining 5% is anticipated to travel to/from E Birch Street from the west. Truck trips will originate from a nearby warehouse facility northeast of the project site. Trucks will utilize E Lambert Road - Carbon Canyon Road (50% to and from the east and 50% to/from the west) to access. Trip distributions at specific movements are further broken down based on the location of the driveways and the internal circulation of the site. Attachment C provides detailed trip distribution and assignment for cars, vans, and trucks. It is important to note van loading, departure, and return occur outside of the standard peak hour as part of site operations.

Work Scope

The following documents are anticipated to be submitted to the City for review and approval unless otherwise instructed:

1. Transportation Impact Analysis

The City's Transportation Impact Analysis Guidelines indicate LOS analysis, shall be required for proposed projects that to exceed 50 net new vehicle trips from the proposed development in either the AM or PM peak hour trip generation.

The project will include a transportation impact analysis report that includes vehicular, pedestrian, bicycle, and transit assessments. A collision analysis will also be included as part of safety review. The traffic analysis will include the following study scenarios:

- Existing Conditions
- Existing Plus Project Conditions
- Opening Year (2025)
- Opening Year (2025) Plus Project

The following intersections are proposed to be analyzed:

1. Valencia Avenue / Nasa Street – La Floresta Drive
2. Valencia Avenue / La Entrada Drive
3. Valencia Avenue / E Birch Street – N Rose Drive
4. Surveyor Avenue / Nasa Street
5. Enterprise Street / Voyager Avenue
6. E Birch Street / Voyager Avenue
7. Valencia Avenue / E Lambert Road - Carbon Canyon Road
8. E Birch Street / Ranger Street
9. Valencia Avenue / Imperial Highway

D1. Project Driveway 1 / Valencia Avenue
D2. Project Driveway 2 / Valencia Avenue
D3. Project Driveway 3 / Nasa Street
D4. Project Driveway 4 / Surveyor Avenue
D5. Project Driveway 5 / Surveyor Avenue
D6. Project Driveway 6 / Surveyor Avenue

Intersection counts for the standard AM (7–9 AM) and PM (4–6 PM) peak hours will be collected (vehicle, pedestrian, and bicycle volumes) and analyzed for the intersection locations listed above unless otherwise instructed.

2. California Environmental Quality Act (CEQA) – SB 743 Vehicle Miles Traveled (VMT) Analysis

As of July 1, 2020, measuring impacts for land use projects transitioned from utilizing level of service and delay to using vehicle miles traveled (VMT) under CEQA. The City of Brea is in the process of updating the City of Brea Transportation Impact Analysis Guidelines to consider the shift in analysis methodologies to VMT.

The City's draft guidelines outline scenarios in which a project is exempt from VMT analysis. The project is not anticipated to qualify as exempt from VMT analysis because the project does not meet the following criteria:

- Transit Priority Areas Screening
- Low VMT-generating Areas Screening
- Project Type Screening

The City utilizes VMT per service population metric which is the sum of all residents and employees who live or work in a designated area. For the proposed project, the type of vehicle trips can be separated into the categories of cars, vans, and trucks. For the VMT analysis, personal vehicles and delivery van trip types will be considered since site operations rely on van travel throughout the day. To ensure the project's VMT generation is appropriately considered, it is necessary to overlay the estimated miles for van VMT and with OCTAM model results. All customers of the proposed delivery station are already being served by other delivery stations. The VMT analysis will include the comparison of the existing VMT for deliveries servicing existing customers will be compared to consider the regional delivery VMT per day.

Car trips represent employee trips arriving and departing to the project site at the beginning and end of their shift. Van trips represent delivery vehicles that depart the project site and service surrounding zip codes throughout the day, this information will be extracted from the OCTAM model. Van trips represent the number of delivery vehicles that are dispersed to the service zip codes and based on the percentage of deliveries going to the zip codes. Truck trips represent the arrival of goods to the site from a larger facility nearby and are typically not considered in VMT analyses. Given the nature of the site and dependency of operations on van trips throughout the day, it is appropriate to utilize project-specific data to provide the delivery van VMT for the site. The delivery van VMT will be analyzed in conjunction with the OCTAM model outputs for employee trips using per service population metric.

An example of the VMT methodology proposed is provided in the attachments.

City Information Request

To ensure the studies developed align with City guidelines and expectations, the following information is requested:

- Traffic Signal Timing Sheets
- Cumulative projects
- Count collection confirmation
- Study intersection and scenarios confirmation
- Collision statistics (If none is provided, the most recent 5 years of SWITRs collision data will be used)

Figure 1: Project Location

Appendix B – Vehicle Miles Traveled Report

Refer to Brea Delivery Station VMT Report

Appendix C – Site Specific Trip Generation

NA Delivery Station operation

	Autos			Trucks			Vans			Total		
Time	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
00:00	0	0	0	2	2	4	0	0	0	2	2	4
01:00	160	0	160	2	2	4	0	0	0	162	2	164
02:00	0	0	0	3	2	5	0	0	0	3	2	5
03:00	0	0	0	3	2	5	0	0	0	3	2	5
04:00	0	0	0	3	3	6	0	0	0	3	3	6
05:00	0	0	0	3	3	6	0	0	0	3	3	6
06:00	0	0	0	2	3	5	0	0	0	2	3	5
07:00	0	0	0	1	3	4	0	0	0	1	3	4
07:30	0	0	0	1	0	1	0	0	0	1	0	1
08:00	12	0	12	0	2	2	0	0	0	12	2	14
08:30	0	0	0	0	0	0	0	0	0	0	0	0
09:00	180	0	180	1	2	3	0	0	0	181	2	183
10:00	166	49	215	0	0	0	0	180	180	166	229	395
11:00	0	0	0	0	1	1	0	165	165	0	166	166
12:00	0	0	0	0	0	0	0	0	0	0	0	0
13:00	19	0	19	0	0	0	0	0	0	19	0	19
14:00	0	160	160	1	0	1	0	0	0	1	160	161
15:00	5	0	5	1	0	1	0	0	0	6	0	6
16:00	0	0	0	0	1	1	0	0	0	0	1	1
16:30	40	0	40	0	1	1	0	0	0	40	1	41
17:00	40	40	80	0	0	0	0	0	0	40	40	80
17:30	0	52	52	0	0	0	0	0	0	0	52	52
18:00	0	19	19	1	0	1	0	0	0	1	19	20
19:00	0	0	0	1	0	1	0	0	0	1	0	1
20:00	0	180	180	1	1	2	180	0	180	181	181	362
21:00	2	168	170	1	1	2	165	0	165	168	169	337
22:00	0	5	5	2	1	3	0	0	0	2	6	8
23:00	49	0	49	2	1	3	0	0	0	51	1	52
Total	673	673	1346	31	31	62	345	345	690	1049	1049	2098

SC/C1 Shift:	1:20 AM	13:50 PM	160	Assoc.
Managers Shift	9:00 AM	7:30 PM	49	Assoc.
PFSD Shift:	2:00 PM	6:00 PM	19	Assoc.
RTS Shift:	4:00 PM	10:30 PM	5	Assoc.
Drivers:	5:40 AM	10:45 PM	345	Drivers

The trip table above was provided by the site user and reflects the best estimate of the trips produced by the planned operations. Truck volumes are not converted to Passenger Car Equivalents.

The table does not match the the values in Table 6 in the report precisely. The Table 6 values have been modified per the request of the City of Brea to account for trips that may occur during the peak hour which are not anticipated in the user-supplied trip table

Appendix D – Existing Traffic Counts

National Data & Surveying Services Intersection Turning Movement Count

Location: Valencia Ave & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 22-010103-009
Date: 10/6/2022

Data - Totals

NS/EW Streets:	Valencia Ave				Valencia Ave				Imperial Hwy				Imperial Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	1	0	2	2	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	15	13	10	0	26	70	53	0	32	175	7	7	13	213	16	1	651
7:15 AM	19	14	14	1	27	77	45	0	20	247	12	2	14	224	15	5	736
7:30 AM	21	22	21	0	34	58	55	0	25	279	14	4	18	249	12	1	813
7:45 AM	26	26	28	0	57	56	59	0	33	290	26	2	29	296	13	3	944
8:00 AM	21	36	28	0	25	88	57	0	29	234	30	4	16	273	19	6	866
8:15 AM	24	31	24	1	20	52	46	0	42	262	18	5	27	264	16	5	837
8:30 AM	18	25	20	0	32	44	48	0	36	224	20	1	21	244	18	3	754
8:45 AM	32	19	19	0	15	52	58	0	27	227	23	1	23	244	19	6	765
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	176	186	164	2	236	497	421	0	244	1938	150	26	161	2007	128	30	6366
APPROACH %'s :	33.33%	35.23%	31.06%	0.38%	20.45%	43.07%	36.48%	0.00%	10.35%	82.19%	6.36%	1.10%	6.92%	86.29%	5.50%	1.29%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	92	115	101	1	136	254	217	0	129	1065	88	15	90	1082	60	15	3460
PEAK HR FACTOR :	0.885	0.799	0.902	0.250	0.596	0.722	0.919	0.000	0.768	0.918	0.733	0.750	0.776	0.914	0.789	0.625	0.916
	0.909				0.882				0.924				0.914				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	1	0	2	2	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	23	65	37	0	27	33	26	0	43	329	29	13	20	229	20	1	895
4:15 PM	15	54	27	0	16	28	26	0	67	308	26	3	29	259	21	7	886
4:30 PM	28	49	25	1	27	48	23	0	64	366	18	7	21	250	25	3	955
4:45 PM	16	58	28	0	26	36	11	0	51	341	31	6	30	258	43	4	939
5:00 PM	28	81	27	1	22	34	24	0	62	316	34	4	21	288	26	3	971
5:15 PM	14	69	40	0	17	57	19	0	48	338	31	9	28	292	38	2	1002
5:30 PM	24	55	32	0	24	43	17	0	41	338	33	5	29	289	26	3	959
5:45 PM	14	74	32	1	20	22	11	0	53	313	26	3	30	217	31	5	852
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	162	505	248	3	179	301	157	0	429	2649	228	50	208	2082	230	28	7459
APPROACH %'s :	17.65%	55.01%	27.02%	0.33%	28.10%	47.25%	24.65%	0.00%	12.78%	78.93%	6.79%	1.49%	8.16%	81.71%	9.03%	1.10%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	82	263	127	1	89	170	71	0	202	1333	129	24	108	1127	133	12	3871
PEAK HR FACTOR :	0.732	0.812	0.794	0.250	0.856	0.746	0.740	0.000	0.815	0.977	0.949	0.667	0.900	0.965	0.773	0.750	0.966
	0.863				0.887				0.984				0.958				

National Data & Surveying Services Intersection Turning Movement Count

Location: Valencia Ave & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 22-010103-009
Date: 10/6/2022

Data - Bikes

NS/EW Streets:	Valencia Ave				Valencia Ave				Imperial Hwy				Imperial Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	1	0	2	2	1	0	2	3	1	0	2	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	0	0	0	0	0	0	0	0	0	0	1	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	0	0	0	0	0	0	0	0	0	2	1	0	6
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%									0.00%	66.67%	33.33%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.375
	0.250												0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	1	0	2	2	1	0	2	3	1	0	2	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	0	0	0	0	0	0	0	0	0	1	1	0	2
4:15 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	1	0	0	1	0	0	0	1	0	0	1	1	1	0	8
APPROACH %'s :	0.00%	66.67%	33.33%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	33.33%	33.33%	33.33%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250
					0.250				0.250								

National Data & Surveying Services Intersection Turning Movement Count

Location: Valencia Ave & Imperial Hwy
City: Brea
Project ID: 22-010103-009
Date: 10/6/2022

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Valencia Ave		Valencia Ave		Imperial Hwy		Imperial Hwy		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	2	0	1	0	0	3
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	1	0	0	1
8:15 AM	0	0	0	0	0	0	0	1	1
8:30 AM	1	0	0	0	0	0	2	0	3
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	1	0	0	2	0	2	2	1	8
APPROACH %'s :	100.00%	0.00%	0.00%	100.00%	0.00%	100.00%	66.67%	33.33%	
PEAK HR :	**07:30 AM - 08:30 AM**								TOTAL
PEAK HR VOL :	0	0	0	0	0	1	0	1	2
PEAK HR FACTOR :						0.250		0.250	0.500
					0.250		0.250		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	1	1	1	0	0	3
4:15 PM	0	0	6	0	6	0	0	0	12
4:30 PM	0	0	1	1	0	0	0	0	2
4:45 PM	0	1	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	2	0	0	2
5:15 PM	0	0	1	0	2	1	0	0	4
5:30 PM	0	1	0	0	1	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	2	8	2	10	4	0	0	26
APPROACH %'s :	0.00%	100.00%	80.00%	20.00%	71.43%	28.57%			
PEAK HR :	**04:45 PM - 05:45 PM**								TOTAL
PEAK HR VOL :	0	2	1	0	3	3	0	0	9
PEAK HR FACTOR :		0.500	0.250		0.375	0.375			0.563
	0.500		0.250		0.500				

Prepared by National Data & Surveying Services

Valencia Ave & Imperial Hwy

Peak Hour Turning Movement Count

ID: 22-010103-009
City: Brea

Day: Thursday
Date: 10/6/2022

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Valencia Ave)

AM	217	254	136	0	304	AM
NOON	0	0	0	0	0	NOON
PM	71	170	89	0	598	PM
	1	2	2	0		

EASTBOUND (Imperial Hwy)

AM	NOON	PM	
1406	0	1304	
15	0	24	0
129	0	202	2
1065	0	1333	3
88	0	129	1
AM	NOON	PM	

WESTBOUND (Imperial Hwy)

	PM	NOON	AM
1	133	0	60
3	1127	0	1082
2	108	0	90
0	12	0	15
	1561	0	1317
	PM	NOON	AM

NORTHBOUND (Valencia Ave)

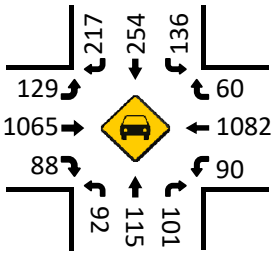
	0	2	2	1		
PM	408	1	82	263	127	PM
NOON	0	0	0	0	0	NOON
AM	433	1	92	115	101	AM

CONTROL

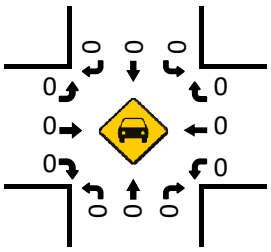
Signalized

	AM	NOON	PM
TEV	3460	0	3871
PHF	0.92		0.97

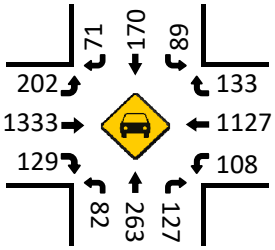
Totals (AM)



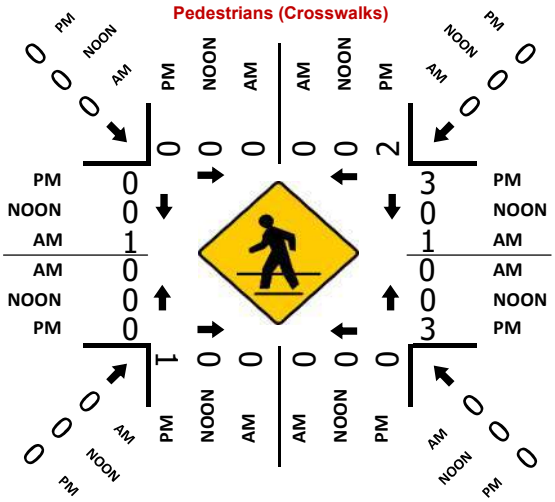
Totals (NOON)



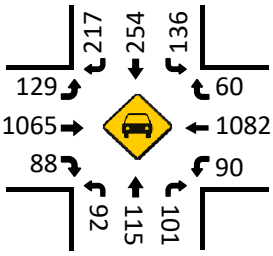
Totals (PM)



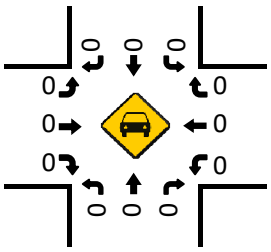
Pedestrians (Crosswalks)



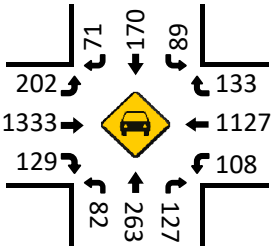
Totals (AM)



Totals (NOON)



Totals (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Valencia Ave & Nasa St/La Floresta Dr
City: Brea
Control: Signalized

Project ID: 22-010103-001
Date: 10/6/2022

Data - Totals

NS/EW Streets:	Valencia Ave				Valencia Ave				Nasa St/La Floresta Dr				Nasa St/La Floresta Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	1	2	0	0	1	0.5	0.5	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	21	34	2	0	1	133	0	0	0	0	10	0	8	0	7	0	216
7:15 AM	15	38	2	0	2	145	0	0	0	0	6	0	6	1	12	0	227
7:30 AM	14	55	3	0	6	150	1	0	0	1	7	0	10	1	34	0	282
7:45 AM	10	64	6	2	12	156	0	0	0	0	14	0	8	9	42	0	323
8:00 AM	7	63	2	2	29	162	2	0	1	2	8	0	8	0	6	0	292
8:15 AM	9	77	8	0	10	113	0	0	0	0	11	0	11	0	12	0	251
8:30 AM	12	59	8	2	7	119	1	0	0	0	7	0	9	1	11	0	236
8:45 AM	8	62	1	0	6	124	1	0	0	0	9	0	6	0	6	0	223
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	96	452	32	6	73	1102	5	0	1	3	72	0	66	12	130	0	2050
APPROACH %'s :	16.38%	77.13%	5.46%	1.02%	6.19%	93.39%	0.42%	0.00%	1.32%	3.95%	94.74%	0.00%	31.73%	5.77%	62.50%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	40	259	19	4	57	581	3	0	1	3	40	0	37	10	94	0	1148
PEAK HR FACTOR :	0.714	0.841	0.594	0.500	0.491	0.897	0.375	0.000	0.250	0.375	0.714	0.000	0.841	0.278	0.560	0.000	0.889
	0.856				0.830				0.786				0.597				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	1	2	0	0	1	0.5	0.5	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	4	99	7	4	6	66	1	0	1	0	21	0	5	0	11	0	225
4:15 PM	3	122	10	3	3	82	0	0	1	1	5	0	5	0	8	0	243
4:30 PM	3	121	12	2	6	74	0	0	0	0	25	0	9	0	12	0	264
4:45 PM	2	135	10	3	10	69	0	0	0	0	13	0	3	0	5	0	250
5:00 PM	5	157	8	2	8	60	0	0	0	0	22	0	7	0	3	0	272
5:15 PM	1	131	10	0	11	85	0	0	0	0	17	0	5	0	18	0	278
5:30 PM	0	140	6	6	6	69	0	1	0	0	12	0	8	0	7	0	255
5:45 PM	3	137	16	6	14	60	0	0	0	0	2	0	4	0	6	0	248
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	21	1042	79	26	64	565	1	1	2	1	117	0	46	0	70	0	2035
APPROACH %'s :	1.80%	89.21%	6.76%	2.23%	10.14%	89.54%	0.16%	0.16%	1.67%	0.83%	97.50%	0.00%	39.66%	0.00%	60.34%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	11	544	40	7	35	288	0	0	0	0	77	0	24	0	38	0	1064
PEAK HR FACTOR :	0.550	0.866	0.833	0.583	0.795	0.847	0.000	0.000	0.000	0.000	0.770	0.000	0.667	0.000	0.528	0.000	0.957
	0.875				0.841				0.770				0.674				

National Data & Surveying Services Intersection Turning Movement Count

Location: Valencia Ave & Nasa St/La Floresta Dr
City: Brea
Control: Signalized

Project ID: 22-010103-001
Date: 10/6/2022

Data - Bikes

NS/EW Streets:	Valencia Ave				Valencia Ave				Nasa St/La Floresta Dr				Nasa St/La Floresta Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	1	2	0	0	1	0.5	0.5	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:30 AM	1	0	0	0	0	0	1	0	0	2	0	0	0	0	1	0	5
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	1	0	0	0	0	1	0	0	4	0	0	0	1	1	0	11
APPROACH %'s :	75.00%	25.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	3
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.750
	0.250								0.250				0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	1	2	0	0	1	0.5	0.5	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
5:45 PM	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	0	1	0	0	1	2	0	1	0	2	0	0	10
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	25.00%	50.00%	0.00%	25.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.250
									0.250				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Valencia Ave & Nasa St/La Floresta Dr
City: Brea
Project ID: 22-010103-001
Date: 10/6/2022

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Valencia Ave		Valencia Ave		Nasa St/La Floresta Dr		Nasa St/La Floresta Dr		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	0	2	0	0	3
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	2	2	0	0	0	0	0	0	4
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	2	3	0	0	0	2	0	0	7
APPROACH %'s :	40.00%	60.00%			0.00%	100.00%			
PEAK HR :	**07:30 AM - 08:30 AM**								TOTAL
PEAK HR VOL :	0	1	0	0	0	2	0	0	3
PEAK HR FACTOR :	0.250				0.250				0.250

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	1	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	2	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	2	1	0	0	2	0	0	0	5
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	2	3	0	0	3	0	0	0	8
APPROACH %'s :	40.00%	60.00%			100.00%	0.00%			
PEAK HR :	**04:30 PM - 05:30 PM**								TOTAL
PEAK HR VOL :	0	2	0	0	1	0	0	0	3
PEAK HR FACTOR :	0.250				0.250				0.375

Prepared by National Data & Surveying Services

Valencia Ave & Nasa St/La Floresta Dr

Peak Hour Turning Movement Count

ID: 22-010103-001
City: Brea

Day: Thursday
Date: 10/6/2022

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND – Valencia Ave

	Right	Through	Left	U-Turn	Departing
AM	3	581	57	0	354
NOON	0	0	0	0	0
PM	0	288	35	0	582
Lanes	0	2	1	0	

EASTBOUND – Nasa St/La Floresta Dr

	AM	NOON	PM	Lanes
Departing	53	0	11	
U-Turn	0	0	0	0
Left	1	0	0	1
Through	3	0	0	0.5
Right	40	0	77	0.5

WESTBOUND – Nasa St/La Floresta Dr

	PM	NOON	AM	Lanes
Right	38	0	94	0.5
Through	0	0	10	0.5
Left	24	0	37	1
U-Turn	0	0	0	0
Departing	75	0	79	

NORTHBOUND – Valencia Ave

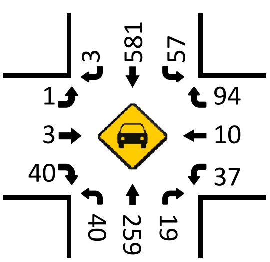
	Departing	U-Turn	Left	Through	Right
Lanes		0	2	2	0
PM	396	7	11	544	40
NOON	0	0	0	0	0
AM	662	4	40	259	19

CONTROL

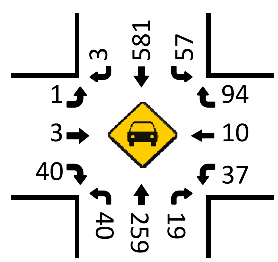
Signalized

	AM	NOON	PM
TEV	1148	0	1064
PHF	0.89		0.96

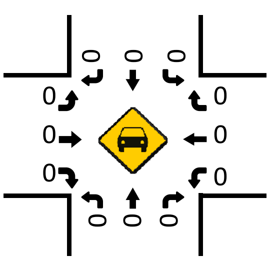
Totals (AM)



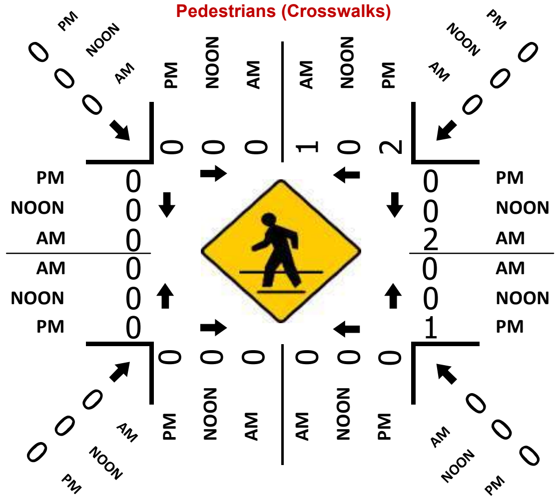
Totals (AM)



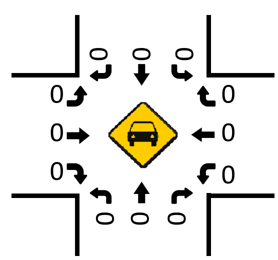
Totals (NOON)



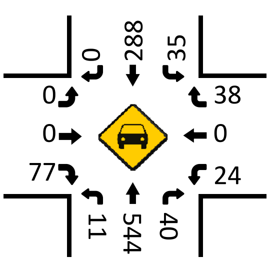
Pedestrians (Crosswalks)



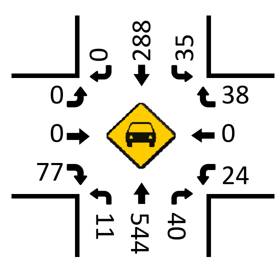
Totals (NOON)



Totals (PM)



Totals (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Valencia Ave & La Entrada Dr
City: Brea
Control: Signalized

Project ID: 22-010103-002
Date: 10/6/2022

Data - Totals

NS/EW Streets:	Valencia Ave				Valencia Ave				La Entrada Dr				La Entrada Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0.5	0.5	1	0	0.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	49	0	0	1	147	0	1	0	0	0	0	2	0	2	0	202
7:15 AM	0	54	0	0	0	143	0	1	0	0	0	0	0	0	0	0	198
7:30 AM	0	99	2	0	1	174	0	1	0	0	0	0	1	0	4	0	282
7:45 AM	0	88	1	0	2	183	0	0	0	0	0	0	1	0	1	0	276
8:00 AM	1	85	0	0	3	171	0	0	0	0	0	0	1	0	4	0	265
8:15 AM	0	75	2	0	0	126	0	0	0	0	0	0	4	0	4	0	211
8:30 AM	0	72	3	0	5	115	1	0	0	0	1	0	6	0	4	0	207
8:45 AM	0	61	3	0	1	121	0	1	0	0	0	0	2	0	1	0	190
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	583	11	0	13	1180	1	4	0	0	1	0	17	0	20	0	1831
APPROACH %'s :	0.17%	97.98%	1.85%	0.00%	1.09%	98.50%	0.08%	0.33%	0.00%	0.00%	100.00%	0.00%	45.95%	0.00%	54.05%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	347	5	0	6	654	0	1	0	0	0	0	7	0	13	0	1034
PEAK HR FACTOR :	0.250	0.876	0.625	0.000	0.500	0.893	0.000	0.250	0.000	0.000	0.000	0.000	0.438	0.000	0.813	0.000	0.917
	0.874				0.893								0.625				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0.5	0.5	1	0	0.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	114	2	0	7	79	0	0	0	0	0	0	2	0	1	0	205
4:15 PM	0	127	2	0	5	76	0	0	0	0	1	0	2	0	2	0	215
4:30 PM	0	137	1	0	5	75	0	0	0	0	0	0	1	0	5	0	224
4:45 PM	1	144	3	0	4	73	0	0	0	0	1	0	2	0	5	0	233
5:00 PM	0	154	3	0	3	70	0	0	0	0	0	0	1	0	1	0	232
5:15 PM	0	162	2	0	2	91	0	0	0	0	0	0	1	0	1	0	259
5:30 PM	0	135	4	0	3	74	0	0	0	0	0	0	0	0	2	0	218
5:45 PM	0	132	2	0	3	72	0	0	0	0	0	0	1	0	1	0	211
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	1105	19	0	32	610	0	0	0	0	2	0	10	0	18	0	1797
APPROACH %'s :	0.09%	98.22%	1.69%	0.00%	4.98%	95.02%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	35.71%	0.00%	64.29%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	1	597	9	0	14	309	0	0	0	0	1	0	5	0	12	0	948
PEAK HR FACTOR :	0.250	0.921	0.750	0.000	0.700	0.849	0.000	0.000	0.000	0.000	0.250	0.000	0.625	0.000	0.600	0.000	0.915
	0.925				0.868				0.250				0.607				

National Data & Surveying Services Intersection Turning Movement Count

Location: Valencia Ave & La Entrada Dr
City: Brea
Control: Signalized

Project ID: 22-010103-002
Date: 10/6/2022

Data - Bikes

AM

NS/EW Streets:	Valencia Ave				Valencia Ave				La Entrada Dr				La Entrada Dr				
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0.5	0.5	1	0	0.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375
	0.500				0.250												

PM

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0.5	0.5	1	0	0.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

National Data & Surveying Services Intersection Turning Movement Count

Location: Valencia Ave & La Entrada Dr
City: Brea
Project ID: 22-010103-002
Date: 10/6/2022

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Valencia Ave		Valencia Ave		La Entrada Dr		La Entrada Dr		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	1	0	0	0	1
7:15 AM	0	0	0	0	3	3	0	0	6
7:30 AM	0	0	0	0	1	0	0	0	1
7:45 AM	0	0	0	0	0	2	0	0	2
8:00 AM	0	1	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	1	0	0	1
8:30 AM	0	0	0	0	0	1	0	0	1
8:45 AM	0	0	0	0	0	1	0	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	1	0	0	5	8	0	0	14
APPROACH %'s :	0.00%	100.00%			38.46%	61.54%			
PEAK HR :	**07:30 AM - 08:30 AM**								TOTAL
PEAK HR VOL :	0	1	0	0	1	3	0	0	5
PEAK HR FACTOR :		0.250			0.250	0.375			0.625
	0.250				0.500				

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	1	2	0	0	3
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	2	1	0	0	3
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	3	3	0	0	6
APPROACH %'s :					50.00%	50.00%			
PEAK HR :	**04:30 PM - 05:30 PM**								TOTAL
PEAK HR VOL :	0	0	0	0	1	2	0	0	3
PEAK HR FACTOR :					0.250	0.250			0.250
					0.250				

Prepared by National Data & Surveying Services

Valencia Ave & La Entrada Dr

Peak Hour Turning Movement Count

ID: 22-010103-002
City: Brea

Day: Thursday
Date: 10/6/2022

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Valencia Ave)

AM	0	654	6	1	361	AM
NOON	0	0	0	0	0	NOON
PM	0	309	14	0	609	PM

EASTBOUND (La Entrada Dr)

AM	NOON	PM		
1	0	1		
0	0	0		0
0	0	0		0.5
0	0	0		0.5
0	0	1		1
AM	NOON	PM		

WESTBOUND (La Entrada Dr)

PM	NOON	AM	
12	0	13	1
0	0	0	0.5
5	0	7	0.5
0	0	0	0
23	0	11	
PM	NOON	AM	

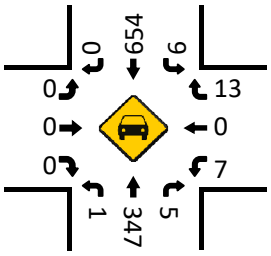
NORTHBOUND (Valencia Ave)

PM	315	0	1	597	9	PM
NOON	0	0	0	0	0	NOON
AM	661	0	1	347	5	AM

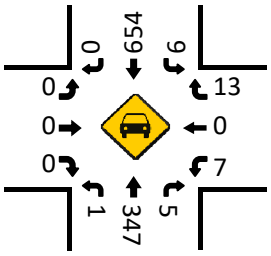
Turning movements (red): 0 2 1 0 (southbound); 0 1 2 0 (northbound)

CONTROL			
Signalized			
TEV	1034 AM	0 NOON	948 PM
PHF	0.92		0.92

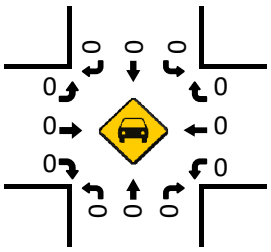
Totals (AM)



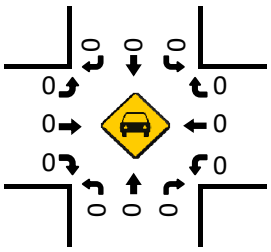
Totals (AM)



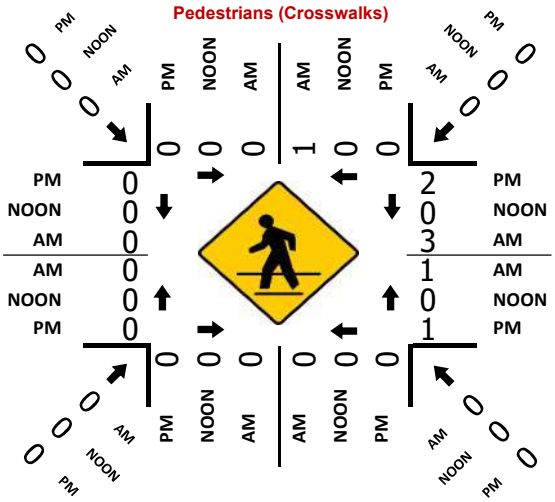
Totals (NOON)



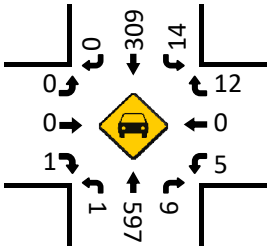
Totals (NOON)



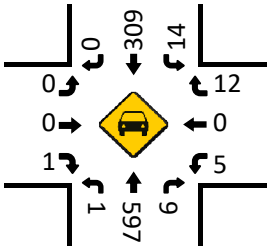
Pedestrians (Crosswalks)



Totals (PM)



Totals (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Valencia Ave & Birch St
City: Brea
Control: Signalized

Project ID: 22-010103-003
Date: 10/6/2022

Data - Totals

NS/EW Streets:	Valencia Ave				Valencia Ave				Birch St				Birch St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	2	2	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	16	33	1	0	169	127	31	0	6	44	13	0	1	52	41	0	534
7:15 AM	23	31	3	0	177	136	23	0	2	67	12	0	1	63	58	0	596
7:30 AM	36	46	2	0	167	149	62	0	10	115	17	0	1	69	59	0	733
7:45 AM	59	41	10	1	163	150	131	0	21	127	30	0	4	77	82	0	896
8:00 AM	16	56	4	2	158	123	21	0	26	104	55	0	3	80	81	0	729
8:15 AM	19	67	3	0	122	98	15	0	11	95	24	0	0	75	78	0	607
8:30 AM	17	53	0	0	128	106	18	0	9	59	18	0	1	69	59	0	537
8:45 AM	18	51	1	1	117	113	12	0	6	60	16	0	1	75	76	0	547
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	204	378	24	4	1201	1002	313	0	91	671	185	0	12	560	534	0	5179
APPROACH %'s :	33.44%	61.97%	3.93%	0.66%	47.73%	39.83%	12.44%	0.00%	9.61%	70.86%	19.54%	0.00%	1.08%	50.63%	48.28%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	130	210	19	3	610	520	229	0	68	441	126	0	8	301	300	0	2965
PEAK HR FACTOR :	0.551	0.784	0.475	0.375	0.913	0.867	0.437	0.000	0.654	0.868	0.573	0.000	0.500	0.941	0.915	0.000	0.827
	0.815				0.765				0.858				0.928				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	2	2	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	31	80	1	0	115	57	2	0	36	117	14	0	3	76	174	0	706
4:15 PM	24	92	0	0	122	53	9	1	33	112	28	0	2	85	160	0	721
4:30 PM	42	93	3	0	151	54	7	0	47	98	26	0	0	83	172	0	776
4:45 PM	35	111	3	0	102	48	10	0	39	123	27	0	3	91	192	0	784
5:00 PM	47	104	6	0	119	41	13	0	60	101	25	0	0	115	189	0	820
5:15 PM	33	117	2	0	107	55	6	0	39	127	32	0	5	92	185	0	800
5:30 PM	45	107	3	0	131	48	7	0	36	118	22	0	1	71	153	0	742
5:45 PM	37	86	0	0	118	51	6	0	30	125	29	0	1	107	189	0	779
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	294	790	18	0	965	407	60	1	320	921	203	0	15	720	1414	0	6128
APPROACH %'s :	26.68%	71.69%	1.63%	0.00%	67.34%	28.40%	4.19%	0.07%	22.16%	63.78%	14.06%	0.00%	0.70%	33.50%	65.80%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	157	425	14	0	479	198	36	0	185	449	110	0	8	381	738	0	3180
PEAK HR FACTOR :	0.835	0.908	0.583	0.000	0.793	0.900	0.692	0.000	0.771	0.884	0.859	0.000	0.400	0.828	0.961	0.000	0.970
	0.949				0.841				0.939				0.927				

National Data & Surveying Services Intersection Turning Movement Count

Location: Valencia Ave & Birch St
City: Brea
Control: Signalized

Project ID: 22-010103-003
Date: 10/6/2022

Data - Bikes

AM

NS/EW Streets:	Valencia Ave				Valencia Ave				Birch St				Birch St				
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	2	2	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
7:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	1	0	0	1	0	0	1	3	1	0	0	0	0	0	10
APPROACH %'s :	0.00%	75.00%	25.00%	0.00%	0.00%	100.00%	0.00%	0.00%	20.00%	60.00%	20.00%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	2	0	0	0	1	0	0	0	3	0	0	0	0	0	0	6
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.750
	0.250				0.250				0.375								

PM

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	2	2	0	0	1	2	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	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	1	0	0	0	0	0	0	0	0	0	1	0	5
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%					0.00%	0.00%	100.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
	0.250																

National Data & Surveying Services Intersection Turning Movement Count

Location: Valencia Ave & Birch St
City: Brea
Project ID: 22-010103-003
Date: 10/6/2022

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Valencia Ave		Valencia Ave		Birch St		Birch St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	1	0	0	0	1	3
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	1	0	0	0	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	1	2	0	0	0	1	4
APPROACH %'s :			33.33%	66.67%			0.00%	100.00%	
PEAK HR :	**07:30 AM - 08:30 AM**								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	1	0	1
4:30 PM	0	0	0	0	0	0	0	1	1
4:45 PM	0	0	0	1	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	1	1
5:45 PM	0	0	0	1	0	0	0	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	2	0	0	1	2	5
APPROACH %'s :			0.00%	100.00%			33.33%	66.67%	
PEAK HR :	**04:30 PM - 05:30 PM**								TOTAL
PEAK HR VOL :	0	0	0	1	0	0	0	1	2
PEAK HR FACTOR :			0.250	0.250			0.250	0.250	0.500

Prepared by National Data & Surveying Services

Valencia Ave & Birch St

Peak Hour Turning Movement Count

ID: 22-010103-003
City: Brea

Day: Thursday
Date: 10/6/2022

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Valencia Ave)

AM	229	520	610	0	578
NOON	0	0	0	0	0
PM	36	198	479	0	1348
Lanes	0	2	1	0	

WESTBOUND (Birch St)

Lanes	PM	NOON	AM
1	738	0	300
2	381	0	301
1	8	0	8
0	0	0	0
	942	0	1070

EASTBOUND (Birch St)

AM	NOON	PM	Lanes
660	0	574	
0	0	0	0
68	0	185	2
441	0	449	2
126	0	110	0

NORTHBOUND (Valencia Ave)

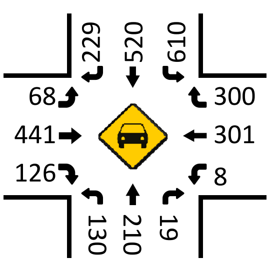
Lanes		0	1	2	0
PM	316	0	157	425	14
NOON	0	0	0	0	0
AM	657	3	130	210	19

CONTROL

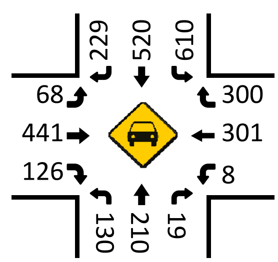
Signalized

	AM	NOON	PM
TEV	2965	0	3180
PHF	0.83		0.97

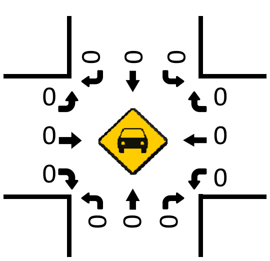
Totals (AM)



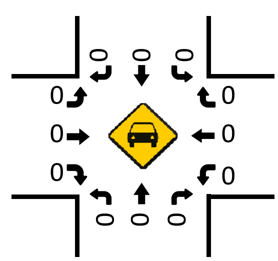
Totals (AM)



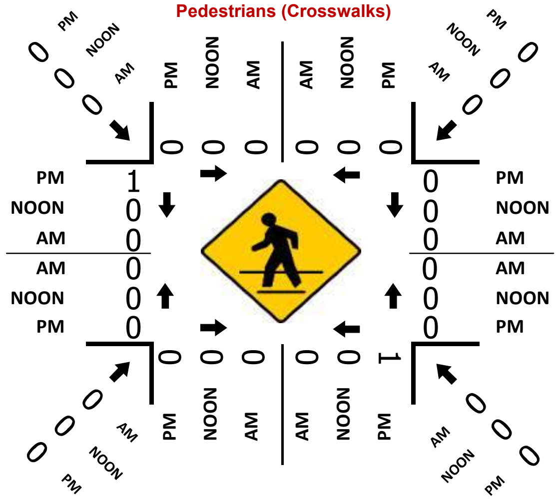
Totals (NOON)



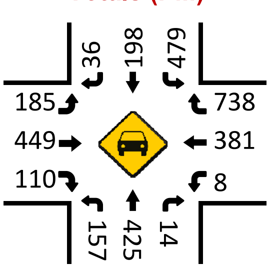
Totals (NOON)



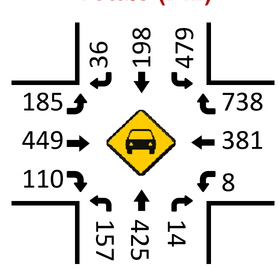
Pedestrians (Crosswalks)



Totals (PM)



Totals (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Valencia Ave & Lambert Rd
City: Brea
Control: Signalized

Project ID: 22-010103-004
Date: 10/6/2022

Data - Totals

NS/EW Streets:	Valencia Ave				Valencia Ave				Lambert Rd				Lambert Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	3	0	0	2	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	25	31	19	0	1	47	4	0	7	24	53	0	219	101	2	0	533
7:15 AM	37	38	21	0	0	27	5	0	9	26	60	0	257	114	1	0	595
7:30 AM	39	35	37	0	2	82	6	0	13	33	71	0	217	108	0	0	643
7:45 AM	50	49	49	0	2	143	15	0	11	28	78	0	225	141	0	0	791
8:00 AM	35	67	53	0	3	38	8	0	19	33	57	0	205	139	2	0	659
8:15 AM	46	64	51	0	3	49	9	0	16	41	40	0	149	120	0	0	588
8:30 AM	38	49	37	0	3	47	8	0	18	48	58	0	149	106	0	0	561
8:45 AM	39	47	43	0	3	71	9	0	10	32	60	0	106	90	2	0	512
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	309	380	310	0	17	504	64	0	103	265	477	0	1527	919	7	0	4882
APPROACH %'s :	30.93%	38.04%	31.03%	0.00%	2.91%	86.15%	10.94%	0.00%	12.19%	31.36%	56.45%	0.00%	62.25%	37.46%	0.29%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	161	189	160	0	7	290	34	0	52	120	266	0	904	502	3	0	2688
PEAK HR FACTOR :	0.805	0.705	0.755	0.000	0.583	0.507	0.567	0.000	0.684	0.909	0.853	0.000	0.879	0.890	0.375	0.000	0.850
	0.823				0.517				0.936				0.947				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	3	0	0	2	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	90	26	178	0	6	42	8	0	11	134	85	0	39	43	2	0	664
4:15 PM	75	32	173	0	3	64	7	0	5	156	87	0	38	44	0	0	684
4:30 PM	78	36	204	0	3	44	5	0	7	156	109	0	55	70	2	0	769
4:45 PM	86	49	201	0	1	28	5	0	2	160	96	0	50	50	1	0	729
5:00 PM	87	51	220	0	1	33	4	0	10	157	78	0	48	49	0	0	738
5:15 PM	95	45	195	0	9	39	3	0	2	158	91	0	39	52	2	0	730
5:30 PM	84	55	153	0	2	33	5	0	9	127	109	0	50	53	1	0	681
5:45 PM	87	60	168	0	3	31	4	0	15	126	93	1	46	41	3	0	678
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	682	354	1492	0	28	314	41	0	61	1174	748	1	365	402	11	0	5673
APPROACH %'s :	26.98%	14.00%	59.02%	0.00%	7.31%	81.98%	10.70%	0.00%	3.07%	59.17%	37.70%	0.05%	46.92%	51.67%	1.41%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	346	181	820	0	14	144	17	0	21	631	374	0	192	221	5	0	2966
PEAK HR FACTOR :	0.911	0.887	0.932	0.000	0.389	0.818	0.850	0.000	0.525	0.986	0.858	0.000	0.873	0.789	0.625	0.000	0.964
	0.941				0.841				0.943				0.823				

National Data & Surveying Services Intersection Turning Movement Count

Location: Valencia Ave & Lambert Rd
City: Brea
Control: Signalized

Project ID: 22-010103-004
Date: 10/6/2022

Data - Bikes

NS/EW Streets:	Valencia Ave				Valencia Ave				Lambert Rd				Lambert Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	3	0	0	2	3	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	2	0	0	1	0	0	0	2	0	0	0	0	0	0	7
APPROACH %'s :	0.00%	50.00%	50.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	1	2	0	0	1	0	0	0	0	0	0	0	0	0	0	4
PEAK HR FACTOR :	0.000	0.250	0.500	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
	0.375				0.250												

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	3	0	0	2	3	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	3
5:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	4	0	0	0	0	0	0	1	0	0	1	0	1	0	7
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%					0.00%	100.00%	0.00%	0.00%	50.00%	0.00%	50.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	2
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.500
	0.250												0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Valencia Ave & Lambert Rd
City: Brea
Project ID: 22-010103-004
Date: 10/6/2022

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Valencia Ave		Valencia Ave		Lambert Rd		Lambert Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	1	1
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	2	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	2	0	0	0	0	0	1	3
APPROACH %'s :	0.00%	100.00%					0.00%	100.00%	
PEAK HR :	**07:15 AM - 08:15 AM**								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	1	1
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	1	1
APPROACH %'s :							0.00%	100.00%	
PEAK HR :	**04:30 PM - 05:30 PM**								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Prepared by National Data & Surveying Services

Valencia Ave & Lambert Rd

Peak Hour Turning Movement Count

ID: 22-010103-004
City: Brea

Day: Thursday
Date: 10/6/2022

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Valencia Ave)

AM	34	290	7	0	244	AM
NOON	0	0	0	0	0	NOON
PM	17	144	14	0	207	PM
	0	2	1	0		

EASTBOUND (Lambert Rd)

AM	NOON	PM	
697	0	584	
0	0	0	0
52	0	21	1
120	0	631	3
266	0	374	0

WESTBOUND (Lambert Rd)

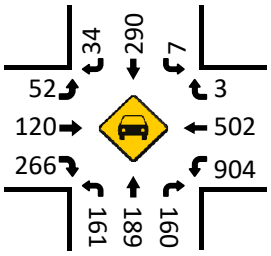
PM	NOON	AM	
5	0	3	0
221	0	502	3
192	0	904	2
0	0	0	0
1465	0	287	

NORTHBOUND (Valencia Ave)

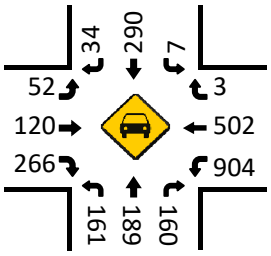
PM	710	0	346	181	820	PM
NOON	0	0	0	0	0	NOON
AM	1460	0	161	189	160	AM
		0	1	2	1	

CONTROL			
Signalized			
TEV	2688 AM	0 NOON	2966 PM
PHF	0.85		0.96

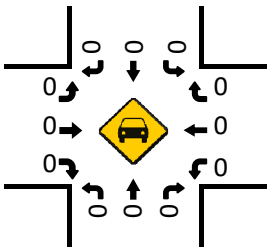
Totals (AM)



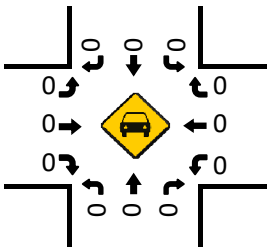
Totals (AM)



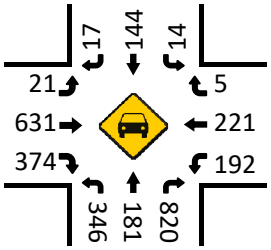
Totals (NOON)



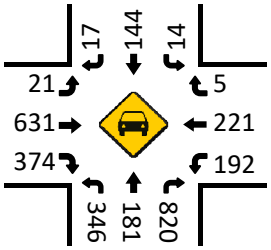
Totals (NOON)



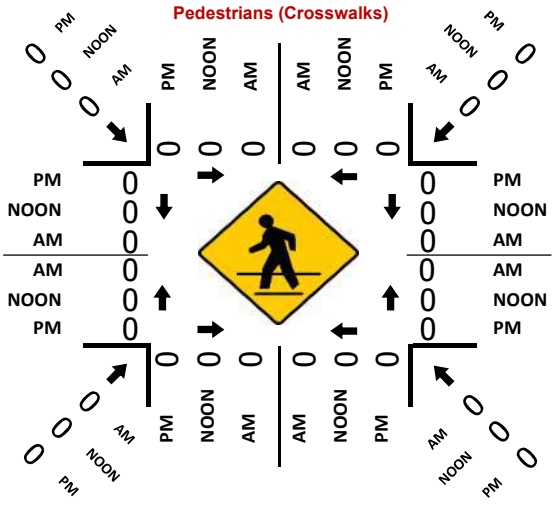
Totals (PM)



Totals (PM)



Pedestrians (Crosswalks)



National Data & Surveying Services Intersection Turning Movement Count

Location: Voyager Ave & Birch St
City: Brea
Control: Signalized

Project ID: 22-010103-007
Date: 10/6/2022

Data - Totals

NS/EW Streets:	Voyager Ave				Voyager Ave				Birch St				Birch St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0.5	0.5	1	0	1	2	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	4	0	1	0	2	0	1	0	3	59	24	0	9	82	4	0	189
7:15 AM	8	1	3	0	0	1	3	0	16	97	8	0	5	92	11	0	245
7:30 AM	13	0	1	0	2	0	4	0	32	155	8	0	10	80	14	0	319
7:45 AM	14	3	9	0	15	0	17	0	17	189	13	1	9	119	13	0	419
8:00 AM	3	0	3	0	12	0	11	0	9	154	20	0	7	113	4	1	337
8:15 AM	3	0	1	0	3	0	5	0	5	121	8	0	3	102	4	0	255
8:30 AM	2	0	2	0	3	0	4	0	3	91	8	0	1	99	2	0	215
8:45 AM	0	0	1	0	1	0	3	0	3	91	13	0	1	96	2	0	211
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	47	4	21	0	38	1	48	0	88	957	102	1	45	783	54	1	2190
APPROACH %'s :	65.28%	5.56%	29.17%	0.00%	43.68%	1.15%	55.17%	0.00%	7.67%	83.36%	8.89%	0.09%	5.10%	88.67%	6.12%	0.11%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	33	3	14	0	32	0	37	0	63	619	49	1	29	414	35	1	1330
PEAK HR FACTOR :	0.589	0.250	0.389	0.000	0.533	0.000	0.544	0.000	0.492	0.819	0.613	0.250	0.725	0.870	0.625	0.250	0.794
	0.481				0.539				0.832				0.849				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0.5	0.5	1	0	1	2	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	10	0	8	0	3	0	3	0	4	164	1	0	1	128	0	0	322
4:15 PM	2	0	5	0	5	0	2	0	1	173	2	0	0	116	2	0	308
4:30 PM	11	0	10	0	1	0	2	0	0	178	1	1	1	131	0	0	336
4:45 PM	9	0	10	0	4	0	3	0	1	183	2	0	0	137	5	0	354
5:00 PM	14	0	14	0	1	0	4	0	3	203	2	0	1	185	2	0	429
5:15 PM	7	0	3	0	1	0	3	0	0	196	6	0	1	140	2	0	359
5:30 PM	7	0	1	0	1	0	2	0	1	199	3	0	0	130	2	0	346
5:45 PM	3	0	1	0	0	0	3	0	0	183	2	0	0	149	0	0	341
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	63	0	52	0	16	0	22	0	10	1479	19	1	4	1116	13	0	2795
APPROACH %'s :	54.78%	0.00%	45.22%	0.00%	42.11%	0.00%	57.89%	0.00%	0.66%	98.01%	1.26%	0.07%	0.35%	98.50%	1.15%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	37	0	28	0	7	0	12	0	5	781	13	0	2	592	11	0	1488
PEAK HR FACTOR :	0.661	0.000	0.500	0.000	0.438	0.000	0.750	0.000	0.417	0.962	0.542	0.000	0.500	0.800	0.550	0.000	0.867
	0.580				0.679				0.960				0.805				

National Data & Surveying Services Intersection Turning Movement Count

Location: Voyager Ave & Birch St
City: Brea
Control: Signalized

Project ID: 22-010103-007
Date: 10/6/2022

Data - Bikes

NS/EW Streets:	Voyager Ave				Voyager Ave				Birch St				Birch St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0.5	0.5	1	0	1	2	0	0	1	2	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	0	0	0	0	0	0	0	0	0	1	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	6	0	0	0	1	0	0	7
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.333
									0.333								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0.5	0.5	1	0	1	2	0	0	1	2	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	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	1	0	0	1	3	0	0	5
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	25.00%	75.00%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	3
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.250	0.000	0.000	0.750
									0.250				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Voyager Ave & Birch St
City: Brea
Project ID: 22-010103-007
Date: 10/6/2022

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Voyager Ave		Voyager Ave		Birch St		Birch St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	2	0	0	0	0	0	0	2
7:15 AM	2	3	0	1	0	0	0	0	6
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	1	1	1	1	0	0	0	0	4
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	3	3	0	0	0	0	0	0	6
8:45 AM	1	0	1	0	0	2	0	0	4
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	7	9	2	2	0	2	0	0	22
APPROACH %'s :	43.75%	56.25%	50.00%	50.00%	0.00%	100.00%			
PEAK HR :	**07:30 AM - 08:30 AM**								TOTAL
PEAK HR VOL :	1	1	1	1	0	0	0	0	4
PEAK HR FACTOR :	0.250	0.250	0.250	0.250					0.250
	0.250		0.250						

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	3	0	1	0	0	0	0	4
5:15 PM	1	2	0	0	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	1	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	1	5	0	1	0	0	0	1	8
APPROACH %'s :	16.67%	83.33%	0.00%	100.00%			0.00%	100.00%	
PEAK HR :	**04:45 PM - 05:45 PM**								TOTAL
PEAK HR VOL :	1	5	0	1	0	0	0	0	7
PEAK HR FACTOR :	0.250	0.417		0.250					0.438
	0.500		0.250						

Prepared by National Data & Surveying Services

Voyager Ave & Birch St

Peak Hour Turning Movement Count

ID: 22-010103-007
City: Brea

Day: Thursday
Date: 10/6/2022

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:45 PM - 05:45 PM	4:00 PM - 06:00 PM

Voyager Ave — SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing
AM	37	0	32	0	101
NOON	0	0	0	0	0
PM	12	0	7	0	16
Lanes	1	0.5	0.5	0	

Birch St — WESTBOUND

Movement	Lanes	PM	NOON	AM
Right	1	11	0	35
Thru	2	592	0	414
Left	1	2	0	29
U-Turn	0	0	0	1
Departing		816	0	666

Birch St — EASTBOUND

Movement	AM	NOON	PM	Lanes
Departing	485	0	641	
U-Turn	1	0	0	0
Left	63	0	5	1
Thru	619	0	781	2
Right	49	0	13	0

Voyager Ave — NORTHBOUND

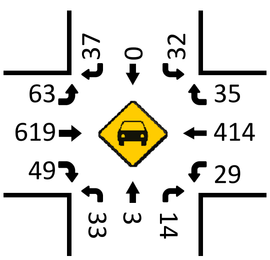
	Departing	U-Turn	Left	Thru	Right
Lanes		0	1	2	0
PM	15	0	37	0	28
NOON	0	0	0	0	0
AM	78	0	33	3	14

CONTROL

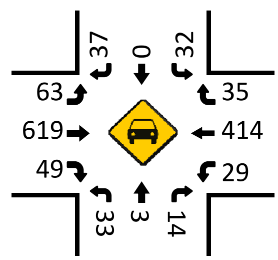
Signalized

	AM	NOON	PM
TEV	1330	0	1488
PHF	0.79		0.87

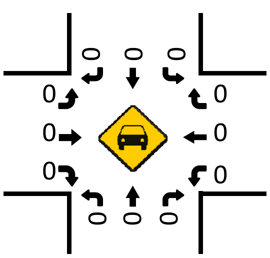
Totals (AM)



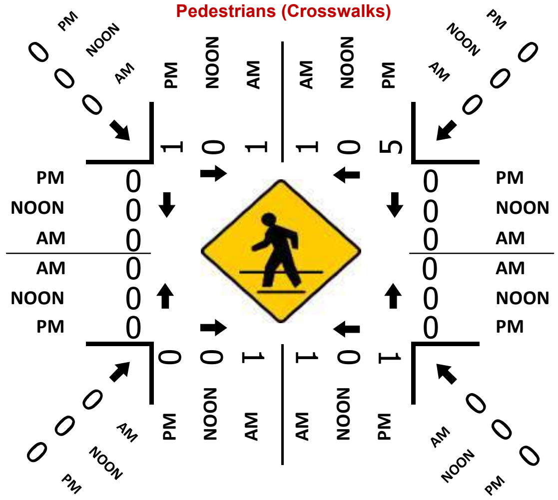
Totals (AM)



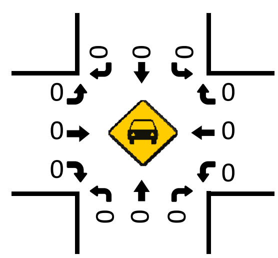
Totals (NOON)



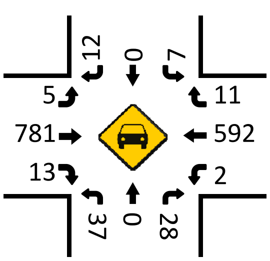
Pedestrians (Crosswalks)



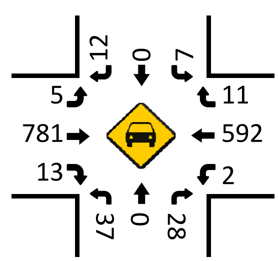
Totals (NOON)



Totals (PM)



Totals (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Voyager Ave & Enterprise St
City: Brea
Control: 1-Way Stop(SB)

Project ID: 22-010103-006
Date: 10/6/2022

Data - Totals

AM

NS/EW Streets:	Voyager Ave				Voyager Ave					Enterprise St				Enterprise St							
	NORTHBOUND				SOUTHBOUND					EASTBOUND				WESTBOUND					NORTHBOUND2		
	0	1	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	ST2	EL	ET	ER	EU	WL	WT	WR	WU	WL2	N2L2	N2T2	TOTAL
7:00 AM	0	0	0	0	6	2	7	0	1	1	5	0	0	0	13	1	0	1	0	0	37
7:15 AM	1	0	0	0	2	0	4	0	0	4	6	1	0	0	9	4	0	0	0	0	31
7:30 AM	1	2	0	0	2	2	8	0	0	4	7	0	0	2	6	4	0	1	0	0	39
7:45 AM	0	0	1	0	3	1	4	0	0	5	5	0	0	1	10	10	0	0	0	0	40
8:00 AM	0	0	0	0	8	1	7	0	0	3	6	2	0	1	4	0	0	1	0	0	33
8:15 AM	0	1	0	0	5	1	5	0	0	1	12	0	0	0	10	0	0	1	0	0	36
8:30 AM	0	0	0	0	2	0	1	0	0	2	2	0	0	0	9	0	0	0	0	0	16
8:45 AM	0	0	0	0	2	2	1	0	1	0	2	0	0	1	5	3	0	0	0	0	17
	NL	NT	NR	NU	SL	ST	SR	SU	ST2	EL	ET	ER	EU	WL	WT	WR	WU	WL2	N2L2	N2T2	TOTAL
TOTAL VOLUMES :	2	3	1	0	30	9	37	0	2	20	45	3	0	5	66	22	0	4	0	0	249
APPROACH %'s :	33.33%	50.00%	16.67%	0.00%	38.46%	11.54%	47.44%	0.00%	2.56%	29.41%	66.18%	4.41%	0.00%	5.15%	68.04%	22.68%	0.00%	4.12%			
PEAK HR :	07:30 AM - 08:30 AM																				TOTAL
PEAK HR VOL :	1	3	1	0	18	5	24	0	0	13	30	2	0	4	30	14	0	3	0	0	148
PEAK HR FACTOR :	0.250	0.375	0.250	0.000	0.563	0.625	0.750	0.000	0.000	0.650	0.625	0.250	0.000	0.500	0.750	0.350	0.000	0.750	0.000	0.000	0.925
		0.417					0.734				0.865					0.607					

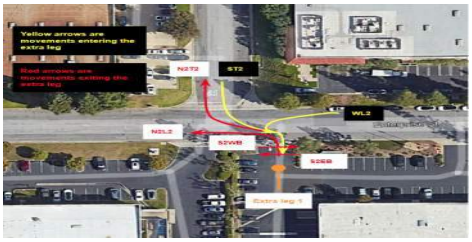
PM

	NORTHBOUND				SOUTHBOUND					EASTBOUND				WESTBOUND							
	0	1	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	ST2	EL	ET	ER	EU	WL	WT	WR	WU	WL2	N2L2	N2T2	TOTAL
4:00 PM	1	0	0	0	2	0	0	0	0	5	9	0	0	0	2	3	0	1	0	0	23
4:15 PM	0	1	0	0	2	0	1	0	0	4	4	0	0	0	3	1	0	0	0	0	16
4:30 PM	0	1	1	0	3	0	0	0	0	5	14	0	0	0	4	3	0	1	0	0	32
4:45 PM	1	1	3	0	3	0	0	0	0	2	4	0	0	0	4	2	0	0	0	1	21
5:00 PM	2	2	3	0	5	0	1	0	0	8	8	0	0	1	1	6	0	0	1	0	38
5:15 PM	0	0	0	0	4	0	2	0	0	2	11	0	0	0	3	0	0	0	1	0	23
5:30 PM	0	0	1	0	5	0	1	0	0	0	4	0	0	0	5	1	0	0	0	0	17
5:45 PM	0	2	0	0	0	0	3	0	0	1	3	0	0	0	2	0	0	0	0	0	11
	NL	NT	NR	NU	SL	ST	SR	SU	ST2	EL	ET	ER	EU	WL	WT	WR	WU	WL2	N2L2	N2T2	TOTAL
TOTAL VOLUMES :	4	7	8	0	24	0	8	0	0	27	57	0	0	1	24	16	0	2	2	1	181
APPROACH %'s :	21.05%	36.84%	42.11%	0.00%	75.00%	0.00%	25.00%	0.00%	0.00%	32.14%	67.86%	0.00%	0.00%	2.33%	55.81%	37.21%	0.00%	4.65%	66.67%	33.33%	
PEAK HR :	04:30 PM - 05:30 PM																				TOTAL
PEAK HR VOL :	3	4	7	0	15	0	3	0	0	17	37	0	0	1	12	11	0	1	2	1	114
PEAK HR FACTOR :	0.375	0.500	0.583	0.000	0.750	0.000	0.375	0.000	0.000	0.531	0.661	0.000	0.000	0.250	0.750	0.458	0.000	0.250	0.500	0.250	0.750
		0.500					0.750				0.711					0.781					

Explanation for extra leg 1 movements

Movements entering the extra leg
ST2 Movements coming from SB on Voyager Ave entering into the Extra Leg 1 (ORORA Manufactured Packaging Products NW Dwy)
WL2 Movements coming from WB on Enterprise St entering into the Extra Leg 1 (ORORA Manufactured Packaging Products NW Dwy)

Movements exiting the extra leg
N2T2 Movements exiting from Extra Leg 1 (ORORA Manufactured Packaging Products NW Dwy) entering into Voyager Ave heading NB
N2L2 Movements exiting from Extra Leg 1 (ORORA Manufactured Packaging Products NW Dwy) entering into Enterprise St Heading WB



National Data & Surveying Services Intersection Turning Movement Count

Location: Voyager Ave & Enterprise St
City: Brea
Control: 1-Way Stop(SB)

Project ID: 22-010103-006
Date: 10/6/2022

Data - Bikes

NS/EW Streets:	Voyager Ave				Voyager Ave					Enterprise St				Enterprise St							
AM	NORTHBOUND				SOUTHBOUND					EASTBOUND				WESTBOUND					NORTHBOUND2		
	0	1	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	ST2	EL	ET	ER	EU	WL	WT	WR	WU	WL2	N2L2	N2T2	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	ST2	EL	ET	ER	EU	WL	WT	WR	WU	WL2	N2L2	N2T2	TOTAL
TOTAL VOLUMES :	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
APPROACH %'s :					100.00%	0.00%	0.00%	0.00%	0.00%												
PEAK HR :	07:30 AM - 08:30 AM																				TOTAL
PEAK HR VOL :	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
							0.250														

PM	NORTHBOUND				SOUTHBOUND					EASTBOUND				WESTBOUND							
	0	1	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	ST2	EL	ET	ER	EU	WL	WT	WR	WU	WL2	N2L2	N2T2	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	ST2	EL	ET	ER	EU	WL	WT	WR	WU	WL2	N2L2	N2T2	TOTAL
TOTAL VOLUMES :	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
APPROACH %'s :					100.00%	0.00%	0.00%	0.00%	0.00%					0.00%	100.00%	0.00%	0.00%	0.00%			
PEAK HR :	04:30 PM - 05:30 PM																				TOTAL
PEAK HR VOL :	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
							0.250														

National Data & Surveying Services Intersection Turning Movement Count

Location: Voyager Ave & Enterprise St
City: Brea

Project ID: 22-010103-006
Date: 10/6/2022

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Voyager Ave		Voyager Ave		Enterprise St		Enterprise St				
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		SOUTH LEG 2		
	EB	WB	EB	WB	NB	SB	NB	SB	EB	WB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	0	0	0	0	0	1	0	2
7:30 AM	0	0	0	3	0	0	0	0	0	3	6
7:45 AM	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	1	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	1	0	1
8:45 AM	0	0	0	0	0	0	0	3	0	0	3
	EB	WB	EB	WB	NB	SB	NB	SB	EB	WB	TOTAL
TOTAL VOLUMES :	0	0	1	3	0	0	0	4	2	3	13
APPROACH %'s :			25.00%	75.00%			0.00%	100.00%	40.00%	60.00%	
PEAK HR :	**07:30 AM - 08:30 AM**										TOTAL
PEAK HR VOL :	0	0	0	3	0	0	0	1	0	3	7
PEAK HR FACTOR :			0.250				0.250		0.250		0.292
			0.250								

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		SOUTH LEG 2		
	EB	WB	EB	WB	NB	SB	NB	SB	EB	WB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	1	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	EB	WB	TOTAL
TOTAL VOLUMES :	0	0	1	0	0	0	0	0	0	0	1
APPROACH %'s :			100.00%	0.00%							
PEAK HR :	**04:30 PM - 05:30 PM**										TOTAL
PEAK HR VOL :	0	0	1	0	0	0	0	0	0	0	1
PEAK HR FACTOR :			0.250								0.250
			0.250								

Prepared by National Data & Surveying Services

Voyager Ave & Enterprise St

Peak Hour Turning Movement Count

ID: 22-010103-006
City: Brea

Day: Thursday
Date: 10/6/2022

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	4:00 PM - 06:00 PM

SOUTHBOUND (Voyager Ave)

AM	24	5	18	0	30	AM
NOON	0	0	0	0	0	NOON
PM	3	0	15	0	32	PM

EASTBOUND (Enterprise St)

AM	NOON	PM	
55	0	18	
0	0	0	0
13	0	17	0
30	0	37	1
2	0	0	0
AM	NOON	PM	

WESTBOUND (Enterprise St)

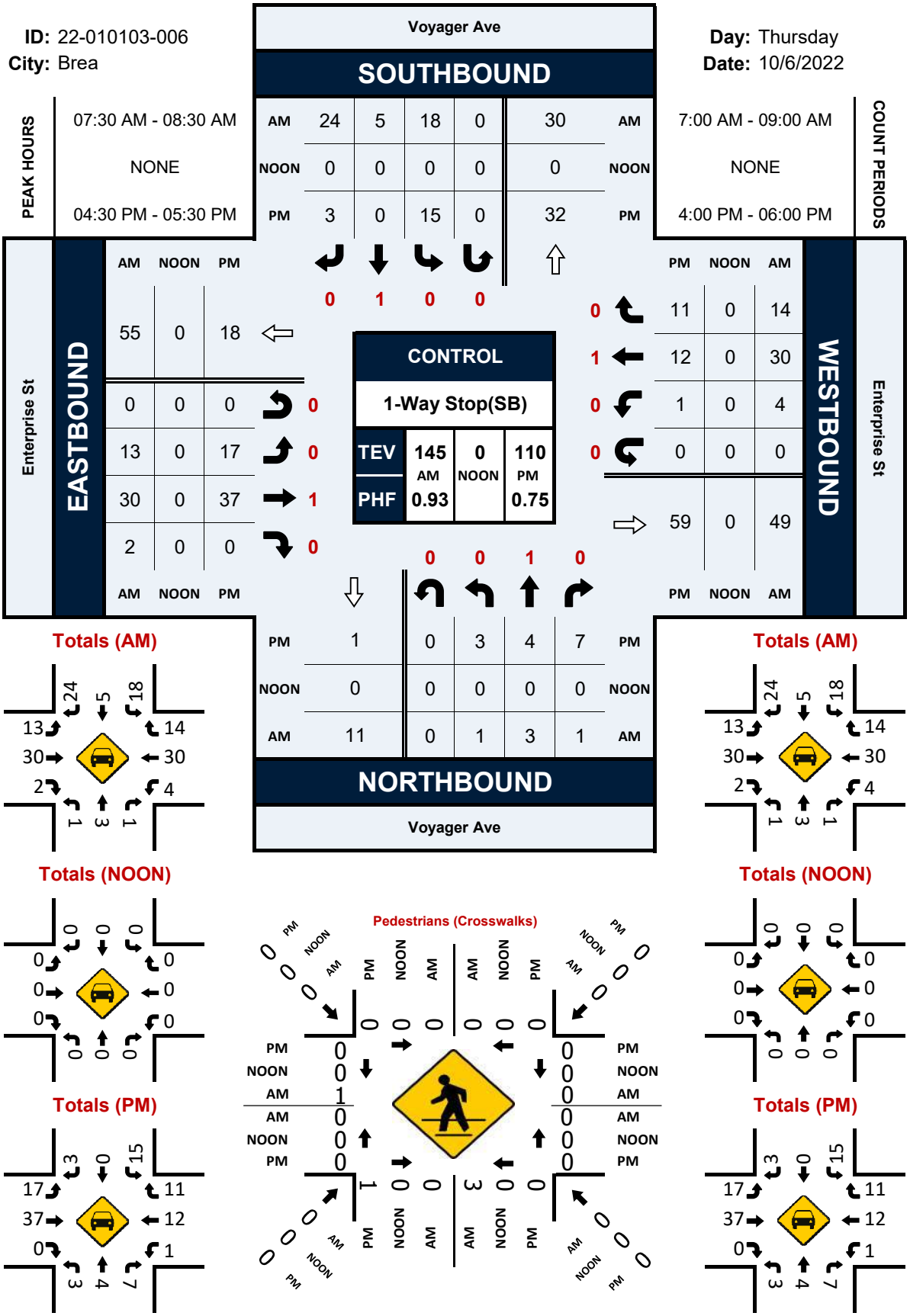
	PM	NOON	AM
0	11	0	14
1	12	0	30
0	1	0	4
0	0	0	0
	59	0	49
	PM	NOON	AM

NORTHBOUND (Voyager Ave)

PM	1	0	3	4	7	PM
NOON	0	0	0	0	0	NOON
AM	11	0	1	3	1	AM

CONTROL: 1-Way Stop(SB)

	AM	NOON	PM
TEV	145	0	110
PHF	0.93		0.75



National Data & Surveying Services Intersection Turning Movement Count

Location: Ranger St/Starflower St & Birch St
City: Brea
Control: Signalized

Project ID: 22-010103-008
Date: 10/6/2022

Data - Totals

NS/EW Streets:	Ranger St/Starflower St				Ranger St/Starflower St				Birch St				Birch St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	4	0	2	0	0	0	4	0	0	92	45	0	4	70	2	0	223
7:15 AM	1	0	0	0	3	1	10	0	2	118	27	0	2	95	1	0	260
7:30 AM	12	0	1	0	8	1	7	0	6	191	21	0	4	107	3	0	361
7:45 AM	4	0	0	0	8	0	15	0	4	206	29	0	4	208	2	0	480
8:00 AM	8	0	0	0	4	1	7	0	2	182	31	0	3	183	0	0	421
8:15 AM	14	0	0	0	3	0	3	0	5	155	20	0	1	109	1	0	311
8:30 AM	7	0	1	0	1	0	6	0	3	116	19	0	6	86	2	0	247
8:45 AM	4	0	1	0	3	0	6	0	8	117	10	1	5	100	2	0	257
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	54	0	5	0	30	3	58	0	30	1177	202	1	29	958	13	0	2560
APPROACH %'s :	91.53%	0.00%	8.47%	0.00%	32.97%	3.30%	63.74%	0.00%	2.13%	83.48%	14.33%	0.07%	2.90%	95.80%	1.30%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	38	0	1	0	23	2	32	0	17	734	101	0	12	607	6	0	1573
PEAK HR FACTOR :	0.679	0.000	0.250	0.000	0.719	0.500	0.533	0.000	0.708	0.891	0.815	0.000	0.750	0.730	0.500	0.000	0.819
	0.696				0.620				0.891				0.730				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	37	0	4	0	1	0	7	0	11	156	4	0	0	150	1	0	371
4:15 PM	23	1	7	0	2	1	6	0	9	171	4	0	0	119	4	0	347
4:30 PM	44	0	6	0	0	1	6	0	5	153	5	1	0	140	4	0	365
4:45 PM	22	0	7	0	0	0	7	0	4	192	4	0	0	164	2	0	402
5:00 PM	50	0	4	0	5	0	5	0	8	173	2	0	0	226	3	0	476
5:15 PM	7	0	0	0	2	0	3	0	9	214	5	0	0	140	3	0	383
5:30 PM	17	1	1	0	2	0	2	0	6	184	5	0	0	160	0	0	378
5:45 PM	7	1	1	0	3	0	8	0	12	187	3	0	1	157	2	0	382
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	207	3	30	0	15	2	44	0	64	1430	32	1	1	1256	19	0	3104
APPROACH %'s :	86.25%	1.25%	12.50%	0.00%	24.59%	3.28%	72.13%	0.00%	4.19%	93.65%	2.10%	0.07%	0.08%	98.43%	1.49%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	96	1	12	0	9	0	17	0	27	763	16	0	0	690	8	0	1639
PEAK HR FACTOR :	0.480	0.250	0.429	0.000	0.450	0.000	0.607	0.000	0.750	0.891	0.800	0.000	0.000	0.763	0.667	0.000	0.861
	0.505				0.650				0.884				0.762				

National Data & Surveying Services Intersection Turning Movement Count

Location: Ranger St/Starflower St & Birch St
City: Brea
Control: Signalized

Project ID: 22-010103-008
Date: 10/6/2022

Data - Bikes

AM

NS/EW Streets:	Ranger St/Starflower St				Ranger St/Starflower St				Birch St				Birch St				
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	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	0	0	0	0	0	0	0	0	0	1	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	7	0	0	0	1	0	0	8
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.417	0.000	0.000	0.000	0.000	0.000	0.000	0.417
									0.417								

PM

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.500
									0.250				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Ranger St/Starflower St & Birch St
City: Brea
Project ID: 22-010103-008
Date: 10/6/2022

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Ranger St/Starflower St		Ranger St/Starflower St		Birch St		Birch St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	2	0	0	0	0	0	0	0	2
7:15 AM	0	1	0	1	0	0	0	0	2
7:30 AM	0	1	1	0	0	0	0	1	3
7:45 AM	1	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	1	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	1	2	0	0	0	0	0	0	3
8:45 AM	1	1	3	0	0	0	0	0	5
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	5	5	4	2	0	0	0	1	17
APPROACH %'s :	50.00%	50.00%	66.67%	33.33%			0.00%	100.00%	
PEAK HR :	**07:30 AM - 08:30 AM**								TOTAL
PEAK HR VOL :	1	1	1	1	0	0	0	1	5
PEAK HR FACTOR :	0.250	0.250	0.250	0.250				0.250	0.417
	0.500		0.500				0.250		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	1	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	1	0	1	0	0	0	2
5:00 PM	0	0	0	1	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	2	0	0	0	0	0	0	2
5:45 PM	0	1	0	0	0	0	0	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	3	1	2	1	0	0	0	7
APPROACH %'s :	0.00%	100.00%	33.33%	66.67%	100.00%	0.00%			
PEAK HR :	**04:45 PM - 05:45 PM**								TOTAL
PEAK HR VOL :	0	2	1	1	1	0	0	0	5
PEAK HR FACTOR :		0.250	0.250	0.250	0.250				0.625
	0.250		0.500		0.250				

Prepared by National Data & Surveying Services

Ranger St/Starflower St & Birch St

Peak Hour Turning Movement Count

ID: 22-010103-008
City: Brea

Day: Thursday
Date: 10/6/2022

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	4:00 PM - 06:00 PM

SOUTHBOUND (Ranger St/Starflower St)

AM	32	2	23	0	23
NOON	0	0	0	0	0
PM	17	0	9	0	36

0 1 0 0

EASTBOUND (Birch St)

AM	NOON	PM	
677	0	803	
0	0	0	0
17	0	27	1
734	0	763	2
101	0	16	0

WESTBOUND (Birch St)

PM	NOON	AM	
8	0	6	0
690	0	607	2
0	0	12	1
0	0	0	0
784	0	758	

NORTHBOUND (Ranger St/Starflower St)

0 0 1 0

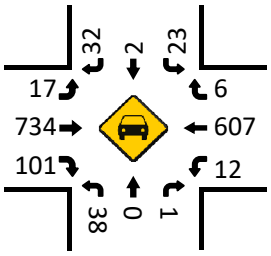
PM	16	0	96	1	12
NOON	0	0	0	0	0
AM	115	0	38	0	1

CONTROL

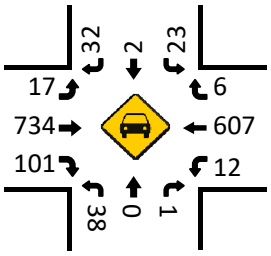
Signalized

TEV	1573 AM	0 NOON	1639 PM
PHF	0.82		0.86

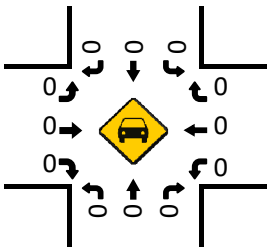
Totals (AM)



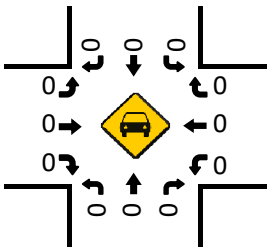
Totals (AM)



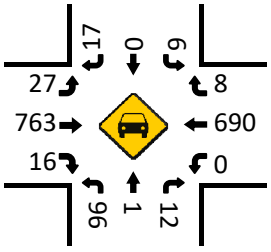
Totals (NOON)



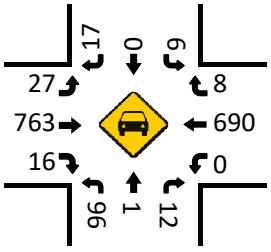
Totals (NOON)



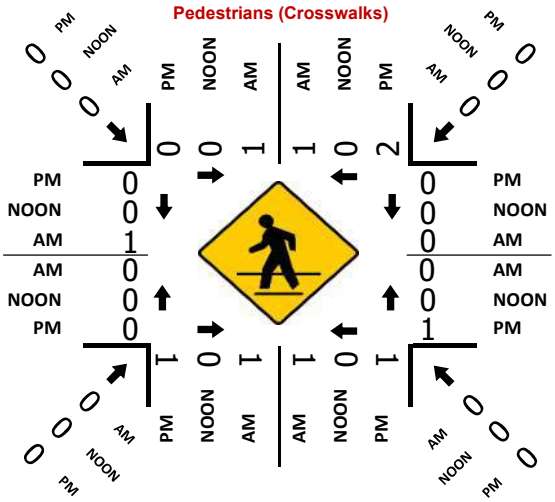
Totals (PM)



Totals (PM)



Pedestrians (Crosswalks)



National Data & Surveying Services Intersection Turning Movement Count

Location: Surveyor Ave & Nasa St
City: Brea
Control: 1-Way Stop(SB)

Project ID: 22-010103-005
Date: 10/6/2022

Data - Totals

NS/EW Streets:	Surveyor Ave				Surveyor Ave				Nasa St				Nasa St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	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	0	0	0	0	9	0	0	0	1	1	0	0	0	8	14	0	33
7:15 AM	0	0	0	0	5	0	0	0	0	1	0	0	0	5	10	0	21
7:30 AM	0	0	0	0	5	0	0	0	0	3	0	0	0	5	10	0	23
7:45 AM	0	0	0	0	10	0	0	0	0	4	0	0	0	2	17	0	33
8:00 AM	0	0	0	0	11	0	1	0	0	2	0	0	0	2	10	0	26
8:15 AM	0	0	0	0	9	0	0	0	0	2	0	0	0	3	6	0	20
8:30 AM	0	0	0	0	7	0	0	0	0	0	0	0	0	3	11	0	21
8:45 AM	0	0	0	0	6	0	1	0	0	4	0	0	0	0	9	0	20
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	62	0	2	0	1	17	0	0	0	28	87	0	197
APPROACH %'s :					96.88%	0.00%	3.13%	0.00%	5.56%	94.44%	0.00%	0.00%	0.00%	24.35%	75.65%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	29	0	0	0	1	9	0	0	0	20	51	0	110
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.725	0.000	0.000	0.000	0.250	0.563	0.000	0.000	0.000	0.625	0.750	0.000	0.833
					0.725				0.625				0.807				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	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	0	0	0	0	19	0	0	0	0	3	0	0	0	0	1	0	23
4:15 PM	0	0	0	0	8	0	1	0	0	3	0	0	0	1	2	0	15
4:30 PM	0	0	0	0	12	0	1	0	3	6	0	0	0	1	0	0	23
4:45 PM	0	0	0	0	15	0	0	0	0	1	0	0	0	1	0	0	17
5:00 PM	0	0	0	0	17	0	0	0	0	2	0	0	0	2	4	0	25
5:15 PM	0	0	0	0	11	0	1	0	1	8	0	0	0	0	4	0	25
5:30 PM	0	0	0	0	2	0	1	0	0	4	0	0	0	2	1	0	10
5:45 PM	0	0	0	0	7	0	0	0	0	2	0	0	0	1	0	0	10
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	91	0	4	0	4	29	0	0	0	8	12	0	148
APPROACH %'s :					95.79%	0.00%	4.21%	0.00%	12.12%	87.88%	0.00%	0.00%	0.00%	40.00%	60.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	55	0	2	0	4	17	0	0	0	4	8	0	90
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.809	0.000	0.500	0.000	0.333	0.531	0.000	0.000	0.000	0.500	0.500	0.000	0.900
					0.838				0.583				0.500				

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National Data & Surveying Services Intersection Turning Movement Count

Location: Surveyor Ave & Nasa St
City: Brea
Control: 1-Way Stop(SB)

Project ID: 22-010103-005
Date: 10/6/2022

Data - Bikes

NS/EW Streets:	Surveyor Ave				Surveyor Ave				Nasa St				Nasa St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	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	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2
8:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	4	0	0	0	0	0	0	0	0	0	5	0	9
APPROACH %'s :					100.00%	0.00%	0.00%	0.00%					0.00%	0.00%	100.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	4
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500
					0.500								0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
5:45 PM	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	4	0	0	0	1	0	0	0	0	0	4	0	9
APPROACH %'s :					100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	3
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.750
					0.250								0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Surveyor Ave & Nasa St
City: Brea
Project ID: 22-010103-005
Date: 10/6/2022

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Surveyor Ave		Surveyor Ave		Nasa St		Nasa St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	1	0	1
8:45 AM	0	2	0	0	0	0	0	0	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	2	0	0	0	0	1	0	3
APPROACH %'s :	0.00%	100.00%					100.00%	0.00%	
PEAK HR :	**07:00 AM - 08:00 AM**								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	1	0	1
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	1	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	1	1
5:45 PM	0	1	0	0	0	0	0	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	2	0	0	0	0	1	1	4
APPROACH %'s :	0.00%	100.00%					50.00%	50.00%	
PEAK HR :	**04:30 PM - 05:30 PM**								TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.250	0.250							0.250

Prepared by National Data & Surveying Services

Surveyor Ave & Nasa St

Peak Hour Turning Movement Count

ID: 22-010103-005
City: Brea

Day: Thursday
Date: 10/6/2022

PEAK HOURS	COUNT PERIODS
07:00 AM - 08:00 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Surveyor Ave)

AM	0	0	29	0	52	AM
NOON	0	0	0	0	0	NOON
PM	2	0	55	0	12	PM

EASTBOUND (Nasa St)

AM	NOON	PM	
20	0	6	
0	0	0	0
1	0	4	0
9	0	17	1
0	0	0	0
AM	NOON	PM	

WESTBOUND (Nasa St)

	PM	NOON	AM
0	8	0	51
1	4	0	20
0	0	0	0
0	0	0	0
	72	0	38
	PM	NOON	AM

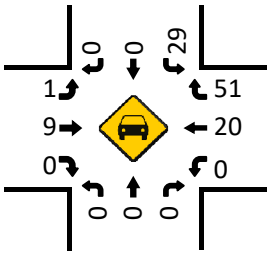
NORTHBOUND (Surveyor Ave)

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

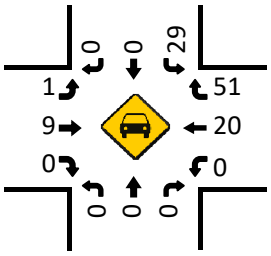
Turning movements (red): 0 1 0 0 (SB); 0 1 0 0 (EB); 0 0 0 0 (NB)

CONTROL			
1-Way Stop(SB)			
TEV	110 AM	0 NOON	90 PM
PHF	0.83		0.90

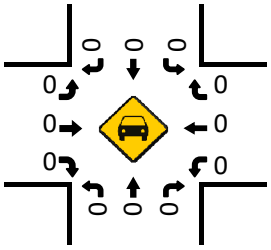
Totals (AM)



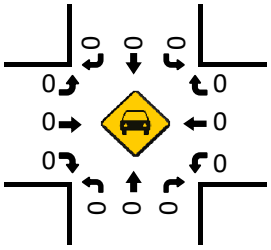
Totals (AM)



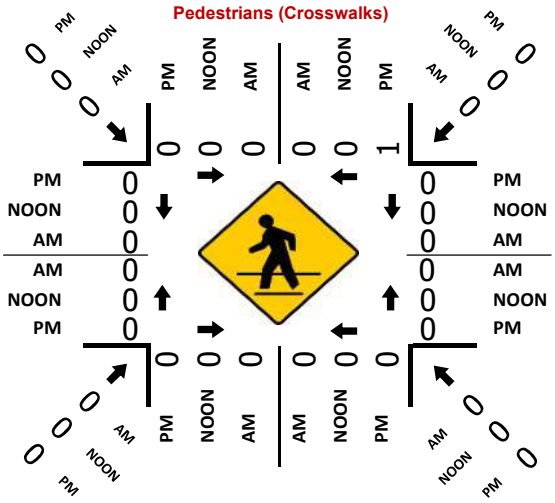
Totals (NOON)



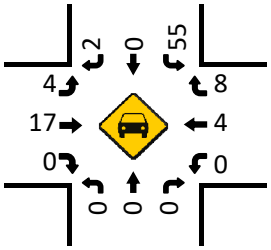
Totals (NOON)



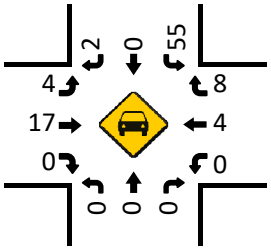
Pedestrians (Crosswalks)



Totals (PM)



Totals (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Surveyor Ave & Shipping & Receiving Lobby Dwy/Employees Only Dwy
City: Brea
Control: 1-Way Stop(WB)

Project ID: 22-010103-010
Date: 10/6/2022

Data - Totals

NS/EW Streets:	Surveyor Ave				Surveyor Ave				Shipping & Receiving Lobby Dwy/Employees Only Dwy				Shipping & Receiving Lobby Dwy/Employees Only Dwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	16	1	0	0	7	0	0	0	0	1	0	0	0	0	0	26
7:15 AM	0	12	0	0	0	7	0	0	0	0	0	0	0	0	0	0	19
7:30 AM	0	13	0	0	0	9	0	0	0	0	2	0	0	0	0	0	24
7:45 AM	0	21	0	0	0	12	0	0	0	0	1	0	0	0	0	0	34
8:00 AM	0	10	0	0	0	12	0	0	0	0	0	0	0	0	0	0	22
8:15 AM	0	7	0	0	0	15	0	0	1	0	0	0	0	0	0	0	23
8:30 AM	0	11	0	0	0	4	0	0	0	0	0	0	0	0	0	0	15
8:45 AM	0	8	0	0	0	6	0	0	0	0	1	0	0	0	0	0	15
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	98	1	0	0	72	0	0	1	0	5	0	0	0	0	0	178
APPROACH %'s :	1.00%	98.00%	1.00%	0.00%	0.00%	100.00%	0.00%	0.00%	16.67%	0.00%	83.33%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	51	0	0	0	48	0	0	1	0	3	0	0	0	0	0	103
PEAK HR FACTOR :	0.000	0.607	0.000	0.000	0.000	0.800	0.000	0.000	0.250	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.757
	0.607				0.800				0.500								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	2	0	0	0	10	0	0	0	0	0	0	0	0	0	0	12
4:15 PM	0	5	0	0	0	11	0	0	0	0	0	0	0	0	0	0	16
4:30 PM	0	8	0	0	0	16	0	0	0	0	0	0	0	0	0	0	24
4:45 PM	0	4	0	0	0	13	0	0	0	0	2	0	0	0	0	0	19
5:00 PM	0	1	0	0	0	14	0	0	0	0	2	0	0	0	0	0	17
5:15 PM	0	4	0	0	0	16	0	0	0	0	0	0	0	0	0	0	20
5:30 PM	0	5	0	0	0	8	0	0	0	0	0	0	0	0	0	0	13
5:45 PM	0	2	0	0	0	7	0	0	0	0	0	0	0	0	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	31	0	0	0	95	0	0	0	0	4	0	0	0	0	0	130
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%					
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	17	0	0	0	59	0	0	0	0	4	0	0	0	0	0	80
PEAK HR FACTOR :	0.000	0.531	0.000	0.000	0.000	0.922	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.833
	0.531				0.922				0.500								

National Data & Surveying Services Intersection Turning Movement Count

Location: Surveyor Ave & Shipping & Receiving Lobby Dwy/Employees Only Dwy
City: Brea
Control: 1-Way Stop(WB)

Project ID: 22-010103-010
Date: 10/6/2022

Data - Bikes

NS/EW Streets:	Surveyor Ave				Surveyor Ave				Shipping & Receiving Lobby Dwy/Employees Only Dwy				Shipping & Receiving Lobby Dwy/Employees Only Dwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
APPROACH %'s :	50.00%	50.00%	0.00%	0.00%													
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	2	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3
APPROACH %'s :	0.00%	50.00%	0.00%	50.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
						0.250											

National Data & Surveying Services Intersection Turning Movement Count

Location: Surveyor Ave & Shipping & Receiving Lobby Dwy/Employees Only D **Project ID:** 22-010103-010
City: Brea **Date:** 10/6/2022

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Surveyor Ave		Surveyor Ave		Shipping & Receiving Lobby Dwy/Employees		Shipping & Receiving Lobby Dwy/Employees		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	4	4
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	1	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	1	1
8:45 AM	0	0	1	0	0	1	0	1	3
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	1	1	0	1	0	6	9
APPROACH %'s :			50.00%	50.00%	0.00%	100.00%	0.00%	100.00%	
PEAK HR :	**07:30 AM - 08:30 AM**								TOTAL
PEAK HR VOL :	0	0	0	1	0	0	0	0	1
PEAK HR FACTOR :			0.250	0.250					0.250

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	1	1
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	1	1
5:45 PM	0	0	0	0	0	0	2	0	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	2	2	4
APPROACH %'s :							50.00%	50.00%	
PEAK HR :	**04:30 PM - 05:30 PM**								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	1	1
PEAK HR FACTOR :							0.250	0.250	0.250

Prepared by National Data & Surveying Services

Surveyor Ave & Shipping & Receiving Lobby Dwy/Employees Only Dwy

Peak Hour Turning Movement Count

ID: 22-010103-010
City: Brea

Day: Thursday
Date: 10/6/2022

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Surveyor Ave)

AM	0	48	0	0	52	AM
NOON	0	0	0	0	0	NOON
PM	0	59	0	0	17	PM
	0	1	0	0		

EASTBOUND (Shipping & Receiving Lobby Dwy/Employees Only Dwy)

AM	NOON	PM	
0	0	0	
0	0	0	0
1	0	0	0
0	0	0	1
3	0	4	0

WESTBOUND (Shipping & Receiving Lobby Dwy/Employees Only Dwy)

	PM	NOON	AM
0	0	0	0
2	0	0	0
0	0	0	0
0	0	0	0
	0	0	0

NORTHBOUND (Surveyor Ave)

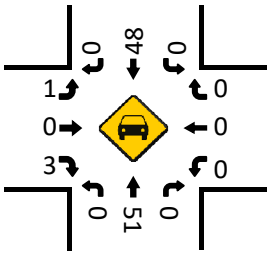
PM	63	0	0	17	0	PM
NOON	0	0	0	0	0	NOON
AM	51	0	0	51	0	AM
		0	0	1	0	

CONTROL

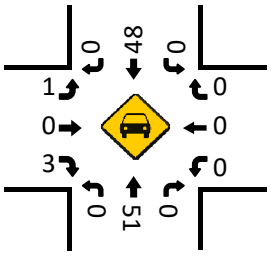
1-Way Stop(WB)

TEV	103	0	80
	AM	NOON	PM
PHF	0.76		0.83

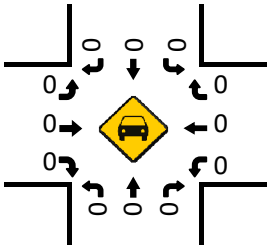
Totals (AM)



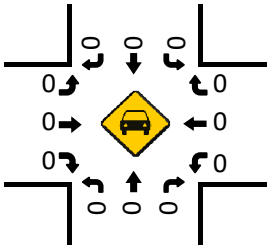
Totals (AM)



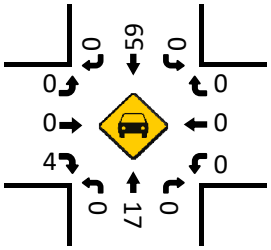
Totals (NOON)



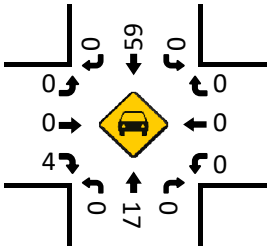
Totals (NOON)



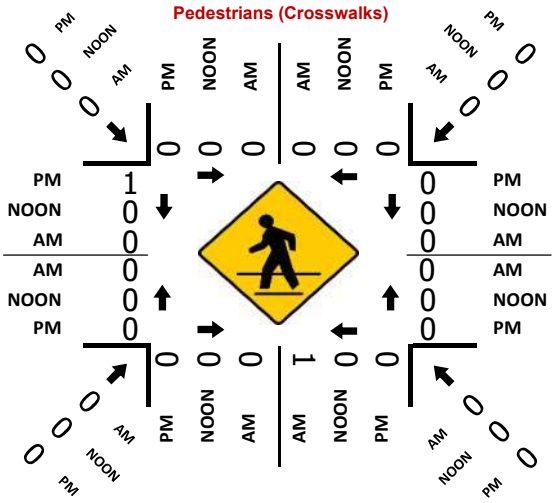
Totals (PM)



Totals (PM)



Pedestrians (Crosswalks)

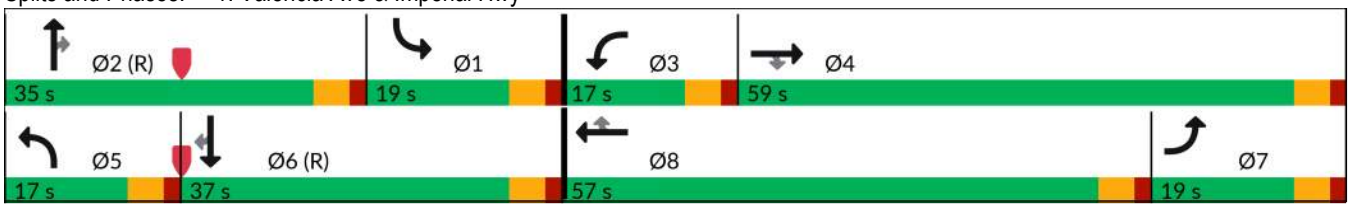


Appendix E – Synchro Analysis Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	129	1065	88	90	1082	60	92	115	101	136	254	217
Future Volume (vph)	129	1065	88	90	1082	60	92	115	101	136	254	217
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0
Total Split (s)	19.0	59.0	59.0	17.0	57.0	57.0	17.0	35.0	35.0	19.0	37.0	37.0
Total Split (%)	14.6%	45.4%	45.4%	13.1%	43.8%	43.8%	13.1%	26.9%	26.9%	14.6%	28.5%	28.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	10.6	41.7	41.7	9.1	40.2	40.2	9.2	45.2	45.2	14.0	50.0	50.0
Actuated g/C Ratio	0.08	0.32	0.32	0.07	0.31	0.31	0.07	0.35	0.35	0.11	0.38	0.38
v/c Ratio	0.50	0.71	0.16	0.41	0.76	0.11	0.42	0.10	0.17	0.42	0.21	0.33
Control Delay (s/veh)	62.9	41.0	1.6	62.7	43.6	0.4	62.6	31.3	3.1	50.0	24.4	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	62.9	41.0	1.6	62.7	43.6	0.4	62.6	31.3	3.1	50.0	24.4	3.7
LOS	E	D	A	E	D	A	E	C	A	D	C	A
Approach Delay (s/veh)		40.5			42.9			31.4			22.8	
Approach LOS		D			D			C			C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 29 (22%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay (s/veh): 37.3	Intersection LOS: D
Intersection Capacity Utilization 51.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Valencia Ave & Imperial Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	140	1158	96	99	1189	66	101	126	111	155	289	247
v/c Ratio	0.50	0.71	0.16	0.41	0.76	0.11	0.42	0.10	0.17	0.42	0.21	0.33
Control Delay (s/veh)	62.9	41.0	1.6	62.7	43.6	0.4	62.6	31.3	3.1	50.0	24.4	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	62.9	41.0	1.6	62.7	43.6	0.4	62.6	31.3	3.1	50.0	24.4	3.7
Queue Length 50th (ft)	59	314	0	41	331	0	42	37	0	62	66	12
Queue Length 95th (ft)	91	334	10	70	353	0	71	69	25	89	110	33
Internal Link Dist (ft)		540			646			773			1102	
Turn Bay Length (ft)	190		300	260		185	150		145	250		185
Base Capacity (vph)	369	2112	741	316	2034	719	316	1230	643	369	1360	760
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.55	0.13	0.31	0.58	0.09	0.32	0.10	0.17	0.42	0.21	0.33

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	129	1065	88	90	1082	60	92	115	101	136	254	217
Future Volume (veh/h)	129	1065	88	90	1082	60	92	115	101	136	254	217
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	140	1158	96	99	1189	66	101	126	111	155	289	247
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.91	0.91	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	1563	485	149	1496	464	152	820	366	920	1610	718
Arrive On Green	0.06	0.31	0.31	0.04	0.29	0.29	0.04	0.23	0.23	0.44	0.76	0.76
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	140	1158	96	99	1189	66	101	126	111	155	289	247
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	5.2	26.5	5.8	3.7	27.9	4.0	3.7	3.7	6.4	3.5	3.0	5.0
Cycle Q Clear(g_c), s	5.2	26.5	5.8	3.7	27.9	4.0	3.7	3.7	6.4	3.5	3.0	5.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	195	1563	485	149	1496	464	152	820	366	920	1610	718
V/C Ratio(X)	0.72	0.74	0.20	0.66	0.80	0.14	0.67	0.15	0.30	0.17	0.18	0.34
Avail Cap(c_a), veh/h	372	2121	658	319	2042	634	319	820	366	920	1610	718
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98
Uniform Delay (d), s/veh	60.3	40.5	33.3	61.3	42.4	33.9	61.2	39.9	29.4	27.5	9.0	5.4
Incr Delay (d2), s/veh	4.9	0.9	0.2	5.0	1.6	0.1	4.9	0.4	2.1	0.1	0.2	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	10.8	2.2	1.7	11.4	1.5	1.7	1.7	3.0	1.4	1.1	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	65.2	41.4	33.5	66.2	43.9	34.1	66.1	40.3	31.6	27.6	9.3	6.7
LnGrp LOS	E	D	C	E	D	C	E	D	C	C	A	A
Approach Vol, veh/h		1394			1354			338			691	
Approach Delay, s/veh		43.3			45.1			45.1			12.5	
Approach LOS		D			D			D			B	

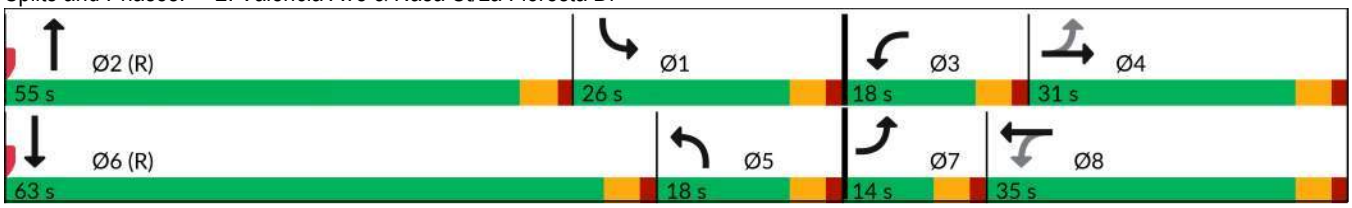
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	39.6	35.0	10.6	44.8	10.7	63.9	12.3	43.1
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	14.0	30.0	12.0	54.0	12.0	32.0	14.0	52.0
Max Q Clear Time (g_c+I1), s	5.5	8.4	5.7	28.5	5.7	7.0	7.2	29.9
Green Ext Time (p_c), s	0.3	1.0	0.1	8.5	0.1	2.5	0.2	8.2

Intersection Summary	
HCM 7th Control Delay, s/veh	38.5
HCM 7th LOS	D

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	1	3	37	10	40	259	57	581
Future Volume (vph)	1	3	37	10	40	259	57	581
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	14.0	31.0	18.0	35.0	18.0	55.0	26.0	63.0
Total Split (%)	10.8%	23.8%	13.8%	26.9%	13.8%	42.3%	20.0%	48.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	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	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	11.3	6.8	19.1	16.8	7.2	84.5	13.8	90.9
Actuated g/C Ratio	0.09	0.05	0.15	0.13	0.06	0.65	0.11	0.70
v/c Ratio	0.01	0.42	0.32	0.51	0.25	0.13	0.37	0.25
Control Delay (s/veh)	43.0	26.7	50.4	15.4	68.7	2.8	53.6	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	43.0	26.7	50.4	15.4	68.7	2.8	53.6	2.4
LOS	D	C	D	B	E	A	D	A
Approach Delay (s/veh)		27.0		24.6		11.1		7.0
Approach LOS		C		C		B		A

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 19 (15%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay (s/veh): 11.7	Intersection LOS: B
Intersection Capacity Utilization 40.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Valencia Ave & Nasa St/La Floresta Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1	55	62	174	47	323	69	704
v/c Ratio	0.01	0.42	0.32	0.51	0.25	0.13	0.37	0.25
Control Delay (s/veh)	43.0	26.7	50.4	15.4	68.7	2.8	53.6	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	43.0	26.7	50.4	15.4	68.7	2.8	53.6	2.4
Queue Length 50th (ft)	1	3	46	12	21	13	60	46
Queue Length 95th (ft)	5	35	55	12	40	22	103	48
Internal Link Dist (ft)		332		460		1102		185
Turn Bay Length (ft)			105		175		200	
Base Capacity (vph)	174	361	228	492	343	2583	285	2802
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.15	0.27	0.35	0.14	0.13	0.24	0.25

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	3	40	37	10	94	40	259	19	57	581	3
Future Volume (veh/h)	1	3	40	37	10	94	40	259	19	57	581	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.04	1.04
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1945	1945
Adj Flow Rate, veh/h	1	4	51	62	17	157	47	301	22	69	700	4
Peak Hour Factor	0.79	0.79	0.79	0.60	0.60	0.60	0.86	0.86	0.86	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	84	10	129	203	20	185	937	1344	98	593	1681	10
Arrive On Green	0.00	0.09	0.09	0.04	0.13	0.13	0.54	0.77	0.77	0.22	0.30	0.30
Sat Flow, veh/h	1781	117	1486	1781	157	1452	3456	3493	254	1781	3768	22
Grp Volume(v), veh/h	1	0	55	62	0	174	47	158	165	69	343	361
Grp Sat Flow(s),veh/h/ln	1781	0	1603	1781	0	1609	1728	1848	1899	1781	1848	1941
Q Serve(g_s), s	0.1	0.0	4.2	4.0	0.0	13.7	0.8	3.1	3.1	4.0	19.3	19.3
Cycle Q Clear(g_c), s	0.1	0.0	4.2	4.0	0.0	13.7	0.8	3.1	3.1	4.0	19.3	19.3
Prop In Lane	1.00		0.93	1.00		0.90	1.00		0.13	1.00		0.01
Lane Grp Cap(c), veh/h	84	0	140	203	0	206	937	711	731	593	824	866
V/C Ratio(X)	0.01	0.00	0.39	0.30	0.00	0.85	0.05	0.22	0.23	0.12	0.42	0.42
Avail Cap(c_a), veh/h	205	0	321	307	0	371	937	711	731	593	824	866
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.3	0.0	56.1	49.5	0.0	55.5	21.9	9.6	9.6	35.3	32.0	32.0
Incr Delay (d2), s/veh	0.1	0.0	1.8	0.8	0.0	9.2	0.0	0.7	0.7	0.1	1.5	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.8	1.9	0.0	6.1	0.3	1.3	1.3	1.7	9.3	9.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.4	0.0	57.9	50.3	0.0	64.7	21.9	10.3	10.3	35.4	33.6	33.5
LnGrp LOS	D		E	D		E	C	B	B	D	C	C
Approach Vol, veh/h		56			236			370			773	
Approach Delay, s/veh		57.8			60.9			11.8			33.7	
Approach LOS		E			E			B			C	

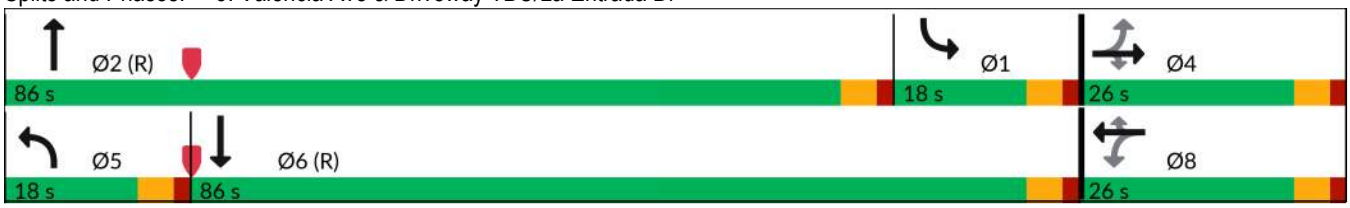
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	48.3	55.0	10.4	16.3	40.3	63.0	5.1	21.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	21.0	50.0	13.0	26.0	13.0	58.0	9.0	30.0
Max Q Clear Time (g_c+I1), s	6.0	5.1	6.0	6.2	2.8	21.3	2.1	15.7
Green Ext Time (p_c), s	0.1	1.8	0.1	0.2	0.1	4.2	0.0	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	33.5
HCM 7th LOS	C

Lane Group	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø4
Lane Configurations								
Traffic Volume (vph)	7	0	13	1	347	6	654	
Future Volume (vph)	7	0	13	1	347	6	654	
Turn Type	Perm	NA	Perm	Prot	NA	Prot	NA	
Protected Phases		8		5	2	1	6	4
Permitted Phases	8		8					
Detector Phase	8	8	8	5	2	1	6	
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	10.0	21.0	10.0	21.0	21.0
Total Split (s)	26.0	26.0	26.0	18.0	86.0	18.0	86.0	26.0
Total Split (%)	20.0%	20.0%	20.0%	13.8%	66.2%	13.8%	66.2%	20%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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	Lead	Lag	Lag	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	C-Max	None	C-Max	None
Act Effct Green (s)		6.6	6.6	5.6	116.0	7.3	117.4	
Actuated g/C Ratio		0.05	0.05	0.04	0.89	0.06	0.90	
v/c Ratio		0.13	0.12	0.01	0.11	0.07	0.20	
Control Delay (s/veh)		61.4	1.4	60.0	1.3	43.8	0.2	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)		61.4	1.4	60.0	1.3	43.8	0.2	
LOS		E	A	E	A	D	A	
Approach Delay (s/veh)		22.0			1.4		0.6	
Approach LOS		C			A		A	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 115 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.20	
Intersection Signal Delay (s/veh): 1.5	Intersection LOS: A
Intersection Capacity Utilization 29.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Valencia Ave & Driveway TBC/La Entrada Dr



Lane Group	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	21	1	400	7	735
v/c Ratio	0.13	0.12	0.01	0.11	0.07	0.20
Control Delay (s/veh)	61.4	1.4	60.0	1.3	43.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	61.4	1.4	60.0	1.3	43.8	0.2
Queue Length 50th (ft)	9	0	0	12	0	2
Queue Length 95th (ft)	20	0	m5	35	m10	8
Internal Link Dist (ft)	755			786		640
Turn Bay Length (ft)			223		160	
Base Capacity (vph)	273	340	177	3571	177	3621
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	0.04	0.06	0.01	0.11	0.04	0.20

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	7	0	13	1	347	5	6	654	0
Future Volume (veh/h)	0	0	0	7	0	13	1	347	5	6	654	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1945	1870
Adj Flow Rate, veh/h	0	0	0	11	0	21	1	394	6	7	735	0
Peak Hour Factor	0.92	0.92	0.92	0.63	0.63	0.63	0.88	0.88	0.88	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	39	33	85	0	33	2	2322	35	428	3187	0
Arrive On Green	0.00	0.00	0.00	0.02	0.00	0.02	0.00	1.00	1.00	0.48	1.00	0.00
Sat Flow, veh/h	0	1870	1585	1418	0	1585	1781	3726	57	1781	3793	0
Grp Volume(v), veh/h	0	0	0	11	0	21	1	195	205	7	735	0
Grp Sat Flow(s),veh/h/ln	0	1870	1585	1418	0	1585	1781	1848	1935	1781	1848	0
Q Serve(g_s), s	0.0	0.0	0.0	1.0	0.0	1.7	0.1	0.0	0.0	0.3	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	1.0	0.0	1.7	0.1	0.0	0.0	0.3	0.0	0.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		0.03	1.00		0.00
Lane Grp Cap(c), veh/h	0	39	33	85	0	33	2	1151	1206	428	3187	0
V/C Ratio(X)	0.00	0.00	0.00	0.13	0.00	0.63	0.51	0.17	0.17	0.02	0.23	0.00
Avail Cap(c_a), veh/h	0	302	256	284	0	256	178	1151	1206	428	3187	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	62.8	0.0	63.1	64.8	0.0	0.0	25.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.7	0.0	17.8	132.1	0.3	0.3	0.0	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.4	0.0	0.9	0.1	0.1	0.1	0.1	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	63.5	0.0	80.9	196.9	0.3	0.3	25.7	0.2	0.0
LnGrp LOS				E		F	F	A	A	C	A	
Approach Vol, veh/h		0			32			401			742	
Approach Delay, s/veh		0.0			74.9			0.8			0.4	
Approach LOS					E			A			A	

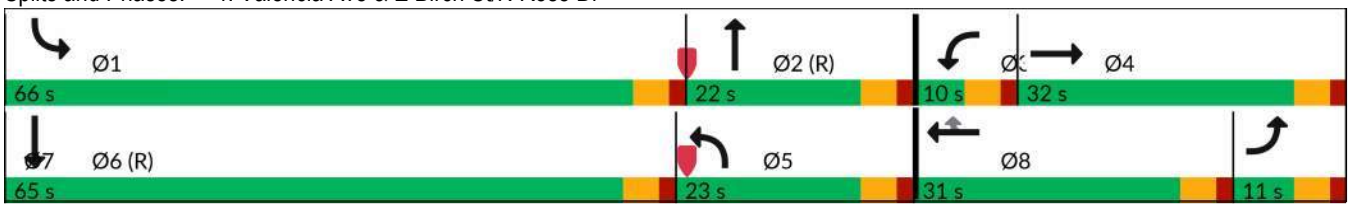
Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	36.3	86.0		7.7	5.1	117.1		7.7
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	13.0	81.0		21.0	13.0	81.0		21.0
Max Q Clear Time (g_c+I1), s	2.3	2.0		0.0	2.1	2.0		3.7
Green Ext Time (p_c), s	0.0	2.2		0.0	0.0	5.3		0.1

Intersection Summary		
HCM 7th Control Delay, s/veh		2.6
HCM 7th LOS		A

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	68	441	8	301	300	130	210	610	520
Future Volume (vph)	68	441	8	301	300	130	210	610	520
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	11.0	32.0	10.0	31.0	31.0	23.0	22.0	66.0	65.0
Total Split (%)	8.5%	24.6%	7.7%	23.8%	23.8%	17.7%	16.9%	50.8%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	7.8	29.2	5.0	20.7	20.7	18.0	22.1	61.7	65.8
Actuated g/C Ratio	0.06	0.22	0.04	0.16	0.16	0.14	0.17	0.47	0.51
v/c Ratio	0.38	0.84	0.13	0.58	0.62	0.65	0.41	0.94	0.56
Control Delay (s/veh)	64.1	56.3	64.8	55.1	10.5	48.4	33.4	35.6	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	64.1	56.3	64.8	55.1	10.5	48.4	33.4	35.6	12.5
LOS	E	E	E	E	B	D	C	D	B
Approach Delay (s/veh)		57.1		33.3			38.9		22.8
Approach LOS		E		C			D		C

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 48 (37%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay (s/veh): 33.7	Intersection LOS: C
Intersection Capacity Utilization 76.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Valencia Ave & E Birch St/N Rose Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	79	660	9	324	323	159	279	792	972
v/c Ratio	0.38	0.84	0.13	0.58	0.62	0.65	0.41	0.94	0.56
Control Delay (s/veh)	64.1	56.3	64.8	55.1	10.5	48.4	33.4	35.6	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	64.1	56.3	64.8	55.1	10.5	48.4	33.4	35.6	12.5
Queue Length 50th (ft)	33	265	8	137	0	123	100	306	165
Queue Length 95th (ft)	57	#353	27	180	85	164	130	461	194
Internal Link Dist (ft)		1706		346			363		2026
Turn Bay Length (ft)	190		230		285	205		160	
Base Capacity (vph)	206	805	68	707	575	245	678	853	1742
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	0.38	0.82	0.13	0.46	0.56	0.65	0.41	0.93	0.56

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	441	126	8	301	300	130	210	19	610	520	229
Future Volume (veh/h)	68	441	126	8	301	300	130	210	19	610	520	229
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	79	513	147	9	324	323	159	256	23	792	675	297
Peak Hour Factor	0.86	0.86	0.86	0.93	0.93	0.93	0.82	0.82	0.82	0.77	0.77	0.77
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	307	556	158	15	439	196	307	592	53	822	1108	488
Arrive On Green	0.09	0.20	0.20	0.01	0.12	0.12	0.06	0.06	0.06	0.15	0.15	0.15
Sat Flow, veh/h	3456	2729	778	1781	3554	1585	1781	3432	306	1781	2401	1056
Grp Volume(v), veh/h	79	333	327	9	324	323	159	137	142	792	500	472
Grp Sat Flow(s),veh/h/ln	1728	1777	1730	1781	1777	1585	1781	1848	1890	1781	1777	1680
Q Serve(g_s), s	2.8	23.9	24.1	0.7	11.4	6.2	11.3	9.3	9.5	57.4	34.2	34.2
Cycle Q Clear(g_c), s	2.8	23.9	24.1	0.7	11.4	6.2	11.3	9.3	9.5	57.4	34.2	34.2
Prop In Lane	1.00		0.45	1.00		1.00	1.00		0.16	1.00		0.63
Lane Grp Cap(c), veh/h	307	362	352	15	439	196	307	319	326	822	820	775
V/C Ratio(X)	0.26	0.92	0.93	0.59	0.74	1.65	0.52	0.43	0.44	0.96	0.61	0.61
Avail Cap(c_a), veh/h	307	369	359	69	711	317	307	319	326	836	820	775
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	0.33	0.33	0.33
Upstream Filter(I)	0.62	0.62	0.62	1.00	1.00	1.00	1.00	1.00	1.00	0.58	0.58	0.58
Uniform Delay (d), s/veh	55.2	50.7	50.8	64.2	55.0	8.5	56.0	55.1	55.2	54.0	44.1	44.1
Incr Delay (d2), s/veh	0.3	19.6	21.2	31.6	2.5	314.9	1.5	4.2	4.2	15.7	2.0	2.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	12.2	12.1	0.4	5.2	22.9	5.4	4.9	5.0	30.9	16.6	15.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	55.5	70.3	72.0	95.8	57.4	323.4	57.6	59.3	59.4	69.7	46.1	46.2
LnGrp LOS	E	E	E	F	E	F	E	E	E	E	D	D
Approach Vol, veh/h		739			656			438			1764	
Approach Delay, s/veh		69.5			188.9			58.7			56.7	
Approach LOS		E			F			E			E	

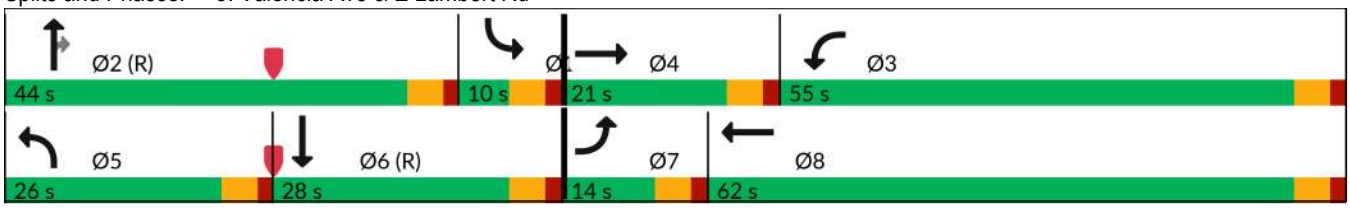
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	65.0	27.4	6.1	31.5	27.4	65.0	16.5	21.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	61.0	17.0	5.0	27.0	18.0	60.0	6.0	26.0
Max Q Clear Time (g_c+I1), s	59.4	11.5	2.7	26.1	13.3	36.2	4.8	13.4
Green Ext Time (p_c), s	0.6	0.6	0.0	0.4	0.2	6.2	0.0	2.6

Intersection Summary	
HCM 7th Control Delay, s/veh	83.7
HCM 7th LOS	F

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	52	120	904	502	161	189	160	7	290
Future Volume (vph)	52	120	904	502	161	189	160	7	290
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA
Protected Phases	7	4	3	8	5	2		1	6
Permitted Phases							2		
Detector Phase	7	4	3	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	21.0	21.0	10.0	21.0
Total Split (s)	14.0	21.0	55.0	62.0	26.0	44.0	44.0	10.0	28.0
Total Split (%)	10.8%	16.2%	42.3%	47.7%	20.0%	33.8%	33.8%	7.7%	21.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	8.2	9.4	42.4	45.7	19.1	59.3	59.3	5.0	39.1
Actuated g/C Ratio	0.06	0.07	0.33	0.35	0.15	0.46	0.46	0.04	0.30
v/c Ratio	0.50	0.70	0.85	0.30	0.75	0.13	0.21	0.19	0.59
Control Delay (s/veh)	74.2	24.7	48.7	30.5	72.5	36.3	18.9	67.1	43.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.2	24.7	48.7	30.5	72.5	36.3	18.9	67.1	43.2
LOS	E	C	D	C	E	D	B	E	D
Approach Delay (s/veh)		30.6		42.2		42.2			43.7
Approach LOS		C		D		D			D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 52 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay (s/veh): 40.8	Intersection LOS: D
Intersection Capacity Utilization 68.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Valencia Ave & E Lambert Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	55	411	952	531	196	230	195	13	623
v/c Ratio	0.50	0.70	0.85	0.30	0.75	0.13	0.21	0.19	0.59
Control Delay (s/veh)	74.2	24.7	48.7	30.5	72.5	36.3	18.9	67.1	43.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.2	24.7	48.7	30.5	72.5	36.3	18.9	67.1	43.2
Queue Length 50th (ft)	45	38	382	121	169	82	38	11	234
Queue Length 95th (ft)	91	72	428	133	228	125	112	19	180
Internal Link Dist (ft)		759		811		2026			731
Turn Bay Length (ft)	230		625		300		120	240	
Base Capacity (vph)	122	808	1320	2227	297	1828	923	68	1054
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	0.45	0.51	0.72	0.24	0.66	0.13	0.21	0.19	0.59

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	120	266	904	502	3	161	189	160	7	290	34
Future Volume (veh/h)	52	120	266	904	502	3	161	189	160	7	290	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	55	128	283	952	528	3	196	230	0	13	558	65
Peak Hour Factor	0.94	0.94	0.94	0.95	0.95	0.95	0.82	0.82	0.82	0.52	0.52	0.52
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	71	419	195	1051	2030	12	225	1109		212	938	109
Arrive On Green	0.04	0.12	0.12	0.30	0.39	0.39	0.04	0.10	0.00	0.12	0.29	0.29
Sat Flow, veh/h	1781	3404	1585	3456	5239	30	1781	3696	1648	1781	3207	373
Grp Volume(v), veh/h	55	128	283	952	343	188	196	230	0	13	308	315
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1728	1702	1865	1781	1848	1648	1781	1777	1803
Q Serve(g_s), s	4.0	4.5	16.0	34.4	8.9	8.9	14.2	7.4	0.0	0.8	19.3	19.4
Cycle Q Clear(g_c), s	4.0	4.5	16.0	34.4	8.9	8.9	14.2	7.4	0.0	0.8	19.3	19.4
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	71	419	195	1051	1319	723	225	1109		212	520	528
V/C Ratio(X)	0.78	0.31	1.45	0.91	0.26	0.26	0.87	0.21		0.06	0.59	0.60
Avail Cap(c_a), veh/h	123	419	195	1329	1493	818	288	1109		212	520	528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.8	51.9	57.0	43.4	27.1	27.1	61.2	44.3	0.0	50.8	39.4	39.4
Incr Delay (d2), s/veh	16.3	0.4	229.1	7.7	0.1	0.2	17.6	0.4	0.0	0.1	4.9	4.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	1.9	18.6	15.2	3.5	3.9	7.9	3.5	0.0	0.4	8.9	9.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	78.2	52.3	286.1	51.1	27.2	27.3	78.9	44.7	0.0	51.0	44.3	44.3
LnGrp LOS	E	D	F	D	C	C	E	D		D	D	D
Approach Vol, veh/h		466			1483			426			636	
Approach Delay, s/veh		197.3			42.6			60.4			44.4	
Approach LOS		F			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.4	44.0	44.6	21.0	21.4	43.0	10.2	55.4
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	5.0	39.0	50.0	16.0	21.0	23.0	9.0	57.0
Max Q Clear Time (g_c+I1), s	2.8	9.4	36.4	18.0	16.2	21.4	6.0	10.9
Green Ext Time (p_c), s	0.0	1.3	3.2	0.0	0.2	0.6	0.0	3.1

Intersection Summary	
HCM 7th Control Delay, s/veh	69.5
HCM 7th LOS	E

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	30	2	4	30	14	1	3	1	18	5	24
Future Vol, veh/h	13	30	2	4	30	14	1	3	1	18	5	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	61	61	61	42	42	42	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	34	2	7	49	23	2	7	2	25	7	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	72	0	0	37	0	0	131	151	36	142	140	61
Stage 1	-	-	-	-	-	-	66	66	-	74	74	-
Stage 2	-	-	-	-	-	-	66	85	-	68	67	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1528	-	-	1574	-	-	841	741	1037	828	751	1005
Stage 1	-	-	-	-	-	-	945	840	-	936	834	-
Stage 2	-	-	-	-	-	-	945	824	-	942	839	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1528	-	-	1574	-	-	795	730	1037	806	740	1005
Mov Cap-2 Maneuver	-	-	-	-	-	-	795	730	-	806	740	-
Stage 1	-	-	-	-	-	-	936	832	-	932	830	-
Stage 2	-	-	-	-	-	-	902	821	-	923	831	-

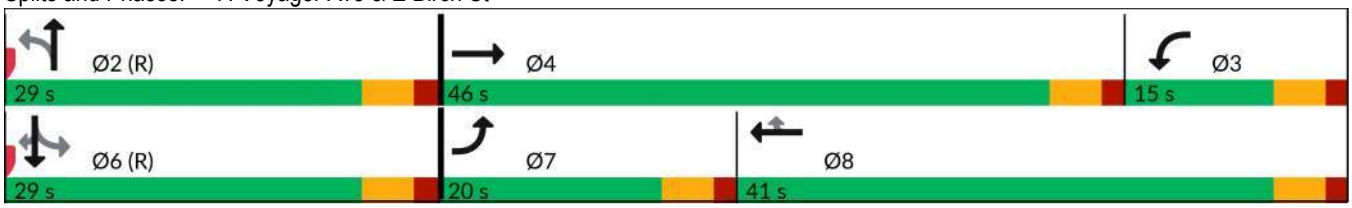
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	2.13	0.61	9.63	9.37
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	790	514	-	-	141	-	-	887
HCM Lane V/C Ratio	0.015	0.01	-	-	0.004	-	-	0.073
HCM Control Delay (s/veh)	9.6	7.4	0	-	7.3	0	-	9.4
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	63	619	29	414	35	33	3	32	0	37
Future Volume (vph)	63	619	29	414	35	33	3	32	0	37
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	7	4	3	8			2		6	
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.5	10.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	20.0	46.0	15.0	41.0	41.0	29.0	29.0	29.0	29.0	29.0
Total Split (%)	22.2%	51.1%	16.7%	45.6%	45.6%	32.2%	32.2%	32.2%	32.2%	32.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	9.2	28.6	7.3	24.4	24.4	43.5	43.5		43.5	43.5
Actuated g/C Ratio	0.10	0.32	0.08	0.27	0.27	0.48	0.48		0.48	0.48
v/c Ratio	0.42	0.72	0.24	0.51	0.08	0.11	0.04		0.09	0.08
Control Delay (s/veh)	23.1	13.9	42.2	29.0	1.1	17.6	8.5		17.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	23.1	13.9	42.2	29.0	1.1	17.6	8.5		17.5	0.2
LOS	C	B	D	C	A	B	A		B	A
Approach Delay (s/veh)		14.7		27.8			14.5		8.2	
Approach LOS		B		C			B		A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 34 (38%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay (s/veh): 18.6	Intersection LOS: B
Intersection Capacity Utilization 43.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 7: Voyager Ave & E Birch St



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	76	805	34	487	41	69	35	59	69
v/c Ratio	0.42	0.72	0.24	0.51	0.08	0.11	0.04	0.09	0.08
Control Delay (s/veh)	23.1	13.9	42.2	29.0	1.1	17.6	8.5	17.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	23.1	13.9	42.2	29.0	1.1	17.6	8.5	17.5	0.2
Queue Length 50th (ft)	20	233	19	120	0	22	2	19	0
Queue Length 95th (ft)	41	246	44	142	3	29	7	29	0
Internal Link Dist (ft)		1715		1706			560	102	
Turn Bay Length (ft)	200		140		225	125			95
Base Capacity (vph)	295	1600	196	1415	684	647	908	660	840
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	0.26	0.50	0.17	0.34	0.06	0.11	0.04	0.09	0.08

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	619	49	29	414	35	33	3	14	32	0	37
Future Volume (veh/h)	63	619	49	29	414	35	33	3	14	32	0	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	746	59	34	487	41	69	6	29	59	0	69
Peak Hour Factor	0.83	0.83	0.83	0.85	0.85	0.85	0.48	0.48	0.48	0.54	0.54	0.54
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	99	912	72	45	866	386	750	155	750	801	0	847
Arrive On Green	0.07	0.36	0.36	0.03	0.24	0.24	0.53	0.53	0.53	0.53	0.00	0.53
Sat Flow, veh/h	1781	3336	264	1781	3554	1585	1332	290	1403	1348	0	1585
Grp Volume(v), veh/h	76	397	408	34	487	41	69	0	35	59	0	69
Grp Sat Flow(s),veh/h/ln	1781	1777	1823	1781	1777	1585	1332	0	1693	1348	0	1585
Q Serve(g_s), s	3.8	18.2	18.2	1.7	10.8	1.8	2.4	0.0	0.9	1.9	0.0	1.9
Cycle Q Clear(g_c), s	3.8	18.2	18.2	1.7	10.8	1.8	5.2	0.0	0.9	2.8	0.0	1.9
Prop In Lane	1.00		0.14	1.00		1.00	1.00		0.83	1.00		1.00
Lane Grp Cap(c), veh/h	99	486	498	45	866	386	750	0	905	801	0	847
V/C Ratio(X)	0.77	0.82	0.82	0.75	0.56	0.11	0.09	0.00	0.04	0.07	0.00	0.08
Avail Cap(c_a), veh/h	297	809	830	198	1421	634	750	0	905	801	0	847
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.65	0.65	0.65	0.77	0.77	0.77	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.1	26.6	26.6	43.6	29.8	26.4	11.7	0.0	10.0	10.6	0.0	10.2
Incr Delay (d2), s/veh	8.0	2.3	2.2	17.2	0.4	0.1	0.2	0.0	0.1	0.2	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	6.5	6.7	0.9	4.3	0.6	0.8	0.0	0.3	0.6	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.1	28.9	28.8	60.8	30.3	26.5	12.0	0.0	10.0	10.8	0.0	10.4
LnGrp LOS	D	C	C	E	C	C	B		B	B		B
Approach Vol, veh/h		881			562			104			128	
Approach Delay, s/veh		30.6			31.9			11.3			10.6	
Approach LOS		C			C			B			B	

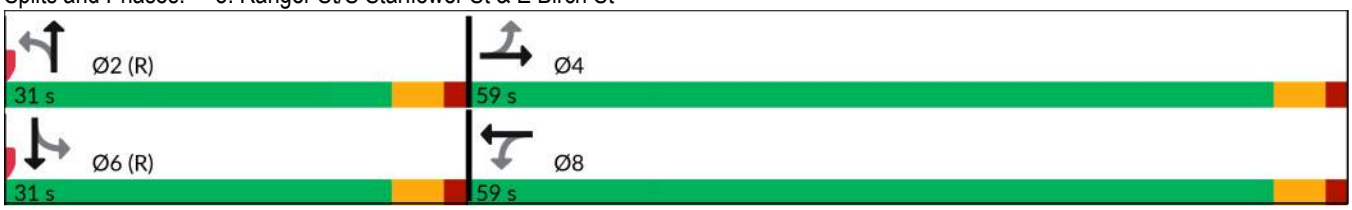
Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		53.1	7.3	29.6		53.1	10.0	26.9
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		24.0	10.0	41.0		24.0	15.0	36.0
Max Q Clear Time (g_c+I1), s		7.2	3.7	20.2		4.8	5.8	12.8
Green Ext Time (p_c), s		0.3	0.0	4.4		0.5	0.1	3.0

Intersection Summary	
HCM 7th Control Delay, s/veh	28.3
HCM 7th LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	17	734	12	607	38	0	23	2
Future Volume (vph)	17	734	12	607	38	0	23	2
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	59.0	59.0	59.0	59.0	31.0	31.0	31.0	31.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%	34.4%	34.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	30.3	30.3	30.3	30.3		49.7		49.7
Actuated g/C Ratio	0.34	0.34	0.34	0.34		0.55		0.55
v/c Ratio	0.17	0.70	0.19	0.70		0.06		0.12
Control Delay (s/veh)	22.5	27.4	19.8	25.7		8.0		6.5
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay (s/veh)	22.5	27.4	19.8	25.7		8.0		6.5
LOS	C	C	B	C		A		A
Approach Delay (s/veh)		27.3		25.6		8.0		6.5
Approach LOS		C		C		A		A

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 88 (98%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay (s/veh): 24.9	Intersection LOS: C
Intersection Capacity Utilization 36.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Ranger St/S Starflower St & E Birch St



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	19	938	16	840	55	107
v/c Ratio	0.17	0.70	0.19	0.70	0.06	0.12
Control Delay (s/veh)	22.5	27.4	19.8	25.7	8.0	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	22.5	27.4	19.8	25.7	8.0	6.5
Queue Length 50th (ft)	8	232	7	240	8	12
Queue Length 95th (ft)	22	254	18	214	21	16
Internal Link Dist (ft)		759		1715	671	28
Turn Bay Length (ft)	145		150			
Base Capacity (vph)	196	2375	147	2122	871	873
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	0.10	0.39	0.11	0.40	0.06	0.12

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	734	101	12	607	6	38	0	1	23	2	32
Future Volume (veh/h)	17	734	101	12	607	6	38	0	1	23	2	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1945	1945	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	19	825	113	16	832	8	54	0	1	43	4	60
Peak Hour Factor	0.89	0.89	0.89	0.73	0.73	0.73	0.70	0.70	0.70	0.53	0.53	0.53
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	156	1103	151	148	1218	12	847	1	14	373	54	473
Arrive On Green	0.34	0.34	0.34	0.11	0.11	0.11	0.55	0.00	0.55	0.55	0.55	0.55
Sat Flow, veh/h	655	3265	447	597	3606	35	1393	1	26	575	98	859
Grp Volume(v), veh/h	19	467	471	16	410	430	55	0	0	107	0	0
Grp Sat Flow(s),veh/h/ln	655	1848	1865	597	1777	1864	1420	0	0	1532	0	0
Q Serve(g_s), s	2.4	20.2	20.2	2.3	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	22.3	20.2	20.2	22.5	20.0	20.0	1.2	0.0	0.0	2.7	0.0	0.0
Prop In Lane	1.00		0.24	1.00		0.02	0.98		0.02	0.40		0.56
Lane Grp Cap(c), veh/h	156	624	630	148	600	629	862	0	0	900	0	0
V/C Ratio(X)	0.12	0.75	0.75	0.11	0.68	0.68	0.06	0.00	0.00	0.12	0.00	0.00
Avail Cap(c_a), veh/h	328	1109	1119	305	1066	1118	862	0	0	900	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.2	26.4	26.4	46.3	35.4	35.4	9.3	0.0	0.0	9.7	0.0	0.0
Incr Delay (d2), s/veh	0.3	1.8	1.8	0.3	1.3	1.2	0.1	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	8.3	8.4	0.4	9.5	10.0	0.5	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.6	28.2	28.2	46.6	36.6	36.6	9.5	0.0	0.0	9.9	0.0	0.0
LnGrp LOS	D	C	C	D	D	D	A			A		
Approach Vol, veh/h		957			856			55			107	
Approach Delay, s/veh		28.4			36.8			9.5			9.9	
Approach LOS		C			D			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	54.6	35.4	54.6	35.4
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	26.0	54.0	26.0	54.0
Max Q Clear Time (g_c+I1), s	3.2	24.3	4.7	24.5
Green Ext Time (p_c), s	0.2	6.0	0.5	5.1

Intersection Summary	
HCM 7th Control Delay, s/veh	30.5
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	9	20	51	29	0
Future Vol, veh/h	1	9	20	51	29	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	53	53	81	81	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	17	25	63	40	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	88	0	-	0	77	56
Stage 1	-	-	-	-	56	-
Stage 2	-	-	-	-	21	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1508	-	-	-	926	1010
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	1002	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1508	-	-	-	925	1010
Mov Cap-2 Maneuver	-	-	-	-	925	-
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	1002	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.74	0	9.07
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	180	-	-	-	925
HCM Lane V/C Ratio	0.001	-	-	-	0.043
HCM Control Delay (s/veh)	7.4	0	-	-	9.1
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	361	657	0
Future Vol, veh/h	0	0	0	361	657	0
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	92	92	86	86	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	420	792	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1001	396	-	0	-	0
Stage 1	792	-	-	-	-	-
Stage 2	210	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	-	-
Pot Cap-1 Maneuver	239	603	0	-	-	-
Stage 1	407	-	0	-	-	-
Stage 2	805	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	239	603	-	-	-	-
Mov Cap-2 Maneuver	239	-	-	-	-	-
Stage 1	407	-	-	-	-	-
Stage 2	805	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	354	661	0
Future Vol, veh/h	0	0	0	354	661	0
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	92	92	86	86	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	412	796	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	398	-	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	601	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	601	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	38	53	0	0	0
Future Vol, veh/h	0	38	53	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	60	60	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	48	88	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	88	0	-	0	112	88
Stage 1	-	-	-	-	88	-
Stage 2	-	-	-	-	24	-
Critical Hdwy	4.13	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1506	-	-	-	878	969
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	996	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1506	-	-	-	878	969
Mov Cap-2 Maneuver	-	-	-	-	878	-
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	996	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1506	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	51	0	0	48
Future Vol, veh/h	0	0	51	0	0	48
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	70	0	0	66

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	136	70	0	0	70	0
Stage 1	70	-	-	-	-	-
Stage 2	66	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	858	993	-	-	1531	-
Stage 1	953	-	-	-	-	-
Stage 2	957	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	858	993	-	-	1531	-
Mov Cap-2 Maneuver	858	-	-	-	-	-
Stage 1	953	-	-	-	-	-
Stage 2	957	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	-	1531	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s/veh)	-	-	0	0	0	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	52	0	0	51
Future Vol, veh/h	0	0	52	0	0	51
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	92	92	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	71	0	0	70

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	141	71	0	0	71	0
Stage 1	71	-	-	-	-	-
Stage 2	70	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	852	991	-	-	1529	-
Stage 1	952	-	-	-	-	-
Stage 2	953	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	852	991	-	-	1529	-
Mov Cap-2 Maneuver	852	-	-	-	-	-
Stage 1	952	-	-	-	-	-
Stage 2	953	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1529	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	51	0	0	52	0
Future Vol, veh/h	0	51	0	0	52	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	92	92	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	70	0	0	71	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	0	70
Stage 1	-	-	0	0
Stage 2	-	-	0	70
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	-	821
Stage 1	-	-	-	-
Stage 2	-	-	-	837
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	0
Mov Cap-2 Maneuver	-	-	-	0
Stage 1	-	-	-	0
Stage 2	-	-	-	0

Approach	EB	WB
HCM Control Delay, s/v	0	0
HCM LOS		A

Minor Lane/Major Mvmt	EBT	EBR	WBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	-	0
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	202	1333	129	108	1127	133	82	263	127	89	170	71
Future Volume (vph)	202	1333	129	108	1127	133	82	263	127	89	170	71
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0
Total Split (s)	26.0	72.0	72.0	18.0	64.0	64.0	16.0	33.0	33.0	17.0	34.0	34.0
Total Split (%)	18.6%	51.4%	51.4%	12.9%	45.7%	45.7%	11.4%	23.6%	23.6%	12.1%	24.3%	24.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	13.7	50.0	50.0	10.0	46.3	46.3	11.0	50.6	50.6	9.4	49.0	49.0
Actuated g/C Ratio	0.10	0.36	0.36	0.07	0.33	0.33	0.08	0.36	0.36	0.07	0.35	0.35
v/c Ratio	0.61	0.75	0.20	0.46	0.70	0.22	0.35	0.24	0.22	0.43	0.15	0.13
Control Delay (s/veh)	68.4	41.9	4.8	68.3	42.8	2.5	65.1	34.2	6.5	73.2	23.2	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	68.4	41.9	4.8	68.3	42.8	2.5	65.1	34.2	6.5	73.2	23.2	1.3
LOS	E	D	A	E	D	A	E	C	A	E	C	A
Approach Delay (s/veh)		42.2			40.9			32.1			32.0	
Approach LOS		D			D			C			C	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 10 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay (s/veh): 39.4	Intersection LOS: D
Intersection Capacity Utilization 56.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Valencia Ave & Imperial Hwy

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	206	1360	132	113	1174	139	95	306	148	100	191	80
v/c Ratio	0.61	0.75	0.20	0.46	0.70	0.22	0.35	0.24	0.22	0.43	0.15	0.13
Control Delay (s/veh)	68.4	41.9	4.8	68.3	42.8	2.5	65.1	34.2	6.5	73.2	23.2	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	68.4	41.9	4.8	68.3	42.8	2.5	65.1	34.2	6.5	73.2	23.2	1.3
Queue Length 50th (ft)	94	397	0	52	341	0	42	102	0	46	50	1
Queue Length 95th (ft)	133	406	40	83	359	24	69	156	47	73	85	2
Internal Link Dist (ft)		540			646			773			1102	
Turn Bay Length (ft)	190		300	260		185	150		145	250		185
Base Capacity (vph)	514	2433	826	318	2142	766	269	1279	666	294	1239	640
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.56	0.16	0.36	0.55	0.18	0.35	0.24	0.22	0.34	0.15	0.13

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	202	1333	129	108	1127	133	82	263	127	89	170	71
Future Volume (veh/h)	202	1333	129	108	1127	133	82	263	127	89	170	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	206	1360	132	112	1174	139	95	306	148	100	191	80
Peak Hour Factor	0.98	0.98	0.98	0.96	0.96	0.96	0.86	0.86	0.86	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	263	1716	533	161	1566	486	924	1536	685	146	736	328
Arrive On Green	0.08	0.34	0.34	0.05	0.31	0.31	0.27	0.43	0.43	0.08	0.41	0.41
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	206	1360	132	112	1174	139	95	306	148	100	191	80
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	8.2	33.7	4.1	4.5	29.0	9.3	2.9	7.5	8.2	3.9	4.9	3.7
Cycle Q Clear(g_c), s	8.2	33.7	4.1	4.5	29.0	9.3	2.9	7.5	8.2	3.9	4.9	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	263	1716	533	161	1566	486	924	1536	685	146	736	328
V/C Ratio(X)	0.78	0.79	0.25	0.70	0.75	0.29	0.10	0.20	0.22	0.68	0.26	0.24
Avail Cap(c_a), veh/h	518	2444	759	321	2152	668	924	1536	685	296	736	328
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.5	42.0	8.1	65.8	43.7	36.9	38.6	24.7	24.9	63.2	34.0	22.4
Incr Delay (d2), s/veh	5.1	1.2	0.2	5.3	1.0	0.3	0.0	0.3	0.7	5.5	0.9	1.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	13.8	3.0	2.0	11.9	3.6	1.2	3.2	3.1	1.8	2.1	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	68.6	43.3	8.3	71.1	44.7	37.2	38.7	25.0	25.6	68.7	34.8	24.2
LnGrp LOS	E	D	A	E	D	D	D	C	C	E	C	C
Approach Vol, veh/h		1698			1425			549			371	
Approach Delay, s/veh		43.6			46.0			27.5			41.7	
Approach LOS		D			D			C			D	

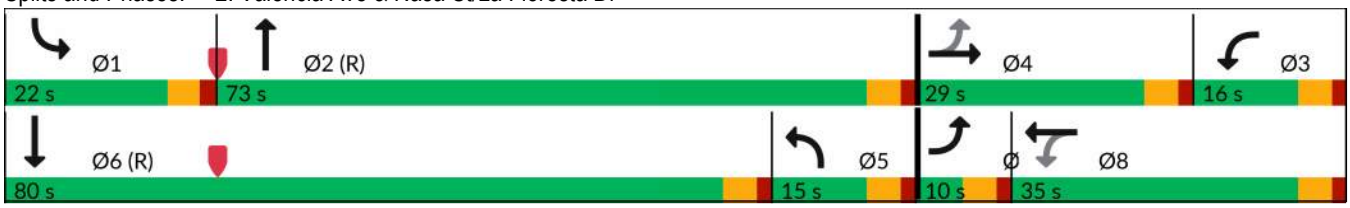
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.9	65.5	11.5	52.1	42.4	34.0	15.6	47.9
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	12.0	28.0	13.0	67.0	11.0	29.0	21.0	59.0
Max Q Clear Time (g_c+I1), s	5.9	10.2	6.5	35.7	4.9	6.9	10.2	31.0
Green Ext Time (p_c), s	0.1	2.2	0.1	11.3	0.1	1.2	0.5	9.1

Intersection Summary	
HCM 7th Control Delay, s/veh	42.1
HCM 7th LOS	D

Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø7
Lane Configurations								
Traffic Volume (vph)	0	24	0	11	544	35	288	
Future Volume (vph)	0	24	0	11	544	35	288	
Turn Type	NA	pm+pt	NA	Prot	NA	Prot	NA	
Protected Phases	4	3	8	5	2	1	6	7
Permitted Phases		8						
Detector Phase	4	3	8	5	2	1	6	
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	10.0	21.0	10.0	21.0	10.0	21.0	10.0
Total Split (s)	29.0	16.0	35.0	15.0	73.0	22.0	80.0	10.0
Total Split (%)	20.7%	11.4%	25.0%	10.7%	52.1%	15.7%	57.1%	7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	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	5.0	
Lead/Lag	Lead	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	C-Max	None	C-Max	None
Act Effct Green (s)	5.5	15.0	13.9	7.4	104.5	8.7	110.1	
Actuated g/C Ratio	0.04	0.11	0.10	0.05	0.75	0.06	0.79	
v/c Ratio	0.16	0.27	0.10	0.07	0.22	0.38	0.11	
Control Delay (s/veh)	0.5	63.1	0.4	38.2	1.7	84.3	4.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	0.5	63.1	0.4	38.2	1.7	84.3	4.1	
LOS	A	E	A	D	A	F	A	
Approach Delay (s/veh)	0.5		24.5		2.4		12.9	
Approach LOS	A		C		A		B	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 9 (6%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.38	
Intersection Signal Delay (s/veh): 7.1	Intersection LOS: A
Intersection Capacity Utilization 40.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Valencia Ave & Nasa St/La Floresta Dr



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	100	35	56	13	663	42	343
v/c Ratio	0.16	0.27	0.10	0.07	0.22	0.38	0.11
Control Delay (s/veh)	0.5	63.1	0.4	38.2	1.7	84.3	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	0.5	63.1	0.4	38.2	1.7	84.3	4.1
Queue Length 50th (ft)	0	29	0	4	20	39	10
Queue Length 95th (ft)	0	48	0	m12	36	77	65
Internal Link Dist (ft)	332		460		1102		185
Turn Bay Length (ft)		105		175		200	
Base Capacity (vph)	756	201	681	245	2965	214	3154
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.17	0.08	0.05	0.22	0.20	0.11

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	77	24	0	38	11	544	40	35	288	0
Future Volume (veh/h)	0	0	77	24	0	38	11	544	40	35	288	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.04	1.04
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1945	1945
Adj Flow Rate, veh/h	0	0	100	35	0	56	12	618	45	42	343	0
Peak Hour Factor	0.77	0.77	0.77	0.68	0.68	0.68	0.88	0.88	0.88	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	0	125	93	0	215	765	2537	185	55	1980	0
Arrive On Green	0.00	0.00	0.08	0.02	0.00	0.14	0.15	0.49	0.49	0.01	0.18	0.00
Sat Flow, veh/h	1781	0	1585	1781	0	1585	3456	3493	254	1781	3793	0
Grp Volume(v), veh/h	0	0	100	35	0	56	12	327	336	42	343	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1585	1728	1848	1899	1781	1848	0
Q Serve(g_s), s	0.0	0.0	8.7	0.0	0.0	4.4	0.4	14.4	14.4	3.3	11.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	8.7	0.0	0.0	4.4	0.4	14.4	14.4	3.3	11.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		0.00
Lane Grp Cap(c), veh/h	116	0	125	93	0	215	765	1342	1380	55	1980	0
V/C Ratio(X)	0.00	0.00	0.80	0.38	0.00	0.26	0.02	0.24	0.24	0.77	0.17	0.00
Avail Cap(c_a), veh/h	179	0	272	195	0	340	765	1342	1380	216	1980	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	0.33	0.33	0.33
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.94	0.94	0.94	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	63.4	67.0	0.0	54.2	46.6	13.5	13.5	68.8	31.3	0.0
Incr Delay (d2), s/veh	0.0	0.0	11.0	2.5	0.0	0.6	0.0	0.4	0.4	19.9	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	3.9	1.3	0.0	1.8	0.2	6.6	6.9	1.8	5.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	74.4	69.6	0.0	54.8	46.6	13.9	13.9	88.7	31.5	0.0
LnGrp LOS			E	E		D	D	B	B	F	C	
Approach Vol, veh/h		100			91			675			385	
Approach Delay, s/veh		74.4			60.5			14.5			37.7	
Approach LOS		E			E			B			D	

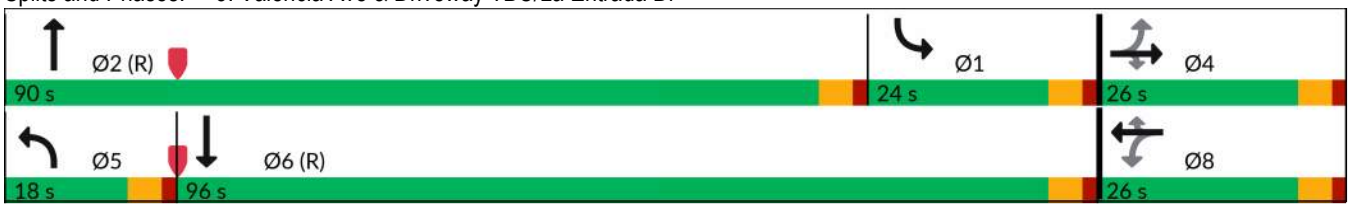
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	106.7	8.0	16.1	36.0	80.0	0.0	24.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	17.0	68.0	11.0	24.0	10.0	75.0	5.0	30.0
Max Q Clear Time (g_c+I1), s	5.3	16.4	2.0	10.7	2.4	13.0	0.0	6.4
Green Ext Time (p_c), s	0.0	4.0	0.0	0.4	0.0	2.2	0.0	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	29.8
HCM 7th LOS	C

Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	1	5	0	12	1	597	14	309
Future Volume (vph)	1	5	0	12	1	597	14	309
Turn Type	Perm	Perm	NA	Perm	Prot	NA	Prot	NA
Protected Phases			8		5	2	1	6
Permitted Phases	4	8		8				
Detector Phase	4	8	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	26.0	26.0	26.0	26.0	18.0	90.0	24.0	96.0
Total Split (%)	18.6%	18.6%	18.6%	18.6%	12.9%	64.3%	17.1%	68.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0		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	5.0
Lead/Lag					Lead	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	6.4		6.4	6.4	5.7	120.2	11.2	127.5
Actuated g/C Ratio	0.05		0.05	0.05	0.04	0.86	0.08	0.91
v/c Ratio	0.00		0.10	0.12	0.01	0.19	0.11	0.10
Control Delay (s/veh)	0.0		66.0	1.6	70.0	4.9	62.1	1.0
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	0.0		66.0	1.6	70.0	4.9	62.1	1.0
LOS	A		E	A	E	A	E	A
Approach Delay (s/veh)			20.0			5.0		3.6
Approach LOS			B			A		A

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 85 (61%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.19	
Intersection Signal Delay (s/veh): 4.9	Intersection LOS: A
Intersection Capacity Utilization 28.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Valencia Ave & Driveway TBC/La Entrada Dr



Lane Group	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1	8	20	1	652	16	355
v/c Ratio	0.00	0.10	0.12	0.01	0.19	0.11	0.10
Control Delay (s/veh)	0.0	66.0	1.6	70.0	4.9	62.1	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	0.0	66.0	1.6	70.0	4.9	62.1	1.0
Queue Length 50th (ft)	0	7	0	1	20	16	17
Queue Length 95th (ft)	0	18	0	m4	188	m40	27
Internal Link Dist (ft)		755			786		640
Turn Bay Length (ft)	150			223		160	
Base Capacity (vph)	759	265	317	164	3436	240	3654
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.03	0.06	0.01	0.19	0.07	0.10

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	1	5	0	12	1	597	9	14	309	0
Future Volume (veh/h)	0	0	1	5	0	12	1	597	9	14	309	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1945	1870
Adj Flow Rate, veh/h	0	0	1	8	0	20	1	642	10	16	355	0
Peak Hour Factor	0.92	0.92	0.92	0.61	0.61	0.61	0.93	0.93	0.93	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	36	31	79	0	31	2	2261	35	475	3224	0
Arrive On Green	0.00	0.00	0.02	0.02	0.00	0.02	0.00	1.00	1.00	0.53	1.00	0.00
Sat Flow, veh/h	0	1870	1585	1416	0	1585	1781	3725	58	1781	3793	0
Grp Volume(v), veh/h	0	0	1	8	0	20	1	318	334	16	355	0
Grp Sat Flow(s),veh/h/ln	0	1870	1585	1416	0	1585	1781	1848	1935	1781	1848	0
Q Serve(g_s), s	0.0	0.0	0.1	0.8	0.0	1.8	0.1	0.0	0.0	0.6	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.1	0.8	0.0	1.8	0.1	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		0.03	1.00		0.00
Lane Grp Cap(c), veh/h	0	36	31	79	0	31	2	1122	1175	475	3224	0
V/C Ratio(X)	0.00	0.00	0.03	0.10	0.00	0.65	0.52	0.28	0.28	0.03	0.11	0.00
Avail Cap(c_a), veh/h	0	281	238	264	0	238	165	1122	1175	475	3224	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	67.4	67.7	0.0	68.2	69.8	0.0	0.0	24.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.4	0.6	0.0	21.1	132.4	0.6	0.6	0.0	0.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.3	0.0	0.9	0.1	0.2	0.2	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	67.8	68.3	0.0	89.2	202.3	0.6	0.6	24.2	0.1	0.0
LnGrp LOS			E	E		F	F	A	A	C	A	
Approach Vol, veh/h		1			28			653			371	
Approach Delay, s/veh		67.8			83.2			0.9			1.1	
Approach LOS		E			F			A			A	

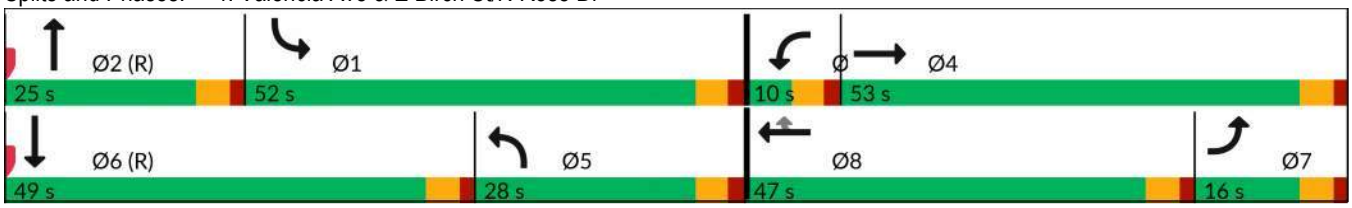
Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	42.3	90.0		7.7	5.2	127.1		7.7
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	19.0	85.0		21.0	13.0	91.0		21.0
Max Q Clear Time (g_c+I1), s	2.6	2.0		2.1	2.1	2.0		3.8
Green Ext Time (p_c), s	0.0	3.9		0.0	0.0	2.3		0.0

Intersection Summary		
HCM 7th Control Delay, s/veh		3.2
HCM 7th LOS		A

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	185	449	8	381	738	157	425	479	198
Future Volume (vph)	185	449	8	381	738	157	425	479	198
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	16.0	53.0	10.0	47.0	47.0	28.0	25.0	52.0	49.0
Total Split (%)	11.4%	37.9%	7.1%	33.6%	33.6%	20.0%	17.9%	37.1%	35.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	11.5	46.9	5.1	32.4	32.4	22.3	29.8	46.3	53.8
Actuated g/C Ratio	0.08	0.34	0.04	0.23	0.23	0.16	0.21	0.33	0.38
v/c Ratio	0.70	0.51	0.14	0.50	0.93	0.59	0.54	0.97	0.21
Control Delay (s/veh)	76.4	36.9	70.4	47.7	27.6	67.5	28.6	68.1	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	76.4	36.9	70.4	47.7	27.6	67.5	28.6	68.1	7.9
LOS	E	D	E	D	C	E	C	E	A
Approach Delay (s/veh)		46.7		34.7			38.8		48.3
Approach LOS		D		C			D		D

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 88 (63%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay (s/veh): 41.5	Intersection LOS: D
Intersection Capacity Utilization 75.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Valencia Ave & E Birch St/N Rose Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	595	9	410	794	165	462	570	279
v/c Ratio	0.70	0.51	0.14	0.50	0.93	0.59	0.54	0.97	0.21
Control Delay (s/veh)	76.4	36.9	70.4	47.7	27.6	67.5	28.6	68.1	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	76.4	36.9	70.4	47.7	27.6	67.5	28.6	68.1	7.9
Queue Length 50th (ft)	90	201	8	166	162	147	162	551	63
Queue Length 95th (ft)	#144	275	28	205	#394	214	#230	#679	m56
Internal Link Dist (ft)		1706		346			363		2026
Turn Bay Length (ft)	190		230		285	205		160	
Base Capacity (vph)	286	1272	64	1061	920	290	850	594	1337
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	0.69	0.47	0.14	0.39	0.86	0.57	0.54	0.96	0.21

Intersection Summary

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	449	110	8	381	738	157	425	14	479	198	36
Future Volume (veh/h)	185	449	110	8	381	738	157	425	14	479	198	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	197	478	117	9	410	794	165	447	15	570	236	43
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.95	0.95	0.95	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	245	1027	250	15	1066	476	306	521	17	612	946	170
Arrive On Green	0.07	0.36	0.36	0.01	0.30	0.30	0.34	0.29	0.29	0.57	0.52	0.52
Sat Flow, veh/h	3456	2834	689	1781	3554	1585	1781	3649	122	1781	3010	540
Grp Volume(v), veh/h	197	299	296	9	410	794	165	226	236	570	138	141
Grp Sat Flow(s),veh/h/ln	1728	1777	1746	1781	1777	1585	1781	1848	1923	1781	1777	1773
Q Serve(g_s), s	7.9	18.0	18.2	0.7	12.8	42.0	10.4	16.2	16.3	41.0	5.9	6.1
Cycle Q Clear(g_c), s	7.9	18.0	18.2	0.7	12.8	42.0	10.4	16.2	16.3	41.0	5.9	6.1
Prop In Lane	1.00		0.39	1.00		1.00	1.00		0.06	1.00		0.30
Lane Grp Cap(c), veh/h	245	644	633	15	1066	476	306	264	275	612	558	557
V/C Ratio(X)	0.80	0.46	0.47	0.60	0.38	1.67	0.54	0.86	0.86	0.93	0.25	0.25
Avail Cap(c_a), veh/h	272	644	633	64	1066	476	306	264	275	612	558	557
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.67	1.67	1.67
Upstream Filter(I)	0.61	0.61	0.61	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85
Uniform Delay (d), s/veh	64.1	34.2	34.3	69.2	38.8	49.0	41.5	48.6	48.7	28.4	24.2	24.3
Incr Delay (d2), s/veh	9.5	0.3	0.3	32.7	0.2	310.6	1.9	28.3	27.8	18.9	0.9	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	7.6	7.6	0.5	5.6	57.4	4.2	8.3	8.6	16.2	2.5	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	73.5	34.5	34.6	101.9	39.0	359.6	43.3	76.9	76.4	47.3	25.1	25.2
LnGrp LOS	E	C	C	F	D	F	D	E	E	D	C	C
Approach Vol, veh/h		792			1213			627			849	
Approach Delay, s/veh		44.3			249.3			67.9			40.0	
Approach LOS		D			F			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	53.1	25.0	6.2	55.7	29.1	49.0	14.9	47.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	47.0	20.0	5.0	48.0	23.0	44.0	11.0	42.0
Max Q Clear Time (g_c+I1), s	43.0	18.3	2.7	20.2	12.4	8.1	9.9	44.0
Green Ext Time (p_c), s	0.8	0.4	0.0	3.3	0.3	1.5	0.1	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	118.9
HCM 7th LOS	F

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	21	631	192	221	346	181	820	14	144
Future Volume (vph)	21	631	192	221	346	181	820	14	144
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA
Protected Phases	7	4	3	8	5	2		1	6
Permitted Phases							2		
Detector Phase	7	4	3	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	21.0	21.0	10.0	21.0
Total Split (s)	11.0	39.0	16.0	44.0	48.0	75.0	75.0	10.0	37.0
Total Split (%)	7.9%	27.9%	11.4%	31.4%	34.3%	53.6%	53.6%	7.1%	26.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	6.2	33.5	12.7	44.4	37.2	74.7	74.7	5.0	36.5
Actuated g/C Ratio	0.04	0.24	0.09	0.32	0.27	0.53	0.53	0.04	0.26
v/c Ratio	0.28	0.87	0.75	0.17	0.78	0.09	0.78	0.27	0.21
Control Delay (s/veh)	74.2	54.9	77.4	35.5	48.4	9.0	9.2	76.5	40.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.2	54.9	77.4	35.5	48.4	9.0	9.2	76.5	40.8
LOS	E	D	E	D	D	A	A	E	D
Approach Delay (s/veh)		55.3		54.7		19.3			43.7
Approach LOS		E		D		B			D

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 89 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay (s/veh): 38.5	Intersection LOS: D
Intersection Capacity Utilization 87.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 5: Valencia Ave & E Lambert Rd

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	22	1069	234	276	368	193	872	17	191
v/c Ratio	0.28	0.87	0.75	0.17	0.78	0.09	0.78	0.27	0.21
Control Delay (s/veh)	74.2	54.9	77.4	35.5	48.4	9.0	9.2	76.5	40.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.2	54.9	77.4	35.5	48.4	9.0	9.2	76.5	40.8
Queue Length 50th (ft)	20	308	106	65	344	30	119	15	70
Queue Length 95th (ft)	50	374	#157	87	m419	m37	773	39	100
Internal Link Dist (ft)		759		811		2026			731
Turn Bay Length (ft)	230		625		300		120	240	
Base Capacity (vph)	79	1257	311	1609	543	2141	1120	63	914
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	0.28	0.85	0.75	0.17	0.68	0.09	0.78	0.27	0.21

Intersection Summary

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	631	374	192	221	5	346	181	820	14	144	17
Future Volume (veh/h)	21	631	374	192	221	5	346	181	820	14	144	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	22	671	398	234	270	6	368	193	0	17	171	20
Peak Hour Factor	0.94	0.94	0.94	0.82	0.82	0.82	0.94	0.94	0.94	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	29	827	385	272	1568	35	547	1848		64	734	85
Arrive On Green	0.02	0.24	0.24	0.08	0.31	0.31	0.51	0.83	0.00	0.04	0.23	0.23
Sat Flow, veh/h	1781	3404	1585	3456	5140	114	1781	3696	1648	1781	3210	371
Grp Volume(v), veh/h	22	671	398	234	178	98	368	193	0	17	94	97
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1728	1702	1850	1781	1848	1648	1781	1777	1804
Q Serve(g_s), s	1.7	26.0	34.0	9.4	5.4	5.4	21.5	1.3	0.0	1.3	6.0	6.2
Cycle Q Clear(g_c), s	1.7	26.0	34.0	9.4	5.4	5.4	21.5	1.3	0.0	1.3	6.0	6.2
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	29	827	385	272	1038	564	547	1848		64	406	412
V/C Ratio(X)	0.75	0.81	1.03	0.86	0.17	0.17	0.67	0.10		0.27	0.23	0.24
Avail Cap(c_a), veh/h	76	827	385	272	1038	564	547	1848		64	406	412
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.54	0.54	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.6	50.0	53.0	63.7	35.7	35.7	28.9	5.9	0.0	65.7	44.0	44.0
Incr Delay (d2), s/veh	31.4	6.2	54.9	23.5	0.1	0.1	1.8	0.1	0.0	2.2	1.3	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	11.4	18.9	4.9	2.2	2.4	7.6	0.5	0.0	0.6	2.8	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	100.0	56.1	107.9	87.3	35.8	35.8	30.6	5.9	0.0	67.9	45.3	45.4
LnGrp LOS	F	E	F	F	D	D	C	A		E	D	D
Approach Vol, veh/h		1091			510			561			208	
Approach Delay, s/veh		75.9			59.4			22.1			47.2	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	75.0	16.0	39.0	48.0	37.0	7.3	47.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	5.0	70.0	11.0	34.0	43.0	32.0	6.0	39.0
Max Q Clear Time (g_c+I1), s	3.3	3.3	11.4	36.0	23.5	8.2	3.7	7.4
Green Ext Time (p_c), s	0.0	1.2	0.0	0.0	1.0	0.9	0.0	1.5

Intersection Summary	
HCM 7th Control Delay, s/veh	57.1
HCM 7th LOS	E

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	37	0	1	12	11	3	4	7	15	0	3
Future Vol, veh/h	17	37	0	1	12	11	3	4	7	15	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	78	78	78	50	50	50	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	52	0	1	15	14	6	8	14	20	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	29	0	0	52	0	0	118	132	52	129	125	22
Stage 1	-	-	-	-	-	-	100	100	-	25	25	-
Stage 2	-	-	-	-	-	-	18	32	-	104	100	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1584	-	-	1554	-	-	858	759	1016	844	765	1055
Stage 1	-	-	-	-	-	-	906	812	-	993	874	-
Stage 2	-	-	-	-	-	-	1001	868	-	902	812	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1584	-	-	1554	-	-	841	746	1016	810	753	1055
Mov Cap-2 Maneuver	-	-	-	-	-	-	841	746	-	810	753	-
Stage 1	-	-	-	-	-	-	892	800	-	992	874	-
Stage 2	-	-	-	-	-	-	997	868	-	867	800	-

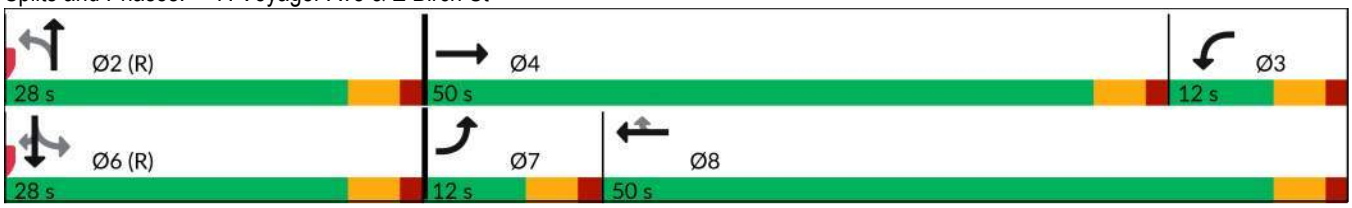
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	2.3	0.3	9.2	9.4
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	885	567	-	-	68	-	-	843
HCM Lane V/C Ratio	0.032	0.015	-	-	0.001	-	-	0.028
HCM Control Delay (s/veh)	9.2	7.3	0	-	7.3	0	-	9.4
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	5	781	2	592	11	37	0	7	0	12
Future Volume (vph)	5	781	2	592	11	37	0	7	0	12
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	7	4	3	8			2		6	
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.5	10.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	12.0	50.0	12.0	50.0	50.0	28.0	28.0	28.0	28.0	28.0
Total Split (%)	13.3%	55.6%	13.3%	55.6%	55.6%	31.1%	31.1%	31.1%	31.1%	31.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.9	28.8	5.7	28.7	28.7	49.0	49.0		49.0	49.0
Actuated g/C Ratio	0.07	0.32	0.06	0.32	0.32	0.54	0.54		0.54	0.54
v/c Ratio	0.04	0.73	0.02	0.65	0.02	0.08	0.04		0.01	0.02
Control Delay (s/veh)	59.0	9.1	39.5	28.7	0.1	13.7	0.1		14.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	59.0	9.1	39.5	28.7	0.1	13.7	0.1		14.3	0.0
LOS	E	A	D	C	A	B	A		B	A
Approach Delay (s/veh)		9.4		28.2			7.8		5.1	
Approach LOS		A		C			A		A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 31 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay (s/veh): 17.4	Intersection LOS: B
Intersection Capacity Utilization 39.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 7: Voyager Ave & E Birch St



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	5	828	2	731	14	64	48	10	18
v/c Ratio	0.04	0.73	0.02	0.65	0.02	0.08	0.04	0.01	0.02
Control Delay (s/veh)	59.0	9.1	39.5	28.7	0.1	13.7	0.1	14.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	59.0	9.1	39.5	28.7	0.1	13.7	0.1	14.3	0.0
Queue Length 50th (ft)	2	21	1	185	0	15	0	2	0
Queue Length 95th (ft)	m6	30	8	190	0	32	0	11	0
Internal Link Dist (ft)		1715		1706			560	102	
Turn Bay Length (ft)	200		140		225	125			95
Base Capacity (vph)	137	1766	137	1769	834	761	1100	735	927
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	0.04	0.47	0.01	0.41	0.02	0.08	0.04	0.01	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	781	13	2	592	11	37	0	28	7	0	12
Future Volume (veh/h)	5	781	13	2	592	11	37	0	28	7	0	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	814	14	2	731	14	64	0	48	10	0	18
Peak Hour Factor	0.96	0.96	0.96	0.81	0.81	0.81	0.58	0.58	0.58	0.68	0.68	0.68
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	9	960	17	4	943	421	842	0	928	826	0	892
Arrive On Green	0.01	0.54	0.54	0.00	0.27	0.27	0.56	0.00	0.56	0.56	0.00	0.56
Sat Flow, veh/h	1781	3575	61	1781	3554	1585	1395	0	1648	1326	0	1585
Grp Volume(v), veh/h	5	405	423	2	731	14	64	0	48	10	0	18
Grp Sat Flow(s),veh/h/ln	1781	1777	1859	1781	1777	1585	1395	0	1648	1326	0	1585
Q Serve(g_s), s	0.3	17.4	17.4	0.1	17.1	0.6	2.0	0.0	1.2	0.3	0.0	0.5
Cycle Q Clear(g_c), s	0.3	17.4	17.4	0.1	17.1	0.6	3.4	0.0	1.2	1.5	0.0	0.5
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	9	477	499	4	943	421	842	0	928	826	0	892
V/C Ratio(X)	0.54	0.85	0.85	0.52	0.78	0.03	0.08	0.00	0.05	0.01	0.00	0.02
Avail Cap(c_a), veh/h	139	888	930	139	1777	793	842	0	928	826	0	892
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	0.84	0.84	0.84	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.4	19.3	19.3	44.9	30.6	24.5	9.7	0.0	8.9	9.2	0.0	8.7
Incr Delay (d2), s/veh	31.6	3.3	3.1	69.0	1.2	0.0	0.2	0.0	0.1	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.8	5.0	0.1	6.9	0.2	0.6	0.0	0.4	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	76.1	22.5	22.4	113.8	31.8	24.5	9.9	0.0	9.0	9.2	0.0	8.7
LnGrp LOS	E	C	C	F	C	C	A		A	A		A
Approach Vol, veh/h		833			747			112			28	
Approach Delay, s/veh		22.8			31.8			9.5			8.9	
Approach LOS		C			C			A			A	

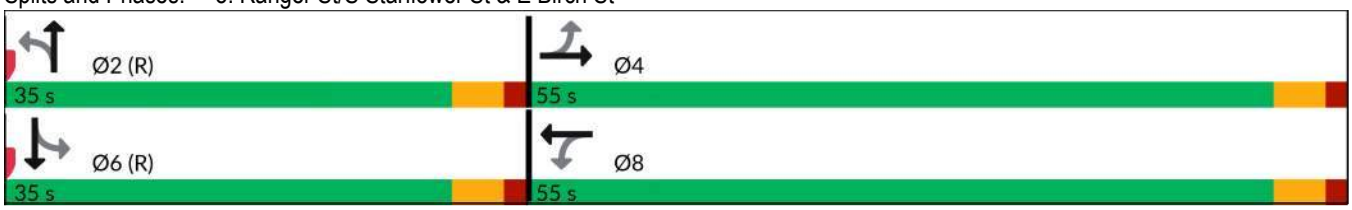
Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		55.6	5.2	29.2		55.6	5.5	28.9
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		23.0	7.0	45.0		23.0	7.0	45.0
Max Q Clear Time (g_c+I1), s		5.4	2.1	19.4		3.5	2.3	19.1
Green Ext Time (p_c), s		0.4	0.0	4.7		0.1	0.0	4.7

Intersection Summary	
HCM 7th Control Delay, s/veh	25.6
HCM 7th LOS	C

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	27	763	690	96	1	9	0
Future Volume (vph)	27	763	690	96	1	9	0
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA
Protected Phases		4	8		2		6
Permitted Phases	4			2		6	
Detector Phase	4	4	8	2	2	6	6
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	55.0	55.0	55.0	35.0	35.0	35.0	35.0
Total Split (%)	61.1%	61.1%	61.1%	38.9%	38.9%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0		5.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	32.2	32.2	32.2		47.8		47.8
Actuated g/C Ratio	0.36	0.36	0.36		0.53		0.53
v/c Ratio	0.30	0.62	0.73		0.27		0.05
Control Delay (s/veh)	27.2	25.1	39.8		13.7		7.2
Queue Delay	0.0	0.0	0.0		0.0		0.0
Total Delay (s/veh)	27.2	25.1	39.8		13.7		7.2
LOS	C	C	D		B		A
Approach Delay (s/veh)		25.2	39.8		13.7		7.2
Approach LOS		C	D		B		A

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay (s/veh): 30.1	Intersection LOS: C
Intersection Capacity Utilization 43.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Ranger St/S Starflower St & E Birch St



Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	31	885	919	214	40
v/c Ratio	0.30	0.62	0.73	0.27	0.05
Control Delay (s/veh)	27.2	25.1	39.8	13.7	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.2	25.1	39.8	13.7	7.2
Queue Length 50th (ft)	13	214	291	60	4
Queue Length 95th (ft)	33	228	291	62	14
Internal Link Dist (ft)		759	1715	671	28
Turn Bay Length (ft)	145				
Base Capacity (vph)	159	2223	1963	801	829
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.19	0.40	0.47	0.27	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	763	16	0	690	8	96	1	12	9	0	17
Future Volume (veh/h)	27	763	16	0	690	8	96	1	12	9	0	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1945	1945	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	31	867	18	0	908	11	188	2	24	14	0	26
Peak Hour Factor	0.88	0.88	0.88	0.76	0.76	0.76	0.51	0.51	0.51	0.65	0.65	0.65
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	1369	28	80	1329	16	742	12	86	311	24	522
Arrive On Green	0.37	0.37	0.37	0.00	0.12	0.12	0.52	0.52	0.52	0.52	0.00	0.52
Sat Flow, veh/h	608	3702	77	628	3596	44	1285	24	165	494	47	1005
Grp Volume(v), veh/h	31	433	452	0	449	470	214	0	0	40	0	0
Grp Sat Flow(s),veh/h/ln	608	1848	1931	628	1777	1863	1474	0	0	1545	0	0
Q Serve(g_s), s	4.2	17.3	17.3	0.0	21.8	21.8	6.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	26.0	17.3	17.3	0.0	21.8	21.8	7.1	0.0	0.0	1.1	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.02	0.88		0.11	0.35		0.65
Lane Grp Cap(c), veh/h	158	683	714	80	657	689	840	0	0	856	0	0
V/C Ratio(X)	0.20	0.63	0.63	0.00	0.68	0.68	0.25	0.00	0.00	0.05	0.00	0.00
Avail Cap(c_a), veh/h	271	1027	1073	197	987	1035	840	0	0	856	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.78	0.78	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.1	23.3	23.3	0.0	34.5	34.5	12.0	0.0	0.0	10.7	0.0	0.0
Incr Delay (d2), s/veh	0.6	1.0	0.9	0.0	1.0	0.9	0.7	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	7.0	7.3	0.0	10.3	10.8	2.5	0.0	0.0	0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.7	24.3	24.3	0.0	35.4	35.4	12.8	0.0	0.0	10.8	0.0	0.0
LnGrp LOS	D	C	C		D	D	B			B		
Approach Vol, veh/h		916			919			214			40	
Approach Delay, s/veh		24.7			35.4			12.8			10.8	
Approach LOS		C			D			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	51.7	38.3	51.7	38.3
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	30.0	50.0	30.0	50.0
Max Q Clear Time (g_c+I1), s	9.1	28.0	3.1	23.8
Green Ext Time (p_c), s	1.2	5.3	0.2	5.4

Intersection Summary	
HCM 7th Control Delay, s/veh	27.9
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	17	4	8	55	2
Future Vol, veh/h	4	17	4	8	55	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	58	58	50	50	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	29	8	16	65	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	24	0	-	0	59	16
Stage 1	-	-	-	-	16	-
Stage 2	-	-	-	-	43	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1591	-	-	-	948	1063
Stage 1	-	-	-	-	1007	-
Stage 2	-	-	-	-	979	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1591	-	-	-	944	1063
Mov Cap-2 Maneuver	-	-	-	-	944	-
Stage 1	-	-	-	-	1002	-
Stage 2	-	-	-	-	979	-

Approach	EB	WB	SB
HCM Control Delay, s/v	1.39	0	9.09
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	343	-	-	-	947
HCM Lane V/C Ratio	0.004	-	-	-	0.072
HCM Control Delay (s/veh)	7.3	0	-	-	9.1
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	609	316	0
Future Vol, veh/h	0	0	0	609	316	0
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	92	92	88	88	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	692	376	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	722	188	-	0	-	0
Stage 1	376	-	-	-	-	-
Stage 2	346	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	-	-
Pot Cap-1 Maneuver	362	822	0	-	-	-
Stage 1	664	-	0	-	-	-
Stage 2	688	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	362	822	-	-	-	-
Mov Cap-2 Maneuver	362	-	-	-	-	-
Stage 1	664	-	-	-	-	-
Stage 2	688	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	582	315	0
Future Vol, veh/h	0	0	0	582	315	0
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	92	92	88	88	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	661	375	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	188	-	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	823	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	823	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	72	11	0	0	0
Future Vol, veh/h	0	72	11	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	68	68	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	94	16	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	16	0	-	0	63	16
Stage 1	-	-	-	-	16	-
Stage 2	-	-	-	-	47	-
Critical Hdwy	4.13	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1600	-	-	-	939	1063
Stage 1	-	-	-	-	1006	-
Stage 2	-	-	-	-	970	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1600	-	-	-	939	1063
Mov Cap-2 Maneuver	-	-	-	-	939	-
Stage 1	-	-	-	-	1006	-
Stage 2	-	-	-	-	970	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1600	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	17	0	0	59
Future Vol, veh/h	0	0	17	0	0	59
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	20	0	0	70

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	90	20	0	0	20	0
Stage 1	20	-	-	-	-	-
Stage 2	70	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	910	1058	-	-	1596	-
Stage 1	1002	-	-	-	-	-
Stage 2	953	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	910	1058	-	-	1596	-
Mov Cap-2 Maneuver	910	-	-	-	-	-
Stage 1	1002	-	-	-	-	-
Stage 2	953	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	-	1596	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s/veh)	-	-	0	0	0	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	17	0	0	63
Future Vol, veh/h	0	0	17	0	0	63
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	92	92	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	20	0	0	75

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	95	20	0	0	20	0
Stage 1	20	-	-	-	-	-
Stage 2	75	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	904	1058	-	-	1596	-
Stage 1	1002	-	-	-	-	-
Stage 2	948	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	904	1058	-	-	1596	-
Mov Cap-2 Maneuver	904	-	-	-	-	-
Stage 1	1002	-	-	-	-	-
Stage 2	948	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1596	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	63	0	0	17	0
Future Vol, veh/h	0	63	0	0	17	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	92	92	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	75	0	0	20	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	0	75
Stage 1	-	-	0	0
Stage 2	-	-	0	75
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	-	815
Stage 1	-	-	-	-
Stage 2	-	-	-	833
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	0
Mov Cap-2 Maneuver	-	-	-	0
Stage 1	-	-	-	0
Stage 2	-	-	-	0

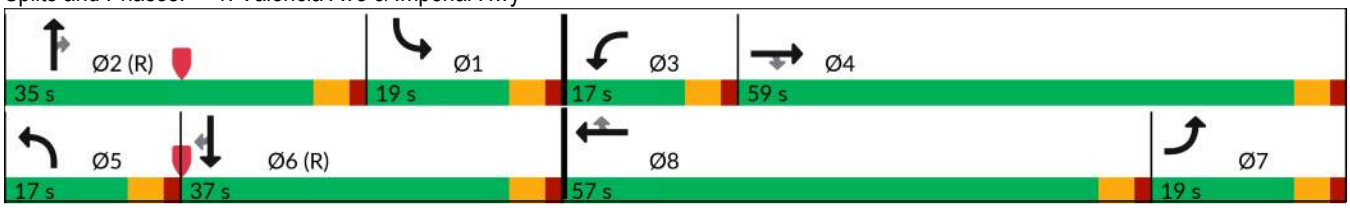
Approach	EB	WB
HCM Control Delay, s/v	0	0
HCM LOS		A

Minor Lane/Major Mvmt	EBT	EBR	WBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	-	0
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	1065	88	90	1082	77	92	115	101	153	254	221
Future Volume (vph)	131	1065	88	90	1082	77	92	115	101	153	254	221
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0
Total Split (s)	19.0	59.0	59.0	17.0	57.0	57.0	17.0	35.0	35.0	19.0	37.0	37.0
Total Split (%)	14.6%	45.4%	45.4%	13.1%	43.8%	43.8%	13.1%	26.9%	26.9%	14.6%	28.5%	28.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	10.7	41.8	41.8	9.1	40.2	40.2	9.2	45.1	45.1	14.0	49.9	49.9
Actuated g/C Ratio	0.08	0.32	0.32	0.07	0.31	0.31	0.07	0.35	0.35	0.11	0.38	0.38
v/c Ratio	0.50	0.71	0.16	0.41	0.76	0.14	0.42	0.10	0.17	0.47	0.21	0.33
Control Delay (s/veh)	63.0	41.0	1.6	62.7	43.6	0.8	62.6	31.3	3.1	51.1	24.6	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	63.0	41.0	1.6	62.7	43.6	0.8	62.6	31.3	3.1	51.1	24.6	3.6
LOS	E	D	A	E	D	A	E	C	A	D	C	A
Approach Delay (s/veh)		40.5			42.3			31.4			23.7	
Approach LOS		D			D			C			C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 29 (22%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay (s/veh): 37.2	Intersection LOS: D
Intersection Capacity Utilization 51.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Valencia Ave & Imperial Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	142	1158	96	99	1189	85	101	126	111	174	289	251
v/c Ratio	0.50	0.71	0.16	0.41	0.76	0.14	0.42	0.10	0.17	0.47	0.21	0.33
Control Delay (s/veh)	63.0	41.0	1.6	62.7	43.6	0.8	62.6	31.3	3.1	51.1	24.6	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	63.0	41.0	1.6	62.7	43.6	0.8	62.6	31.3	3.1	51.1	24.6	3.6
Queue Length 50th (ft)	60	313	0	41	331	0	42	37	0	70	64	12
Queue Length 95th (ft)	93	333	10	70	353	3	71	69	25	98	110	29
Internal Link Dist (ft)		540			646			773			1102	
Turn Bay Length (ft)	190		300	260		185	150		145	250		185
Base Capacity (vph)	369	2112	741	316	2034	719	316	1228	642	369	1358	762
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.55	0.13	0.31	0.58	0.12	0.32	0.10	0.17	0.47	0.21	0.33

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	1065	88	90	1082	77	92	115	101	153	254	221
Future Volume (veh/h)	131	1065	88	90	1082	77	92	115	101	153	254	221
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	142	1158	96	99	1189	85	101	126	111	174	289	251
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.91	0.91	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	197	1568	487	149	1498	465	152	820	366	916	1606	716
Arrive On Green	0.06	0.31	0.31	0.04	0.29	0.29	0.04	0.23	0.23	0.44	0.75	0.75
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	142	1158	96	99	1189	85	101	126	111	174	289	251
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	5.3	26.4	5.8	3.7	27.9	5.2	3.7	3.7	6.4	4.0	3.0	5.2
Cycle Q Clear(g_c), s	5.3	26.4	5.8	3.7	27.9	5.2	3.7	3.7	6.4	4.0	3.0	5.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	197	1568	487	149	1498	465	152	820	366	916	1606	716
V/C Ratio(X)	0.72	0.74	0.20	0.66	0.79	0.18	0.67	0.15	0.30	0.19	0.18	0.35
Avail Cap(c_a), veh/h	372	2121	658	319	2042	634	319	820	366	916	1606	716
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98
Uniform Delay (d), s/veh	60.3	40.4	33.2	61.3	42.3	34.3	61.2	39.9	29.4	27.7	9.1	5.5
Incr Delay (d2), s/veh	4.9	0.9	0.2	5.0	1.6	0.2	4.9	0.4	2.1	0.1	0.2	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	10.7	2.2	1.7	11.4	2.0	1.7	1.7	3.0	1.6	1.1	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	65.2	41.3	33.4	66.2	43.9	34.5	66.1	40.3	31.6	27.8	9.3	6.8
LnGrp LOS	E	D	C	E	D	C	E	D	C	C	A	A
Approach Vol, veh/h		1396			1373			338			714	
Approach Delay, s/veh		43.2			44.9			45.1			13.0	
Approach LOS		D			D			D			B	

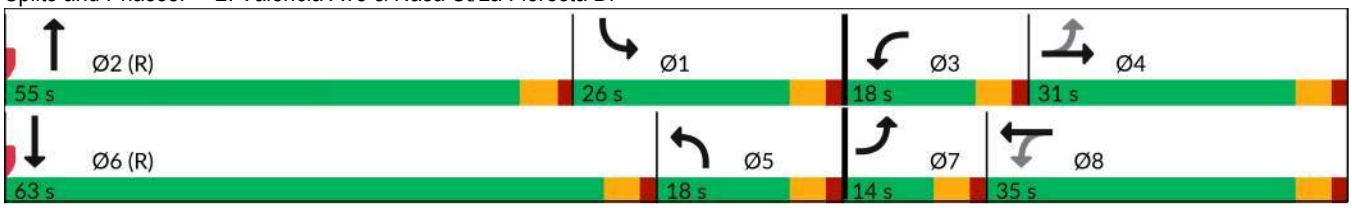
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	39.5	35.0	10.6	44.9	10.7	63.7	12.4	43.1
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	14.0	30.0	12.0	54.0	12.0	32.0	14.0	52.0
Max Q Clear Time (g_c+I1), s	6.0	8.4	5.7	28.4	5.7	7.2	7.3	29.9
Green Ext Time (p_c), s	0.3	1.0	0.1	8.5	0.1	2.5	0.2	8.2

Intersection Summary	
HCM 7th Control Delay, s/veh	38.3
HCM 7th LOS	D

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	1	3	37	10	59	259	57	581
Future Volume (vph)	1	3	37	10	59	259	57	581
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	14.0	31.0	18.0	35.0	18.0	55.0	26.0	63.0
Total Split (%)	10.8%	23.8%	13.8%	26.9%	13.8%	42.3%	20.0%	48.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	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	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	11.6	7.1	19.4	17.1	8.0	83.5	14.5	89.9
Actuated g/C Ratio	0.09	0.05	0.15	0.13	0.06	0.64	0.11	0.69
v/c Ratio	0.01	0.51	0.32	0.50	0.33	0.13	0.35	0.25
Control Delay (s/veh)	42.0	25.0	50.2	15.1	69.4	3.3	51.9	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.0	25.0	50.2	15.1	69.4	3.3	51.9	2.6
LOS	D	C	D	B	E	A	D	A
Approach Delay (s/veh)		25.2		24.3		15.0		7.0
Approach LOS		C		C		B		A

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 19 (15%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay (s/veh): 12.9	Intersection LOS: B
Intersection Capacity Utilization 40.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Valencia Ave & Nasa St/La Floresta Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1	81	62	174	69	323	69	704
v/c Ratio	0.01	0.51	0.32	0.50	0.33	0.13	0.35	0.25
Control Delay (s/veh)	42.0	25.0	50.2	15.1	69.4	3.3	51.9	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.0	25.0	50.2	15.1	69.4	3.3	51.9	2.6
Queue Length 50th (ft)	1	3	46	12	31	16	60	46
Queue Length 95th (ft)	5	40	54	12	54	26	103	52
Internal Link Dist (ft)		332		460		1102		185
Turn Bay Length (ft)			105		175		200	
Base Capacity (vph)	177	380	226	492	343	2552	285	2770
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.21	0.27	0.35	0.20	0.13	0.24	0.25

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	3	61	37	10	94	59	259	19	57	581	3
Future Volume (veh/h)	1	3	61	37	10	94	59	259	19	57	581	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.04	1.04
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1945	1945
Adj Flow Rate, veh/h	1	4	77	62	17	157	69	301	22	69	700	4
Peak Hour Factor	0.79	0.79	0.79	0.60	0.60	0.60	0.86	0.86	0.86	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	84	7	132	180	20	185	937	1344	98	593	1681	10
Arrive On Green	0.00	0.09	0.09	0.04	0.13	0.13	0.54	0.77	0.77	0.22	0.30	0.30
Sat Flow, veh/h	1781	79	1518	1781	157	1452	3456	3493	254	1781	3768	22
Grp Volume(v), veh/h	1	0	81	62	0	174	69	158	165	69	343	361
Grp Sat Flow(s),veh/h/ln	1781	0	1597	1781	0	1609	1728	1848	1899	1781	1848	1941
Q Serve(g_s), s	0.1	0.0	6.3	4.0	0.0	13.7	1.2	3.1	3.1	4.0	19.3	19.3
Cycle Q Clear(g_c), s	0.1	0.0	6.3	4.0	0.0	13.7	1.2	3.1	3.1	4.0	19.3	19.3
Prop In Lane	1.00		0.95	1.00		0.90	1.00		0.13	1.00		0.01
Lane Grp Cap(c), veh/h	84	0	139	180	0	206	937	711	731	593	824	866
V/C Ratio(X)	0.01	0.00	0.58	0.34	0.00	0.85	0.07	0.22	0.23	0.12	0.42	0.42
Avail Cap(c_a), veh/h	205	0	319	284	0	371	937	711	731	593	824	866
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.3	0.0	57.1	49.6	0.0	55.5	22.0	9.6	9.6	35.3	32.0	32.0
Incr Delay (d2), s/veh	0.1	0.0	3.8	1.1	0.0	9.2	0.0	0.7	0.7	0.1	1.5	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	2.7	1.9	0.0	6.1	0.5	1.3	1.3	1.7	9.3	9.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.4	0.0	60.9	50.7	0.0	64.7	22.0	10.3	10.3	35.4	33.6	33.5
LnGrp LOS	D		E	D		E	C	B	B	D	C	C
Approach Vol, veh/h		82			236			392			773	
Approach Delay, s/veh		60.8			61.0			12.3			33.7	
Approach LOS		E			E			B			C	

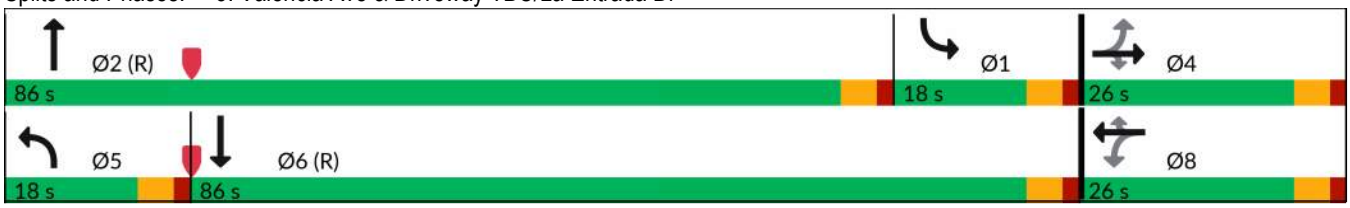
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	48.3	55.0	10.4	16.3	40.3	63.0	5.1	21.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	21.0	50.0	13.0	26.0	13.0	58.0	9.0	30.0
Max Q Clear Time (g_c+I1), s	6.0	5.1	6.0	8.3	3.2	21.3	2.1	15.7
Green Ext Time (p_c), s	0.1	1.8	0.1	0.4	0.1	4.2	0.0	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	33.9
HCM 7th LOS	C

Lane Group	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø4
Lane Configurations								
Traffic Volume (vph)	7	0	13	1	347	6	654	
Future Volume (vph)	7	0	13	1	347	6	654	
Turn Type	Perm	NA	Perm	Prot	NA	Prot	NA	
Protected Phases		8		5	2	1	6	4
Permitted Phases	8		8					
Detector Phase	8	8	8	5	2	1	6	
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	10.0	21.0	10.0	21.0	21.0
Total Split (s)	26.0	26.0	26.0	18.0	86.0	18.0	86.0	26.0
Total Split (%)	20.0%	20.0%	20.0%	13.8%	66.2%	13.8%	66.2%	20%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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	Lead	Lag	Lag	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	C-Max	None	C-Max	None
Act Effct Green (s)		6.6	6.6	5.6	116.0	7.3	117.4	
Actuated g/C Ratio		0.05	0.05	0.04	0.89	0.06	0.90	
v/c Ratio		0.13	0.12	0.01	0.11	0.07	0.20	
Control Delay (s/veh)		61.4	1.4	60.0	1.3	41.8	0.2	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)		61.4	1.4	60.0	1.3	41.8	0.2	
LOS		E	A	E	A	D	A	
Approach Delay (s/veh)		22.0			1.4		0.6	
Approach LOS		C			A		A	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 115 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.20	
Intersection Signal Delay (s/veh): 1.5	Intersection LOS: A
Intersection Capacity Utilization 29.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Valencia Ave & Driveway TBC/La Entrada Dr



Lane Group	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	21	1	400	7	735
v/c Ratio	0.13	0.12	0.01	0.11	0.07	0.20
Control Delay (s/veh)	61.4	1.4	60.0	1.3	41.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	61.4	1.4	60.0	1.3	41.8	0.2
Queue Length 50th (ft)	9	0	0	12	0	1
Queue Length 95th (ft)	20	0	m5	36	m9	8
Internal Link Dist (ft)	755			786		640
Turn Bay Length (ft)			223		160	
Base Capacity (vph)	273	340	177	3571	177	3621
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	0.04	0.06	0.01	0.11	0.04	0.20

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	7	0	13	1	347	5	6	654	0
Future Volume (veh/h)	0	0	0	7	0	13	1	347	5	6	654	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1945	1870
Adj Flow Rate, veh/h	0	0	0	11	0	21	1	394	6	7	735	0
Peak Hour Factor	0.92	0.92	0.92	0.63	0.63	0.63	0.88	0.88	0.88	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	39	33	85	0	33	2	2322	35	428	3187	0
Arrive On Green	0.00	0.00	0.00	0.02	0.00	0.02	0.00	1.00	1.00	0.48	1.00	0.00
Sat Flow, veh/h	0	1870	1585	1418	0	1585	1781	3726	57	1781	3793	0
Grp Volume(v), veh/h	0	0	0	11	0	21	1	195	205	7	735	0
Grp Sat Flow(s),veh/h/ln	0	1870	1585	1418	0	1585	1781	1848	1935	1781	1848	0
Q Serve(g_s), s	0.0	0.0	0.0	1.0	0.0	1.7	0.1	0.0	0.0	0.3	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	1.0	0.0	1.7	0.1	0.0	0.0	0.3	0.0	0.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		0.03	1.00		0.00
Lane Grp Cap(c), veh/h	0	39	33	85	0	33	2	1151	1206	428	3187	0
V/C Ratio(X)	0.00	0.00	0.00	0.13	0.00	0.63	0.51	0.17	0.17	0.02	0.23	0.00
Avail Cap(c_a), veh/h	0	302	256	284	0	256	178	1151	1206	428	3187	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	62.8	0.0	63.1	64.8	0.0	0.0	25.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.7	0.0	17.8	132.1	0.3	0.3	0.0	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.4	0.0	0.9	0.1	0.1	0.1	0.1	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	63.5	0.0	80.9	196.9	0.3	0.3	25.7	0.2	0.0
LnGrp LOS				E		F	F	A	A	C	A	
Approach Vol, veh/h		0			32			401			742	
Approach Delay, s/veh		0.0			74.9			0.8			0.4	
Approach LOS					E			A			A	

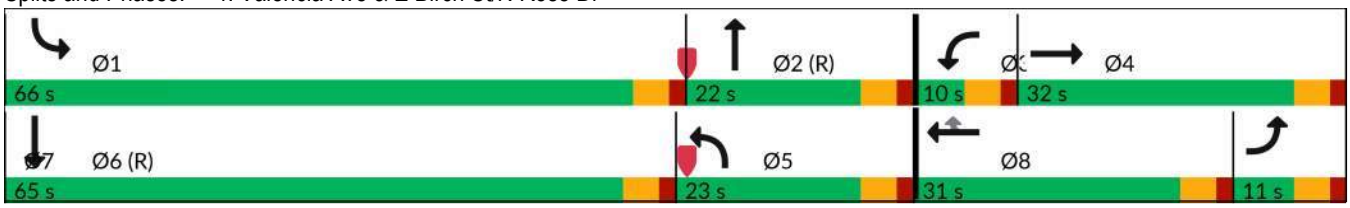
Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	36.3	86.0		7.7	5.1	117.1		7.7
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	13.0	81.0		21.0	13.0	81.0		21.0
Max Q Clear Time (g_c+I1), s	2.3	2.0		0.0	2.1	2.0		3.7
Green Ext Time (p_c), s	0.0	2.2		0.0	0.0	5.3		0.1

Intersection Summary		
HCM 7th Control Delay, s/veh		2.6
HCM 7th LOS		A

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	94	441	8	301	300	130	210	610	543
Future Volume (vph)	94	441	8	301	300	130	210	610	543
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	11.0	32.0	10.0	31.0	31.0	23.0	22.0	66.0	65.0
Total Split (%)	8.5%	24.6%	7.7%	23.8%	23.8%	17.7%	16.9%	50.8%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	8.8	30.2	5.0	18.4	18.4	18.0	21.7	61.1	64.8
Actuated g/C Ratio	0.07	0.23	0.04	0.14	0.14	0.14	0.17	0.47	0.50
v/c Ratio	0.47	0.81	0.13	0.65	0.64	0.65	0.42	0.95	0.59
Control Delay (s/veh)	65.2	53.8	64.8	58.5	11.3	48.8	34.1	36.9	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	65.2	53.8	64.8	58.5	11.3	48.8	34.1	36.9	12.8
LOS	E	D	E	E	B	D	C	D	B
Approach Delay (s/veh)		55.5		35.4			39.4		23.4
Approach LOS		E		D			D		C

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 48 (37%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay (s/veh): 34.2	Intersection LOS: C
Intersection Capacity Utilization 76.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Valencia Ave & E Birch St/N Rose Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	109	660	9	324	323	159	279	792	1008
v/c Ratio	0.47	0.81	0.13	0.65	0.64	0.65	0.42	0.95	0.59
Control Delay (s/veh)	65.2	53.8	64.8	58.5	11.3	48.8	34.1	36.9	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	65.2	53.8	64.8	58.5	11.3	48.8	34.1	36.9	12.8
Queue Length 50th (ft)	45	261	8	137	0	123	101	328	184
Queue Length 95th (ft)	74	#353	27	180	85	166	131	450	204
Internal Link Dist (ft)		1706		346			363		2026
Turn Bay Length (ft)	190		230		285	205		160	
Base Capacity (vph)	232	825	68	707	575	245	665	845	1718
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	0.47	0.80	0.13	0.46	0.56	0.65	0.42	0.94	0.59

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	441	126	8	301	300	130	210	19	610	543	233
Future Volume (veh/h)	94	441	126	8	301	300	130	210	19	610	543	233
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	109	513	147	9	324	323	159	256	23	792	705	303
Peak Hour Factor	0.86	0.86	0.86	0.93	0.93	0.93	0.82	0.82	0.82	0.77	0.77	0.77
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	307	556	158	15	439	196	307	592	53	822	1117	480
Arrive On Green	0.09	0.20	0.20	0.01	0.12	0.12	0.06	0.06	0.06	0.15	0.15	0.15
Sat Flow, veh/h	3456	2729	778	1781	3554	1585	1781	3432	306	1781	2420	1040
Grp Volume(v), veh/h	109	333	327	9	324	323	159	137	142	792	518	490
Grp Sat Flow(s),veh/h/ln	1728	1777	1730	1781	1777	1585	1781	1848	1890	1781	1777	1683
Q Serve(g_s), s	3.9	23.9	24.1	0.7	11.4	6.2	11.3	9.3	9.5	57.4	35.5	35.5
Cycle Q Clear(g_c), s	3.9	23.9	24.1	0.7	11.4	6.2	11.3	9.3	9.5	57.4	35.5	35.5
Prop In Lane	1.00		0.45	1.00		1.00	1.00		0.16	1.00		0.62
Lane Grp Cap(c), veh/h	307	362	352	15	439	196	307	319	326	822	820	777
V/C Ratio(X)	0.36	0.92	0.93	0.59	0.74	1.65	0.52	0.43	0.44	0.96	0.63	0.63
Avail Cap(c_a), veh/h	307	369	359	69	711	317	307	319	326	836	820	777
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	0.33	0.33	0.33
Upstream Filter(I)	0.62	0.62	0.62	1.00	1.00	1.00	1.00	1.00	1.00	0.56	0.56	0.56
Uniform Delay (d), s/veh	55.7	50.7	50.8	64.2	55.0	8.5	56.0	55.1	55.2	54.0	44.7	44.7
Incr Delay (d2), s/veh	0.4	19.6	21.2	31.6	2.5	314.9	1.5	4.2	4.2	15.4	2.1	2.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	12.2	12.1	0.4	5.2	22.9	5.4	4.9	5.0	30.9	17.3	16.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	56.2	70.3	72.0	95.8	57.4	323.4	57.6	59.3	59.4	69.4	46.8	46.9
LnGrp LOS	E	E	E	F	E	F	E	E	E	E	D	D
Approach Vol, veh/h		769			656			438			1800	
Approach Delay, s/veh		69.0			188.9			58.7			56.8	
Approach LOS		E			F			E			E	

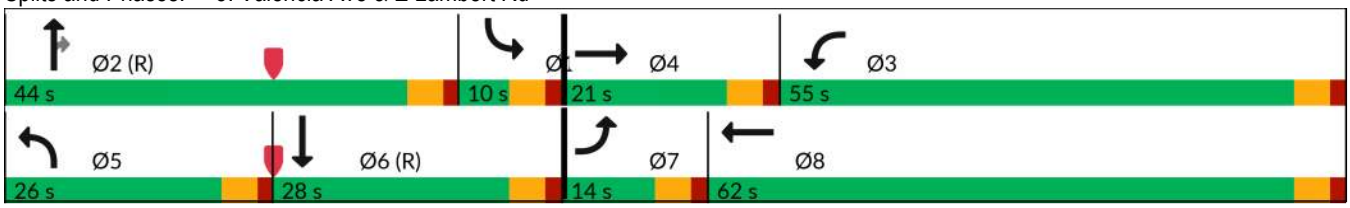
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	65.0	27.4	6.1	31.5	27.4	65.0	16.5	21.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	61.0	17.0	5.0	27.0	18.0	60.0	6.0	26.0
Max Q Clear Time (g_c+I1), s	59.4	11.5	2.7	26.1	13.3	37.5	5.9	13.4
Green Ext Time (p_c), s	0.6	0.6	0.0	0.4	0.2	6.4	0.0	2.6

Intersection Summary	
HCM 7th Control Delay, s/veh	83.2
HCM 7th LOS	F

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	52	120	920	502	172	189	175	7	290
Future Volume (vph)	52	120	920	502	172	189	175	7	290
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA
Protected Phases	7	4	3	8	5	2		1	6
Permitted Phases							2		
Detector Phase	7	4	3	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	21.0	21.0	10.0	21.0
Total Split (s)	14.0	21.0	55.0	62.0	26.0	44.0	44.0	10.0	28.0
Total Split (%)	10.8%	16.2%	42.3%	47.7%	20.0%	33.8%	33.8%	7.7%	21.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	8.2	9.7	43.2	46.9	19.9	58.1	58.1	5.0	37.2
Actuated g/C Ratio	0.06	0.07	0.33	0.36	0.15	0.45	0.45	0.04	0.29
v/c Ratio	0.50	0.71	0.85	0.29	0.77	0.13	0.23	0.19	0.62
Control Delay (s/veh)	74.2	25.9	47.9	29.7	72.7	36.9	18.9	67.1	45.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.2	25.9	47.9	29.7	72.7	36.9	18.9	67.1	45.2
LOS	E	C	D	C	E	D	B	E	D
Approach Delay (s/veh)		31.5		41.5		42.6			45.7
Approach LOS		C		D		D			D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 52 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay (s/veh): 41.0	Intersection LOS: D
Intersection Capacity Utilization 70.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Valencia Ave & E Lambert Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	55	423	968	531	210	230	213	13	623
v/c Ratio	0.50	0.71	0.85	0.29	0.77	0.13	0.23	0.19	0.62
Control Delay (s/veh)	74.2	25.9	47.9	29.7	72.7	36.9	18.9	67.1	45.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.2	25.9	47.9	29.7	72.7	36.9	18.9	67.1	45.2
Queue Length 50th (ft)	45	42	390	120	182	84	41	11	240
Queue Length 95th (ft)	91	78	434	132	243	126	120	19	180
Internal Link Dist (ft)		759		811		2026			731
Turn Bay Length (ft)	230		625		300		120	240	
Base Capacity (vph)	122	806	1322	2227	298	1793	919	68	1002
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	0.45	0.52	0.73	0.24	0.70	0.13	0.23	0.19	0.62

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	120	277	920	502	3	172	189	175	7	290	34
Future Volume (veh/h)	52	120	277	920	502	3	172	189	175	7	290	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	55	128	295	968	528	3	210	230	0	13	558	65
Peak Hour Factor	0.94	0.94	0.94	0.95	0.95	0.95	0.82	0.82	0.82	0.52	0.52	0.52
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	71	419	195	1067	2054	12	239	1109		204	899	104
Arrive On Green	0.04	0.12	0.12	0.31	0.39	0.39	0.04	0.10	0.00	0.11	0.28	0.28
Sat Flow, veh/h	1781	3404	1585	3456	5239	30	1781	3696	1648	1781	3207	373
Grp Volume(v), veh/h	55	128	295	968	343	188	210	230	0	13	308	315
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1728	1702	1865	1781	1848	1648	1781	1777	1803
Q Serve(g_s), s	4.0	4.5	16.0	35.0	8.9	8.9	15.2	7.4	0.0	0.8	19.7	19.8
Cycle Q Clear(g_c), s	4.0	4.5	16.0	35.0	8.9	8.9	15.2	7.4	0.0	0.8	19.7	19.8
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	71	419	195	1067	1334	731	239	1109		204	498	505
V/C Ratio(X)	0.78	0.31	1.51	0.91	0.26	0.26	0.88	0.21		0.06	0.62	0.62
Avail Cap(c_a), veh/h	123	419	195	1329	1493	818	288	1109		204	498	505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.83	0.83	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.8	51.9	57.0	43.1	26.7	26.7	61.1	44.3	0.0	51.4	40.7	40.8
Incr Delay (d2), s/veh	16.3	0.4	255.1	8.0	0.1	0.2	19.4	0.4	0.0	0.1	5.7	5.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	1.9	20.0	15.4	3.5	3.8	8.6	3.5	0.0	0.4	9.2	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	78.2	52.3	312.1	51.1	26.8	26.9	80.5	44.7	0.0	51.5	46.4	46.5
LnGrp LOS	E	D	F	D	C	C	F	D		D	D	D
Approach Vol, veh/h		478			1499			440			636	
Approach Delay, s/veh		215.6			42.5			61.8			46.5	
Approach LOS		F			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.9	44.0	45.1	21.0	22.4	41.4	10.2	56.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	5.0	39.0	50.0	16.0	21.0	23.0	9.0	57.0
Max Q Clear Time (g_c+I1), s	2.8	9.4	37.0	18.0	17.2	21.8	6.0	10.9
Green Ext Time (p_c), s	0.0	1.3	3.2	0.0	0.2	0.5	0.0	3.1

Intersection Summary	
HCM 7th Control Delay, s/veh	73.2
HCM 7th LOS	E

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	30	2	4	30	43	1	3	1	24	5	24
Future Vol, veh/h	13	30	2	4	30	43	1	3	1	24	5	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	61	61	61	42	42	42	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	34	2	7	49	70	2	7	2	33	7	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	120	0	0	37	0	0	131	198	36	165	164	84
Stage 1	-	-	-	-	-	-	66	66	-	98	98	-
Stage 2	-	-	-	-	-	-	66	133	-	68	67	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1468	-	-	1574	-	-	841	697	1037	799	728	975
Stage 1	-	-	-	-	-	-	945	840	-	909	814	-
Stage 2	-	-	-	-	-	-	945	786	-	942	839	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1468	-	-	1574	-	-	793	687	1037	777	718	975
Mov Cap-2 Maneuver	-	-	-	-	-	-	793	687	-	777	718	-
Stage 1	-	-	-	-	-	-	935	832	-	905	811	-
Stage 2	-	-	-	-	-	-	901	783	-	922	831	-

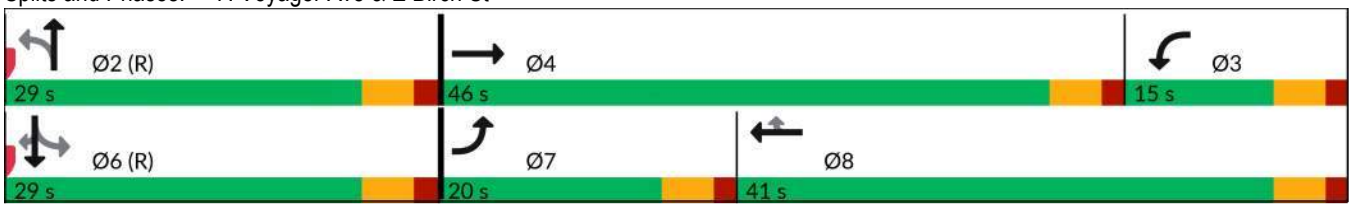
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	2.16	0.38	9.82	9.64
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	759	514	-	-	84	-	-	848
HCM Lane V/C Ratio	0.016	0.01	-	-	0.004	-	-	0.086
HCM Control Delay (s/veh)	9.8	7.5	0	-	7.3	0	-	9.6
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.3

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	63	619	33	414	35	35	3	32	0	37
Future Volume (vph)	63	619	33	414	35	35	3	32	0	37
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	7	4	3	8			2		6	
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.5	10.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	20.0	46.0	15.0	41.0	41.0	29.0	29.0	29.0	29.0	29.0
Total Split (%)	22.2%	51.1%	16.7%	45.6%	45.6%	32.2%	32.2%	32.2%	32.2%	32.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	9.2	28.6	7.5	24.7	24.7	43.2	43.2		43.2	43.2
Actuated g/C Ratio	0.10	0.32	0.08	0.27	0.27	0.48	0.48		0.48	0.48
v/c Ratio	0.42	0.72	0.27	0.50	0.08	0.11	0.10		0.09	0.08
Control Delay (s/veh)	23.2	13.9	42.5	28.7	1.0	17.8	5.6		17.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	23.2	13.9	42.5	28.7	1.0	17.8	5.6		17.9	0.2
LOS	C	B	D	C	A	B	A		B	A
Approach Delay (s/veh)		14.7		27.6			11.1		8.3	
Approach LOS		B		C			B		A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 34 (38%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay (s/veh): 18.1	Intersection LOS: B
Intersection Capacity Utilization 43.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 7: Voyager Ave & E Birch St



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	76	807	39	487	41	73	89	59	69
v/c Ratio	0.42	0.72	0.27	0.50	0.08	0.11	0.10	0.09	0.08
Control Delay (s/veh)	23.2	13.9	42.5	28.7	1.0	17.8	5.6	17.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	23.2	13.9	42.5	28.7	1.0	17.8	5.6	17.9	0.2
Queue Length 50th (ft)	20	233	21	118	0	24	2	19	0
Queue Length 95th (ft)	41	246	48	141	3	31	3	30	0
Internal Link Dist (ft)		1715		1706			560	102	
Turn Bay Length (ft)	200		140		225	125			95
Base Capacity (vph)	295	1600	196	1415	684	643	915	625	835
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	0.26	0.50	0.20	0.34	0.06	0.11	0.10	0.09	0.08

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	619	51	33	414	35	35	3	40	32	0	37
Future Volume (veh/h)	63	619	51	33	414	35	35	3	40	32	0	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	746	61	39	487	41	73	6	83	59	0	69
Peak Hour Factor	0.83	0.83	0.83	0.85	0.85	0.85	0.48	0.48	0.48	0.54	0.54	0.54
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	99	912	75	49	876	391	722	60	826	741	0	843
Arrive On Green	0.07	0.36	0.36	0.03	0.25	0.25	0.53	0.53	0.53	0.53	0.00	0.53
Sat Flow, veh/h	1781	3326	272	1781	3554	1585	1332	112	1553	1243	0	1585
Grp Volume(v), veh/h	76	398	409	39	487	41	73	0	89	59	0	69
Grp Sat Flow(s),veh/h/ln	1781	1777	1821	1781	1777	1585	1332	0	1666	1243	0	1585
Q Serve(g_s), s	3.8	18.3	18.3	2.0	10.8	1.8	2.7	0.0	2.4	2.1	0.0	1.9
Cycle Q Clear(g_c), s	3.8	18.3	18.3	2.0	10.8	1.8	7.2	0.0	2.4	4.5	0.0	1.9
Prop In Lane	1.00		0.15	1.00		1.00	1.00		0.93	1.00		1.00
Lane Grp Cap(c), veh/h	99	487	499	49	876	391	722	0	885	741	0	843
V/C Ratio(X)	0.77	0.82	0.82	0.79	0.56	0.10	0.10	0.00	0.10	0.08	0.00	0.08
Avail Cap(c_a), veh/h	297	809	830	198	1421	634	722	0	885	741	0	843
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.65	0.65	0.65	0.72	0.72	0.72	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.1	26.6	26.6	43.5	29.6	26.2	12.8	0.0	10.4	11.5	0.0	10.3
Incr Delay (d2), s/veh	8.0	2.3	2.2	18.0	0.4	0.1	0.3	0.0	0.2	0.2	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	6.5	6.7	1.1	4.3	0.6	0.9	0.0	0.9	0.6	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.1	28.8	28.8	61.5	30.0	26.3	13.1	0.0	10.7	11.8	0.0	10.5
LnGrp LOS	D	C	C	E	C	C	B		B	B		B
Approach Vol, veh/h		883			567			162			128	
Approach Delay, s/veh		30.6			31.9			11.7			11.1	
Approach LOS		C			C			B			B	

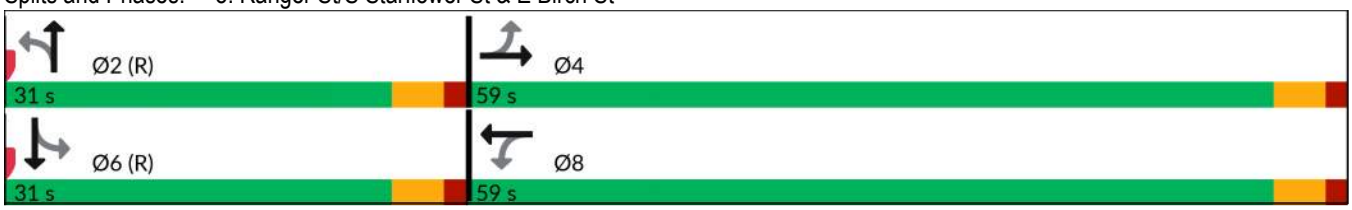
Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		52.8	7.5	29.7		52.8	10.0	27.2
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		24.0	10.0	41.0		24.0	15.0	36.0
Max Q Clear Time (g_c+I1), s		9.2	4.0	20.3		6.5	5.8	12.8
Green Ext Time (p_c), s		0.6	0.0	4.4		0.4	0.1	3.0

Intersection Summary	
HCM 7th Control Delay, s/veh	27.8
HCM 7th LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	17	736	12	609	38	0	23	2
Future Volume (vph)	17	736	12	609	38	0	23	2
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	59.0	59.0	59.0	59.0	31.0	31.0	31.0	31.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%	34.4%	34.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	30.4	30.4	30.4	30.4		49.6		49.6
Actuated g/C Ratio	0.34	0.34	0.34	0.34		0.55		0.55
v/c Ratio	0.17	0.70	0.19	0.71		0.06		0.12
Control Delay (s/veh)	22.5	27.4	19.8	25.7		8.0		6.5
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay (s/veh)	22.5	27.4	19.8	25.7		8.0		6.5
LOS	C	C	B	C		A		A
Approach Delay (s/veh)		27.3		25.5		8.0		6.5
Approach LOS		C		C		A		A

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 88 (98%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay (s/veh): 24.9	Intersection LOS: C
Intersection Capacity Utilization 36.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Ranger St/S Starflower St & E Birch St



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	19	940	16	842	55	107
v/c Ratio	0.17	0.70	0.19	0.71	0.06	0.12
Control Delay (s/veh)	22.5	27.4	19.8	25.7	8.0	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	22.5	27.4	19.8	25.7	8.0	6.5
Queue Length 50th (ft)	8	233	7	240	8	12
Queue Length 95th (ft)	22	254	19	212	21	16
Internal Link Dist (ft)		759		1715	671	28
Turn Bay Length (ft)	145		150			
Base Capacity (vph)	196	2375	147	2122	871	873
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	0.10	0.40	0.11	0.40	0.06	0.12

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	736	101	12	609	6	38	0	1	23	2	32
Future Volume (veh/h)	17	736	101	12	609	6	38	0	1	23	2	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1945	1945	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	19	827	113	16	834	8	54	0	1	43	4	60
Peak Hour Factor	0.89	0.89	0.89	0.73	0.73	0.73	0.70	0.70	0.70	0.53	0.53	0.53
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	156	1105	151	148	1220	12	846	1	14	372	54	473
Arrive On Green	0.34	0.34	0.34	0.11	0.11	0.11	0.55	0.00	0.55	0.55	0.55	0.55
Sat Flow, veh/h	653	3266	446	596	3606	35	1393	1	26	574	98	859
Grp Volume(v), veh/h	19	468	472	16	411	431	55	0	0	107	0	0
Grp Sat Flow(s),veh/h/ln	653	1848	1865	596	1777	1864	1421	0	0	1532	0	0
Q Serve(g_s), s	2.4	20.2	20.2	2.3	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	22.4	20.2	20.2	22.5	20.0	20.0	1.2	0.0	0.0	2.7	0.0	0.0
Prop In Lane	1.00		0.24	1.00		0.02	0.98		0.02	0.40		0.56
Lane Grp Cap(c), veh/h	156	625	631	148	601	631	861	0	0	899	0	0
V/C Ratio(X)	0.12	0.75	0.75	0.11	0.68	0.68	0.06	0.00	0.00	0.12	0.00	0.00
Avail Cap(c_a), veh/h	327	1109	1119	304	1066	1118	861	0	0	899	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.2	26.4	26.4	46.3	35.3	35.3	9.4	0.0	0.0	9.7	0.0	0.0
Incr Delay (d2), s/veh	0.3	1.8	1.8	0.3	1.3	1.2	0.1	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	8.3	8.4	0.4	9.5	10.0	0.5	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.6	28.2	28.2	46.5	36.6	36.6	9.5	0.0	0.0	10.0	0.0	0.0
LnGrp LOS	D	C	C	D	D	D	A			A		
Approach Vol, veh/h		959			858			55			107	
Approach Delay, s/veh		28.4			36.8			9.5			10.0	
Approach LOS		C			D			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	54.5	35.5	54.5	35.5
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	26.0	54.0	26.0	54.0
Max Q Clear Time (g_c+I1), s	3.2	24.4	4.7	24.5
Green Ext Time (p_c), s	0.2	6.1	0.5	5.2

Intersection Summary	
HCM 7th Control Delay, s/veh	30.5
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	9	20	70	50	0
Future Vol, veh/h	1	9	20	70	50	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	53	53	81	81	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	17	25	86	68	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	111	0	-	0	89	68
Stage 1	-	-	-	-	68	-
Stage 2	-	-	-	-	21	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1479	-	-	-	912	995
Stage 1	-	-	-	-	955	-
Stage 2	-	-	-	-	1002	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1479	-	-	-	911	995
Mov Cap-2 Maneuver	-	-	-	-	911	-
Stage 1	-	-	-	-	954	-
Stage 2	-	-	-	-	1002	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.74	0	9.27
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	180	-	-	-	911
HCM Lane V/C Ratio	0.001	-	-	-	0.075
HCM Control Delay (s/veh)	7.4	0	-	-	9.3
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	361	657	23
Future Vol, veh/h	0	0	0	361	657	23
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	92	92	86	86	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	420	792	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1015	410	-	0	-	0
Stage 1	805	-	-	-	-	-
Stage 2	210	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	-	-
Pot Cap-1 Maneuver	234	591	0	-	-	-
Stage 1	400	-	0	-	-	-
Stage 2	805	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	234	591	-	-	-	-
Mov Cap-2 Maneuver	234	-	-	-	-	-
Stage 1	400	-	-	-	-	-
Stage 2	805	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	354	661	0
Future Vol, veh/h	0	0	0	354	661	0
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	92	92	86	86	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	412	796	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	398	-	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	601	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	601	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	59	72	0	0	0
Future Vol, veh/h	0	59	72	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	60	60	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	75	120	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	120	0	-	0	157	120
Stage 1	-	-	-	-	120	-
Stage 2	-	-	-	-	37	-
Critical Hdwy	4.13	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1467	-	-	-	826	931
Stage 1	-	-	-	-	905	-
Stage 2	-	-	-	-	981	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1467	-	-	-	826	931
Mov Cap-2 Maneuver	-	-	-	-	826	-
Stage 1	-	-	-	-	905	-
Stage 2	-	-	-	-	981	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1467	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	54	16	6	69
Future Vol, veh/h	0	0	54	16	6	69
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	74	22	8	95

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	196	85	0	0	96	0
Stage 1	85	-	-	-	-	-
Stage 2	111	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	793	974	-	-	1498	-
Stage 1	938	-	-	-	-	-
Stage 2	914	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	788	974	-	-	1498	-
Mov Cap-2 Maneuver	788	-	-	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	908	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	0	0	0.59
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	-	144	-
HCM Lane V/C Ratio	-	-	-	-	0.005	-
HCM Control Delay (s/veh)	-	-	0	0	7.4	0
HCM Lane LOS	-	-	A	A	A	A
HCM 95th %tile Q(veh)	-	-	-	-	0	-

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	6	55	0	0	63
Future Vol, veh/h	15	6	55	0	0	63
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	92	92	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	7	75	0	0	86

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	162	75	0	0	75	0
Stage 1	75	-	-	-	-	-
Stage 2	86	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	829	986	-	-	1524	-
Stage 1	948	-	-	-	-	-
Stage 2	937	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	829	986	-	-	1524	-
Mov Cap-2 Maneuver	829	-	-	-	-	-
Stage 1	948	-	-	-	-	-
Stage 2	937	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.26	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	869	1524	-
HCM Lane V/C Ratio	-	-	0.026	-	-
HCM Control Delay (s/veh)	-	-	9.3	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	57	6	22	58	3
Future Vol, veh/h	0	57	6	22	58	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	92	92	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	78	7	24	79	4

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	0	78
Stage 1	-	-	0	0
Stage 2	-	-	0	78
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	-	812
Stage 1	-	-	-	-
Stage 2	-	-	-	830
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	0
Mov Cap-2 Maneuver	-	-	-	0
Stage 1	-	-	-	0
Stage 2	-	-	-	0

Approach	EB	WB
HCM Control Delay, s/v	0	
HCM LOS		-

Minor Lane/Major Mvmt	EBT	EBR	WBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	1333	129	108	1127	150	82	295	127	97	186	79
Future Volume (vph)	220	1333	129	108	1127	150	82	295	127	97	186	79
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0
Total Split (s)	26.0	72.0	72.0	18.0	64.0	64.0	16.0	33.0	33.0	17.0	34.0	34.0
Total Split (%)	18.6%	51.4%	51.4%	12.9%	45.7%	45.7%	11.4%	23.6%	23.6%	12.1%	24.3%	24.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	14.4	50.0	50.0	10.0	45.6	45.6	11.0	50.2	50.2	9.8	49.0	49.0
Actuated g/C Ratio	0.10	0.36	0.36	0.07	0.33	0.33	0.08	0.36	0.36	0.07	0.35	0.35
v/c Ratio	0.63	0.75	0.20	0.46	0.71	0.25	0.35	0.27	0.22	0.45	0.17	0.14
Control Delay (s/veh)	68.3	41.9	4.8	68.3	43.6	4.0	65.1	34.8	6.6	79.1	21.7	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	68.3	41.9	4.8	68.3	43.6	4.0	65.1	34.8	6.6	79.1	21.7	1.1
LOS	E	D	A	E	D	A	E	C	A	E	C	A
Approach Delay (s/veh)		42.5			41.3			32.6			32.6	
Approach LOS		D			D			C			C	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 10 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay (s/veh): 39.7	Intersection LOS: D
Intersection Capacity Utilization 57.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Valencia Ave & Imperial Hwy

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	224	1360	132	113	1174	156	95	343	148	109	209	89
v/c Ratio	0.63	0.75	0.20	0.46	0.71	0.25	0.35	0.27	0.22	0.45	0.17	0.14
Control Delay (s/veh)	68.3	41.9	4.8	68.3	43.6	4.0	65.1	34.8	6.6	79.1	21.7	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	68.3	41.9	4.8	68.3	43.6	4.0	65.1	34.8	6.6	79.1	21.7	1.1
Queue Length 50th (ft)	102	397	0	52	343	0	42	116	0	47	36	1
Queue Length 95th (ft)	143	406	40	83	363	37	69	174	47	64	64	3
Internal Link Dist (ft)		540			646			773			1102	
Turn Bay Length (ft)	190		300	260		185	150		145	250		185
Base Capacity (vph)	514	2433	826	318	2142	766	269	1269	662	296	1239	640
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.56	0.16	0.36	0.55	0.20	0.35	0.27	0.22	0.37	0.17	0.14

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	1333	129	108	1127	150	82	295	127	97	186	79
Future Volume (veh/h)	220	1333	129	108	1127	150	82	295	127	97	186	79
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	224	1360	132	112	1174	156	95	343	148	109	209	89
Peak Hour Factor	0.98	0.98	0.98	0.96	0.96	0.96	0.86	0.86	0.86	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	281	1716	533	161	1539	478	924	1526	680	156	736	328
Arrive On Green	0.08	0.34	0.34	0.05	0.30	0.30	0.27	0.43	0.43	0.09	0.41	0.41
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	224	1360	132	112	1174	156	95	343	148	109	209	89
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	8.9	33.7	4.1	4.5	29.2	10.7	2.9	8.5	8.2	4.3	5.5	4.2
Cycle Q Clear(g_c), s	8.9	33.7	4.1	4.5	29.2	10.7	2.9	8.5	8.2	4.3	5.5	4.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	281	1716	533	161	1539	478	924	1526	680	156	736	328
V/C Ratio(X)	0.80	0.79	0.25	0.70	0.76	0.33	0.10	0.22	0.22	0.70	0.28	0.27
Avail Cap(c_a), veh/h	518	2444	759	321	2152	668	924	1526	680	296	736	328
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.2	42.0	8.1	65.8	44.4	37.9	38.6	25.2	25.1	62.8	34.1	22.2
Incr Delay (d2), s/veh	5.1	1.2	0.2	5.3	1.1	0.4	0.0	0.3	0.7	5.6	1.0	2.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	13.8	3.0	2.0	12.0	4.1	1.2	3.7	0.1	1.9	2.3	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	68.3	43.3	8.3	71.1	45.4	38.3	38.7	25.6	25.9	68.3	35.1	24.2
LnGrp LOS	E	D	A	E	D	D	D	C	C	E	D	C
Approach Vol, veh/h		1716			1442			586			407	
Approach Delay, s/veh		43.8			46.7			27.8			41.6	
Approach LOS		D			D			C			D	

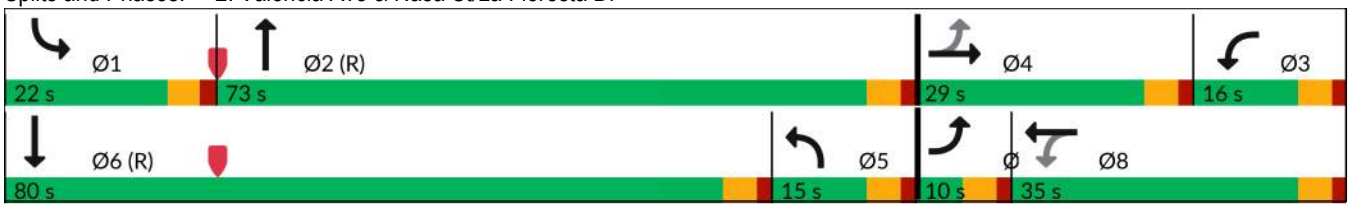
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.3	65.1	11.5	52.1	42.4	34.0	16.4	47.2
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	12.0	28.0	13.0	67.0	11.0	29.0	21.0	59.0
Max Q Clear Time (g_c+I1), s	6.3	10.5	6.5	35.7	4.9	7.5	10.9	31.2
Green Ext Time (p_c), s	0.1	2.4	0.1	11.3	0.1	1.4	0.5	9.2

Intersection Summary	
HCM 7th Control Delay, s/veh	42.3
HCM 7th LOS	D

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	8	0	24	0	78	544	35	308
Future Volume (vph)	8	0	24	0	78	544	35	308
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	10.0	29.0	16.0	35.0	15.0	73.0	22.0	80.0
Total Split (%)	7.1%	20.7%	11.4%	25.0%	10.7%	52.1%	15.7%	57.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	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	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
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	5.5	5.5	14.0	12.9	10.0	103.4	8.7	100.1
Actuated g/C Ratio	0.04	0.04	0.10	0.09	0.07	0.74	0.06	0.72
v/c Ratio	0.14	0.19	0.20	0.10	0.36	0.23	0.38	0.14
Control Delay (s/veh)	69.8	0.7	61.2	0.4	43.3	2.1	86.6	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	69.8	0.7	61.2	0.4	43.3	2.1	86.6	7.7
LOS	E	A	E	A	D	A	F	A
Approach Delay (s/veh)		6.2		23.8		6.9		15.5
Approach LOS		A		C		A		B

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 9 (6%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.38	
Intersection Signal Delay (s/veh): 10.6	Intersection LOS: B
Intersection Capacity Utilization 40.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Valencia Ave & Nasa St/La Floresta Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	10	116	35	56	89	663	42	386
v/c Ratio	0.14	0.19	0.20	0.10	0.36	0.23	0.38	0.14
Control Delay (s/veh)	69.8	0.7	61.2	0.4	43.3	2.1	86.6	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	69.8	0.7	61.2	0.4	43.3	2.1	86.6	7.7
Queue Length 50th (ft)	9	0	29	0	34	20	40	57
Queue Length 95th (ft)	25	0	50	0	60	45	78	72
Internal Link Dist (ft)		332		460		1102		185
Turn Bay Length (ft)			105		175		200	
Base Capacity (vph)	69	746	227	677	245	2935	214	2848
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.16	0.15	0.08	0.36	0.23	0.20	0.14

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	0	89	24	0	38	78	544	40	35	308	16
Future Volume (veh/h)	8	0	89	24	0	38	78	544	40	35	308	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.04	1.04
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1945	1945
Adj Flow Rate, veh/h	10	0	116	35	0	56	89	618	45	42	367	19
Peak Hour Factor	0.77	0.77	0.77	0.68	0.68	0.68	0.88	0.88	0.88	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	83	0	142	93	0	161	729	2501	182	55	1915	99
Arrive On Green	0.01	0.00	0.09	0.02	0.00	0.10	0.21	0.72	0.72	0.01	0.18	0.18
Sat Flow, veh/h	1781	0	1585	1781	0	1585	3456	3493	254	1781	3575	185
Grp Volume(v), veh/h	10	0	116	35	0	56	89	327	336	42	189	197
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1585	1728	1848	1899	1781	1848	1912
Q Serve(g_s), s	0.7	0.0	10.1	0.0	0.0	4.6	2.9	8.5	8.6	3.3	12.2	12.3
Cycle Q Clear(g_c), s	0.7	0.0	10.1	0.0	0.0	4.6	2.9	8.5	8.6	3.3	12.2	12.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		0.10
Lane Grp Cap(c), veh/h	83	0	142	93	0	161	729	1323	1360	55	990	1024
V/C Ratio(X)	0.12	0.00	0.82	0.38	0.00	0.35	0.12	0.25	0.25	0.77	0.19	0.19
Avail Cap(c_a), veh/h	131	0	272	195	0	340	729	1323	1360	216	990	1024
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.93	0.93	0.93	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.3	0.0	62.6	67.0	0.0	58.6	44.7	6.9	6.9	68.8	31.8	31.8
Incr Delay (d2), s/veh	0.6	0.0	11.0	2.5	0.0	1.3	0.1	0.4	0.4	19.9	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	4.5	1.3	0.0	1.9	1.2	3.1	3.2	1.8	6.0	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	62.0	0.0	73.6	69.5	0.0	59.9	44.8	7.3	7.3	88.7	32.2	32.2
LnGrp LOS	E		E	E		E	D	A	A	F	C	C
Approach Vol, veh/h		126			91			752			428	
Approach Delay, s/veh		72.7			63.6			11.7			37.8	
Approach LOS		E			E			B			D	

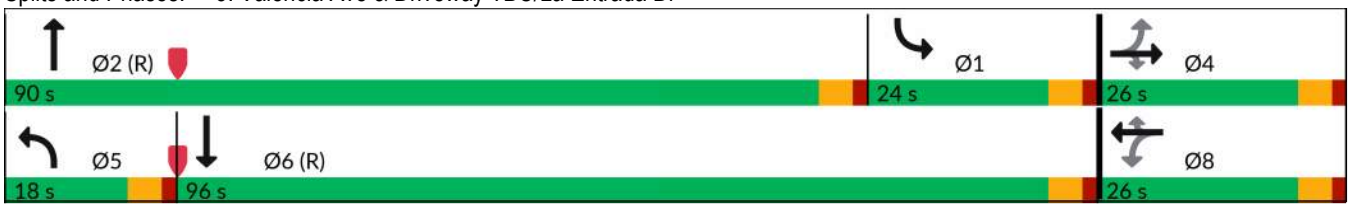
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	105.2	8.0	17.5	34.5	80.0	6.3	19.2
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	17.0	68.0	11.0	24.0	10.0	75.0	5.0	30.0
Max Q Clear Time (g_c+I1), s	5.3	10.6	2.0	12.1	4.9	14.3	2.7	6.6
Green Ext Time (p_c), s	0.0	4.0	0.0	0.4	0.1	2.2	0.0	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	28.6
HCM 7th LOS	C

Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	1	5	0	12	1	605	14	325
Future Volume (vph)	1	5	0	12	1	605	14	325
Turn Type	Perm	Perm	NA	Perm	Prot	NA	Prot	NA
Protected Phases			8		5	2	1	6
Permitted Phases	4	8		8				
Detector Phase	4	8	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	26.0	26.0	26.0	26.0	18.0	90.0	24.0	96.0
Total Split (%)	18.6%	18.6%	18.6%	18.6%	12.9%	64.3%	17.1%	68.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0		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	5.0
Lead/Lag					Lead	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	6.4		6.4	6.4	5.7	120.2	11.2	127.5
Actuated g/C Ratio	0.05		0.05	0.05	0.04	0.86	0.08	0.91
v/c Ratio	0.00		0.10	0.12	0.01	0.19	0.11	0.10
Control Delay (s/veh)	0.0		66.0	1.6	68.0	4.6	60.1	1.0
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	0.0		66.0	1.6	68.0	4.6	60.1	1.0
LOS	A		E	A	E	A	E	A
Approach Delay (s/veh)			20.0			4.7		3.4
Approach LOS			B			A		A

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 85 (61%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.19	
Intersection Signal Delay (s/veh): 4.6	Intersection LOS: A
Intersection Capacity Utilization 28.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Valencia Ave & Driveway TBC/La Entrada Dr



Lane Group	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1	8	20	1	661	16	374
v/c Ratio	0.00	0.10	0.12	0.01	0.19	0.11	0.10
Control Delay (s/veh)	0.0	66.0	1.6	68.0	4.6	60.1	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	0.0	66.0	1.6	68.0	4.6	60.1	1.0
Queue Length 50th (ft)	0	7	0	1	20	16	17
Queue Length 95th (ft)	0	18	0	m4	187	m39	27
Internal Link Dist (ft)		755			786		640
Turn Bay Length (ft)	150			223		160	
Base Capacity (vph)	744	265	317	164	3436	240	3654
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.03	0.06	0.01	0.19	0.07	0.10

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	1	5	0	12	1	605	9	14	325	0
Future Volume (veh/h)	0	0	1	5	0	12	1	605	9	14	325	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1945	1870
Adj Flow Rate, veh/h	0	0	1	8	0	20	1	651	10	16	374	0
Peak Hour Factor	0.92	0.92	0.92	0.61	0.61	0.61	0.93	0.93	0.93	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	36	31	79	0	31	2	2262	35	475	3224	0
Arrive On Green	0.00	0.00	0.02	0.02	0.00	0.02	0.00	1.00	1.00	0.53	1.00	0.00
Sat Flow, veh/h	0	1870	1585	1416	0	1585	1781	3726	57	1781	3793	0
Grp Volume(v), veh/h	0	0	1	8	0	20	1	323	338	16	374	0
Grp Sat Flow(s),veh/h/ln	0	1870	1585	1416	0	1585	1781	1848	1935	1781	1848	0
Q Serve(g_s), s	0.0	0.0	0.1	0.8	0.0	1.8	0.1	0.0	0.0	0.6	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.1	0.8	0.0	1.8	0.1	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		0.03	1.00		0.00
Lane Grp Cap(c), veh/h	0	36	31	79	0	31	2	1122	1175	475	3224	0
V/C Ratio(X)	0.00	0.00	0.03	0.10	0.00	0.65	0.52	0.29	0.29	0.03	0.12	0.00
Avail Cap(c_a), veh/h	0	281	238	264	0	238	165	1122	1175	475	3224	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	67.4	67.7	0.0	68.2	69.8	0.0	0.0	24.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.4	0.6	0.0	21.1	132.4	0.6	0.6	0.0	0.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.3	0.0	0.9	0.1	0.2	0.2	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	67.8	68.3	0.0	89.2	202.3	0.6	0.6	24.2	0.1	0.0
LnGrp LOS			E	E		F	F	A	A	C	A	
Approach Vol, veh/h		1			28			662			390	
Approach Delay, s/veh		67.8			83.2			0.9			1.1	
Approach LOS		E			F			A			A	

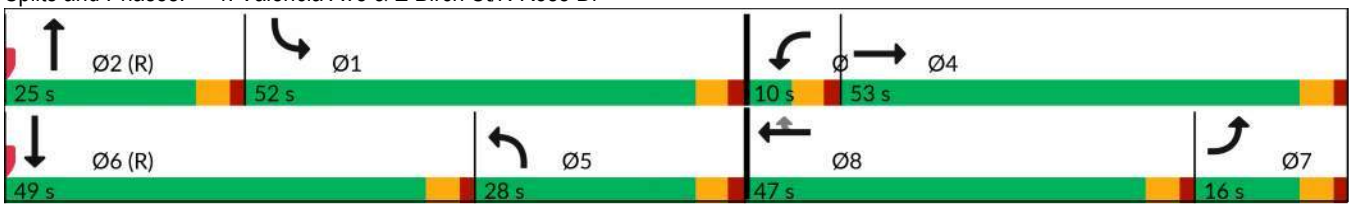
Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	42.3	90.0		7.7	5.2	127.1		7.7
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	19.0	85.0		21.0	13.0	91.0		21.0
Max Q Clear Time (g_c+I1), s	2.6	2.0		2.1	2.1	2.0		3.8
Green Ext Time (p_c), s	0.0	4.0		0.0	0.0	2.4		0.0

Intersection Summary		
HCM 7th Control Delay, s/veh		3.2
HCM 7th LOS		A

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	185	449	8	381	738	157	433	479	214
Future Volume (vph)	185	449	8	381	738	157	433	479	214
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	16.0	53.0	10.0	47.0	47.0	28.0	25.0	52.0	49.0
Total Split (%)	11.4%	37.9%	7.1%	33.6%	33.6%	20.0%	17.9%	37.1%	35.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	11.5	46.9	5.1	32.4	32.4	22.3	29.8	46.3	53.8
Actuated g/C Ratio	0.08	0.34	0.04	0.23	0.23	0.16	0.21	0.33	0.38
v/c Ratio	0.70	0.51	0.14	0.50	0.93	0.59	0.55	0.97	0.22
Control Delay (s/veh)	76.4	36.9	70.4	47.7	27.6	70.6	30.3	67.9	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	76.4	36.9	70.4	47.7	27.6	70.6	30.3	67.9	8.3
LOS	E	D	E	D	C	E	C	E	A
Approach Delay (s/veh)		46.7		34.7			40.7		47.5
Approach LOS		D		C			D		D

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 88 (63%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay (s/veh): 41.7	Intersection LOS: D
Intersection Capacity Utilization 75.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Valencia Ave & E Birch St/N Rose Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	595	9	410	794	165	471	570	298
v/c Ratio	0.70	0.51	0.14	0.50	0.93	0.59	0.55	0.97	0.22
Control Delay (s/veh)	76.4	36.9	70.4	47.7	27.6	70.6	30.3	67.9	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	76.4	36.9	70.4	47.7	27.6	70.6	30.3	67.9	8.3
Queue Length 50th (ft)	90	201	8	166	162	147	168	551	67
Queue Length 95th (ft)	#144	275	28	205	#394	235	#251	#679	m63
Internal Link Dist (ft)		1706		346			363		2026
Turn Bay Length (ft)	190		230		285	205		160	
Base Capacity (vph)	286	1272	64	1061	920	290	850	594	1338
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	0.69	0.47	0.14	0.39	0.86	0.57	0.55	0.96	0.22

Intersection Summary

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	449	110	8	381	738	157	433	14	479	214	36
Future Volume (veh/h)	185	449	110	8	381	738	157	433	14	479	214	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	197	478	117	9	410	794	165	456	15	570	255	43
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.95	0.95	0.95	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	245	1027	250	15	1066	476	306	522	17	612	958	159
Arrive On Green	0.07	0.36	0.36	0.01	0.30	0.30	0.34	0.29	0.29	0.57	0.52	0.52
Sat Flow, veh/h	3456	2834	689	1781	3554	1585	1781	3652	120	1781	3049	507
Grp Volume(v), veh/h	197	299	296	9	410	794	165	230	241	570	147	151
Grp Sat Flow(s),veh/h/ln	1728	1777	1746	1781	1777	1585	1781	1848	1924	1781	1777	1779
Q Serve(g_s), s	7.9	18.0	18.2	0.7	12.8	42.0	10.4	16.6	16.7	41.0	6.4	6.6
Cycle Q Clear(g_c), s	7.9	18.0	18.2	0.7	12.8	42.0	10.4	16.6	16.7	41.0	6.4	6.6
Prop In Lane	1.00		0.39	1.00		1.00	1.00		0.06	1.00		0.29
Lane Grp Cap(c), veh/h	245	644	633	15	1066	476	306	264	275	612	558	559
V/C Ratio(X)	0.80	0.46	0.47	0.60	0.38	1.67	0.54	0.87	0.88	0.93	0.26	0.27
Avail Cap(c_a), veh/h	272	644	633	64	1066	476	306	264	275	612	558	559
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.67	1.67	1.67
Upstream Filter(I)	0.61	0.61	0.61	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85
Uniform Delay (d), s/veh	64.1	34.2	34.3	69.2	38.8	49.0	41.5	48.8	48.8	28.4	24.3	24.4
Incr Delay (d2), s/veh	9.5	0.3	0.3	32.7	0.2	310.6	1.9	30.5	30.0	18.9	1.0	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	7.6	7.6	0.5	5.6	57.4	4.2	8.6	8.9	16.2	2.6	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	73.5	34.5	34.6	101.9	39.0	359.6	43.3	79.3	78.8	47.3	25.3	25.4
LnGrp LOS	E	C	C	F	D	F	D	E	E	D	C	C
Approach Vol, veh/h		792			1213			636			868	
Approach Delay, s/veh		44.3			249.3			69.8			39.7	
Approach LOS		D			F			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	53.1	25.0	6.2	55.7	29.1	49.0	14.9	47.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	47.0	20.0	5.0	48.0	23.0	44.0	11.0	42.0
Max Q Clear Time (g_c+I1), s	43.0	18.7	2.7	20.2	12.4	8.6	9.9	44.0
Green Ext Time (p_c), s	0.8	0.4	0.0	3.3	0.3	1.6	0.1	0.0

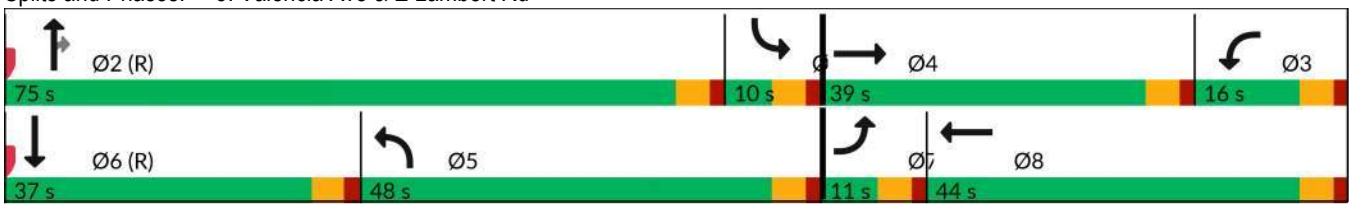
Intersection Summary	
HCM 7th Control Delay, s/veh	118.6
HCM 7th LOS	F

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	21	631	192	221	354	181	820	14	144
Future Volume (vph)	21	631	192	221	354	181	820	14	144
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA
Protected Phases	7	4	3	8	5	2		1	6
Permitted Phases							2		
Detector Phase	7	4	3	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	21.0	21.0	10.0	21.0
Total Split (s)	11.0	39.0	16.0	44.0	48.0	75.0	75.0	10.0	37.0
Total Split (%)	7.9%	27.9%	11.4%	31.4%	34.3%	53.6%	53.6%	7.1%	26.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	6.2	33.8	12.7	44.7	37.4	74.4	74.4	5.0	36.0
Actuated g/C Ratio	0.04	0.24	0.09	0.32	0.27	0.53	0.53	0.04	0.26
v/c Ratio	0.28	0.90dr	0.75	0.17	0.80	0.09	0.78	0.27	0.21
Control Delay (s/veh)	74.2	55.0	77.4	35.3	49.1	9.1	9.3	76.5	41.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.2	55.0	77.4	35.3	49.1	9.1	9.3	76.5	41.1
LOS	E	D	E	D	D	A	A	E	D
Approach Delay (s/veh)		55.3		54.6		19.7			44.0
Approach LOS		E		D		B			D

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 89 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay (s/veh): 38.8	Intersection LOS: D
Intersection Capacity Utilization 87.5%	ICU Level of Service E
Analysis Period (min) 15	

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 5: Valencia Ave & E Lambert Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	22	1086	234	276	377	193	872	17	191
v/c Ratio	0.28	0.90dr	0.75	0.17	0.80	0.09	0.78	0.27	0.21
Control Delay (s/veh)	74.2	55.0	77.4	35.3	49.1	9.1	9.3	76.5	41.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.2	55.0	77.4	35.3	49.1	9.1	9.3	76.5	41.1
Queue Length 50th (ft)	20	311	106	65	353	30	118	15	71
Queue Length 95th (ft)	50	380	#157	87	m430	m37	772	39	100
Internal Link Dist (ft)		759		811		2026			731
Turn Bay Length (ft)	230		625		300		120	240	
Base Capacity (vph)	79	1265	311	1620	543	2132	1117	63	902
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	0.28	0.86	0.75	0.17	0.69	0.09	0.78	0.27	0.21

Intersection Summary

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.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	631	390	192	221	5	354	181	820	14	144	17
Future Volume (veh/h)	21	631	390	192	221	5	354	181	820	14	144	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	22	671	415	234	270	6	377	193	0	17	171	20
Peak Hour Factor	0.94	0.94	0.94	0.82	0.82	0.82	0.94	0.94	0.94	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	29	827	385	272	1568	35	547	1848		64	734	85
Arrive On Green	0.02	0.24	0.24	0.08	0.31	0.31	0.51	0.83	0.00	0.04	0.23	0.23
Sat Flow, veh/h	1781	3404	1585	3456	5140	114	1781	3696	1648	1781	3210	371
Grp Volume(v), veh/h	22	671	415	234	178	98	377	193	0	17	94	97
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1728	1702	1850	1781	1848	1648	1781	1777	1804
Q Serve(g_s), s	1.7	26.0	34.0	9.4	5.4	5.4	22.3	1.3	0.0	1.3	6.0	6.2
Cycle Q Clear(g_c), s	1.7	26.0	34.0	9.4	5.4	5.4	22.3	1.3	0.0	1.3	6.0	6.2
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	29	827	385	272	1038	564	547	1848		64	406	412
V/C Ratio(X)	0.75	0.81	1.08	0.86	0.17	0.17	0.69	0.10		0.27	0.23	0.24
Avail Cap(c_a), veh/h	76	827	385	272	1038	564	547	1848		64	406	412
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.54	0.54	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.6	50.0	53.0	63.7	35.7	35.7	29.1	5.9	0.0	65.7	44.0	44.0
Incr Delay (d2), s/veh	31.4	6.2	68.3	23.5	0.1	0.1	2.0	0.1	0.0	2.2	1.3	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	11.4	20.3	4.9	2.2	2.4	7.9	0.5	0.0	0.6	2.8	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	100.0	56.1	121.3	87.3	35.8	35.8	31.0	5.9	0.0	67.9	45.3	45.4
LnGrp LOS	F	E	F	F	D	D	C	A		E	D	D
Approach Vol, veh/h		1108			510			570			208	
Approach Delay, s/veh		81.4			59.4			22.5			47.2	
Approach LOS		F			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	75.0	16.0	39.0	48.0	37.0	7.3	47.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	5.0	70.0	11.0	34.0	43.0	32.0	6.0	39.0
Max Q Clear Time (g_c+I1), s	3.3	3.3	11.4	36.0	24.3	8.2	3.7	7.4
Green Ext Time (p_c), s	0.0	1.2	0.0	0.0	1.0	0.9	0.0	1.5

Intersection Summary	
HCM 7th Control Delay, s/veh	59.8
HCM 7th LOS	E

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	37	0	1	12	11	3	4	7	15	0	3
Future Vol, veh/h	17	37	0	1	12	11	3	4	7	15	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	78	78	78	50	50	50	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	52	0	1	15	14	6	8	14	20	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	29	0	0	52	0	0	118	132	52	129	125	22
Stage 1	-	-	-	-	-	-	100	100	-	25	25	-
Stage 2	-	-	-	-	-	-	18	32	-	104	100	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1584	-	-	1554	-	-	858	759	1016	844	765	1055
Stage 1	-	-	-	-	-	-	906	812	-	993	874	-
Stage 2	-	-	-	-	-	-	1001	868	-	902	812	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1584	-	-	1554	-	-	841	746	1016	810	753	1055
Mov Cap-2 Maneuver	-	-	-	-	-	-	841	746	-	810	753	-
Stage 1	-	-	-	-	-	-	892	800	-	992	874	-
Stage 2	-	-	-	-	-	-	997	868	-	867	800	-

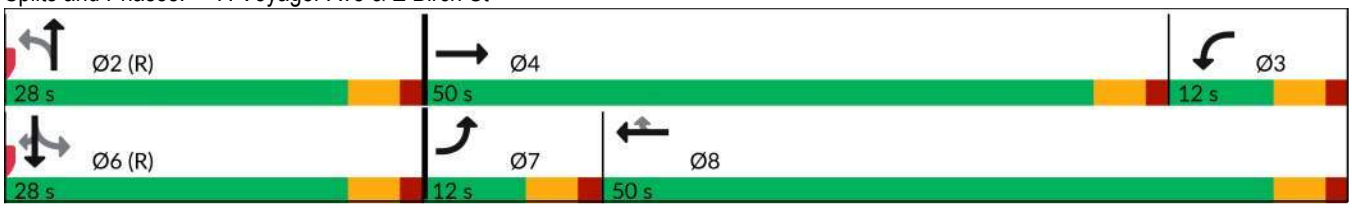
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	2.3	0.3	9.2	9.4
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	885	567	-	-	68	-	-	843
HCM Lane V/C Ratio	0.032	0.015	-	-	0.001	-	-	0.028
HCM Control Delay (s/veh)	9.2	7.3	0	-	7.3	0	-	9.4
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	5	781	2	592	11	37	0	7	0	12
Future Volume (vph)	5	781	2	592	11	37	0	7	0	12
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	7	4	3	8			2		6	
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.5	10.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	12.0	50.0	12.0	50.0	50.0	28.0	28.0	28.0	28.0	28.0
Total Split (%)	13.3%	55.6%	13.3%	55.6%	55.6%	31.1%	31.1%	31.1%	31.1%	31.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.9	28.8	5.7	28.7	28.7	49.0	49.0		49.0	49.0
Actuated g/C Ratio	0.07	0.32	0.06	0.32	0.32	0.54	0.54		0.54	0.54
v/c Ratio	0.04	0.73	0.02	0.65	0.02	0.08	0.04		0.01	0.02
Control Delay (s/veh)	59.0	9.1	39.5	28.7	0.1	13.7	0.1		14.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	59.0	9.1	39.5	28.7	0.1	13.7	0.1		14.3	0.0
LOS	E	A	D	C	A	B	A		B	A
Approach Delay (s/veh)		9.4		28.2			7.8		5.1	
Approach LOS		A		C			A		A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 31 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay (s/veh): 17.4	Intersection LOS: B
Intersection Capacity Utilization 39.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 7: Voyager Ave & E Birch St



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	5	828	2	731	14	64	48	10	18
v/c Ratio	0.04	0.73	0.02	0.65	0.02	0.08	0.04	0.01	0.02
Control Delay (s/veh)	59.0	9.1	39.5	28.7	0.1	13.7	0.1	14.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	59.0	9.1	39.5	28.7	0.1	13.7	0.1	14.3	0.0
Queue Length 50th (ft)	2	21	1	185	0	15	0	2	0
Queue Length 95th (ft)	m6	30	8	190	0	32	0	11	0
Internal Link Dist (ft)		1715		1706			560	102	
Turn Bay Length (ft)	200		140		225	125			95
Base Capacity (vph)	137	1766	137	1769	834	761	1100	735	927
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	0.04	0.47	0.01	0.41	0.02	0.08	0.04	0.01	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	781	13	2	592	11	37	0	28	7	0	12
Future Volume (veh/h)	5	781	13	2	592	11	37	0	28	7	0	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	814	14	2	731	14	64	0	48	10	0	18
Peak Hour Factor	0.96	0.96	0.96	0.81	0.81	0.81	0.58	0.58	0.58	0.68	0.68	0.68
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	9	960	17	4	943	421	842	0	928	826	0	892
Arrive On Green	0.01	0.54	0.54	0.00	0.27	0.27	0.56	0.00	0.56	0.56	0.00	0.56
Sat Flow, veh/h	1781	3575	61	1781	3554	1585	1395	0	1648	1326	0	1585
Grp Volume(v), veh/h	5	405	423	2	731	14	64	0	48	10	0	18
Grp Sat Flow(s),veh/h/ln	1781	1777	1859	1781	1777	1585	1395	0	1648	1326	0	1585
Q Serve(g_s), s	0.3	17.4	17.4	0.1	17.1	0.6	2.0	0.0	1.2	0.3	0.0	0.5
Cycle Q Clear(g_c), s	0.3	17.4	17.4	0.1	17.1	0.6	3.4	0.0	1.2	1.5	0.0	0.5
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	9	477	499	4	943	421	842	0	928	826	0	892
V/C Ratio(X)	0.54	0.85	0.85	0.52	0.78	0.03	0.08	0.00	0.05	0.01	0.00	0.02
Avail Cap(c_a), veh/h	139	888	930	139	1777	793	842	0	928	826	0	892
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	0.84	0.84	0.84	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.4	19.3	19.3	44.9	30.6	24.5	9.7	0.0	8.9	9.2	0.0	8.7
Incr Delay (d2), s/veh	31.6	3.3	3.1	69.0	1.2	0.0	0.2	0.0	0.1	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.8	5.0	0.1	6.9	0.2	0.6	0.0	0.4	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	76.1	22.5	22.4	113.8	31.8	24.5	9.9	0.0	9.0	9.2	0.0	8.7
LnGrp LOS	E	C	C	F	C	C	A		A	A		A
Approach Vol, veh/h		833			747			112			28	
Approach Delay, s/veh		22.8			31.8			9.5			8.9	
Approach LOS		C			C			A			A	

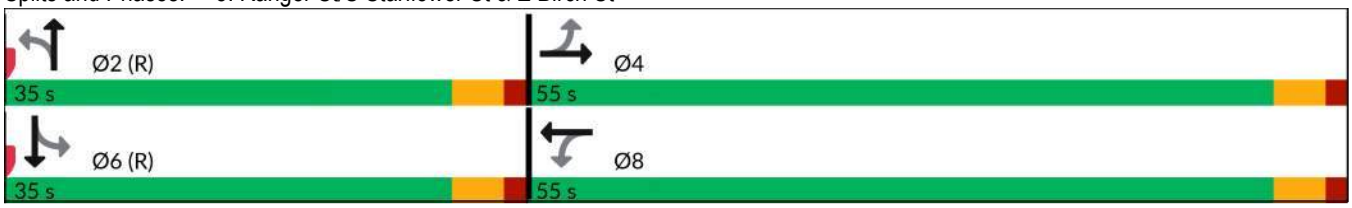
Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		55.6	5.2	29.2		55.6	5.5	28.9
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		23.0	7.0	45.0		23.0	7.0	45.0
Max Q Clear Time (g_c+I1), s		5.4	2.1	19.4		3.5	2.3	19.1
Green Ext Time (p_c), s		0.4	0.0	4.7		0.1	0.0	4.7

Intersection Summary	
HCM 7th Control Delay, s/veh	25.6
HCM 7th LOS	C

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	27	763	690	96	1	9	0
Future Volume (vph)	27	763	690	96	1	9	0
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA
Protected Phases		4	8		2		6
Permitted Phases	4			2		6	
Detector Phase	4	4	8	2	2	6	6
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	55.0	55.0	55.0	35.0	35.0	35.0	35.0
Total Split (%)	61.1%	61.1%	61.1%	38.9%	38.9%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0		5.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	32.2	32.2	32.2		47.8		47.8
Actuated g/C Ratio	0.36	0.36	0.36		0.53		0.53
v/c Ratio	0.30	0.62	0.73		0.27		0.05
Control Delay (s/veh)	27.2	25.1	39.8		13.7		7.2
Queue Delay	0.0	0.0	0.0		0.0		0.0
Total Delay (s/veh)	27.2	25.1	39.8		13.7		7.2
LOS	C	C	D		B		A
Approach Delay (s/veh)		25.2	39.8		13.7		7.2
Approach LOS		C	D		B		A

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay (s/veh): 30.1	Intersection LOS: C
Intersection Capacity Utilization 43.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Ranger St/S Starflower St & E Birch St



Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	31	885	919	214	40
v/c Ratio	0.30	0.62	0.73	0.27	0.05
Control Delay (s/veh)	27.2	25.1	39.8	13.7	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.2	25.1	39.8	13.7	7.2
Queue Length 50th (ft)	13	214	291	60	4
Queue Length 95th (ft)	33	228	291	62	14
Internal Link Dist (ft)		759	1715	671	28
Turn Bay Length (ft)	145				
Base Capacity (vph)	159	2223	1963	801	829
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.19	0.40	0.47	0.27	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	763	16	0	690	8	96	1	12	9	0	17
Future Volume (veh/h)	27	763	16	0	690	8	96	1	12	9	0	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1945	1945	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	31	867	18	0	908	11	188	2	24	14	0	26
Peak Hour Factor	0.88	0.88	0.88	0.76	0.76	0.76	0.51	0.51	0.51	0.65	0.65	0.65
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	1369	28	80	1329	16	742	12	86	311	24	522
Arrive On Green	0.37	0.37	0.37	0.00	0.12	0.12	0.52	0.52	0.52	0.52	0.00	0.52
Sat Flow, veh/h	608	3702	77	628	3596	44	1285	24	165	494	47	1005
Grp Volume(v), veh/h	31	433	452	0	449	470	214	0	0	40	0	0
Grp Sat Flow(s),veh/h/ln	608	1848	1931	628	1777	1863	1474	0	0	1545	0	0
Q Serve(g_s), s	4.2	17.3	17.3	0.0	21.8	21.8	6.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	26.0	17.3	17.3	0.0	21.8	21.8	7.1	0.0	0.0	1.1	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.02	0.88		0.11	0.35		0.65
Lane Grp Cap(c), veh/h	158	683	714	80	657	689	840	0	0	856	0	0
V/C Ratio(X)	0.20	0.63	0.63	0.00	0.68	0.68	0.25	0.00	0.00	0.05	0.00	0.00
Avail Cap(c_a), veh/h	271	1027	1073	197	987	1035	840	0	0	856	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.78	0.78	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.1	23.3	23.3	0.0	34.5	34.5	12.0	0.0	0.0	10.7	0.0	0.0
Incr Delay (d2), s/veh	0.6	1.0	0.9	0.0	1.0	0.9	0.7	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	7.0	7.3	0.0	10.3	10.8	2.5	0.0	0.0	0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.7	24.3	24.3	0.0	35.4	35.4	12.8	0.0	0.0	10.8	0.0	0.0
LnGrp LOS	D	C	C		D	D	B			B		
Approach Vol, veh/h		916			919			214			40	
Approach Delay, s/veh		24.7			35.4			12.8			10.8	
Approach LOS		C			D			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	51.7	38.3	51.7	38.3
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	30.0	50.0	30.0	50.0
Max Q Clear Time (g_c+I1), s	9.1	28.0	3.1	23.8
Green Ext Time (p_c), s	1.2	5.3	0.2	5.4

Intersection Summary	
HCM 7th Control Delay, s/veh	27.9
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	17	4	11	55	2
Future Vol, veh/h	4	17	4	11	55	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	58	58	50	50	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	29	8	22	65	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	30	0	-	0	62	19
Stage 1	-	-	-	-	19	-
Stage 2	-	-	-	-	43	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1583	-	-	-	944	1059
Stage 1	-	-	-	-	1004	-
Stage 2	-	-	-	-	979	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1583	-	-	-	940	1059
Mov Cap-2 Maneuver	-	-	-	-	940	-
Stage 1	-	-	-	-	999	-
Stage 2	-	-	-	-	979	-

Approach	EB	WB	SB
HCM Control Delay, s/v	1.39	0	9.11
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	343	-	-	-	944
HCM Lane V/C Ratio	0.004	-	-	-	0.072
HCM Control Delay (s/veh)	7.3	0	-	-	9.1
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	617	332	0
Future Vol, veh/h	0	0	0	617	332	0
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	92	92	88	88	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	701	395	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	746	198	-	0	-	0
Stage 1	395	-	-	-	-	-
Stage 2	351	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	-	-
Pot Cap-1 Maneuver	349	810	0	-	-	-
Stage 1	649	-	0	-	-	-
Stage 2	684	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	349	810	-	-	-	-
Mov Cap-2 Maneuver	349	-	-	-	-	-
Stage 1	649	-	-	-	-	-
Stage 2	684	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	20	0	590	331	0
Future Vol, veh/h	0	20	0	590	331	0
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	92	92	88	88	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	22	0	670	394	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	197	-	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	811	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	811	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.56	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	811	-
HCM Lane V/C Ratio	-	0.027	-
HCM Control Delay (s/veh)	-	9.6	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	72	14	80	20	0
Future Vol, veh/h	0	72	14	80	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	68	68	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	94	21	118	22	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	138	0	-	0	126	79
Stage 1	-	-	-	-	79	-
Stage 2	-	-	-	-	47	-
Critical Hdwy	4.13	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1444	-	-	-	862	980
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	970	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1444	-	-	-	862	980
Mov Cap-2 Maneuver	-	-	-	-	862	-
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	970	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.28
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1444	-	-	-	862
HCM Lane V/C Ratio	-	-	-	-	0.025
HCM Control Delay (s/veh)	0	-	-	-	9.3
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	20	0	0	59
Future Vol, veh/h	0	0	20	0	0	59
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	24	0	0	70

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	94	24	0	0	24	0
Stage 1	24	-	-	-	-	-
Stage 2	70	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	906	1053	-	-	1591	-
Stage 1	999	-	-	-	-	-
Stage 2	953	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	906	1053	-	-	1591	-
Mov Cap-2 Maneuver	906	-	-	-	-	-
Stage 1	999	-	-	-	-	-
Stage 2	953	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	-	1591	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s/veh)	-	-	0	0	0	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	20	0	0	63
Future Vol, veh/h	0	0	20	0	0	63
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	92	92	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	24	0	0	75

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	99	24	0	0	24	0
Stage 1	24	-	-	-	-	-
Stage 2	75	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	900	1053	-	-	1591	-
Stage 1	999	-	-	-	-	-
Stage 2	948	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	900	1053	-	-	1591	-
Mov Cap-2 Maneuver	900	-	-	-	-	-
Stage 1	999	-	-	-	-	-
Stage 2	948	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1591	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	63	0	0	17	3
Future Vol, veh/h	0	63	0	0	17	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	92	92	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	75	0	0	20	4

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	0	75
Stage 1	-	-	0	0
Stage 2	-	-	0	75
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	-	815
Stage 1	-	-	-	-
Stage 2	-	-	-	833
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	0
Mov Cap-2 Maneuver	-	-	-	0
Stage 1	-	-	-	0
Stage 2	-	-	-	0

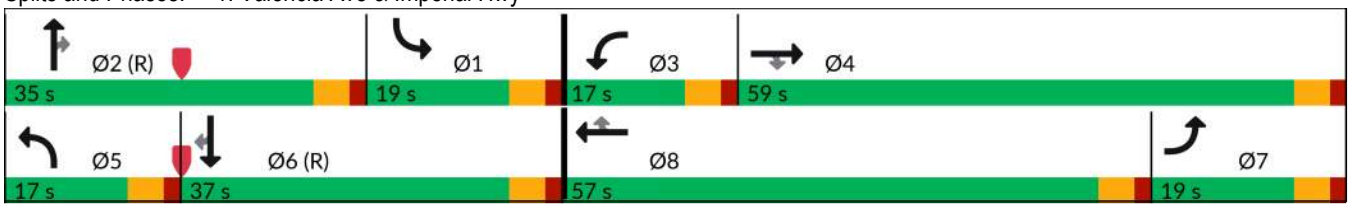
Approach	EB	WB
HCM Control Delay, s/v	0	0
HCM LOS		A

Minor Lane/Major Mvmt	EBT	EBR	WBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	-	0
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	1119	93	93	1168	70	99	133	104	146	278	228
Future Volume (vph)	140	1119	93	93	1168	70	99	133	104	146	278	228
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0
Total Split (s)	19.0	59.0	59.0	17.0	57.0	57.0	17.0	35.0	35.0	19.0	37.0	37.0
Total Split (%)	14.6%	45.4%	45.4%	13.1%	43.8%	43.8%	13.1%	26.9%	26.9%	14.6%	28.5%	28.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	11.1	44.8	44.8	9.2	43.0	43.0	9.5	42.0	42.0	14.0	46.5	46.5
Actuated g/C Ratio	0.09	0.34	0.34	0.07	0.33	0.33	0.07	0.32	0.32	0.11	0.36	0.36
v/c Ratio	0.52	0.69	0.16	0.42	0.76	0.12	0.44	0.13	0.19	0.45	0.25	0.35
Control Delay (s/veh)	63.1	38.6	1.7	62.7	42.0	0.4	62.7	33.8	3.6	51.2	27.5	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	63.1	38.6	1.7	62.7	42.0	0.4	62.7	33.8	3.6	51.2	27.5	4.4
LOS	E	D	A	E	D	A	E	C	A	D	C	A
Approach Delay (s/veh)		38.6			41.2			33.0			24.7	
Approach LOS		D			D			C			C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 29 (22%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay (s/veh): 36.5	Intersection LOS: D
Intersection Capacity Utilization 54.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Valencia Ave & Imperial Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	152	1216	101	102	1284	77	109	146	114	166	316	259
v/c Ratio	0.52	0.69	0.16	0.42	0.76	0.12	0.44	0.13	0.19	0.45	0.25	0.35
Control Delay (s/veh)	63.1	38.6	1.7	62.7	42.0	0.4	62.7	33.8	3.6	51.2	27.5	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	63.1	38.6	1.7	62.7	42.0	0.4	62.7	33.8	3.6	51.2	27.5	4.4
Queue Length 50th (ft)	64	320	0	43	353	0	46	45	0	68	86	15
Queue Length 95th (ft)	98	338	13	72	375	0	75	81	28	94	122	42
Internal Link Dist (ft)		540			646			773			1102	
Turn Bay Length (ft)	190		300	260		185	150		145	250		185
Base Capacity (vph)	370	2112	741	316	2034	719	317	1142	607	369	1265	730
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.58	0.14	0.32	0.63	0.11	0.34	0.13	0.19	0.45	0.25	0.35

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	1119	93	93	1168	70	99	133	104	146	278	228
Future Volume (veh/h)	140	1119	93	93	1168	70	99	133	104	146	278	228
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	152	1216	101	102	1284	77	109	146	114	166	316	259
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.91	0.91	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	1675	520	153	1595	495	161	820	366	840	1519	677
Arrive On Green	0.06	0.33	0.33	0.04	0.31	0.31	0.05	0.23	0.23	0.41	0.71	0.71
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	152	1216	101	102	1284	77	109	146	114	166	316	259
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	5.6	27.3	5.9	3.8	30.0	4.6	4.0	4.3	6.5	4.0	3.9	6.4
Cycle Q Clear(g_c), s	5.6	27.3	5.9	3.8	30.0	4.6	4.0	4.3	6.5	4.0	3.9	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	207	1675	520	153	1595	495	161	820	366	840	1519	677
V/C Ratio(X)	0.73	0.73	0.19	0.67	0.81	0.16	0.68	0.18	0.31	0.20	0.21	0.38
Avail Cap(c_a), veh/h	372	2121	658	319	2042	634	319	820	366	840	1519	677
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.97	0.97
Uniform Delay (d), s/veh	60.1	38.5	31.3	61.2	41.1	32.3	61.0	40.1	29.4	30.4	11.2	6.9
Incr Delay (d2), s/veh	4.9	0.9	0.2	5.0	1.9	0.1	4.9	0.5	2.2	0.1	0.3	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	11.0	2.2	1.7	12.3	1.7	1.9	1.9	3.1	1.6	1.5	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	65.0	39.4	31.5	66.1	43.0	32.5	66.0	40.6	31.6	30.5	11.5	8.5
LnGrp LOS	E	D	C	E	D	C	E	D	C	C	B	A
Approach Vol, veh/h		1469			1463			369			741	
Approach Delay, s/veh		41.5			44.0			45.3			14.7	
Approach LOS		D			D			D			B	

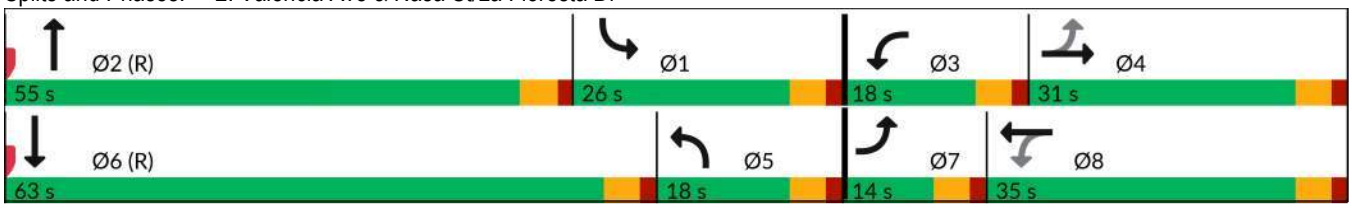
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	36.6	35.0	10.7	47.7	11.0	60.6	12.8	45.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	14.0	30.0	12.0	54.0	12.0	32.0	14.0	52.0
Max Q Clear Time (g_c+I1), s	6.0	8.5	5.8	29.3	6.0	8.4	7.6	32.0
Green Ext Time (p_c), s	0.3	1.2	0.1	8.9	0.1	2.7	0.2	8.6

Intersection Summary	
HCM 7th Control Delay, s/veh	37.9
HCM 7th LOS	D

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	2	3	38	10	62	277	59	620
Future Volume (vph)	2	3	38	10	62	277	59	620
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	14.0	31.0	18.0	35.0	18.0	55.0	26.0	63.0
Total Split (%)	10.8%	23.8%	13.8%	26.9%	13.8%	42.3%	20.0%	48.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	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	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	11.6	6.9	19.3	16.9	8.1	83.5	14.6	89.9
Actuated g/C Ratio	0.09	0.05	0.15	0.13	0.06	0.64	0.11	0.69
v/c Ratio	0.02	0.45	0.32	0.51	0.34	0.14	0.36	0.27
Control Delay (s/veh)	43.0	26.0	50.2	15.3	67.6	3.0	51.5	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	43.0	26.0	50.2	15.3	67.6	3.0	51.5	2.5
LOS	D	C	D	B	E	A	D	A
Approach Delay (s/veh)		26.8		24.4		14.1		6.7
Approach LOS		C		C		B		A

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 19 (15%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay (s/veh): 12.3	Intersection LOS: B
Intersection Capacity Utilization 41.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Valencia Ave & Nasa St/La Floresta Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	3	63	63	179	72	345	71	753
v/c Ratio	0.02	0.45	0.32	0.51	0.34	0.14	0.36	0.27
Control Delay (s/veh)	43.0	26.0	50.2	15.3	67.6	3.0	51.5	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	43.0	26.0	50.2	15.3	67.6	3.0	51.5	2.5
Queue Length 50th (ft)	2	3	47	12	32	15	62	47
Queue Length 95th (ft)	9	37	55	11	57	24	107	54
Internal Link Dist (ft)		332		460		1102		185
Turn Bay Length (ft)			105		175		200	
Base Capacity (vph)	173	367	229	495	343	2553	285	2771
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.17	0.28	0.36	0.21	0.14	0.25	0.27

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	3	47	38	10	97	62	277	20	59	620	5
Future Volume (veh/h)	2	3	47	38	10	97	62	277	20	59	620	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.04	1.04
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1945	1945
Adj Flow Rate, veh/h	3	4	59	63	17	162	72	322	23	71	747	6
Peak Hour Factor	0.79	0.79	0.79	0.60	0.60	0.60	0.86	0.86	0.86	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	88	9	138	204	20	191	919	1346	96	583	1676	13
Arrive On Green	0.00	0.09	0.09	0.04	0.13	0.13	0.53	0.77	0.77	0.22	0.30	0.30
Sat Flow, veh/h	1781	102	1499	1781	153	1456	3456	3500	249	1781	3757	30
Grp Volume(v), veh/h	3	0	63	63	0	179	72	169	176	71	367	386
Grp Sat Flow(s),veh/h/ln	1781	0	1601	1781	0	1608	1728	1848	1900	1781	1848	1940
Q Serve(g_s), s	0.2	0.0	4.8	4.1	0.0	14.1	1.3	3.4	3.4	4.2	20.9	20.9
Cycle Q Clear(g_c), s	0.2	0.0	4.8	4.1	0.0	14.1	1.3	3.4	3.4	4.2	20.9	20.9
Prop In Lane	1.00		0.94	1.00		0.91	1.00		0.13	1.00		0.02
Lane Grp Cap(c), veh/h	88	0	147	204	0	211	919	711	731	583	824	865
V/C Ratio(X)	0.03	0.00	0.43	0.31	0.00	0.85	0.08	0.24	0.24	0.12	0.45	0.45
Avail Cap(c_a), veh/h	205	0	320	307	0	371	919	711	731	583	824	865
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.6	0.0	55.8	48.9	0.0	55.2	22.6	9.6	9.6	35.7	32.6	32.6
Incr Delay (d2), s/veh	0.2	0.0	2.0	0.9	0.0	9.2	0.0	0.8	0.8	0.1	1.7	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	2.1	1.9	0.0	6.3	0.5	1.4	1.4	1.8	10.1	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	53.8	0.0	57.8	49.8	0.0	64.5	22.7	10.4	10.4	35.8	34.3	34.2
LnGrp LOS	D		E	D		E	C	B	B	D	C	C
Approach Vol, veh/h		66			242			417			824	
Approach Delay, s/veh		57.6			60.6			12.5			34.4	
Approach LOS		E			E			B			C	

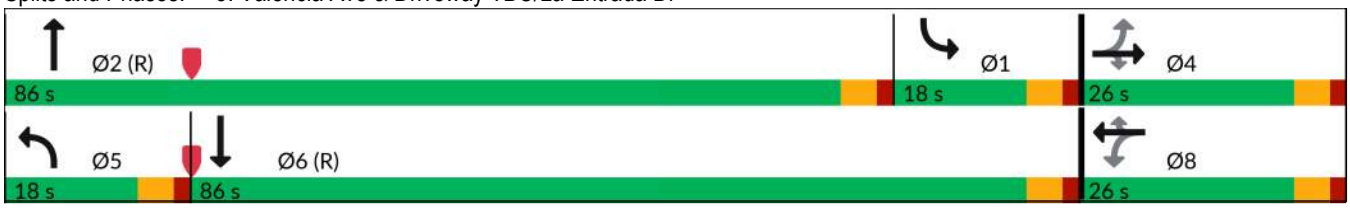
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	47.6	55.0	10.5	16.9	39.6	63.0	5.4	22.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	21.0	50.0	13.0	26.0	13.0	58.0	9.0	30.0
Max Q Clear Time (g_c+I1), s	6.2	5.4	6.1	6.8	3.3	22.9	2.2	16.1
Green Ext Time (p_c), s	0.1	1.9	0.1	0.3	0.1	4.6	0.0	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	33.6
HCM 7th LOS	C

Lane Group	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø4
Lane Configurations								
Traffic Volume (vph)	7	0	13	1	369	6	697	
Future Volume (vph)	7	0	13	1	369	6	697	
Turn Type	Perm	NA	Perm	Prot	NA	Prot	NA	
Protected Phases		8		5	2	1	6	4
Permitted Phases	8		8					
Detector Phase	8	8	8	5	2	1	6	
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	10.0	21.0	10.0	21.0	21.0
Total Split (s)	26.0	26.0	26.0	18.0	86.0	18.0	86.0	26.0
Total Split (%)	20.0%	20.0%	20.0%	13.8%	66.2%	13.8%	66.2%	20%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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	Lead	Lag	Lag	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	C-Max	None	C-Max	None
Act Effct Green (s)		6.6	6.6	5.6	116.0	7.3	117.4	
Actuated g/C Ratio		0.05	0.05	0.04	0.89	0.06	0.90	
v/c Ratio		0.13	0.12	0.01	0.12	0.07	0.22	
Control Delay (s/veh)		61.4	1.4	58.0	2.4	41.8	0.2	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)		61.4	1.4	58.0	2.4	41.8	0.2	
LOS		E	A	E	A	D	A	
Approach Delay (s/veh)		22.0			2.5		0.6	
Approach LOS		C			A		A	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 115 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.22	
Intersection Signal Delay (s/veh): 1.8	Intersection LOS: A
Intersection Capacity Utilization 30.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Valencia Ave & Driveway TBC/La Entrada Dr



Lane Group	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	21	1	425	7	783
v/c Ratio	0.13	0.12	0.01	0.12	0.07	0.22
Control Delay (s/veh)	61.4	1.4	58.0	2.4	41.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	61.4	1.4	58.0	2.4	41.8	0.2
Queue Length 50th (ft)	9	0	0	12	6	2
Queue Length 95th (ft)	20	0	m5	66	m8	8
Internal Link Dist (ft)	755			786		640
Turn Bay Length (ft)			223		160	
Base Capacity (vph)	273	340	177	3571	177	3621
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	0.04	0.06	0.01	0.12	0.04	0.22

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	7	0	13	1	369	5	6	697	0
Future Volume (veh/h)	0	0	0	7	0	13	1	369	5	6	697	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1945	1870
Adj Flow Rate, veh/h	0	0	0	11	0	21	1	419	6	7	783	0
Peak Hour Factor	0.92	0.92	0.92	0.63	0.63	0.63	0.88	0.88	0.88	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	39	33	85	0	33	2	2324	33	428	3187	0
Arrive On Green	0.00	0.00	0.00	0.02	0.00	0.02	0.00	1.00	1.00	0.48	1.00	0.00
Sat Flow, veh/h	0	1870	1585	1418	0	1585	1781	3730	53	1781	3793	0
Grp Volume(v), veh/h	0	0	0	11	0	21	1	207	218	7	783	0
Grp Sat Flow(s),veh/h/ln	0	1870	1585	1418	0	1585	1781	1848	1936	1781	1848	0
Q Serve(g_s), s	0.0	0.0	0.0	1.0	0.0	1.7	0.1	0.0	0.0	0.3	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	1.0	0.0	1.7	0.1	0.0	0.0	0.3	0.0	0.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		0.03	1.00		0.00
Lane Grp Cap(c), veh/h	0	39	33	85	0	33	2	1151	1206	428	3187	0
V/C Ratio(X)	0.00	0.00	0.00	0.13	0.00	0.63	0.51	0.18	0.18	0.02	0.25	0.00
Avail Cap(c_a), veh/h	0	302	256	284	0	256	178	1151	1206	428	3187	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	62.8	0.0	63.1	64.8	0.0	0.0	25.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.7	0.0	17.8	132.1	0.3	0.3	0.0	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.4	0.0	0.9	0.1	0.1	0.1	0.1	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	63.5	0.0	80.9	196.9	0.3	0.3	25.7	0.2	0.0
LnGrp LOS				E		F	F	A	A	C	A	
Approach Vol, veh/h		0			32			426			790	
Approach Delay, s/veh		0.0			74.9			0.8			0.4	
Approach LOS					E			A			A	

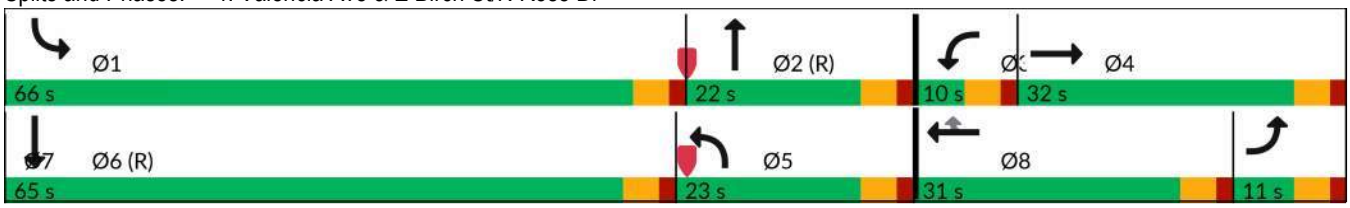
Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	36.3	86.0		7.7	5.1	117.1		7.7
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	13.0	81.0		21.0	13.0	81.0		21.0
Max Q Clear Time (g_c+I1), s	2.3	2.0		0.0	2.1	2.0		3.7
Green Ext Time (p_c), s	0.0	2.4		0.0	0.0	5.8		0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	2.5
HCM 7th LOS	A

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	71	475	8	320	309	134	227	628	559
Future Volume (vph)	71	475	8	320	309	134	227	628	559
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	11.0	32.0	10.0	31.0	31.0	23.0	22.0	66.0	65.0
Total Split (%)	8.5%	24.6%	7.7%	23.8%	23.8%	17.7%	16.9%	50.8%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	9.2	31.3	5.0	19.1	19.1	18.0	19.0	62.7	63.7
Actuated g/C Ratio	0.07	0.24	0.04	0.15	0.15	0.14	0.15	0.48	0.49
v/c Ratio	0.34	0.83	0.13	0.66	0.64	0.67	0.52	0.96	0.61
Control Delay (s/veh)	62.0	54.9	64.8	58.3	11.0	50.8	38.2	36.7	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	62.0	54.9	64.8	58.3	11.0	50.8	38.2	36.7	13.5
LOS	E	D	E	E	B	D	D	D	B
Approach Delay (s/veh)		55.6		35.5			42.6		23.8
Approach LOS		E		D			D		C

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 48 (37%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay (s/veh): 34.8	Intersection LOS: C
Intersection Capacity Utilization 79.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Valencia Ave & E Birch St/N Rose Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	703	9	344	332	163	301	816	1034
v/c Ratio	0.34	0.83	0.13	0.66	0.64	0.67	0.52	0.96	0.61
Control Delay (s/veh)	62.0	54.9	64.8	58.3	11.0	50.8	38.2	36.7	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	62.0	54.9	64.8	58.3	11.0	50.8	38.2	36.7	13.5
Queue Length 50th (ft)	34	281	8	146	0	114	108	337	194
Queue Length 95th (ft)	60	#394	27	188	85	186	155	512	231
Internal Link Dist (ft)		1706		346			363		2026
Turn Bay Length (ft)	190		230		285	205		160	
Base Capacity (vph)	241	842	68	707	582	245	584	854	1691
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	0.34	0.83	0.13	0.49	0.57	0.67	0.52	0.96	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	475	130	8	320	309	134	227	20	628	559	237
Future Volume (veh/h)	71	475	130	8	320	309	134	227	20	628	559	237
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	83	552	151	9	344	332	163	277	24	816	726	308
Peak Hour Factor	0.86	0.86	0.86	0.93	0.93	0.93	0.82	0.82	0.82	0.77	0.77	0.77
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	300	573	156	15	460	205	300	553	48	836	1122	476
Arrive On Green	0.09	0.21	0.21	0.01	0.13	0.13	0.06	0.05	0.05	0.15	0.15	0.15
Sat Flow, veh/h	3456	2760	752	1781	3554	1585	1781	3443	296	1781	2431	1031
Grp Volume(v), veh/h	83	355	348	9	344	332	163	148	153	816	531	503
Grp Sat Flow(s),veh/h/ln	1728	1777	1735	1781	1777	1585	1781	1848	1892	1781	1777	1685
Q Serve(g_s), s	2.9	25.7	25.9	0.7	12.1	6.3	11.6	10.1	10.2	59.3	36.5	36.5
Cycle Q Clear(g_c), s	2.9	25.7	25.9	0.7	12.1	6.3	11.6	10.1	10.2	59.3	36.5	36.5
Prop In Lane	1.00		0.43	1.00		1.00	1.00		0.16	1.00		0.61
Lane Grp Cap(c), veh/h	300	369	360	15	460	205	300	297	304	836	820	778
V/C Ratio(X)	0.28	0.96	0.97	0.59	0.75	1.62	0.54	0.50	0.50	0.98	0.65	0.65
Avail Cap(c_a), veh/h	300	369	360	69	711	317	300	297	304	836	820	778
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	0.33	0.33	0.33
Upstream Filter(I)	0.61	0.61	0.61	1.00	1.00	1.00	1.00	1.00	1.00	0.51	0.51	0.51
Uniform Delay (d), s/veh	55.5	51.0	51.1	64.2	54.6	7.9	56.5	56.4	56.5	54.2	45.1	45.2
Incr Delay (d2), s/veh	0.3	27.1	28.7	31.6	2.5	300.2	2.0	5.9	5.9	16.9	2.0	2.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	13.8	13.7	0.4	5.6	23.2	5.6	5.4	5.6	32.1	17.8	16.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	55.8	78.1	79.8	95.8	57.0	308.1	58.5	62.3	62.4	71.1	47.2	47.3
LnGrp LOS	E	E	E	F	E	F	E	E	E	E	D	D
Approach Vol, veh/h		786			685			464			1850	
Approach Delay, s/veh		76.5			179.2			61.0			57.7	
Approach LOS		E			F			E			E	

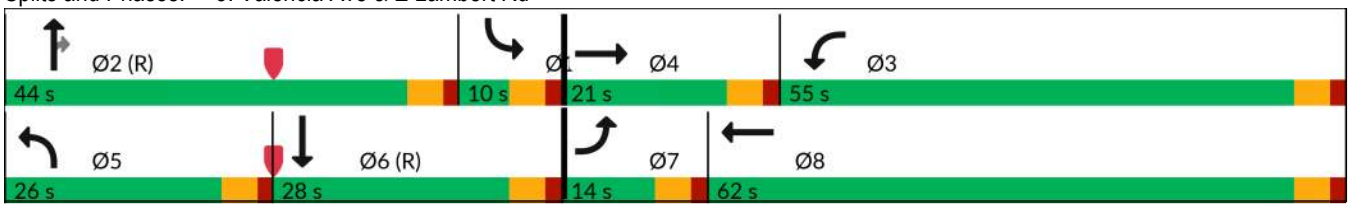
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	66.0	25.9	6.1	32.0	26.9	65.0	16.3	21.8
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	61.0	17.0	5.0	27.0	18.0	60.0	6.0	26.0
Max Q Clear Time (g_c+I1), s	61.3	12.2	2.7	27.9	13.6	38.5	4.9	14.1
Green Ext Time (p_c), s	0.0	0.6	0.0	0.0	0.2	6.5	0.0	2.7

Intersection Summary	
HCM 7th Control Delay, s/veh	84.0
HCM 7th LOS	F

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	56	170	952	592	167	196	175	7	300
Future Volume (vph)	56	170	952	592	167	196	175	7	300
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA
Protected Phases	7	4	3	8	5	2		1	6
Permitted Phases							2		
Detector Phase	7	4	3	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	21.0	21.0	10.0	21.0
Total Split (s)	14.0	21.0	55.0	62.0	26.0	44.0	44.0	10.0	28.0
Total Split (%)	10.8%	16.2%	42.3%	47.7%	20.0%	33.8%	33.8%	7.7%	21.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	8.3	11.8	44.0	49.7	19.1	55.2	55.2	5.0	35.1
Actuated g/C Ratio	0.06	0.09	0.34	0.38	0.15	0.42	0.42	0.04	0.27
v/c Ratio	0.54	0.73	0.86	0.32	0.78	0.14	0.24	0.19	0.68
Control Delay (s/veh)	76.3	32.6	48.3	28.4	76.1	40.6	21.3	67.1	48.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	76.3	32.6	48.3	28.4	76.1	40.6	21.3	67.1	48.2
LOS	E	C	D	C	E	D	C	E	D
Approach Delay (s/veh)		37.5		40.7		45.4			48.6
Approach LOS		D		D		D			D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 52 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay (s/veh): 42.6	Intersection LOS: D
Intersection Capacity Utilization 72.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Valencia Ave & E Lambert Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	60	475	1002	626	204	239	213	13	648
v/c Ratio	0.54	0.73	0.86	0.32	0.78	0.14	0.24	0.19	0.68
Control Delay (s/veh)	76.3	32.6	48.3	28.4	76.1	40.6	21.3	67.1	48.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	76.3	32.6	48.3	28.4	76.1	40.6	21.3	67.1	48.2
Queue Length 50th (ft)	50	64	403	139	176	88	53	11	260
Queue Length 95th (ft)	97	102	456	152	238	131	119	19	187
Internal Link Dist (ft)		759		811		2026			731
Turn Bay Length (ft)	230		625		300		120	240	
Base Capacity (vph)	122	793	1320	2227	291	1703	884	68	946
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	0.49	0.60	0.76	0.28	0.70	0.14	0.24	0.19	0.68

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	170	276	952	592	3	167	196	175	7	300	37
Future Volume (veh/h)	56	170	276	952	592	3	167	196	175	7	300	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	60	181	294	1002	623	3	204	239	0	13	577	71
Peak Hour Factor	0.94	0.94	0.94	0.95	0.95	0.95	0.82	0.82	0.82	0.52	0.52	0.52
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	419	195	1100	2087	10	233	1109		187	873	107
Arrive On Green	0.04	0.12	0.12	0.32	0.40	0.40	0.04	0.10	0.00	0.10	0.27	0.27
Sat Flow, veh/h	1781	3404	1585	3456	5245	25	1781	3696	1648	1781	3186	391
Grp Volume(v), veh/h	60	181	294	1002	404	222	204	239	0	13	321	327
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1728	1702	1866	1781	1848	1648	1781	1777	1800
Q Serve(g_s), s	4.3	6.4	16.0	36.2	10.5	10.6	14.8	7.7	0.0	0.9	20.8	20.9
Cycle Q Clear(g_c), s	4.3	6.4	16.0	36.2	10.5	10.6	14.8	7.7	0.0	0.9	20.8	20.9
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	77	419	195	1100	1355	743	233	1109		187	487	493
V/C Ratio(X)	0.78	0.43	1.51	0.91	0.30	0.30	0.88	0.22		0.07	0.66	0.66
Avail Cap(c_a), veh/h	123	419	195	1329	1493	818	288	1109		187	487	493
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.81	0.81	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.6	52.8	57.0	42.6	26.7	26.7	61.1	44.5	0.0	52.5	41.8	41.8
Incr Delay (d2), s/veh	15.3	0.7	252.9	8.5	0.1	0.2	18.1	0.4	0.0	0.2	6.8	6.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	2.7	19.9	16.0	4.1	4.6	8.3	3.7	0.0	0.4	9.8	10.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	76.9	53.5	309.9	51.1	26.9	27.0	79.3	44.8	0.0	52.6	48.6	48.7
LnGrp LOS	E	D	F	D	C	C	E	D		D	D	D
Approach Vol, veh/h		535			1628			443			661	
Approach Delay, s/veh		197.0			41.8			60.7			48.7	
Approach LOS		F			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.6	44.0	46.4	21.0	22.0	40.6	10.6	56.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	5.0	39.0	50.0	16.0	21.0	23.0	9.0	57.0
Max Q Clear Time (g_c+I1), s	2.9	9.7	38.2	18.0	16.8	22.9	6.3	12.6
Green Ext Time (p_c), s	0.0	1.4	3.2	0.0	0.2	0.0	0.0	3.8

Intersection Summary	
HCM 7th Control Delay, s/veh	71.2
HCM 7th LOS	E

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	31	2	4	31	15	1	3	1	21	5	25
Future Vol, veh/h	13	31	2	4	31	15	1	3	1	21	5	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	61	61	61	42	42	42	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	36	2	7	51	25	2	7	2	29	7	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	75	0	0	38	0	0	134	155	37	145	144	63
Stage 1	-	-	-	-	-	-	67	67	-	76	76	-
Stage 2	-	-	-	-	-	-	67	89	-	69	68	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1524	-	-	1572	-	-	838	737	1036	823	747	1001
Stage 1	-	-	-	-	-	-	944	839	-	933	832	-
Stage 2	-	-	-	-	-	-	943	822	-	941	838	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1524	-	-	1572	-	-	790	726	1036	802	736	1001
Mov Cap-2 Maneuver	-	-	-	-	-	-	790	726	-	802	736	-
Stage 1	-	-	-	-	-	-	934	831	-	929	828	-
Stage 2	-	-	-	-	-	-	899	818	-	921	830	-

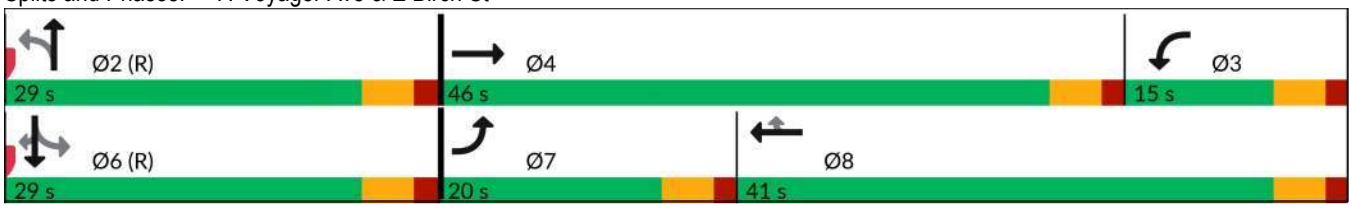
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	2.09	0.58	9.65	9.44
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	786	503	-	-	135	-	-	880
HCM Lane V/C Ratio	0.015	0.01	-	-	0.004	-	-	0.079
HCM Control Delay (s/veh)	9.7	7.4	0	-	7.3	0	-	9.4
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.3

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	65	660	30	438	36	35	3	33	0	38
Future Volume (vph)	65	660	30	438	36	35	3	33	0	38
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	7	4	3	8			2		6	
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.5	10.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	20.0	46.0	15.0	41.0	41.0	29.0	29.0	29.0	29.0	29.0
Total Split (%)	22.2%	51.1%	16.7%	45.6%	45.6%	32.2%	32.2%	32.2%	32.2%	32.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	9.3	30.1	7.3	25.9	25.9	42.0	42.0		42.0	42.0
Actuated g/C Ratio	0.10	0.33	0.08	0.29	0.29	0.47	0.47		0.47	0.47
v/c Ratio	0.43	0.73	0.24	0.51	0.08	0.12	0.04		0.10	0.09
Control Delay (s/veh)	24.5	13.8	42.3	27.9	1.1	18.8	9.1		18.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	24.5	13.8	42.3	27.9	1.1	18.8	9.1		18.8	0.2
LOS	C	B	D	C	A	B	A		B	A
Approach Delay (s/veh)		14.7		26.9			15.6		8.8	
Approach LOS		B		C			B		A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 34 (38%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay (s/veh): 18.4	Intersection LOS: B
Intersection Capacity Utilization 44.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 7: Voyager Ave & E Birch St



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	78	858	35	515	42	73	35	61	70
v/c Ratio	0.43	0.73	0.24	0.51	0.08	0.12	0.04	0.10	0.09
Control Delay (s/veh)	24.5	13.8	42.3	27.9	1.1	18.8	9.1	18.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.5	13.8	42.3	27.9	1.1	18.8	9.1	18.8	0.2
Queue Length 50th (ft)	21	247	19	124	0	24	2	20	0
Queue Length 95th (ft)	43	257	45	144	3	32	7	31	0
Internal Link Dist (ft)		1715		1706			560	102	
Turn Bay Length (ft)	200		140		225	125			95
Base Capacity (vph)	295	1600	196	1415	684	623	877	637	815
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	0.26	0.54	0.18	0.36	0.06	0.12	0.04	0.10	0.09

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	660	52	30	438	36	35	3	14	33	0	38
Future Volume (veh/h)	65	660	52	30	438	36	35	3	14	33	0	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	78	795	63	35	515	42	73	6	29	61	0	70
Peak Hour Factor	0.83	0.83	0.83	0.85	0.85	0.85	0.48	0.48	0.48	0.54	0.54	0.54
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	963	76	46	917	409	726	150	727	778	0	822
Arrive On Green	0.08	0.38	0.38	0.03	0.26	0.26	0.52	0.52	0.52	0.52	0.00	0.52
Sat Flow, veh/h	1781	3335	264	1781	3554	1585	1331	290	1403	1346	0	1585
Grp Volume(v), veh/h	78	423	435	35	515	42	73	0	35	61	0	70
Grp Sat Flow(s),veh/h/ln	1781	1777	1823	1781	1777	1585	1331	0	1693	1346	0	1585
Q Serve(g_s), s	3.9	19.3	19.3	1.8	11.3	1.8	2.7	0.0	0.9	2.1	0.0	2.0
Cycle Q Clear(g_c), s	3.9	19.3	19.3	1.8	11.3	1.8	5.7	0.0	0.9	3.0	0.0	2.0
Prop In Lane	1.00		0.14	1.00		1.00	1.00		0.83	1.00		1.00
Lane Grp Cap(c), veh/h	101	513	527	46	917	409	726	0	878	778	0	822
V/C Ratio(X)	0.77	0.83	0.83	0.76	0.56	0.10	0.10	0.00	0.04	0.08	0.00	0.09
Avail Cap(c_a), veh/h	297	809	830	198	1421	634	726	0	878	778	0	822
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.64	0.64	0.64	0.70	0.70	0.70	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.0	25.7	25.7	43.6	29.0	25.4	12.6	0.0	10.7	11.4	0.0	10.9
Incr Delay (d2), s/veh	7.7	2.6	2.5	16.1	0.4	0.1	0.3	0.0	0.1	0.2	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	6.8	7.0	0.9	4.5	0.6	0.8	0.0	0.4	0.7	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.8	28.2	28.2	59.7	29.4	25.5	12.9	0.0	10.7	11.6	0.0	11.1
LnGrp LOS	D	C	C	E	C	C	B		B	B		B
Approach Vol, veh/h		936			592			108			131	
Approach Delay, s/veh		29.9			30.9			12.2			11.3	
Approach LOS		C			C			B			B	

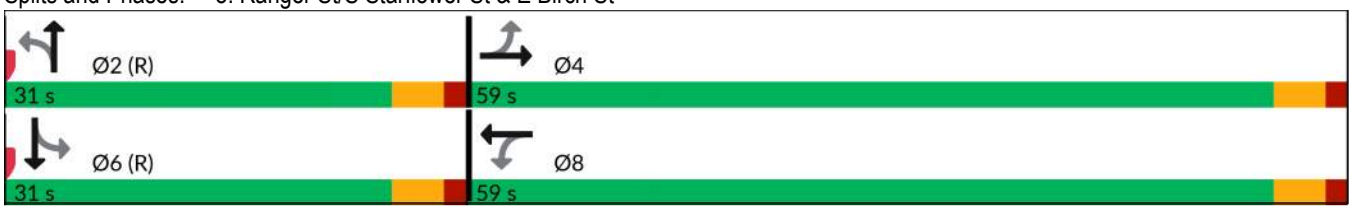
Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		51.7	7.3	31.0		51.7	10.1	28.2
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		24.0	10.0	41.0		24.0	15.0	36.0
Max Q Clear Time (g_c+I1), s		7.7	3.8	21.3		5.0	5.9	13.3
Green Ext Time (p_c), s		0.3	0.0	4.6		0.5	0.1	3.1

Intersection Summary	
HCM 7th Control Delay, s/veh	27.8
HCM 7th LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	18	780	12	637	39	0	24	2
Future Volume (vph)	18	780	12	637	39	0	24	2
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	59.0	59.0	59.0	59.0	31.0	31.0	31.0	31.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%	34.4%	34.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	31.8	31.8	31.8	31.8		48.2		48.2
Actuated g/C Ratio	0.35	0.35	0.35	0.35		0.54		0.54
v/c Ratio	0.18	0.71	0.19	0.71		0.07		0.13
Control Delay (s/veh)	21.9	26.7	19.3	25.1		8.7		6.9
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay (s/veh)	21.9	26.7	19.3	25.1		8.7		6.9
LOS	C	C	B	C		A		A
Approach Delay (s/veh)		26.6		25.0		8.7		6.9
Approach LOS		C		C		A		A

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 88 (98%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay (s/veh): 24.4	Intersection LOS: C
Intersection Capacity Utilization 37.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Ranger St/S Starflower St & E Birch St



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	20	993	16	881	57	111
v/c Ratio	0.18	0.71	0.19	0.71	0.07	0.13
Control Delay (s/veh)	21.9	26.7	19.3	25.1	8.7	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.9	26.7	19.3	25.1	8.7	6.9
Queue Length 50th (ft)	8	245	7	251	8	13
Queue Length 95th (ft)	23	264	18	219	23	17
Internal Link Dist (ft)		759		1715	671	28
Turn Bay Length (ft)	145		150			
Base Capacity (vph)	187	2375	141	2122	841	848
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	0.42	0.11	0.42	0.07	0.13

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	780	104	12	637	6	39	0	1	24	2	33
Future Volume (veh/h)	18	780	104	12	637	6	39	0	1	24	2	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1945	1945	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	20	876	117	16	873	8	56	0	1	45	4	62
Peak Hour Factor	0.89	0.89	0.89	0.73	0.73	0.73	0.70	0.70	0.70	0.53	0.53	0.53
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	157	1164	155	148	1281	12	824	1	13	365	52	456
Arrive On Green	0.36	0.36	0.36	0.12	0.12	0.12	0.53	0.00	0.53	0.53	0.53	0.53
Sat Flow, veh/h	630	3277	438	567	3608	33	1395	1	25	579	97	855
Grp Volume(v), veh/h	20	494	499	16	430	451	57	0	0	111	0	0
Grp Sat Flow(s),veh/h/ln	630	1848	1866	567	1777	1864	1421	0	0	1531	0	0
Q Serve(g_s), s	2.6	21.2	21.2	2.5	20.9	20.9	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	23.5	21.2	21.2	23.6	20.9	20.9	1.3	0.0	0.0	2.9	0.0	0.0
Prop In Lane	1.00		0.23	1.00		0.02	0.98		0.02	0.41		0.56
Lane Grp Cap(c), veh/h	157	656	663	148	631	662	838	0	0	873	0	0
V/C Ratio(X)	0.13	0.75	0.75	0.11	0.68	0.68	0.07	0.00	0.00	0.13	0.00	0.00
Avail Cap(c_a), veh/h	312	1109	1120	287	1066	1119	838	0	0	873	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	35.7	25.5	25.5	46.3	34.8	34.8	10.1	0.0	0.0	10.5	0.0	0.0
Incr Delay (d2), s/veh	0.4	1.8	1.8	0.3	1.2	1.1	0.2	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	8.7	8.7	0.4	9.9	10.4	0.6	0.0	0.0	1.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.1	27.3	27.3	46.6	36.0	36.0	10.2	0.0	0.0	10.8	0.0	0.0
LnGrp LOS	D	C	C	D	D	D	B			B		
Approach Vol, veh/h		1013			897			57			111	
Approach Delay, s/veh		27.5			36.2			10.2			10.8	
Approach LOS		C			D			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	53.0	37.0	53.0	37.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	26.0	54.0	26.0	54.0
Max Q Clear Time (g_c+I1), s	3.3	25.5	4.9	25.6
Green Ext Time (p_c), s	0.2	6.5	0.6	5.4

Intersection Summary	
HCM 7th Control Delay, s/veh	29.9
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	15	44	53	30	2
Future Vol, veh/h	2	15	44	53	30	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	53	53	81	81	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	28	54	65	41	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	120	0	-	0	123	87
Stage 1	-	-	-	-	87	-
Stage 2	-	-	-	-	36	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1468	-	-	-	872	971
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	987	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1468	-	-	-	870	971
Mov Cap-2 Maneuver	-	-	-	-	870	-
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	987	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.88	0	9.33
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	212	-	-	-	876
HCM Lane V/C Ratio	0.003	-	-	-	0.05
HCM Control Delay (s/veh)	7.5	0	-	-	9.3
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	383	700	0
Future Vol, veh/h	0	0	0	383	700	0
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	92	92	86	86	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	445	843	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1066	422	-	0	-	0
Stage 1	843	-	-	-	-	-
Stage 2	223	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	-	-
Pot Cap-1 Maneuver	217	581	0	-	-	-
Stage 1	382	-	0	-	-	-
Stage 2	793	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	217	581	-	-	-	-
Mov Cap-2 Maneuver	217	-	-	-	-	-
Stage 1	382	-	-	-	-	-
Stage 2	793	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	376	704	0
Future Vol, veh/h	0	0	0	376	704	0
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	92	92	86	86	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	437	848	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	424	-	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	578	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	578	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	45	78	0	0	0
Future Vol, veh/h	0	45	78	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	60	60	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	57	130	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	130	0	-	0	158	130
Stage 1	-	-	-	-	130	-
Stage 2	-	-	-	-	28	-
Critical Hdwy	4.13	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1454	-	-	-	825	919
Stage 1	-	-	-	-	895	-
Stage 2	-	-	-	-	991	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1454	-	-	-	825	919
Mov Cap-2 Maneuver	-	-	-	-	825	-
Stage 1	-	-	-	-	895	-
Stage 2	-	-	-	-	991	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1454	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	54	0	0	51
Future Vol, veh/h	0	0	54	0	0	51
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	74	0	0	70

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	144	74	0	0	74	0
Stage 1	74	-	-	-	-	-
Stage 2	70	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	849	988	-	-	1526	-
Stage 1	949	-	-	-	-	-
Stage 2	953	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	849	988	-	-	1526	-
Mov Cap-2 Maneuver	849	-	-	-	-	-
Stage 1	949	-	-	-	-	-
Stage 2	953	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	-	1526	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s/veh)	-	-	0	0	0	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	55	0	0	55
Future Vol, veh/h	0	0	55	0	0	55
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	92	92	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	75	0	0	75

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	151	75	0	0	75	0
Stage 1	75	-	-	-	-	-
Stage 2	75	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	841	986	-	-	1524	-
Stage 1	948	-	-	-	-	-
Stage 2	948	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	841	986	-	-	1524	-
Mov Cap-2 Maneuver	841	-	-	-	-	-
Stage 1	948	-	-	-	-	-
Stage 2	948	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1524	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	55	0	0	55	0
Future Vol, veh/h	0	55	0	0	55	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	92	92	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	75	0	0	75	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	0	75
Stage 1	-	-	0	0
Stage 2	-	-	0	75
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	-	815
Stage 1	-	-	-	-
Stage 2	-	-	-	832
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	0
Mov Cap-2 Maneuver	-	-	-	0
Stage 1	-	-	-	0
Stage 2	-	-	-	0

Approach	EB	WB
HCM Control Delay, s/v	0	0
HCM LOS		A

Minor Lane/Major Mvmt	EBT	EBR	WBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	-	0
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	216	1429	139	111	1214	145	89	288	131	102	193	81
Future Volume (vph)	216	1429	139	111	1214	145	89	288	131	102	193	81
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0
Total Split (s)	26.0	72.0	72.0	18.0	64.0	64.0	16.0	33.0	33.0	17.0	34.0	34.0
Total Split (%)	18.6%	51.4%	51.4%	12.9%	45.7%	45.7%	11.4%	23.6%	23.6%	12.1%	24.3%	24.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	14.3	53.4	53.4	10.1	49.2	49.2	11.0	46.5	46.5	10.0	45.5	45.5
Actuated g/C Ratio	0.10	0.38	0.38	0.07	0.35	0.35	0.08	0.33	0.33	0.07	0.33	0.33
v/c Ratio	0.63	0.75	0.21	0.47	0.71	0.23	0.38	0.29	0.24	0.47	0.19	0.15
Control Delay (s/veh)	68.3	39.9	4.3	68.3	41.2	3.3	65.7	37.7	7.1	73.9	25.8	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	68.3	39.9	4.3	68.3	41.2	3.3	65.7	37.7	7.1	73.9	25.8	1.3
LOS	E	D	A	E	D	A	E	D	A	E	C	A
Approach Delay (s/veh)		40.5			39.5			34.7			33.6	
Approach LOS		D			D			C			C	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 10 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay (s/veh): 38.7	Intersection LOS: D
Intersection Capacity Utilization 58.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Valencia Ave & Imperial Hwy

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	220	1458	142	116	1265	151	103	335	152	115	217	91
v/c Ratio	0.63	0.75	0.21	0.47	0.71	0.23	0.38	0.29	0.24	0.47	0.19	0.15
Control Delay (s/veh)	68.3	39.9	4.3	68.3	41.2	3.3	65.7	37.7	7.1	73.9	25.8	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	68.3	39.9	4.3	68.3	41.2	3.3	65.7	37.7	7.1	73.9	25.8	1.3
Queue Length 50th (ft)	101	417	0	53	361	0	46	118	0	44	45	1
Queue Length 95th (ft)	141	425	39	85	379	32	74	177	50	73	79	4
Internal Link Dist (ft)		540			646			773			1102	
Turn Bay Length (ft)	190		300	260		185	150		145	250		185
Base Capacity (vph)	514	2433	831	318	2142	766	269	1175	627	298	1150	603
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.60	0.17	0.36	0.59	0.20	0.38	0.29	0.24	0.39	0.19	0.15

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	216	1429	139	111	1214	145	89	288	131	102	193	81
Future Volume (veh/h)	216	1429	139	111	1214	145	89	288	131	102	193	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	220	1458	142	116	1265	151	103	335	152	115	217	91
Peak Hour Factor	0.98	0.98	0.98	0.96	0.96	0.96	0.86	0.86	0.86	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	277	1826	567	165	1660	515	845	1439	642	162	736	328
Arrive On Green	0.08	0.36	0.36	0.05	0.33	0.33	0.24	0.40	0.40	0.09	0.41	0.41
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	220	1458	142	116	1265	151	103	335	152	115	217	91
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	8.8	35.9	4.5	4.6	31.1	9.9	3.2	8.7	8.8	4.5	5.7	4.3
Cycle Q Clear(g_c), s	8.8	35.9	4.5	4.6	31.1	9.9	3.2	8.7	8.8	4.5	5.7	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	277	1826	567	165	1660	515	845	1439	642	162	736	328
V/C Ratio(X)	0.79	0.80	0.25	0.70	0.76	0.29	0.12	0.23	0.24	0.71	0.29	0.28
Avail Cap(c_a), veh/h	518	2444	759	321	2152	668	845	1439	642	296	736	328
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.2	40.4	8.2	65.7	42.4	35.2	41.2	27.4	27.4	62.5	34.2	22.3
Incr Delay (d2), s/veh	5.1	1.4	0.2	5.3	1.2	0.3	0.1	0.4	0.9	5.6	1.0	2.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	14.7	3.2	2.1	12.8	3.8	1.4	3.8	3.4	2.0	2.4	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	68.4	41.9	8.4	71.0	43.6	35.5	41.2	27.8	28.3	68.1	35.2	24.4
LnGrp LOS	E	D	A	E	D	D	D	C	C	E	D	C
Approach Vol, veh/h		1820			1532			590			423	
Approach Delay, s/veh		42.5			44.9			30.2			41.8	
Approach LOS		D			D			C			D	

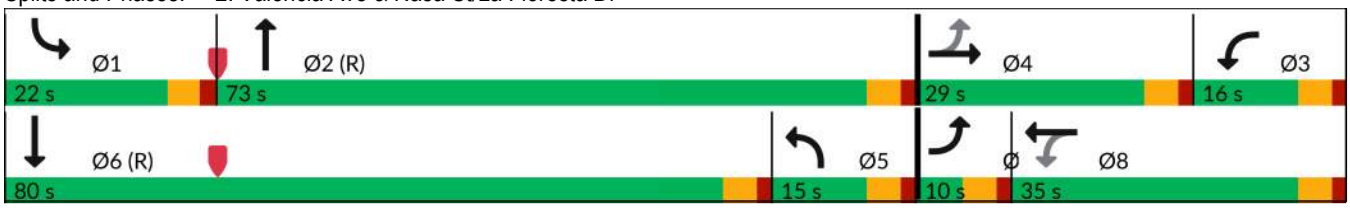
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.6	61.7	11.7	55.1	39.2	34.0	16.2	50.5
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	12.0	28.0	13.0	67.0	11.0	29.0	21.0	59.0
Max Q Clear Time (g_c+I1), s	6.5	10.8	6.6	37.9	5.2	7.7	10.8	33.1
Green Ext Time (p_c), s	0.1	2.4	0.1	12.1	0.1	1.4	0.5	9.7

Intersection Summary	
HCM 7th Control Delay, s/veh	41.6
HCM 7th LOS	D

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	2	0	25	0	20	583	36	311
Future Volume (vph)	2	0	25	0	20	583	36	311
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	10.0	29.0	16.0	35.0	15.0	73.0	22.0	80.0
Total Split (%)	7.1%	20.7%	11.4%	25.0%	10.7%	52.1%	15.7%	57.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	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	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
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	5.5	5.5	14.1	13.0	8.3	103.3	8.8	106.0
Actuated g/C Ratio	0.04	0.04	0.10	0.09	0.06	0.74	0.06	0.76
v/c Ratio	0.04	0.21	0.22	0.11	0.11	0.24	0.39	0.12
Control Delay (s/veh)	66.0	0.8	61.4	0.4	37.5	2.0	90.3	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	66.0	0.8	61.4	0.4	37.5	2.0	90.3	6.0
LOS	E	A	E	A	D	A	F	A
Approach Delay (s/veh)		2.3		24.4		3.1		14.7
Approach LOS		A		C		A		B

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 9 (6%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.39	
Intersection Signal Delay (s/veh): 8.0	Intersection LOS: A
Intersection Capacity Utilization 41.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Valencia Ave & Nasa St/La Floresta Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	3	130	37	57	23	710	43	371
v/c Ratio	0.04	0.21	0.22	0.11	0.11	0.24	0.39	0.12
Control Delay (s/veh)	66.0	0.8	61.4	0.4	37.5	2.0	90.3	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	66.0	0.8	61.4	0.4	37.5	2.0	90.3	6.0
Queue Length 50th (ft)	3	0	31	0	8	21	40	56
Queue Length 95th (ft)	12	0	53	0	m19	45	79	71
Internal Link Dist (ft)		332		460		1102		185
Turn Bay Length (ft)			105		175		200	
Base Capacity (vph)	69	742	227	666	245	2931	214	3036
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.18	0.16	0.09	0.09	0.24	0.20	0.12

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	0	100	25	0	39	20	583	41	36	311	1
Future Volume (veh/h)	2	0	100	25	0	39	20	583	41	36	311	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.04	1.04
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1945	1945
Adj Flow Rate, veh/h	3	0	130	37	0	57	23	662	47	43	370	1
Peak Hour Factor	0.77	0.77	0.77	0.68	0.68	0.68	0.88	0.88	0.88	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	93	0	156	95	0	185	696	2470	175	56	2026	5
Arrive On Green	0.00	0.00	0.10	0.02	0.00	0.12	0.20	0.71	0.71	0.01	0.18	0.18
Sat Flow, veh/h	1781	0	1585	1781	0	1585	3456	3500	248	1781	3781	10
Grp Volume(v), veh/h	3	0	130	37	0	57	23	349	360	43	181	190
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1585	1728	1848	1900	1781	1848	1943
Q Serve(g_s), s	0.2	0.0	11.3	0.0	0.0	4.6	0.7	9.6	9.6	3.4	11.7	11.7
Cycle Q Clear(g_c), s	0.2	0.0	11.3	0.0	0.0	4.6	0.7	9.6	9.6	3.4	11.7	11.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		0.01
Lane Grp Cap(c), veh/h	93	0	156	95	0	185	696	1304	1341	56	990	1041
V/C Ratio(X)	0.03	0.00	0.83	0.39	0.00	0.31	0.03	0.27	0.27	0.77	0.18	0.18
Avail Cap(c_a), veh/h	151	0	272	196	0	340	696	1304	1341	216	990	1041
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.93	0.93	0.93	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.9	0.0	62.0	67.0	0.0	56.6	44.9	7.5	7.5	68.8	31.6	31.6
Incr Delay (d2), s/veh	0.1	0.0	11.0	2.6	0.0	0.9	0.0	0.5	0.5	19.5	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	5.1	1.4	0.0	1.9	0.3	3.6	3.7	1.8	5.7	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.1	0.0	73.0	69.6	0.0	57.6	45.0	7.9	7.9	88.2	32.0	31.9
LnGrp LOS	E		E	E		E	D	A	A	F	C	C
Approach Vol, veh/h		133			94			732			414	
Approach Delay, s/veh		72.7			62.3			9.1			37.8	
Approach LOS		E			E			A			D	

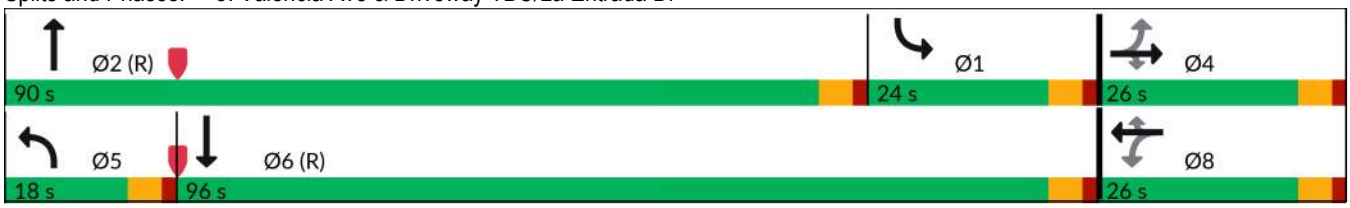
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	103.8	8.1	18.8	33.2	80.0	5.4	21.4
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	17.0	68.0	11.0	24.0	10.0	75.0	5.0	30.0
Max Q Clear Time (g_c+I1), s	5.4	11.6	2.0	13.3	2.7	13.7	2.2	6.6
Green Ext Time (p_c), s	0.0	4.4	0.0	0.5	0.0	2.0	0.0	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	27.6
HCM 7th LOS	C

Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	1	5	0	12	1	640	14	333
Future Volume (vph)	1	5	0	12	1	640	14	333
Turn Type	Perm	Perm	NA	Perm	Prot	NA	Prot	NA
Protected Phases			8		5	2	1	6
Permitted Phases	4	8		8				
Detector Phase	4	8	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	26.0	26.0	26.0	26.0	18.0	90.0	24.0	96.0
Total Split (%)	18.6%	18.6%	18.6%	18.6%	12.9%	64.3%	17.1%	68.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0		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	5.0
Lead/Lag					Lead	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	6.4		6.4	6.4	5.7	120.2	11.2	127.5
Actuated g/C Ratio	0.05		0.05	0.05	0.04	0.86	0.08	0.91
v/c Ratio	0.00		0.10	0.12	0.01	0.20	0.11	0.10
Control Delay (s/veh)	0.0		66.0	1.6	68.0	4.3	59.4	0.9
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	0.0		66.0	1.6	68.0	4.3	59.4	0.9
LOS	A		E	A	E	A	E	A
Approach Delay (s/veh)			20.0			4.4		3.3
Approach LOS			B			A		A

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 85 (61%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.20	
Intersection Signal Delay (s/veh): 4.4	Intersection LOS: A
Intersection Capacity Utilization 29.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Valencia Ave & Driveway TBC/La Entrada Dr



Lane Group	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1	8	20	1	698	16	383
v/c Ratio	0.00	0.10	0.12	0.01	0.20	0.11	0.10
Control Delay (s/veh)	0.0	66.0	1.6	68.0	4.3	59.4	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	0.0	66.0	1.6	68.0	4.3	59.4	0.9
Queue Length 50th (ft)	0	7	0	1	28	16	17
Queue Length 95th (ft)	0	18	0	m3	203	m40	27
Internal Link Dist (ft)		755			786		640
Turn Bay Length (ft)	150			223		160	
Base Capacity (vph)	737	265	317	164	3436	240	3654
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.03	0.06	0.01	0.20	0.07	0.10

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	1	5	0	12	1	640	9	14	333	0
Future Volume (veh/h)	0	0	1	5	0	12	1	640	9	14	333	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1945	1870
Adj Flow Rate, veh/h	0	0	1	8	0	20	1	688	10	16	383	0
Peak Hour Factor	0.92	0.92	0.92	0.61	0.61	0.61	0.93	0.93	0.93	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	36	31	79	0	31	2	2264	33	475	3224	0
Arrive On Green	0.00	0.00	0.02	0.02	0.00	0.02	0.00	1.00	1.00	0.53	1.00	0.00
Sat Flow, veh/h	0	1870	1585	1416	0	1585	1781	3729	54	1781	3793	0
Grp Volume(v), veh/h	0	0	1	8	0	20	1	341	357	16	383	0
Grp Sat Flow(s),veh/h/ln	0	1870	1585	1416	0	1585	1781	1848	1935	1781	1848	0
Q Serve(g_s), s	0.0	0.0	0.1	0.8	0.0	1.8	0.1	0.0	0.0	0.6	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.1	0.8	0.0	1.8	0.1	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		0.03	1.00		0.00
Lane Grp Cap(c), veh/h	0	36	31	79	0	31	2	1122	1175	475	3224	0
V/C Ratio(X)	0.00	0.00	0.03	0.10	0.00	0.65	0.52	0.30	0.30	0.03	0.12	0.00
Avail Cap(c_a), veh/h	0	281	238	264	0	238	165	1122	1175	475	3224	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	67.4	67.7	0.0	68.2	69.8	0.0	0.0	24.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.4	0.6	0.0	21.1	132.4	0.7	0.7	0.0	0.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.3	0.0	0.9	0.1	0.2	0.2	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	67.8	68.3	0.0	89.2	202.3	0.7	0.7	24.2	0.1	0.0
LnGrp LOS			E	E		F	F	A	A	C	A	
Approach Vol, veh/h		1			28			699			399	
Approach Delay, s/veh		67.8			83.2			1.0			1.0	
Approach LOS		E			F			A			A	

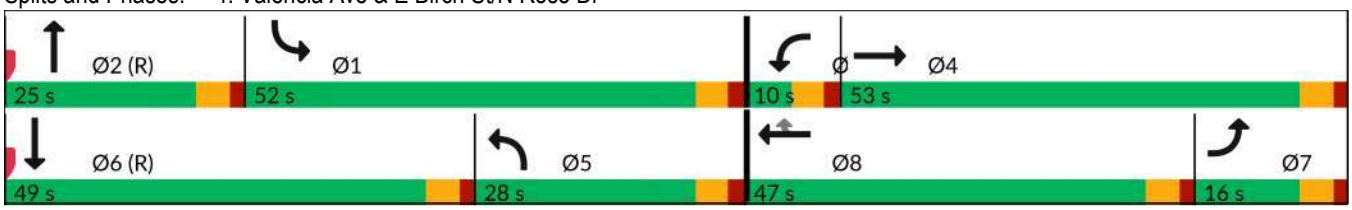
Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	42.3	90.0		7.7	5.2	127.1		7.7
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	19.0	85.0		21.0	13.0	91.0		21.0
Max Q Clear Time (g_c+I1), s	2.6	2.0		2.1	2.1	2.0		3.8
Green Ext Time (p_c), s	0.0	4.3		0.0	0.0	2.5		0.0

Intersection Summary		
HCM 7th Control Delay, s/veh		3.1
HCM 7th LOS		A

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	194	477	8	414	760	162	463	494	219
Future Volume (vph)	194	477	8	414	760	162	463	494	219
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	16.0	53.0	10.0	47.0	47.0	28.0	25.0	52.0	49.0
Total Split (%)	11.4%	37.9%	7.1%	33.6%	33.6%	20.0%	17.9%	37.1%	35.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	11.6	49.1	5.0	34.5	34.5	23.0	26.9	47.0	50.9
Actuated g/C Ratio	0.08	0.35	0.04	0.25	0.25	0.16	0.19	0.34	0.36
v/c Ratio	0.73	0.51	0.14	0.51	0.94	0.59	0.65	0.99	0.24
Control Delay (s/veh)	77.7	35.9	70.5	46.5	30.1	70.5	32.5	69.6	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	77.7	35.9	70.5	46.5	30.1	70.5	32.5	69.6	9.0
LOS	E	D	E	D	C	E	C	E	A
Approach Delay (s/veh)		46.2		36.1			42.1		48.7
Approach LOS		D		D			D		D

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 88 (63%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay (s/veh): 42.6	Intersection LOS: D
Intersection Capacity Utilization 78.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Valencia Ave & E Birch St/N Rose Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	206	627	9	445	817	171	502	588	309
v/c Ratio	0.73	0.51	0.14	0.51	0.94	0.59	0.65	0.99	0.24
Control Delay (s/veh)	77.7	35.9	70.5	46.5	30.1	70.5	32.5	69.6	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	77.7	35.9	70.5	46.5	30.1	70.5	32.5	69.6	9.0
Queue Length 50th (ft)	94	205	8	175	192	153	182	569	72
Queue Length 95th (ft)	#154	293	28	223	#495	243	#315	m#711	m64
Internal Link Dist (ft)		1706		346			363		2026
Turn Bay Length (ft)	190		230		285	205		160	
Base Capacity (vph)	287	1290	63	1061	919	290	768	594	1266
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	0.72	0.49	0.14	0.42	0.89	0.59	0.65	0.99	0.24

Intersection Summary

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	194	477	113	8	414	760	162	463	14	494	219	40
Future Volume (veh/h)	194	477	113	8	414	760	162	463	14	494	219	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	206	507	120	9	445	817	171	487	15	588	261	48
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.95	0.95	0.95	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	1042	245	15	1066	476	302	523	16	607	944	171
Arrive On Green	0.07	0.36	0.36	0.01	0.30	0.30	0.34	0.29	0.29	0.57	0.52	0.52
Sat Flow, veh/h	3456	2854	672	1781	3554	1585	1781	3660	113	1781	3005	545
Grp Volume(v), veh/h	206	315	312	9	445	817	171	246	256	588	153	156
Grp Sat Flow(s),veh/h/ln	1728	1777	1749	1781	1777	1585	1781	1848	1925	1781	1777	1772
Q Serve(g_s), s	8.2	19.1	19.3	0.7	14.0	42.0	11.0	18.1	18.2	44.4	6.7	6.9
Cycle Q Clear(g_c), s	8.2	19.1	19.3	0.7	14.0	42.0	11.0	18.1	18.2	44.4	6.7	6.9
Prop In Lane	1.00		0.38	1.00		1.00	1.00		0.06	1.00		0.31
Lane Grp Cap(c), veh/h	254	648	638	15	1066	476	302	264	275	607	558	557
V/C Ratio(X)	0.81	0.49	0.49	0.60	0.42	1.72	0.57	0.93	0.93	0.97	0.27	0.28
Avail Cap(c_a), veh/h	272	648	638	64	1066	476	302	264	275	607	558	557
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.67	1.67	1.67
Upstream Filter(I)	0.60	0.60	0.60	1.00	1.00	1.00	1.00	1.00	1.00	0.81	0.81	0.81
Uniform Delay (d), s/veh	63.9	34.3	34.4	69.2	39.2	49.0	42.1	49.3	49.3	29.4	24.4	24.4
Incr Delay (d2), s/veh	10.2	0.3	0.3	32.7	0.3	332.0	2.5	40.0	39.4	25.2	1.0	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	8.1	8.0	0.5	6.2	60.2	4.4	9.8	10.2	18.4	2.8	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	74.2	34.6	34.7	101.9	39.5	381.0	44.5	89.3	88.7	54.6	25.4	25.5
LnGrp LOS	E	C	C	F	D	F	D	F	F	D	C	C
Approach Vol, veh/h		833			1271			673			897	
Approach Delay, s/veh		44.4			259.4			77.7			44.5	
Approach LOS		D			F			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	52.7	25.0	6.2	56.1	28.7	49.0	15.3	47.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	47.0	20.0	5.0	48.0	23.0	44.0	11.0	42.0
Max Q Clear Time (g_c+I1), s	46.4	20.2	2.7	21.3	13.0	8.9	10.2	44.0
Green Ext Time (p_c), s	0.2	0.0	0.0	3.5	0.3	1.7	0.1	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	124.9
HCM 7th LOS	F

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	23	729	198	249	358	189	868	14	151
Future Volume (vph)	23	729	198	249	358	189	868	14	151
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA
Protected Phases	7	4	3	8	5	2		1	6
Permitted Phases							2		
Detector Phase	7	4	3	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	21.0	21.0	10.0	21.0
Total Split (s)	11.0	39.0	16.0	44.0	48.0	75.0	75.0	10.0	37.0
Total Split (%)	7.9%	27.9%	11.4%	31.4%	34.3%	53.6%	53.6%	7.1%	26.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	6.2	36.9	12.0	47.1	37.5	72.1	72.1	5.0	33.6
Actuated g/C Ratio	0.04	0.26	0.09	0.34	0.27	0.52	0.52	0.04	0.24
v/c Ratio	0.31	0.89	0.82	0.18	0.80	0.10	0.85	0.27	0.24
Control Delay (s/veh)	75.3	54.7	85.0	34.5	47.5	9.3	12.3	76.5	42.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	75.3	54.7	85.0	34.5	47.5	9.3	12.3	76.5	42.5
LOS	E	D	F	C	D	A	B	E	D
Approach Delay (s/veh)		55.2		56.6		20.8			45.1
Approach LOS		E		E		C			D

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 89 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay (s/veh): 39.9	Intersection LOS: D
Intersection Capacity Utilization 92.3%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 5: Valencia Ave & E Lambert Rd

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	24	1187	241	310	381	201	923	17	203
v/c Ratio	0.31	0.89	0.82	0.18	0.80	0.10	0.85	0.27	0.24
Control Delay (s/veh)	75.3	54.7	85.0	34.5	47.5	9.3	12.3	76.5	42.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	75.3	54.7	85.0	34.5	47.5	9.3	12.3	76.5	42.5
Queue Length 50th (ft)	21	341	114	73	356	31	145	15	76
Queue Length 95th (ft)	54	#466	#163	97	m428	m37	m827	39	105
Internal Link Dist (ft)		759		811		2026			731
Turn Bay Length (ft)	230		625		300		120	240	
Base Capacity (vph)	79	1338	293	1705	543	2065	1089	63	841
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	0.30	0.89	0.82	0.18	0.70	0.10	0.85	0.27	0.24

Intersection Summary

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	729	386	198	249	5	358	189	868	14	151	19
Future Volume (veh/h)	23	729	386	198	249	5	358	189	868	14	151	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	24	776	411	241	304	6	381	201	0	17	180	23
Peak Hour Factor	0.94	0.94	0.94	0.82	0.82	0.82	0.94	0.94	0.94	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	31	827	385	272	1568	31	547	1848		64	726	91
Arrive On Green	0.02	0.24	0.24	0.08	0.30	0.30	0.51	0.83	0.00	0.04	0.23	0.23
Sat Flow, veh/h	1781	3404	1585	3456	5155	101	1781	3696	1648	1781	3175	400
Grp Volume(v), veh/h	24	776	411	241	200	110	381	201	0	17	100	103
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1728	1702	1852	1781	1848	1648	1781	1777	1798
Q Serve(g_s), s	1.9	31.3	34.0	9.7	6.1	6.1	22.7	1.4	0.0	1.3	6.4	6.6
Cycle Q Clear(g_c), s	1.9	31.3	34.0	9.7	6.1	6.1	22.7	1.4	0.0	1.3	6.4	6.6
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	31	827	385	272	1035	563	547	1848		64	406	411
V/C Ratio(X)	0.78	0.94	1.07	0.89	0.19	0.19	0.70	0.11		0.27	0.25	0.25
Avail Cap(c_a), veh/h	76	827	385	272	1035	563	547	1848		64	406	411
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.47	0.47	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.5	52.0	53.0	63.9	36.0	36.0	29.1	5.9	0.0	65.7	44.1	44.2
Incr Delay (d2), s/veh	33.0	18.2	65.0	27.8	0.1	0.2	1.8	0.1	0.0	2.2	1.4	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	15.0	20.0	5.2	2.5	2.7	8.0	0.5	0.0	0.6	2.9	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	101.6	70.1	118.0	91.7	36.1	36.2	31.0	5.9	0.0	67.9	45.6	45.7
LnGrp LOS	F	E	F	F	D	D	C	A		E	D	D
Approach Vol, veh/h		1211			551			582			220	
Approach Delay, s/veh		87.0			60.4			22.3			47.3	
Approach LOS		F			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	75.0	16.0	39.0	48.0	37.0	7.4	47.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	5.0	70.0	11.0	34.0	43.0	32.0	6.0	39.0
Max Q Clear Time (g_c+I1), s	3.3	3.4	11.7	36.0	24.7	8.6	3.9	8.1
Green Ext Time (p_c), s	0.0	1.2	0.0	0.0	1.0	1.0	0.0	1.7

Intersection Summary	
HCM 7th Control Delay, s/veh	63.2
HCM 7th LOS	E

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	38	0	1	12	13	3	4	7	16	0	3
Future Vol, veh/h	18	38	0	1	12	13	3	4	7	16	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	78	78	78	50	50	50	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	54	0	1	15	17	6	8	14	21	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	32	0	0	54	0	0	122	139	54	135	131	24
Stage 1	-	-	-	-	-	-	104	104	-	26	26	-
Stage 2	-	-	-	-	-	-	18	35	-	108	104	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1580	-	-	1552	-	-	853	752	1014	837	760	1053
Stage 1	-	-	-	-	-	-	902	809	-	991	873	-
Stage 2	-	-	-	-	-	-	1001	866	-	897	809	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1580	-	-	1552	-	-	835	739	1014	802	747	1053
Mov Cap-2 Maneuver	-	-	-	-	-	-	835	739	-	802	747	-
Stage 1	-	-	-	-	-	-	887	796	-	990	873	-
Stage 2	-	-	-	-	-	-	997	865	-	861	796	-

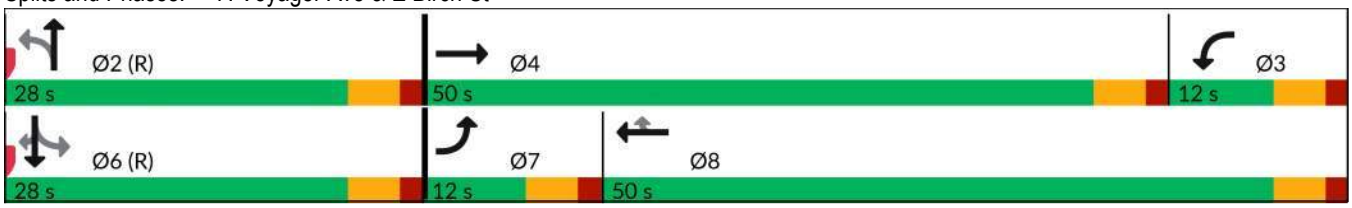
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	2.35	0.28	9.23	9.45
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	880	579	-	-	63	-	-	834
HCM Lane V/C Ratio	0.032	0.016	-	-	0.001	-	-	0.03
HCM Control Delay (s/veh)	9.2	7.3	0	-	7.3	0	-	9.5
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	5	822	2	634	11	40	0	7	0	12
Future Volume (vph)	5	822	2	634	11	40	0	7	0	12
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	7	4	3	8			2		6	
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.5	10.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	12.0	50.0	12.0	50.0	50.0	28.0	28.0	28.0	28.0	28.0
Total Split (%)	13.3%	55.6%	13.3%	55.6%	55.6%	31.1%	31.1%	31.1%	31.1%	31.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.9	30.3	5.7	30.2	30.2	47.5	47.5		47.5	47.5
Actuated g/C Ratio	0.07	0.34	0.06	0.34	0.34	0.53	0.53		0.53	0.53
v/c Ratio	0.04	0.73	0.02	0.66	0.02	0.09	0.05		0.01	0.02
Control Delay (s/veh)	59.6	9.0	39.5	27.9	0.1	14.6	0.1		15.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	59.6	9.0	39.5	27.9	0.1	14.6	0.1		15.3	0.0
LOS	E	A	D	C	A	B	A		B	A
Approach Delay (s/veh)		9.3		27.4			8.5		5.5	
Approach LOS		A		C			A		A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 31 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay (s/veh): 17.1	Intersection LOS: B
Intersection Capacity Utilization 40.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 7: Voyager Ave & E Birch St



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	5	871	2	783	14	69	50	10	18
v/c Ratio	0.04	0.73	0.02	0.66	0.02	0.09	0.05	0.01	0.02
Control Delay (s/veh)	59.6	9.0	39.5	27.9	0.1	14.6	0.1	15.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	59.6	9.0	39.5	27.9	0.1	14.6	0.1	15.3	0.0
Queue Length 50th (ft)	2	25	1	198	0	17	0	2	0
Queue Length 95th (ft)	m5	32	8	198	0	35	0	11	0
Internal Link Dist (ft)		1715		1706			560	102	
Turn Bay Length (ft)	200		140		225	125			95
Base Capacity (vph)	137	1766	137	1769	834	738	1069	711	903
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	0.04	0.49	0.01	0.44	0.02	0.09	0.05	0.01	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	822	14	2	634	11	40	0	29	7	0	12
Future Volume (veh/h)	5	822	14	2	634	11	40	0	29	7	0	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	856	15	2	783	14	69	0	50	10	0	18
Peak Hour Factor	0.96	0.96	0.96	0.81	0.81	0.81	0.58	0.58	0.58	0.68	0.68	0.68
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	9	1001	18	12	1000	446	818	0	901	801	0	866
Arrive On Green	0.01	0.56	0.56	0.01	0.28	0.28	0.55	0.00	0.55	0.55	0.00	0.55
Sat Flow, veh/h	1781	3573	63	1781	3554	1585	1395	0	1648	1320	0	1585
Grp Volume(v), veh/h	5	426	445	2	783	14	69	0	50	10	0	18
Grp Sat Flow(s),veh/h/ln	1781	1777	1859	1781	1777	1585	1395	0	1648	1320	0	1585
Q Serve(g_s), s	0.3	18.2	18.2	0.1	18.3	0.6	2.2	0.0	1.3	0.3	0.0	0.5
Cycle Q Clear(g_c), s	0.3	18.2	18.2	0.1	18.3	0.6	3.8	0.0	1.3	1.6	0.0	0.5
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	9	498	521	12	1000	446	818	0	901	801	0	866
V/C Ratio(X)	0.54	0.86	0.86	0.17	0.78	0.03	0.08	0.00	0.06	0.01	0.00	0.02
Avail Cap(c_a), veh/h	139	888	930	139	1777	793	818	0	901	801	0	866
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	0.83	0.83	0.83	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.4	18.2	18.2	44.5	29.8	23.4	10.5	0.0	9.5	9.9	0.0	9.4
Incr Delay (d2), s/veh	31.6	3.3	3.2	5.6	1.1	0.0	0.2	0.0	0.1	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.8	5.0	0.1	7.3	0.2	0.7	0.0	0.5	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	76.1	21.5	21.4	50.1	30.9	23.5	10.7	0.0	9.7	9.9	0.0	9.4
LnGrp LOS	E	C	C	D	C	C	B		A	A		A
Approach Vol, veh/h		876			799			119			28	
Approach Delay, s/veh		21.8			30.9			10.3			9.6	
Approach LOS		C			C			B			A	

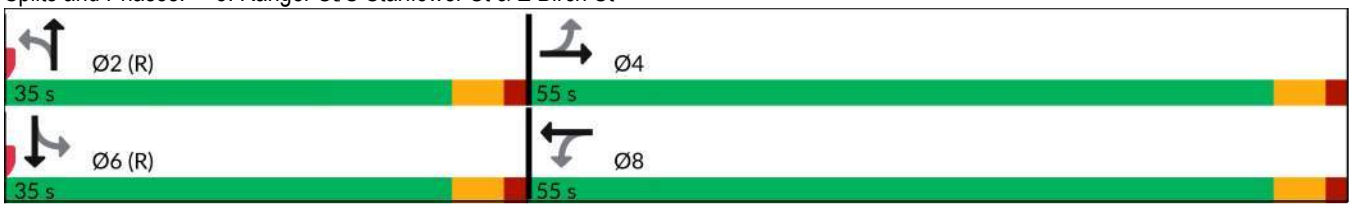
Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		54.2	5.6	30.2		54.2	5.5	30.3
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		23.0	7.0	45.0		23.0	7.0	45.0
Max Q Clear Time (g_c+I1), s		5.8	2.1	20.2		3.6	2.3	20.3
Green Ext Time (p_c), s		0.4	0.0	5.0		0.1	0.0	5.1

Intersection Summary	
HCM 7th Control Delay, s/veh	24.8
HCM 7th LOS	C

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	28	804	737	99	1	9	0
Future Volume (vph)	28	804	737	99	1	9	0
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA
Protected Phases		4	8		2		6
Permitted Phases	4			2		6	
Detector Phase	4	4	8	2	2	6	6
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	55.0	55.0	55.0	35.0	35.0	35.0	35.0
Total Split (%)	61.1%	61.1%	61.1%	38.9%	38.9%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0		5.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	34.1	34.1	34.1		45.9		45.9
Actuated g/C Ratio	0.38	0.38	0.38		0.51		0.51
v/c Ratio	0.32	0.61	0.73		0.29		0.05
Control Delay (s/veh)	27.0	23.8	39.4		15.1		7.7
Queue Delay	0.0	0.0	0.0		0.0		0.0
Total Delay (s/veh)	27.0	23.8	39.4		15.1		7.7
LOS	C	C	D		B		A
Approach Delay (s/veh)		23.9	39.4		15.1		7.7
Approach LOS		C	D		B		A

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay (s/veh): 29.6	Intersection LOS: C
Intersection Capacity Utilization 44.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Ranger St/S Starflower St & E Birch St



Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	32	932	981	220	42
v/c Ratio	0.32	0.61	0.73	0.29	0.05
Control Delay (s/veh)	27.0	23.8	39.4	15.1	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.0	23.8	39.4	15.1	7.7
Queue Length 50th (ft)	13	219	310	66	4
Queue Length 95th (ft)	33	231	306	67	14
Internal Link Dist (ft)		759	1715	671	28
Turn Bay Length (ft)	145				
Base Capacity (vph)	147	2223	1963	767	798
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.42	0.50	0.29	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	804	16	0	737	8	99	1	12	9	0	18
Future Volume (veh/h)	28	804	16	0	737	8	99	1	12	9	0	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1945	1945	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	32	914	18	0	970	11	194	2	24	14	0	28
Peak Hour Factor	0.88	0.88	0.88	0.76	0.76	0.76	0.51	0.51	0.51	0.65	0.65	0.65
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	157	1454	29	80	1411	16	715	12	80	286	25	514
Arrive On Green	0.39	0.39	0.39	0.00	0.13	0.13	0.50	0.50	0.50	0.50	0.00	0.50
Sat Flow, veh/h	574	3707	73	601	3599	41	1288	23	161	468	50	1035
Grp Volume(v), veh/h	32	456	476	0	479	502	220	0	0	42	0	0
Grp Sat Flow(s),veh/h/ln	574	1848	1932	601	1777	1863	1472	0	0	1553	0	0
Q Serve(g_s), s	4.6	17.9	17.9	0.0	23.2	23.2	6.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	27.8	17.9	17.9	0.0	23.2	23.2	7.6	0.0	0.0	1.2	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.02	0.88		0.11	0.33		0.67
Lane Grp Cap(c), veh/h	157	725	758	80	697	731	807	0	0	825	0	0
V/C Ratio(X)	0.20	0.63	0.63	0.00	0.69	0.69	0.27	0.00	0.00	0.05	0.00	0.00
Avail Cap(c_a), veh/h	251	1027	1073	178	987	1035	807	0	0	825	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.77	0.77	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	35.7	22.1	22.1	0.0	33.9	33.9	13.2	0.0	0.0	11.7	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.9	0.9	0.0	0.9	0.9	0.8	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	7.1	7.4	0.0	11.0	11.5	2.7	0.0	0.0	0.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.3	23.0	22.9	0.0	34.8	34.8	14.1	0.0	0.0	11.8	0.0	0.0
LnGrp LOS	D	C	C		C	C	B			B		
Approach Vol, veh/h		964			981			220			42	
Approach Delay, s/veh		23.4			34.8			14.1			11.8	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	49.7	40.3	49.7	40.3
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	30.0	50.0	30.0	50.0
Max Q Clear Time (g_c+I1), s	9.6	29.8	3.2	25.2
Green Ext Time (p_c), s	1.3	5.5	0.2	5.9

Intersection Summary	
HCM 7th Control Delay, s/veh	27.3
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	42	14	8	57	3
Future Vol, veh/h	6	42	14	8	57	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	58	58	50	50	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	72	28	16	68	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	44	0	-	0	129	36
Stage 1	-	-	-	-	36	-
Stage 2	-	-	-	-	93	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1564	-	-	-	865	1037
Stage 1	-	-	-	-	986	-
Stage 2	-	-	-	-	931	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1564	-	-	-	859	1037
Mov Cap-2 Maneuver	-	-	-	-	859	-
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	931	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.91	0	9.53
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	225	-	-	-	867
HCM Lane V/C Ratio	0.007	-	-	-	0.082
HCM Control Delay (s/veh)	7.3	0	-	-	9.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	652	341	0
Future Vol, veh/h	0	0	0	652	341	0
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	92	92	88	88	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	741	406	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	776	203	-	0	-	0
Stage 1	406	-	-	-	-	-
Stage 2	370	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	-	-
Pot Cap-1 Maneuver	334	804	0	-	-	-
Stage 1	641	-	0	-	-	-
Stage 2	668	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	334	804	-	-	-	-
Mov Cap-2 Maneuver	334	-	-	-	-	-
Stage 1	641	-	-	-	-	-
Stage 2	668	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	625	340	0
Future Vol, veh/h	0	0	0	625	340	0
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	92	92	88	88	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	710	405	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	202	-	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	805	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	805	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	98	21	0	0	0
Future Vol, veh/h	0	98	21	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	68	68	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	127	31	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	31	0	-	0	95	31
Stage 1	-	-	-	-	31	-
Stage 2	-	-	-	-	64	-
Critical Hdwy	4.13	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1581	-	-	-	900	1043
Stage 1	-	-	-	-	991	-
Stage 2	-	-	-	-	952	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1581	-	-	-	900	1043
Mov Cap-2 Maneuver	-	-	-	-	900	-
Stage 1	-	-	-	-	991	-
Stage 2	-	-	-	-	952	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1581	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	20	0	0	62
Future Vol, veh/h	0	0	20	0	0	62
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	24	0	0	74

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	98	24	0	0	24	0
Stage 1	24	-	-	-	-	-
Stage 2	74	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	901	1053	-	-	1591	-
Stage 1	999	-	-	-	-	-
Stage 2	949	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	901	1053	-	-	1591	-
Mov Cap-2 Maneuver	901	-	-	-	-	-
Stage 1	999	-	-	-	-	-
Stage 2	949	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	-	1591	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s/veh)	-	-	0	0	0	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	20	0	0	66
Future Vol, veh/h	0	0	20	0	0	66
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	92	92	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	24	0	0	79

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	102	24	0	0	24	0
Stage 1	24	-	-	-	-	-
Stage 2	79	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	896	1053	-	-	1591	-
Stage 1	999	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	896	1053	-	-	1591	-
Mov Cap-2 Maneuver	896	-	-	-	-	-
Stage 1	999	-	-	-	-	-
Stage 2	944	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1591	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	66	0	0	20	0
Future Vol, veh/h	0	66	0	0	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	92	92	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	79	0	0	24	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	0	79
Stage 1	-	-	0	0
Stage 2	-	-	0	79
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	-	812
Stage 1	-	-	-	-
Stage 2	-	-	-	830
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	0
Mov Cap-2 Maneuver	-	-	-	0
Stage 1	-	-	-	0
Stage 2	-	-	-	0

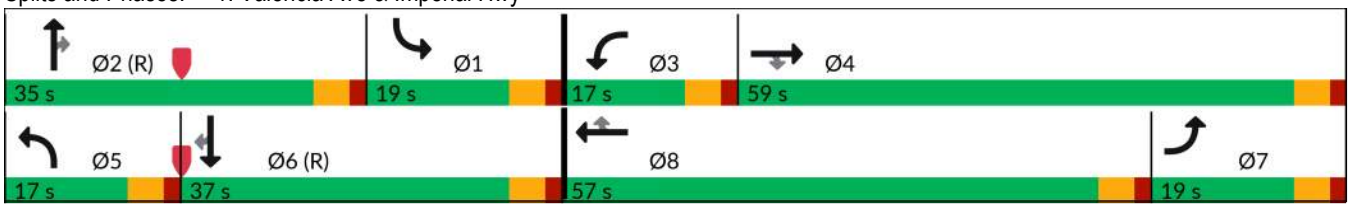
Approach	EB	WB
HCM Control Delay, s/v	0	0
HCM LOS		A

Minor Lane/Major Mvmt	EBT	EBR	WBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	-	0
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	1119	93	93	1168	87	99	133	104	163	278	232
Future Volume (vph)	142	1119	93	93	1168	87	99	133	104	163	278	232
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0
Total Split (s)	19.0	59.0	59.0	17.0	57.0	57.0	17.0	35.0	35.0	19.0	37.0	37.0
Total Split (%)	14.6%	45.4%	45.4%	13.1%	43.8%	43.8%	13.1%	26.9%	26.9%	14.6%	28.5%	28.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	11.2	45.0	45.0	9.2	43.1	43.1	9.5	41.8	41.8	14.0	46.3	46.3
Actuated g/C Ratio	0.09	0.35	0.35	0.07	0.33	0.33	0.07	0.32	0.32	0.11	0.36	0.36
v/c Ratio	0.52	0.69	0.16	0.42	0.76	0.16	0.44	0.13	0.19	0.50	0.25	0.36
Control Delay (s/veh)	63.0	38.3	1.7	62.7	41.8	1.5	62.7	34.0	3.6	52.7	28.0	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	63.0	38.3	1.7	62.7	41.8	1.5	62.7	34.0	3.6	52.7	28.0	4.7
LOS	E	D	A	E	D	A	E	C	A	D	C	A
Approach Delay (s/veh)		38.4			40.6			33.1			25.9	
Approach LOS		D			D			C			C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 29 (22%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay (s/veh): 36.4	Intersection LOS: D
Intersection Capacity Utilization 54.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Valencia Ave & Imperial Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	154	1216	101	102	1284	96	109	146	114	185	316	264
v/c Ratio	0.52	0.69	0.16	0.42	0.76	0.16	0.44	0.13	0.19	0.50	0.25	0.36
Control Delay (s/veh)	63.0	38.3	1.7	62.7	41.8	1.5	62.7	34.0	3.6	52.7	28.0	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	63.0	38.3	1.7	62.7	41.8	1.5	62.7	34.0	3.6	52.7	28.0	4.7
Queue Length 50th (ft)	64	320	0	43	353	0	46	45	0	75	86	16
Queue Length 95th (ft)	98	335	13	72	372	10	75	82	28	105	124	42
Internal Link Dist (ft)		540			646			773			1102	
Turn Bay Length (ft)	190		300	260		185	150		145	250		185
Base Capacity (vph)	371	2112	741	316	2034	719	317	1137	605	369	1259	728
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.58	0.14	0.32	0.63	0.13	0.34	0.13	0.19	0.50	0.25	0.36

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	142	1119	93	93	1168	87	99	133	104	163	278	232
Future Volume (veh/h)	142	1119	93	93	1168	87	99	133	104	163	278	232
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	154	1216	101	102	1284	96	109	146	114	185	316	264
Peak Hour Factor	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.91	0.91	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	209	1681	522	153	1597	496	161	820	366	836	1515	676
Arrive On Green	0.06	0.33	0.33	0.04	0.31	0.31	0.05	0.23	0.23	0.40	0.71	0.71
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	154	1216	101	102	1284	96	109	146	114	185	316	264
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	5.7	27.3	5.9	3.8	30.0	5.8	4.0	4.3	6.5	4.6	3.9	6.6
Cycle Q Clear(g_c), s	5.7	27.3	5.9	3.8	30.0	5.8	4.0	4.3	6.5	4.6	3.9	6.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	209	1681	522	153	1597	496	161	820	366	836	1515	676
V/C Ratio(X)	0.74	0.72	0.19	0.67	0.80	0.19	0.68	0.18	0.31	0.22	0.21	0.39
Avail Cap(c_a), veh/h	372	2121	658	319	2042	634	319	820	366	836	1515	676
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.97	0.97
Uniform Delay (d), s/veh	60.0	38.4	31.2	61.2	41.0	32.7	61.0	40.1	29.4	30.7	11.3	6.9
Incr Delay (d2), s/veh	5.0	0.9	0.2	5.0	1.9	0.2	4.9	0.5	2.2	0.1	0.3	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	11.0	2.2	1.7	12.3	2.2	1.9	1.9	3.1	1.8	1.5	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	65.0	39.3	31.4	66.1	42.9	32.9	66.0	40.6	31.6	30.8	11.6	8.6
LnGrp LOS	E	D	C	E	D	C	E	D	C	C	B	A
Approach Vol, veh/h		1471			1482			369			765	
Approach Delay, s/veh		41.5			43.9			45.3			15.2	
Approach LOS		D			D			D			B	

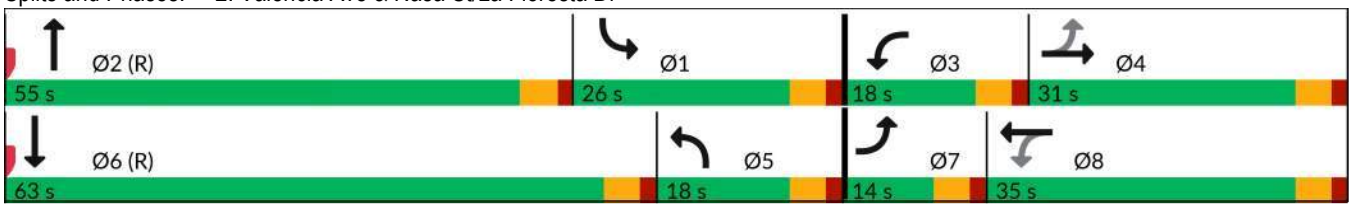
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	36.5	35.0	10.7	47.8	11.0	60.4	12.9	45.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	14.0	30.0	12.0	54.0	12.0	32.0	14.0	52.0
Max Q Clear Time (g_c+I1), s	6.6	8.5	5.8	29.3	6.0	8.6	7.7	32.0
Green Ext Time (p_c), s	0.3	1.2	0.1	8.9	0.1	2.7	0.2	8.6

Intersection Summary	
HCM 7th Control Delay, s/veh	37.8
HCM 7th LOS	D

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	2	3	38	10	81	277	59	620
Future Volume (vph)	2	3	38	10	81	277	59	620
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	14.0	31.0	18.0	35.0	18.0	55.0	26.0	63.0
Total Split (%)	10.8%	23.8%	13.8%	26.9%	13.8%	42.3%	20.0%	48.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	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	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	11.9	7.2	19.5	17.1	8.9	82.6	15.3	86.7
Actuated g/C Ratio	0.09	0.06	0.15	0.13	0.07	0.64	0.12	0.67
v/c Ratio	0.02	0.53	0.34	0.51	0.40	0.14	0.34	0.28
Control Delay (s/veh)	42.5	24.5	50.4	15.0	68.3	3.6	50.8	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.5	24.5	50.4	15.0	68.3	3.6	50.8	2.2
LOS	D	C	D	B	E	A	D	A
Approach Delay (s/veh)		25.1		24.2		17.5		6.4
Approach LOS		C		C		B		A

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 19 (15%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay (s/veh): 13.2	Intersection LOS: B
Intersection Capacity Utilization 41.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Valencia Ave & Nasa St/La Floresta Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	3	90	63	179	94	345	71	753
v/c Ratio	0.02	0.53	0.34	0.51	0.40	0.14	0.34	0.28
Control Delay (s/veh)	42.5	24.5	50.4	15.0	68.3	3.6	50.8	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.5	24.5	50.4	15.0	68.3	3.6	50.8	2.2
Queue Length 50th (ft)	2	3	47	12	42	17	63	15
Queue Length 95th (ft)	9	40	55	11	68	31	108	55
Internal Link Dist (ft)		332		460		1102		185
Turn Bay Length (ft)			105		175		200	
Base Capacity (vph)	175	388	223	495	343	2525	285	2672
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.23	0.28	0.36	0.27	0.14	0.25	0.28

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	3	68	38	10	97	81	277	20	59	620	5
Future Volume (veh/h)	2	3	68	38	10	97	81	277	20	59	620	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.04	1.04
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1945	1945
Adj Flow Rate, veh/h	3	4	86	63	17	162	94	322	23	71	747	6
Peak Hour Factor	0.79	0.79	0.79	0.60	0.60	0.60	0.86	0.86	0.86	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	88	7	140	180	20	191	919	1346	96	583	1676	13
Arrive On Green	0.00	0.09	0.09	0.04	0.13	0.13	0.53	0.77	0.77	0.11	0.15	0.15
Sat Flow, veh/h	1781	71	1525	1781	153	1456	3456	3500	249	1781	3757	30
Grp Volume(v), veh/h	3	0	90	63	0	179	94	169	176	71	367	386
Grp Sat Flow(s),veh/h/ln	1781	0	1596	1781	0	1608	1728	1848	1900	1781	1848	1940
Q Serve(g_s), s	0.2	0.0	7.1	4.1	0.0	14.1	1.8	3.4	3.4	4.7	23.6	23.6
Cycle Q Clear(g_c), s	0.2	0.0	7.1	4.1	0.0	14.1	1.8	3.4	3.4	4.7	23.6	23.6
Prop In Lane	1.00		0.96	1.00		0.91	1.00		0.13	1.00		0.02
Lane Grp Cap(c), veh/h	88	0	147	180	0	211	919	711	731	583	824	865
V/C Ratio(X)	0.03	0.00	0.61	0.35	0.00	0.85	0.10	0.24	0.24	0.12	0.45	0.45
Avail Cap(c_a), veh/h	205	0	319	283	0	371	919	711	731	583	824	865
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.6	0.0	56.8	49.1	0.0	55.2	22.7	9.6	9.6	41.1	40.8	40.8
Incr Delay (d2), s/veh	0.2	0.0	4.1	1.2	0.0	9.2	0.0	0.8	0.8	0.1	1.7	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	3.0	1.9	0.0	6.3	0.7	1.4	1.4	2.1	12.0	12.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	53.8	0.0	60.9	50.2	0.0	64.5	22.8	10.4	10.4	41.2	42.5	42.4
LnGrp LOS	D		E	D		E	C	B	B	D	D	D
Approach Vol, veh/h		93			242			439			824	
Approach Delay, s/veh		60.7			60.8			13.0			42.3	
Approach LOS		E			E			B			D	

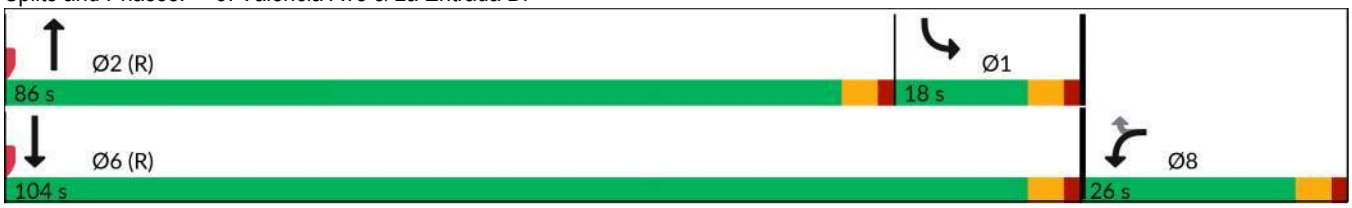
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	47.6	55.0	10.5	16.9	39.6	63.0	5.4	22.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	21.0	50.0	13.0	26.0	13.0	58.0	9.0	30.0
Max Q Clear Time (g_c+I1), s	6.7	5.4	6.1	9.1	3.8	25.6	2.2	16.1
Green Ext Time (p_c), s	0.1	1.9	0.1	0.4	0.1	4.5	0.0	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	38.2
HCM 7th LOS	D

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	7	13	369	6	697
Future Volume (vph)	7	13	369	6	697
Turn Type	Prot	Perm	NA	Prot	NA
Protected Phases	8		2	1	6
Permitted Phases		8			
Detector Phase	8	8	2	1	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	10.0	21.0
Total Split (s)	26.0	26.0	86.0	18.0	104.0
Total Split (%)	20.0%	20.0%	66.2%	13.8%	80.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead	Lag	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Max	None	C-Max
Act Effct Green (s)	6.4	6.4	116.2	7.3	119.8
Actuated g/C Ratio	0.05	0.05	0.89	0.06	0.92
v/c Ratio	0.13	0.21	0.12	0.07	0.21
Control Delay (s/veh)	61.7	27.3	0.9	58.7	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	61.7	27.3	0.9	58.7	0.4
LOS	E	C	A	E	A
Approach Delay (s/veh)	39.1		0.9		0.9
Approach LOS	D		A		A

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 115 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.21	
Intersection Signal Delay (s/veh): 1.9	Intersection LOS: A
Intersection Capacity Utilization 30.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Valencia Ave & La Entrada Dr



Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	11	21	425	7	783
v/c Ratio	0.13	0.21	0.12	0.07	0.21
Control Delay (s/veh)	61.7	27.3	0.9	58.7	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	61.7	27.3	0.9	58.7	0.4
Queue Length 50th (ft)	9	0	5	6	20
Queue Length 95th (ft)	20	14	25	m9	2
Internal Link Dist (ft)	755		786		640
Turn Bay Length (ft)	150			160	
Base Capacity (vph)	285	273	3577	177	3695
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.08	0.12	0.04	0.21

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	13	369	5	6	697
Future Volume (veh/h)	7	13	369	5	6	697
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.04	1.00	1.00	1.04
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1945	1870	1870	1945
Adj Flow Rate, veh/h	11	21	419	6	7	783
Peak Hour Factor	0.63	0.63	0.88	0.88	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	38	33	2324	33	428	3334
Arrive On Green	0.02	0.02	1.00	1.00	0.48	1.00
Sat Flow, veh/h	1781	1585	3827	53	1781	3793
Grp Volume(v), veh/h	11	21	207	218	7	783
Grp Sat Flow(s),veh/h/ln	1781	1585	1848	1936	1781	1848
Q Serve(g_s), s	0.8	1.7	0.0	0.0	0.3	0.0
Cycle Q Clear(g_c), s	0.8	1.7	0.0	0.0	0.3	0.0
Prop In Lane	1.00	1.00		0.03	1.00	
Lane Grp Cap(c), veh/h	38	33	1151	1206	428	3334
V/C Ratio(X)	0.29	0.63	0.18	0.18	0.02	0.23
Avail Cap(c_a), veh/h	288	256	1151	1206	428	3334
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.7	63.1	0.0	0.0	25.7	0.0
Incr Delay (d2), s/veh	4.2	17.8	0.3	0.3	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.9	0.1	0.1	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	66.9	80.9	0.3	0.3	25.7	0.2
LnGrp LOS	E	F	A	A	C	A
Approach Vol, veh/h	32		425			790
Approach Delay, s/veh	76.1		0.3			0.4
Approach LOS	E		A			A

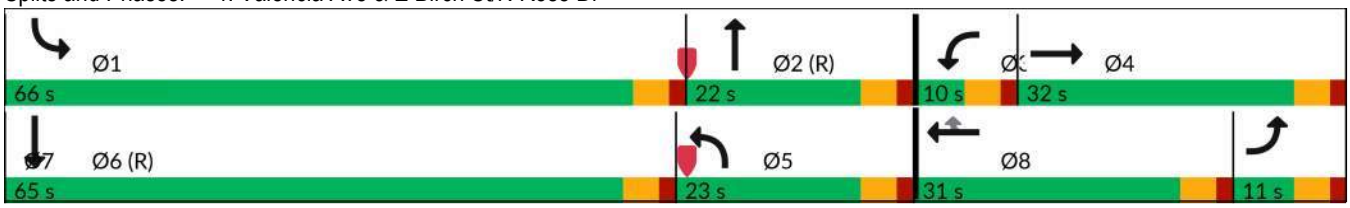
Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	36.3	86.0				122.3	7.7
Change Period (Y+Rc), s	5.0	5.0				5.0	5.0
Max Green Setting (Gmax), s	13.0	81.0				99.0	21.0
Max Q Clear Time (g_c+I1), s	2.3	2.0				2.0	3.7
Green Ext Time (p_c), s	0.0	2.4				5.8	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	2.3
HCM 7th LOS	A

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	97	475	8	320	309	134	227	628	582
Future Volume (vph)	97	475	8	320	309	134	227	628	582
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	11.0	32.0	10.0	31.0	31.0	23.0	22.0	66.0	65.0
Total Split (%)	8.5%	24.6%	7.7%	23.8%	23.8%	17.7%	16.9%	50.8%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	9.3	31.4	5.0	19.1	19.1	18.0	19.0	62.6	63.6
Actuated g/C Ratio	0.07	0.24	0.04	0.15	0.15	0.14	0.15	0.48	0.49
v/c Ratio	0.46	0.83	0.13	0.66	0.64	0.67	0.52	0.96	0.63
Control Delay (s/veh)	64.7	54.5	64.8	58.3	11.0	53.3	40.5	36.6	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	64.7	54.5	64.8	58.3	11.0	53.3	40.5	36.6	13.8
LOS	E	D	E	E	B	D	D	D	B
Approach Delay (s/veh)		56.0		35.5			45.0		23.7
Approach LOS		E		D			D		C

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 48 (37%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay (s/veh): 35.2	Intersection LOS: D
Intersection Capacity Utilization 79.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Valencia Ave & E Birch St/N Rose Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	113	703	9	344	332	163	301	816	1069
v/c Ratio	0.46	0.83	0.13	0.66	0.64	0.67	0.52	0.96	0.63
Control Delay (s/veh)	64.7	54.5	64.8	58.3	11.0	53.3	40.5	36.6	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	64.7	54.5	64.8	58.3	11.0	53.3	40.5	36.6	13.8
Queue Length 50th (ft)	47	281	8	146	0	114	109	328	203
Queue Length 95th (ft)	77	#394	27	188	85	191	159	524	243
Internal Link Dist (ft)		1706		346			363		2026
Turn Bay Length (ft)	190		230		285	205		160	
Base Capacity (vph)	245	845	68	707	582	245	584	853	1687
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	0.46	0.83	0.13	0.49	0.57	0.67	0.52	0.96	0.63

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	97	475	130	8	320	309	134	227	20	628	582	241
Future Volume (veh/h)	97	475	130	8	320	309	134	227	20	628	582	241
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	113	552	151	9	344	332	163	277	24	816	756	313
Peak Hour Factor	0.86	0.86	0.86	0.93	0.93	0.93	0.82	0.82	0.82	0.77	0.77	0.77
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	300	573	156	15	460	205	300	553	48	836	1131	468
Arrive On Green	0.09	0.21	0.21	0.01	0.13	0.13	0.06	0.05	0.05	0.15	0.15	0.15
Sat Flow, veh/h	3456	2760	752	1781	3554	1585	1781	3443	296	1781	2451	1014
Grp Volume(v), veh/h	113	355	348	9	344	332	163	148	153	816	548	521
Grp Sat Flow(s),veh/h/ln	1728	1777	1735	1781	1777	1585	1781	1848	1892	1781	1777	1688
Q Serve(g_s), s	4.0	25.7	25.9	0.7	12.1	6.3	11.6	10.1	10.2	59.3	37.8	37.9
Cycle Q Clear(g_c), s	4.0	25.7	25.9	0.7	12.1	6.3	11.6	10.1	10.2	59.3	37.8	37.9
Prop In Lane	1.00		0.43	1.00		1.00	1.00		0.16	1.00		0.60
Lane Grp Cap(c), veh/h	300	369	360	15	460	205	300	297	304	836	820	779
V/C Ratio(X)	0.38	0.96	0.97	0.59	0.75	1.62	0.54	0.50	0.50	0.98	0.67	0.67
Avail Cap(c_a), veh/h	300	369	360	69	711	317	300	297	304	836	820	779
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	0.33	0.33	0.33
Upstream Filter(I)	0.61	0.61	0.61	1.00	1.00	1.00	1.00	1.00	1.00	0.49	0.49	0.49
Uniform Delay (d), s/veh	56.0	51.0	51.1	64.2	54.6	7.9	56.5	56.4	56.5	54.2	45.7	45.7
Incr Delay (d2), s/veh	0.5	27.1	28.7	31.6	2.5	300.2	2.0	5.9	5.9	16.5	2.1	2.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	13.8	13.7	0.4	5.6	23.2	5.6	5.4	5.6	32.0	18.4	17.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	56.5	78.1	79.8	95.8	57.0	308.1	58.5	62.3	62.4	70.7	47.8	48.0
LnGrp LOS	E	E	E	F	E	F	E	E	E	E	D	D
Approach Vol, veh/h		816			685			464			1885	
Approach Delay, s/veh		75.8			179.2			61.0			57.8	
Approach LOS		E			F			E			E	

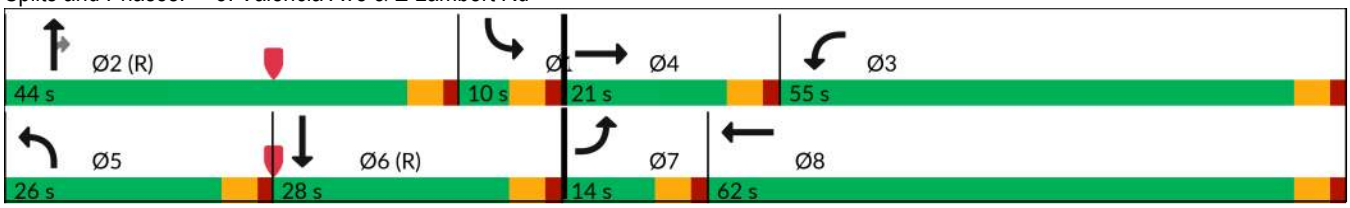
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	66.0	25.9	6.1	32.0	26.9	65.0	16.3	21.8
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	61.0	17.0	5.0	27.0	18.0	60.0	6.0	26.0
Max Q Clear Time (g_c+I1), s	61.3	12.2	2.7	27.9	13.6	39.9	6.0	14.1
Green Ext Time (p_c), s	0.0	0.6	0.0	0.0	0.2	6.6	0.0	2.7

Intersection Summary	
HCM 7th Control Delay, s/veh	83.6
HCM 7th LOS	F

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	56	170	968	592	178	196	190	7	300
Future Volume (vph)	56	170	968	592	178	196	190	7	300
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA
Protected Phases	7	4	3	8	5	2		1	6
Permitted Phases							2		
Detector Phase	7	4	3	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	21.0	21.0	10.0	21.0
Total Split (s)	14.0	21.0	55.0	62.0	26.0	44.0	44.0	10.0	28.0
Total Split (%)	10.8%	16.2%	42.3%	47.7%	20.0%	33.8%	33.8%	7.7%	21.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	8.3	11.8	44.5	50.2	20.0	54.7	54.7	5.0	33.7
Actuated g/C Ratio	0.06	0.09	0.34	0.39	0.15	0.42	0.42	0.04	0.26
v/c Ratio	0.54	0.74	0.87	0.32	0.80	0.14	0.26	0.19	0.71
Control Delay (s/veh)	76.3	32.2	48.5	28.1	74.9	40.2	20.7	67.1	50.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	76.3	32.2	48.5	28.1	74.9	40.2	20.7	67.1	50.0
LOS	E	C	D	C	E	D	C	E	D
Approach Delay (s/veh)		37.0		40.7		44.6			50.3
Approach LOS		D		D		D			D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 52 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay (s/veh): 42.7	Intersection LOS: D
Intersection Capacity Utilization 73.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 5: Valencia Ave & E Lambert Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	60	486	1019	626	217	239	232	13	648
v/c Ratio	0.54	0.74	0.87	0.32	0.80	0.14	0.26	0.19	0.71
Control Delay (s/veh)	76.3	32.2	48.5	28.1	74.9	40.2	20.7	67.1	50.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	76.3	32.2	48.5	28.1	74.9	40.2	20.7	67.1	50.0
Queue Length 50th (ft)	50	65	410	138	188	90	58	11	264
Queue Length 95th (ft)	97	103	468	152	252	132	127	19	187
Internal Link Dist (ft)		759		811		2026			731
Turn Bay Length (ft)	230		625		300		120	240	
Base Capacity (vph)	122	802	1320	2227	296	1688	889	68	909
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	0.49	0.61	0.77	0.28	0.73	0.14	0.26	0.19	0.71

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	170	287	968	592	3	178	196	190	7	300	37
Future Volume (veh/h)	56	170	287	968	592	3	178	196	190	7	300	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	60	181	305	1019	623	3	217	239	0	13	577	71
Peak Hour Factor	0.94	0.94	0.94	0.95	0.95	0.95	0.82	0.82	0.82	0.52	0.52	0.52
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	419	195	1116	2112	10	246	1109		179	836	103
Arrive On Green	0.04	0.12	0.12	0.32	0.40	0.40	0.05	0.10	0.00	0.10	0.26	0.26
Sat Flow, veh/h	1781	3404	1585	3456	5245	25	1781	3696	1648	1781	3186	391
Grp Volume(v), veh/h	60	181	305	1019	404	222	217	239	0	13	321	327
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1728	1702	1866	1781	1848	1648	1781	1777	1800
Q Serve(g_s), s	4.3	6.4	16.0	36.8	10.5	10.5	15.7	7.7	0.0	0.9	21.2	21.3
Cycle Q Clear(g_c), s	4.3	6.4	16.0	36.8	10.5	10.5	15.7	7.7	0.0	0.9	21.2	21.3
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	77	419	195	1116	1371	751	246	1109		179	466	472
V/C Ratio(X)	0.78	0.43	1.56	0.91	0.29	0.30	0.88	0.22		0.07	0.69	0.69
Avail Cap(c_a), veh/h	123	419	195	1329	1493	818	288	1109		179	466	472
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.6	52.8	57.0	42.3	26.3	26.3	61.0	44.5	0.0	53.0	43.2	43.2
Incr Delay (d2), s/veh	15.3	0.7	277.0	8.8	0.1	0.2	19.9	0.4	0.0	0.2	8.1	8.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	2.7	21.2	16.3	4.1	4.5	8.9	3.7	0.0	0.4	10.1	10.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	76.9	53.5	334.0	51.1	26.4	26.5	80.9	44.8	0.0	53.2	51.3	51.3
LnGrp LOS	E	D	F	D	C	C	F	D		D	D	D
Approach Vol, veh/h		546			1645			456			661	
Approach Delay, s/veh		212.8			41.7			62.0			51.3	
Approach LOS		F			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	44.0	47.0	21.0	22.9	39.1	10.6	57.3
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	5.0	39.0	50.0	16.0	21.0	23.0	9.0	57.0
Max Q Clear Time (g_c+I1), s	2.9	9.7	38.8	18.0	17.7	23.3	6.3	12.5
Green Ext Time (p_c), s	0.0	1.4	3.2	0.0	0.2	0.0	0.0	3.8

Intersection Summary	
HCM 7th Control Delay, s/veh	74.7
HCM 7th LOS	E

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	31	2	4	31	44	1	3	1	27	5	25
Future Vol, veh/h	13	31	2	4	31	44	1	3	1	27	5	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	61	61	61	42	42	42	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	36	2	7	51	72	2	7	2	37	7	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	123	0	0	38	0	0	134	203	37	169	168	87
Stage 1	-	-	-	-	-	-	67	67	-	100	100	-
Stage 2	-	-	-	-	-	-	67	136	-	69	68	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1464	-	-	1572	-	-	838	693	1036	795	725	972
Stage 1	-	-	-	-	-	-	944	839	-	906	812	-
Stage 2	-	-	-	-	-	-	943	784	-	941	838	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1464	-	-	1572	-	-	788	683	1036	773	714	972
Mov Cap-2 Maneuver	-	-	-	-	-	-	788	683	-	773	714	-
Stage 1	-	-	-	-	-	-	934	831	-	902	809	-
Stage 2	-	-	-	-	-	-	898	780	-	921	830	-

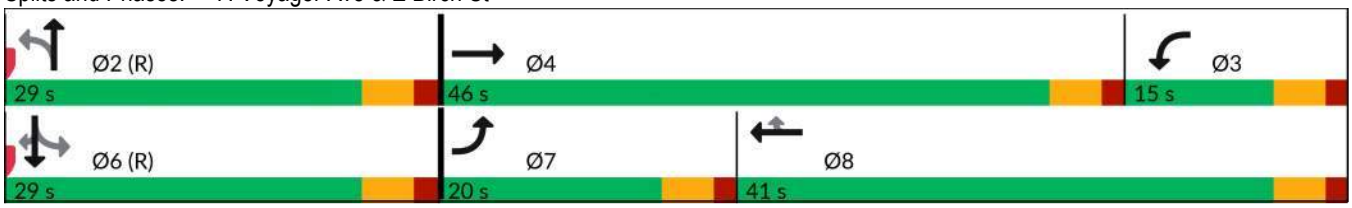
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	2.12	0.37	9.85	9.71
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	755	503	-	-	82	-	-	842
HCM Lane V/C Ratio	0.016	0.01	-	-	0.004	-	-	0.093
HCM Control Delay (s/veh)	9.8	7.5	0	-	7.3	0	-	9.7
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.3

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	65	660	34	438	36	37	3	33	0	38
Future Volume (vph)	65	660	34	438	36	37	3	33	0	38
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	7	4	3	8			2		6	
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.5	10.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	20.0	46.0	15.0	41.0	41.0	29.0	29.0	29.0	29.0	29.0
Total Split (%)	22.2%	51.1%	16.7%	45.6%	45.6%	32.2%	32.2%	32.2%	32.2%	32.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	9.3	30.1	7.5	26.1	26.1	41.7	41.7		41.7	41.7
Actuated g/C Ratio	0.10	0.33	0.08	0.29	0.29	0.46	0.46		0.46	0.46
v/c Ratio	0.43	0.73	0.27	0.50	0.08	0.12	0.10		0.10	0.09
Control Delay (s/veh)	24.6	13.7	42.6	27.6	1.1	19.1	6.0		19.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	24.6	13.7	42.6	27.6	1.1	19.1	6.0		19.1	0.2
LOS	C	B	D	C	A	B	A		B	A
Approach Delay (s/veh)		14.6		26.8			12.0		9.0	
Approach LOS		B		C			B		A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 34 (38%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay (s/veh): 18.0	Intersection LOS: B
Intersection Capacity Utilization 44.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 7: Voyager Ave & E Birch St



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	78	860	40	515	42	77	89	61	70
v/c Ratio	0.43	0.73	0.27	0.50	0.08	0.12	0.10	0.10	0.09
Control Delay (s/veh)	24.6	13.7	42.6	27.6	1.1	19.1	6.0	19.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.6	13.7	42.6	27.6	1.1	19.1	6.0	19.1	0.2
Queue Length 50th (ft)	21	248	22	124	0	26	2	20	0
Queue Length 95th (ft)	44	258	49	143	3	33	3	32	0
Internal Link Dist (ft)		1715		1706			560	102	
Turn Bay Length (ft)	200		140		225	125			95
Base Capacity (vph)	295	1600	196	1415	684	619	886	603	811
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	0.26	0.54	0.20	0.36	0.06	0.12	0.10	0.10	0.09

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	660	54	34	438	36	37	3	40	33	0	38
Future Volume (veh/h)	65	660	54	34	438	36	37	3	40	33	0	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	78	795	65	40	515	42	77	6	83	61	0	70
Peak Hour Factor	0.83	0.83	0.83	0.85	0.85	0.85	0.48	0.48	0.48	0.54	0.54	0.54
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	963	79	50	928	414	696	58	801	718	0	817
Arrive On Green	0.08	0.39	0.39	0.03	0.26	0.26	0.52	0.52	0.52	0.52	0.00	0.52
Sat Flow, veh/h	1781	3326	272	1781	3554	1585	1331	112	1553	1238	0	1585
Grp Volume(v), veh/h	78	425	435	40	515	42	77	0	89	61	0	70
Grp Sat Flow(s),veh/h/ln	1781	1777	1821	1781	1777	1585	1331	0	1666	1238	0	1585
Q Serve(g_s), s	3.9	19.4	19.4	2.0	11.3	1.8	3.0	0.0	2.5	2.3	0.0	2.0
Cycle Q Clear(g_c), s	3.9	19.4	19.4	2.0	11.3	1.8	7.7	0.0	2.5	4.7	0.0	2.0
Prop In Lane	1.00		0.15	1.00		1.00	1.00		0.93	1.00		1.00
Lane Grp Cap(c), veh/h	101	514	527	50	928	414	696	0	859	718	0	817
V/C Ratio(X)	0.77	0.83	0.83	0.79	0.56	0.10	0.11	0.00	0.10	0.08	0.00	0.09
Avail Cap(c_a), veh/h	297	809	830	198	1421	634	696	0	859	718	0	817
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.64	0.64	0.64	0.70	0.70	0.70	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.0	25.6	25.6	43.5	28.7	25.2	13.8	0.0	11.2	12.4	0.0	11.1
Incr Delay (d2), s/veh	7.7	2.6	2.6	17.4	0.4	0.1	0.3	0.0	0.2	0.2	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	6.8	7.0	1.1	4.5	0.6	0.9	0.0	0.9	0.7	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.8	28.2	28.2	60.9	29.1	25.3	14.1	0.0	11.4	12.6	0.0	11.3
LnGrp LOS	D	C	C	E	C	C	B		B	B		B
Approach Vol, veh/h		938			597			166			131	
Approach Delay, s/veh		29.9			31.0			12.6			11.9	
Approach LOS		C			C			B			B	

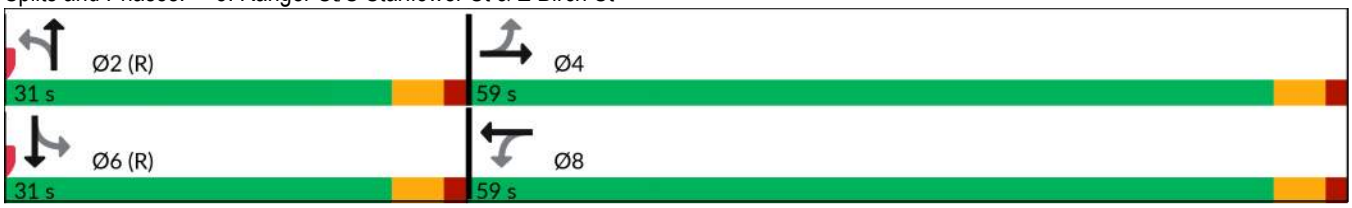
Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		51.4	7.5	31.1		51.4	10.1	28.5
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		24.0	10.0	41.0		24.0	15.0	36.0
Max Q Clear Time (g_c+I1), s		9.7	4.0	21.4		6.7	5.9	13.3
Green Ext Time (p_c), s		0.6	0.0	4.7		0.5	0.1	3.1

Intersection Summary	
HCM 7th Control Delay, s/veh	27.4
HCM 7th LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	18	782	12	639	39	0	24	2
Future Volume (vph)	18	782	12	639	39	0	24	2
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	59.0	59.0	59.0	59.0	31.0	31.0	31.0	31.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%	34.4%	34.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	31.8	31.8	31.8	31.8		48.2		48.2
Actuated g/C Ratio	0.35	0.35	0.35	0.35		0.54		0.54
v/c Ratio	0.18	0.71	0.19	0.71		0.07		0.13
Control Delay (s/veh)	21.9	26.7	19.3	24.9		8.7		6.9
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay (s/veh)	21.9	26.7	19.3	24.9		8.7		6.9
LOS	C	C	B	C		A		A
Approach Delay (s/veh)		26.6		24.8		8.7		6.9
Approach LOS		C		C		A		A

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 88 (98%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay (s/veh): 24.3	Intersection LOS: C
Intersection Capacity Utilization 37.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Ranger St/S Starflower St & E Birch St



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	20	996	16	883	57	111
v/c Ratio	0.18	0.71	0.19	0.71	0.07	0.13
Control Delay (s/veh)	21.9	26.7	19.3	24.9	8.7	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.9	26.7	19.3	24.9	8.7	6.9
Queue Length 50th (ft)	8	245	7	251	8	13
Queue Length 95th (ft)	23	264	18	217	23	17
Internal Link Dist (ft)		759		1715	671	28
Turn Bay Length (ft)	145		150			
Base Capacity (vph)	186	2375	141	2122	840	847
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	0.42	0.11	0.42	0.07	0.13

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	782	104	12	639	6	39	0	1	24	2	33
Future Volume (veh/h)	18	782	104	12	639	6	39	0	1	24	2	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1945	1945	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	20	879	117	16	875	8	56	0	1	45	4	62
Peak Hour Factor	0.89	0.89	0.89	0.73	0.73	0.73	0.70	0.70	0.70	0.53	0.53	0.53
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	1167	155	148	1284	12	823	1	13	365	52	456
Arrive On Green	0.36	0.36	0.36	0.12	0.12	0.12	0.53	0.00	0.53	0.53	0.53	0.53
Sat Flow, veh/h	629	3278	436	565	3608	33	1395	1	25	579	97	855
Grp Volume(v), veh/h	20	495	501	16	431	452	57	0	0	111	0	0
Grp Sat Flow(s),veh/h/ln	629	1848	1867	565	1777	1864	1421	0	0	1531	0	0
Q Serve(g_s), s	2.6	21.2	21.2	2.5	20.9	20.9	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	23.5	21.2	21.2	23.7	20.9	20.9	1.3	0.0	0.0	2.9	0.0	0.0
Prop In Lane	1.00		0.23	1.00		0.02	0.98		0.02	0.41		0.56
Lane Grp Cap(c), veh/h	158	658	664	148	632	664	837	0	0	872	0	0
V/C Ratio(X)	0.13	0.75	0.75	0.11	0.68	0.68	0.07	0.00	0.00	0.13	0.00	0.00
Avail Cap(c_a), veh/h	311	1109	1120	286	1066	1119	837	0	0	872	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	35.7	25.5	25.5	46.3	34.8	34.8	10.1	0.0	0.0	10.5	0.0	0.0
Incr Delay (d2), s/veh	0.4	1.8	1.8	0.3	1.2	1.1	0.2	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	8.7	8.7	0.4	10.0	10.4	0.6	0.0	0.0	1.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.1	27.3	27.3	46.6	36.0	35.9	10.3	0.0	0.0	10.8	0.0	0.0
LnGrp LOS	D	C	C	D	D	D	B			B		
Approach Vol, veh/h		1016			899			57			111	
Approach Delay, s/veh		27.4			36.2			10.3			10.8	
Approach LOS		C			D			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	53.0	37.0	53.0	37.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	26.0	54.0	26.0	54.0
Max Q Clear Time (g_c+I1), s	3.3	25.5	4.9	25.7
Green Ext Time (p_c), s	0.2	6.5	0.6	5.4

Intersection Summary	
HCM 7th Control Delay, s/veh	29.9
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	15	44	72	51	2
Future Vol, veh/h	2	15	44	72	51	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	53	53	81	81	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	28	54	89	70	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	143	0	-	0	135	99
Stage 1	-	-	-	-	99	-
Stage 2	-	-	-	-	36	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1439	-	-	-	859	957
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	987	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1439	-	-	-	857	957
Mov Cap-2 Maneuver	-	-	-	-	857	-
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	987	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.88	0	9.57
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	212	-	-	-	860
HCM Lane V/C Ratio	0.003	-	-	-	0.084
HCM Control Delay (s/veh)	7.5	0	-	-	9.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	383	700	23
Future Vol, veh/h	0	0	0	383	700	23
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	92	92	86	86	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	445	843	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1080	436	-	0	-	0
Stage 1	857	-	-	-	-	-
Stage 2	223	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	-	-
Pot Cap-1 Maneuver	213	569	0	-	-	-
Stage 1	376	-	0	-	-	-
Stage 2	793	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	213	569	-	-	-	-
Mov Cap-2 Maneuver	213	-	-	-	-	-
Stage 1	376	-	-	-	-	-
Stage 2	793	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	376	704	0
Future Vol, veh/h	0	0	0	376	704	0
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	92	92	86	86	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	437	848	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	424	-	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	578	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	578	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	66	97	0	0	0
Future Vol, veh/h	0	66	97	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	60	60	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	84	162	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	162	0	-	0	203	162
Stage 1	-	-	-	-	162	-
Stage 2	-	-	-	-	42	-
Critical Hdwy	4.13	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1416	-	-	-	776	883
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	976	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1416	-	-	-	776	883
Mov Cap-2 Maneuver	-	-	-	-	776	-
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	976	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1416	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	57	16	6	72
Future Vol, veh/h	0	0	57	16	6	72
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	78	22	8	99

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	204	89	0	0	100	0
Stage 1	89	-	-	-	-	-
Stage 2	115	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	784	969	-	-	1493	-
Stage 1	934	-	-	-	-	-
Stage 2	910	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	780	969	-	-	1493	-
Mov Cap-2 Maneuver	780	-	-	-	-	-
Stage 1	934	-	-	-	-	-
Stage 2	905	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	0	0	0.57
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	-	138	-
HCM Lane V/C Ratio	-	-	-	-	0.006	-
HCM Control Delay (s/veh)	-	-	0	0	7.4	0
HCM Lane LOS	-	-	A	A	A	A
HCM 95th %tile Q(veh)	-	-	-	-	0	-

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	6	58	0	0	67
Future Vol, veh/h	15	6	58	0	0	67
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	92	92	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	7	79	0	0	92

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	171	79	0	0	79	0
Stage 1	79	-	-	-	-	-
Stage 2	92	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	819	981	-	-	1519	-
Stage 1	944	-	-	-	-	-
Stage 2	932	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	819	981	-	-	1519	-
Mov Cap-2 Maneuver	819	-	-	-	-	-
Stage 1	944	-	-	-	-	-
Stage 2	932	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.3	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	859	1519	-
HCM Lane V/C Ratio	-	-	0.027	-	-
HCM Control Delay (s/veh)	-	-	9.3	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	61	6	22	61	3
Future Vol, veh/h	0	61	6	22	61	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	92	92	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	84	7	24	84	4

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	0	84
Stage 1	-	-	0	0
Stage 2	-	-	0	84
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	-	807
Stage 1	-	-	-	-
Stage 2	-	-	-	826
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	0
Mov Cap-2 Maneuver	-	-	-	0
Stage 1	-	-	-	0
Stage 2	-	-	-	0

Approach	EB	WB
HCM Control Delay, s/v	0	
HCM LOS		-

Minor Lane/Major Mvmt	EBT	EBR	WBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	234	1429	139	111	1214	162	89	320	131	110	209	89
Future Volume (vph)	234	1429	139	111	1214	162	89	320	131	110	209	89
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0
Total Split (s)	26.0	72.0	72.0	18.0	64.0	64.0	16.0	33.0	33.0	17.0	34.0	34.0
Total Split (%)	18.6%	51.4%	51.4%	12.9%	45.7%	45.7%	11.4%	23.6%	23.6%	12.1%	24.3%	24.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	15.0	53.4	53.4	10.1	48.5	48.5	11.0	46.1	46.1	10.4	45.5	45.5
Actuated g/C Ratio	0.11	0.38	0.38	0.07	0.35	0.35	0.08	0.33	0.33	0.07	0.33	0.33
v/c Ratio	0.65	0.75	0.21	0.47	0.72	0.26	0.38	0.32	0.24	0.49	0.20	0.17
Control Delay (s/veh)	68.2	39.9	4.3	68.3	42.0	4.7	65.7	38.5	7.2	76.7	25.4	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	68.2	39.9	4.3	68.3	42.0	4.7	65.7	38.5	7.2	76.7	25.4	1.5
LOS	E	D	A	E	D	A	E	D	A	E	C	A
Approach Delay (s/veh)		40.8			39.9			35.4			34.1	
Approach LOS		D			D			D			C	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 10 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay (s/veh): 39.0	Intersection LOS: D
Intersection Capacity Utilization 59.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Valencia Ave & Imperial Hwy

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	239	1458	142	116	1265	169	103	372	152	124	235	100
v/c Ratio	0.65	0.75	0.21	0.47	0.72	0.26	0.38	0.32	0.24	0.49	0.20	0.17
Control Delay (s/veh)	68.2	39.9	4.3	68.3	42.0	4.7	65.7	38.5	7.2	76.7	25.4	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	68.2	39.9	4.3	68.3	42.0	4.7	65.7	38.5	7.2	76.7	25.4	1.5
Queue Length 50th (ft)	109	417	0	53	365	0	46	134	0	48	52	0
Queue Length 95th (ft)	151	425	39	85	384	44	74	197	50	79	91	4
Internal Link Dist (ft)		540			646			773			1102	
Turn Bay Length (ft)	190		300	260		185	150		145	250		185
Base Capacity (vph)	514	2433	831	318	2142	766	269	1165	623	300	1150	603
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.60	0.17	0.36	0.59	0.22	0.38	0.32	0.24	0.41	0.20	0.17

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	1429	139	111	1214	162	89	320	131	110	209	89
Future Volume (veh/h)	234	1429	139	111	1214	162	89	320	131	110	209	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	239	1458	142	116	1265	169	103	372	152	124	235	100
Peak Hour Factor	0.98	0.98	0.98	0.96	0.96	0.96	0.86	0.86	0.86	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	297	1826	567	165	1632	506	845	1429	637	172	736	328
Arrive On Green	0.09	0.36	0.36	0.05	0.32	0.32	0.24	0.40	0.40	0.10	0.41	0.41
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	239	1458	142	116	1265	169	103	372	152	124	235	100
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	9.5	35.9	4.5	4.6	31.4	11.4	3.2	9.8	8.9	4.9	6.2	4.7
Cycle Q Clear(g_c), s	9.5	35.9	4.5	4.6	31.4	11.4	3.2	9.8	8.9	4.9	6.2	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	297	1826	567	165	1632	506	845	1429	637	172	736	328
V/C Ratio(X)	0.81	0.80	0.25	0.70	0.78	0.33	0.12	0.26	0.24	0.72	0.32	0.30
Avail Cap(c_a), veh/h	518	2444	759	321	2152	668	845	1429	637	296	736	328
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99
Uniform Delay (d), s/veh	62.8	40.4	8.2	65.7	43.1	36.3	41.2	27.9	27.7	62.1	34.3	22.0
Incr Delay (d2), s/veh	5.1	1.4	0.2	5.3	1.3	0.4	0.1	0.4	0.9	5.6	1.1	2.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	14.7	3.2	2.1	12.9	4.3	1.4	4.3	3.4	2.2	2.6	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	68.0	41.9	8.4	71.0	44.4	36.7	41.2	28.4	28.6	67.7	35.5	24.4
LnGrp LOS	E	D	A	E	D	D	D	C	C	E	D	C
Approach Vol, veh/h		1839			1550			627			459	
Approach Delay, s/veh		42.7			45.6			30.5			41.8	
Approach LOS		D			D			C			D	

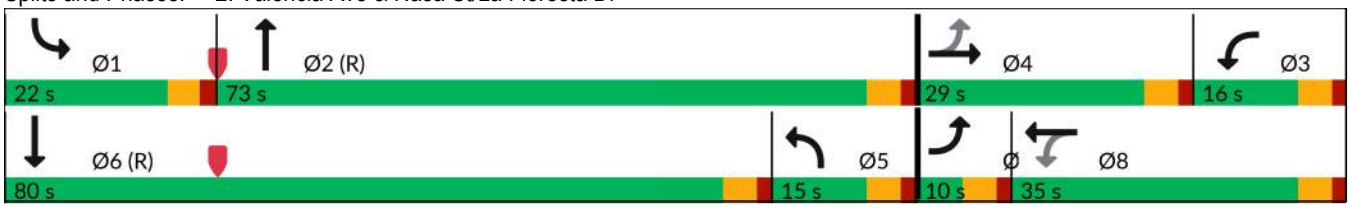
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	61.3	11.7	55.1	39.2	34.0	17.0	49.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	12.0	28.0	13.0	67.0	11.0	29.0	21.0	59.0
Max Q Clear Time (g_c+I1), s	6.9	11.8	6.6	37.9	5.2	8.2	11.5	33.4
Green Ext Time (p_c), s	0.1	2.6	0.1	12.1	0.1	1.6	0.5	9.8

Intersection Summary	
HCM 7th Control Delay, s/veh	41.9
HCM 7th LOS	D

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	10	0	25	0	87	583	36	331
Future Volume (vph)	10	0	25	0	87	583	36	331
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	10.0	29.0	16.0	35.0	15.0	73.0	22.0	80.0
Total Split (%)	7.1%	20.7%	11.4%	25.0%	10.7%	52.1%	15.7%	57.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	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	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
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	5.5	5.5	12.8	11.7	10.0	102.6	8.8	99.3
Actuated g/C Ratio	0.04	0.04	0.09	0.08	0.07	0.73	0.06	0.71
v/c Ratio	0.18	0.25	0.22	0.11	0.40	0.24	0.39	0.15
Control Delay (s/veh)	70.8	1.0	63.0	0.4	43.1	2.3	90.9	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	70.8	1.0	63.0	0.4	43.1	2.3	90.9	6.8
LOS	E	A	E	A	D	A	F	A
Approach Delay (s/veh)		6.7		25.1		7.3		14.7
Approach LOS		A		C		A		B

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 9 (6%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.40	
Intersection Signal Delay (s/veh): 10.6	Intersection LOS: B
Intersection Capacity Utilization 41.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Valencia Ave & Nasa St/La Floresta Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	13	145	37	57	99	710	43	414
v/c Ratio	0.18	0.25	0.22	0.11	0.40	0.24	0.39	0.15
Control Delay (s/veh)	70.8	1.0	63.0	0.4	43.1	2.3	90.9	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	70.8	1.0	63.0	0.4	43.1	2.3	90.9	6.8
Queue Length 50th (ft)	12	0	31	0	38	21	41	53
Queue Length 95th (ft)	30	0	53	0	65	50	78	73
Internal Link Dist (ft)		332		460		1102		185
Turn Bay Length (ft)			105		175		200	
Base Capacity (vph)	73	727	216	662	245	2911	214	2826
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.20	0.17	0.09	0.40	0.24	0.20	0.15

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	0	112	25	0	39	87	583	41	36	331	17
Future Volume (veh/h)	10	0	112	25	0	39	87	583	41	36	331	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.04	1.04
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1945	1945
Adj Flow Rate, veh/h	13	0	145	37	0	57	99	662	47	43	394	20
Peak Hour Factor	0.77	0.77	0.77	0.68	0.68	0.68	0.88	0.88	0.88	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	109	0	171	95	0	187	663	2437	173	56	1917	97
Arrive On Green	0.01	0.00	0.11	0.02	0.00	0.12	0.19	0.70	0.70	0.01	0.18	0.18
Sat Flow, veh/h	1781	0	1585	1781	0	1585	3456	3500	248	1781	3579	181
Grp Volume(v), veh/h	13	0	145	37	0	57	99	349	360	43	203	211
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1585	1728	1848	1900	1781	1848	1913
Q Serve(g_s), s	0.9	0.0	12.6	0.0	0.0	4.6	3.3	9.9	9.9	3.4	13.1	13.2
Cycle Q Clear(g_c), s	0.9	0.0	12.6	0.0	0.0	4.6	3.3	9.9	9.9	3.4	13.1	13.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		0.09
Lane Grp Cap(c), veh/h	109	0	171	95	0	187	663	1286	1323	56	990	1025
V/C Ratio(X)	0.12	0.00	0.85	0.39	0.00	0.30	0.15	0.27	0.27	0.77	0.20	0.21
Avail Cap(c_a), veh/h	153	0	272	196	0	340	663	1286	1323	216	990	1025
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.0	0.0	61.3	67.0	0.0	56.5	47.1	8.0	8.0	68.8	32.2	32.2
Incr Delay (d2), s/veh	0.5	0.0	13.3	2.6	0.0	0.9	0.1	0.5	0.5	19.5	0.5	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	5.7	1.4	0.0	1.9	1.4	3.7	3.8	1.8	6.6	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.5	0.0	74.6	69.6	0.0	57.4	47.2	8.4	8.4	88.2	32.6	32.6
LnGrp LOS	E		E	E		E	D	A	A	F	C	C
Approach Vol, veh/h		158			94			808			457	
Approach Delay, s/veh		73.4			62.2			13.2			37.9	
Approach LOS		E			E			B			D	

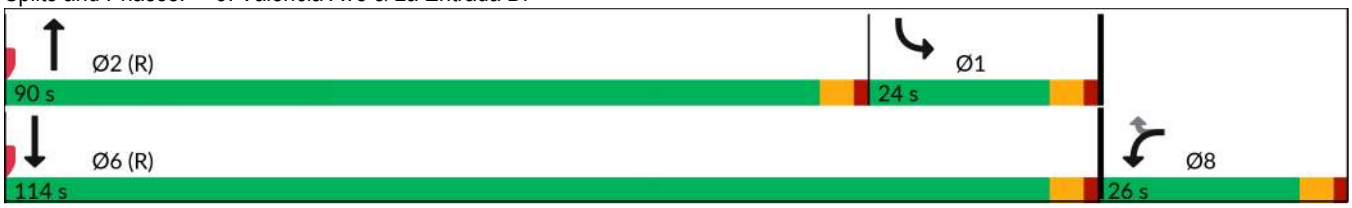
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	102.5	8.1	20.1	31.9	80.0	6.6	21.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	17.0	68.0	11.0	24.0	10.0	75.0	5.0	30.0
Max Q Clear Time (g_c+I1), s	5.4	11.9	2.0	14.6	5.3	15.2	2.9	6.6
Green Ext Time (p_c), s	0.0	4.4	0.0	0.5	0.1	2.3	0.0	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	29.9
HCM 7th LOS	C

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	5	12	648	14	349
Future Volume (vph)	5	12	648	14	349
Turn Type	Prot	Perm	NA	Prot	NA
Protected Phases	8		2	1	6
Permitted Phases		8			
Detector Phase	8	8	2	1	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	10.0	21.0
Total Split (s)	26.0	26.0	90.0	24.0	114.0
Total Split (%)	18.6%	18.6%	64.3%	17.1%	81.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead	Lag	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Max	None	C-Max
Act Effct Green (s)	6.4	6.4	120.2	11.2	129.8
Actuated g/C Ratio	0.05	0.05	0.86	0.08	0.93
v/c Ratio	0.10	0.22	0.21	0.11	0.11
Control Delay (s/veh)	66.2	29.4	8.1	68.1	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	66.2	29.4	8.1	68.1	1.0
LOS	E	C	A	E	A
Approach Delay (s/veh)	39.9		8.1		3.6
Approach LOS	D		A		A

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 85 (61%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.22	
Intersection Signal Delay (s/veh): 7.2	Intersection LOS: A
Intersection Capacity Utilization 29.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Valencia Ave & La Entrada Dr



Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	8	20	707	16	401
v/c Ratio	0.10	0.22	0.21	0.11	0.11
Control Delay (s/veh)	66.2	29.4	8.1	68.1	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	66.2	29.4	8.1	68.1	1.0
Queue Length 50th (ft)	7	0	21	0	17
Queue Length 95th (ft)	18	13	273	m38	33
Internal Link Dist (ft)	755		786		640
Turn Bay Length (ft)	150			160	
Base Capacity (vph)	265	254	3438	240	3720
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.08	0.21	0.07	0.11

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	12	648	9	14	349
Future Volume (veh/h)	5	12	648	9	14	349
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.04	1.00	1.00	1.04
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1945	1870	1870	1945
Adj Flow Rate, veh/h	8	20	697	10	16	401
Peak Hour Factor	0.61	0.61	0.93	0.93	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	34	30	2265	32	475	3362
Arrive On Green	0.02	0.02	1.00	1.00	0.53	1.00
Sat Flow, veh/h	1781	1585	3827	54	1781	3793
Grp Volume(v), veh/h	8	20	345	362	16	401
Grp Sat Flow(s),veh/h/ln	1781	1585	1848	1936	1781	1848
Q Serve(g_s), s	0.6	1.8	0.0	0.0	0.6	0.0
Cycle Q Clear(g_c), s	0.6	1.8	0.0	0.0	0.6	0.0
Prop In Lane	1.00	1.00		0.03	1.00	
Lane Grp Cap(c), veh/h	34	30	1122	1175	475	3362
V/C Ratio(X)	0.24	0.67	0.31	0.31	0.03	0.12
Avail Cap(c_a), veh/h	267	238	1122	1175	475	3362
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.7	68.2	0.0	0.0	24.1	0.0
Incr Delay (d2), s/veh	3.5	22.4	0.7	0.7	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.9	0.2	0.2	0.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	71.2	90.7	0.7	0.7	24.1	0.1
LnGrp LOS	E	F	A	A	C	A
Approach Vol, veh/h	28		707			417
Approach Delay, s/veh	85.1		0.7			1.0
Approach LOS	F		A			A

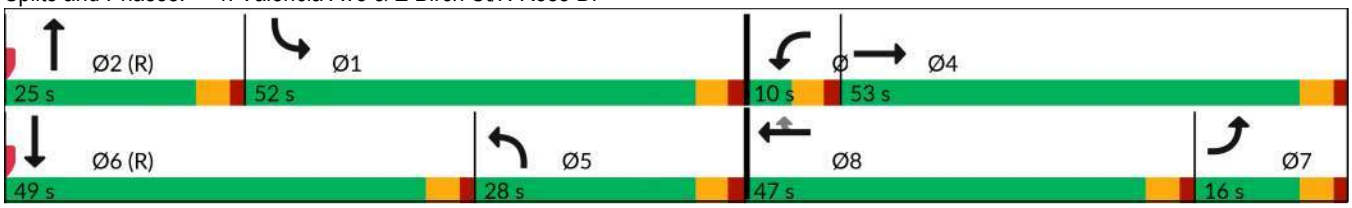
Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	42.3	90.0				132.3	7.7
Change Period (Y+Rc), s	5.0	5.0				5.0	5.0
Max Green Setting (Gmax), s	19.0	85.0				109.0	21.0
Max Q Clear Time (g_c+I1), s	2.6	2.0				2.0	3.8
Green Ext Time (p_c), s	0.0	4.4				2.6	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	2.9
HCM 7th LOS	A

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	194	477	8	414	760	162	471	494	235
Future Volume (vph)	194	477	8	414	760	162	471	494	235
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	16.0	53.0	10.0	47.0	47.0	28.0	25.0	52.0	49.0
Total Split (%)	11.4%	37.9%	7.1%	33.6%	33.6%	20.0%	17.9%	37.1%	35.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	11.6	49.1	5.0	34.5	34.5	23.0	26.9	47.0	50.9
Actuated g/C Ratio	0.08	0.35	0.04	0.25	0.25	0.16	0.19	0.34	0.36
v/c Ratio	0.73	0.51	0.14	0.51	0.94	0.59	0.67	0.99	0.26
Control Delay (s/veh)	77.7	35.9	70.5	46.5	30.1	65.5	37.7	69.5	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	77.7	35.9	70.5	46.5	30.1	65.5	37.7	69.5	9.4
LOS	E	D	E	D	C	E	D	E	A
Approach Delay (s/veh)		46.2		36.1			44.7		48.0
Approach LOS		D		D			D		D

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 88 (63%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay (s/veh): 42.9	Intersection LOS: D
Intersection Capacity Utilization 78.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Valencia Ave & E Birch St/N Rose Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	206	627	9	445	817	171	511	588	328
v/c Ratio	0.73	0.51	0.14	0.51	0.94	0.59	0.67	0.99	0.26
Control Delay (s/veh)	77.7	35.9	70.5	46.5	30.1	65.5	37.7	69.5	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	77.7	35.9	70.5	46.5	30.1	65.5	37.7	69.5	9.4
Queue Length 50th (ft)	94	205	8	175	192	153	188	569	77
Queue Length 95th (ft)	#154	293	28	223	#495	243	#312	m#707	m70
Internal Link Dist (ft)		1706		346			363		2026
Turn Bay Length (ft)	190		230		285	205		160	
Base Capacity (vph)	287	1290	63	1061	919	290	768	594	1266
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	0.72	0.49	0.14	0.42	0.89	0.59	0.67	0.99	0.26

Intersection Summary

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	194	477	113	8	414	760	162	471	14	494	235	40
Future Volume (veh/h)	194	477	113	8	414	760	162	471	14	494	235	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	206	507	120	9	445	817	171	496	15	588	280	48
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.95	0.95	0.95	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	1042	245	15	1066	476	302	523	16	607	955	162
Arrive On Green	0.07	0.36	0.36	0.01	0.30	0.30	0.34	0.29	0.29	0.57	0.52	0.52
Sat Flow, veh/h	3456	2854	672	1781	3554	1585	1781	3663	111	1781	3040	515
Grp Volume(v), veh/h	206	315	312	9	445	817	171	250	261	588	162	166
Grp Sat Flow(s),veh/h/ln	1728	1777	1749	1781	1777	1585	1781	1848	1925	1781	1777	1778
Q Serve(g_s), s	8.2	19.1	19.3	0.7	14.0	42.0	11.0	18.5	18.6	44.4	7.2	7.4
Cycle Q Clear(g_c), s	8.2	19.1	19.3	0.7	14.0	42.0	11.0	18.5	18.6	44.4	7.2	7.4
Prop In Lane	1.00		0.38	1.00		1.00	1.00		0.06	1.00		0.29
Lane Grp Cap(c), veh/h	254	648	638	15	1066	476	302	264	275	607	558	559
V/C Ratio(X)	0.81	0.49	0.49	0.60	0.42	1.72	0.57	0.95	0.95	0.97	0.29	0.30
Avail Cap(c_a), veh/h	272	648	638	64	1066	476	302	264	275	607	558	559
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.67	1.67	1.67
Upstream Filter(I)	0.60	0.60	0.60	1.00	1.00	1.00	1.00	1.00	1.00	0.81	0.81	0.81
Uniform Delay (d), s/veh	63.9	34.3	34.4	69.2	39.2	49.0	42.1	49.5	49.5	29.4	24.5	24.6
Incr Delay (d2), s/veh	10.2	0.3	0.3	32.7	0.3	332.0	2.5	43.3	42.6	25.2	1.1	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	8.1	8.0	0.5	6.2	60.2	4.4	10.2	10.7	18.4	2.9	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	74.2	34.6	34.7	101.9	39.5	381.0	44.5	92.7	92.1	54.6	25.6	25.7
LnGrp LOS	E	C	C	F	D	F	D	F	F	D	C	C
Approach Vol, veh/h		833			1271			682			916	
Approach Delay, s/veh		44.4			259.4			80.4			44.2	
Approach LOS		D			F			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	52.7	25.0	6.2	56.1	28.7	49.0	15.3	47.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	47.0	20.0	5.0	48.0	23.0	44.0	11.0	42.0
Max Q Clear Time (g_c+I1), s	46.4	20.6	2.7	21.3	13.0	9.4	10.2	44.0
Green Ext Time (p_c), s	0.2	0.0	0.0	3.5	0.3	1.8	0.1	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	124.8
HCM 7th LOS	F

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	23	729	198	249	366	189	868	14	151
Future Volume (vph)	23	729	198	249	366	189	868	14	151
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA
Protected Phases	7	4	3	8	5	2		1	6
Permitted Phases							2		
Detector Phase	7	4	3	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	21.0	21.0	10.0	21.0
Total Split (s)	11.0	39.0	16.0	44.0	48.0	75.0	75.0	10.0	37.0
Total Split (%)	7.9%	27.9%	11.4%	31.4%	34.3%	53.6%	53.6%	7.1%	26.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	6.2	37.2	11.9	47.2	37.6	71.9	71.9	5.0	33.3
Actuated g/C Ratio	0.04	0.27	0.09	0.34	0.27	0.51	0.51	0.04	0.24
v/c Ratio	0.31	0.89	0.83	0.18	0.82	0.10	0.85	0.27	0.24
Control Delay (s/veh)	75.3	54.9	85.8	34.4	48.2	9.3	12.3	76.5	42.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	75.3	54.9	85.8	34.4	48.2	9.3	12.3	76.5	42.6
LOS	E	D	F	C	D	A	B	E	D
Approach Delay (s/veh)		55.3		56.9		21.1			45.3
Approach LOS		E		E		C			D

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 89 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay (s/veh): 40.2	Intersection LOS: D
Intersection Capacity Utilization 92.7%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 5: Valencia Ave & E Lambert Rd

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	24	1204	241	310	389	201	923	17	203
v/c Ratio	0.31	0.89	0.83	0.18	0.82	0.10	0.85	0.27	0.24
Control Delay (s/veh)	75.3	54.9	85.8	34.4	48.2	9.3	12.3	76.5	42.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	75.3	54.9	85.8	34.4	48.2	9.3	12.3	76.5	42.6
Queue Length 50th (ft)	21	348	114	74	364	30	142	15	76
Queue Length 95th (ft)	54	#476	#163	97	m438	m37	m828	39	105
Internal Link Dist (ft)		759		811		2026			731
Turn Bay Length (ft)	230		625		300		120	240	
Base Capacity (vph)	79	1348	291	1711	543	2059	1087	63	833
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	0.30	0.89	0.83	0.18	0.72	0.10	0.85	0.27	0.24

Intersection Summary

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	729	402	198	249	5	366	189	868	14	151	19
Future Volume (veh/h)	23	729	402	198	249	5	366	189	868	14	151	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	24	776	428	241	304	6	389	201	0	17	180	23
Peak Hour Factor	0.94	0.94	0.94	0.82	0.82	0.82	0.94	0.94	0.94	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	31	827	385	272	1568	31	547	1848		64	726	91
Arrive On Green	0.02	0.24	0.24	0.08	0.30	0.30	0.51	0.83	0.00	0.04	0.23	0.23
Sat Flow, veh/h	1781	3404	1585	3456	5155	101	1781	3696	1648	1781	3175	400
Grp Volume(v), veh/h	24	776	428	241	200	110	389	201	0	17	100	103
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1728	1702	1852	1781	1848	1648	1781	1777	1798
Q Serve(g_s), s	1.9	31.3	34.0	9.7	6.1	6.1	23.4	1.4	0.0	1.3	6.4	6.6
Cycle Q Clear(g_c), s	1.9	31.3	34.0	9.7	6.1	6.1	23.4	1.4	0.0	1.3	6.4	6.6
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	31	827	385	272	1035	563	547	1848		64	406	411
V/C Ratio(X)	0.78	0.94	1.11	0.89	0.19	0.19	0.71	0.11		0.27	0.25	0.25
Avail Cap(c_a), veh/h	76	827	385	272	1035	563	547	1848		64	406	411
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.46	0.46	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.5	52.0	53.0	63.9	36.0	36.0	29.3	5.9	0.0	65.7	44.1	44.2
Incr Delay (d2), s/veh	33.0	18.2	79.7	27.8	0.1	0.2	2.0	0.1	0.0	2.2	1.4	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	15.0	21.6	5.2	2.5	2.7	8.3	0.5	0.0	0.6	2.9	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	101.6	70.1	132.7	91.7	36.1	36.2	31.3	5.9	0.0	67.9	45.6	45.7
LnGrp LOS	F	E	F	F	D	D	C	A		E	D	D
Approach Vol, veh/h		1228			551			590			220	
Approach Delay, s/veh		92.6			60.4			22.7			47.3	
Approach LOS		F			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	75.0	16.0	39.0	48.0	37.0	7.4	47.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	5.0	70.0	11.0	34.0	43.0	32.0	6.0	39.0
Max Q Clear Time (g_c+I1), s	3.3	3.4	11.7	36.0	25.4	8.6	3.9	8.1
Green Ext Time (p_c), s	0.0	1.2	0.0	0.0	1.1	1.0	0.0	1.7

Intersection Summary	
HCM 7th Control Delay, s/veh	66.0
HCM 7th LOS	E

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	38	0	1	12	13	3	4	7	16	0	3
Future Vol, veh/h	18	38	0	1	12	13	3	4	7	16	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	78	78	78	50	50	50	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	54	0	1	15	17	6	8	14	21	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	32	0	0	54	0	0	122	139	54	135	131	24
Stage 1	-	-	-	-	-	-	104	104	-	26	26	-
Stage 2	-	-	-	-	-	-	18	35	-	108	104	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1580	-	-	1552	-	-	853	752	1014	837	760	1053
Stage 1	-	-	-	-	-	-	902	809	-	991	873	-
Stage 2	-	-	-	-	-	-	1001	866	-	897	809	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1580	-	-	1552	-	-	835	739	1014	802	747	1053
Mov Cap-2 Maneuver	-	-	-	-	-	-	835	739	-	802	747	-
Stage 1	-	-	-	-	-	-	887	796	-	990	873	-
Stage 2	-	-	-	-	-	-	997	865	-	861	796	-

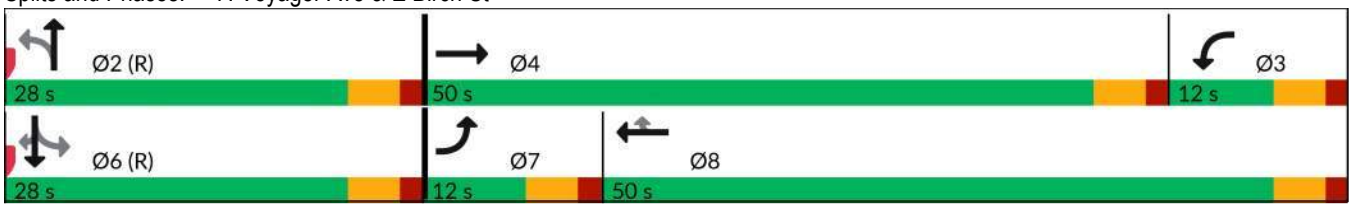
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	2.35	0.28	9.23	9.45
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	880	579	-	-	63	-	-	834
HCM Lane V/C Ratio	0.032	0.016	-	-	0.001	-	-	0.03
HCM Control Delay (s/veh)	9.2	7.3	0	-	7.3	0	-	9.5
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	5	822	2	634	11	40	0	7	0	12
Future Volume (vph)	5	822	2	634	11	40	0	7	0	12
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	7	4	3	8			2		6	
Permitted Phases					8	2		6		6
Detector Phase	7	4	3	8	8	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.5	10.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	12.0	50.0	12.0	50.0	50.0	28.0	28.0	28.0	28.0	28.0
Total Split (%)	13.3%	55.6%	13.3%	55.6%	55.6%	31.1%	31.1%	31.1%	31.1%	31.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.9	30.3	5.7	30.2	30.2	47.5	47.5		47.5	47.5
Actuated g/C Ratio	0.07	0.34	0.06	0.34	0.34	0.53	0.53		0.53	0.53
v/c Ratio	0.04	0.73	0.02	0.66	0.02	0.09	0.05		0.01	0.02
Control Delay (s/veh)	59.6	9.0	39.5	27.9	0.1	14.6	0.1		15.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	59.6	9.0	39.5	27.9	0.1	14.6	0.1		15.3	0.0
LOS	E	A	D	C	A	B	A		B	A
Approach Delay (s/veh)		9.3		27.4			8.5		5.5	
Approach LOS		A		C			A		A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 31 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay (s/veh): 17.1	Intersection LOS: B
Intersection Capacity Utilization 40.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 7: Voyager Ave & E Birch St



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	5	871	2	783	14	69	50	10	18
v/c Ratio	0.04	0.73	0.02	0.66	0.02	0.09	0.05	0.01	0.02
Control Delay (s/veh)	59.6	9.0	39.5	27.9	0.1	14.6	0.1	15.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	59.6	9.0	39.5	27.9	0.1	14.6	0.1	15.3	0.0
Queue Length 50th (ft)	2	25	1	198	0	17	0	2	0
Queue Length 95th (ft)	m5	32	8	198	0	35	0	11	0
Internal Link Dist (ft)		1715		1706			560	102	
Turn Bay Length (ft)	200		140		225	125			95
Base Capacity (vph)	137	1766	137	1769	834	738	1069	711	903
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	0.04	0.49	0.01	0.44	0.02	0.09	0.05	0.01	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	822	14	2	634	11	40	0	29	7	0	12
Future Volume (veh/h)	5	822	14	2	634	11	40	0	29	7	0	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	856	15	2	783	14	69	0	50	10	0	18
Peak Hour Factor	0.96	0.96	0.96	0.81	0.81	0.81	0.58	0.58	0.58	0.68	0.68	0.68
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	9	1001	18	12	1000	446	818	0	901	801	0	866
Arrive On Green	0.01	0.56	0.56	0.01	0.28	0.28	0.55	0.00	0.55	0.55	0.00	0.55
Sat Flow, veh/h	1781	3573	63	1781	3554	1585	1395	0	1648	1320	0	1585
Grp Volume(v), veh/h	5	426	445	2	783	14	69	0	50	10	0	18
Grp Sat Flow(s),veh/h/ln	1781	1777	1859	1781	1777	1585	1395	0	1648	1320	0	1585
Q Serve(g_s), s	0.3	18.2	18.2	0.1	18.3	0.6	2.2	0.0	1.3	0.3	0.0	0.5
Cycle Q Clear(g_c), s	0.3	18.2	18.2	0.1	18.3	0.6	3.8	0.0	1.3	1.6	0.0	0.5
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	9	498	521	12	1000	446	818	0	901	801	0	866
V/C Ratio(X)	0.54	0.86	0.86	0.17	0.78	0.03	0.08	0.00	0.06	0.01	0.00	0.02
Avail Cap(c_a), veh/h	139	888	930	139	1777	793	818	0	901	801	0	866
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	0.83	0.83	0.83	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.4	18.2	18.2	44.5	29.8	23.4	10.5	0.0	9.5	9.9	0.0	9.4
Incr Delay (d2), s/veh	31.6	3.3	3.2	5.6	1.1	0.0	0.2	0.0	0.1	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.8	5.0	0.1	7.3	0.2	0.7	0.0	0.5	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	76.1	21.5	21.4	50.1	30.9	23.5	10.7	0.0	9.7	9.9	0.0	9.4
LnGrp LOS	E	C	C	D	C	C	B		A	A		A
Approach Vol, veh/h		876			799			119			28	
Approach Delay, s/veh		21.8			30.9			10.3			9.6	
Approach LOS		C			C			B			A	

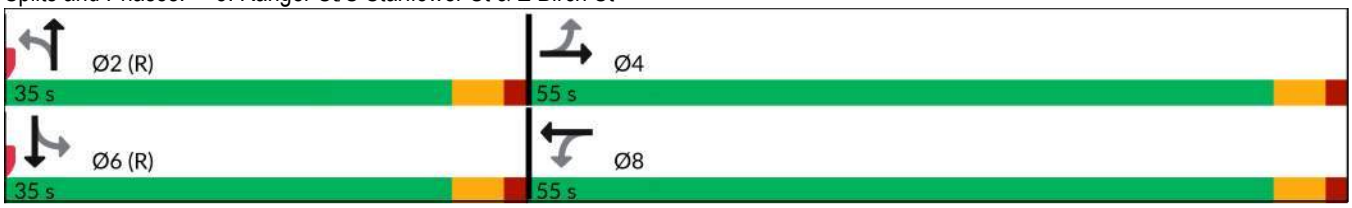
Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		54.2	5.6	30.2		54.2	5.5	30.3
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		23.0	7.0	45.0		23.0	7.0	45.0
Max Q Clear Time (g_c+I1), s		5.8	2.1	20.2		3.6	2.3	20.3
Green Ext Time (p_c), s		0.4	0.0	5.0		0.1	0.0	5.1

Intersection Summary	
HCM 7th Control Delay, s/veh	24.8
HCM 7th LOS	C

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	28	804	737	99	1	9	0
Future Volume (vph)	28	804	737	99	1	9	0
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA
Protected Phases		4	8		2		6
Permitted Phases	4			2		6	
Detector Phase	4	4	8	2	2	6	6
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Total Split (s)	55.0	55.0	55.0	35.0	35.0	35.0	35.0
Total Split (%)	61.1%	61.1%	61.1%	38.9%	38.9%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0		5.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	34.1	34.1	34.1		45.9		45.9
Actuated g/C Ratio	0.38	0.38	0.38		0.51		0.51
v/c Ratio	0.32	0.61	0.73		0.29		0.05
Control Delay (s/veh)	27.0	23.8	39.4		15.1		7.7
Queue Delay	0.0	0.0	0.0		0.0		0.0
Total Delay (s/veh)	27.0	23.8	39.4		15.1		7.7
LOS	C	C	D		B		A
Approach Delay (s/veh)		23.9	39.4		15.1		7.7
Approach LOS		C	D		B		A

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay (s/veh): 29.6	Intersection LOS: C
Intersection Capacity Utilization 44.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Ranger St/S Starflower St & E Birch St



Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	32	932	981	220	42
v/c Ratio	0.32	0.61	0.73	0.29	0.05
Control Delay (s/veh)	27.0	23.8	39.4	15.1	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.0	23.8	39.4	15.1	7.7
Queue Length 50th (ft)	13	219	310	66	4
Queue Length 95th (ft)	33	231	306	67	14
Internal Link Dist (ft)		759	1715	671	28
Turn Bay Length (ft)	145				
Base Capacity (vph)	147	2223	1963	767	798
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.42	0.50	0.29	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	804	16	0	737	8	99	1	12	9	0	18
Future Volume (veh/h)	28	804	16	0	737	8	99	1	12	9	0	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.04	1.04	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1945	1945	1870	1870	1870	1870	1945	1945	1870	1870	1870
Adj Flow Rate, veh/h	32	914	18	0	970	11	194	2	24	14	0	28
Peak Hour Factor	0.88	0.88	0.88	0.76	0.76	0.76	0.51	0.51	0.51	0.65	0.65	0.65
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	157	1454	29	80	1411	16	715	12	80	286	25	514
Arrive On Green	0.39	0.39	0.39	0.00	0.13	0.13	0.50	0.50	0.50	0.50	0.00	0.50
Sat Flow, veh/h	574	3707	73	601	3599	41	1288	23	161	468	50	1035
Grp Volume(v), veh/h	32	456	476	0	479	502	220	0	0	42	0	0
Grp Sat Flow(s),veh/h/ln	574	1848	1932	601	1777	1863	1472	0	0	1553	0	0
Q Serve(g_s), s	4.6	17.9	17.9	0.0	23.2	23.2	6.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	27.8	17.9	17.9	0.0	23.2	23.2	7.6	0.0	0.0	1.2	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.02	0.88		0.11	0.33		0.67
Lane Grp Cap(c), veh/h	157	725	758	80	697	731	807	0	0	825	0	0
V/C Ratio(X)	0.20	0.63	0.63	0.00	0.69	0.69	0.27	0.00	0.00	0.05	0.00	0.00
Avail Cap(c_a), veh/h	251	1027	1073	178	987	1035	807	0	0	825	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.77	0.77	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	35.7	22.1	22.1	0.0	33.9	33.9	13.2	0.0	0.0	11.7	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.9	0.9	0.0	0.9	0.9	0.8	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	7.1	7.4	0.0	11.0	11.5	2.7	0.0	0.0	0.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.3	23.0	22.9	0.0	34.8	34.8	14.1	0.0	0.0	11.8	0.0	0.0
LnGrp LOS	D	C	C		C	C	B			B		
Approach Vol, veh/h		964			981			220			42	
Approach Delay, s/veh		23.4			34.8			14.1			11.8	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	49.7	40.3	49.7	40.3
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	30.0	50.0	30.0	50.0
Max Q Clear Time (g_c+I1), s	9.6	29.8	3.2	25.2
Green Ext Time (p_c), s	1.3	5.5	0.2	5.9

Intersection Summary	
HCM 7th Control Delay, s/veh	27.3
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	42	14	11	57	3
Future Vol, veh/h	6	42	14	11	57	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	58	58	50	50	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	72	28	22	68	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	50	0	-	0	132	39
Stage 1	-	-	-	-	39	-
Stage 2	-	-	-	-	93	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1557	-	-	-	862	1033
Stage 1	-	-	-	-	983	-
Stage 2	-	-	-	-	931	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1557	-	-	-	856	1033
Mov Cap-2 Maneuver	-	-	-	-	856	-
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	931	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.92	0	9.55
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	225	-	-	-	863
HCM Lane V/C Ratio	0.007	-	-	-	0.083
HCM Control Delay (s/veh)	7.3	0	-	-	9.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	660	357	0
Future Vol, veh/h	0	0	0	660	357	0
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	92	92	88	88	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	750	425	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	800	213	-	0	-	0
Stage 1	425	-	-	-	-	-
Stage 2	375	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	-	-
Pot Cap-1 Maneuver	322	793	0	-	-	-
Stage 1	627	-	0	-	-	-
Stage 2	665	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	322	793	-	-	-	-
Mov Cap-2 Maneuver	322	-	-	-	-	-
Stage 1	627	-	-	-	-	-
Stage 2	665	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s/veh)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↱		↑↑	↑↑	
Traffic Vol, veh/h	0	20	0	633	356	0
Future Vol, veh/h	0	20	0	633	356	0
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	92	92	88	88	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	22	0	719	424	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	212	-	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	793	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	793	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.67	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	793	-
HCM Lane V/C Ratio	-	0.027	-
HCM Control Delay (s/veh)	-	9.7	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	98	24	80	20	0
Future Vol, veh/h	0	98	24	80	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	68	68	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	127	35	118	22	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	153	0	-	0	158	94
Stage 1	-	-	-	-	94	-
Stage 2	-	-	-	-	64	-
Critical Hdwy	4.13	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1426	-	-	-	826	962
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	952	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1426	-	-	-	826	962
Mov Cap-2 Maneuver	-	-	-	-	826	-
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	952	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.48
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1426	-	-	-	826
HCM Lane V/C Ratio	-	-	-	-	0.026
HCM Control Delay (s/veh)	0	-	-	-	9.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	23	0	0	62
Future Vol, veh/h	0	0	23	0	0	62
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	27	0	0	74

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	101	27	0	0	27	0
Stage 1	27	-	-	-	-	-
Stage 2	74	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	897	1048	-	-	1586	-
Stage 1	995	-	-	-	-	-
Stage 2	949	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	897	1048	-	-	1586	-
Mov Cap-2 Maneuver	897	-	-	-	-	-
Stage 1	995	-	-	-	-	-
Stage 2	949	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	-	1586	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s/veh)	-	-	0	0	0	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	23	0	0	66
Future Vol, veh/h	0	0	23	0	0	66
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	92	92	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	27	0	0	79

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	106	27	0	0	27	0
Stage 1	27	-	-	-	-	-
Stage 2	79	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	892	1048	-	-	1586	-
Stage 1	995	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	892	1048	-	-	1586	-
Mov Cap-2 Maneuver	892	-	-	-	-	-
Stage 1	995	-	-	-	-	-
Stage 2	944	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1586	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	66	0	0	20	3
Future Vol, veh/h	0	66	0	0	20	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	92	92	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	79	0	0	24	4

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	0	79
Stage 1	-	-	0	0
Stage 2	-	-	0	79
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	-	812
Stage 1	-	-	-	-
Stage 2	-	-	-	830
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	0
Mov Cap-2 Maneuver	-	-	-	0
Stage 1	-	-	-	0
Stage 2	-	-	-	0

Approach	EB	WB
HCM Control Delay, s/v	0	0
HCM LOS		A

Minor Lane/Major Mvmt	EBT	EBR	WBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s/veh)	-	-	0
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	-

Appendix F – Intersection Capacity Utilization Reports

Intersection	1	
Condition	Existing	
Lane Capacity	1700	vphpl
Lost time factor	0.05	

NBL	Prot
SBL	Prot
EBL	Prot
WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		2	2	1	2	2	1	2	3	1	2	3	1
Lane Capacity		3400	3400	1700	3400	3400	1700	3400	5100	1700	3400	5100	1700
AM Peak	Raw Vol	136	254	217	92	115	101	129	1065	88	90	1082	60
	Comb Vol	136	254	217	92	115	101	129	1065	88	90	1082	60
	v/c	0.040	0.075	0.128	0.027	0.034	0.059	0.038	0.209	0.052	0.026	0.212	0.035
PM Peak	Raw Vol	89	170	71	82	263	127	202	1333	129	108	1127	133
	Comb Vol	89	170	71	82	263	127	202	1333	129	108	1127	133
	v/c	0.026	0.050	0.042	0.024	0.077	0.075	0.059	0.261	0.076	0.032	0.221	0.078

		AM	PM
E/W Critical Movement		0.250	0.293
N/S Critical Movement		0.155	0.103
Clearance Interval		0.050	0.050
	ICU	**0.455**	**0.446**
	LOS	**A**	**A**

AM Critical Movements					
E/W	EBL/WBT	EBL/WBT	0.250	WBL, EBT	0.235
N/S	NBL/SBR	NBL/SBR	0.155	SBL/NBR	0.099

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.280	WBL, EBT	0.293
N/S	SBL/NBT	NBL/SBT	0.074	SBL/NBT	0.103

Intersection	2	
Condition	Existing	
Lane Capacity	1700	vphpl
Lost time factor	0.05	

NBL	Prot
SBL	Prot
EBL	Perm
WBL	Perm

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		1	2	0	2	2	0	1	1	0	1	1	0
Lane Capacity		1700	3400		3400	3400		1700	1700		1700	1700	
AM Peak	Raw Vol	57	581	3	40	259	19	1	3	40	37	10	94
	Comb Vol	57	584	0	40	278	0	1	43	0	37	104	0
	v/c	0.034	0.172		0.012	0.082		0.001	0.025		0.022	0.061	
PM Peak	Raw Vol	35	288	0	11	544	40	0	0	77	24	0	38
	Comb Vol	35	288	0	11	584	0	0	77	0	24	38	0
	v/c	0.021	0.085		0.003	0.172		0.000	0.045		0.014	0.022	

		AM	PM
E/W Critical Movement		0.062	0.059
N/S Critical Movement		0.184	0.193
Clearance Interval		0.050	0.050
	ICU	**0.296**	**0.302**
	LOS	**A**	**A**

AM Critical Movements					
E/W	EBL/WBT	EBL/WBT	0.062	WBL, EBT	0.047
N/S	NBL/SBT	NBL/SBT	0.184	SBL/NBT	0.116

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.022	WBL, EBT	0.059
N/S	SBL/NBT	NBL/SBT	0.088	SBL/NBT	0.193

Intersection	3	
Condition	Existing	
Lane Capacity	1700	vphpl
Lost time factor	0.05	

NBL	Prot
SBL	Prot
EBL	Prot-Perm
WBL	Prot-Perm

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		1	2	0	1	2	0	0	1	1	0	1	1
Lane Capacity		1700	3400		1700	3400			1700	1700		1700	1700
AM Peak	Raw Vol	6	654	0	1	347	5	0	0	0	7	0	13
	Comb Vol	6	654	0	1	352	0	0	0	0	0	7	13
	v/c	0.004	0.192		0.001	0.104			0.000	0.000		0.004	0.008
PM Peak	Raw Vol	14	309	0	1	597	9	0	0	1	5	0	12
	Comb Vol	14	309	0	1	606	0	0	0	1	0	5	12
	v/c	0.008	0.091		0.001	0.178			0.000	0.001		0.003	0.007

		AM	PM
E/W Critical Movement		0.008	0.007
N/S Critical Movement		0.193	0.186
Clearance Interval		0.050	0.050
	ICU	**0.251**	**0.243**
	LOS	**A**	**A**

AM Critical Movements					
E/W	EBL/WBR	EBL/WBR	0.008	WBL, EBT	0.000
N/S	NBL/SBT	NBL/SBT	0.193	SBL/NBT	0.108

PM Critical Movements					
E/W	EBL/WBR	EBL/WBR	0.007	WBL, EBR	0.001
N/S	SBL/NBT	NBL/SBT	0.092	SBL/NBT	0.186

Intersection	4	
Condition	Existing	
Lane Capacity	1700	vphpl
Lost time factor	0.05	

NBL	Prot
SBL	Prot
EBL	Prot
WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		1	2	0	1	2	0	2	2	0	1	2	1
Lane Capacity		1700	3400		1700	3400		3400	3400		1700	3400	1700
AM Peak	Raw Vol	610	520	229	130	210	19	68	441	126	8	301	300
	Comb Vol	610	749	0	130	229	0	68	567	0	8	301	300
	v/c	0.359	0.220		0.076	0.067		0.020	0.167		0.005	0.089	0.176
PM Peak	Raw Vol	479	198	36	157	425	14	185	449	110	8	381	738
	Comb Vol	479	234	0	157	439	0	185	559	0	8	381	738
	v/c	0.282	0.069		0.092	0.129		0.054	0.164		0.005	0.112	0.434

	AM	PM
E/W Critical Movement	0.196	0.488
N/S Critical Movement	0.426	0.411
Clearance Interval	0.050	0.050
ICU	**0.672**	**0.949**
LOS	**B**	**E**

AM Critical Movements					
E/W	EBL/WBR	EBL/WBR	0.196	WBL, EBT	0.172
N/S	SBL/NBT	NBL/SBT	0.296	SBL/NBT	0.426

PM Critical Movements					
E/W	EBL/WBR	EBL/WBR	0.488	WBL, EBT	0.169
N/S	SBL/NBT	NBL/SBT	0.161	SBL/NBT	0.411

Intersection	5	
Condition	Existing	
Lane Capacity	1700	vphpl
Lost time factor	0.05	

NBL	Prot
SBL	Prot
EBL	Prot
WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		1	2	0	1	2	FREE	1	3	0	2	3	0
Lane Capacity		1700	3400		1700	3400	#VALUE!	1700	5100		3400	5100	
AM Peak	Raw Vol	7	290	34	161	189	160	52	120	266	904	502	3
	Comb Vol	7	324	0	161	189	160	52	386	0	904	505	0
	v/c	0.004	0.095		0.095	0.056		0.031	0.076		0.266	0.099	
PM Peak	Raw Vol	14	144	17	346	181	820	21	631	374	192	221	5
	Comb Vol	14	161	0	346	181	820	21	1005	0	192	226	0
	v/c	0.008	0.047		0.204	0.053		0.012	0.197		0.056	0.044	

	AM	PM
E/W Critical Movement	0.342	0.253
N/S Critical Movement	0.190	0.251
Clearance Interval	0.050	0.050
ICU	**0.582**	**0.554**
LOS	**A**	**A**

AM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.130	WBL, EBT	0.342
N/S	NBL/SBT	NBL/SBT	0.190	SBL/NBT	0.060

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.056	WBL, EBT	0.253
N/S	NBL/SBT	NBL/SBT	0.251	SBL/NBT	0.061

Intersection	7	
Condition	Existing	
Lane Capacity	1700	vphpl
Lost time factor	0.05	

NBL	Perm
SBL	Perm
EBL	Prot
WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		0	1	1	1	1	0	1	2	0	1	2	1
Lane Capacity			1700	1700	1700	1700		1700	3400		1700	3400	1700
AM Peak	Raw Vol	32	0	37	33	3	14	63	619	49	29	414	35
	Comb Vol	0	32	37	33	17	0	63	668	0	29	414	35
	v/c		0.019	0.022	0.019	0.010		0.037	0.196		0.017	0.122	0.021
PM Peak	Raw Vol	7	0	12	37	0	28	5	781	13	2	592	11
	Comb Vol	0	7	12	37	28	0	5	794	0	2	592	11
	v/c		0.004	0.007	0.022	0.016		0.003	0.234		0.001	0.174	0.006

	AM	PM
E/W Critical Movement	0.213	0.235
N/S Critical Movement	0.041	0.029
Clearance Interval	0.050	0.050
ICU	**0.304**	**0.314**
LOS	**A**	**A**

AM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.159	WBL, EBT	0.213
N/S	NBL/SBR	NBL/SBR	0.041	SBL/NBT	0.010

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.177	WBL, EBT	0.235
N/S	NBL/SBR	NBL/SBR	0.029	SBL/NBT	0.016

Intersection	8	
Condition	Existing	
Lane Capacity	1700	vphpl
Lost time factor	0.05	

NBL	Perm
SBL	Perm
EBL	Perm
WBL	Perm

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		0	1	0	0	1	0	1	2	0	1	2	0
Lane Capacity			1700			1700		1700	3400		1700	3400	
AM Peak	Raw Vol	23	2	32	38	0	1	17	734	101	12	607	6
	Comb Vol	0	57	0	0	39	0	17	835	0	12	613	0
	v/c		0.034			0.023		0.010	0.246		0.007	0.180	
PM Peak	Raw Vol	9	0	17	96	1	12	27	763	16	0	690	8
	Comb Vol	0	26	0	0	109	0	27	779	0	0	698	0
	v/c		0.015			0.064		0.016	0.229		0.000	0.205	

	AM	PM
E/W Critical Movement	0.253	0.229
N/S Critical Movement	0.034	0.064
Clearance Interval	0.050	0.050
ICU	**0.337**	**0.343**
LOS	**A**	**A**

AM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.190	WBL, EBT	0.253
N/S	NBL/SBT	NBL/SBT	0.034	SBL/NBT	0.023

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.221	WBL, EBT	0.229
N/S	SBL/NBT	NBL/SBT	0.015	SBL/NBT	0.064

Intersection	1	
Condition	Ex + Site	
Lane Capacity	1700	vphpl
Lost time factor	0.05	

NBL	Prot
SBL	Prot
EBL	Prot
WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		2	2	1	2	2	1	2	3	1	2	3	1
Lane Capacity		3400	3400	1700	3400	3400	1700	3400	5100	1700	3400	5100	1700
AM Peak	Raw Vol	153	254	221	92	115	101	131	1065	88	90	1082	77
	Comb Vol	153	254	221	92	115	101	131	1065	88	90	1082	77
	v/c	0.045	0.075	0.130	0.027	0.034	0.059	0.039	0.209	0.052	0.026	0.212	0.045
PM Peak	Raw Vol	97	186	79	82	295	127	220	1333	129	108	1127	150
	Comb Vol	97	186	79	82	295	127	220	1333	129	108	1127	150
	v/c	0.029	0.055	0.046	0.024	0.087	0.075	0.065	0.261	0.076	0.032	0.221	0.088

		AM	PM
E/W Critical Movement		0.251	0.293
N/S Critical Movement		0.157	0.116
Clearance Interval		0.050	0.050
	ICU	**0.458**	**0.459**
	LOS	**A**	**A**

AM Critical Movements					
E/W	EBL/WBT	EBL/WBT	0.251	WBL, EBT	0.235
N/S	NBL/SBR	NBL/SBR	0.157	SBL/NBR	0.104

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.286	WBL, EBT	0.293
N/S	SBL/NBT	NBL/SBT	0.079	SBL/NBT	0.116

Intersection	2	
Condition	Ex + Site	
Lane Capacity	1700	vphpl
Lost time factor	0.05	

NBL	Prot
SBL	Prot
EBL	Perm
WBL	Perm

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		1	2	0	2	2	0	1	1	0	1	1	0
Lane Capacity		1700	3400		3400	3400		1700	1700		1700	1700	
AM Peak	Raw Vol	57	581	3	59	259	19	1	3	61	37	10	94
	Comb Vol	57	584	0	59	278	0	1	64	0	37	104	0
	v/c	0.034	0.172		0.017	0.082		0.001	0.038		0.022	0.061	
PM Peak	Raw Vol	35	308	16	78	544	40	8	0	89	24	0	38
	Comb Vol	35	324	0	78	584	0	8	89	0	24	38	0
	v/c	0.021	0.095		0.023	0.172		0.005	0.052		0.014	0.022	

		AM	PM
E/W Critical Movement		0.062	0.066
N/S Critical Movement		0.189	0.193
Clearance Interval		0.050	0.050
	ICU	**0.301**	**0.309**
	LOS	**A**	**A**

AM Critical Movements					
E/W	EBL/WBT	EBL/WBT	0.062	WBL, EBT	0.060
N/S	NBL/SBT	NBL/SBT	0.189	SBL/NBT	0.116

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.027	WBL, EBT	0.066
N/S	SBL/NBT	NBL/SBT	0.118	SBL/NBT	0.193

Intersection	3	
Condition	Ex + Site	
Lane Capacity	1700	vphpl
Lost time factor	0.05	

NBL	Prot
SBL	Prot
EBL	Prot-Perm
WBL	Prot-Perm

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		1	2	0	1	2	0	0	1	1	0	1	1
Lane Capacity		1700	3400		1700	3400			1700	1700		1700	1700
AM Peak	Raw Vol	6	654	0	1	347	5	0	0	0	7	0	13
	Comb Vol	6	654	0	1	352	0	0	0	0	0	7	13
	v/c	0.004	0.192		0.001	0.104			0.000	0.000		0.004	0.008
PM Peak	Raw Vol	14	325	0	1	605	9	0	0	1	5	0	12
	Comb Vol	14	325	0	1	614	0	0	0	1	0	5	12
	v/c	0.008	0.096		0.001	0.181			0.000	0.001		0.003	0.007

		AM	PM
E/W Critical Movement		0.008	0.007
N/S Critical Movement		0.193	0.189
Clearance Interval		0.050	0.050
	ICU	**0.251**	**0.246**
	LOS	**A**	**A**

AM Critical Movements					
E/W	EBL/WBR	EBL/WBR	0.008	WBL, EBT	0.000
N/S	NBL/SBT	NBL/SBT	0.193	SBL/NBT	0.108

PM Critical Movements					
E/W	EBL/WBR	EBL/WBR	0.007	WBL, EBR	0.001
N/S	SBL/NBT	NBL/SBT	0.097	SBL/NBT	0.189

Intersection	4	
Condition	Ex + Site	
Lane Capacity	1700	vphpl
Lost time factor	0.05	

NBL	Prot
SBL	Prot
EBL	Prot
WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		1	2	0	1	2	0	2	2	0	1	2	1
Lane Capacity		1700	3400		1700	3400		3400	3400		1700	3400	1700
AM Peak	Raw Vol	610	543	233	130	210	19	94	441	126	8	301	300
	Comb Vol	610	776	0	130	229	0	94	567	0	8	301	300
	v/c	0.359	0.228		0.076	0.067		0.028	0.167		0.005	0.089	0.176
PM Peak	Raw Vol	479	214	36	157	433	14	185	449	110	8	381	738
	Comb Vol	479	250	0	157	447	0	185	559	0	8	381	738
	v/c	0.282	0.074		0.092	0.131		0.054	0.164		0.005	0.112	0.434

	AM	PM
E/W Critical Movement	0.204	0.488
N/S Critical Movement	0.426	0.413
Clearance Interval	0.050	0.050
ICU	**0.680**	**0.951**
LOS	**B**	**E**

AM Critical Movements					
E/W	EBL/WBR	EBL/WBR	0.204	WBL, EBT	0.172
N/S	SBL/NBT	NBL/SBT	0.304	SBL/NBT	0.426

PM Critical Movements					
E/W	EBL/WBR	EBL/WBR	0.488	WBL, EBT	0.169
N/S	SBL/NBT	NBL/SBT	0.166	SBL/NBT	0.413

Intersection	5	
Condition	Ex + Site	
Lane Capacity	1700	vphpl
Lost time factor	0.05	

NBL	Prot
SBL	Prot
EBL	Prot
WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		1	2	0	1	2	FREE	1	3	0	2	3	0
Lane Capacity		1700	3400		1700	3400	#VALUE!	1700	5100		3400	5100	
AM Peak	Raw Vol	7	290	34	172	189	175	52	120	277	920	502	3
	Comb Vol	7	324	0	172	189	175	52	397	0	920	505	0
	v/c	0.004	0.095		0.101	0.056		0.031	0.078		0.271	0.099	
PM Peak	Raw Vol	14	144	17	354	181	820	21	631	390	192	221	5
	Comb Vol	14	161	0	354	181	820	21	1021	0	192	226	0
	v/c	0.008	0.047		0.208	0.053		0.012	0.200		0.056	0.044	

	AM	PM
E/W Critical Movement	0.349	0.256
N/S Critical Movement	0.196	0.255
Clearance Interval	0.050	0.050
ICU	**0.595**	**0.561**
LOS	**A**	**A**

AM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.130	WBL, EBT	0.349
N/S	NBL/SBT	NBL/SBT	0.196	SBL/NBT	0.060

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.056	WBL, EBT	0.256
N/S	NBL/SBT	NBL/SBT	0.255	SBL/NBT	0.061

Intersection	7	
Condition	Ex + Site	
Lane Capacity	1700	vphpl
Lost time factor	0.05	

NBL	Perm
SBL	Perm
EBL	Prot
WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		0	1	1	1	1	0	1	2	0	1	2	1
Lane Capacity			1700	1700	1700	1700		1700	3400		1700	3400	1700
AM Peak	Raw Vol	32	0	37	35	3	40	63	619	51	33	414	35
	Comb Vol	0	32	37	35	43	0	63	670	0	33	414	35
	v/c		0.019	0.022	0.021	0.025		0.037	0.197		0.019	0.122	0.021
PM Peak	Raw Vol	7	0	12	37	0	28	5	781	13	2	592	11
	Comb Vol	0	7	12	37	28	0	5	794	0	2	592	11
	v/c		0.004	0.007	0.022	0.016		0.003	0.234		0.001	0.174	0.006

	AM	PM
E/W Critical Movement	0.216	0.235
N/S Critical Movement	0.043	0.029
Clearance Interval	0.050	0.050
ICU	**0.309**	**0.314**
LOS	**A**	**A**

AM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.159	WBL, EBT	0.216
N/S	NBL/SBR	NBL/SBR	0.043	SBL/NBT	0.025

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.177	WBL, EBT	0.235
N/S	NBL/SBR	NBL/SBR	0.029	SBL/NBT	0.016

Intersection	8	
Condition	Ex + Site	
Lane Capacity	1700	vphpl
Lost time factor	0.05	

NBL	Perm
SBL	Perm
EBL	Perm
WBL	Perm

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		0	1	0	0	1	0	1	2	0	1	2	0
Lane Capacity			1700			1700		1700	3400		1700	3400	
AM Peak	Raw Vol	23	2	32	38	0	1	17	736	101	12	609	6
	Comb Vol	0	57	0	0	39	0	17	837	0	12	615	0
	v/c		0.034			0.023		0.010	0.246		0.007	0.181	
PM Peak	Raw Vol	9	0	17	96	1	12	27	763	16	0	690	8
	Comb Vol	0	26	0	0	109	0	27	779	0	0	698	0
	v/c		0.015			0.064		0.016	0.229		0.000	0.205	

	AM	PM
E/W Critical Movement	0.253	0.229
N/S Critical Movement	0.034	0.064
Clearance Interval	0.050	0.050
ICU	**0.337**	**0.343**
LOS	**A**	**A**

AM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.191	WBL, EBT	0.253
N/S	NBL/SBT	NBL/SBT	0.034	SBL/NBT	0.023

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.221	WBL, EBT	0.229
N/S	SBL/NBT	NBL/SBT	0.015	SBL/NBT	0.064

Intersection	1		NBL	Prot
Condition	Opening	(No Build)	SBL	Prot
Lane Capacity	1700	vphpl	EBL	Prot
Lost time factor	0.05		WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		2	2	1	2	2	1	2	3	1	2	3	1
Lane Capacity		3400	3400	1700	3400	3400	1700	3400	5100	1700	3400	5100	1700
AM Peak	Raw Vol	146	278	228	99	133	104	140	1119	93	93	1168	70
	Comb Vol	146	278	228	99	133	104	140	1119	93	93	1168	70
	v/c	0.043	0.082	0.134	0.029	0.039	0.061	0.041	0.219	0.055	0.027	0.229	0.041
PM Peak	Raw Vol	102	193	81	89	288	131	216	1429	139	111	1214	145
	Comb Vol	102	193	81	89	288	131	216	1429	139	111	1214	145
	v/c	0.030	0.057	0.048	0.026	0.085	0.077	0.064	0.280	0.082	0.033	0.238	0.085

	AM	PM
E/W Critical Movement	0.270	0.313
N/S Critical Movement	0.163	0.115
Clearance Interval	0.050	0.050
ICU	**0.483**	**0.478**
LOS	**A**	**A**

AM Critical Movements					
E/W	EBL/WBT	EBL/WBT	0.270	WBL, EBT	0.246
N/S	NBL/SBR	NBL/SBR	0.163	SBL/NBR	0.104

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.302	WBL, EBT	0.313
N/S	SBL/NBT	NBL/SBT	0.083	SBL/NBT	0.115

Intersection	2		NBL	Prot
Condition	Opening	(No Build)	SBL	Prot
Lane Capacity	1700	vphpl	EBL	Prot
Lost time factor	0.05		WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		1	2	0	2	2	0	1	1	0	1	1	0
Lane Capacity		1700	3400		3400	3400		1700	1700		1700	1700	
AM Peak	Raw Vol	59	620	5	62	277	20	2	3	47	38	10	97
	Comb Vol	59	625	0	62	297	0	2	50	0	38	107	0
	v/c	0.035	0.184		0.018	0.087		0.001	0.029		0.022	0.063	
PM Peak	Raw Vol	36	311	1	20	583	41	2	0	100	25	0	39
	Comb Vol	36	312	0	20	624	0	2	100	0	25	39	0
	v/c	0.021	0.092		0.006	0.184		0.001	0.059		0.015	0.023	

	AM	PM
E/W Critical Movement	0.064	0.074
N/S Critical Movement	0.202	0.205
Clearance Interval	0.050	0.050
ICU	**0.316**	**0.329**
LOS	**A**	**A**

AM Critical Movements					
E/W	EBL/WBT	EBL/WBT	0.064	WBL, EBT	0.051
N/S	NBL/SBT	NBL/SBT	0.202	SBL/NBT	0.122

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.024	WBL, EBT	0.074
N/S	SBL/NBT	NBL/SBT	0.098	SBL/NBT	0.205

Intersection	3		NBL	Prot
Condition	Opening	(No Build)	SBL	Prot
Lane Capacity	1700	vphpl	EBL	Prot
Lost time factor	0.05		WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		1	2	0	1	2	0	0	1	1	0	1	1
Lane Capacity		1700	3400		1700	3400			1700	1700		1700	1700
AM Peak	Raw Vol	6	697	0	1	369	5	0	0	0	7	0	13
	Comb Vol	6	697	0	1	374	0	0	0	0	0	7	13
	v/c	0.004	0.205		0.001	0.110			0.000	0.000		0.004	0.008
PM Peak	Raw Vol	14	333	0	1	640	9	0	0	1	5	0	12
	Comb Vol	14	333	0	1	649	0	0	0	1	0	5	12
	v/c	0.008	0.098		0.001	0.191			0.000	0.001		0.003	0.007

	AM	PM
E/W Critical Movement	0.008	0.007
N/S Critical Movement	0.206	0.199
Clearance Interval	0.050	0.050
ICU	**0.264**	**0.256**
LOS	**A**	**A**

AM Critical Movements					
E/W	EBL/WBR	EBL/WBR	0.008	WBL, EBT	0.000
N/S	NBL/SBT	NBL/SBT	0.206	SBL/NBT	0.114

PM Critical Movements					
E/W	EBL/WBR	EBL/WBR	0.007	WBL, EBR	0.001
N/S	SBL/NBT	NBL/SBT	0.099	SBL/NBT	0.199

Intersection	4		NBL	Prot
Condition	Opening	(No Build)	SBL	Prot
Lane Capacity	1700	vphpl	EBL	Prot
Lost time factor	0.05		WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		1	2	0	1	2	0	2	2	0	1	2	1
Lane Capacity		1700	3400		1700	3400		3400	3400		1700	3400	1700
AM Peak	Raw Vol	628	559	237	134	227	20	71	475	130	8	320	309
	Comb Vol	628	796	0	134	247	0	71	605	0	8	320	309
	v/c	0.369	0.234		0.079	0.073		0.021	0.178		0.005	0.094	0.182
PM Peak	Raw Vol	494	219	40	162	463	14	194	477	113	8	414	760
	Comb Vol	494	259	0	162	477	0	194	590	0	8	414	760
	v/c	0.291	0.076		0.095	0.140		0.057	0.174		0.005	0.122	0.447

	AM	PM
E/W Critical Movement	0.203	0.504
N/S Critical Movement	0.442	0.431
Clearance Interval	0.050	0.050
ICU	**0.695**	**0.985**
LOS	**B**	**E**

AM Critical Movements					
E/W	EBL/WBR	EBL/WBR	0.203	WBL, EBT	0.183
N/S	SBL/NBT	NBL/SBT	0.313	SBL/NBT	0.442

PM Critical Movements					
E/W	EBL/WBR	EBL/WBR	0.504	WBL, EBT	0.179
N/S	SBL/NBT	NBL/SBT	0.171	SBL/NBT	0.431

Intersection	5		NBL	Prot
Condition	Opening	(No Build)	SBL	Prot
Lane Capacity	1700	vphpl	EBL	Prot
Lost time factor	0.05		WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		1	2	0	1	2	FREE	1	3	0	2	3	0
Lane Capacity		1700	3400		1700	3400	#VALUE!	1700	5100		3400	5100	
AM Peak	Raw Vol	7	300	37	167	196	175	56	170	276	952	592	3
	Comb Vol	7	337	0	167	196	175	56	446	0	952	595	0
	v/c	0.004	0.099		0.098	0.058		0.033	0.087		0.280	0.117	
PM Peak	Raw Vol	14	151	19	358	189	868	23	729	386	198	249	5
	Comb Vol	14	170	0	358	189	868	23	1115	0	198	254	0
	v/c	0.008	0.050		0.211	0.056		0.014	0.219		0.058	0.050	

	AM	PM
E/W Critical Movement	0.367	0.277
N/S Critical Movement	0.197	0.261
Clearance Interval	0.050	0.050
ICU	**0.614**	**0.588**
LOS	**B**	**A**

AM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.150	WBL, EBT	0.367
N/S	NBL/SBT	NBL/SBT	0.197	SBL/NBT	0.062

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.064	WBL, EBT	0.277
N/S	NBL/SBT	NBL/SBT	0.261	SBL/NBT	0.064

Intersection	7		NBL	Prot
Condition	Opening	(No Build)	SBL	Prot
Lane Capacity	1700	vphpl	EBL	Prot
Lost time factor	0.05		WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		0	1	1	1	1	0	1	2	0	1	2	1
Lane Capacity			1700	1700	1700	1700		1700	3400		1700	3400	1700
AM Peak	Raw Vol	33	0	38	35	3	14	65	660	52	30	438	36
	Comb Vol	0	33	38	35	17	0	65	712	0	30	438	36
	v/c		0.019	0.022	0.021	0.010		0.038	0.209		0.018	0.129	0.021
PM Peak	Raw Vol	7	0	12	40	0	29	5	822	14	2	634	11
	Comb Vol	0	7	12	40	29	0	5	836	0	2	634	11
	v/c		0.004	0.007	0.024	0.017		0.003	0.246		0.001	0.186	0.006

	AM	PM
E/W Critical Movement	0.227	0.247
N/S Critical Movement	0.043	0.031
Clearance Interval	0.050	0.050
ICU	**0.320**	**0.328**
LOS	**A**	**A**

AM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.167	WBL, EBT	0.227
N/S	NBL/SBR	NBL/SBR	0.043	SBL/NBT	0.010

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.189	WBL, EBT	0.247
N/S	NBL/SBR	NBL/SBR	0.031	SBL/NBT	0.017

Intersection	8	
Condition	Opening	(No Build)
Lane Capacity	1700	vphpl
Lost time factor	0.05	

NBL	Prot
SBL	Prot
EBL	Prot
WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		0	1	0	0	1	0	1	2	0	1	2	0
Lane Capacity			1700			1700		1700	3400		1700	3400	
AM Peak	Raw Vol	24	2	33	39	0	1	18	780	104	12	637	6
	Comb Vol	0	59	0	0	40	0	18	884	0	12	643	0
	v/c		0.035			0.024		0.011	0.260		0.007	0.189	
PM Peak	Raw Vol	9	0	18	99	1	12	28	804	16	0	737	8
	Comb Vol	0	27	0	0	112	0	28	820	0	0	745	0
	v/c		0.016			0.066		0.016	0.241		0.000	0.219	

	AM	PM
E/W Critical Movement	0.267	0.241
N/S Critical Movement	0.035	0.066
Clearance Interval	0.050	0.050
ICU	**0.352**	**0.357**
LOS	**A**	**A**

AM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.200	WBL, EBT	0.267
N/S	NBL/SBT	NBL/SBT	0.035	SBL/NBT	0.024

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.235	WBL, EBT	0.241
N/S	SBL/NBT	NBL/SBT	0.016	SBL/NBT	0.066

Intersection	1		NBL	Prot
Condition	Op + Site	(Build)	SBL	Prot
Lane Capacity	1700	vphpl	EBL	Prot
Lost time factor	0.05		WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		2	2	1	2	2	1	2	3	1	2	3	1
Lane Capacity		3400	3400	1700	3400	3400	1700	3400	5100	1700	3400	5100	1700
AM Peak	Raw Vol	163	278	232	99	133	104	142	1119	93	93	1168	87
	Comb Vol	163	278	232	99	133	104	142	1119	93	93	1168	87
	v/c	0.048	0.082	0.136	0.029	0.039	0.061	0.042	0.219	0.055	0.027	0.229	0.051
PM Peak	Raw Vol	110	209	89	89	320	131	234	1429	139	111	1214	162
	Comb Vol	110	209	89	89	320	131	234	1429	139	111	1214	162
	v/c	0.032	0.061	0.052	0.026	0.094	0.077	0.069	0.280	0.082	0.033	0.238	0.095

		AM	PM
E/W Critical Movement		0.271	0.313
N/S Critical Movement		0.165	0.126
Clearance Interval		0.050	0.050
	ICU	**0.486**	**0.489**
	LOS	**A**	**A**

AM Critical Movements					
E/W	EBL/WBT	EBL/WBT	0.271	WBL, EBT	0.246
N/S	NBL/SBR	NBL/SBR	0.165	SBL/NBR	0.109

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.307	WBL, EBT	0.313
N/S	SBL/NBT	NBL/SBT	0.087	SBL/NBT	0.126

Intersection	2		NBL	Prot
Condition	Op + Site	(Build)	SBL	Prot
Lane Capacity	1700	vphpl	EBL	Prot
Lost time factor	0.05		WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		1	2	0	2	2	0	1	1	0	1	1	0
Lane Capacity		1700	3400		3400	3400		1700	1700		1700	1700	
AM Peak	Raw Vol	59	620	5	81	277	20	2	3	68	38	10	97
	Comb Vol	59	625	0	81	297	0	2	71	0	38	107	0
	v/c	0.035	0.184		0.024	0.087		0.001	0.042		0.022	0.063	
PM Peak	Raw Vol	36	331	17	87	583	41	10	0	112	25	0	39
	Comb Vol	36	348	0	87	624	0	10	112	0	25	39	0
	v/c	0.021	0.102		0.026	0.184		0.006	0.066		0.015	0.023	

		AM	PM
E/W Critical Movement		0.064	0.081
N/S Critical Movement		0.208	0.205
Clearance Interval		0.050	0.050
	ICU	**0.322**	**0.336**
	LOS	**A**	**A**

AM Critical Movements					
E/W	EBL/WBT	EBL/WBT	0.064	WBL, EBT	0.064
N/S	NBL/SBT	NBL/SBT	0.208	SBL/NBT	0.122

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.029	WBL, EBT	0.081
N/S	SBL/NBT	NBL/SBT	0.128	SBL/NBT	0.205

Intersection	3		NBL	Prot
Condition	Op + Site	(Build)	SBL	Prot
Lane Capacity	1700	vphpl	EBL	Prot
Lost time factor	0.05		WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		1	2	0	1	2	0	0	1	1	0	1	1
Lane Capacity		1700	3400		1700	3400			1700	1700		1700	1700
AM Peak	Raw Vol	6	697	0	0	369	5	0	0	0	7	0	13
	Comb Vol	6	697	0	0	374	0	0	0	0	0	7	13
	v/c	0.004	0.205		0.000	0.110			0.000	0.000		0.004	0.008
PM Peak	Raw Vol	14	349	0	0	648	9	0	0	0	5	0	12
	Comb Vol	14	349	0	0	657	0	0	0	0	0	5	12
	v/c	0.008	0.103		0.000	0.193			0.000	0.000		0.003	0.007

		AM	PM
E/W Critical Movement		0.008	0.007
N/S Critical Movement		0.205	0.201
Clearance Interval		0.050	0.050
	ICU	**0.263**	**0.258**
	LOS	**A**	**A**

AM Critical Movements					
E/W	EBL/WBR	EBL/WBR	0.008	WBL, EBT	0.000
N/S	NBL/SBT	NBL/SBT	0.205	SBL/NBT	0.114

PM Critical Movements					
E/W	EBL/WBR	EBL/WBR	0.007	WBL, EBT	0.000
N/S	SBL/NBT	NBL/SBT	0.103	SBL/NBT	0.201

Intersection	4		NBL	Prot
Condition	Op + Site	(Build)	SBL	Prot
Lane Capacity	1700	vphpl	EBL	Prot
Lost time factor	0.05		WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		1	2	0	1	2	0	2	2	0	1	2	1
Lane Capacity		1700	3400		1700	3400		3400	3400		1700	3400	1700
AM Peak	Raw Vol	628	582	241	134	227	20	97	475	130	8	320	309
	Comb Vol	628	823	0	134	247	0	97	605	0	8	320	309
	v/c	0.369	0.242		0.079	0.073		0.029	0.178		0.005	0.094	0.182
PM Peak	Raw Vol	494	235	40	162	471	14	194	477	113	8	414	760
	Comb Vol	494	275	0	162	485	0	194	590	0	8	414	760
	v/c	0.291	0.081		0.095	0.143		0.057	0.174		0.005	0.122	0.447

	AM	PM
E/W Critical Movement	0.211	0.504
N/S Critical Movement	0.442	0.434
Clearance Interval	0.050	0.050
ICU	**0.703**	**0.988**
LOS	**C**	**E**

AM Critical Movements					
E/W	EBL/WBR	EBL/WBR	0.211	WBL, EBT	0.183
N/S	SBL/NBT	NBL/SBT	0.321	SBL/NBT	0.442

PM Critical Movements					
E/W	EBL/WBR	EBL/WBR	0.504	WBL, EBT	0.179
N/S	SBL/NBT	NBL/SBT	0.176	SBL/NBT	0.434

Intersection	5		NBL	Prot
Condition	Op + Site	(Build)	SBL	Prot
Lane Capacity	1700	vphpl	EBL	Prot
Lost time factor	0.05		WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		1	2	0	1	2	FREE	1	3	0	2	3	0
Lane Capacity		1700	3400		1700	3400	#VALUE!	1700	5100		3400	5100	
AM Peak	Raw Vol	7	300	37	178	196	190	56	170	287	968	592	3
	Comb Vol	7	337	0	178	196	190	56	457	0	968	595	0
	v/c	0.004	0.099		0.105	0.058		0.033	0.090		0.285	0.117	
PM Peak	Raw Vol	14	151	19	366	189	868	23	729	402	198	249	5
	Comb Vol	14	170	0	366	189	868	23	1131	0	198	254	0
	v/c	0.008	0.050		0.215	0.056		0.014	0.222		0.058	0.050	

	AM	PM
E/W Critical Movement	0.375	0.280
N/S Critical Movement	0.204	0.265
Clearance Interval	0.050	0.050
ICU	**0.629**	**0.595**
LOS	**B**	**A**

AM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.150	WBL, EBT	0.375
N/S	NBL/SBT	NBL/SBT	0.204	SBL/NBT	0.062

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.064	WBL, EBT	0.280
N/S	NBL/SBT	NBL/SBT	0.265	SBL/NBT	0.064

Intersection	7		NBL	Prot
Condition	Op + Site	(Build)	SBL	Prot
Lane Capacity	1700	vphpl	EBL	Prot
Lost time factor	0.05		WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		0	1	1	1	1	0	1	2	0	1	2	1
Lane Capacity			1700	1700	1700	1700		1700	3400		1700	3400	1700
AM Peak	Raw Vol	33	0	38	37	3	40	65	660	54	34	438	36
	Comb Vol	0	33	38	37	43	0	65	714	0	34	438	36
	v/c		0.019	0.022	0.022	0.025		0.038	0.210		0.020	0.129	0.021
PM Peak	Raw Vol	7	0	12	40	0	29	5	822	14	2	634	11
	Comb Vol	0	7	12	40	29	0	5	836	0	2	634	11
	v/c		0.004	0.007	0.024	0.017		0.003	0.246		0.001	0.186	0.006

	AM	PM
E/W Critical Movement	0.230	0.247
N/S Critical Movement	0.044	0.031
Clearance Interval	0.050	0.050
ICU	**0.324**	**0.328**
LOS	**A**	**A**

AM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.167	WBL, EBT	0.230
N/S	NBL/SBR	NBL/SBR	0.044	SBL/NBT	0.025

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.189	WBL, EBT	0.247
N/S	NBL/SBR	NBL/SBR	0.031	SBL/NBT	0.017

Intersection	8	
Condition	Op + Site	(Build)
Lane Capacity	1700	vphpl
Lost time factor	0.05	

NBL	Prot
SBL	Prot
EBL	Prot
WBL	Prot

Movement		SBL	SBT	SBR	NBL	NBT	NBR	EBL	EBT	EBR	WBL	WBT	WBR
# Lanes		0	1	0	0	1	0	1	2	0	1	2	0
Lane Capacity			1700			1700		1700	3400		1700	3400	
AM Peak	Raw Vol	24	2	33	39	0	1	18	782	104	12	639	6
	Comb Vol	0	59	0	0	40	0	18	886	0	12	645	0
	v/c		0.035			0.024		0.011	0.261		0.007	0.190	
PM Peak	Raw Vol	9	0	18	99	1	12	28	804	16	0	737	8
	Comb Vol	0	27	0	0	112	0	28	820	0	0	745	0
	v/c		0.016			0.066		0.016	0.241		0.000	0.219	

	AM	PM
E/W Critical Movement	0.268	0.241
N/S Critical Movement	0.035	0.066
Clearance Interval	0.050	0.050
ICU	**0.353**	**0.357**
LOS	**A**	**A**

AM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.201	WBL, EBT	0.268
N/S	NBL/SBT	NBL/SBT	0.035	SBL/NBT	0.024

PM Critical Movements					
E/W	WBL, EBT	EBL/WBT	0.235	WBL, EBT	0.241
N/S	SBL/NBT	NBL/SBT	0.016	SBL/NBT	0.066

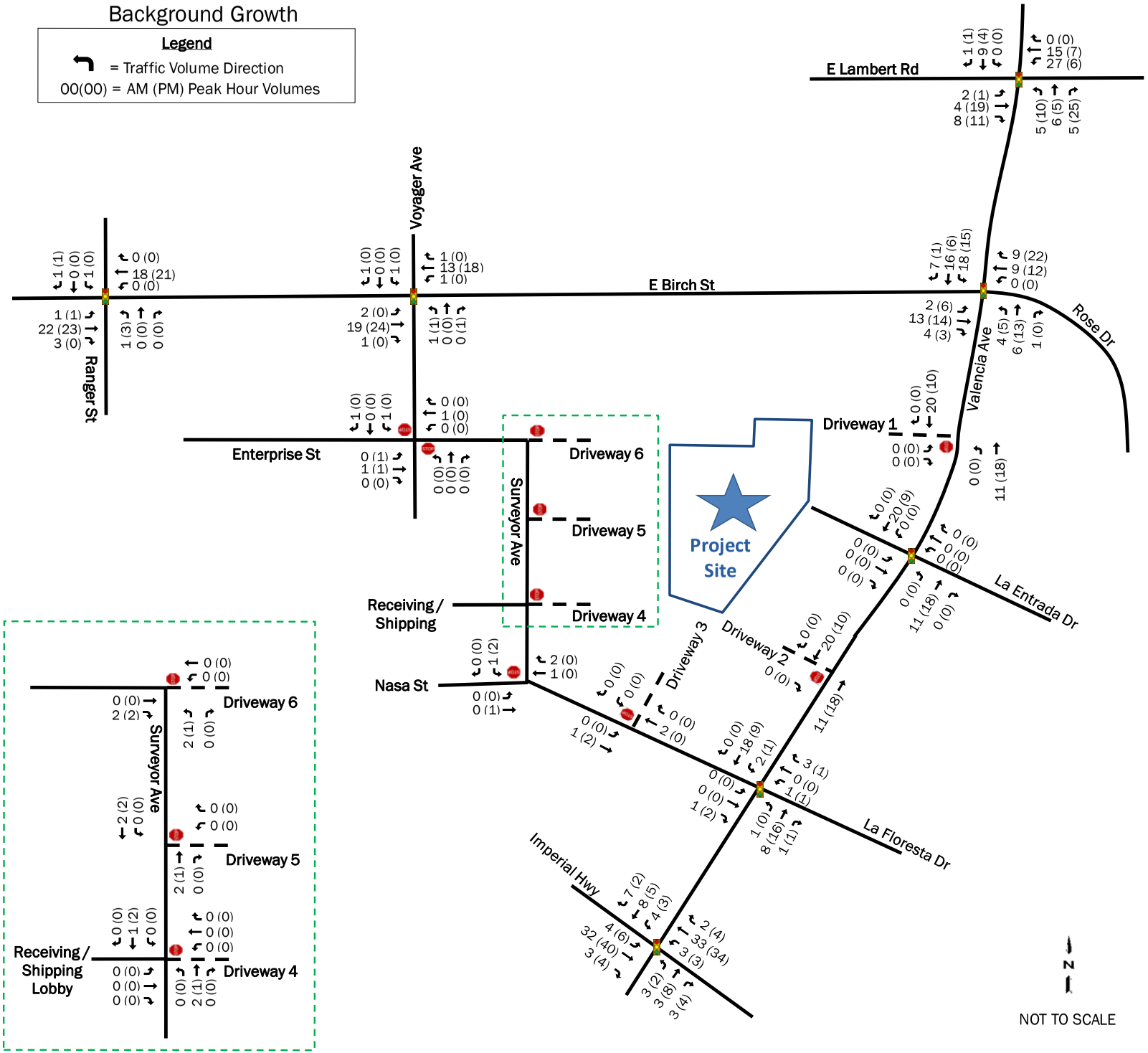
Appendix G – Background Growth & Cumulative Projects

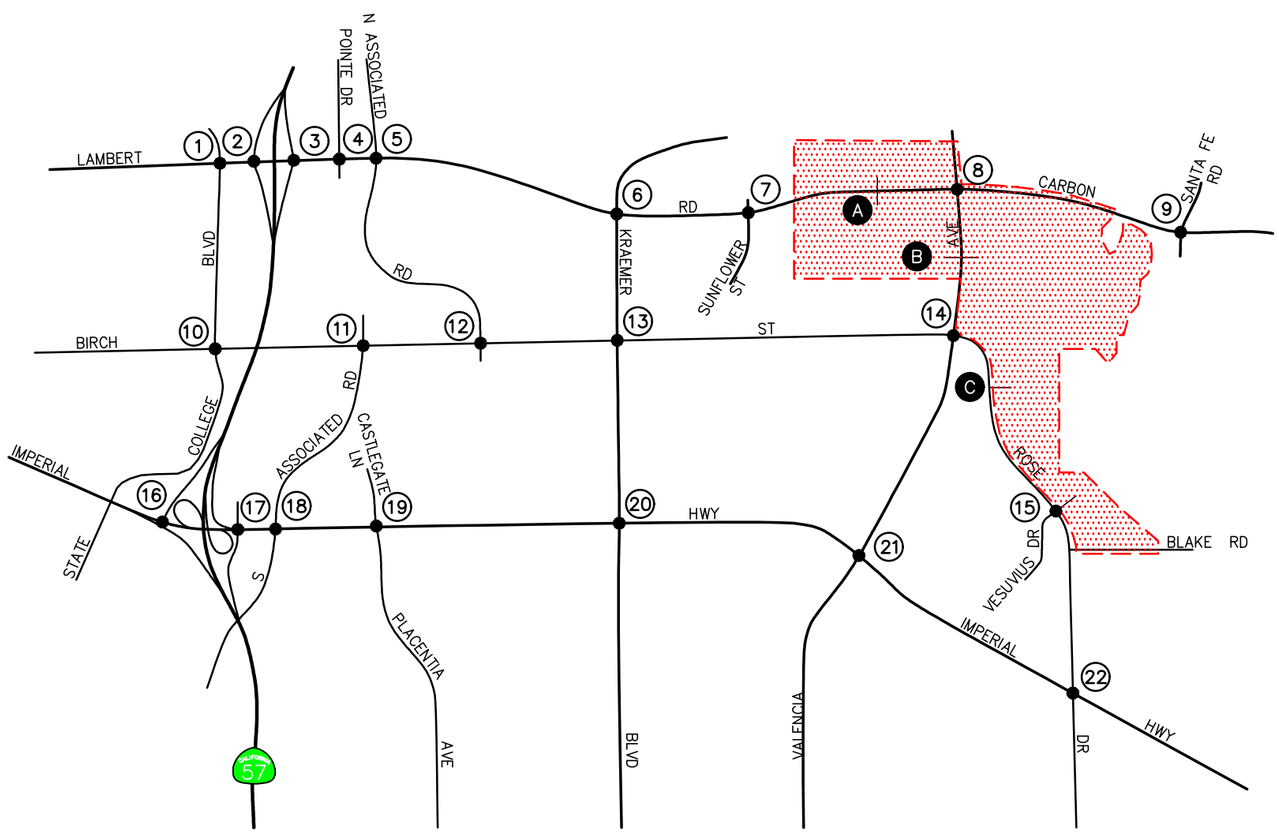
Background Growth

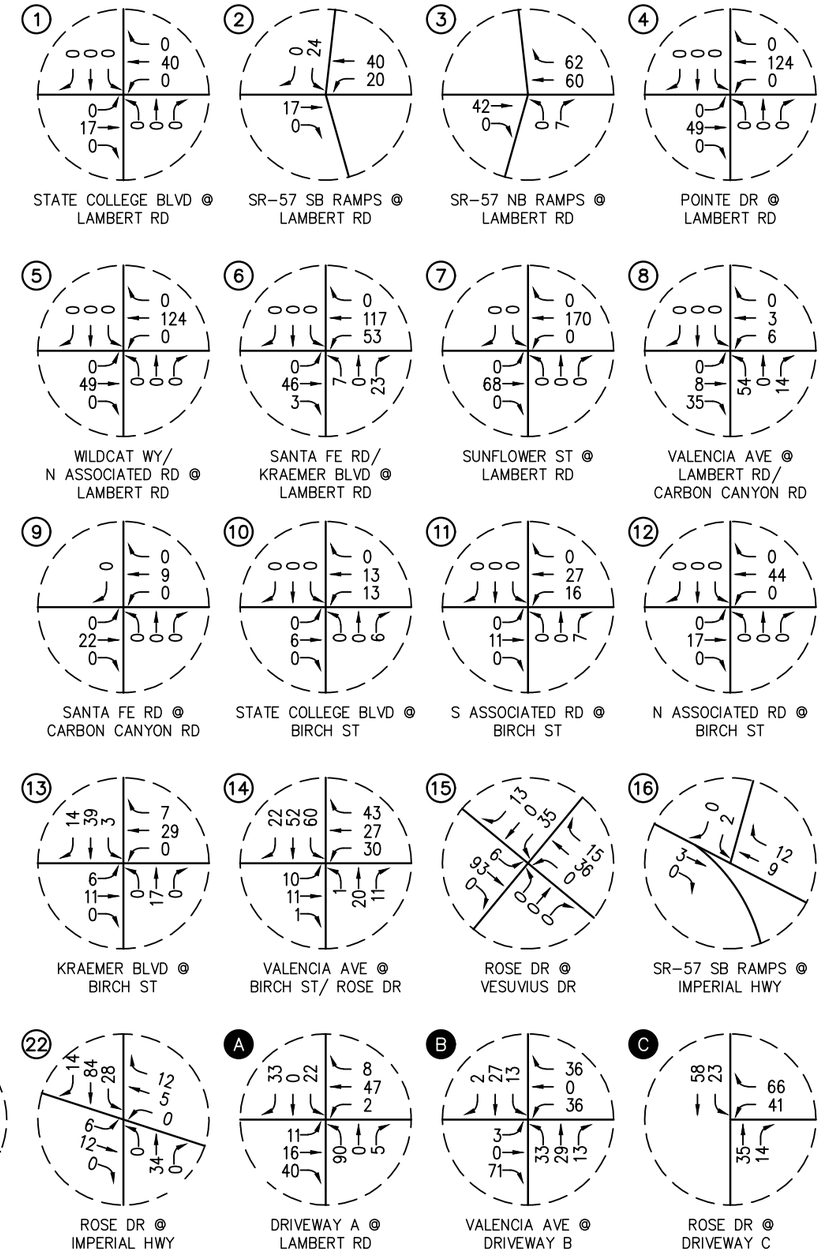
Legend

= Traffic Volume Direction

00(00) = AM (PM) Peak Hour Volumes







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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

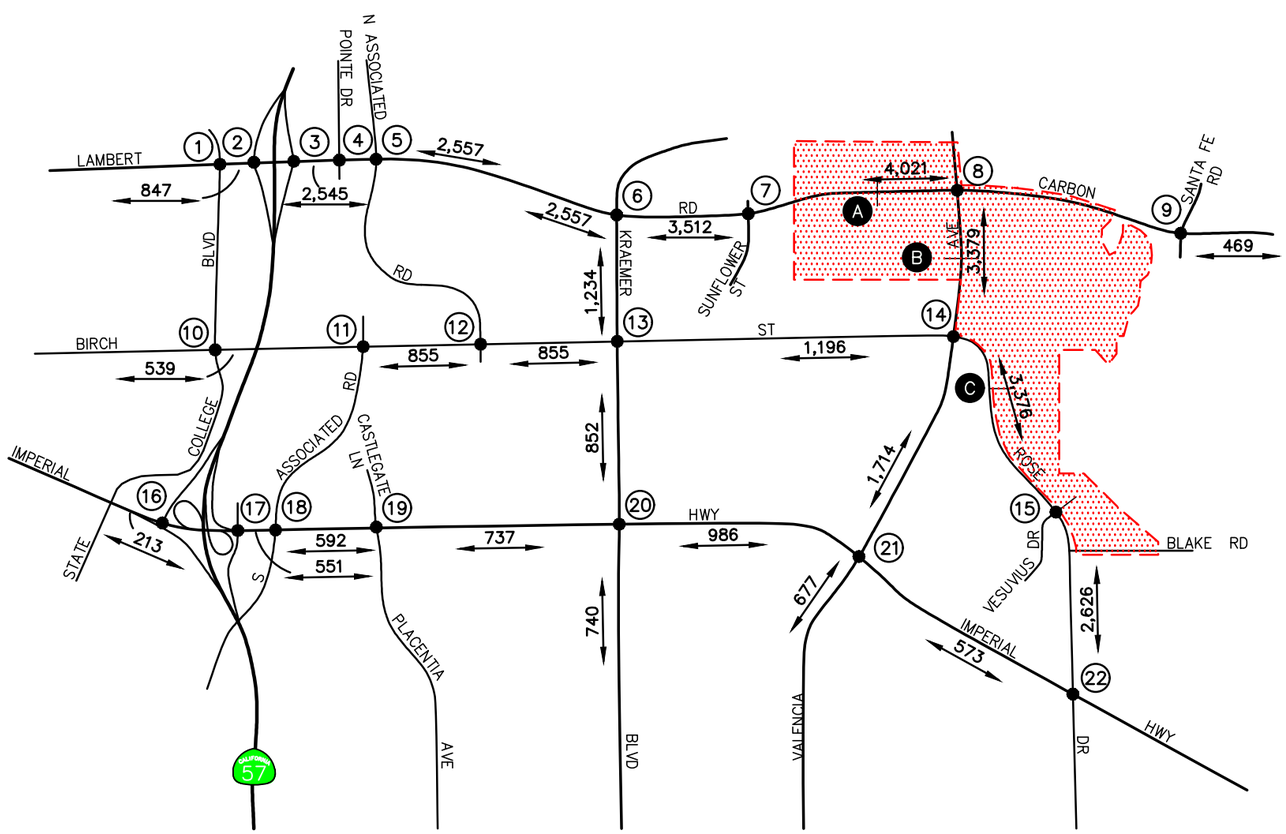
(#) = STUDY INTERSECTION

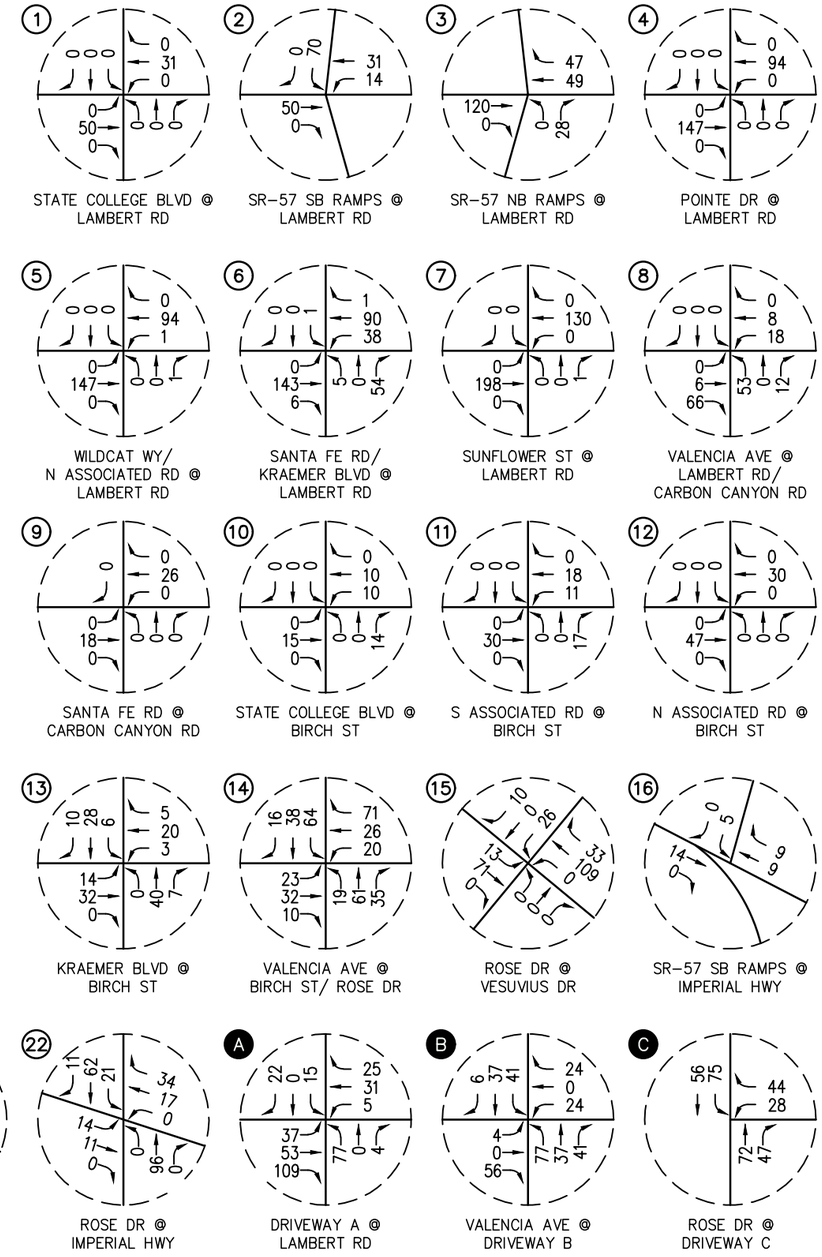
= PROJECT SITE

FIGURE 5-6

AM PEAK HOUR PROJECT TRAFFIC VOLUMES

BREA 265 SPECIFIC PLAN, BREA





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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

XX,XXX = DAILY TRAFFIC VOLUMES

= PROJECT SITE

FIGURE 5-7

PM PEAK HOUR AND DAILY PROJECT TRAFFIC VOLUMES

BREA 265 SPECIFIC PLAN, BREA

11.0 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.

Figures 11-1 and ***11-2*** present the recommended improvements and intersection controls at the key study intersections for the Year 2035 and Year 2045 traffic conditions per ICU analysis and HCM analysis, respectively. These are discussed in more detail in the sections below.

Table 11-1 identifies the incremental intersection improvements needed by the relevant study years to maintain, where possible, acceptable service levels based on the LOS standards defined in this report, as detailed in the sections below.

11.1 Planned Improvements

The following improvements listed below are part of the SR-57 Lambert Interchange improvement project, now under construction, that have been included in the Year 2035 and Year 2045 background traffic conditions:

- **No. 2 – SR-57 SB Ramps at Lambert Road:** Widen the off-ramp to provide a second exclusive southbound left-turn lane. Restripe the shared southbound left-turn/through/right-turn lane to a second exclusive right-turn lane. Widen to provide a second exclusive eastbound right-turn lane. Modify the existing traffic signal.

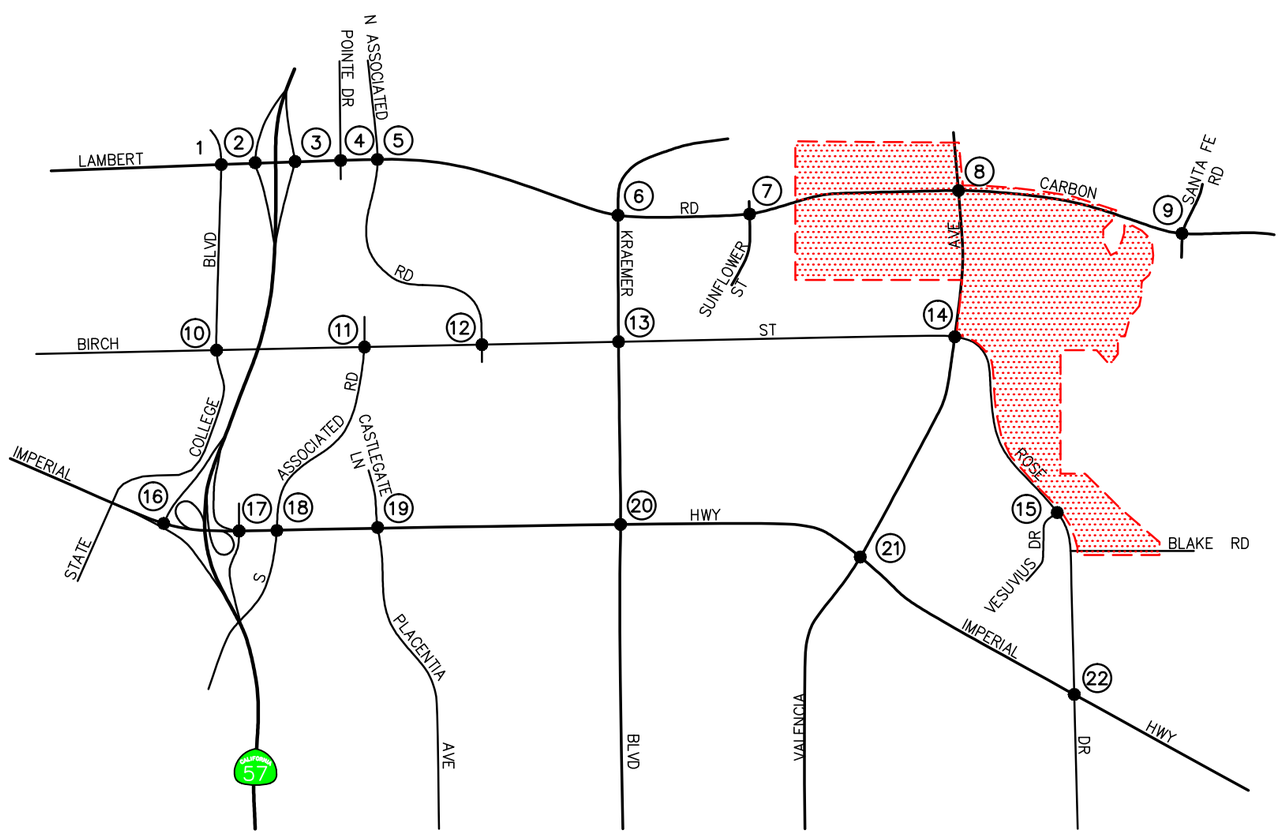
- **No. 3 – SR-57 NB Ramps at Lambert Road:** Construct a loop on-ramp on the south leg. Remove dual eastbound exclusive left-turn lanes. Widen and restripe to provide a shared eastbound through/right-turn lane and an exclusive eastbound right-turn lane. Reconstruct the existing on-ramp for a free westbound right-turn lane. Modify the existing traffic signal.

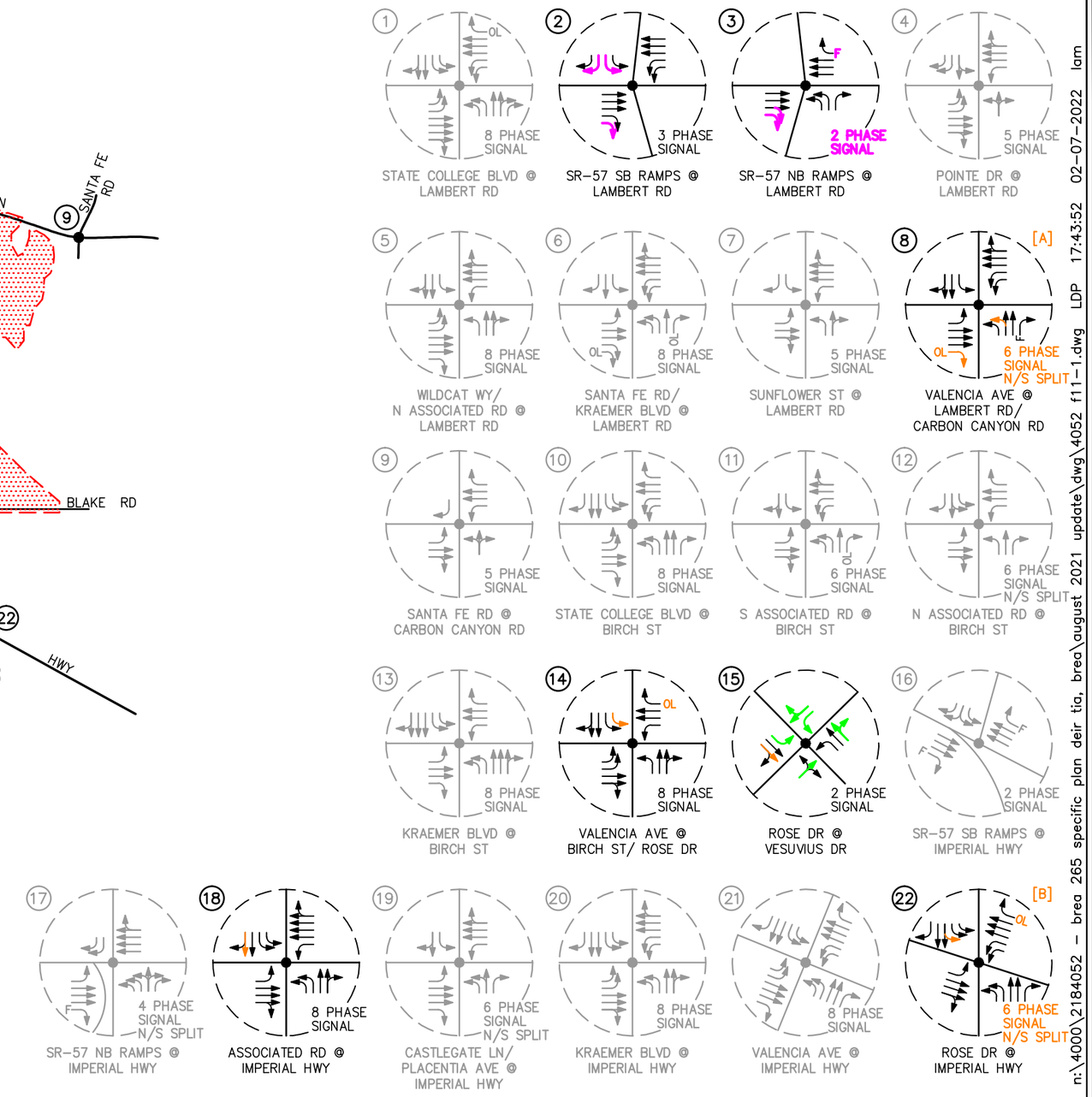
11.2 Year 2035 Plus Project Traffic Conditions Recommended Improvements

11.2.1 *Year 2035 Plus Project – ICU*

The results of the intersection capacity analyses presented previously in *Table 8-1* show that five (5) of the twenty-two (22) study intersections require Project-related improvements under Year 2035 Plus Project traffic conditions based on ICU analysis. As such, the following intersection improvements are recommended. Per City requirements, the Project may be expected to pay a fair-share/local fee to cover the Project's fair share of the full construction costs needed to implement these improvements.

- **No. 8 – Valencia Avenue at Lambert Road/Carbon Canyon Road:** Restripe the first northbound through lane to provide a shared left/through lane. Widen and/or restripe the eastbound approach to provide an exclusive eastbound right-turn lane. Remove the existing pedestrian crosswalk on the west leg of the intersection. Modify the existing traffic signal





NOTES:

[A] = REMOVE CROSSWALK ON WEST LEG

[B] = REMOVE CROSSWALK ON EAST LEG

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

= APPROACH LANE ASSIGNMENT

= PLANNED IMPROVEMENTS

= RECOMMENDED IMPROVEMENTS

= PROJECT SPECIFIC IMPROVEMENTS

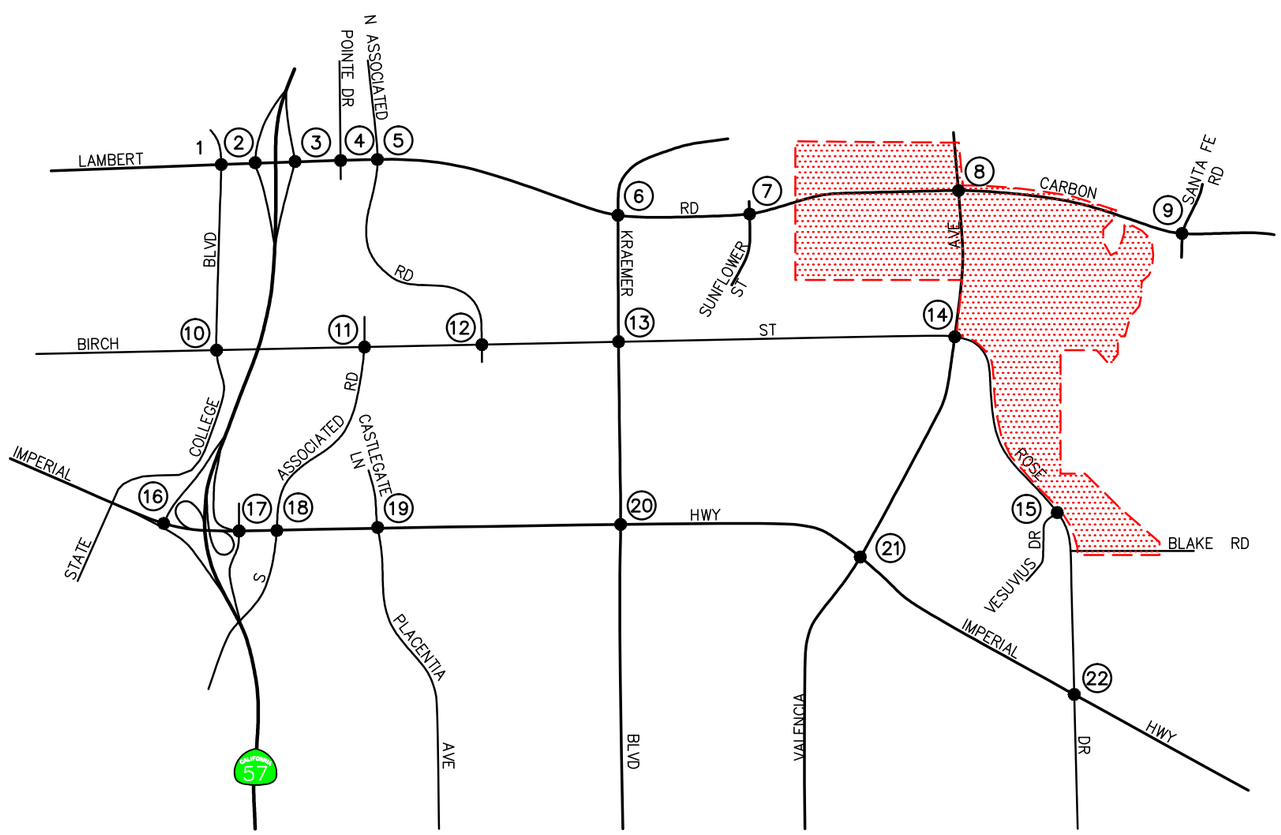
= TRAFFIC SIGNAL, = STOP SIGN

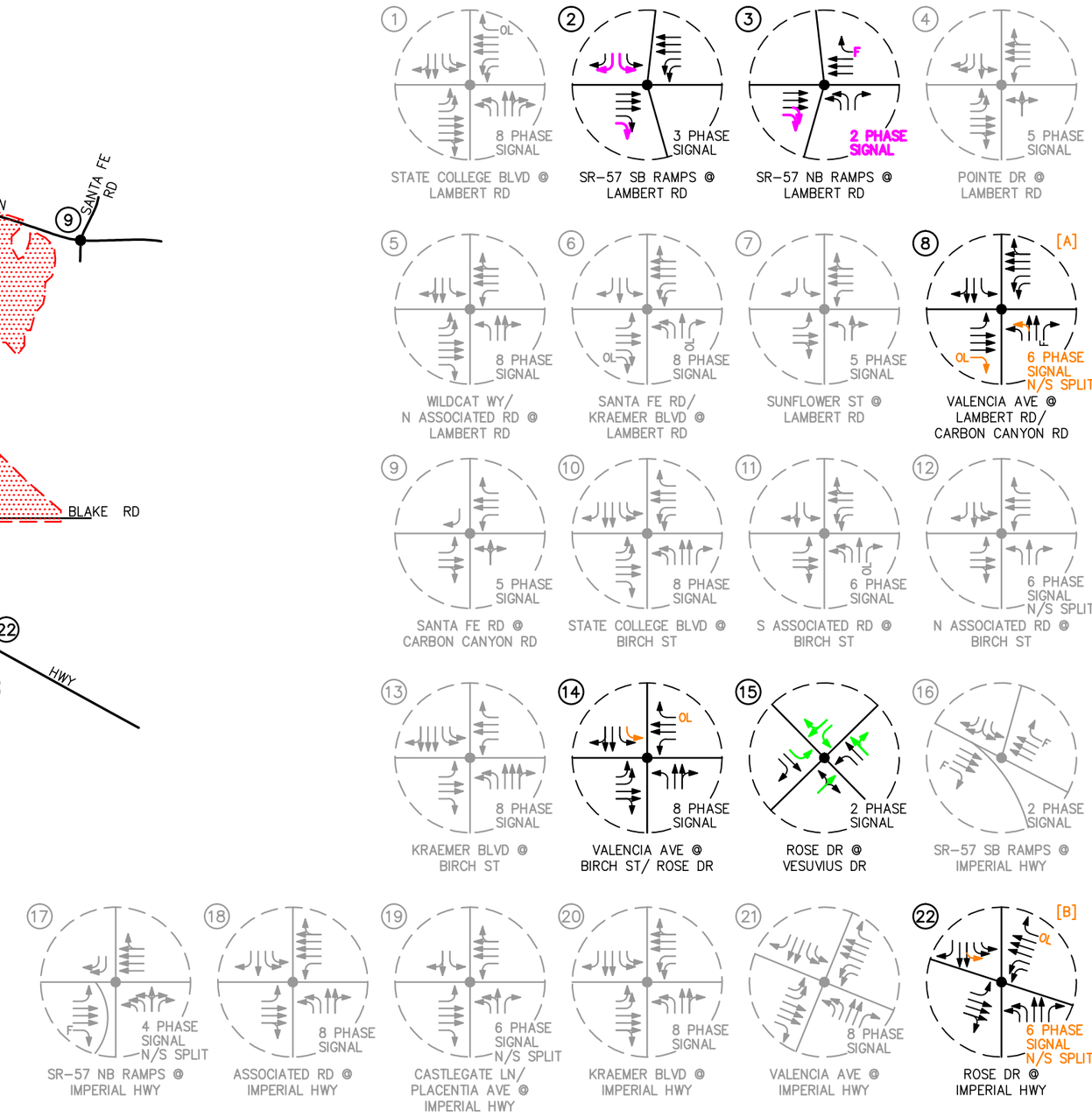
= PROJECT SITE

FIGURE 11-1

PLANNED AND RECOMMENDED IMPROVEMENTS – ICU

BREA 265 SPECIFIC PLAN, BREA





NOTES:

[A] = REMOVE CROSSWALK ON WEST LEG

[B] = REMOVE CROSSWALK ON EAST LEG

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

= APPROACH LANE ASSIGNMENT

= PLANNED IMPROVEMENTS

= RECOMMENDED IMPROVEMENTS

= PROJECT SPECIFIC IMPROVEMENTS

= TRAFFIC SIGNAL, = STOP SIGN

= PROJECT SITE

FIGURE 11-2

PLANNED AND RECOMMENDED IMPROVEMENTS – HCM

BREA 265 SPECIFIC PLAN, BREA

and provide split phasing in the northbound and southbound directions and an eastbound right-turn overlap phase. This improvement will require design concurrence from Caltrans and construction will occur under standard Caltrans permitting process.

- **No. 14 – Valencia Avenue at Birch Street/Rose Drive:** Widen and/or restripe the southbound approach to provide a second exclusive southbound left-turn lane. Modify the existing traffic signal and provide westbound right-turn overlap phasing. This improvement will require design concurrence from Caltrans and construction will occur under standard Caltrans permitting process.

- **No. 15 – Rose Drive at Vesuvius Drive/Driveway D:** *Same as those identified in Sections 10.4.1 and 10.4.3.* Restripe the southbound exclusive right-turn as a shared southbound through/right-turn lane. Widen to provide a second southbound departure lane. Modify the existing traffic signal.

- **No. 18 – Associated Road at Imperial Highway:** Restripe the southbound exclusive right-turn as a shared southbound through/right-turn lane. Modify the existing traffic signal. This improvement will require design concurrence from Caltrans and construction will occur under standard Caltrans permitting process.

- **No. 22 – Rose Drive at Imperial Highway:** Restripe the second southbound through lane as a shared southbound left/through lane. Modify the existing traffic signal and provide northbound and southbound split phasing and westbound right-turn overlap phasing. Remove crosswalk on the east leg. This improvement will require design concurrence from Caltrans and construction will occur under standard Caltrans permitting process.

11.2.2 *Year 2035 Plus Project – HCM*

The results of the intersection capacity analyses presented previously in *Table 8-2* show that three (3) of the twenty-two (22) study intersections require Project-related improvements under Year 2035 Plus Project traffic conditions based on HCM analysis. As such, the following intersection improvements are recommended. Per City requirements, the Project may be expected to pay a fair-share/local fee to cover the Project's fair share of the full construction costs needed to implement these improvements.

- **No. 8 – Valencia Avenue at Lambert Road/Carbon Canyon Road:** *Same as those identified in Section 11.2.1.* Restripe the first northbound through lane to provide a shared left/through lane. Widen and/or restripe the eastbound approach to provide an exclusive eastbound right-turn lane. Remove the existing pedestrian crosswalk on the west leg of the intersection. Modify the existing traffic signal and provide split phasing in the northbound and southbound directions and an eastbound right-turn overlap phase. This improvement will require design concurrence from Caltrans and construction will occur under standard Caltrans permitting process.

- **<u>No. 14 – Valencia Avenue at Birch Street/Rose Drive:</u>** *Same as those identified in Section 11.2.1.* Widen and/or restripe the southbound approach to provide a second exclusive southbound left-turn lane. Modify the existing traffic signal and provide westbound right-turn overlap phasing. This improvement will require design concurrence from Caltrans and construction will occur under standard Caltrans permitting process.

- **<u>No. 22 – Rose Drive at Imperial Highway:</u>** *Same as those identified in Section 11.2.1.* Restripe the second southbound through lane as a shared southbound left/through lane. Modify the existing traffic signal and provide northbound and southbound split phasing and westbound right-turn overlap phasing. Remove crosswalk on the east leg. This improvement will require design concurrence from Caltrans and construction will occur under standard Caltrans permitting process.

11.3 Year 2045 Plus Project Traffic Conditions Recommended Improvements

11.3.1 *Year 2045 Plus Project – ICU*

The results of the intersection capacity analyses presented previously in *Table 8-3* show that four (4) of the twenty-two (22) study intersections require Project-related improvements under Year 2045 Plus Project traffic conditions based on ICU analysis. As such, the following intersection improvements are recommended. Per City requirements, the Project may be expected to pay a fair-share/local fee to cover the Project's fair share of the full construction costs needed to implement these improvements. It should be noted that although the intersection of Associated Road at Imperial Highway (Intersection No. 18) does not require Project-related improvements, improvements at the intersection have been included to provide consistency with Year 2035 improvements.

- **<u>No. 8 – Valencia Avenue at Lambert Road/Carbon Canyon Road:</u>** *Same as those identified in Sections 11.2.1 and 11.2.2.* Restripe the first northbound through lane to provide a shared left/through lane. Widen and/or restripe the eastbound approach to provide an exclusive eastbound right-turn lane. Remove the existing pedestrian crosswalk on the west leg of the intersection. Modify the existing traffic signal and provide split phasing in the northbound and southbound directions and an eastbound right-turn overlap phase. This improvement will require design concurrence from Caltrans and construction will occur under standard Caltrans permitting process.

- **<u>No. 14 – Valencia Avenue at Birch Street/Rose Drive:</u>** *Same as those identified in Sections 11.2.1 and 11.2.2.* Widen and/or restripe the southbound approach to provide a second exclusive southbound left-turn lane. Modify the existing traffic signal and provide westbound right-turn overlap phasing. This improvement will require design concurrence from Caltrans and construction will occur under standard Caltrans permitting process.

- **<u>No. 15 – Rose Drive at Vesuvius Drive/Driveway D:</u>** *Same as those identified in Sections 10.4.1 and 10.4.3 and 11.2.1.* Restripe the southbound exclusive right-turn as a shared southbound through/right-turn lane. Widen to provide a second southbound departure lane. Modify the existing traffic signal.

- **<u>No. 18 – Associated Road at Imperial Highway:</u>** *Same as those identified in Section 11.2.1.* Restripe the southbound exclusive right-turn as a shared southbound through/right-turn lane. Modify the existing traffic signal. This improvement will require design concurrence from Caltrans and construction will occur under standard Caltrans permitting process.

- **<u>No. 22 – Rose Drive at Imperial Highway:</u>** *Same as those identified in Sections 11.2.1 and 11.2.2.* Restripe the second southbound through lane as a shared southbound left/through lane. Modify the existing traffic signal and provide northbound and southbound split phasing and westbound right-turn overlap phasing. Remove crosswalk on the east leg. This improvement will require design concurrence from Caltrans and construction will occur under standard Caltrans permitting process.

11.3.2 *Year 2045 Plus Project – HCM*

The results of the intersection capacity analyses presented previously in *Table 8-4* show that three (3) of the twenty-two (22) study intersections require Project-related improvements under Year 2045 Plus Project traffic conditions based on HCM analysis. As such, the following intersection improvements are recommended. Per City requirements, the Project may be expected to pay a fair-share/local fee to cover the Project's fair share of the full construction costs needed to implement these improvements.

- **<u>No. 8 – Valencia Avenue at Lambert Road/Carbon Canyon Road:</u>** *Same as those identified in Sections 11.2.1 and 11.2.2 and 11.2.3.* Restripe the first northbound through lane to provide a shared left/through lane. Widen and/or restripe the eastbound approach to provide an exclusive eastbound right-turn lane. Remove the existing pedestrian crosswalk on the west leg of the intersection. Modify the existing traffic signal and provide split phasing in the northbound and southbound directions and an eastbound right-turn overlap phase. This improvement will require design concurrence from Caltrans and construction will occur under standard Caltrans permitting process.

- **<u>No. 14 – Valencia Avenue at Birch Street/Rose Drive:</u>** *Same as those identified in Sections 11.2.1 and 11.2.2 and 11.2.3.* Widen and/or restripe the southbound approach to provide a second exclusive southbound left-turn lane. Modify the existing traffic signal and provide westbound right-turn overlap phasing. This improvement will require design concurrence from Caltrans and construction will occur under standard Caltrans permitting process.

- **<u>No. 22 – Rose Drive at Imperial Highway:</u>** *Same as those identified in Sections 11.2.1 and 11.2.2 and 11.2.3.* Restripe the second southbound through lane as a shared southbound left/through lane. Modify the existing traffic signal and provide northbound and southbound split phasing and westbound right-turn overlap phasing. Remove crosswalk on the east leg. This improvement will require design concurrence from Caltrans and construction will occur under standard Caltrans permitting process.

Cumulative Projects Summary & Traffic Generation Forecast

	Name	Location	Description	Daily 2-way	AM Peak Hour Enter	AM Peak Hour Exit	AM Peak Hour Total	PM Peak Hour Enter	PM Peak Hour Exit	PM Peak Hour Total
City of Brea										
1	Brea Mall Mixed-	1065 Brea Mall	Demolish existing 161,990 SF Sears	4,487	176	172	348	303	158	461
2	Brea Plaza	409-477 S. Associated Rd,	Demolition of an existing 18,450 SF	-1,680	39	61	100	-33	-27	-60
3	Extra Space Self	2700 E. Imperial Highway	126,546 self-storage facility	183	6	5	11	9	10	19
4	Starbucks with	2 Pointe Drive	2,400 SF coffee shop with drive-thru	961	52	51	103	35	35	70
5	Western Realco	2929 E. Imperial Highway	131,500 SF industrial building	544	25	8	33	10	27	37
6	Brea 265	The project site is	The Brea 265 Specific Plan proposes a	9,351	182	452	634	542	351	893
7	Brea Regional	2500 E. Imperial Highway	160,260 SF Lt. Industrial	3446	436	214	650	302	452	754
8	Western Realco	2727 E. Imperial Highway	68,692 SF Lt. Industrial	308	45	6	51	4	27	31
9	Industrial	Nasa at Surveyor Ind. Site	56,000 SF Lt Industrial	262	37	5	42	4	23	27
			Cumulative Projects Total Trip Generation Total:	17,862	998	974	1,972	1,176	1,056	2,232

Source: BREA 265 EIR Table 5.17 & City of Brea Projects in Process 4/5/23

BREA REGIONAL ANIMAL HOSPITAL ***(MAP ID: 6)***

Project:	• Conditional Use Permit
Project No.:	• CUP No. 2022-02; **ACCELA No. PLN 2022-00010**
Project Location:	• 2500 E. Imperial Highway • Assessor's Parcel Number (APN): 336-541-30
Project Description:	• The applicant is proposing to establish an animal hospital with no changes to the exterior of the building and no building expansion
Project Planner:	• Planning Division (planner@acityofbrea.net)
Applicant:	• Richard Wright
Notes:	• Currently under construction

PROJECT MAP:

CURRENT STATUS:

- Approved by Planning Commission on June 28, 2022.

BREA PLANNING DIVISION

INDUSTRIAL BUILDING ***(MAP ID: 3)***

Project:	• Plan Review
Project No.:	• PR No. 2022-04; EIR Addendum; **ACCELA No. PLN 2022-00012**
Project Location:	• 2727 E. Imperial Highway • Assessor's Parcel Number (APN): 320-091-66
Project Description:	• The applicant is requesting the demolition and rebuild of a new warehouse with related site improvements. The building would be a total of 120,550 SF.
Project Planner:	• Kim Zuppiger, Contract Planner (KimZ@cityofbrea.net)
Applicant:	• Duke Realty
Notes:	Next Steps: • Application was submitted March 3, 2022 • Staff comments provided to applicant; pending resubmittal.

PROJECT MAP:

CURRENT STATUS:

- Project is currently under review.
- Planning Commission review is not required.

33 Site Cumulative Projects Total Trip Generation Total:						
	AM Peak Hour			PM Peak Hour		
Total	Enter	Exit	Total	Enter	Exit	Total
38572	1547	1459	3006	1792	1725	3517

Node 8	Primary Trip		Distribution	
Turning Mvmt	AM	PM	AM %	PM %
SBL	0	0	0.00%	0.00%
SBT	1	5	0.03%	0.14%
SBR	3	2	0.10%	0.06%
NBL	0	0	0.00%	0.00%
NBT	1	4	0.03%	0.11%
NBR	16	37	0.53%	1.05%
EBL	3	2	0.10%	0.06%
EBT	71	126	2.36%	3.58%
EBR	0	0	0.00%	0.00%
WBL	33	0	1.10%	0.00%
WBT	117	34	3.89%	0.97%
WBR	0	0	0.00%	0.00%

Node 14	Primary Trip		Distribution	
Turning Mvmt	AM	PM	AM %	PM %
SBL	0	0	0.00%	0.00%
SBT	33	23	1.10%	0.65%
SBR	1	5	0.03%	0.14%
NBL	0	0	0.00%	0.00%
NBT	16	37	0.53%	1.05%
NBR	0	0	0.00%	0.00%
EBL	1	4	0.03%	0.11%
EBT	32	23	1.06%	0.65%
EBR	0	0	0.00%	0.00%
WBL	0	0	0.00%	0.00%
WBT	15	34	0.50%	0.97%
WBR	0	0	0.00%	0.00%

Node 21	Primary Trip		Distribution	
Turning Mvmt	AM	PM	AM %	PM %
SBL	8	6	0.27%	0.17%
SBT	24	16	0.80%	0.45%
SBR	4	2	0.13%	0.06%
NBL	6	8	0.20%	0.23%
NBT	11	25	0.37%	0.71%
NBR	0	0	0.00%	0.00%
EBL	1	6	0.03%	0.17%
EBT	34	90	1.13%	2.56%
EBR	3	10	0.10%	0.28%
WBL	0	0	0.00%	0.00%
WBT	83	84	2.76%	2.39%
WBR	5	8	0.17%	0.23%

8 Site Cumulative Projects				
Node 5	Primary Trip		Distribution	
Turning Mvr	AM	PM	AM %	PM %
SBL	0	0	0.00%	0.00%
SBT	1	3	0.03%	0.14%
SBR	2	1	0.10%	0.06%
NBL	0	0	0.00%	0.00%
NBT	1	3	0.03%	0.11%
NBR	10	23	0.53%	1.05%
EBL	2	1	0.10%	0.06%
EBT	47	80	2.36%	3.58%
EBR	0	0	0.00%	0.00%
WBL	22	0	1.10%	0.00%
WBT	77	22	3.89%	0.97%
WBR	0	0	0.00%	0.00%

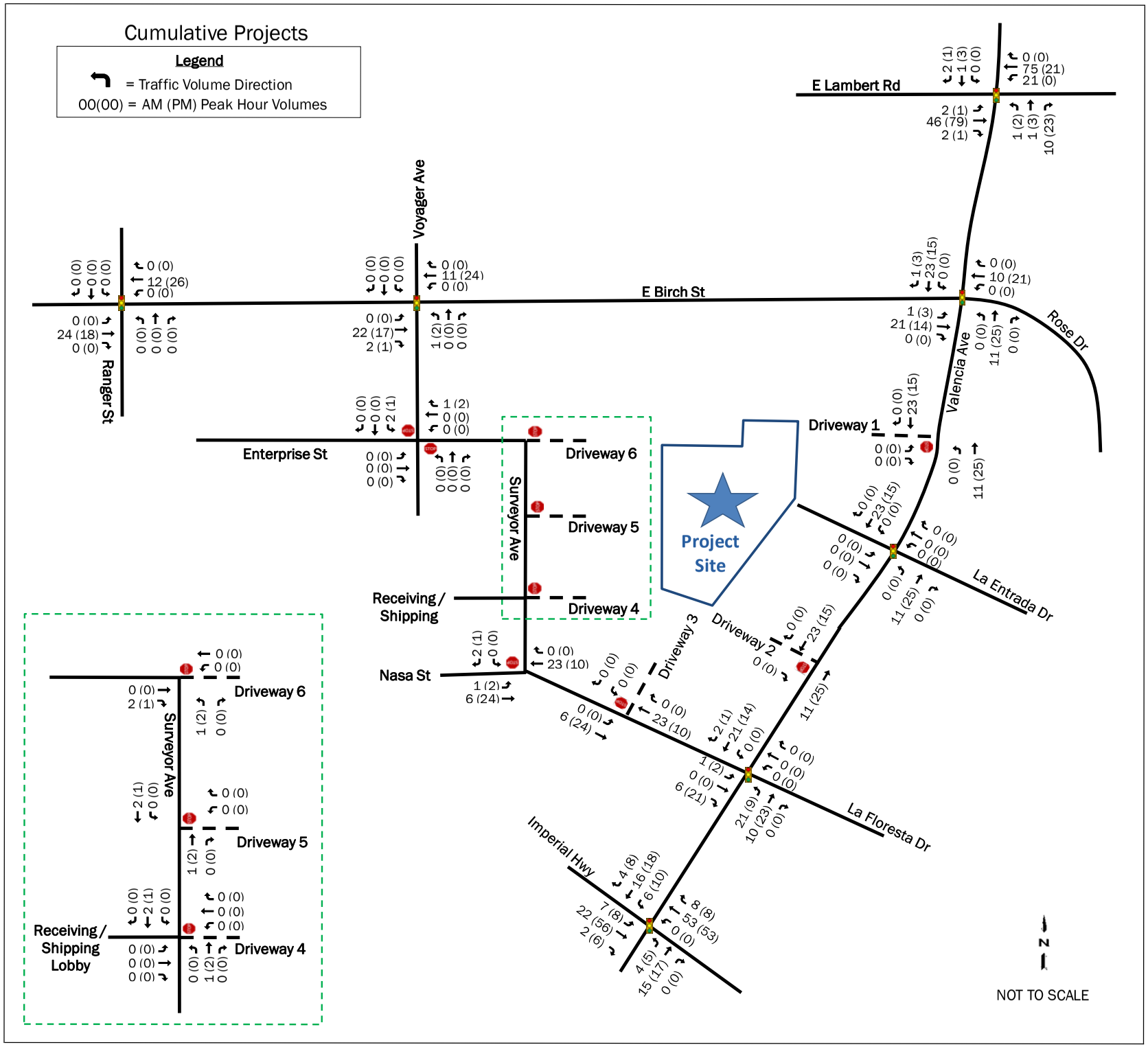
Node 4	Primary Trip		Distribution	
Turning Mvr	AM	PM	AM %	PM %
SBL	0	0	0.00%	0.00%
SBT	22	15	1.10%	0.65%
SBR	1	3	0.03%	0.14%
NBL	0	0	0.00%	0.00%
NBT	10	23	0.53%	1.05%
NBR	0	0	0.00%	0.00%
EBL	1	3	0.03%	0.11%
EBT	21	15	1.06%	0.65%
EBR	0	0	0.00%	0.00%
WBL	0	0	0.00%	0.00%
WBT	10	22	0.50%	0.97%
WBR	0	0	0.00%	0.00%

Node 1	Primary Trip		Distribution	
Turning Mvr	AM	PM	AM %	PM %
SBL	5	4	0.27%	0.17%
SBT	16	10	0.80%	0.45%
SBR	3	1	0.13%	0.06%
NBL	4	5	0.20%	0.23%
NBT	7	16	0.37%	0.71%
NBR	0	0	0.00%	0.00%
EBL	1	4	0.03%	0.17%
EBT	22	57	1.13%	2.56%
EBR	2	6	0.10%	0.28%
WBL	0	0	0.00%	0.00%
WBT	54	53	2.76%	2.39%
WBR	3	5	0.17%	0.23%

Cumulative Projects VMT Summary for TAZ 61

	Name	Location	Description	TAZ	Daily 2-way	Avg Trip Length	Service Population	VMT/Capita
City of Brea								
1	Brea Mall Mixed-Use Project	1065 Brea Mall	Demolish existing 161,990 SF Sears department store, and construct 119,415 SF additional retail space, a 128,000 SF health club, and 383 DU medium density residential units	59	4,487	n/a	n/a	n/a
2	Brea Plaza	409-477 S. Associated Rd, and 1555, 1609, 1623, 1643 E. Imperial Highway	Demolition of an existing 18,450 SF movie theater and the construction of a mixed-use development w/ 21,355 SF of office space and 229 apartment units	62	-1,680	n/a	n/a	n/a
3	Extra Space Self Storage	2700 E. Imperial Highway	126,546 self-storage facility	140	183	n/a	n/a	n/a
4	Starbucks with Drive-Thru	2 Pointe Drive	2,400 SF coffee shop with drive-thru	43	961	n/a	n/a	n/a
5	Western Realco	2929 E. Imperial Highway	131,500 SF industrial building	61	544	8.9	175	27.7
6	Brea 265 Specific Plan	The project site is bordered by Lambert Road/Carbon Canyon Road to the north, Rose Drive to the south, Carbon Canyon Regional Park to the east, and residential uses and Valencia Avenue to the west	The Brea 265 Specific Plan proposes a master-planned residential community of low- and medium-density residential neighborhoods, parks, recreational amenities, and open space linked together by an extensive trail network that connects to the Tracks at Brea and other regional systems.	43 52 53	9,351	n/a	n/a	n/a
7	Brea Regional Animal Hospital	2500 E. Imperial Highway	160,260 SF Office	73	3446	n/a	n/a	n/a
8	Western Realco	2727 E. Imperial Highway	68,692 SF Lt. Industrial	61	308	8.9	100	27.4
9	Industrial Building	Nasa at Surveyor Ind. Site	56,000 SF Lt Industrial	61	262	8.9	85	27.4
			Cumulative Projects Total:	61	1,114	8.9	360	27.5

Source: City of Brea list of projects

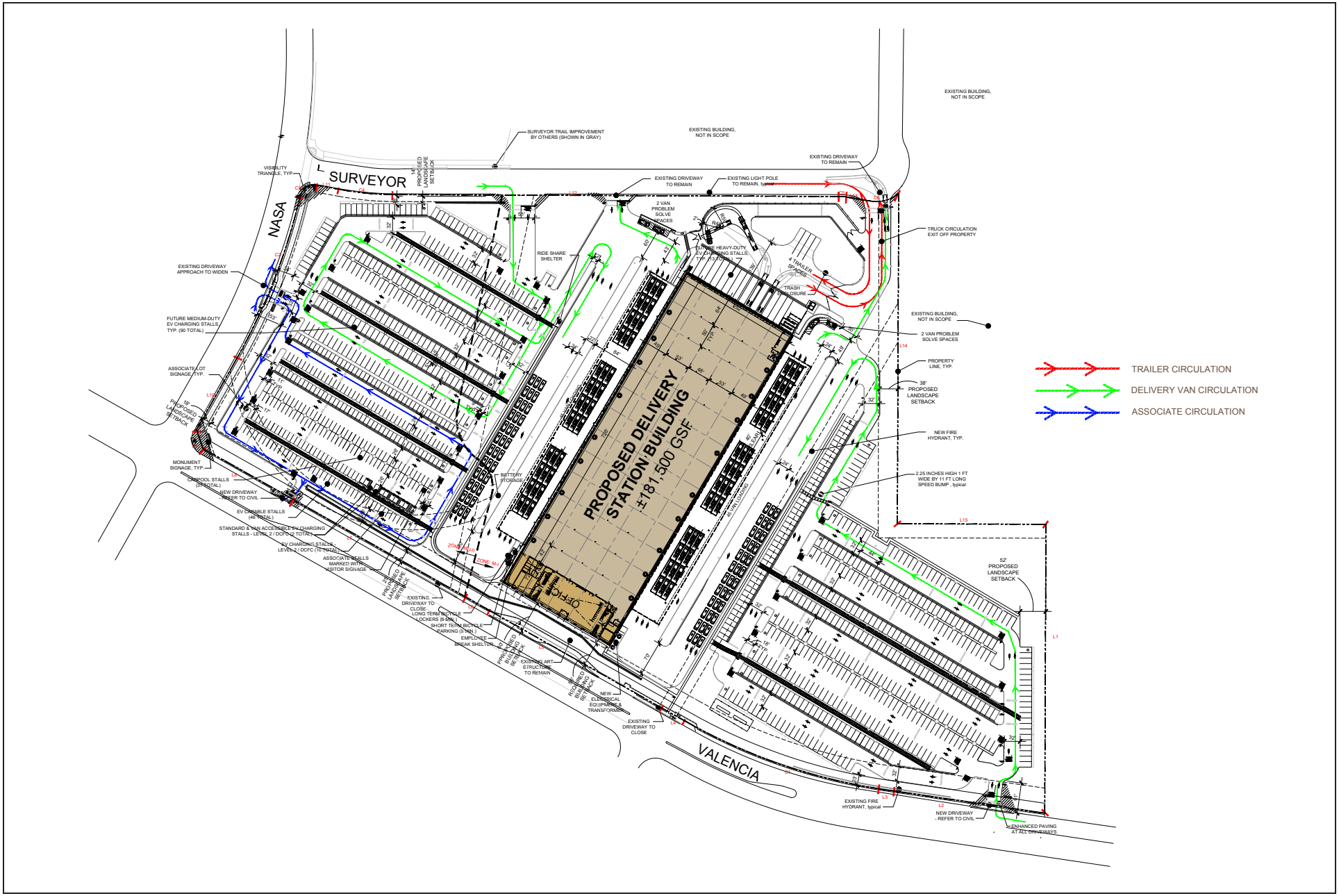

Cumulative Projects
Legend
= Traffic Volume Direction
00(00) = AM (PM) Peak Hour Volumes
E Lambert Rd
E Birch St
Voyager Ave
Ranger St
Enterprise St
Valencia Ave
Rose Dr
La Entrada Dr
La Floresta Dr
Imperial Hwy
Surveyor Ave
Nasa St
Receiving / Shipping
Driveway 1
Driveway 2
Driveway 3
Driveway 4
Driveway 5
Driveway 6
Project Site
Receiving / Shipping Lobby
NOT TO SCALE
N

Appendix H – Collision Data

	CASE_ID	ACCIDENT_	PRIMARY_RD	SECONDARY_RD	COLLISION_SEVERITY	NUMBER_KILLED	NUMBER_INJURED	PCF_CODE_OF_VIOL	PCF_VIOL_CATEGORY	TYPE_OF_COLLISION
1	8676474	2018	IMPERIAL HWY	VALENCIA AV	0	0	0	-	8	-
1	8570916	2018	IMPERIAL HWY	VALENCIA AV	0	0	0	-	7	B
1	8666978	2018	IMPERIAL HWY	VALENCIA AV	0	0	0	-	8	B
1	8787245	2019	IMPERIAL HWY	VALENCIA AV	0	0	0	-	8	B
1	8910504	2019	IMPERIAL HWY	VALENCIA AV	0	0	0	-	9	B
1	81603460	2021	IMPERIAL HY	VALENCIA AV	0	0	0	-	7	B
1	81670343	2021	IMPERIAL HY	VALENCIA AV	0	0	0	-	7	B
1	81693254	2022	IMPERIAL HY	VALENCIA AV	0	0	0	-	7	B
1	81695490	2022	IMPERIAL HY	VALENCIA AV	0	0	0	-	7	B
1	81829697	2022	IMPERIAL HY	VALENCIA AV	0	0	0	-	7	B
1	9025625	2020	IMPERIAL HWY	VALENCIA AV	0	0	0	-	7	B
1	9056854	2020	IMPERIAL HWY	VALENCIA AV	0	0	0	-	7	B
1	9071481	2020	IMPERIAL HWY	VALENCIA AV	0	0	0	-	7	B
1	9107167	2020	IMPERIAL HWY	VALENCIA AV	0	0	0	-	7	B
1	8342310	2017	IMPERIAL HWY	VALENCIA AV	0	0	0	-	8	B
1	8357867	2017	IMPERIAL HWY	VALENCIA AV	0	0	0	-	0	B
1	81740875	2022	IMPERIAL HY	VALENCIA AV	0	0	0	-	3	C
1	8964674	2019	VALENCIA AV	IMPERIAL HWY	0	0	0	-	9	D
1	81699791	2022	IMPERIAL HY	VALENCIA AV	0	0	0	-	9	D
1	9071464	2020	IMPERIAL HWY	VALENCIA AV	0	0	0	-	12	D
1	8412569	2017	IMPERIAL HWY	VALENCIA AV	0	0	0	-	0	D
1	8666860	2018	VALENCIA AV	IMPERIAL HWY	0	0	0	-	8	E
1	8865227	2019	IMPERIAL HWY	VALENCIA AV	0	0	0	-	1	E
1	81597246	2021	IMPERIAL HY	VALENCIA AV	0	0	0	-	8	E
1	81675181	2021	VALENCIA AV	IMPERIAL HY	0	0	0	-	8	E
1	81745871	2022	IMPERIAL HY	VALENCIA AV	0	0	0	-	7	E
1	81934728	2022	IMPERIAL HY	VALENCIA AV	0	0	0	-	8	E
1	81875271	2022	VALENCIA AV	IMPERIAL HY	0	0	0	-	8	E
1	9180281	2020	VALENCIA AV	IMPERIAL HWY	0	0	0	-	8	E
1	9183207	2020	VALENCIA AV	IMPERIAL HWY	0	0	0	-	8	E
1	9048605	2020	IMPERIAL HWY	VALENCIA AV	3	0	2	-	3	C
1	9198298	2020	IMPERIAL HWY	VALENCIA AV	3	0	1	-	3	C
1	81745877	2022	IMPERIAL HY	VALENCIA AV	3	0	1	-	9	D
1	8519660	2017	IMPERIAL HWY	VALENCIA AV	3	0	2	-	12	D
1	9126828	2020	IMPERIAL HWY	VALENCIA AV	4	0	6	-	9	A
1	81566029	2021	VALENCIA AV	IMPERIAL HY	4	0	1	-	7	B
1	8537403	2018	IMPERIAL HWY	VALENCIA AV	4	0	1	-	3	C
1	8617545	2018	IMPERIAL HWY	VALENCIA AV	4	0	1	-	3	C
1	81562001	2021	IMPERIAL HY	VALENCIA AV	4	0	1	-	3	C
1	9077861	2020	IMPERIAL HWY	VALENCIA AV	4	0	1	-	3	C
1	8749616	2018	IMPERIAL HWY	VALENCIA AV	4	0	1	-	3	D
1	8700601	2018	IMPERIAL HWY	VALENCIA AV	4	0	1	-	0	D
1	8913727	2019	IMPERIAL HWY	VALENCIA AV	4	0	2	-	0	D
1	9020956	2019	VALENCIA AV	IMPERIAL HWY	4	0	1	-	1	D
1	81480680	2021	IMPERIAL HY	VALENCIA AV	4	0	1	-	12	D
1	9035363	2020	IMPERIAL HWY	VALENCIA AV	4	0	2	-	9	D
1	8388024	2017	VALENCIA AV	LA FLORESTA DR	4	0	2	-	9	D
1	8447934	2017	IMPERIAL HWY	VALENCIA AV	4	0	2	-	9	D
1	8448708	2017	IMPERIAL HWY	VALENCIA AV	4	0	1	-	12	D
2	8873030	2019	VALENCIA AV	NASA ST	0	0	0	-	7	B
2	8910402	2019	VALENCIA AV	NASA ST	0	0	0	-	3	C
4	8665009	2018	VALENCIA AV	ROSE DR	0	0	0	-	0	B
4	8960439	2019	VALENCIA AV	BIRCH ST	0	0	0	-	3	B
4	9179947	2020	VALENCIA AV	ROSE RD	0	0	0	-	9	B
4	8896364	2019	VALENCIA AV	BIRCH ST	0	0	0	-	3	C
4	8364751	2017	VALENCIA AV	BIRCH ST	0	0	0	-	8	C
4	8474408	2017	VALENCIA ST	BIRCH ST	0	0	0	-	22	C
4	8493272	2017	VALENCIA AV	ROSE DR	3	0	2	-	3	C
4	8874871	2019	VALENCIA ST	BIRCH ST	3	0	1	-	12	D
4	9034502	2020	VALENCIA AV	BIRCH ST	3	0	1	-	12	D
4	8320062	2017	VALENCIA AV	BIRCH ST	4	0	1	-	12	D
4	8832182	2019	ROSE DR	VALENCIA AV	0	0	0	-	8	E
4	81699795	2022	BIRCH ST	VALENCIA AV	0	0	0	-	1	E
4	8984885	2019	ROSE DR	VALENCIA AV	3	0	1	-	8	E

4	8459530	2017	VALENCIA AV	BIRCH ST	0	0	0 -	18	E
4	8416956	2017	BIRCH ST	VALENCIA AV	0	0	0 -	8	E
4	9106778	2020	ROSE DR	VALENCIA AV	0	0	0 -	21	H
5	8311499	2017	CARBON CANYON RD	VALENCIA AV	0	0	0 -	0	-
5	8537407	2018	VALENCIA AV	CARBON CANYON RD	0	0	0 -	21	B
5	8167600	2019	CARBON CANYON RD	VALENCIA AV	0	0	0 -	7	B
5	81566031	2021	CARBON CANYON RD	VALENCIA AV	0	0	0 -	7	B
5	81670332	2021	CARBON CANYON RD	VALENCIA AV	0	0	0 -	7	B
5	8749612	2018	CARBON CANYON RD	VALENCIA AV	4	0	4 -	8	B
5	8469436	2017	CARBON CANYON RD	VALENCIA AV	0	0	0 -	7	B
5	8504498	2017	CARBON CANYON RD	VALENCIA AV	0	0	0 -	0	B
5	8508188	2017	CARBON CANYON RD	VALENCIA AV	0	0	0 -	0	B
5	8652151	2018	CARBON CANYON RD	VALENCIA AV	0	0	0 -	3	C
5	9013360	2019	CARBON CANYON RD	VALENCIA AV	0	0	0 -	3	C
5	8859022	2019	LAMBERT RD	VALENCIA AV	0	0	0 -	3	C
5	81924905	2022	CARBON CANYON RD	VALENCIA AV	0	0	0 -	3	C
5	9180276	2020	VALENCIA AV	LAMNBERT RD	3	0	2 -	1	C
5	8858969	2019	CARBON CANYON RD	VALENCIA AV	4	0	1 -	1	C
5	8404300	2017	CARBON CANYON RD	VALENCIA AV	0	0	0 -	3	C
5	8472226	2017	CARBON CANYON RD	VALENCIA AV	0	0	0 -	3	C
5	9180285	2020	CARBON CANYON RD	VALENCIA AV	0	0	0 -	12	D
5	81879586	2022	CARBON CANYON RD	VALENCIA AV	1	1	4 -	1	D
5	8708021	2018	CARBON CANYON RD	VALENCIA AV	4	0	2 -	8	D
5	8469126	2017	VALENCIA AV	CARBON CANYON RD	0	0	0 -	8	E
6	8571835	2018	ENTERPRISE ST	VOYAGER AV	4	0	1 -	9	B
6	9056516	2020	ENTERPRISE ST	VOYAGER AV	4	0	1 -	3	C

APPENDIX B:
REVISED FIGURES



Source: Ware Malcomb, 2025.

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DJT4 PARCEL DELIVERY FACILITY PROJECT

Conceptual Site Plan

Figure 3-3

Source: Ware Malcomb, 2025.

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DJT4 PARCEL DELIVERY FACILITY PROJECT

Valencia Avenue View

Figure 3-4

EXISTING TREE LEGEND

SYMBOLS	DESCRIPTION	REMARKS
	EXISTING LONDON PLANE TREE	PROTECT IN PLACE

TREE LEGEND - SUNSET ZONE 23

SYMBOLS	BOTANIC NAME / COMMON NAME	SIZE	SPACING	QTY.	WUCOLS	REMARKS
	HETEROMELES ARBUTIFOLIA TOYON (NATIVE PLANT)	15 GAL.	60" o.c.	40	VERY LOW	
	CINNAMOMUM CAMPHORA CAMPHOR TREE	60" BOX	PER PLAN	94	MODERATE	FULL TO THE GROUND
	LOPHOSTEMON CONFERTUS BRISBANE BOX	24" BOX	PER PLAN	427	MODERATE	STANDARD
	PLATANUS RACEMOSA CALIFORNIA SYCAMORE (NATIVE PLANT)	24" BOX	PER PLAN	135	MODERATE	STANDARD
	QUERCUS AGRIFOLIA COAST LIVE OAK (NATIVE PLANT)	24" BOX 36" BOX	PER PLAN	96 48	LOW	FULL TO THE GROUND

SHRUB LEGEND - SUNSET ZONE 23

SYMBOLS	BOTANIC NAME / COMMON NAME	SIZE	SPACING	QTY.	WUCOLS	REMARKS
	CARISSA MACROCARPA 'GREEN CARPET' NATAL PLUM	1 GAL.	24" o.c.	26,210	LOW	
	ELAEAGNUS PUNGENS SILVERBERRY	5 GAL.	36" o.c.	307	LOW	3' HT. MIN.
	LIGUSTRUM JAPONICUM 'TEXANUM' WAXLEAF PRIVET	5 GAL.	36" o.c.	1490	MODERATE	6-7' HT. MIN.
	RHAPHOLEPIS INDICA 'CLARA'	5 GAL.	36" o.c.	82	LOW	30" HT. MAX.
	XYLOSMA CONGESTUM	5 GAL.	36" o.c.	995	LOW	3' HT. MIN.

GROUNDCOVER LEGEND - SUNSET ZONE 23

SYMBOLS	BOTANIC NAME / COMMON NAME	SIZE	SPACING	QTY.	WUCOLS	REMARKS
	ACACIA REDOLENS 'DESERT CARPET' PROSTRATE ACACIA	1 GAL.	72" o.c.	6359	VERY LOW	

MODULAR WETLAND LEGEND - SUNSET ZONE 23

SYMBOLS	BOTANIC NAME / COMMON NAME	SIZE	SPACING	QTY.	WUCOLS	REMARKS
	JUNCUS PATENS CALIFORNIA GRAY RUSH	1 GAL.	24" O.C.	104	LOW	-

Source: Ware Malcomb, 2025.

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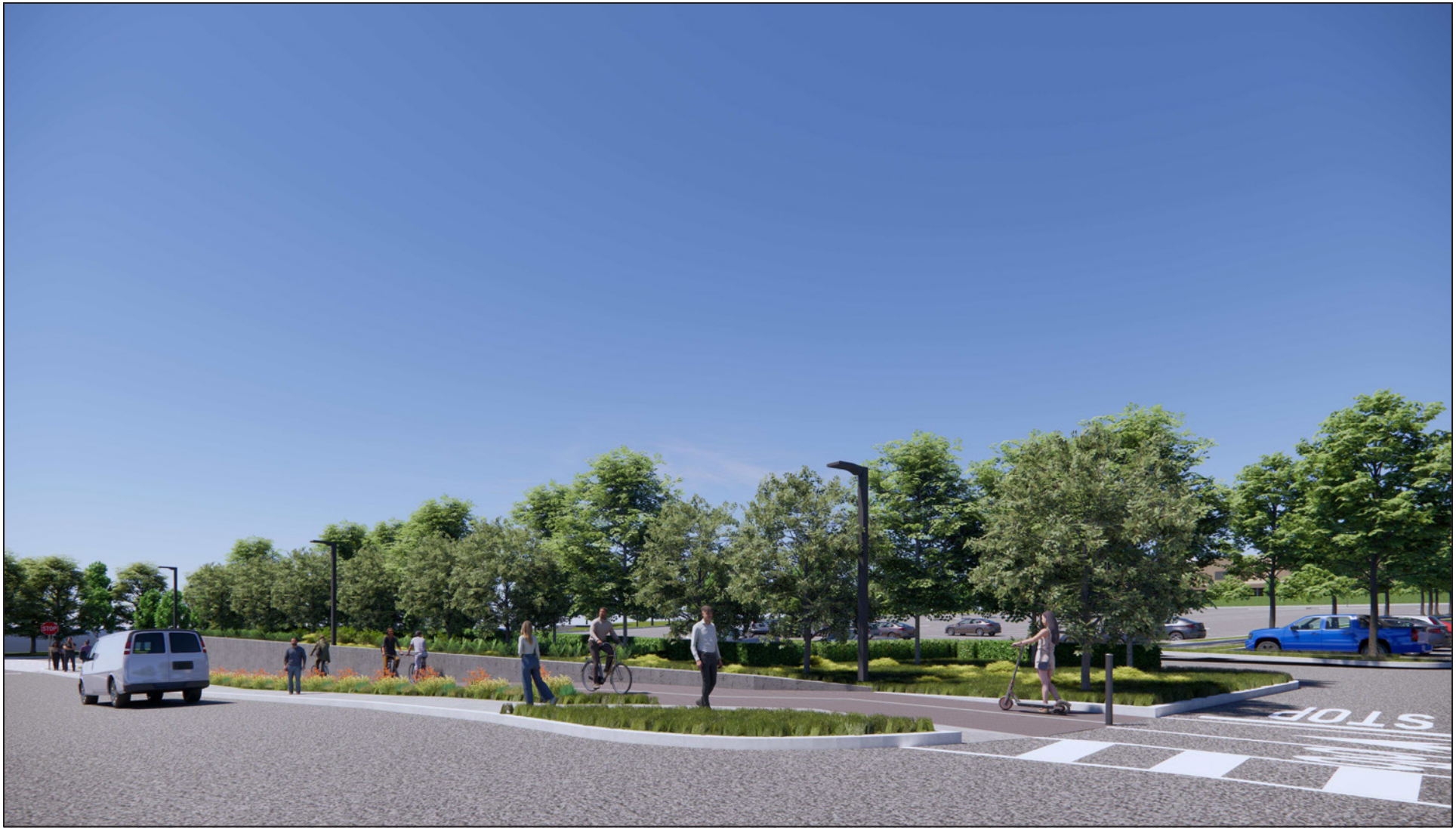
DJT4 PARCEL DELIVERY FACILITY PROJECT

Conceptual Planting Plan

Figure 3-5



Source: Ware Malcomb, 2025.

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DJT4 PARCEL DELIVERY FACILITY PROJECT

Nasa Street View

Figure 3-6