TRAFFIC STUDY

17861 CARTWRIGHT ROAD

IRVINE, ORANGE COUNTY, CALIFORNIA

PLANNING AREA 36

IRVINE BUSINESS COMPLEX

CASE FILE NUMBER
00820914-PCPU

This Traffic Study has been prepared under the supervision of
Ambarish Mukherjee, P.E.

LSA

December 2020

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December 2020

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LIST OF ABBREVIATIONS AND ACRONYMS

ADT	average daily traffic
ARTIC	Anaheim Regional Transportation Intermodal Center
CEQA	California Environmental Quality Act
City	City of Irvine
CMP	Congestion Management Program
DIV	development intensity value
ft	foot/feet
HCM	*Highway Capacity Manual*
HOV	high-occupancy vehicle
I-405	Interstate 405
IBC	Irvine Business Complex
ICU	intersection capacity utilization
iShuttle	Irvine Shuttle
ITAM	Irvine Transportation Analysis Model
ITE	Institute of Transportation Engineers
LOS	level(s) of service
OCTA	Orange County Transportation Authority
PA	Planning Area
project	17861 Cartwright Road Project
sf	square foot/feet
SR-55	State Route 55
TAZ	Traffic Analysis Zone
TDP	Transportation Design Procedure
TDR	transfer of development rights
v/c	volume-to-capacity
VMT	vehicle miles traveled
vph	vehicles per hour

EXECUTIVE SUMMARY

The purpose of this analysis is to determine potential short-term and long-range level of service (LOS) impacts resulting from the development of 60 residential (rental) units at 17861 Cartwright Road in the Irvine Business Complex (IBC) (Planning Area 36 [PA 36]) in Irvine, California.

The existing 17861 Cartwright Road site (IBC Project No. 106 located in Traffic Analysis Zone [TAZ] 491) includes a vacant 19,061-square-foot (sf) office building. The proposed project will demolish the existing vacant building and construct 60 rental (100 percent affordable housing) units. The proposed project includes 44 base units and 16 density bonus units (35 percent of the 44 base units). Access to the 17861 Cartwright Road project site is currently provided via two access driveways on Cartwright Road (one northern shared driveway and one southern driveway). The proposed project would remove the southern driveway and use the northern driveway (currently shared with Yogurtland Franchising, Inc. at 17801 Cartwright Road) as the sole access point. The existing northern driveway currently provides an exit-only driveway for overflow vehicles parked at the Yogurtland Franchising, Inc. building. This access driveway would be changed with implementation of the proposed project to allow inbound and outbound vehicles. A shared access agreement between the two property owners will be reviewed by the City of Irvine (City) and executed prior to project approval.

The IBC development intensity value (DIV) budget for the 17861 Cartwright Road site of 19,061 sf of office use and 1,953 sf of zoning potential is 28 a.m. peak-hour DIVs, 29 p.m. peak-hour DIVs, and 293 daily DIVs. Density bonus units do not generate DIVs. The proposed project of 44 base units (excluding the 16 density bonus units) would generate 22 a.m. peak-hour DIVs, 23 p.m. peak-hour DIVs, and 277 daily DIVs. Because the proposed project is within the DIV budget for the site, a transfer of development rights (TDR) is not required.

This study focuses on the a.m. peak-hour, p.m. peak-hour, and daily levels of service (LOS) at seven intersections and seven roadway segments. Project LOS impacts were determined based on an analysis of the following scenarios:

1. Existing
2. Existing Plus Project
3. Short-Term Interim-Year (2023) Approved Baseline
4. Short-Term Interim-Year (2023) Approved Baseline Plus Project
5. Short-Term Interim-Year (2023) Pending Baseline
6. Short-Term Interim-Year (2023) Pending Baseline Plus Project
7. Long-Range (2040) Approved Baseline
8. Long-Range (2040) Approved Baseline Plus Project
9. Long-Range (2040) Pending Baseline
10. Long-Range (2040) Pending Baseline Plus Project
11. Buildout (Post-2040) Approved Baseline
12. Buildout (Post-2040) Approved Baseline Plus Project
13. Buildout (Post-2040) Pending Baseline
14. Buildout (Post-2040) Pending Baseline Plus Project

Based on the results of this analysis, the proposed project can be implemented without negatively affecting the design or operation of the surrounding roadway system. An evaluation of intersection LOS shows that the addition of project traffic to the Existing, Short-Term Interim-Year, Long-Range, and Buildout Approved and Pending traffic volumes would not significantly impact the LOS of the study area intersections or roadways, according to the City performance criteria.

Project access was analyzed based on the City's Transportation Design Procedures (TDPs; adopted in February 2007). As a result, no negative effects to vehicle access were identified using the following TDPs:

- **TDP-1:** Turn-Lane Pocket Lengths
- **TDP-3:** Left-Turn In/Out Access
- **TDP-4:** Right-Turn Lanes At Uncontrolled Driveways
- **TDP-10:** Distance Between Driveways And Intersections
- **TDP-15:** Gate Stacking

The project would not meet the requirement of TDP-14 (Driveway Lengths). However, a request for deviation has been prepared for the City's review and approval. The deviation request is provided as Appendix G to this Traffic Study.

The project incorporates design features to accommodate pedestrian circulation on site. Pedestrian traffic is afforded safe travel via paths and sidewalks that connect to the public street system. Transit facilities are accessible to and from the project site with Orange County Transportation Authority (OCTA) and Irvine Shuttle (iShuttle) bus stops along Main Street. In the vicinity of the project site, bicycle travel can occur in the on-street (Class II) bike lanes along Main Street.

Based on the City's *Traffic Study Guidelines* (adopted on June 23, 2020), affordable housing projects are screened out from a vehicle miles traveled (VMT) analysis, and are presumed to have a less than significant transportation impact. Therefore, the project meets the requirements of the City's *Traffic Study Guidelines* regarding VMT, and the project does not create a significant California Environmental Quality Act (CEQA) impact.

TRAFFIC STUDY
17861 CARTWRIGHT ROAD

LSA has prepared the following Traffic Study to identify the potential existing, short-term interim-year, long-range, and buildout level of service (LOS) impacts resulting from the development of 60 residential (rental) units at 17861 Cartwright Road in Irvine, California. LSA has prepared this analysis consistent with the approved Scope of Work dated October 21, 2020 (provided in Appendix A). This Traffic Study was prepared in accordance with the applicable sections of the City of Irvine (City) *Traffic Study Guidelines* (adopted by the City Council on June 23, 2020), the City's Transportation Design Procedures (TDPs; adopted in February 2007), and Sections 2-17-3 and 9-36-10 of the City's Zoning Code.

INTRODUCTION

Project Site

Figure 1 shows the project site location. The existing 17861 Cartwright Road site (Irvine Business Complex [IBC] Project No. 106 located in Traffic Analysis Zone [TAZ] 491) includes a vacant 19,061-square-foot (sf) office building and 1,953 sf of zoning potential. The proposed project will demolish the existing vacant building and construct 60 rental (100 percent affordable housing) units. The proposed project includes 44 base units and 16 density bonus units (35 percent of the 44 base units). The project site is bounded by Cartwright Road to the east and existing office/industrial uses to the north, south, and west. Access to the project site will be provided via an existing full-access driveway on Cartwright Road that is shared with the adjacent office use at 17801 Cartwright Road (Yogurtland Franchising, Inc.). Figure 2 illustrates a site plan of the proposed project.

Study Area Boundary

As shown on Figure 1, the study area includes the following intersections in the Irvine Transportation Analysis Model (ITAM):

1. MacArthur Boulevard/Main Street
2. Gillette Avenue/Main Street
3. Von Karman Avenue/Main Street
4. Cartwright Road/Main Street
5. Jamboree Road/Main Street
6. Jamboree Road/Interstate 405 (I-405) northbound ramps
7. Jamboree Road/I-405 southbound ramps

Roadway segments in between each study area intersection have been analyzed in this study.

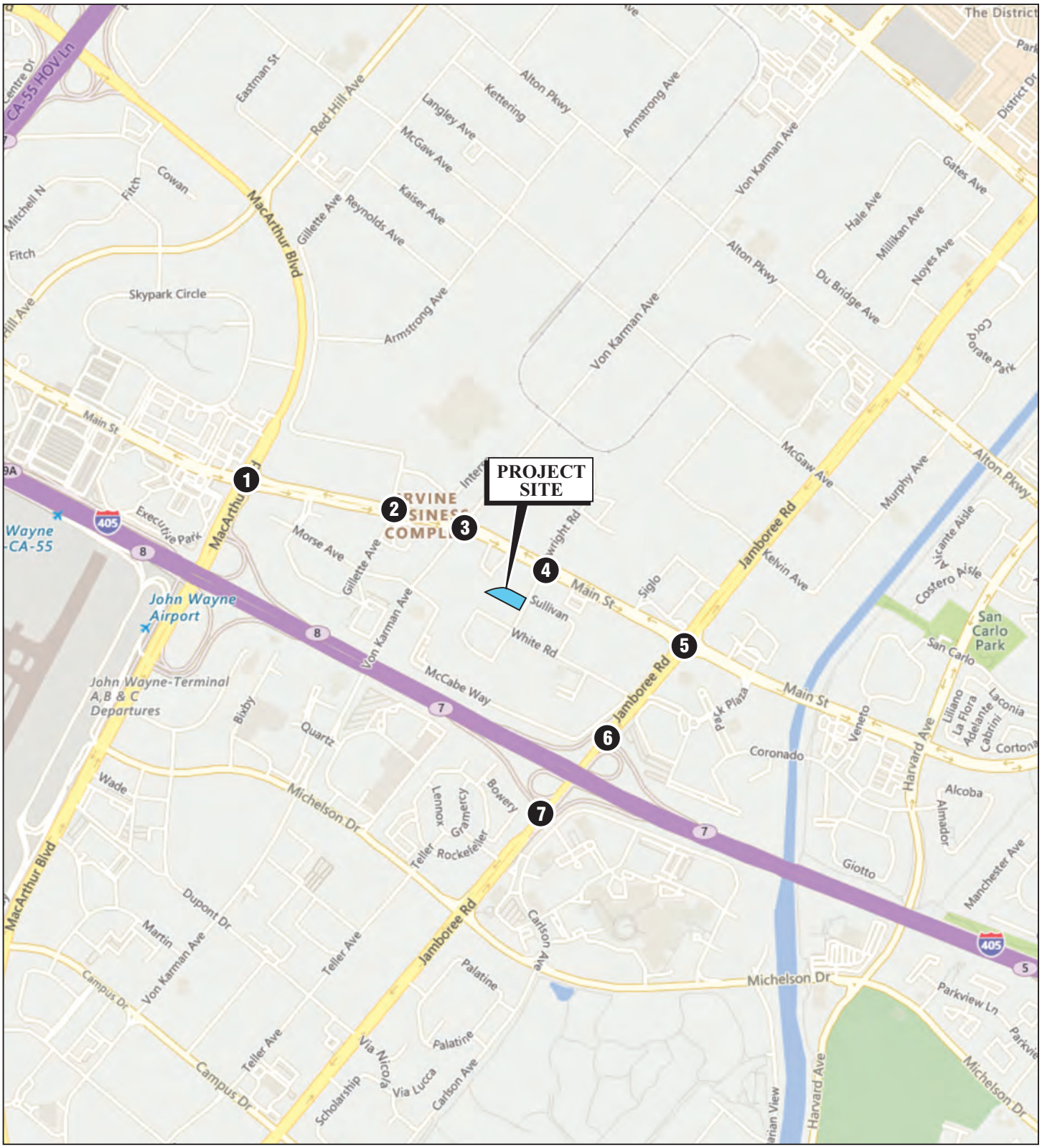

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FIGURE 1

LEGEND

- Study Area Intersection

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SOURCE: Bing Maps

17861 Cartwright Road

Project Location and Study Area Intersections

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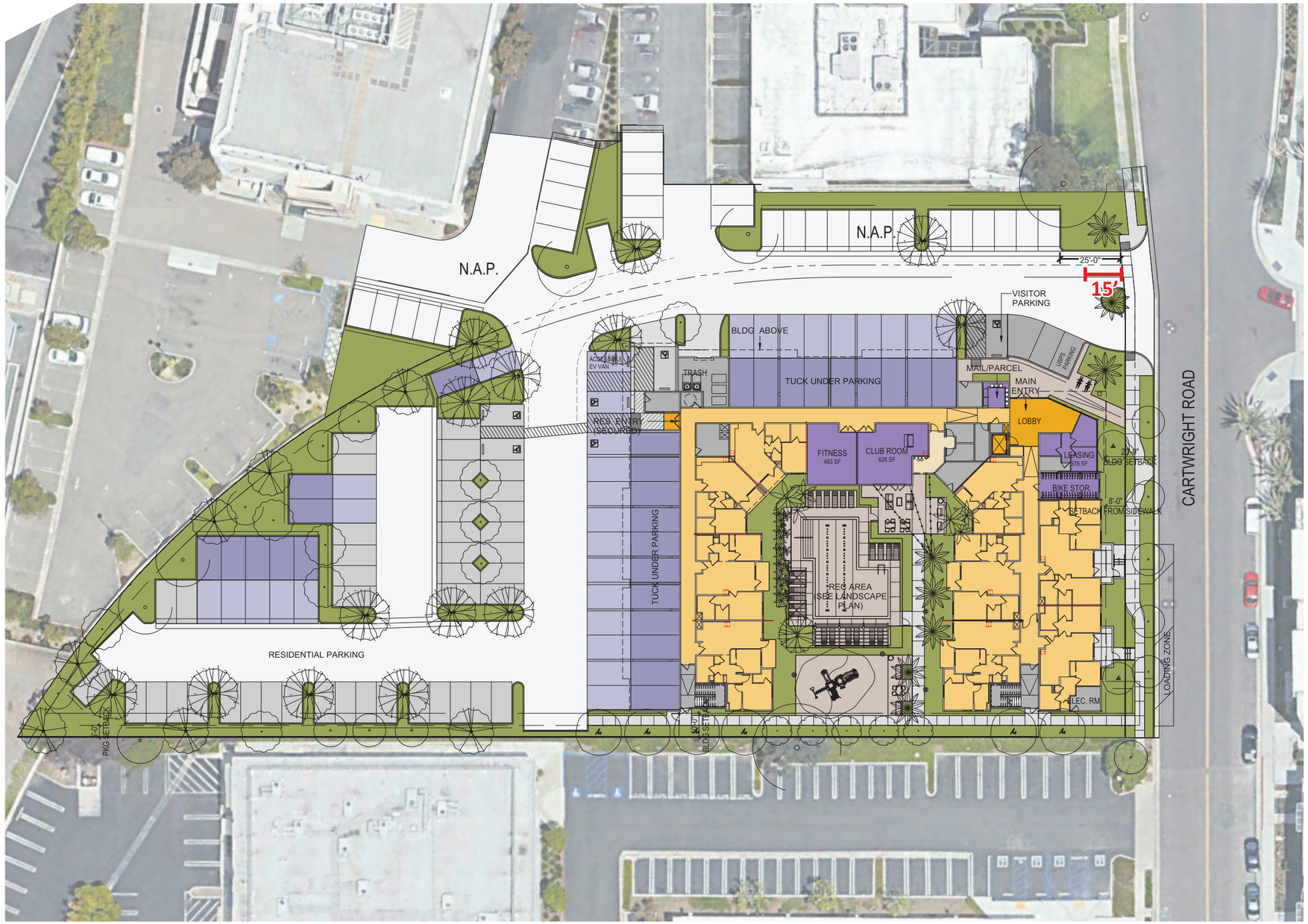

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FIGURE 2

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SOURCE: Fuscoe Engineering

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17861 Cartwright Road

Site Plan

Existing, General Plan, and Proposed Site Uses

The current City General Plan (2015) designation for the site is Urban and Industrial. The current zoning is 5.1 IBC Multi-Use.

Table A presents the IBC development intensity value (DIV) budget for the 17861 Cartwright Road project site. The purpose of this information is to identify the existing DIV budget and whether the proposed project would exceed this DIV budget. The project DIVs are generated using DIV rates contained in the City's Zoning Ordinance, Section 9-36-8. These DIV rates are used to determine both the entitlement on site and the DIVs generated by the proposed project; however, these rates are not used for LOS impact analysis purposes. Instead, LOS impacts are based on the proposed land use of the proposed project with forecasts from the latest version of the ITAM.

As Table A indicates, the IBC DIV budget for the project site is 28 a.m. peak-hour DIVs, 29 p.m. peak hour DIVs, and 293 daily DIVs. The proposed project of 44 base units (excluding the 16 density bonus units) would generate 22 a.m. peak-hour DIVs, 23 p.m. peak-hour DIVs, and 277 daily DIVs. Because the proposed project is within the DIV budget for the site, a transfer of development rights (TDR) is not required.

It should be noted that the term "DIVs" is used to discuss the amount of proposed development within a site. The term "trips" is used to refer to the LOS impact analysis resulting from the proposed development.

PERFORMANCE CRITERIA

To determine the peak-hour operations at signalized intersections within the study area, the intersection capacity utilization (ICU) methodology was used. The ICU methodology compares the volume-to-capacity (v/c) ratios of conflicting turn movements at an intersection, sums these critical conflicting v/c ratios for each intersection approach, and determines the overall ICU. The resulting ICU is expressed in terms of LOS, where LOS A represents free-flow activity and LOS F represents overcapacity operation. Parameters set by the City for ICU calculations, including lane capacity, right-turn treatment, and clearance interval, are included in this analysis.

According to the City's *Traffic Study Guidelines* and consistent with the City's General Plan, LOS at an intersection or roadway is considered to be unsatisfactory when the ICU exceeds 1.00 (i.e., LOS F) within the IBC. The relationship of ICU to LOS is demonstrated in the following table:

Level of Service	ICU
A	0.00–0.60
B	0.61–0.70
C	0.71–0.80
D	0.81–0.90
E	0.91–1.00
F	>1.00

Source: City of Irvine *Traffic Study Guidelines* (2020).
ICU = intersection capacity utilization

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Table A: 17861 Cartwright Road DIV Summary

Land Use	Size	Unit	Daily	AM Peak Hour	PM Peak Hour
DIV Rates [1]					
Office/Zoning Potential		SF	0.01377	0.00130	0.00138
Residential		DU	6.30000	0.50000	0.52000
Existing DIV Budget (Project No. 106)					
Office	19,061	SF	262.47	24.78	26.30
Zoning Potential	1,953	SF	26.89	2.54	2.70
DIV Budget Differential			4	1	0
Total			**293**	**28**	**29**
Project DIV Generation					
Residential	60	DU	378.00	30.00	31.20
Density Bonus (35% of 44 DU)	(16)	DU	(100.80)	(8.00)	(8.32)
Total (excluding Density Bonus)			**277.20**	**22.00**	**22.88**
Difference (Existing - Project)			**15.80**	**6.00**	**6.12**
Remaining Entitlement (Office Equivalency)			**1,147**	4,615	4,435

[1] Development intensity value (DIV) rates obtained from the Irvine Business Complex (IBC) Database Summary.

DU = dwelling unit

SF = square feet

In addition to the ICU methodology of calculating intersection LOS, an operational analysis was also prepared based on the *Highway Capacity Manual* (HCM 6th Edition; Transportation Research Board [TRB] 2017) methodology to determine the LOS at signalized California Department of Transportation (Caltrans) intersections within the study area. The HCM 6th Edition signalized intersection methodology presents LOS in terms of total intersection delay (in seconds per vehicle). The resulting delay is expressed in terms of LOS, similar to the ICU methodology. The relationship of delay to LOS is demonstrated in the following table:

Level of Service	Signalized Intersection Delay (seconds)
A	≤10.0
B	>10.0 and ≤20.0
C	>20.0 and ≤35.0
D	>35.0 and ≤55.0
E	>55.0 and ≤80.0
F	>80.0

Source: *Highway Capacity Manual* (Transportation Research Board 2017).

Roadway link v/c ratios were determined using the City's theoretical daily capacities. Facility types were taken from the City's General Plan. The following table illustrates theoretical daily capacities (as contained in the City's *Traffic Study Guidelines*) for roadways within the study area:

Facility Type	Number of Lanes	Theoretical Capacity (vehicles per day)
Major Highway	8	72,000
	7	63,000
	6	54,000
Primary Highway	4	32,000
Secondary Highway	4	28,000
Commuter	2	13,000

Sources: City of Irvine General Plan (2015) and City of Irvine *Traffic Study Guidelines* (2020).
Note: The theoretical capacity of a seven-lane Major Highway is interpolated from the theoretical capacities of a six-lane and an eight-lane Major Highway.

Using the City's adopted methodologies (ICU for signalized intersections and v/c ratios for roadway links), a project LOS impact occurs if the project causes a signalized intersection or roadway link to exceed the acceptable LOS or when the signalized intersection or roadway link in question exceeds the acceptable LOS and the effect of development is greater than or equal to 0.02.

The City's peak-hour link analysis (per the adopted City *Traffic Study Guidelines*) is used to evaluate roadway capacity conditions and the need for improvement, if necessary. The peak-hour link analysis determines directional a.m. and p.m. peak-hour v/c ratios for each link that is projected to exceed LOS standards. The peak-hour capacity is determined by multiplying the midblock number of lanes for each direction by a lane capacity of 1,600 vehicles per hour (vph). Where the distance between controlled intersections is 1 or more miles, the midblock number of lanes shall be multiplied by a lane capacity of 2,000 vph. Project mitigation will be required to bring the LOS back to 1.00 (within the IBC) or to the LOS baseline, if the baseline is greater than 1.00.

The project driveway is analyzed based on the design criteria recommended in the City's TDPs. The TDPs establish uniform policies and procedures for reviewing traffic design plans within the City. The TDPs were used to evaluate the roadway design features that may be affected by the proposed project. A description and an analysis of each applicable design criterion are provided later in this Traffic Study.

ANALYSIS METHODOLOGY AND APPROACH

The ITAM (Model version 15) was used to forecast Short-Term Interim-Year, Long-Range, and Buildout Approved and Pending conditions with and without the proposed project. The Approved condition represents each application for development currently approved by the City. The Pending condition represents the planned growth for Irvine per the General Plan and the IBC zoning (including the adopted IBC Vision Plan), as well as all of the projects in Irvine that are approved (but not yet built) and currently under review.

The Existing Plus Project scenario was determined by considering the traffic volume differential between the Existing No Project and Existing Plus Project ITAM runs. This differential was added to existing counts conducted at study area intersections and roadway segments to determine Existing Plus Project conditions in ITAM.

The future conditions are based on the funded roadway network and land use assumptions envisioned to be in place by the respective horizon year. This future traffic analysis requires 12 ITAM runs. These ITAM runs are examined with and without the proposed project in both the Approved and Pending development scenarios.

The 17861 Cartwright Road project site is located within the IBC in TAZ 491. The IBC Vision Plan effort established the following maximum residential dwelling unit limits:

- 15,000 market-rate (base) residential units
- 2,038 affordable-rate (density bonus) residential units

In order to analyze the effect of this development intensity upon the existing and future roadway network, the IBC Vision Plan Traffic Study made certain assumptions about the type, quantity, and location of where this development intensity would occur in the Long-Range and Buildout ITAM scenarios.

The IBC Vision Plan did not consider residential units within TAZ 491. Consequently, to maintain consistency with the IBC Vision Plan, this Traffic Study will need to adjust the TAZ land use by redistributing the type, quantity, and location of residential units in the Long-Range and Buildout scenarios while staying within the established maximum ranges of the IBC Vision Plan.

For traffic modeling purposes, changes have been identified by City staff for TAZs within ITAM to accommodate the residential intensity proposed within the project TAZ. TAZ 421 has additional base and density bonus units available to transfer to TAZ 491, in which the 17861 Cartwright Road project is located. This redistribution of residential units would result in the following land use changes:

- TAZ 421: reduction of 44 base units and 16 density bonus units, and addition of 16,580 sf of office equivalency

Figure 3 illustrates the project TAZ (491) and the other TAZ affected by the project (421).

LSA prepared the forecast data for this proposed project based on the latest version of ITAM. The scenarios examined for each future condition are as follows:

1. **Short-Term Interim-Year (2023) Approved Baseline:** The ITAM 2023 run (Y23-15 or higher) will include the effects of each application for development approved by the City. Any additional development beyond the existing uses for the project that might be assumed in ITAM will be deleted for the analysis of this scenario.

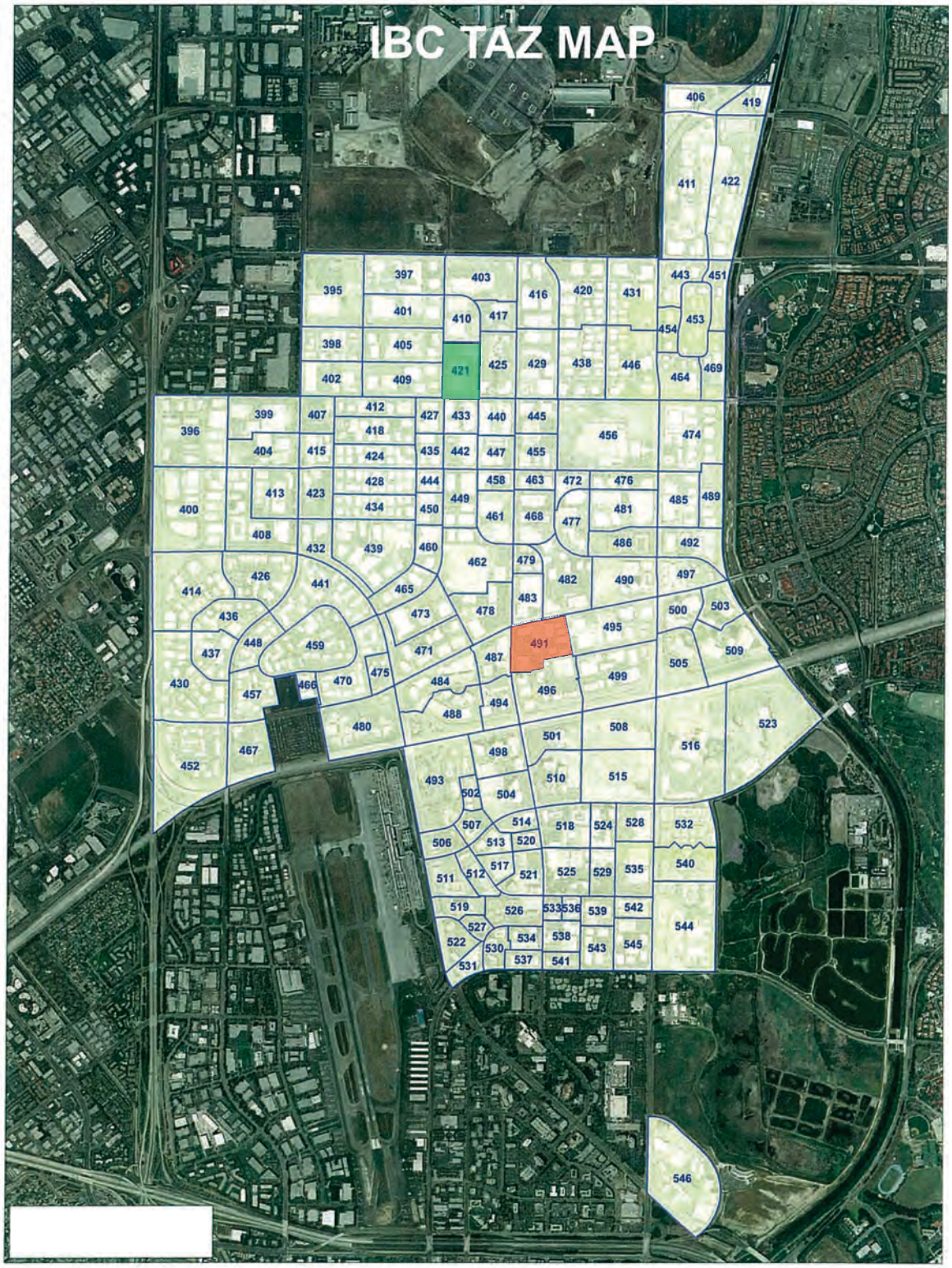
2. **Short-Term Interim-Year (2023) Baseline Plus Project:** The ITAM 2023 run (Y23-15 or higher) will include the effects of each application for development approved by the City. The project (60 residential [44 base and 16 density bonus] units in TAZ 491) will be assumed to be built for this analysis. Additionally, a removal of 19,061 sf of office use will be reflected in TAZ 491.

3. **Short-Term Interim-Year (2023) Pending Baseline:** The ITAM 2023 run (Y23-15 or higher) will include the cumulative effects of each application for development currently approved and under review by the City. Any additional development beyond the existing uses for the project that might be assumed in ITAM will be deleted for the analysis of this scenario.

4. **Short-Term Interim-Year (2023) Pending Plus Project:** The ITAM 2023 run (Y23-15 or higher) will include the cumulative effects of each application for development currently approved and under review by the City. The project (60 residential [44 base and 16 density bonus] units in TAZ 491) will be assumed to be fully built out for this analysis. Additionally, a removal of 19,061 sf of office use will be reflected in TAZ 491.

5. **Long-Range (2040) Approved Baseline:** The ITAM 2040 run (Y40-15 or higher) will include the Alton Parkway/State Route 55 (SR-55) four-lane overcrossing. The ITAM will include the effects of each application for development and including all known executed TDRs (regardless of size) currently approved by the City. This scenario will include the intensity assumed in the buildout of the IBC Vision Plan.

6. **Long-Range (2040) Approved Plus Project:** The ITAM 2040 run (Y40-15 or higher) will include the Alton Parkway/SR-55 four-lane overcrossing. The ITAM will include the effects of each application for development and all known executed TDRs (regardless of size) currently approved by the City. The project (60 residential [44 base and 16 density bonus] units TAZ 491) will be assumed to be fully built out for this analysis. Additionally, a removal of 19,867 sf of office use and zoning potential will be reflected in TAZ 491. TAZ 421 will be adjusted to account for the IBC Vision Plan residential cap (reduction of 44 base and 16 density bonus units, and addition of 16,580 sf of office equivalency).



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LEGEND

- Project TAZ
- Other TAZ Affected by the Project

N

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FIGURE 3

17861 Cartwright Road

IBC TAZ Map

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7. **Long-Range (2040) Pending Baseline:** The ITAM 2040 run (Y40-15 or higher) will include the Alton Parkway/SR-55 four-lane overcrossing. The ITAM will include the cumulative effects of each application for development and all known executed TDRs (regardless of size) currently approved and under review by the City. This scenario will include the intensity assumed in the buildout of the IBC Vision Plan.

8. **Long-Range (2040) Pending Plus Project:** The ITAM 2040 run (Y40-15 or higher) will include the Alton Parkway/SR-55 four-lane overcrossing. The ITAM will include the cumulative effects of each application for development and all known executed TDRs (regardless of size) currently approved and under review by the City. The project (60 residential [44 base and 16 density bonus] units in TAZ 491) will be assumed to be fully built out for this analysis. Additionally, a removal of 19,867 sf of office use and zoning potential will be reflected in TAZ 491. TAZ 421 will be adjusted to account for the IBC Vision Plan residential cap (reduction of 44 base and 16 density bonus units, and addition of 16,580 sf of office equivalency).

9. **Buildout (Post-2040) Approved Baseline:** The ITAM Post-2040 run (P40-15 or higher) will include the Alton Parkway/SR-55 four-lane overcrossing and with the Von Karman Avenue/I-405 high-occupancy vehicle (HOV) drop ramps. The ITAM will include the effects of each application for development and all known executed TDRs (regardless of size) currently approved by the City. This scenario will include the intensity assumed in the buildout of the IBC Vision Plan.

10. **Buildout (Post-2040) Approved Plus Project:** The ITAM Post-2040 run (P40-15 or higher) will include the Alton Parkway/SR-55 four-lane overcrossing and with the Von Karman Avenue/I-405 HOV drop ramps. The ITAM will include the effects of each application for development and all known executed TDRs (regardless of size) currently approved by the City. The project (60 residential [44 base and 16 density bonus] units in TAZ 491) will be assumed to be fully built out for this analysis. Additionally, a removal of 19,867 sf of office use and zoning potential will be reflected in TAZ 491. TAZ 421 will be adjusted to account for the IBC Vision Plan residential cap (reduction of 44 base and 16 density bonus units, and addition of 16,580 sf of office equivalency).

11. **Buildout (Post-2040) Pending Baseline:** The ITAM Post-2040 run (P40-15 or higher) will include the Alton Parkway/SR-55 four-lane overcrossing and with the Von Karman Avenue/I-405 HOV drop ramps. The ITAM will include the cumulative effects of each application for development and all known executed TDRs (regardless of size) currently approved and under review by the City. This scenario will include the intensity assumed in the buildout of the IBC Vision Plan.

12. **Buildout (Post-2040) Pending Baseline Plus Project.** The ITAM Post-2040 run (P40-15 or higher) will include the Alton Parkway/SR-55 four-lane overcrossing and with the Von Karman Avenue/ I-405 HOV drop ramps. The ITAM will include the cumulative effects of each application for development and all known executed TDRs (regardless of size) currently approved and under review by the City. The project (60 residential [44 base and 16 density bonus] units in TAZ 491) will be assumed to be fully built out for this analysis. Additionally, a removal of 19,867 sf of office use and zoning potential will be reflected in TAZ 491. TAZ 421 will be adjusted to account for the IBC Vision Plan residential cap (reduction of 44 base and 16 density bonus units, and addition of 16,580 sf of office equivalency).

Project LOS impacts are identified at study area intersections for the Short-Term Interim-Year, Long-Range, and Buildout Approved and Pending conditions, assuming improvements to the circulation system identified by the City. Daily traffic volumes and v/c ratios are also presented in the analysis for the study area roadway segments for each scenario. Traffic volumes and calculations for the Short-Term Interim-Year, Long-Range, and Buildout Approved and Pending scenarios are referenced throughout this Traffic Study and are provided in Appendix B.

PROPOSED PROJECT TRAFFIC

Trip Generation

Traffic volume forecasts were prepared using ITAM (Model No. 15) for 60 residential units. ITAM integrates trip generation, distribution, and assignment into the methodology used to forecast trips. ITAM does not base trip generation on land use but rather on socioeconomic data. The socioeconomic approach to traffic modeling is premised on more precise demographic assumptions that look beyond the simple land uses reflected in the City's Zoning Code. As a result, the current ITAM does not contain land-use-based trip rates that can easily be used to determine the trip generation of a land development proposal.

The project trips assigned to the study area intersections and the roadway segments for the Existing, Short-Term Interim-Year, Long-Range, and Buildout Approved and Pending conditions are based on ITAM, which is the OCTA-sanctioned subarea model for the City. All modeling protocols (including trip generation, distribution, and assignment) are consistent with local, regional, and national guidance for such features. All project trip generation is accounted for in ITAM, and the effects of the proposed project reflect the contribution of its trips to the local street system. All project traffic, as well as cumulative traffic and growth within Irvine and adjacent cities (i.e., Santa Ana, Tustin, and Newport Beach), is accounted for. ITAM is the appropriate tool to evaluate discrete project-related circulation effects for the City.

The socioeconomic trip rates contained in ITAM are different than the land-use-based trip rates in the Institute of Transportation Engineers (ITE) *Trip Generation Manual,* 10th Edition (2017). The ITAM socioeconomic trip rates are used for Traffic Study purposes (i.e., evaluation of study area intersections and roadway segments under Existing, Short-Term Interim-Year, Long-Range, and Buildout Approved and Pending conditions).

For the purpose of disclosing the approximate net number of trips generated by the proposed project of 60 residential units, trip rates contained in the ITE *Trip Generation Manual* were used. Table B shows the project trip generation using the ITE trip rates. The land-use-based trip generation is used for evaluation of the City's TDPs; that evaluation is provided later in this Traffic Study.

As Table B indicates, the proposed project is forecast to generate an average daily traffic (ADT) volume of 326 trips, including 22 trips (six inbound and 16 outbound) in the a.m. peak hour and 26 trips (16 inbound and 10 outbound) in the p.m. peak hour, based on ITE trip rates.

Table B: Project Trip Generation

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Multifamily (Mid-Rise)		DU	5.44	0.09	0.27	0.36	0.27	0.17	0.44
Project Trip Generation									
Multifamily (Mid-Rise)	60	DU	326	6	16	22	16	10	26

[1] Trip rates are referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10th Edition (2017) Land Use Code (221): Multifamily Housing (Mid-Rise) – Between 3 and 10 Levels.
ADT = average daily traffic
DU = dwelling unit

Trip Distribution and Assignment

Directions of approach to and departure from the site are based on ITAM's select zone assignments for project TAZ 491 for a.m. peak-hour, p.m. peak-hour, and daily conditions under each horizon year. The model data, prepared by LSA, represent the baseline traffic volumes plus the trips generated by the proposed project under each project scenario. For the purposes of the access analysis, the a.m. peak-hour and p.m. peak-hour ITAM Buildout Approved Baseline Plus Project select zone assignments for TAZ 491 were used to distribute and assign project trips in and out of the site. The ITAM Buildout Approved Baseline Plus Project select zone assignments are provided in Appendix C. The results of the access analysis are discussed later in this report.

EXISTING CONDITIONS

Existing Site Uses

The project site at 17861 Cartwright Road currently includes a currently vacant 19,061 sf office building. The project site is bounded by Cartwright Road to the east and existing office/industrial uses to the north, south, and west. Access to the project site will be provided via an existing full-access driveway on Cartwright Road that is shared with the adjacent office use at 17801 Cartwright Road (Yogurtland Franchising, Inc.).

Existing Roadways and Intersections

Key roadways in the vicinity of the proposed project are as follows:

- **Cartwright Road–White Road:** Cartwright Road–White Road is a Local Street. South of Main Street, Cartwright Road is an undivided, two-lane north-south roadway that transitions to the undivided, two-lane east-west roadway of White Road. Cartwright Road provides direct access to the project site. In the vicinity of the project site, on-street parking is permitted on the east side of Cartwright Road and the north side of White Road. Sidewalks are provided on both sides of Cartwright Road–White Road.

- **Main Street**: According to the City's General Plan Circulation Element, Main Street is classified as a Major Highway. Main Street is a divided, six-lane north-south roadway located north of the project site. The posted speed limit is 45 miles per hour. On-street (Class II) bicycle lanes and sidewalks are provided on both sides of the street. On-street parking is not permitted.

Existing Baseline and Plus Project Traffic Volumes and Levels of Service

Intersection turning movement volumes for the a.m. (7:00 a.m. to 9:00 a.m.) and p.m. (4:00 p.m. to 6:00 p.m.) peak hours and 24-hour roadway volumes were collected at the study area intersections and roadways by Counts Unlimited in 2018 (when schools were in session and prior to COVID-19). As local schools are closed and existing traffic conditions are atypical due to the pandemic, a 4 percent growth factor (2 percent per year) has been applied the 2018 traffic counts to represent 2020 conditions. The existing traffic counts and adjustments are provided in Appendix D.

As previously discussed, the ICU methodology was used to determine the LOS at signalized intersections, and the HCM methodology was used to determine the LOS at unsignalized intersections. The Existing (Baseline and Plus Project) ICU and HCM worksheets are provided in Appendix B and Appendix E, respectively.

A summary of Existing (Baseline and Plus Project) intersection LOS is presented in Table C. As this indicates, all study area intersections currently operate at satisfactory LOS. With the addition of the proposed project in the existing setting, all study area intersections would continue to operate at satisfactory LOS. Therefore, the proposed project can be implemented in an existing setting with no peak-hour LOS impacts at signalized intersections.

Existing (Baseline and Plus Project) ADT volumes and v/c ratios are presented in Table D. As this table indicates, all study area roadway segments currently operate at satisfactory LOS, with the exception of Jamboree Road between Main Street and the I-405 northbound ramps (LOS F) and Jamboree Road between the I-405 northbound ramps and I-405 southbound ramps (LOS F). With the addition of the proposed project in the existing setting, all study area roadway segments would continue to operate at satisfactory LOS, with the exception of the previously stated roadway segments. However, the roadway segment v/c ratios do not increase by 0.02 or greater at these locations. Therefore, no daily LOS impacts are created on roadway segments with the implementation of the proposed project in an existing setting.

FUTURE CONDITIONS

The following discussion presents the results of the future analysis with and without the proposed project.

Short-Term Interim-Year Approved Baseline and Plus Project Traffic Volumes and LOS

Table E presents a summary of the intersection LOS for the Short-Term Interim-Year Approved (Baseline and Plus Project) conditions. As this table indicates, all study area intersections are forecast to operate at satisfactory LOS in the Baseline (No Project) condition.

With the addition of the proposed project in the Short-Term Interim-Year Approved condition, all study area intersections would continue to operate at satisfactory LOS, with the exception of the Jamboree Road/I-405 southbound ramps (a.m. peak hour). At this intersection, the Baseline ICU is reported as 1.00 but should have been reported as 1.01 based on rounding, and the Plus Project ICU is correctly reported as 1.01. When a project is deficient in the Baseline (No Project) condition (i.e., 1.01), the project's responsibility for implementing an improvement falls under a different set of

LSA

Table C: Existing Intersection LOS Summary

Study Area No.	ITAM Node No.	Intersection	Baseline				Plus Project				Peak-Hour Δ ICU		LOS Impact?
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour				
			ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	AM	PM	
1	78	MacArthur Boulevard/Main Street	0.58	A	0.78	C	0.60	A	0.78	C	0.02	0.00	No
2	70	Gillette Avenue/Main Street	0.32	A	0.65	B	0.36	A	0.65	B	0.04	0.00	No
3	100	Von Karman Avenue/Main Street	0.67	B	0.70	B	0.72	C	0.70	B	0.05	0.00	No
4	116	Cartwright Road/Main Street	0.36	A	0.55	A	0.35	A	0.55	A	(0.01)	0.00	No
5	141	Jamboree Road/Main Street	0.76	C	0.87	D	0.76	C	0.86	D	0.00	(0.01)	No
6	143	Jamboree Road/I-405 northbound ramps	0.73	C	0.85	D	0.73	C	0.85	D	0.00	0.00	No
		HCM	*24.6*	*C*	*30.4*	*C*	*24.6*	*C*	*30.7*	*C*	-	-	N/A
7	144	Jamboree Road/I-405 southbound ramps	0.95	E	0.94	E	0.95	E	0.94	E	0.00	0.00	No
		HCM	*>80.0*	*F*	*46.1*	*D*	*>80.0*	*F*	*46.2*	*D*	-	-	N/A

Δ = change

Delay is reported in seconds.

HCM = Highway Capacity Manual

ICU = Intersection Capacity Utilization

I-405 = Interstate 405

ITAM = Irvine Transportation Analysis Model

LOS = level of service

N/A = not applicable

Table D: Existing ADT Volumes and V/C Ratios

ITAM Post No.	Roadway	Segment	Capacity	Baseline			Plus Project			Δ V/C	LOS Impact?
				ADT	V/C	LOS	ADT	V/C	LOS		
145	Jamboree Road	Main Street to I-405 NB Ramps	72,000	74,700	1.04	F	74,700	1.04	F	0.00	No
956	Jamboree Road	I-405 NB Ramps to I-405 SB Ramps	72,000	76,300	1.06	F	76,300	1.06	F	0.00	No
820	Main Street	MacArthur to Gillette	54,000	33,800	0.63	B	34,600	0.64	B	0.01	No
821	Main Street	Gillette to Von Karman	54,000	33,800	0.63	B	35,400	0.66	B	0.03	No
822	Main Street	Von Karman to Cartwright	54,000	22,300	0.41	A	22,300	0.41	A	0.00	No
823	Main Street	Cartwright to Jamboree	54,000	22,300	0.41	A	22,400	0.41	A	0.00	No
1428	Cartwright Road	south of Main	13,000	3,200	0.25	A	3,900	0.30	A	0.05	No

Δ = change

= exceeds City's level of service criteria

ADT = average daily trips

I-405 = Interstate 405

ITAM = Irvine Transportation Analysis Model

LOS = level of service

V/C = volume-to-capacity ratio

LSA

Table E: Short-Term Interim-Year Approved Intersection LOS Summary

Study Area No.	ITAM Node No.	Intersection	Baseline				Plus Project				Peak-Hour Δ ICU		LOS Impact?
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour				
			ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	AM	PM	
1	78	MacArthur Boulevard/Main Street	0.69	B	0.80	C	0.69	B	0.81	D	0.00	0.01	No
2	70	Gillette Avenue/Main Street	0.46	A	0.64	B	0.46	A	0.64	B	0.00	0.00	No
3	100	Von Karman Avenue/Main Street	0.71	C	0.81	D	0.72	C	0.81	D	0.01	0.00	No
4	116	Cartwright Road/Main Street	0.56	A	0.68	B	0.56	A	0.68	B	0.00	0.00	No
5	141	Jamboree Road/Main Street	0.73	C	0.83	D	0.73	C	0.83	D	0.00	0.00	No
6	143	Jamboree Road/I-405 northbound ramps	0.77	C	0.85	D	0.77	C	0.85	D	0.00	0.00	No
		HCM	*26.5*	*C*	*32.6*	*C*	*26.5*	*C*	*32.6*	*C*	-	-	N/A
7	144	Jamboree Road/I-405 southbound ramps	1.00	E	0.95	E	1.01	F	0.94	E	0.01	(0.01)	No
		HCM	*>80.0*	*F*	*62.6*	*E*	*>80.0*	*F*	*61.8*	*E*	-	-	N/A

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Delay is reported in seconds.

HCM = Highway Capacity Manual

ICU = Intersection Capacity Utilization

I-405 = Interstate 405

ITAM = Irvine Transportation Analysis Model

LOS = level of service

N/A = not applicable

criteria than when the Baseline condition operates at acceptable LOS. For a deficient Baseline condition, the project must contribute at least 2 percent to the ICU. This proposed project's ICU contribution is 0.3 percent; therefore, an improvement is not required of the proposed project. It should be noted that there is a future IBC area-wide improvement at the Jamboree Road/I-405 southbound ramps to widen the off-ramp approach to add a lane to provide two left-turn lanes, a shared left-turn/right-turn lane, and two right-turn lanes. With this future improvement, the intersection would operate at acceptable LOS. The housing project will contribute toward this IBC area-wide improvement through its payment of IBC transportation fees. Therefore, the proposed project can be implemented in the Short-Term Interim-Year Approved condition with no peak-hour LOS impacts at signalized intersections.

The ADT volumes and v/c ratios for the Short-Term Interim-Year Approved (Baseline and Plus Project) conditions are presented in Table F. As this table indicates, all study area roadway segments are forecast to operate at satisfactory LOS in the Baseline (No Project) condition, with the exception of Jamboree Road between Main Street and the I-405 northbound ramps (LOS F) and Jamboree Road between the I-405 northbound ramps and I-405 southbound ramps (LOS F). With the addition of the proposed project in the Short-Term Interim-Year Approved condition, all study area roadway segments would continue to operate at satisfactory LOS, with the exception of the previously stated roadway segments. However, the roadway segment v/c ratios do not increase by 0.02 or greater at these locations. Therefore, no daily LOS impacts are created on roadway segments with the implementation of the proposed project in the Short-Term Interim-Year Approved condition.

Short-Term Interim-Year Pending Baseline and Plus Project Traffic Volumes and LOS

Table G presents a summary of the intersection LOS for the Short-Term Interim-Year Pending (Baseline and Plus Project) conditions. As this table indicates, all study area intersections are forecast to operate at satisfactory LOS in the Baseline (No Project) condition. With the addition of the proposed project in the Short-Term Interim-Year Pending condition, all study area intersections would continue to operate at satisfactory LOS. Therefore, the proposed project can be implemented in the Short-Term Interim-Year Pending condition with no peak-hour LOS impacts at signalized intersections.

The ADT volumes and v/c ratios for the Short-Term Interim-Year Pending (Baseline and Plus Project) conditions are presented in Table H. As this table indicates, all study area roadway segments are forecast to operate at satisfactory LOS in the Baseline (No Project) condition, with the exception of Jamboree Road between Main Street and the I-405 northbound ramps (LOS F) and Jamboree Road between the I-405 northbound ramps and I-405 southbound ramps (LOS F). With the addition of the proposed project in the Short-Term Interim-Year Pending condition, all study area roadway segments would continue to operate at satisfactory LOS, with the exception of the previously stated roadway segments. However, the roadway segment v/c ratios do not increase by 0.02 or greater at these locations. Therefore, no daily LOS impacts are created on roadway segments with the implementation of the proposed project in the Short-Term Interim-Year Pending condition.

Table F: Short-Term Interim-Year Approved ADT Volumes and V/C Ratios

ITAM Post No.	Roadway	Segment	Capacity	Baseline			Plus Project			Δ V/C	LOS Impact?
				ADT	V/C	LOS	ADT	V/C	LOS		
145	Jamboree Road	Main Street to I-405 NB Ramps	72,000	75,200	1.04	F	75,300	1.05	F	0.01	No
956	Jamboree Road	I-405 NB Ramps to I-405 SB Ramps	72,000	80,600	1.12	F	80,600	1.12	F	0.00	No
820	Main Street	MacArthur to Gillette	54,000	36,400	0.67	B	36,500	0.68	B	0.01	No
821	Main Street	Gillette to Von Karman	54,000	39,200	0.73	C	39,400	0.73	C	0.00	No
822	Main Street	Von Karman to Cartwright	54,000	28,700	0.53	A	28,700	0.53	A	0.00	No
823	Main Street	Cartwright to Jamboree	54,000	26,500	0.49	A	26,500	0.49	A	0.00	No
1428	Cartwright Road	south of Main	13,000	6,100	0.47	A	6,100	0.47	A	0.00	No

Δ = change

= exceeds City's level of service criteria

ADT = average daily trips

I-405 = Interstate 405

ITAM = Irvine Transportation Analysis Model

LOS = level of service

V/C = volume-to-capacity ratio

LSA

Table G: Short-Term Interim-Year Pending Intersection LOS Summary

Study Area No.	ITAM Node No.	Intersection	Baseline				Plus Project				Peak-Hour Δ ICU		LOS Impact?
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour				
			ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	AM	PM	
1	78	MacArthur Boulevard/Main Street	0.69	B	0.81	D	0.69	B	0.81	D	0.00	0.00	No
2	70	Gillette Avenue/Main Street	0.47	A	0.63	B	0.48	A	0.62	B	0.01	(0.01)	No
3	100	Von Karman Avenue/Main Street	0.70	B	0.81	D	0.71	C	0.80	C	0.01	(0.01)	No
4	116	Cartwright Road/Main Street	0.55	A	0.66	B	0.55	A	0.66	B	0.00	0.00	No
5	141	Jamboree Road/Main Street	0.80	C	0.90	D	0.80	C	0.90	D	0.00	0.00	No
6	143	Jamboree Road/I-405 northbound ramps	0.75	C	0.84	D	0.75	C	0.84	D	0.00	0.00	No
		HCM	*25.8*	*C*	*28.7*	*C*	*25.8*	*C*	*28.5*	*C*	-	-	N/A
7	144	Jamboree Road/I-405 southbound ramps	0.98	E	0.93	E	0.98	E	0.93	E	0.00	0.00	No
		HCM	*>80.0*	*F*	*55.6*	*E*	*>80.0*	*F*	*56.0*	*E*	-	-	N/A

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Delay is reported in seconds.

HCM = Highway Capacity Manual

ICU = Intersection Capacity Utilization

I-405 = Interstate 405

ITAM = Irvine Transportation Analysis Model

LOS = level of service

N/A = not applicable

Table H: Short-Term Interim-Year Pending ADT Volumes and V/C Ratios

ITAM Post No.	Roadway	Segment	Capacity	Baseline			Plus Project			Δ V/C	LOS Impact?
				ADT	V/C	LOS	ADT	V/C	LOS		
145	Jamboree Road	Main Street to I-405 NB Ramps	72,000	74,600	1.04	F	74,600	1.04	F	0.00	No
956	Jamboree Road	I-405 NB Ramps to I-405 SB Ramps	72,000	79,600	1.11	F	79,600	1.11	F	0.00	No
820	Main Street	MacArthur to Gillette	54,000	36,700	0.68	B	36,800	0.68	B	0.00	No
821	Main Street	Gillette to Von Karman	54,000	39,000	0.72	C	39,000	0.72	C	0.00	No
822	Main Street	Von Karman to Cartwright	54,000	28,100	0.52	A	28,000	0.52	A	0.00	No
823	Main Street	Cartwright to Jamboree	54,000	26,200	0.49	A	26,100	0.48	A	(0.01)	No
1428	Cartwright Road	south of Main	13,000	6,200	0.48	A	6,100	0.47	A	(0.01)	No

Δ = change

= exceeds City's level of service criteria

ADT = average daily trips

I-405 = Interstate 405

ITAM = Irvine Transportation Analysis Model

LOS = level of service

V/C = volume-to-capacity ratio

Long-Range Approved Baseline and Plus Project Traffic Volumes and LOS

Table I presents a summary of the intersection LOS for the Long-Range Approved (Baseline and Plus Project) conditions. As this table indicates, all study area intersections are forecast to operate at satisfactory LOS in the Baseline (No Project) condition, with the exception of Jamboree Road/I-405 southbound ramps (LOS F in both peak hours). With the addition of the proposed project in the Long-Range Approved condition, all study area intersections would continue to operate at satisfactory LOS, with the exception of Jamboree Road/I-405 southbound ramps. However, the proposed project would not increase the deficient peak-hour ICU by 0.02 or greater.

Therefore, the proposed project can be implemented in the Long-Range Approved condition with no peak-hour LOS impacts at signalized intersections.

The ADT volumes and v/c ratios for the Long-Range Approved (Baseline and Plus Project) conditions are presented in Table J. As this table indicates, all study area roadway segments are forecast to operate at satisfactory LOS in the Baseline (No Project) condition, with the exception of Jamboree Road between Main Street and the I-405 northbound ramps (LOS F) and Jamboree Road between the I-405 northbound ramps and I-405 southbound ramps (LOS F). With the addition of the proposed project in the Long-Range Approved condition, all study area roadway segments would continue to operate at satisfactory LOS, with the exception of the previously stated roadway segments. However, the roadway segment v/c ratios do not increase by 0.02 or greater at these locations. Therefore, no daily LOS impacts are created on roadway segments with the implementation of the proposed project in the Long-Range Approved condition.

Long-Range Pending Baseline and Plus Project Traffic Volumes and LOS

Table K presents a summary of the intersection LOS for the Long-Range Pending (Baseline and Plus Project) conditions. As this table indicates, all study area intersections are forecast to operate at satisfactory LOS in the Baseline (No Project) condition, with the exception of Jamboree Road/I-405 southbound ramps (LOS F in both peak hours). With the addition of the proposed project in the Long-Range Pending condition, all study area intersections would continue to operate at satisfactory LOS, with the exception of Jamboree Road/I-405 southbound ramps. However, the proposed project would not increase the deficient peak-hour ICU by 0.02 or greater. Therefore, the proposed project can be implemented in the Long-Range Pending condition with no peak-hour LOS impacts at signalized intersections.

The ADT volumes and v/c ratios for the Long-Range Pending (Baseline and Plus Project) conditions are presented in Table L. As this table indicates, all study area roadway segments are forecast to operate at satisfactory LOS in the Baseline (No Project) condition, with the exception of Jamboree Road between Main Street and the I-405 northbound ramps (LOS F) and Jamboree Road between the I-405 northbound ramps and I-405 southbound ramps (LOS F). With the addition of the proposed project in the Long-Range Pending condition, all study area roadway segments would continue to operate at satisfactory LOS, with the exception of the previously stated roadway segments. However, the roadway segment v/c ratios do not increase by 0.02 or greater at these locations. Therefore, no daily LOS impacts are created on roadway segments with the implementation of the proposed project in the Long-Range Pending condition.

Table I: Long-Range Approved Intersection LOS Summary

Study Area No.	ITAM Node No.	Intersection	Baseline				Plus Project				Peak-Hour Δ ICU		LOS Impact?
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour				
			ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	AM	PM	
1	78	MacArthur Boulevard/Main Street	0.80	C	0.88	D	0.80	C	0.88	D	0.00	0.00	No
2	70	Gillette Avenue/Main Street	0.45	A	0.65	B	0.44	A	0.65	B	(0.01)	0.00	No
3	100	Von Karman Avenue/Main Street	0.76	C	0.86	D	0.76	C	0.86	D	0.00	0.00	No
4	116	Cartwright Road/Main Street	0.57	A	0.71	C	0.55	A	0.71	C	(0.02)	0.00	No
5	141	Jamboree Road/Main Street	0.83	D	0.96	E	0.83	D	0.96	E	0.00	0.00	No
6	143	Jamboree Road/I-405 northbound ramps	0.85	D	0.94	E	0.85	D	0.94	E	0.00	0.00	No
		HCM	*54.2*	*D*	*70.4*	*E*	*54.8*	*D*	*70.3*	*E*	-	-	N/A
7	144	Jamboree Road/I-405 southbound ramps	1.15	F	1.04	F	1.16	F	1.04	F	0.01	0.00	No
		HCM	*>80.0*	*F*	*73.4*	*E*	*>80.0*	*F*	*74.5*	*E*	-	-	N/A

Δ = change

Delay is reported in seconds.

HCM = Highway Capacity Manual

ICU = Intersection Capacity Utilization

I-405 = Interstate 405

ITAM = Irvine Transportation Analysis Model

LOS = level of service

N/A = not applicable

Table J: Long-Range Approved ADT Volumes and V/C Ratios

ITAM Post No.	Roadway	Segment	Capacity	Baseline			Plus Project			Δ V/C	LOS Impact?
				ADT	V/C	LOS	ADT	V/C	LOS		
145	Jamboree Road	Main Street to I-405 NB Ramps	72,000	81,900	1.14	F	81,900	1.14	F	0.00	No
956	Jamboree Road	I-405 NB Ramps to I-405 SB Ramps	72,000	92,200	1.28	F	92,200	1.28	F	0.00	No
820	Main Street	MacArthur to Gillette	54,000	36,600	0.68	B	36,600	0.68	B	0.00	No
821	Main Street	Gillette to Von Karman	54,000	40,300	0.75	C	40,300	0.75	C	0.00	No
822	Main Street	Von Karman to Cartwright	54,000	29,700	0.55	A	29,700	0.55	A	0.00	No
823	Main Street	Cartwright to Jamboree	54,000	28,200	0.52	A	28,200	0.52	A	0.00	No
1428	Cartwright Road	south of Main	13,000	6,700	0.52	A	6,800	0.52	A	0.00	No

Δ = change

= exceeds City's level of service criteria

ADT = average daily trips

I-405 = Interstate 405

ITAM = Irvine Transportation Analysis Model

LOS = level of service

V/C = volume-to-capacity ratio

Table K: Long-Range Pending Intersection LOS Summary

Study Area No.	ITAM Node No.	Intersection	Baseline				Plus Project				Peak-Hour Δ ICU		LOS Impact?
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour				
			ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	AM	PM	
1	78	MacArthur Boulevard/Main Street	0.80	C	0.89	D	0.81	D	0.89	D	0.01	0.00	No
2	70	Gillette Avenue/Main Street	0.45	A	0.65	B	0.46	A	0.65	B	0.01	0.00	No
3	100	Von Karman Avenue/Main Street	0.77	C	0.89	D	0.77	C	0.89	D	0.00	0.00	No
4	116	Cartwright Road/Main Street	0.56	A	0.71	C	0.56	A	0.71	C	0.00	0.00	No
5	141	Jamboree Road/Main Street	0.84	D	0.97	E	0.84	D	0.96	E	0.00	(0.01)	No
6	143	Jamboree Road/I-405 northbound ramps	0.85	D	0.95	E	0.85	D	0.95	E	0.00	0.00	No
		HCM	*51.6*	*D*	*74.8*	*E*	*52.4*	*D*	*73.8*	*E*	-	-	N/A
7	144	Jamboree Road/I-405 southbound ramps	1.17	F	1.04	F	1.17	F	1.04	F	0.00	0.00	No
		HCM	*>80.0*	*F*	*76.2*	*E*	*>80.0*	*F*	*76.1*	*E*	-	-	N/A

Δ = change

Delay is reported in seconds.

HCM = Highway Capacity Manual

ICU = Intersection Capacity Utilization

I-405 = Interstate 405

ITAM = Irvine Transportation Analysis Model

LOS = level of service

N/A = not applicable

Table L: Long-Range Pending ADT Volumes and V/C Ratios

ITAM Post No.	Roadway	Segment	Capacity	Baseline			Plus Project			Δ V/C	LOS Impact?
				ADT	V/C	LOS	ADT	V/C	LOS		
145	Jamboree Road	Main Street to I-405 NB Ramps	72,000	82,500	1.15	F	82,500	1.15	F	0.00	No
956	Jamboree Road	I-405 NB Ramps to I-405 SB Ramps	72,000	92,100	1.28	F	92,100	1.28	F	0.00	No
820	Main Street	MacArthur to Gillette	54,000	36,700	0.68	B	36,700	0.68	B	0.00	No
821	Main Street	Gillette to Von Karman	54,000	40,500	0.75	C	40,600	0.75	C	0.00	No
822	Main Street	Von Karman to Cartwright	54,000	30,100	0.56	A	30,000	0.56	A	0.00	No
823	Main Street	Cartwright to Jamboree	54,000	28,300	0.52	A	28,400	0.53	A	0.01	No
1428	Cartwright Road	south of Main	13,000	6,800	0.52	A	6,800	0.52	A	0.00	No

Δ = change

= exceeds City's level of service criteria

ADT = average daily trips

I-405 = Interstate 405

ITAM = Irvine Transportation Analysis Model

LOS = level of service

V/C = volume-to-capacity ratio

Buildout Approved Baseline and Plus Project Traffic Volumes and LOS

Table M presents a summary of the intersection LOS for the Buildout Approved (Baseline and Plus Project) conditions. As this table indicates, all study area intersections are forecast to operate at satisfactory LOS in the Baseline (No Project) condition. It should be noted that the deficient a.m. and p.m. peak-hour ICU and LOS improve at Jamboree Road/I-405 southbound ramps from Long-Range Approved Baseline conditions with the addition of a shared eastbound left-turn/right-turn lane. With the addition of the proposed project in the Buildout Approved condition, all study area intersections would continue to operate at satisfactory LOS.

Therefore, the proposed project can be implemented in the Buildout Approved condition with no peak-hour LOS impacts at signalized intersections.

The ADT volumes and v/c ratios for the Buildout Approved (Baseline and Plus Project) conditions are presented in Table N. As this table indicates, all study area roadway segments are forecast to operate at satisfactory LOS in the Baseline (No Project) condition, with the exception of Jamboree Road between Main Street and the I-405 northbound ramps (LOS F) and Jamboree Road between the I-405 northbound ramps and I-405 southbound ramps (LOS F). With the addition of the proposed project in the Buildout Approved condition, all study area roadway segments would continue to operate at satisfactory LOS, with the exception of the previously stated roadway segments. However, the roadway segment v/c ratios do not increase by 0.02 or greater at these locations. Therefore, no daily LOS impacts are created on roadway segments with the implementation of the proposed project in the Buildout Approved condition.

Buildout Pending Baseline and Plus Project Traffic Volumes and LOS

Table O presents a summary of the intersection LOS for the Buildout Pending (Baseline and Plus Project) conditions. As this table indicates, all study area intersections are forecast to operate at satisfactory LOS in the Baseline (No Project) condition. It should be noted that the deficient a.m. and p.m. peak-hour ICU and LOS improve at Jamboree Road/I-405 southbound ramps from Long-Range Pending Baseline conditions with the addition of a shared eastbound left-turn/right-turn lane. With the addition of the proposed project in the Buildout Pending condition, all study area intersections would continue to operate at satisfactory LOS. Therefore, the proposed project can be implemented in the Buildout Pending condition with no peak-hour LOS impacts at signalized intersections.

The ADT volumes and v/c ratios for the Long-Range Pending (Baseline and Plus Project) conditions are presented in Table P. As this table indicates, all study area roadway segments are forecast to operate at satisfactory LOS in the Baseline (No Project) condition, with the exception of Jamboree Road between Main Street and the I-405 northbound ramps (LOS F) and Jamboree Road between the I-405 northbound ramps and I-405 southbound ramps (LOS F). With the addition of the proposed project in the Buildout Pending condition, all study area roadway segments would continue to operate at satisfactory LOS, with the exception of the previously stated roadway segments. However, the roadway segment v/c ratios do not increase by 0.02 or greater at these locations. Therefore, no daily LOS impacts are created on roadway segments with the implementation of the proposed project in the Buildout Pending condition.

Table M: Buildout Approved Intersection LOS Summary

Study Area No.	ITAM Node No.	Intersection	Baseline				Plus Project				Peak-Hour Δ ICU		LOS Impact?
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour				
			ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	AM	PM	
1	78	MacArthur Boulevard/Main Street	0.81	D	0.88	D	0.81	D	0.88	D	0.00	0.00	No
2	70	Gillette Avenue/Main Street	0.43	A	0.63	B	0.44	A	0.63	B	0.01	0.00	No
3	100	Von Karman Avenue/Main Street	0.73	C	0.84	D	0.73	C	0.82	D	0.00	(0.02)	No
4	116	Cartwright Road/Main Street	0.52	A	0.67	B	0.52	A	0.67	B	0.00	0.00	No
5	141	Jamboree Road/Main Street	0.81	D	0.93	E	0.81	D	0.92	E	0.00	(0.01)	No
6	143	Jamboree Road/I-405 northbound ramps	0.82	D	0.96	E	0.82	D	0.96	E	0.00	0.00	No
		HCM	*41.3*	*D*	*>80.0*	*F*	*41.0*	*D*	*>80.0*	*F*	-	-	N/A
7	144	Jamboree Road/I-405 southbound ramps	0.89	D	0.86	D	0.89	D	0.86	D	0.00	0.00	No
		HCM	*76.8*	*E*	*57.1*	*E*	*76.2*	*E*	*57.1*	*E*	-	-	N/A

Δ = change

Delay is reported in seconds.

HCM = Highway Capacity Manual

ICU = Intersection Capacity Utilization

I-405 = Interstate 405

ITAM = Irvine Transportation Analysis Model

LOS = level of service

N/A = not applicable

LSA

Table N: Buildout Approved ADT Volumes and V/C Ratios

ITAM Post No.	Roadway	Segment	Capacity	Baseline			Plus Project			Δ V/C	LOS Impact?
				ADT	V/C	LOS	ADT	V/C	LOS		
145	Jamboree Road	Main Street to I-405 NB Ramps	72,000	80,500	1.12	F	80,500	1.12	F	0.00	No
956	Jamboree Road	I-405 NB Ramps to I-405 SB Ramps	72,000	88,900	1.23	F	88,900	1.23	F	0.00	No
820	Main Street	MacArthur to Gillette	54,000	35,100	0.65	B	35,100	0.65	B	0.00	No
821	Main Street	Gillette to Von Karman	54,000	38,500	0.71	C	38,500	0.71	C	0.00	No
822	Main Street	Von Karman to Cartwright	54,000	28,800	0.53	A	28,800	0.53	A	0.00	No
823	Main Street	Cartwright to Jamboree	54,000	27,100	0.50	A	27,100	0.50	A	0.00	No
1428	Cartwright Road	south of Main	13,000	6,400	0.49	A	6,400	0.49	A	0.00	No

Δ = change

= exceeds City's level of service criteria

ADT = average daily trips

I-405 = Interstate 405

ITAM = Irvine Transportation Analysis Model

LOS = level of service

V/C = volume-to-capacity ratio

Table O: Buildout Pending Intersection LOS Summary

Study Area No.	ITAM Node No.	Intersection	Baseline				Plus Project				Peak-Hour Δ ICU		LOS Impact?
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour				
			ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	AM	PM	
1	78	MacArthur Boulevard/Main Street	0.83	D	0.90	D	0.83	D	0.90	D	0.00	0.00	No
2	70	Gillette Avenue/Main Street	0.44	A	0.63	B	0.44	A	0.64	B	0.00	0.01	No
3	100	Von Karman Avenue/Main Street	0.75	C	0.85	D	0.74	C	0.85	D	(0.01)	0.00	No
4	116	Cartwright Road/Main Street	0.53	A	0.67	B	0.53	A	0.67	B	0.00	0.00	No
5	141	Jamboree Road/Main Street	0.82	D	0.93	E	0.82	D	0.94	E	0.00	0.01	No
6	143	Jamboree Road/I-405 northbound ramps	0.83	D	0.97	E	0.83	D	0.97	E	0.00	0.00	No
		HCM	*43.1*	*D*	*>80.0*	*F*	*45.0*	*D*	*>80.0*	*F*	-	-	N/A
7	144	Jamboree Road/I-405 southbound ramps	0.90	D	0.87	D	0.91	E	0.87	D	0.01	0.00	No
		HCM	*>80.0*	*F*	*62.6*	*E*	*>80.0*	*F*	*62.4*	*E*	-	-	N/A

Δ = change

Delay is reported in seconds.

HCM = Highway Capacity Manual

ICU = Intersection Capacity Utilization

I-405 = Interstate 405

ITAM = Irvine Transportation Analysis Model

LOS = level of service

N/A = not applicable

Table P: Buildout Pending ADT Volumes and V/C Ratios

ITAM Post No.	Roadway	Segment	Capacity	Baseline			Plus Project			Δ V/C	LOS Impact?
				ADT	V/C	LOS	ADT	V/C	LOS		
145	Jamboree Road	Main Street to I-405 NB Ramps	72,000	81,900	1.14	F	81,800	1.14	F	0.00	No
956	Jamboree Road	I-405 NB Ramps to I-405 SB Ramps	72,000	90,500	1.26	F	90,500	1.26	F	0.00	No
820	Main Street	MacArthur to Gillette	54,000	35,300	0.65	B	35,300	0.65	B	0.00	No
821	Main Street	Gillette to Von Karman	54,000	38,900	0.72	C	39,000	0.72	C	0.00	No
822	Main Street	Von Karman to Cartwright	54,000	29,200	0.54	A	29,200	0.54	A	0.00	No
823	Main Street	Cartwright to Jamboree	54,000	27,400	0.51	A	27,400	0.51	A	0.00	No
1428	Cartwright Road	south of Main	13,000	6,500	0.50	A	6,500	0.50	A	0.00	No

Δ = change

= exceeds City's level of service criteria

ADT = average daily trips

I-405 = Interstate 405

ITAM = Irvine Transportation Analysis Model

LOS = level of service

V/C = volume-to-capacity ratio

SPECIAL ISSUES

Site Access Analysis

Access to the 17861 Cartwright Road project site is currently provided via two access driveways on Cartwright Road (one northern shared driveway and one southern driveway). The proposed project would remove the southern driveway and use the northern driveway (currently shared with Yogurtland Franchising, Inc. at 17801 Cartwright Road) as the sole access point.

The existing northern driveway is currently an exit-only driveway for Yogurtland Franchising, Inc. vehicles utilizing the overflow (angled) parking spaces adjacent to the 17801 Cartwright building. This access driveway would be changed with implementation of the proposed project to allow inbound and outbound vehicles. The existing angled parking for the 17801 Cartwright Road building would be removed. The project would provide 13 new perpendicular parking spaces to be used exclusively by the adjacent tenant. A shared access agreement between the two property owners will be reviewed by the City and executed prior to project approval.

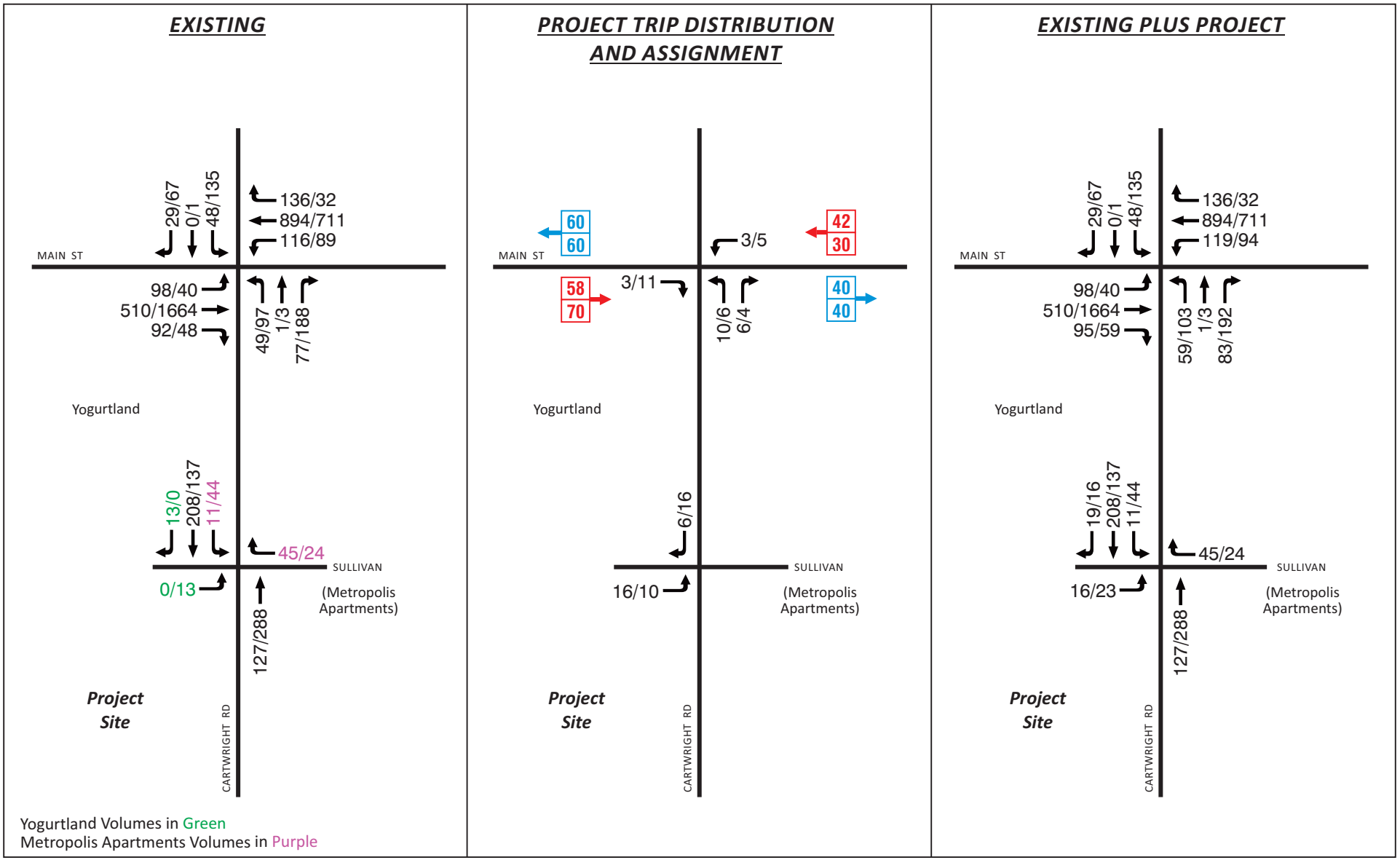
The reconfiguration of the overflow parking layout would not affect the ability of 17801 Cartwright Road to provide adequate on-site parking, as these spaces are not required to meet the City's parking requirements. In addition, the proposed 60-unit project requires 105 parking spaces but will be providing 107 parking spaces. As such, both the 17861 Cartwright Road project and the adjacent 17801 Cartwright Road sites would meet or exceed the City's parking requirements upon project completion.

The TDP evaluation of the shared project driveway on Cartwright Road is based on the Existing and Existing Plus Project conditions. Figure 4 illustrates the Existing peak-hour volumes, the project trip distribution and assignment, and the Existing Plus Project peak-hour volumes at Cartwright Road/ Main Street and the project driveway.

As previously discussed, project trips were generated using ITE trip rates (refer to Table B). The project trip generation (22 trips in the a.m. peak hour and 26 trips in the p.m. peak hour) represents the 60 residential units. The trip distribution percentages at the project driveway were derived from the ITAM Short-Term Interim-Year Approved Baseline Plus Project select zone assignments.

LSA has manually added peak-hour traffic volumes generated by the Yogurtland Franchising, Inc. at the shared project driveway (a conservative estimate of 13 inbound vehicles in the a.m. peak hour and 13 outbound vehicles in the p.m. peak hour for the new [overflow] parking spaces). In addition, LSA has also included peak-hour traffic volumes for the Metropolis Apartments project on Sullivan (i.e., the Metropolis Apartments driveway directly across the shared project driveway on Cartwright Road) based on the trip assignment from the approved *Metropolis Traffic Study* (LSA, September 2011).

This analysis has been conducted consistent with the approved scope of work and the TDPs. Applicable design criteria for this project include TDP-1 (Turn Lane Pocket Lengths), TDP-3 (Left-Turn In/Out Access), TDP-4 (Right-Turn Lanes at Uncontrolled Driveways), TDP-10 (Distances Between Driveways and Intersections, TDP-14 (Driveway Lengths), and TDP-15 (Gate Stacking).



LSA

LEGEND

XX/YY - AM/PM Peak Hour Volumes

AM / PM - Inbound Trip Distribution Percentages

AM / PM - Outbound Trip Distribution Percentages

N

SCHEMATIC - NOT TO SCALE

FIGURE 4

17861 Cartwright Road

Existing and Existing Plus Project Peak Hour Volumes

I:\CGW2001\G\Ex+Project Volumes.cdr (8/5/2020)

TDP-1: Turn Lane Pocket Lengths

The length of left-turn pockets at signalized intersections is based on several parameters, including traffic control, turn volume, and cycle length. The purpose of the turn-pocket length is to allow the turning vehicle to exit the through movement and decelerate into the turn pocket without affecting the through movement.

The minimum single turn pocket length for Major, Primary, and Secondary Highways (e.g., Main Street) is 150 feet (ft), and the minimum single turn pocket length for Commuter and Local streets (i.e., Cartwright Road) is 90 ft.

Cartwright Road/Main Street (Northbound and Westbound). The northbound left-turn lane at the signalized intersection of Cartwright Road/Main Street is approximately 150 ft with a 60 ft taper. The Existing northbound left-turn demand is 49 vehicles during the a.m. peak hour and 97 vehicles during the p.m. peak hour. Based on TDP-1, the northbound left-turn lane meets the 140 ft required to accommodate the 97 p.m. peak-hour vehicles. The Existing Plus Project left-turn demand at this location is 59 a.m. and 103 p.m. peak-hour vehicles, as shown on Figure 4. According to TDP-1, 150 ft of northbound left-turn storage capacity is required for the 103 p.m. peak-hour vehicles. As in the Existing condition, the northbound left-turn pocket meets TDP-1.

The dual westbound left-turn lanes at Cartwright Road/Main Street are approximately 210 ft per lane (420 total ft) with a 120 ft taper. The Existing westbound left-turn demand is 116 vehicles during the a.m. peak hour and 89 vehicles during the p.m. peak hour. Based on TDP-1, the dual westbound left-turn lanes meet the 170 ft required to accommodate the 116 a.m. peak-hour vehicles. The Existing Plus Project left-turn demand at this location is 119 a.m. and 94 p.m. peak-hour vehicles, as shown on Figure 4. According to TDP-1, approximately 170 ft of westbound left-turn storage capacity is required for the 119 a.m. peak-hour vehicles. As in the Existing condition, the dual westbound left-turn pockets meet TDP-1.

TDP-3: Left-Turn In/Out Access

TDP-3 provides procedures to determine whether left-in-only or left-in/left-out access at unsignalized locations would be considered along Major, Primary, Secondary, and Commuter Streets (e.g., Cartwright Road). This TDP is based on the volume of vehicles entering and/or exiting a driveway in relationship to the conflicting volumes along the highway.

Figure 3.2 (Left-Turn Access Criteria) in the City's TDPs presents a graph in which the left-turn volumes are compared to the conflicting volumes. Left-turn in/out access is considered acceptable when the point representing the left-turn volume and the conflicting volume lies below the line. Access is not recommended when this point is above the line.

Appendix F illustrates the points representing the peak-hour left-turn in/out volumes and the conflicting volumes at the project driveway. Table Q summarizes the TDP-3 analysis.

LSA

Table Q: TDP-3 Analysis Summary

Cartwright Road Project Driveway Turn Movement	Existing Volumes		Existing Plus Project Volumes	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Northbound Left (NBL)	0	0	0	0
Northbound Through (NBT)	127	288	127	288
Northbound Right (NBR)	0	0	0	0
Southbound Left (SBL)	11	44	11	44
Southbound Through (SBT)	208	137	208	137
Southbound Right (SBR)	13	0	19	16
Eastbound Left (EBL)	0	13	16	23
Eastbound Through (EBT)	0	0	0	0
Eastbound Right (EBR)	0	0	0	0
Westbound Left (WBL)	0	0	0	0
Westbound Through (WBT)	0	0	0	0
Westbound Right (WBR)	45	24	45	24
Left-In Access				
Left-Turn Volume In (LTV-I) (NBL)	0	0	0	0
Left-In Access Vc[1]	221	137	227	153
Acceptable?	**Yes**	**Yes**	**Yes**	**Yes**
Left-Out Access				
Left-Turn Volume Out (LTV-O) (EBL)	0	13	16	23
Left-Out Access Vc[2]	353	469	356	477
Acceptable?	**Yes**	**Yes**	**Yes**	**Yes**

[1] Left-In Access Vc = SBT + SBR

[2] Left-Out Access Vc = 1/2 SBR + SBT + SBL + NBL + NBT + NBR + WBL + WBT

Vc = conflicting volumne

The Existing left-turn volumes into the Cartwright Road project driveway are zero a.m. and zero p.m. peak-hour vehicles. The Existing conflicting volumes for left-in access are 221 a.m. and 137 p.m. peak-hour vehicles. Because there are no Existing left-turn inbound volumes, the TDP-3 criteria for left-turn-in access are satisfied.

The Existing left-turn volumes out of the Cartwright Road project driveway are zero a.m. and 13 p.m. peak-hour vehicles. The Existing conflicting volumes for left-out access are 353 a.m. and 469 p.m. peak-hour vehicles. The Existing left-turn outbound volumes do not exceed the threshold of acceptable conflicting volumes. Therefore, the TDP-3 criteria for left-turn-out access are satisfied.

The Existing Plus Project left-turn volumes into the Cartwright Road project driveway are zero a.m. and zero p.m. peak-hour vehicles. The Existing Plus Project conflicting volumes for left-in access are 227 a.m. and 153 p.m. peak-hour vehicles. Because there are no Existing Plus Project left-turn inbound volumes, the TDP 3 criteria for left turn-in access are satisfied.

The Existing Plus Project left-turn volumes out of the Cartwright Road project driveway are 16 a.m. and 23 p.m. peak-hour vehicles. The Existing Plus Project conflicting volumes for left-out access are 356 a.m. and 477 p.m. peak-hour vehicles. The Existing Plus Project left-turn outbound volumes do not exceed the threshold of acceptable conflicting volumes. Therefore, the TDP-3 criteria for left-turn-out access are satisfied.

TDP-4: Right-Turn Lanes at Uncontrolled Driveways

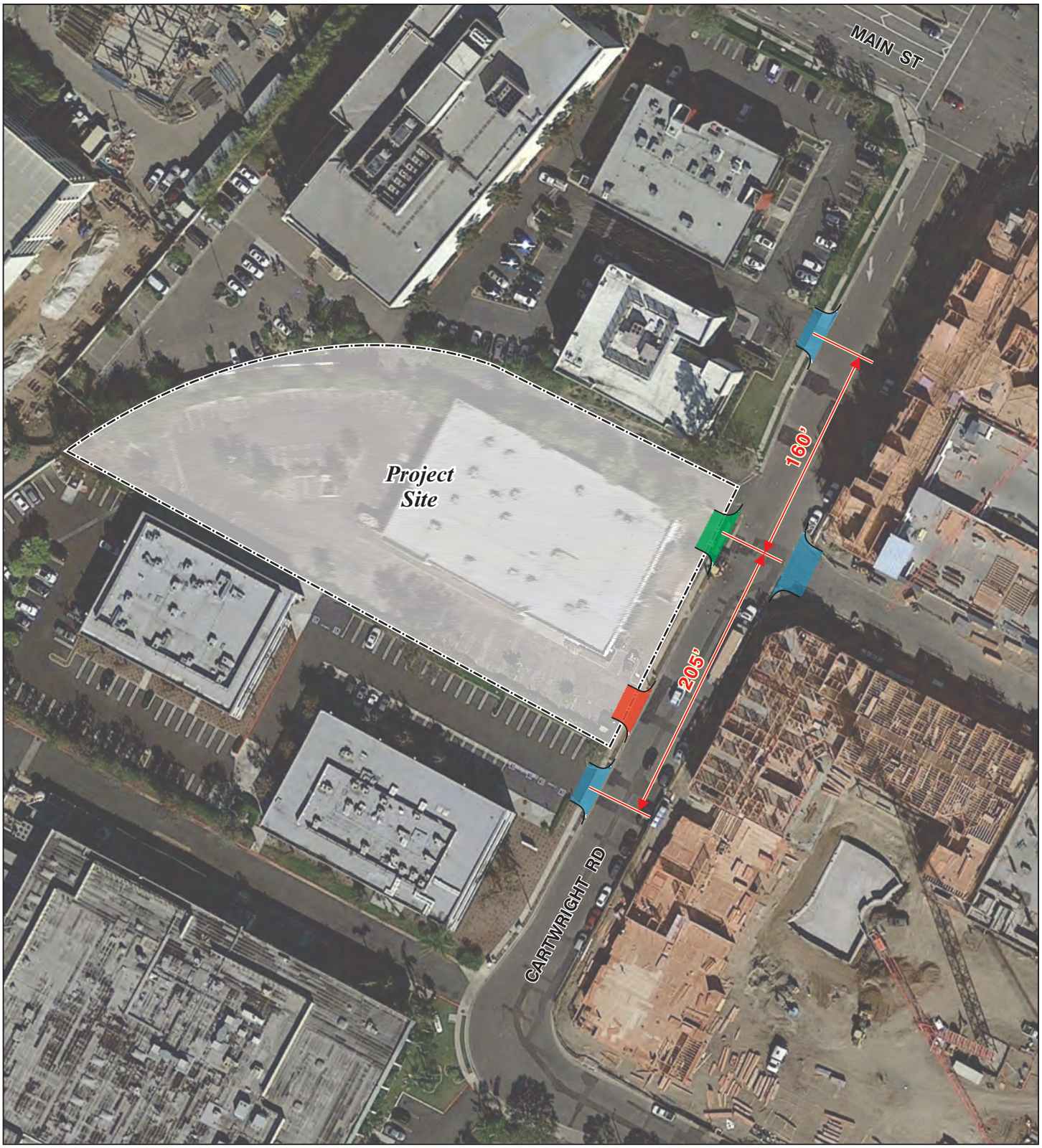
TDP-4 states that right-turn lanes on Local streets (i.e., Cartwright Road) are not required. As such, a dedicated right-turn lane is not required at the Cartwright Road project driveway.

TDP-10: Distances Between Driveways and Intersections

According to the criteria contained in TDP-10, it is recommended there be a minimum of 105 ft between a driveway and an intersection (or between two driveways) on Local streets (i.e., Cartwright Road). The distance between driveways should be measured from the centerline of each driveway. The distance between an intersection and a driveway should be measured from the curb face of the street to the curb face of the driveway.

Access to the existing 17861 Cartwright Road site is provided via two full-access driveways on Cartwright Road (one northerly shared driveway and one southerly driveway). The proposed project would demolish the southerly driveway and use the northerly driveway as the sole access point. Figure 5 illustrates the existing driveways along Cartwright Road in the vicinity of the project site.

The project driveway on Cartwright Road is aligned with the driveway for the Metropolis Apartments (Sullivan). The project driveway is approximately 160 ft south of an adjacent driveway and 205 ft north of another adjacent driveway. Both adjacent driveways serve office/industrial uses. Therefore, the TDP-10 criteria for distance between driveways and intersections are satisfied for the Cartwright Road project driveway.



LSA

FIGURE 5

LEGEND

- Project Driveway
- Existing Driveway on Project Site to be Removed
- Existing Opposing Driveway
- Project Site Boundary

N

0 50 100
FEET

SOURCE: Google Earth

17861 Cartwright Road

Cartwright Road Driveway Locations

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TDP-14: Driveway Lengths

TDP-14 provides guidance regarding a sufficient driveway length to allow vehicles "to enter the parking area without causing subsequent vehicles to back out on the City street system." The measurement of sufficient length is based on the distance from the back of the sidewalk or stop bar to the first intersecting parking space or traffic control measure on site. The minimum unsignalized driveway length should be 25 ft and should increase at a rate of 1 ft of storage per peak-hour vehicle (in 25 ft increments).

The Cartwright Road project driveway provides approximately 15 ft of throat length (measured from the back of the Cartwright Road sidewalk to the first parking space on site, as shown on Figure 2.

As previously described, the Cartwright Road project driveway is shared with the adjacent office use (Yogurtland Franchising, Inc.). The Existing inbound volumes for Yogurtland Franchising, Inc. are 13 a.m. and zero p.m. peak-hour vehicles. The project would generate an inbound volume of six vehicles in the a.m. peak hour and 16 vehicles in the p.m. peak hour. The Existing Plus Project inbound volumes are 19 a.m. and 16 p.m. peak-hour vehicles. Based on TDP-14 criteria, a driveway throat length of 25 ft is required. As such, TDP-14 is not met for the Cartwright Road project driveway. A request for deviation from TDP-14 is provided in Appendix G to justify why the proposed driveway throat length is adequate for the project.

TDP-15: Gate Stacking

For gated entries, a separate gate stacking analysis shall be prepared. Because the 17861 Cartwright Road project would not have a gated entry, TDP-15 does not apply.

Circulation Phasing

The City's *2020 Citywide Circulation Phasing Analysis Report* (March 2020) was reviewed to identify any deficient locations within the project study area. The City's analysis identified three locations that recommended improvements. However, none of these locations are within the IBC or the project study area. Based on the results presented in this Traffic Study, the project would not result in LOS impacts to study area intersections or roadway segments. As a result, study area improvements are not required.

Congestion Management Program Consistency Requirements

As presented previously in Table B, the proposed project is forecast to generate 326 daily trips. The proposed project would generate fewer than 2,400 daily trips, and does not take direct access to a Congestion Management Program (CMP) facility (i.e., Jamboree Road). Therefore, a CMP-level analysis is not required.

Pedestrian Circulation

Objective B-3 of the City's General Plan Circulation Element is "to establish a pedestrian circulation system to support and encourage walking as a mode of transportation." The City has established the following three policies to support Objective B-3:

1. Link residences with schools, shopping centers, and other public facilities, both within a planning area and to adjacent planning areas, through an internal system of trails.
2. Require development to provide safe, convenient, and direct pedestrian access to surrounding land uses and transit stops. Issues such as anticipated interaction between pedestrians and vehicles, proposed infrastructure improvements, and design standards shall be considered.
3. Design and locate land uses to encourage access to them by nonautomotive means.

In support of Objective B-3, the proposed project incorporates a continuous system of sidewalks within the project site. The pedestrian amenities within the site and at its adjacencies have been designed to comply with the City's objective. Safe access to the public street system (via Cartwright Road) will be provided. Sidewalks are currently provided on both sides of Cartwright Road. Where modes intersect (i.e., streets and sidewalks), accessible ramps will be incorporated. Land uses within close proximity to the project site include other office and industrial uses, employment centers, and residential uses, all of which are accessible by nonautomotive means.

Bicycle Circulation

The City General Plan includes a list of goals and objectives for bicycle planning. As stated in the General Plan, the bicycle circulation objective is: "To plan, provide and maintain a comprehensive bicycle trail network that, together with the regional trail system, encourages increased use of bicycle trails for commuters and recreational purposes." Main Street currently provides an on-street (Class II) bike lane. Alton Parkway, Jamboree Road, and Von Karman Avenue (located north, east, and west of the project site) also provide on-street bike lanes. An on-street bike lane along McGaw Avenue (between Red Hill Avenue and San Diego Creek) and a trail along the Barranca Channel (between Gillette Avenue and Alton Parkway) are proposed north of the project site (per Figure N-4 of the City General Plan). Bicycle travel can occur along these routes to employment, shopping, or recreational destinations. There are no designated bike lanes on Cartwright Road, as this is a local roadway. However, bicycle travel can occur along this roadway. In addition, the project will provide 38 bicycle storage spaces adjacent to the leasing office in the northeast corner of the building, as well as two bicycle racks (accommodating four bicycles) to the right of the surface parking space designated for the United States Postal Service.

Transit Facilities

Transit facilities will be accessible to and from the project site. This is an important feature, as OCTA stops are provided at the northwest and southeast corners of Cartwright Road/Main Street (Routes 53 and 86), approximately 550 ft and 590 ft from the project site, respectively. OCTA Route 53 provides transportation to and from the Anaheim Regional Transportation Intermodal Center (ARTIC) and Irvine via Main Street. OCTA Route 86 provides transportation to and from Costa Mesa and Mission Viejo via Main Street, Alton Parkway, and Jeronimo Road.

Irvine Shuttle (iShuttle) stops are also provided at the northeast corner of Von Karman Avenue/Main Street (Route 400A) and the northeast corner of Jamboree Road/Main Street (Route 400B),

approximately 1,420 ft and 2,620 ft from the project site, respectively. iShuttle Route 400A provides transportation to and from the Tustin Metrolink Station and John Wayne Airport via Von Karman Avenue. iShuttle Route 400B provides transportation to and from the Tustin Metrolink Station and John Wayne Airport via Jamboree Road. The OCTA and iShuttle bus system maps and bus stop locations are provided in Appendix H.

VEHICLE MILES TRAVELED ANALYSIS

As a result of the final rulemaking surrounding Senate Bill 743 and the implementation deadline of July 1, 2020, a vehicle miles traveled (VMT) analysis has been prepared in accordance with the City's adopted *Traffic Study Guidelines*. Based on the City's guidelines, affordable housing projects are screened out from a VMT analysis and are presumed to have a less than significant transportation impact. Therefore, the proposed project meets the requirements of the City's *Traffic Study Guidelines* regarding VMT, and the project does not create a significant CEQA impact.

REQUIRED IMPROVEMENTS AND/OR RECOMMENDATIONS

Based on the results of this analysis, the development of the proposed project can be implemented without significantly impacting the LOS of the surrounding roadway system in the Existing, Short-Term Interim-Year, Long-Range, and Buildout horizons. The addition of project traffic to study area intersections and roadway segments does not result in City thresholds for performance being exceeded; therefore, mitigation is not required according to the City performance criteria.

The project driveway and surrounding intersections have been analyzed using the City's TDPs. The project would not meet the requirements of TDP-14 (Driveway Length). However, a request for deviation from TDP-14 (provided in Appendix G) has been prepared for review and approval by the City. No access or circulation improvements are required or recommended.

CONCLUSIONS

Based on the results of this analysis, the proposed project can be implemented without impacting the LOS of the surrounding roadway system. The evaluation of the study area intersection and roadway segment LOS with the development of 60 residential units on site shows that the addition of project traffic to the Existing, Short-Term Interim-Year, Long-Range, and Buildout conditions would not create any adverse LOS impacts according to the City's performance criteria.

A site access analysis, consistent with the City's TDPs, was conducted for the proposed project. Based on this analysis, the requirements of TDP-1, TDP-3, TDP-4, TDP-10, and TDP-15 have been met.

Although the proposed project would not meet TDP-14, a request for deviation has been prepared for the City's review and approval. This deviation would not result in an unsafe condition or inadequate access to the project site.

Affordable housing projects are screened out from a VMT analysis, and are presumed to have a less than significant transportation impact. Therefore, the proposed project meets the requirements of the City's *Traffic Study Guidelines* regarding VMT, and the project does not create a significant CEQA impact.

The existing site incorporates design features to accommodate modes of active transit (i.e., pedestrian, bicycle, and public transportation). In the vicinity of the project site, bicycle travel can occur along Cartwright Road and the on-street (Class II) bike lane on Main Street. Transit facilities are accessible to and from the project site with OCTA and iShuttle stops in close proximity to the project site. The lines serviced by these stops provide direct access to regional transportation hubs.

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APPENDIX A

APPROVED SCOPE OF WORK

SCOPE OF WORK
17861 CARTWRIGHT ROAD
TRAFFIC STUDY
(CASE FILE NO. 00817556-PPA)

The purpose of this Scope of Work is to define the methodology and requirements for the Traffic Study for the proposed 17861 Cartwright Road project. The Traffic Study will determine the potential short-term and long-range traffic impacts resulting from the development of 60 residential (rental) units at 17861 Cartwright Road in the Irvine Business Complex (IBC) (Planning Area 36 [PA 36]) of Irvine. The design of the proposed project (including the access, circulation, and layout of the site plan) is subject to the findings of the Traffic Study.

The existing 17861 Cartwright Road site (IBC Project No. 106 located in Traffic Analysis Zone [TAZ] 491) includes a vacant 19,061-square-foot (sf) office building. The proposed project will demolish the existing vacant building and construct 60 rental units. The proposed project includes 44 base units and 16 density bonus units (35 percent of the 44 base units). Access to the 17861 Cartwright Road project site is currently provided via two access driveways on Cartwright Road (one northern shared driveway and one southern driveway). The proposed project would remove the southern driveway and use the northern driveway (currently shared with Yogurtland Franchising, Inc. at 17801 Cartwright Road) as the sole access point. The existing northern driveway currently provides an exit-only driveway for overflow vehicles parked at the Yogurtland Franchising, Inc. building. This access driveway would be changed with the project to allow inbound and outbound vehicles. A shared access agreement between the two property owners will be reviewed by the City and executed prior to project approval.

Based on the City of Irvine (City) Traffic Study Guidelines, a full Traffic Study will be required to evaluate the cumulative impacts with build out of the proposed project. The IBC development intensity value (DIV) budget for the existing 17861 Cartwright Road site of 19,061 sf of office use and 1,953 sf of zoning potential is 28 a.m. peak-hour DIVs, 29 p.m. peak-hour DIVs, and 293 daily DIVs. Density bonus units do not generate DIVs. The proposed project of 44 base units (excluding the 16 density bonus units) would generate 22.00 a.m. peak-hour DIVs, 22.88 p.m. peak-hour DIVs, and 277.20 daily DIVs. As such, the proposed project is within the existing IBC DIV budget for the site. Therefore, the project would not be responsible for a transfer of development rights (TDR). Table A (attached) provides a DIV summary of the 17861 Cartwright Road site.

This Traffic Study will be developed in accordance with the applicable sections of the City's Traffic Study Guidelines (adopted by the City Council on June 23, 2020), the City's Transportation Design Procedures (TDPs) (adopted in February 2007), and the Irvine Zoning Ordinance and will include the following key elements.

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10/21/20
Approved by DAC

I. EXECUTIVE SUMMARY

This section will provide a short, clear, and concise description of the project and Traffic Study findings. The proposed study recommendations and project mitigation measures will also be included in this section, if necessary.

II. INTRODUCTION

This section of the report will include a comprehensive description of the project and key elements of the Traffic Study, including planning area description, general terrain features, and existing/proposed uses on site. The specific surrounding land uses on each adjacent parcel will also be described. The following elements are identified for the purpose of conducting the Traffic Study.

A. Project Site

A project location (and study area intersection) map and conceptual site plan have been attached to this scope of work and will be provided in the Traffic Study. The project site is bounded by Cartwright Road to the east and existing office/industrial uses to the north, south and west in the IBC. Access to the project site will be provided via an existing full-access driveway on Cartwright Road that is shared with the adjacent office use at 17801 Cartwright Road (Yogurtland Franchising, Inc.).

B. Study Area Boundary

The study area will include the following intersections (and roadway links between each intersection) in the City's traffic model (Irvine Transportation Analysis Model [ITAM]):

1. McArthur Boulevard/Main Street
2. Gillette Avenue/Main Street
3. Von Karman Avenue/Main Street
4. Cartwright Road/Main Street
5. Jamboree Road/Main Street
6. Jamboree Road/Interstate 405 (I-405) northbound ramps
7. Jamboree Road/I-405 southbound ramps

Roadway segments in between the study area intersections will be analyzed. If significant project traffic distribution is identified at the boundary of the initial study area, the analysis area will be expanded accordingly.

C. Existing, General Plan, and Proposed Site Uses

The following tables will be prepared in this section of the report (based on information provided by the City):

- Existing site: IBC land uses, square footage of each type of land use and DIVs used, and potential development intensity
- Build out of the site: total DIVs used

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III. PERFORMANCE CRITERIA

The performance criteria to determine potential project impacts and mitigation will be consistent with the City's criteria, as approved by the City Council on June 23, 2020. Also, the most recently approved peak-hour link capacity methodology will be utilized for evaluating roadway capacity conditions and the need for mitigation measures (if necessary). The City's TDPs will be used as the performance criteria to evaluate the proposed project access and internal circulation.

IV. EXISTING CONDITIONS

A. Existing Site Uses

Existing land uses on site will be identified. The existing site includes approximately 19,061 sf of office use.

B. Existing Roadways and Intersections

The characteristics of the site's surrounding roadway network will be surveyed to verify the existing number of lanes, traffic signal locations, intersection configurations, and other visible factors that may have to be included in the analysis.

Existing roadway volumes, volume-to-capacity (v/c) ratios, and level of service (LOS) at intersections will be included for the above roadways and intersections. The LOS analysis tables will include ITAM intersection numbers and average daily traffic (ADT) post locations for each study area intersection and roadway segment.

V. ANALYSIS METHODOLOGY/APPROACH

As local schools are currently closed and existing traffic conditions are atypical, the traffic analysis will be based on existing counts collected in 2018. A 4 percent growth factor (2 percent per year) will be applied to represent 2020 conditions for study area roadways and intersections.

Study area intersections will be analyzed using the adopted Intersection Capacity Utilization (ICU) methodology for signalized intersections and the Highway Capacity Manual (HCM) methodology for unsignalized intersections. The roadway segments between the intersections will also be analyzed in the report. Daily traffic volumes and v/c ratios will be presented in the analysis for these roadway segments. A peak-hour link analysis will be conducted for roadway segments where the "plus project" LOS is LOS F and the project contributes greater than 0.01 to the v/c ratio.

To disclose the effect of adding the project land use in an existing setting, the following analyses will be conducted:

- Existing
- Existing Plus Project

For purposes of the Existing Plus Project analysis, the project trips will be determined by considering the traffic volume differential between the Existing No Project and Existing Plus Project ITAM runs.

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This differential will be added to the existing counts to determine Existing Plus Project conditions. The Existing No Project ITAM run will be provided by City staff.

The approved version (Model Number 15 or higher) of the ITAM will be used for conducting all runs. The following ITAM runs will be conducted for the study. It should be noted that the "plus project" condition reflects the reduction of unbuilt residential units from the TAZ that assumes these units under Long-Range and Buildout conditions.

- Short-Term Interim-Year (2023) Approved Baseline
- Short-Term Interim-Year (2023) Approved Baseline Plus Project
- Short-Term Interim-Year (2023) Pending Baseline
- Short-Term Interim-Year (2023) Pending Baseline Plus Project
- Long-Range (2040) Approved Baseline
- Long-Range (2040) Approved Baseline Plus Project
- Long-Range (2040) Pending Baseline
- Long-Range (2040) Pending Baseline Plus Project
- Buildout (Post-2040) Approved Baseline
- Buildout (Post-2040) Approved Baseline Plus Project
- Buildout (Post-2040) Pending Baseline
- Buildout (Post-2040) Pending Baseline Plus Project

The future conditions described above are based on the roadway network and land use assumptions envisioned to be in place by the respective horizon years. City staff has incorporated all approved and pending projects to be analyzed for the cumulative setting in the latest version of the ITAM.

City staff will make all necessary land use and network changes for the baseline (approved and pending) scenarios and will provide LSA with the baseline ITAM files. LSA will prepare the forecast "plus project" ITAM data. A description of any changes to the ITAM for this project will be provided to the City for review. The ITAM data will be post-processed and used in the LOS analysis.

VI. FUTURE TRAFFIC CONDITIONS

LSA will analyze the effects of the proposed land use changes on the study area intersections and roadway segments for existing, 2023, 2040, and post-2040 horizons.

The 17861 Cartwright Road project site is located within the IBC. The IBC Vision Plan effort established the following maximum residential dwelling unit limits:

- 15,000 market-rate (base) residential units
- 2,038 affordable-rate (density bonus) residential units

In order to analyze the impact of this development intensity upon the existing and future roadway network, the IBC Vision Plan Traffic Study made certain assumptions about the type, quantity, and location of where this development intensity would occur in the Long-Range and Buildout ITAM scenarios.

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The IBC Vision Plan did not consider residential units within TAZ 491. Consequently, to maintain consistency with the IBC Vision Plan, this TIA will need to adjust the TAZ land use by redistributing the type, quantity, and location of residential units in the Long-Range and Buildout scenarios while staying within the established maximum ranges of the IBC Vision Plan.

For traffic modeling purposes, changes have been identified by City staff for TAZs within ITAM to accommodate the residential intensity proposed within the project TAZ. TAZ 421 has additional base and density bonus units available to transfer to TAZ 491, in which the 17861 Cartwright Road project is located. This redistribution of residential units would result in the following land use changes in the Long-Range and Buildout Plus Project scenarios:

- TAZ 421: reduction of 44 base units and 16 density bonus units, and addition of 16,580 sf of office equivalency

A graphic will be provided in the TIA illustrating the project site TAZ (491) and other TAZ (421) affected by the project.

LSA will request the future baseline ITAM from City staff. LSA will revise the land use and incorporate network changes related to the "plus project" scenario. These ITAM runs will include the following scenarios:

1. **Short-Term Interim-Year (2023) Approved Baseline:** The ITAM 2023 run (Y23-15 or higher) will include the impacts of each application for development approved by the City. Any additional development beyond the existing uses for the project that might be assumed in ITAM will be deleted for the analysis of this scenario.

2. **Short-Term Interim-Year (2023) Baseline Plus Project:** The ITAM 2023 run (Y23-15 or higher) will include the impacts of each application for development approved by the City. The project (60 residential [44 base and 16 density bonus] units in TAZ 491) will be assumed to be built for this analysis. Additionally, a removal of 19,061 sf of office use will be reflected in TAZ 491.

3. **Short-Term Interim-Year (2023) Pending Baseline:** The ITAM 2023 run (Y23-15 or higher) will include the cumulative impacts of each application for development currently approved and under review by the City. Any additional development beyond the existing uses for the project that might be assumed in ITAM will be deleted for the analysis of this scenario.

4. **Short-Term Interim-Year (2023) Pending Plus Project:** The ITAM 2023 run (Y23-15 or higher) will include the cumulative impacts of each application for development currently approved and under review by the City. The project (60 residential [44 base and 16 density bonus] units in TAZ 491) will be assumed to be fully built out for this analysis. Additionally, a removal of 19,061 sf of office use will be reflected in TAZ 491.

5. **Long-Range (2040) Approved Baseline:** The ITAM 2040 run (Y40-15 or higher) will include the Alton Parkway/SR-55 four-lane overcrossing. The ITAM will include the impacts of each application for development and including all known executed TDRs (regardless of size)

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currently approved by the City. This scenario will include the intensity assumed in the build out of the IBC Vision Plan.

6. **Long-Range (2040) Approved Plus Project:** The ITAM 2040 run (Y40-15 or higher) will include the Alton Parkway/SR-55 four-lane overcrossing. The ITAM will include the impacts of each application for development and all known executed TDRs (regardless of size) currently approved by the City. The project (60 residential [44 base and 16 density bonus] units TAZ 491) will be assumed to be fully built out for this analysis. Additionally, a removal of 19,867 sf of office use and zoning potential will be reflected in TAZ 491. TAZ 421 will be adjusted to account for the IBC Vision Plan residential cap (reduction of 44 base and 16 density bonus units, and addition of 16,580 sf of office equivalency).

7. **Long-Range (2040) Pending Baseline:** The ITAM 2040 run (Y40-15 or higher) will include the Alton Parkway/ SR-55 four-lane overcrossing. The ITAM will include the cumulative impacts of each application for development and all known executed TDRs (regardless of size) currently approved and under review by the City. This scenario will include the intensity assumed in the build out of the IBC Vision Plan.

8. **Long-Range (2040) Pending Plus Project:** The ITAM 2040 run (Y40-15 or higher) will include the Alton Parkway/SR-55 four-lane overcrossing. The ITAM will include the cumulative impacts of each application for development and all known executed TDRs (regardless of size) currently approved and under review by the City. The project (60 residential [44 base and 16 density bonus] units in TAZ 491) will be assumed to be fully built out for this analysis. Additionally, a removal of 19,867 sf of office use and zoning potential will be reflected in TAZ 491. TAZ 421 will be adjusted to account for the IBC Vision Plan residential cap (reduction of 44 base and 16 density bonus units, and addition of 16,580 sf of office equivalency).

9. **Buildout (Post-2040) Approved Baseline:** The ITAM Post-2040 run (P40-15 or higher) will include the Alton Parkway/SR-55 four-lane overcrossing and with the Von Karman Avenue/I-405 HOV drop ramps. The ITAM will include the impacts of each application for development and all known executed TDRs (regardless of size) currently approved by the City. This scenario will include the intensity assumed in the build out of the IBC Vision Plan.

10. **Buildout (Post-2040) Approved Plus Project:** The ITAM Post-2040 run (P40-15 or higher) will include the Alton Parkway/SR-55 four-lane overcrossing and with the Von Karman Avenue/I-405 HOV drop ramps. The ITAM will include the impacts of each application for development and all known executed TDRs (regardless of size) currently approved by the City. The project (60 residential [44 base and 16 density bonus] units in TAZ 491) will be assumed to be fully built out for this analysis. Additionally, a removal of 19,867 sf of office use and zoning potential will be reflected in TAZ 491. TAZ 421 will be adjusted to account for the IBC Vision Plan residential cap (reduction of 44 base and 16 density bonus units, and addition of 16,580 sf of office equivalency).

11. **Buildout (Post-2040) Pending Baseline:** The ITAM Post-2040 run (P40-15 or higher) will include the Alton Parkway/SR-55 four-lane overcrossing and with the Von Karman Avenue/I-405 HOV

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drop ramps. The ITAM will include the cumulative impacts of each application for development and all known executed TDRs (regardless of size) currently approved and under review by the City. This scenario will include the intensity assumed in the build out of the IBC Vision Plan.

12. **Buildout (Post-2040) Pending Baseline Plus Project.** The ITAM Post-2040 run (P40-15 or higher) will include the Alton Parkway/SR-55 four-lane overcrossing and with the Von Karman Avenue/I-405 HOV drop ramps. The ITAM will include the cumulative impacts of each application for development and all known executed TDRs (regardless of size) currently approved and under review by the City. The project (60 residential [44 base and 16 density bonus] units in TAZ 491) will be assumed to be fully built out for this analysis. Additionally, a removal of 19,867 sf of office use and zoning potential will be reflected in TAZ 491. TAZ 421 will be adjusted to account for the IBC Vision Plan residential cap (reduction of 44 base and 16 density bonus units, and addition of 16,580 sf of office equivalency).

LSA will utilize the approved version of the ITAM forecasts to analyze these conditions at study area intersections and roadway segments. In addition, City staff will review the ITAM network and land uses for the baseline and "plus project" scenario to ensure that it accurately reflects the project impacts. LSA will provide a copy of the "plus project" ITAM runs (compact disc) with the Traffic Study to the City/Project Manager for review.

Project impacts will be identified at study area intersections for the 2023, 2040, and post-2040 (approved and pending) conditions, assuming improvements to the circulation system identified by the City. Daily traffic volumes and v/c ratios will also be presented in the analysis for the study area roadway segments for each scenario. The City's peak-hour link analysis (per the adopted City Traffic Study Guidelines) will be utilized for evaluating roadway capacity conditions and the need for mitigation measures (if necessary).The peak-hour link analysis will determine directional a.m. and p.m. peak-hour v/c ratios for each link that is anticipated to exceed LOS standards under "plus project" conditions and the project increases the v/c ratio by greater than 0.01. The peak-hour capacity will be determined by multiplying the midblock number of lanes for each direction by a lane capacity of 1,600 vehicles per hour. Where the distance between controlled intersections is one or more miles, the midblock number of lanes shall be multiplied by a lane capacity of 2,000 vehicles per hour.

VII. PROPOSED PROJECT IMPACTS

A. Trip Generation

LSA will generate a.m. peak-hour trips, p.m. peak-hour trips, and ADT for the proposed project using trip generation rates from the Institute of Transportation Engineers (ITE) *Trip Generation* Manual, 10th Edition (2017). This information will be provided in tabular form. The trip generation discussion will include a table that compares the proposed gross trip generation of the project to the existing trip generation for the site.

B. Adjustments to Trip Generation

No adjustments to the trip generation shall be made without prior written approval from the City.

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C. Trip Distribution and Trip Assignment

The directions of approach to and departure from the site will be obtained based on the ITAM distribution. A map indicating regional directions of trip distribution will be presented in the Traffic Study. The project trip distribution and assignment will be based on the ITAM select zone analysis performed for Buildout Approved Baseline Plus Project a.m. peak-hour, p.m. peak-hour, and daily conditions.

VIII. PHASING

The proposed project will be constructed in a single phase and will be occupied by year 2023.

IX. SPECIAL ANALYSES/ISSUES

A. Access Analysis

An access analysis of the project driveway on Cartwright Road will be performed. LSA will review project volume forecasts at the access location and determine the adequacy of the interface with the arterial street system using the City's TDPs.

The project peak-hour trips, per ITE trip rates, will be assigned in and out of the project access driveway. Trip distribution and assignment will be determined using the distribution patterns from the most recent version of the ITAM. In addition, LSA will manually include peak hour traffic volume generated by the Yogurtland Franchising, Inc. at the shared project driveway. LSA will also show peak hour traffic on Sullivan (i.e,. Metropolis apartment project access on Cartwright Road located directly across the project driveway) based on the trip assignment from its approved traffic study. This method is in lieu of conducting existing traffic counts at these locations due to current atypical conditions. An exhibit will be provided that shows the existing without project and existing plus project turning volumes at the access driveway to the project site. An exhibit will also be provided to depict the project driveway, as well as any adjacent and opposing driveways. The exhibits will be drawn roughly to scale, with the distances between driveways and intersections dimensioned. The adjacent and opposing driveways to the project site will be included as part of the access analysis.

The internal circulation analysis will address specific design requirements of the City based on the proposed access plan and the project trip assignment. This analysis is to ensure that the project will continue to meet or exceed the requirements within the City's TDP. Specific design features to be evaluated include turn-lane pocket length (TDP-1) for the northbound left-turn and westbound left-turn lanes at Cartwright Road/Main Street, left-turn in/out access (TDP-3), right-turn lanes at uncontrolled driveways (TDP-4), distance between driveways and intersections (TDP-10), driveway lengths (TDP-14), and gate stacking (TDP-15) (if applicable).

A summary of the proposed project and results of the analysis will be prepared. Based upon these results, recommendations will be presented for the design of the project access driveway and interface with adjacent streets. These recommendations will be consistent with the City's TDP.

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B. Circulation Phasing

An analysis of any impacted intersections identified in the City's 2020 Circulation Phasing Analysis Report within the project study area (if any) will be included in this section.

C. Congestion Management Program (CMP) Land Use Coordination Requirements

Jamboree Road is included on the CMP highway system and is within the study area for this project. As such, the City's "CMP Monitoring Checklist: Land Use Coordination Component" will be completed and included in the Traffic Study if the proposed project is forecast to generate 2,400 or more ADT, or greater than 1,600 ADT directly onto the CMP Highway System.

D. Pedestrian Circulation

The pedestrian circulation on site and connection to the adjacent public facilities and corresponding traffic control measures within the project site will be discussed in this section. The Traffic Study will include a discussion of how policies a, b, and c of General Plan Objective B-3 will be met with implementation of this project.

E. Bicycle Circulation

Bicycle circulation on site and connection to adjacent bicycle facilities will be discussed in this section. LSA will document how the project will conform to applicable policies of Objective B-4 of the City's General Plan.

F. Transit Facilities

The Traffic Study will identify the transit facilities (e.g., OCTA bus and iShuttle) within the project vicinity. If a bus stop is located adjacent to the project site, LSA will discuss pedestrian access and bus stop turnout design per City guidelines.

F. VMT Analysis

As a result of the final rulemaking surrounding Senate Bill 743 and the implementation deadline of July 1, 2020, a VMT analysis will be prepared in accordance with adopted Traffic Study Guidelines.

X. REQUIRED MITIGATION MEASURES AND/OR RECOMMENDATIONS

Based on the results and in accordance with the adopted City Traffic Study Guidelines, physical and/or operational improvements and/or alternative mitigation measure improvements required to mitigate any potentially adverse impacts due to the proposed project will be identified.

XI. CONCLUSIONS

A summary of the results of the analysis and recommendations will be prepared.

XII. REVISIONS TO ANALYSIS

Revisions to the Traffic Study will be provided in response to the City's comments.

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XIII. SIGNATURE

The Traffic Study will be prepared under the supervision of, and signed, stamped, and dated by, a registered traffic engineer or a registered professional civil engineer with appropriate engineering and/or planning credentials.

Attachments: Table A – 17861 Cartwright Road DIV Summary
Figure 1 – Project Location and Study Area Intersections
Conceptual Site Plan

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LSA

Table A: 17861 Cartwright Road DIV Summary

Land Use	Size	Unit	Daily	AM Peak Hour	PM Peak Hour
DIV Rates [1]					
Office/Zoning Potential		SF	0.01377	0.00130	0.00138
Residential		DU	6.30000	0.50000	0.52000
Existing DIV Budget (Project No. 106)					
Office	19,061	SF	262.47	24.78	26.30
Zoning Potential	1,953	SF	26.89	2.54	2.70
DIV Budget Differential			4	1	0
Total			**293**	**28**	**29**
Project DIV Generation					
Residential	60	DU	378.00	30.00	31.20
Density Bonus (35% of 44 DU)	(16)	DU	(100.80)	(8.00)	(8.32)
Total (excluding Density Bonus)			**277.20**	**22.00**	**22.88**
Difference (Existing - Project)			**15.80**	**6.00**	**6.12**
Remaining Entitlement (Office Equivalency)			**1,147**	4,615	4,435

[1] Development intensity value (DIV) rates obtained from the Irvine Business Complex (IBC) Database Summary.

DU = dwelling unit

SF = square feet

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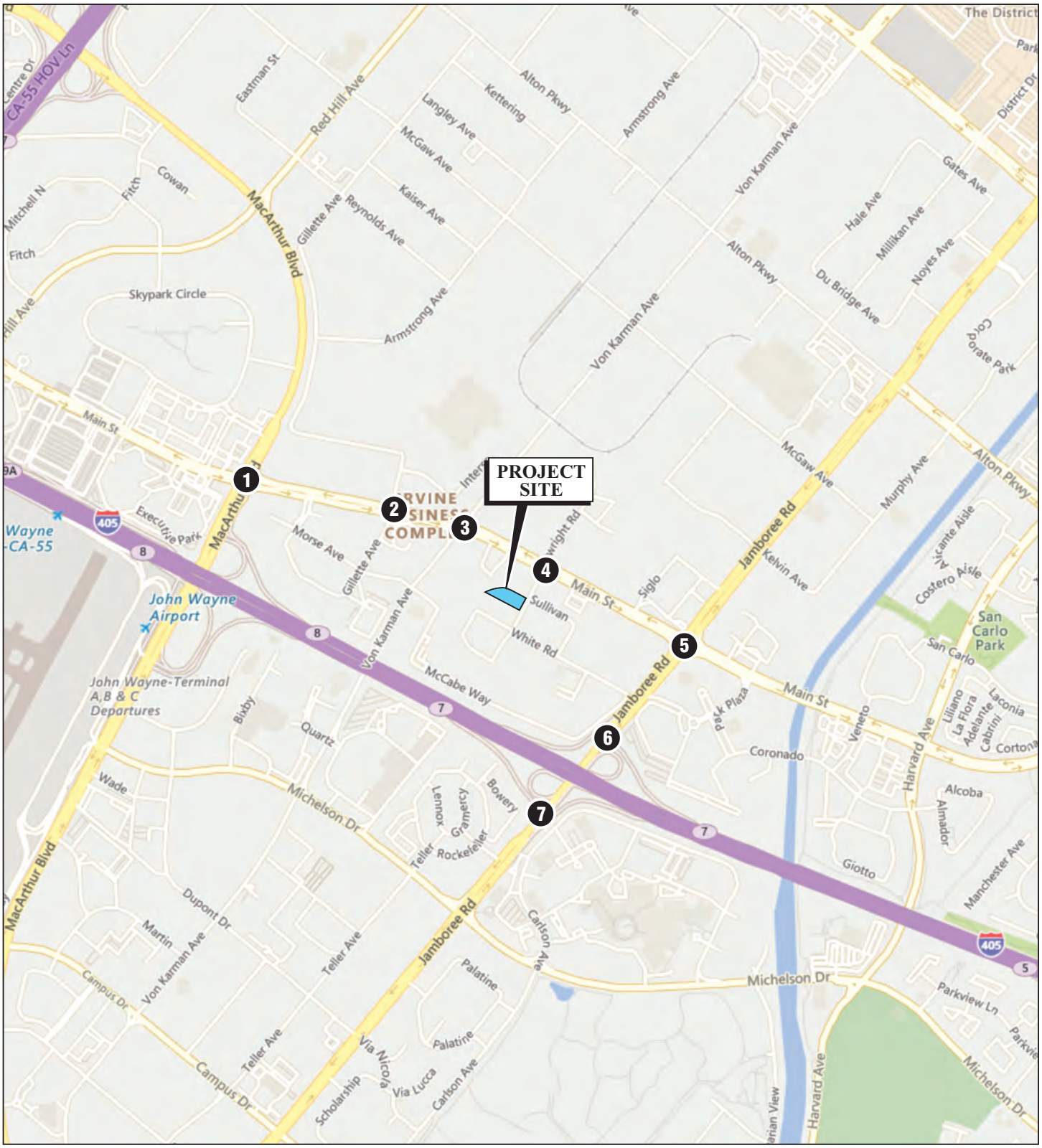
10/21/20
Approved for DAC

P:\CGW2001\xls\DIVs.xlsx\Sept 2020 SOW (9/30/2020)



LSA

FIGURE 1

LEGEND

- Study Area Intersection

N

0 750 1500

FEET

SOURCE: Bing Maps

17861 Cartwright Road

Project Location and Study Area Intersections

I:\CGW2001\G\Location & Study Ints.cdr (4/14/2020)

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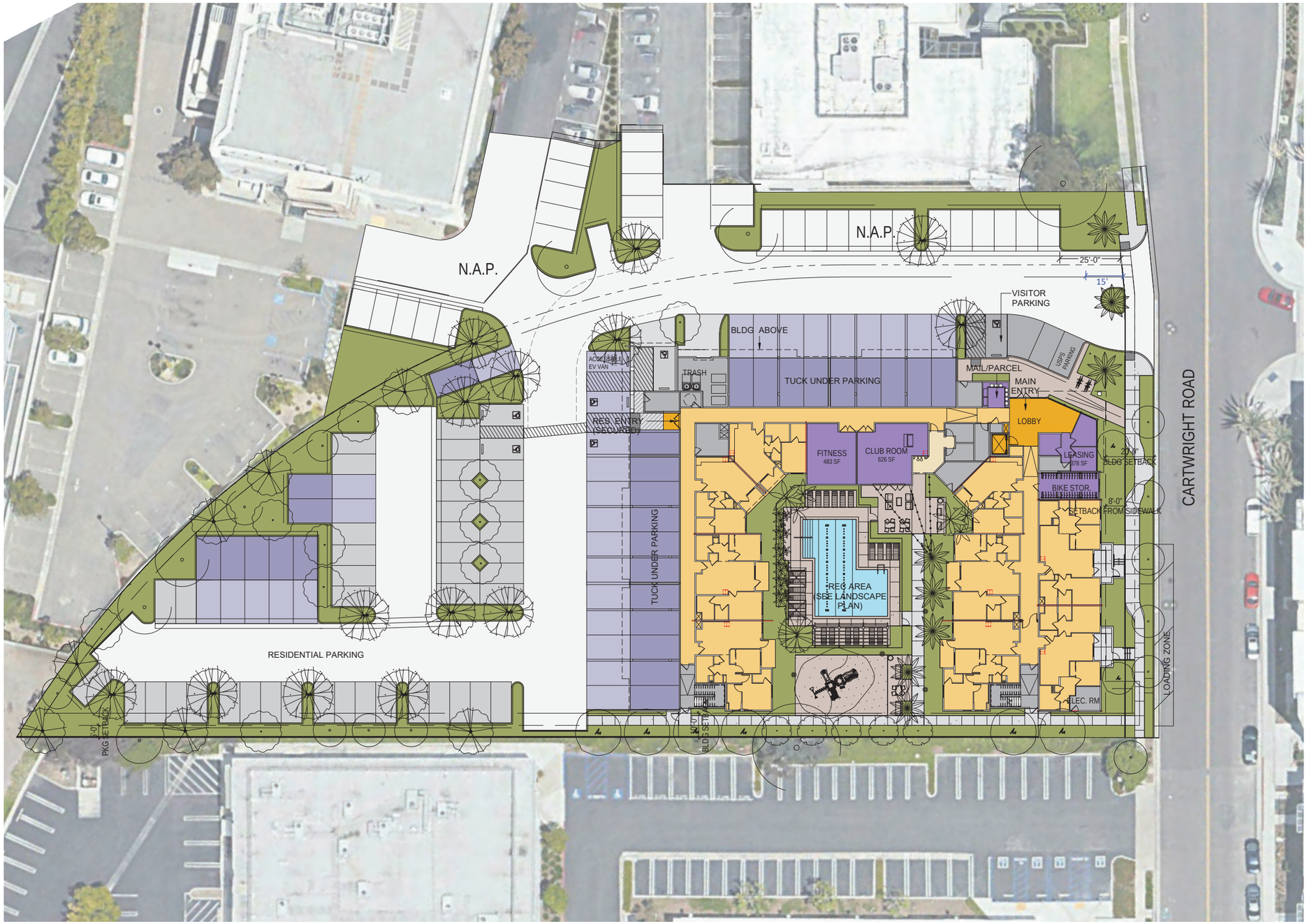

PARKING PROVIDED	
LONG TERM (8.5' x 18')	42
LONG TERM @ TANDEM (10' x 18')	27
TANDEM (10' x 20')	28
VISITOR STANDARD (9' x 19')	3
NON-ACCESSIBLE TOTAL	100

ACCESSIBLE (18'-0" x 9'-0")	3
ACCESSIBLE VAN (18'-0" x 9'-0")	2
ACCESSIBLE VAN EV (18'-0" x 9'-0")	1
VISITOR ACCESSIBLE VAN (19'-0" x 9'-0")	1
ACCESSIBLE TOTAL	7
SITE TOTAL	107

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Irvine, CA 92614
ktgy.com
949.851.2133

C&C DEVELOPMENT
14211 Yorba Street, Suite 200
Tustin, CA 92780

CARTWRIGHT APARTMENTS

IRVINE, CA CITY CASE #: 00820914-PCPU

ENTITLEMENT SUBMITTAL #2

REVISED AUG 26, 2020

0' 10' 20' 40'

CONCEPT SITE PLAN

As indicated

A1.0

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APPENDIX B

ITAM TRAFFIC FORECASTS

Adt Refinement Summary

Scenario:		*Project:*	CGW2001
Existing Model RunID:	2015	*JobNumber:*	
Future Model RunID:	2015	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	8/3/2020
Future Analysis Year:	Existing With Project		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
145	Jamboree Rd.	b/w Main St.and Union	74,700	74,070	74,103	Increment	33	0%	0%	-100%	0%	33	74,700
146	Jamboree Rd.	b/w Union and I-405 NB Ra	74,700	83,414	83,482	Ratio	61	0%	0%	-100%	0%	61	74,800
147	Jamboree Rd.	s/o I-405 SB Ramps	72,060	84,347	84,348	Ratio	1	0%	0%	-100%	0%	1	72,100
820	Main St.	e/o MacArthur Bl.	33,800	45,790	46,898	Ratio	818	2%	2%	-100%	2%	818	34,600
821	Main St.	b/w Gillette Av.and Von Kar	33,800	33,552	35,167	Increment	1,615	5%	5%	-100%	5%	1,615	35,400
822	Main St.	b/w Von Karman Av.and Car	22,300	26,396	25,864	Ratio	-449	-2%	0%	-100%	0%	0	22,300
823	Main St.	b/w Siglo and Jamboree Rd.	22,300	33,962	34,101	Ratio	91	0%	0%	-100%	0%	91	22,400
956	Jamboree Rd.	b/w I-405 NB and SB Ramps	76,300	77,854	77,793	Ratio	-60	0%	0%	-100%	0%	0	76,300
1257	Cartwright Rd.	n/o Main St.		3,637	3,637	Increment	0	0%	0%	-100%	0%	0	3,600
1423	Main St.	w/o Gillette Av.	33,800	39,307	40,881	Ratio	1,353	4%	4%	-100%	4%	1,353	35,200
1425	Main St.	w/o Siglo	22,300	29,814	30,335	Ratio	390	2%	2%	-100%	2%	390	22,700
1428	Cartwright Rd.	s/o Main St.	3,200	4,788	5,905	Ratio	747	23%	23%	-100%	23%	747	3,900
1430	Main St.	e/o Cartwright Rd.	22,300	28,630	29,182	Ratio	430	2%	2%	-100%	2%	430	22,700

Adt Refinement Summary

Scenario:		*Project:*	CGW2001
Existing Model RunID:	2015	*JobNumber:*	
Future Model RunID:	2023	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	7/28/2020
Future Analysis Year:	2023 Approved NP		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
145	Jamboree Rd.	b/w Main St.and Union	68,700	74,005	81,055	Ratio	6,545	10%	10%	-100%	10%	6,545	75,200
146	Jamboree Rd.	b/w Union and I-405 NB Ra	68,700	83,353	90,055	Ratio	5,524	8%	8%	-100%	8%	5,524	74,200
147	Jamboree Rd.	s/o I-405 SB Ramps	72,060	84,258	96,604	Ratio	10,559	15%	15%	-100%	15%	10,559	82,600
820	Main St.	e/o MacArthur Bl.	31,630	45,881	52,781	Ratio	4,757	15%	15%	-100%	15%	4,757	36,400
821	Main St.	b/w Gillette Av.and Von Kar	31,631	33,568	41,620	Ratio	7,587	24%	24%	-100%	24%	7,587	39,200
822	Main St.	b/w Von Karman Av.and Car	23,054	26,590	33,057	Ratio	5,607	24%	24%	-100%	24%	5,607	28,700
823	Main St.	b/w Siglo and Jamboree Rd.	23,054	33,831	38,881	Ratio	3,441	15%	15%	-100%	15%	3,441	26,500
956	Jamboree Rd.	b/w I-405 NB and SB Ramps	73,907	77,796	84,845	Ratio	6,697	9%	9%	-100%	9%	6,697	80,600
1257	Cartwright Rd.	n/o Main St.		3,637	6,344	Increment	2,707	0%	0%	-100%	0%	0	6,300
1423	Main St.	w/o Gillette Av.	36,924	39,391	47,279	Ratio	7,394	20%	20%	-100%	20%	7,394	44,300
1425	Main St.	w/o Siglo	30,130	29,670	35,036	Increment	5,366	18%	18%	-100%	18%	5,366	35,500
1428	Cartwright Rd.	s/o Main St.		4,450	6,140	Increment	1,690	0%	0%	-100%	0%	0	6,100
1430	Main St.	e/o Cartwright Rd.	26,594	28,481	35,345	Ratio	6,409	24%	24%	-100%	24%	6,409	33,000

Adt Refinement Summary

Scenario:		*Project:*	CGW2001
Existing Model RunID:	2015	*JobNumber:*	
Future Model RunID:	2023	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	7/28/2020
Future Analysis Year:	2023 Approved WP		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
145	Jamboree Rd.	b/w Main St.and Union	68,700	74,005	81,076	Ratio	6,564	10%	10%	-100%	10%	6,564	75,300
146	Jamboree Rd.	b/w Union and I-405 NB Ra	68,700	83,353	90,064	Ratio	5,531	8%	8%	-100%	8%	5,531	74,200
147	Jamboree Rd.	s/o I-405 SB Ramps	72,060	84,258	96,597	Ratio	10,553	15%	15%	-100%	15%	10,553	82,600
820	Main St.	e/o MacArthur Bl.	31,630	45,881	52,956	Ratio	4,877	15%	15%	-100%	15%	4,877	36,500
821	Main St.	b/w Gillette Av.and Von Kar	31,631	33,568	41,822	Ratio	7,778	25%	25%	-100%	25%	7,778	39,400
822	Main St.	b/w Von Karman Av.and Car	23,054	26,590	33,140	Ratio	5,679	25%	25%	-100%	25%	5,679	28,700
823	Main St.	b/w Siglo and Jamboree Rd.	23,054	33,831	38,843	Ratio	3,415	15%	15%	-100%	15%	3,415	26,500
956	Jamboree Rd.	b/w I-405 NB and SB Ramps	73,907	77,796	84,804	Ratio	6,658	9%	9%	-100%	9%	6,658	80,600
1257	Cartwright Rd.	n/o Main St.		3,637	6,347	Increment	2,710	0%	0%	-100%	0%	0	6,300
1423	Main St.	w/o Gillette Av.	36,924	39,391	47,433	Ratio	7,538	20%	20%	-100%	20%	7,538	44,500
1425	Main St.	w/o Siglo	30,130	29,670	35,019	Increment	5,349	18%	18%	-100%	18%	5,349	35,500
1428	Cartwright Rd.	s/o Main St.		4,450	6,122	Increment	1,672	0%	0%	-100%	0%	0	6,100
1430	Main St.	e/o Cartwright Rd.	26,594	28,481	35,421	Ratio	6,480	24%	24%	-100%	24%	6,480	33,100

Adt Refinement Summary

Scenario:		*Project:*	CGW2001
Existing Model RunID:	2015	*JobNumber:*	
Future Model RunID:	2023 Pending	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	7/28/2020
Future Analysis Year:	Interim Pending NP		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
145	Jamboree Rd.	b/w Main St.and Union	68,700	75,290	81,730	Ratio	5,876	9%	9%	-100%	9%	5,876	74,600
146	Jamboree Rd.	b/w Union and I-405 NB Ra	68,700	84,625	90,668	Ratio	4,906	7%	7%	-100%	7%	4,906	73,600
147	Jamboree Rd.	s/o I-405 SB Ramps	72,060	87,742	98,212	Ratio	8,599	12%	12%	-100%	12%	8,599	80,700
820	Main St.	e/o MacArthur Bl.	31,630	45,979	53,369	Ratio	5,084	16%	16%	-100%	16%	5,084	36,700
821	Main St.	b/w Gillette Av.and Von Kar	31,631	34,319	42,297	Ratio	7,353	23%	23%	-100%	23%	7,353	39,000
822	Main St.	b/w Von Karman Av.and Car	23,054	27,559	33,591	Ratio	5,046	22%	22%	-100%	22%	5,046	28,100
823	Main St.	b/w Siglo and Jamboree Rd.	23,054	34,654	39,316	Ratio	3,101	13%	13%	-100%	13%	3,101	26,200
956	Jamboree Rd.	b/w I-405 NB and SB Ramps	73,907	79,625	85,735	Ratio	5,671	8%	8%	-100%	8%	5,671	79,600
1257	Cartwright Rd.	n/o Main St.		3,618	6,347	Increment	2,729	0%	0%	-100%	0%	0	6,300
1423	Main St.	w/o Gillette Av.	36,924	39,931	47,996	Ratio	7,458	20%	20%	-100%	20%	7,458	44,400
1425	Main St.	w/o Siglo	30,130	30,657	35,502	Ratio	4,762	16%	16%	-100%	16%	4,762	34,900
1428	Cartwright Rd.	s/o Main St.		4,785	6,166	Increment	1,381	0%	0%	-100%	0%	0	6,200
1430	Main St.	e/o Cartwright Rd.	26,594	29,791	35,925	Ratio	5,476	21%	21%	-100%	21%	5,476	32,100

Adt Refinement Summary

Scenario:		*Project:*	CGW2001
Existing Model RunID:	2015	*JobNumber:*	
Future Model RunID:	2023 Pending	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	7/28/2020
Future Analysis Year:	Interim Pending WP		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
145	Jamboree Rd.	b/w Main St.and Union	68,700	75,290	81,713	Ratio	5,861	9%	9%	-100%	9%	5,861	74,600
146	Jamboree Rd.	b/w Union and I-405 NB Ra	68,700	84,625	90,666	Ratio	4,904	7%	7%	-100%	7%	4,904	73,600
147	Jamboree Rd.	s/o I-405 SB Ramps	72,060	87,742	98,240	Ratio	8,622	12%	12%	-100%	12%	8,622	80,700
820	Main St.	e/o MacArthur Bl.	31,630	45,979	53,452	Ratio	5,141	16%	16%	-100%	16%	5,141	36,800
821	Main St.	b/w Gillette Av.and Von Kar	31,631	34,319	42,351	Ratio	7,403	23%	23%	-100%	23%	7,403	39,000
822	Main St.	b/w Von Karman Av.and Car	23,054	27,559	33,515	Ratio	4,982	22%	22%	-100%	22%	4,982	28,000
823	Main St.	b/w Siglo and Jamboree Rd.	23,054	34,654	39,260	Ratio	3,064	13%	13%	-100%	13%	3,064	26,100
956	Jamboree Rd.	b/w I-405 NB and SB Ramps	73,907	79,625	85,714	Ratio	5,652	8%	8%	-100%	8%	5,652	79,600
1257	Cartwright Rd.	n/o Main St.		3,618	6,345	Increment	2,727	0%	0%	-100%	0%	0	6,300
1423	Main St.	w/o Gillette Av.	36,924	39,931	48,068	Ratio	7,524	20%	20%	-100%	20%	7,524	44,400
1425	Main St.	w/o Siglo	30,130	30,657	35,436	Ratio	4,697	16%	16%	-100%	16%	4,697	34,800
1428	Cartwright Rd.	s/o Main St.		4,785	6,146	Increment	1,361	0%	0%	-100%	0%	0	6,100
1430	Main St.	e/o Cartwright Rd.	26,594	29,791	35,852	Ratio	5,411	20%	20%	-100%	20%	5,411	32,000

Adt Refinement Summary

Scenario:		*Project:*	CGW2001
Existing Model RunID:	2015	*JobNumber:*	
Future Model RunID:	2040	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	7/27/2020
Future Analysis Year:	2040 Approved NP		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
145	Jamboree Rd.	b/w Main St.and Union	68,700	74,005	88,196	Ratio	13,174	19%	19%	-100%	19%	13,174	81,900
146	Jamboree Rd.	b/w Union and I-405 NB Ra	68,700	83,353	97,392	Ratio	11,571	17%	17%	-100%	17%	11,571	80,300
147	Jamboree Rd.	s/o I-405 SB Ramps	72,060	84,258	113,392	Ratio	24,916	35%	35%	-100%	35%	24,916	97,000
820	Main St.	e/o MacArthur Bl.	31,630	45,881	53,098	Ratio	4,975	16%	16%	-100%	16%	4,975	36,600
821	Main St.	b/w Gillette Av.and Von Kar	31,631	33,568	42,756	Ratio	8,658	27%	27%	-100%	27%	8,658	40,300
822	Main St.	b/w Von Karman Av.and Car	23,054	26,590	34,313	Ratio	6,696	29%	29%	-100%	29%	6,696	29,700
823	Main St.	b/w Siglo and Jamboree Rd.	23,054	33,831	41,333	Ratio	5,112	22%	22%	-100%	22%	5,112	28,200
956	Jamboree Rd.	b/w I-405 NB and SB Ramps	73,907	77,796	97,058	Ratio	18,299	25%	25%	-100%	25%	18,299	92,200
1257	Cartwright Rd.	n/o Main St.		3,637	6,502	Increment	2,865	0%	0%	-100%	0%	0	6,500
1423	Main St.	w/o Gillette Av.	36,924	39,391	47,770	Ratio	7,854	21%	21%	-100%	21%	7,854	44,800
1425	Main St.	w/o Siglo	30,130	29,670	37,510	Increment	7,840	26%	26%	-100%	26%	7,840	38,000
1428	Cartwright Rd.	s/o Main St.		4,450	6,724	Increment	2,274	0%	0%	-100%	0%	0	6,700
1430	Main St.	e/o Cartwright Rd.	26,594	28,481	36,659	Ratio	7,636	29%	29%	-100%	29%	7,636	34,200

Adt Refinement Summary

Scenario:
Existing Model RunID: 2015
Future Model RunID: 2040
Existing Validation Year: 2015
Future Analysis Year: 2040 Approved WP

Project: CGW2001
JobNumber:
Analyst: Deb Sinha
Date: 7/27/2020

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
145	Jamboree Rd.	b/w Main St.and Union	68,700	74,005	88,207	Ratio	13,184	19%	19%	-100%	19%	13,184	81,900
146	Jamboree Rd.	b/w Union and I-405 NB Ra	68,700	83,353	97,396	Ratio	11,574	17%	17%	-100%	17%	11,574	80,300
147	Jamboree Rd.	s/o I-405 SB Ramps	72,060	84,258	113,479	Ratio	24,991	35%	35%	-100%	35%	24,991	97,100
820	Main St.	e/o MacArthur Bl.	31,630	45,881	53,131	Ratio	4,998	16%	16%	-100%	16%	4,998	36,600
821	Main St.	b/w Gillette Av.and Von Kar	31,631	33,568	42,809	Ratio	8,708	28%	28%	-100%	28%	8,708	40,300
822	Main St.	b/w Von Karman Av.and Car	23,054	26,590	34,290	Ratio	6,676	29%	29%	-100%	29%	6,676	29,700
823	Main St.	b/w Siglo and Jamboree Rd.	23,054	33,831	41,383	Ratio	5,146	22%	22%	-100%	22%	5,146	28,200
956	Jamboree Rd.	b/w I-405 NB and SB Ramps	73,907	77,796	97,100	Ratio	18,339	25%	25%	-100%	25%	18,339	92,200
1257	Cartwright Rd.	n/o Main St.		3,637	6,501	Increment	2,864	0%	0%	-100%	0%	0	6,500
1423	Main St.	w/o Gillette Av.	36,924	39,391	47,804	Ratio	7,886	21%	21%	-100%	21%	7,886	44,800
1425	Main St.	w/o Siglo	30,130	29,670	37,544	Increment	7,874	26%	26%	-100%	26%	7,874	38,000
1428	Cartwright Rd.	s/o Main St.		4,450	6,751	Increment	2,301	0%	0%	-100%	0%	0	6,800
1430	Main St.	e/o Cartwright Rd.	26,594	28,481	36,674	Ratio	7,650	29%	29%	-100%	29%	7,650	34,200

Adt Refinement Summary

Scenario:
Existing Model RunID: 2015
Future Model RunID: 2040
Existing Validation Year: 2015
Future Analysis Year: LongRange Pend NP

Project: CGW2001
JobNumber:
Analyst: Deb Sinha
Date: 7/24/2020

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
145	Jamboree Rd.	b/w Main St.and Union	68,700	74,005	88,915	Ratio	13,841	20%	20%	-100%	20%	13,841	82,500
146	Jamboree Rd.	b/w Union and I-405 NB Ra	68,700	83,353	98,117	Ratio	12,169	18%	18%	-100%	18%	12,169	80,900
147	Jamboree Rd.	s/o I-405 SB Ramps	72,060	84,258	113,922	Ratio	25,370	35%	35%	-100%	35%	25,370	97,400
820	Main St.	e/o MacArthur Bl.	31,630	45,881	53,223	Ratio	5,062	16%	16%	-100%	16%	5,062	36,700
821	Main St.	b/w Gillette Av.and Von Kar	31,631	33,568	43,000	Ratio	8,888	28%	28%	-100%	28%	8,888	40,500
822	Main St.	b/w Von Karman Av.and Car	23,054	26,590	34,660	Ratio	6,997	30%	30%	-100%	30%	6,997	30,100
823	Main St.	b/w Siglo and Jamboree Rd.	23,054	33,831	41,600	Ratio	5,294	23%	23%	-100%	23%	5,294	28,300
956	Jamboree Rd.	b/w I-405 NB and SB Ramps	73,907	77,796	96,916	Ratio	18,164	25%	25%	-100%	25%	18,164	92,100
1257	Cartwright Rd.	n/o Main St.		3,637	6,496	Increment	2,859	0%	0%	-100%	0%	0	6,500
1423	Main St.	w/o Gillette Av.	36,924	39,391	47,993	Ratio	8,063	22%	22%	-100%	22%	8,063	45,000
1425	Main St.	w/o Siglo	30,130	29,670	37,773	Increment	8,103	27%	27%	-100%	27%	8,103	38,200
1428	Cartwright Rd.	s/o Main St.		4,450	6,775	Increment	2,325	0%	0%	-100%	0%	0	6,800
1430	Main St.	e/o Cartwright Rd.	26,594	28,481	37,033	Ratio	7,985	30%	30%	-100%	30%	7,985	34,600

Adt Refinement Summary

Scenario:
Existing Model RunID: 2015
Future Model RunID: 2040
Existing Validation Year: 2015
Future Analysis Year: LongRange Pend WP

Project: CGW2001
JobNumber:
Analyst: Deb Sinha
Date: 7/24/2020

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
145	Jamboree Rd.	b/w Main St.and Union	68,700	74,005	88,908	Ratio	13,835	20%	20%	-100%	20%	13,835	82,500
146	Jamboree Rd.	b/w Union and I-405 NB Ra	68,700	83,353	98,084	Ratio	12,141	18%	18%	-100%	18%	12,141	80,800
147	Jamboree Rd.	s/o I-405 SB Ramps	72,060	84,258	113,935	Ratio	25,381	35%	35%	-100%	35%	25,381	97,400
820	Main St.	e/o MacArthur Bl.	31,630	45,881	53,265	Ratio	5,090	16%	16%	-100%	16%	5,090	36,700
821	Main St.	b/w Gillette Av.and Von Kar	31,631	33,568	43,061	Ratio	8,945	28%	28%	-100%	28%	8,945	40,600
822	Main St.	b/w Von Karman Av.and Car	23,054	26,590	34,641	Ratio	6,980	30%	30%	-100%	30%	6,980	30,000
823	Main St.	b/w Siglo and Jamboree Rd.	23,054	33,831	41,609	Ratio	5,300	23%	23%	-100%	23%	5,300	28,400
956	Jamboree Rd.	b/w I-405 NB and SB Ramps	73,907	77,796	96,899	Ratio	18,148	25%	25%	-100%	25%	18,148	92,100
1257	Cartwright Rd.	n/o Main St.		3,637	6,493	Increment	2,856	0%	0%	-100%	0%	0	6,500
1423	Main St.	w/o Gillette Av.	36,924	39,391	48,061	Ratio	8,127	22%	22%	-100%	22%	8,127	45,100
1425	Main St.	w/o Siglo	30,130	29,670	37,764	Increment	8,094	27%	27%	-100%	27%	8,094	38,200
1428	Cartwright Rd.	s/o Main St.		4,450	6,796	Increment	2,346	0%	0%	-100%	0%	0	6,800
1430	Main St.	e/o Cartwright Rd.	26,594	28,481	37,029	Ratio	7,982	30%	30%	-100%	30%	7,982	34,600

Adt Refinement Summary

Scenario: Approved
Existing Model RunID: 2015
Future Model RunID: P2040
Existing Validation Year: 2015
Future Analysis Year: Buildout Aprv NP

Project: CGW2001
JobNumber:
Analyst: Deb Sinha
Date: 7/22/2020

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
145	Jamboree Rd.	b/w Main St.and Union	68,700	74,005	86,683	Ratio	11,769	17%	17%	-100%	17%	11,769	80,500
146	Jamboree Rd.	b/w Union and I-405 NB Ra	68,700	83,353	96,247	Ratio	10,627	15%	15%	-100%	15%	10,627	79,300
147	Jamboree Rd.	s/o I-405 SB Ramps	72,060	84,258	110,687	Ratio	22,603	31%	31%	-100%	31%	22,603	94,700
820	Main St.	e/o MacArthur Bl.	31,630	45,881	50,868	Ratio	3,438	11%	11%	-100%	11%	3,438	35,100
821	Main St.	b/w Gillette Av.and Von Kar	31,631	33,568	40,876	Ratio	6,886	22%	22%	-100%	22%	6,886	38,500
822	Main St.	b/w Von Karman Av.and Car	23,054	26,590	33,228	Ratio	5,755	25%	25%	-100%	25%	5,755	28,800
823	Main St.	b/w Siglo and Jamboree Rd.	23,054	33,831	39,813	Ratio	4,076	18%	18%	-100%	18%	4,076	27,100
956	Jamboree Rd.	b/w I-405 NB and SB Ramps	73,907	77,796	93,599	Ratio	15,013	20%	20%	-100%	20%	15,013	88,900
1257	Cartwright Rd.	n/o Main St.		3,637	6,512	Increment	2,875	0%	0%	-100%	0%	0	6,500
1423	Main St.	w/o Gillette Av.	36,924	39,391	45,086	Ratio	5,338	14%	14%	-100%	14%	5,338	42,300
1425	Main St.	w/o Siglo	30,130	29,670	36,451	Increment	6,781	23%	23%	-100%	23%	6,781	36,900
1428	Cartwright Rd.	s/o Main St.		4,450	6,399	Increment	1,949	0%	0%	-100%	0%	0	6,400
1430	Main St.	e/o Cartwright Rd.	26,594	28,481	35,716	Ratio	6,756	25%	25%	-100%	25%	6,756	33,300

Adt Refinement Summary

Scenario: Approved
Existing Model RunID:
Future Model RunID: P2040
Existing Validation Year:
Future Analysis Year: Buildout Aprv WP

Project: CGW2001
2015 *JobNumber:*
Analyst: Deb Sinha
2015 *Date:* 7/22/2020

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
145	Jamboree Rd.	b/w Main St.and Union	68,700	74,005	86,678	Ratio	11,765	17%	17%	-100%	17%	11,765	80,500
146	Jamboree Rd.	b/w Union and I-405 NB Ra	68,700	83,353	96,241	Ratio	10,622	15%	15%	-100%	15%	10,622	79,300
147	Jamboree Rd.	s/o I-405 SB Ramps	72,060	84,258	110,700	Ratio	22,614	31%	31%	-100%	31%	22,614	94,700
820	Main St.	e/o MacArthur Bl.	31,630	45,881	50,907	Ratio	3,465	11%	11%	-100%	11%	3,465	35,100
821	Main St.	b/w Gillette Av.and Von Kar	31,631	33,568	40,909	Ratio	6,917	22%	22%	-100%	22%	6,917	38,500
822	Main St.	b/w Von Karman Av.and Car	23,054	26,590	33,185	Ratio	5,718	25%	25%	-100%	25%	5,718	28,800
823	Main St.	b/w Siglo and Jamboree Rd.	23,054	33,831	39,832	Ratio	4,089	18%	18%	-100%	18%	4,089	27,100
956	Jamboree Rd.	b/w I-405 NB and SB Ramps	73,907	77,796	93,582	Ratio	14,997	20%	20%	-100%	20%	14,997	88,900
1257	Cartwright Rd.	n/o Main St.		3,637	6,512	Increment	2,875	0%	0%	-100%	0%	0	6,500
1423	Main St.	w/o Gillette Av.	36,924	39,391	45,121	Ratio	5,371	15%	15%	-100%	15%	5,371	42,300
1425	Main St.	w/o Siglo	30,130	29,670	36,465	Increment	6,795	23%	23%	-100%	23%	6,795	36,900
1428	Cartwright Rd.	s/o Main St.		4,450	6,423	Increment	1,973	0%	0%	-100%	0%	0	6,400
1430	Main St.	e/o Cartwright Rd.	26,594	28,481	35,740	Ratio	6,778	25%	25%	-100%	25%	6,778	33,400

Adt Refinement Summary

Scenario:
Existing Model RunID:
Future Model RunID: P2040
Existing Validation Year:
Future Analysis Year: Buildout Pend NP

Project: CGW2001
2012 *JobNumber:*
Analyst: Deb Sinha
2015 *Date:* 7/23/2020

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
145	Jamboree Rd.	b/w Main St.and Union	68,700	74,005	88,173	Ratio	13,152	19%	19%	-100%	19%	13,152	81,900
146	Jamboree Rd.	b/w Union and I-405 NB Ra	68,700	83,353	97,710	Ratio	11,833	17%	17%	-100%	17%	11,833	80,500
147	Jamboree Rd.	s/o I-405 SB Ramps	72,060	84,258	113,147	Ratio	24,707	34%	34%	-100%	34%	24,707	96,800
820	Main St.	e/o MacArthur Bl.	31,630	45,881	51,165	Ratio	3,643	12%	12%	-100%	12%	3,643	35,300
821	Main St.	b/w Gillette Av.and Von Kar	31,631	33,568	41,316	Ratio	7,301	23%	23%	-100%	23%	7,301	38,900
822	Main St.	b/w Von Karman Av.and Car	23,054	26,590	33,684	Ratio	6,151	27%	27%	-100%	27%	6,151	29,200
823	Main St.	b/w Siglo and Jamboree Rd.	23,054	33,831	40,250	Ratio	4,374	19%	19%	-100%	19%	4,374	27,400
956	Jamboree Rd.	b/w I-405 NB and SB Ramps	73,907	77,796	95,288	Ratio	16,618	22%	22%	-100%	22%	16,618	90,500
1257	Cartwright Rd.	n/o Main St.		3,637	6,509	Increment	2,872	0%	0%	-100%	0%	0	6,500
1423	Main St.	w/o Gillette Av.	36,924	39,391	45,486	Ratio	5,713	15%	15%	-100%	15%	5,713	42,600
1425	Main St.	w/o Siglo	30,130	29,670	36,826	Increment	7,156	24%	24%	-100%	24%	7,156	37,300
1428	Cartwright Rd.	s/o Main St.		4,450	6,478	Increment	2,028	0%	0%	-100%	0%	0	6,500
1430	Main St.	e/o Cartwright Rd.	26,594	28,481	36,206	Ratio	7,213	27%	27%	-100%	27%	7,213	33,800

Adt Refinement Summary

Scenario:		*Project:*	CGW2001
Existing Model RunID:	2012	*JobNumber:*	
Future Model RunID:	P2040	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	7/23/2020
Future Analysis Year:	Buildout Pend WP		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
145	Jamboree Rd.	b/w Main St.and Union	68,700	74,005	88,169	Ratio	13,149	19%	19%	-100%	19%	13,149	81,800
146	Jamboree Rd.	b/w Union and I-405 NB Ra	68,700	83,353	97,699	Ratio	11,824	17%	17%	-100%	17%	11,824	80,500
147	Jamboree Rd.	s/o I-405 SB Ramps	72,060	84,258	113,175	Ratio	24,731	34%	34%	-100%	34%	24,731	96,800
820	Main St.	e/o MacArthur Bl.	31,630	45,881	51,199	Ratio	3,666	12%	12%	-100%	12%	3,666	35,300
821	Main St.	b/w Gillette Av.and Von Kar	31,631	33,568	41,352	Ratio	7,335	23%	23%	-100%	23%	7,335	39,000
822	Main St.	b/w Von Karman Av.and Car	23,054	26,590	33,653	Ratio	6,124	27%	27%	-100%	27%	6,124	29,200
823	Main St.	b/w Siglo and Jamboree Rd.	23,054	33,831	40,225	Ratio	4,357	19%	19%	-100%	19%	4,357	27,400
956	Jamboree Rd.	b/w I-405 NB and SB Ramps	73,907	77,796	95,299	Ratio	16,628	22%	22%	-100%	22%	16,628	90,500
1257	Cartwright Rd.	n/o Main St.		3,637	6,512	Increment	2,875	0%	0%	-100%	0%	0	6,500
1423	Main St.	w/o Gillette Av.	36,924	39,391	45,524	Ratio	5,749	16%	16%	-100%	16%	5,749	42,700
1425	Main St.	w/o Siglo	30,130	29,670	36,805	Increment	7,135	24%	24%	-100%	24%	7,135	37,300
1428	Cartwright Rd.	s/o Main St.		4,450	6,472	Increment	2,022	0%	0%	-100%	0%	0	6,500
1430	Main St.	e/o Cartwright Rd.	26,594	28,481	36,181	Ratio	7,190	27%	27%	-100%	27%	7,190	33,800

70 . Gillette Av. at Main St.

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	62	.02*	312	.09*
NBT	1	1700	6	.00	87	.05
NBR	1	1700	60	.04	331	.19
SBL	2	3400	29	.01	166	.05
SBT	1	1700	18	.01*	23	.01*
SBR	d	1700	98	.06	308	.18
EBL	2	3400	285	.08*	191	.06*
EBT	4	6800	1057	.16	1404	.21
EBR	f		439		112	
WBL	2	3400	203	.06	35	.01
WBT	3	5100	696	.16*	1244	.26*
WBR	0	0	136		75	

Right Turn Adjustment Multi .18*
Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .32 .65

78 . MacArthur Bl. at Main St.

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	703	.21*	703	.21*
NBT	4	6800	928	.14	1100	.16
NBR	f		1281		595	
SBL	2	3400	424	.12	295	.09
SBT	4	6800	501	.07*	794	.12*
SBR	1	1700	71	.04	62	.04
EBL	1	1700	49	.03	87	.05
EBT	3	5100	875	.17*	851	.17*
EBR	1	1700	551	.32	682	.40
WBL	2	3400	260	.08*	718	.21*
WBT	3	5100	470	.09	1240	.24
WBR	f		200		520	

Right Turn Adjustment EBR .02*
Clearance Interval .05* .05*
Note: Assumes Right-Turn Overlap for EBR

TOTAL CAPACITY UTILIZATION .58 .78

100 . Von Karman Av. at Main St.

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	193	.06*	427	.13
NBT	2	3400	364	.11	1000	.29*
NBR	1	1700	119	.07	460	.27
SBL	1	1700	126	.07	131	.08*
SBT	2	3400	1167	.34*	488	.14
SBR	1	1700	394	.23	267	.16
EBL	2	3400	175	.05	415	.12*
EBT	3	5100	601	.12*	1205	.24
EBR	f		453		254	
WBL	2	3400	342	.10*	98	.03
WBT	3	5100	619	.14	686	.16*
WBR	0	0	95		144	

Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .67 .70

116 . Cartwright Rd. at Main St.

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	49	.03*	97	.06*
NBT	1	1700	1	.00	3	.00
NBR	1	1700	77	.05	188	.11
SBL	2	3400	48	.01	135	.04
SBT	1	1700	0	.02*	1	.04*
SBR	0	0	29		67	
EBL	1	1700	98	.06*	40	.02
EBT	3	5100	510	.12	1664	.34*
EBR	0	0	92		48	
WBL	2	3400	116	.03	89	.03*
WBT	3	5100	894	.20*	711	.15
WBR	0	0	136		32	

Right Turn Adjustment NBR .03*
Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .36 .55

141 . Jamboree Rd. at Main St.

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	381	.11*	217	.06
NBT	4	6800	1292	.19	2585	.38*
NBR	f		406		699	
SBL	2	3400	339	.10	252	.07*
SBT	4	6800	2531	.37*	1611	.24
SBR	1	1700	243	.14	168	.10
EBL	2	3400	131	.04	542	.16
EBT	3	5100	308	.06*	1066	.21*
EBR	f		239		609	
WBL	2	3400	572	.17*	537	.16*
WBT	3	5100	658	.13	408	.08
WBR	f		148		347	

Clearance Interval .05* .05*
Note: Assumes Right-Turn Overlap for SBR

TOTAL CAPACITY UTILIZATION .76 .87

143 . Jamboree Rd. at I-405 NB Ramps

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2013	.39*	3254	.64*
NBR	f		519		642	
SBL	0	0	0		0	
SBT	4	6800	1871	.28	1657	.24
SBR	f		1490		1083	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1474	.29*	795	.16*
WBT	0	0	0		0	
WBR	f		638		436	

Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .73 .85

144 . Jamboree Rd. at I-405 SB Ramps

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1354	.27	2663	.52*
NBR	f		386		861	
SBL	0	0	0		0	
SBT	4	6800	3104	.46*	1987	.29
SBR	f		213		509	
EBL	2	3400	1249	.37*	1266	.37*
EBT	0	0	0		0	
EBR	2	3400	1507	.44	664	.20
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	

Right Turn Adjustment EBR .07*
Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .95 .94

70 . Gillette Av. at Main St.

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	62	.02*	311	.09*
NBT	1	1700	6	.00	87	.05
NBR	1	1700	60	.04	331	.19
SBL	2	3400	26	.01	158	.05
SBT	1	1700	18	.01*	24	.01*
SBR	d	1700	98	.06	310	.18
EBL	2	3400	292	.09*	192	.06*
EBT	4	6800	1051	.15	1489	.22
EBR	f		437		111	
WBL	2	3400	203	.06	35	.01
WBT	3	5100	822	.19*	1271	.26*
WBR	0	0	141		74	
Right Turn Adjustment					Multi	.18*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .36 .65

78 . MacArthur Bl. at Main St.

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	707	.21*	698	.21*
NBT	4	6800	919	.14	1107	.16
NBR	f		1271		614	
SBL	2	3400	424	.12	302	.09
SBT	4	6800	530	.08*	806	.12*
SBR	1	1700	70	.04	61	.04
EBL	1	1700	49	.03	86	.05
EBT	3	5100	874	.17*	896	.18*
EBR	1	1700	541	.32	675	.40
WBL	2	3400	291	.09*	718	.21*
WBT	3	5100	513	.10	1255	.25
WBR	f		238		518	
Right Turn Adjustment					EBR	.01*
Clearance Interval				.05*		.05*
Note: Assumes Right-Turn Overlap for EBR						

TOTAL CAPACITY UTILIZATION .60 .78

100 . Von Karman Av. at Main St.

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	358	.11*	466	.14
NBT	2	3400	437	.13	997	.29*
NBR	1	1700	117	.07	434	.26
SBL	1	1700	128	.08	128	.08*
SBT	2	3400	1141	.34*	551	.16
SBR	1	1700	389	.23	252	.15
EBL	2	3400	166	.05	413	.12*
EBT	3	5100	597	.12*	1168	.23
EBR	f		457		370	
WBL	2	3400	334	.10*	97	.03
WBT	3	5100	590	.13	688	.16*
WBR	0	0	95		144	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .72 .70

116 . Cartwright Rd. at Main St.

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	49	.03*	96	.06*
NBT	1	1700	3	.00	4	.00
NBR	1	1700	168	.10	229	.13
SBL	2	3400	48	.01	133	.04
SBT	1	1700	1	.02*	4	.04*
SBR	0	0	29		66	
EBL	1	1700	98	.06*	39	.02
EBT	3	5100	508	.12	1601	.32*
EBR	0	0	92		47	
WBL	2	3400	117	.03	126	.04*
WBT	3	5100	857	.19*	713	.15
WBR	0	0	133		31	
Right Turn Adjustment					NBR	.04*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .35 .55

141 . Jamboree Rd. at Main St.

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	370	.11*	218	.06
NBT	4	6800	1291	.19	2577	.38*
NBR	f		408		713	
SBL	2	3400	342	.10	252	.07*
SBT	4	6800	2526	.37*	1612	.24
SBR	1	1700	228	.13	194	.11
EBL	2	3400	192	.06	538	.16
EBT	3	5100	317	.06*	1040	.20*
EBR	f		248		602	
WBL	2	3400	577	.17*	540	.16*
WBT	3	5100	630	.12	407	.08
WBR	f		147		348	
Clearance Interval				.05*		.05*
Note: Assumes Right-Turn Overlap for SBR						

TOTAL CAPACITY UTILIZATION .76 .86

143 . Jamboree Rd. at I-405 NB Ramps

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2011	.39*	3263	.64*
NBR	f		518		640	
SBL	0	0	0		0	
SBT	4	6800	1875	.28	1653	.24
SBR	f		1494		1084	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1474	.29*	792	.16*
WBT	0	0	0		0	
WBR	f		630		440	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .73 .85

144 . Jamboree Rd. at I-405 SB Ramps

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1355	.27	2670	.52*
NBR	f		383		862	
SBL	0	0	0		0	
SBT	4	6800	3098	.46*	1985	.29
SBR	f		223		504	
EBL	2	3400	1245	.37*	1266	.37*
EBT	0	0	0		0	
EBR	2	3400	1511	.44	667	.20
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.07*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .95 .94

70 . Gillette Av. at Main St.

2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	50	.01*	299	.09
NBT	1	1700	5	.00	129	.08*
NBR	1	1700	65	.04	372	.22
SBL	2	3400	54	.02	135	.04*
SBT	1	1700	73	.04*	9	.01
SBR	d	1700	163	.10	165	.10
EBL	2	3400	239	.07*	174	.05*
EBT	4	6800	1331	.20	1827	.27
EBR	f		385		90	
WBL	2	3400	252	.07	40	.01
WBT	3	5100	1316	.28*	1620	.34*
WBR	0	0	96		128	

Right Turn Adjustment SBR .01* Multi .08*
Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .46 .64

78 . MacArthur Bl. at Main St.

2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	770	.23*	719	.21*
NBT	4	6800	1160	.17	1427	.21
NBR	f		1470		638	
SBL	2	3400	535	.16	396	.12
SBT	4	6800	677	.10*	944	.14*
SBR	1	1700	108	.06	72	.04
EBL	1	1700	58	.03	133	.08
EBT	3	5100	945	.19*	936	.18*
EBR	1	1700	577	.34	653	.38
WBL	2	3400	397	.12*	734	.22*
WBT	3	5100	772	.15	1199	.24
WBR	f		301		641	

Clearance Interval .05* .05*
Note: Assumes Right-Turn Overlap for EBR

TOTAL CAPACITY UTILIZATION .69 .80

100 . Von Karman Av. at Main St.

2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	182	.05*	514	.15
NBT	2	3400	401	.12	1114	.33*
NBR	1	1700	118	.07	546	.32
SBL	1	1700	96	.06	121	.07*
SBT	2	3400	1103	.32*	463	.14
SBR	1	1700	424	.25	258	.15
EBL	2	3400	216	.06*	390	.11
EBT	3	5100	655	.13	1674	.33*
EBR	f		562		269	
WBL	2	3400	446	.13	117	.03*
WBT	3	5100	1044	.23*	1029	.23
WBR	0	0	113		156	

Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .71 .81

116 . Cartwright Rd. at Main St.

2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	32	.02*	136	.08*
NBT	1	1700	1	.00	12	.01
NBR	1	1700	37	.02	172	.10
SBL	2	3400	105	.03	135	.04
SBT	1	1700	5	.10*	2	.08*
SBR	0	0	160		132	
EBL	1	1700	95	.06*	146	.09
EBT	3	5100	729	.17	2253	.45*
EBR	0	0	125		25	
WBL	2	3400	159	.05	73	.02*
WBT	3	5100	1568	.33*	1062	.22
WBR	0	0	124		82	

Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .56 .68

141 . Jamboree Rd. at Main St.

2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	438	.13*	365	.11
NBT	5	8500	1393	.16	2686	.32*
NBR	1	1700	430	.25	583	.34
SBL	2	3400	402	.12	259	.08*
SBT	5	8500	2568	.30*	1759	.21
SBR	1	1700	369	.22	214	.13
EBL	2	3400	134	.04	684	.20
EBT	3	5100	418	.08*	1208	.24*
EBR	2	3400	368	.11	670	.20
WBL	2	3400	564	.17*	461	.14*
WBT	3	5100	833	.16	591	.12
WBR	1	1700	163	.10	370	.22

Clearance Interval .05* .05*
Note: Assumes Right-Turn Overlap for SBR

TOTAL CAPACITY UTILIZATION .73 .83

143 . Jamboree Rd. at I-405 NB Ramps

2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2118	.42*	3199	.63*
NBR	f		750		690	
SBL	0	0	0		0	
SBT	4	6800	1968	.29	1929	.28
SBR	f		1600		1000	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1522	.30*	871	.17*
WBT	0	0	0		0	
WBR	f		722		561	

Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .77 .85

144 . Jamboree Rd. at I-405 SB Ramps

2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1840	.36	2691	.53*
NBR	f		600		1290	
SBL	0	0	0		0	
SBT	4	6800	3157	.46*	2198	.32
SBR	f		300		630	
EBL	2	3400	1130	.33*	1249	.37*
EBT	0	0	0		0	
EBR	2	3400	1653	.49	1042	.31
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	

Right Turn Adjustment EBR .16*
Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION 1.00 .95

70 . Gillette Av. at Main St.

2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	50	.01*	297	.09
NBT	1	1700	5	.00	129	.08*
NBR	1	1700	66	.04	375	.22
SBL	2	3400	55	.02	137	.04*
SBT	1	1700	73	.04*	9	.01
SBR	d	1700	162	.10	164	.10
EBL	2	3400	237	.07*	173	.05*
EBT	4	6800	1329	.20	1839	.27
EBR	f		380		90	
WBL	2	3400	257	.08	41	.01
WBT	3	5100	1328	.28*	1619	.34*
WBR	0	0	99		128	
Right Turn Adjustment			SBR	.01*	Multi	.08*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .46 .64

78 . MacArthur Bl. at Main St.

2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	770	.23*	718	.21*
NBT	4	6800	1173	.17	1419	.21
NBR	f		1471		643	
SBL	2	3400	532	.16	401	.12
SBT	4	6800	672	.10*	946	.14*
SBR	1	1700	108	.06	73	.04
EBL	1	1700	59	.03	132	.08
EBT	3	5100	946	.19*	946	.19*
EBR	1	1700	577	.34	652	.38
WBL	2	3400	402	.12*	732	.22*
WBT	3	5100	782	.15	1199	.24
WBR	f		308		638	
Clearance Interval				.05*		.05*
Note: Assumes Right-Turn Overlap for EBR						

TOTAL CAPACITY UTILIZATION .69 .81

100 . Von Karman Av. at Main St.

2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	191	.06*	511	.15
NBT	2	3400	408	.12	1110	.33*
NBR	1	1700	121	.07	542	.32
SBL	1	1700	95	.06	122	.07*
SBT	2	3400	1096	.32*	469	.14
SBR	1	1700	429	.25	260	.15
EBL	2	3400	213	.06*	394	.12
EBT	3	5100	653	.13	1686	.33*
EBR	f		564		273	
WBL	2	3400	440	.13	118	.03*
WBT	3	5100	1050	.23*	1028	.23
WBR	0	0	110		156	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .72 .81

116 . Cartwright Rd. at Main St.

2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	32	.02*	136	.08*
NBT	1	1700	1	.00	12	.01
NBR	1	1700	36	.02	172	.10
SBL	2	3400	104	.03	135	.04
SBT	1	1700	5	.10*	2	.08*
SBR	0	0	161		132	
EBL	1	1700	95	.06*	146	.09
EBT	3	5100	730	.17	2263	.45*
EBR	0	0	126		25	
WBL	2	3400	158	.05	73	.02*
WBT	3	5100	1576	.33*	1062	.22
WBR	0	0	123		82	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .56 .68

141 . Jamboree Rd. at Main St.

2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	440	.13*	365	.11
NBT	5	8500	1393	.16	2686	.32*
NBR	1	1700	429	.25	583	.34
SBL	2	3400	401	.12	259	.08*
SBT	5	8500	2578	.30*	1759	.21
SBR	1	1700	369	.22	214	.13
EBL	2	3400	136	.04	684	.20
EBT	3	5100	422	.08*	1208	.24*
EBR	2	3400	372	.11	670	.20
WBL	2	3400	564	.17*	461	.14*
WBT	3	5100	833	.16	591	.12
WBR	1	1700	163	.10	370	.22
Clearance Interval				.05*		.05*
Note: Assumes Right-Turn Overlap for SBR						

TOTAL CAPACITY UTILIZATION .73 .83

143 . Jamboree Rd. at I-405 NB Ramps

2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2122	.42*	3199	.63*
NBR	f		750		690	
SBL	0	0	0		0	
SBT	4	6800	1981	.29	1929	.28
SBR	f		1600		1000	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1519	.30*	871	.17*
WBT	0	0	0		0	
WBR	f		728		561	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .77 .85

144 . Jamboree Rd. at I-405 SB Ramps

2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1837	.36	2700	.53*
NBR	f		601		1280	
SBL	0	0	0		0	
SBT	4	6800	3163	.47*	2194	.32
SBR	f		300		630	
EBL	2	3400	1136	.33*	1240	.36*
EBT	0	0	0		0	
EBR	2	3400	1653	.49	1046	.31
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.16*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION 1.01 .94

70 . Gillette Av. at Main St.

2023 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	49	.01*	296	.09
NBT	1	1700	5	.00	145	.09*
NBR	1	1700	65	.04	360	.21
SBL	2	3400	71	.02	160	.05*
SBT	1	1700	92	.05*	12	.01
SBR	d	1700	208	.12	199	.12
EBL	2	3400	268	.08*	199	.06*
EBT	4	6800	1334	.20	1800	.26
EBR	f		374		96	
WBL	2	3400	244	.07	43	.01
WBT	3	5100	1283	.27*	1615	.35*
WBR	0	0	107		145	

Right Turn Adjustment SBR .01* Multi .03*
Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .47 .63

78 . MacArthur Bl. at Main St.

2023 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	783	.23*	726	.21*
NBT	4	6800	1133	.17	1409	.21
NBR	f		1483		636	
SBL	2	3400	529	.16	392	.12
SBT	4	6800	654	.10*	945	.14*
SBR	1	1700	108	.06	73	.04
EBL	1	1700	58	.03	134	.08
EBT	3	5100	972	.19*	954	.19*
EBR	1	1700	580	.34	672	.40
WBL	2	3400	400	.12*	746	.22*
WBT	3	5100	801	.16	1224	.24
WBR	f		300		640	

Clearance Interval .05* .05*
Note: Assumes Right-Turn Overlap for EBR

TOTAL CAPACITY UTILIZATION .69 .81

100 . Von Karman Av. at Main St.

2023 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	184	.05*	507	.15
NBT	2	3400	405	.12	1113	.33*
NBR	1	1700	120	.07	530	.31
SBL	1	1700	99	.06	126	.07*
SBT	2	3400	1097	.32*	462	.14
SBR	1	1700	434	.26	272	.16
EBL	2	3400	218	.06*	399	.12
EBT	3	5100	672	.13	1664	.33*
EBR	f		559		257	
WBL	2	3400	418	.12	111	.03*
WBT	3	5100	1005	.22*	1031	.23
WBR	0	0	108		158	

Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .70 .81

116 . Cartwright Rd. at Main St.

2023 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	28	.02*	124	.07*
NBT	1	1700	1	.00	11	.01
NBR	1	1700	31	.02	154	.09
SBL	2	3400	102	.03	138	.04
SBT	1	1700	5	.10*	2	.08*
SBR	0	0	163		139	
EBL	1	1700	101	.06*	147	.09
EBT	3	5100	748	.17	2223	.44*
EBR	0	0	129		22	
WBL	2	3400	146	.04	66	.02*
WBT	3	5100	1509	.32*	1070	.23
WBR	0	0	118		82	

Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .55 .66

141 . Jamboree Rd. at Main St.

2023 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	453	.13*	344	.10
NBT	4	6800	1364	.20	2640	.39*
NBR	f		447		577	
SBL	2	3400	407	.12	261	.08*
SBT	4	6800	2525	.37*	1762	.26
SBR	1	1700	371	.22	206	.12
EBL	2	3400	117	.03	682	.20
EBT	3	5100	385	.08*	1212	.24*
EBR	f		329		667	
WBL	2	3400	566	.17*	471	.14*
WBT	3	5100	856	.17	580	.11
WBR	f		159		379	

Clearance Interval .05* .05*
Note: Assumes Right-Turn Overlap for SBR

TOTAL CAPACITY UTILIZATION .80 .90

143 . Jamboree Rd. at I-405 NB Ramps

2023 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2112	.41*	3146	.62*
NBR	f		710		700	
SBL	0	0	0		0	
SBT	4	6800	1954	.29	1948	.29
SBR	f		1530		1000	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1496	.29*	872	.17*
WBT	0	0	0		0	
WBR	f		738		544	

Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .75 .84

144 . Jamboree Rd. at I-405 SB Ramps

2023 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1753	.34	2670	.52*
NBR	f		620		1270	
SBL	0	0	0		0	
SBT	4	6800	3127	.46*	2207	.32
SBR	f		280		630	
EBL	2	3400	1167	.34*	1220	.36*
EBT	0	0	0		0	
EBR	2	3400	1593	.47	983	.29
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	

Right Turn Adjustment EBR .13*
Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .98 .93

70 . Gillette Av. at Main St.

2023 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	50	.01*	293	.09
NBT	1	1700	5	.00	145	.09*
NBR	1	1700	65	.04	362	.21
SBL	2	3400	70	.02	161	.05*
SBT	1	1700	91	.05*	12	.01
SBR	d	1700	210	.12	197	.12
EBL	2	3400	275	.08*	198	.06*
EBT	4	6800	1326	.20	1798	.26
EBR	f		375		95	
WBL	2	3400	244	.07	43	.01
WBT	3	5100	1300	.28*	1610	.34*
WBR	0	0	110		146	

Right Turn Adjustment SBR .01* Multi .03*
Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .48 .62

78 . MacArthur Bl. at Main St.

2023 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	780	.23	727	.21*
NBT	4	6800	1136	.17*	1417	.21
NBR	f		1485		637	
SBL	2	3400	529	.16*	392	.12
SBT	4	6800	643	.09	945	.14*
SBR	1	1700	107	.06	73	.04
EBL	1	1700	58	.03	134	.08
EBT	3	5100	966	.19*	954	.19*
EBR	1	1700	566	.33	672	.40
WBL	2	3400	401	.12*	746	.22*
WBT	3	5100	813	.16	1222	.24
WBR	f		307		642	

Clearance Interval .05* .05*
Note: Assumes Right-Turn Overlap for EBR

TOTAL CAPACITY UTILIZATION .69 .81

100 . Von Karman Av. at Main St.

2023 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	190	.06*	508	.15
NBT	2	3400	408	.12	1111	.33*
NBR	1	1700	122	.07	522	.31
SBL	1	1700	99	.06	123	.07*
SBT	2	3400	1092	.32*	465	.14
SBR	1	1700	439	.26	272	.16
EBL	2	3400	216	.06*	402	.12*
EBT	3	5100	669	.13	1655	.32
EBR	f		555		262	
WBL	2	3400	413	.12	112	.03
WBT	3	5100	1011	.22*	1031	.23*
WBR	0	0	106		158	

Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .71 .80

116 . Cartwright Rd. at Main St.

2023 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	28	.02*	125	.07*
NBT	1	1700	1	.00	12	.01
NBR	1	1700	31	.02	154	.09
SBL	2	3400	104	.03	139	.04
SBT	1	1700	5	.10*	2	.08*
SBR	0	0	161		139	
EBL	1	1700	100	.06*	152	.09
EBT	3	5100	755	.17	2198	.44*
EBR	0	0	123		22	
WBL	2	3400	142	.04	66	.02*
WBT	3	5100	1511	.32*	1066	.23
WBR	0	0	119		86	

Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .55 .66

141 . Jamboree Rd. at Main St.

2023 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	449	.13*	346	.10
NBT	4	6800	1364	.20	2643	.39*
NBR	f		448		583	
SBL	2	3400	407	.12	261	.08*
SBT	4	6800	2524	.37*	1763	.26
SBR	1	1700	368	.22	205	.12
EBL	2	3400	116	.03	675	.20
EBT	3	5100	385	.08*	1208	.24*
EBR	f		329		667	
WBL	2	3400	568	.17*	473	.14*
WBT	3	5100	853	.17	580	.11
WBR	f		160		376	

Clearance Interval .05* .05*
Note: Assumes Right-Turn Overlap for SBR

TOTAL CAPACITY UTILIZATION .80 .90

143 . Jamboree Rd. at I-405 NB Ramps

2023 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2107	.41*	3150	.62*
NBR	f		711		691	
SBL	0	0	0		0	
SBT	4	6800	1958	.29	1946	.29
SBR	f		1532		991	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1496	.29*	867	.17*
WBT	0	0	0		0	
WBR	f		736		555	

Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .75 .84

144 . Jamboree Rd. at I-405 SB Ramps

2023 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1763	.35	2669	.52*
NBR	f		620		1280	
SBL	0	0	0		0	
SBT	4	6800	3128	.46*	2204	.32
SBR	f		280		630	
EBL	2	3400	1157	.34*	1221	.36*
EBT	0	0	0		0	
EBR	2	3400	1602	.47	986	.29
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	

Right Turn Adjustment EBR .13*
Clearance Interval .05* .05*

TOTAL CAPACITY UTILIZATION .98 .93

70 . Gillette Av. at Main St.

2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	39	.01*	279	.08
NBT	1	1700	6	.00	134	.08*
NBR	1	1700	76	.04	388	.23
SBL	2	3400	71	.02	185	.05*
SBT	1	1700	79	.05*	13	.01
SBR	d	1700	140	.08	202	.12
EBL	2	3400	292	.09*	161	.05*
EBT	4	6800	1534	.23	1707	.25
EBR	f		369		86	
WBL	2	3400	273	.08	51	.02
WBT	3	5100	1131	.25*	1770	.38*
WBR	0	0	133		155	
Right Turn Adjustment					Multi	.04*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .45 .65

78 . MacArthur Bl. at Main St.

2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	777	.23	825	.24*
NBT	4	6800	1334	.20*	1665	.24
NBR	f		1470		611	
SBL	2	3400	631	.19*	418	.12
SBT	4	6800	1020	.15	1180	.17*
SBR	1	1700	129	.08	91	.05
EBL	1	1700	75	.04	152	.09
EBT	3	5100	1053	.21*	881	.17*
EBR	1	1700	822	.48	727	.43
WBL	2	3400	400	.12*	783	.23*
WBT	3	5100	616	.12	1294	.25
WBR	f		273		703	
Right Turn Adjustment			EBR	.03*	EBR	.02*
Clearance Interval				.05*		.05*
Note: Assumes Right-Turn Overlap for EBR						

TOTAL CAPACITY UTILIZATION .80 .88

100 . Von Karman Av. at Main St.

2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	197	.06*	558	.16
NBT	2	3400	592	.17	1217	.36*
NBR	1	1700	151	.09	608	.36
SBL	1	1700	100	.06	156	.09*
SBT	2	3400	1203	.35*	621	.18
SBR	1	1700	376	.22	324	.19
EBL	2	3400	277	.08*	374	.11*
EBT	3	5100	729	.14	1636	.32
EBR	f		654		274	
WBL	2	3400	503	.15	135	.04
WBT	3	5100	957	.22*	1108	.25*
WBR	0	0	141		169	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .76 .86

116 . Cartwright Rd. at Main St.

2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	31	.02*	158	.09*
NBT	1	1700	1	.00	14	.01
NBR	1	1700	38	.02	198	.12
SBL	2	3400	110	.03	139	.04
SBT	1	1700	6	.10*	3	.08*
SBR	0	0	156		138	
EBL	1	1700	102	.06*	148	.09
EBT	3	5100	832	.19	2293	.46*
EBR	0	0	142		31	
WBL	2	3400	172	.05	97	.03*
WBT	3	5100	1583	.34*	1154	.24
WBR	0	0	127		88	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .57 .71

141 . Jamboree Rd. at Main St.

2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	465	.14*	402	.12
NBT	4	6800	1632	.24	2868	.42*
NBR	f		479		622	
SBL	2	3400	452	.13	304	.09*
SBT	4	6800	2595	.38*	2026	.30
SBR	1	1700	394	.23	259	.15
EBL	2	3400	165	.05	723	.21
EBT	3	5100	489	.10*	1274	.25*
EBR	f		387		693	
WBL	2	3400	538	.16*	511	.15*
WBT	3	5100	841	.16	689	.14
WBR	f		182		419	
Clearance Interval				.05*		.05*
Note: Assumes Right-Turn Overlap for SBR						

TOTAL CAPACITY UTILIZATION .83 .96

143 . Jamboree Rd. at I-405 NB Ramps

2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2393	.47*	3467	.68*
NBR	f		940		960	
SBL	0	0	0		0	
SBT	4	6800	2055	.30	2300	.34
SBR	f		1520		970	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1705	.33*	1050	.21*
WBT	0	0	0		0	
WBR	f		787		543	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .85 .94

144 . Jamboree Rd. at I-405 SB Ramps

2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2266	.44	3281	.64*
NBR	f		660		1430	
SBL	0	0	0		0	
SBT	4	6800	3454	.51*	2756	.41
SBR	f		280		630	
EBL	2	3400	1164	.34*	1189	.35*
EBT	0	0	0		0	
EBR	2	3400	2016	.59	1164	.34
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.25*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION 1.15 1.04

70 . Gillette Av. at Main St.

2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	39	.01*	277	.08
NBT	1	1700	6	.00	133	.08*
NBR	1	1700	76	.04	390	.23
SBL	2	3400	69	.02	186	.05*
SBT	1	1700	76	.04*	13	.01
SBR	d	1700	136	.08	200	.12
EBL	2	3400	297	.09*	160	.05*
EBT	4	6800	1535	.23	1708	.25
EBR	f		367		86	
WBL	2	3400	277	.08	51	.02
WBT	3	5100	1146	.25*	1776	.38*
WBR	0	0	137		156	
Right Turn Adjustment					Multi	.04*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .44 .65

78 . MacArthur Bl. at Main St.

2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	780	.23	830	.24*
NBT	4	6800	1347	.20*	1660	.24
NBR	f		1473		610	
SBL	2	3400	630	.19*	416	.12
SBT	4	6800	1011	.15	1182	.17*
SBR	1	1700	129	.08	92	.05
EBL	1	1700	76	.04	152	.09
EBT	3	5100	1057	.21*	884	.17*
EBR	1	1700	818	.48	734	.43
WBL	2	3400	401	.12*	784	.23*
WBT	3	5100	621	.12	1298	.25
WBR	f		278		698	
Right Turn Adjustment			EBR	.03*	EBR	.02*
Clearance Interval				.05*		.05*
Note: Assumes Right-Turn Overlap for EBR						

TOTAL CAPACITY UTILIZATION .80 .88

100 . Von Karman Av. at Main St.

2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	207	.06*	561	.17
NBT	2	3400	599	.18	1211	.36*
NBR	1	1700	154	.09	608	.36
SBL	1	1700	99	.06	154	.09*
SBT	2	3400	1201	.35*	624	.18
SBR	1	1700	380	.22	322	.19
EBL	2	3400	274	.08*	372	.11*
EBT	3	5100	727	.14	1638	.32
EBR	f		660		279	
WBL	2	3400	500	.15	136	.04
WBT	3	5100	963	.22*	1107	.25*
WBR	0	0	137		167	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .76 .86

116 . Cartwright Rd. at Main St.

2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	35	.02*	155	.09*
NBT	1	1700	2	.00	14	.01
NBR	1	1700	43	.03	191	.11
SBL	2	3400	109	.03	138	.04
SBT	1	1700	5	.09*	3	.08*
SBR	0	0	156		139	
EBL	1	1700	102	.06*	149	.09
EBT	3	5100	828	.19	2301	.46*
EBR	0	0	139		31	
WBL	2	3400	166	.05	96	.03*
WBT	3	5100	1579	.33*	1155	.24
WBR	0	0	126		87	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .55 .71

141 . Jamboree Rd. at Main St.

2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	467	.14*	404	.12
NBT	4	6800	1632	.24	2863	.42*
NBR	f		474		618	
SBL	2	3400	446	.13	304	.09*
SBT	4	6800	2595	.38*	2025	.30
SBR	1	1700	396	.23	262	.15
EBL	2	3400	167	.05	728	.21
EBT	3	5100	490	.10*	1278	.25*
EBR	f		392		696	
WBL	2	3400	533	.16*	509	.15*
WBT	3	5100	837	.16	694	.14
WBR	f		180		419	
Clearance Interval				.05*		.05*
Note: Assumes Right-Turn Overlap for SBR						

TOTAL CAPACITY UTILIZATION .83 .96

143 . Jamboree Rd. at I-405 NB Ramps

2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2401	.47*	3471	.68*
NBR	f		940		960	
SBL	0	0	0		0	
SBT	4	6800	2056	.30	2304	.34
SBR	f		1520		970	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1704	.33*	1046	.21*
WBT	0	0	0		0	
WBR	f		779		539	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .85 .94

144 . Jamboree Rd. at I-405 SB Ramps

2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2259	.44	3280	.64*
NBR	f		670		1441	
SBL	0	0	0		0	
SBT	4	6800	3447	.51*	2755	.41
SBR	f		290		631	
EBL	2	3400	1171	.34*	1194	.35*
EBT	0	0	0		0	
EBR	2	3400	2033	.60	1169	.34
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.26*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION 1.16 1.04

70 . Gillette Av. at Main St.

2040 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	39	.01*	275	.08
NBT	1	1700	6	.00	138	.08*
NBR	1	1700	75	.04	387	.23
SBL	2	3400	82	.02	182	.05*
SBT	1	1700	90	.05*	13	.01
SBR	d	1700	167	.10	195	.11
EBL	2	3400	291	.09*	168	.05*
EBT	4	6800	1523	.22	1711	.25
EBR	f		360		86	
WBL	2	3400	270	.08	51	.02
WBT	3	5100	1163	.25*	1780	.38*
WBR	0	0	134		164	
Right Turn Adjustment					Multi	.03*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .45 .64

78 . MacArthur Bl. at Main St.

2040 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	777	.23	823	.24*
NBT	4	6800	1378	.20*	1694	.25
NBR	f		1446		624	
SBL	2	3400	635	.19*	423	.12
SBT	4	6800	1023	.15	1196	.18*
SBR	1	1700	132	.08	90	.05
EBL	1	1700	78	.05	151	.09
EBT	3	5100	1053	.21*	875	.17*
EBR	1	1700	819	.48	724	.43
WBL	2	3400	410	.12*	793	.23*
WBT	3	5100	644	.13	1278	.25
WBR	f		295		709	
Right Turn Adjustment				EBR .03*	EBR	.02*
Clearance Interval				.05*		.05*
Note: Assumes Right-Turn Overlap for EBR						

TOTAL CAPACITY UTILIZATION .80 .89

100 . Von Karman Av. at Main St.

2040 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	204	.06*	566	.17
NBT	2	3400	623	.18	1287	.38*
NBR	1	1700	163	.10	636	.37
SBL	1	1700	104	.06	162	.10*
SBT	2	3400	1239	.36*	641	.19
SBR	1	1700	376	.22	327	.19
EBL	2	3400	272	.08*	377	.11*
EBT	3	5100	734	.14	1632	.32
EBR	f		653		271	
WBL	2	3400	532	.16	138	.04
WBT	3	5100	982	.22*	1107	.25*
WBR	0	0	146		176	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .77 .89

116 . Cartwright Rd. at Main St.

2040 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	35	.02*	158	.09*
NBT	1	1700	2	.00	14	.01
NBR	1	1700	43	.03	198	.12
SBL	2	3400	109	.03	139	.04
SBT	1	1700	5	.09*	3	.08*
SBR	0	0	156		138	
EBL	1	1700	101	.06*	149	.09
EBT	3	5100	838	.19	2333	.46*
EBR	0	0	141		31	
WBL	2	3400	173	.05	96	.03*
WBT	3	5100	1629	.34*	1164	.25
WBR	0	0	128		88	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .56 .71

141 . Jamboree Rd. at Main St.

2040 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	469	.14*	398	.12
NBT	4	6800	1592	.23	2894	.43*
NBR	f		464		630	
SBL	2	3400	462	.14	320	.09*
SBT	4	6800	2657	.39*	2063	.30
SBR	1	1700	418	.25	266	.16
EBL	2	3400	169	.05	735	.22
EBT	3	5100	497	.10*	1300	.25*
EBR	f		394		685	
WBL	2	3400	533	.16*	512	.15*
WBT	3	5100	865	.17	696	.14
WBR	f		181		431	
Clearance Interval				.05*		.05*
Note: Assumes Right-Turn Overlap for SBR						

TOTAL CAPACITY UTILIZATION .84 .97

143 . Jamboree Rd. at I-405 NB Ramps

2040 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2350	.46*	3511	.69*
NBR	f		851		880	
SBL	0	0	0		0	
SBT	4	6800	2126	.31	2342	.34
SBR	f		1522		970	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1718	.34*	1058	.21*
WBT	0	0	0		0	
WBR	f		784		549	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .85 .95

144 . Jamboree Rd. at I-405 SB Ramps

2040 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2118	.42	3251	.64*
NBR	f		681		1490	
SBL	0	0	0		0	
SBT	4	6800	3531	.52*	2796	.41
SBR	f		290		640	
EBL	2	3400	1175	.35*	1179	.35*
EBT	0	0	0		0	
EBR	2	3400	2055	.60	1184	.35
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment				EBR .25*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION 1.17 1.04

70 . Gillette Av. at Main St.

2040 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	39	.01*	277	.08
NBT	1	1700	6	.00	138	.08*
NBR	1	1700	75	.04	385	.23
SBL	2	3400	82	.02	180	.05*
SBT	1	1700	90	.05*	13	.01
SBR	d	1700	168	.10	196	.12
EBL	2	3400	291	.09*	169	.05*
EBT	4	6800	1533	.23	1718	.25
EBR	f		360		86	
WBL	2	3400	270	.08	51	.02
WBT	3	5100	1173	.26*	1781	.38*
WBR	0	0	134		163	
Right Turn Adjustment					Multi	.04*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .46 .65

78 . MacArthur Bl. at Main St.

2040 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	779	.23*	832	.24*
NBT	4	6800	1377	.20	1693	.25
NBR	f		1454		625	
SBL	2	3400	620	.18	424	.12
SBT	4	6800	1002	.15*	1195	.18*
SBR	1	1700	128	.08	91	.05
EBL	1	1700	78	.05	151	.09
EBT	3	5100	1057	.21*	881	.17*
EBR	1	1700	825	.49	727	.43
WBL	2	3400	413	.12*	788	.23*
WBT	3	5100	643	.13	1287	.25
WBR	f		294		705	
Right Turn Adjustment			EBR	.05*	EBR	.02*
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for EBR

TOTAL CAPACITY UTILIZATION .81 .89

100 . Von Karman Av. at Main St.

2040 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	209	.06*	564	.17
NBT	2	3400	626	.18	1284	.38*
NBR	1	1700	164	.10	631	.37
SBL	1	1700	104	.06	163	.10*
SBT	2	3400	1235	.36*	648	.19
SBR	1	1700	381	.22	330	.19
EBL	2	3400	271	.08*	380	.11*
EBT	3	5100	734	.14	1636	.32
EBR	f		654		274	
WBL	2	3400	524	.15	138	.04
WBT	3	5100	983	.22*	1106	.25*
WBR	0	0	143		176	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .77 .89

116 . Cartwright Rd. at Main St.

2040 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	35	.02*	154	.09*
NBT	1	1700	2	.00	13	.01
NBR	1	1700	43	.03	194	.11
SBL	2	3400	110	.03	140	.04
SBT	1	1700	5	.09*	3	.08*
SBR	0	0	155		138	
EBL	1	1700	101	.06*	148	.09
EBT	3	5100	847	.19	2337	.46*
EBR	0	0	142		33	
WBL	2	3400	173	.05	104	.03*
WBT	3	5100	1620	.34*	1168	.25
WBR	0	0	127		88	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .56 .71

141 . Jamboree Rd. at Main St.

2040 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	463	.14*	399	.12
NBT	4	6800	1599	.24	2887	.42*
NBR	f		463		626	
SBL	2	3400	464	.14	318	.09*
SBT	4	6800	2666	.39*	2064	.30
SBR	1	1700	417	.25	267	.16
EBL	2	3400	170	.05	736	.22
EBT	3	5100	497	.10*	1297	.25*
EBR	f		393		688	
WBL	2	3400	535	.16*	508	.15*
WBT	3	5100	862	.17	694	.14
WBR	f		183		427	
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for SBR

TOTAL CAPACITY UTILIZATION .84 .96

143 . Jamboree Rd. at I-405 NB Ramps

2040 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2350	.46*	3505	.69*
NBR	f		851		880	
SBL	0	0	0		0	
SBT	4	6800	2136	.31	2346	.35
SBR	f		1512		970	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1728	.34*	1054	.21*
WBT	0	0	0		0	
WBR	f		784		545	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .85 .95

144 . Jamboree Rd. at I-405 SB Ramps

2040 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2131	.42	3247	.64*
NBR	f		680		1490	
SBL	0	0	0		0	
SBT	4	6800	3545	.52*	2798	.41
SBR	f		290		640	
EBL	2	3400	1169	.34*	1183	.35*
EBT	0	0	0		0	
EBR	2	3400	2055	.60	1182	.35
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.26*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION 1.17 1.04

70 . Gillette Av. at Main St.

P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	36	.01*	256	.08
NBT	1	1700	6	.00	134	.08*
NBR	1	1700	78	.05	412	.24
SBL	2	3400	71	.02	189	.06*
SBT	1	1700	80	.05*	13	.01
SBR	d	1700	128	.08	178	.10
EBL	2	3400	261	.08*	147	.04*
EBT	4	6800	1371	.20	1652	.24
EBR	f		333		78	
WBL	2	3400	297	.09	49	.01
WBT	3	5100	1105	.24*	1590	.34*
WBR	0	0	143		152	
Right Turn Adjustment					Multi	.06*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .43 .63

78 . MacArthur Bl. at Main St.

P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	684	.20*	758	.22*
NBT	4	6800	1227	.18	1603	.24
NBR	f		1408		649	
SBL	2	3400	585	.17	387	.11
SBT	4	6800	1025	.15*	1170	.17*
SBR	1	1700	110	.06	73	.04
EBL	1	1700	65	.04	126	.07
EBT	3	5100	957	.19*	804	.16*
EBR	1	1700	808	.48	710	.42
WBL	2	3400	426	.13*	830	.24*
WBT	3	5100	556	.11	1109	.22
WBR	f		258		631	
Right Turn Adjustment			EBR	.09*	EBR	.04*
Clearance Interval				.05*		.05*
Note: Assumes Right-Turn Overlap for EBR						

TOTAL CAPACITY UTILIZATION .81 .88

100 . Von Karman Av. at Main St.

P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	270	.08*	462	.14
NBT	2	3400	703	.21	1141	.34*
NBR	1	1700	217	.13	537	.32
SBL	1	1700	108	.06	145	.09*
SBT	2	3400	1116	.33*	704	.21
SBR	1	1700	385	.23	282	.17
EBL	2	3400	224	.07*	375	.11*
EBT	3	5100	714	.14	1548	.30
EBR	f		552		317	
WBL	2	3400	422	.12	169	.05
WBT	3	5100	885	.20*	1067	.25*
WBR	0	0	113		184	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .73 .84

116 . Cartwright Rd. at Main St.

P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	33	.02*	136	.08*
NBT	1	1700	2	.00	13	.01
NBR	1	1700	46	.03	172	.10
SBL	2	3400	117	.03	141	.04
SBT	1	1700	5	.09*	3	.08*
SBR	0	0	147		137	
EBL	1	1700	106	.06*	143	.08
EBT	3	5100	897	.20	2147	.43*
EBR	0	0	130		28	
WBL	2	3400	145	.04	99	.03*
WBT	3	5100	1400	.30*	1177	.25
WBR	0	0	122		94	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .52 .67

141 . Jamboree Rd. at Main St.

P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	403	.12*	419	.12
NBT	4	6800	1520	.22	2835	.42*
NBR	f		469		608	
SBL	2	3400	452	.13	281	.08*
SBT	4	6800	2605	.38*	1921	.28
SBR	1	1700	349	.21	256	.15
EBL	2	3400	164	.05	679	.20
EBT	3	5100	511	.10*	1183	.23*
EBR	f		405		659	
WBL	2	3400	544	.16*	493	.15*
WBT	3	5100	751	.15	696	.14
WBR	f		175		400	
Clearance Interval				.05*		.05*
Note: Assumes Right-Turn Overlap for SBR						

TOTAL CAPACITY UTILIZATION .81 .93

143 . Jamboree Rd. at I-405 NB Ramps

P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2186	.43*	3407	.67*
NBR	f		680		630	
SBL	0	0	0		0	
SBT	4	6800	2152	.32	2240	.33
SBR	f		1420		970	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1748	.34*	1220	.24*
WBT	0	0	0		0	
WBR	f		854		623	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .82 .96

144 . Jamboree Rd. at I-405 SB Ramps

P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1995	.39	2945	.58*
NBR	f		790		1532	
SBL	0	0	0		0	
SBT	4	6800	3491	.51*	2801	.41
SBR	f		375		691	
EBL	2.5		994	.29*	1069	[.23]*
EBT	0	8500	0		0	[.23]
EBR	2.5		1696	.33	1073	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.04*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .89 .86

70 . Gillette Av. at Main St.

P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	36	.01*	256	.08
NBT	1	1700	6	.00	134	.08*
NBR	1	1700	78	.05	412	.24
SBL	2	3400	71	.02	189	.06*
SBT	1	1700	80	.05*	13	.01
SBR	d	1700	129	.08	178	.10
EBL	2	3400	267	.08*	147	.04*
EBT	4	6800	1361	.20	1652	.24
EBR	f		332		78	
WBL	2	3400	298	.09	49	.01
WBT	3	5100	1114	.25*	1590	.34*
WBR	0	0	147		152	
Right Turn Adjustment					Multi	.06*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .44 .63

78 . MacArthur Bl. at Main St.

P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	689	.20*	760	.22*
NBT	4	6800	1227	.18	1619	.24
NBR	f		1404		650	
SBL	2	3400	584	.17	388	.11
SBT	4	6800	1035	.15*	1178	.17*
SBR	1	1700	111	.07	74	.04
EBL	1	1700	65	.04	127	.07
EBT	3	5100	952	.19*	802	.16*
EBR	1	1700	814	.48	712	.42
WBL	2	3400	431	.13*	830	.24*
WBT	3	5100	560	.11	1106	.22
WBR	f		258		634	
Right Turn Adjustment			EBR	.09*	EBR	.04*
Clearance Interval				.05*		.05*
Note: Assumes Right-Turn Overlap for EBR						

TOTAL CAPACITY UTILIZATION .81 .88

100 . Von Karman Av. at Main St.

P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	276	.08*	466	.14
NBT	2	3400	714	.21	1145	.34*
NBR	1	1700	220	.13	540	.32
SBL	1	1700	107	.06	143	.08*
SBT	2	3400	1116	.33*	708	.21
SBR	1	1700	387	.23	279	.16
EBL	2	3400	224	.07*	376	.11
EBT	3	5100	712	.14	1551	.30*
EBR	f		554		323	
WBL	2	3400	421	.12	170	.05*
WBT	3	5100	887	.20*	1058	.24
WBR	0	0	112		182	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .73 .82

116 . Cartwright Rd. at Main St.

P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	32	.02*	134	.08*
NBT	1	1700	2	.00	13	.01
NBR	1	1700	46	.03	174	.10
SBL	2	3400	119	.04	142	.04
SBT	1	1700	5	.09*	3	.08*
SBR	0	0	146		135	
EBL	1	1700	104	.06*	142	.08
EBT	3	5100	894	.20	2144	.43*
EBR	0	0	128		28	
WBL	2	3400	147	.04	100	.03*
WBT	3	5100	1401	.30*	1181	.25
WBR	0	0	124		96	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .52 .67

141 . Jamboree Rd. at Main St.

P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	407	.12*	423	.12
NBT	4	6800	1525	.22	2826	.42*
NBR	f		471		606	
SBL	2	3400	448	.13	283	.08*
SBT	4	6800	2610	.38*	1927	.28
SBR	1	1700	349	.21	261	.15
EBL	2	3400	164	.05	677	.20
EBT	3	5100	509	.10*	1180	.23*
EBR	f		408		655	
WBL	2	3400	545	.16*	488	.14*
WBT	3	5100	751	.15	697	.14
WBR	f		174		397	
Clearance Interval				.05*		.05*
Note: Assumes Right-Turn Overlap for SBR						

TOTAL CAPACITY UTILIZATION .81 .92

143 . Jamboree Rd. at I-405 NB Ramps

P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2186	.43*	3402	.67*
NBR	f		681		630	
SBL	0	0	0		0	
SBT	4	6800	2160	.32	2237	.33
SBR	f		1422		970	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1744	.34*	1223	.24*
WBT	0	0	0		0	
WBR	f		857		618	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .82 .96

144 . Jamboree Rd. at I-405 SB Ramps

P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1996	.39	2943	.58*
NBR	f		790		1533	
SBL	0	0	0		0	
SBT	4	6800	3490	.51*	2801	.41
SBR	f		375		691	
EBL	2.5		1003	.29*	1065	[.23]*
EBT	0	8500	0		0	[.23]
EBR	2.5		1687	.33	1077	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.04*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .89 .86

70 . Gillette Av. at Main St.

P2040 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	37	.01*	249	.07
NBT	1	1700	6	.00	143	.08*
NBR	1	1700	77	.05	409	.24
SBL	2	3400	84	.02	186	.05*
SBT	1	1700	92	.05*	12	.01
SBR	d	1700	154	.09	171	.10
EBL	2	3400	260	.08*	160	.05*
EBT	4	6800	1369	.20	1669	.25
EBR	f		325		78	
WBL	2	3400	293	.09	50	.01
WBT	3	5100	1139	.25*	1593	.35*
WBR	0	0	144		167	
Right Turn Adjustment					NBR	.05*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .44 .63

78 . MacArthur Bl. at Main St.

P2040 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	698	.21*	778	.23*
NBT	4	6800	1238	.18	1633	.24
NBR	f		1423		669	
SBL	2	3400	576	.17	386	.11
SBT	4	6800	1046	.15*	1182	.17*
SBR	1	1700	109	.06	73	.04
EBL	1	1700	64	.04	126	.07
EBT	3	5100	941	.18*	815	.16*
EBR	1	1700	825	.49	730	.43
WBL	2	3400	460	.14*	839	.25*
WBT	3	5100	583	.11	1100	.22
WBR	f		268		622	
Right Turn Adjustment				EBR	.10*	EBR .04*
Clearance Interval					.05*	.05*
Note: Assumes Right-Turn Overlap for EBR						

TOTAL CAPACITY UTILIZATION .83 .90

100 . Von Karman Av. at Main St.

P2040 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	263	.08*	464	.14
NBT	2	3400	723	.21	1201	.35*
NBR	1	1700	215	.13	555	.33
SBL	1	1700	114	.07	154	.09*
SBT	2	3400	1173	.35*	735	.22
SBR	1	1700	402	.24	292	.17
EBL	2	3400	235	.07*	385	.11
EBT	3	5100	721	.14	1561	.31*
EBR	f		554		313	
WBL	2	3400	433	.13	172	.05*
WBT	3	5100	905	.20*	1074	.25
WBR	0	0	122		194	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .75 .85

116 . Cartwright Rd. at Main St.

P2040 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	33	.02*	136	.08*
NBT	1	1700	2	.00	12	.01
NBR	1	1700	46	.03	173	.10
SBL	2	3400	118	.03	141	.04
SBT	1	1700	5	.09*	3	.08*
SBR	0	0	147		137	
EBL	1	1700	104	.06*	143	.08
EBT	3	5100	906	.20	2187	.43*
EBR	0	0	132		28	
WBL	2	3400	153	.05	99	.03*
WBT	3	5100	1441	.31*	1197	.25
WBR	0	0	124		94	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .53 .67

141 . Jamboree Rd. at Main St.

P2040 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	411	.12*	425	.13
NBT	4	6800	1531	.23	2887	.42*
NBR	f		470		609	
SBL	2	3400	450	.13	285	.08*
SBT	4	6800	2635	.39*	1950	.29
SBR	1	1700	354	.21	263	.15
EBL	2	3400	164	.05	697	.21
EBT	3	5100	507	.10*	1196	.23*
EBR	f		409		667	
WBL	2	3400	544	.16*	493	.15*
WBT	3	5100	753	.15	701	.14
WBR	f		173		405	
Clearance Interval				.05*		.05*
Note: Assumes Right-Turn Overlap for SBR						

TOTAL CAPACITY UTILIZATION .82 .93

143 . Jamboree Rd. at I-405 NB Ramps

P2040 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2188	.43*	3458	.68*
NBR	f		680		630	
SBL	0	0	0		0	
SBT	4	6800	2211	.33	2279	.34
SBR	f		1410		970	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1769	.35*	1231	.24*
WBT	0	0	0		0	
WBR	f		862		632	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .83 .97

144 . Jamboree Rd. at I-405 SB Ramps

P2040 Pending NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2006	.39	3006	.59*
NBR	f		809		1590	
SBL	0	0	0		0	
SBT	4	6800	3562	.52*	2849	.42
SBR	f		384		700	
EBL	2.5		985	.29*	1054	[.23]*
EBT	0	8500	0		0	[.23]
EBR	2.5		1704	.33	1101	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment				EBR	.04*	
Clearance Interval					.05*	.05*

TOTAL CAPACITY UTILIZATION .90 .87

70 . Gillette Av. at Main St.

P2040 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	37	.01*	248	.07
NBT	1	1700	6	.00	141	.08*
NBR	1	1700	77	.05	413	.24
SBL	2	3400	83	.02	187	.06*
SBT	1	1700	92	.05*	12	.01
SBR	d	1700	155	.09	170	.10
EBL	2	3400	260	.08*	157	.05*
EBT	4	6800	1369	.20	1674	.25
EBR	f		325		78	
WBL	2	3400	293	.09	50	.01
WBT	3	5100	1148	.25*	1595	.35*
WBR	0	0	144		166	
Right Turn Adjustment					NBR	.05*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .44 .64

78 . MacArthur Bl. at Main St.

P2040 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	698	.21*	774	.23*
NBT	4	6800	1238	.18	1634	.24
NBR	f		1423		671	
SBL	2	3400	576	.17	386	.11
SBT	4	6800	1046	.15*	1182	.17*
SBR	1	1700	109	.06	72	.04
EBL	1	1700	64	.04	126	.07
EBT	3	5100	941	.18*	815	.16*
EBR	1	1700	825	.49	730	.43
WBL	2	3400	460	.14*	841	.25*
WBT	3	5100	583	.11	1096	.21
WBR	f		268		623	
Right Turn Adjustment				EBR	.10*	EBR .04*
Clearance Interval					.05*	.05*
Note: Assumes Right-Turn Overlap for EBR						

TOTAL CAPACITY UTILIZATION .83 .90

100 . Von Karman Av. at Main St.

P2040 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	272	.08*	469	.14
NBT	2	3400	730	.21	1200	.35*
NBR	1	1700	219	.13	560	.33
SBL	1	1700	113	.07	151	.09*
SBT	2	3400	1162	.34*	740	.22
SBR	1	1700	403	.24	289	.17
EBL	2	3400	234	.07*	384	.11
EBT	3	5100	721	.14	1565	.31*
EBR	f		555		321	
WBL	2	3400	430	.13	173	.05*
WBT	3	5100	910	.20*	1066	.25
WBR	0	0	119		191	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .74 .85

116 . Cartwright Rd. at Main St.

P2040 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	32	.02*	134	.08*
NBT	1	1700	2	.00	12	.01
NBR	1	1700	46	.03	174	.10
SBL	2	3400	120	.04	142	.04
SBT	1	1700	5	.09*	3	.08*
SBR	0	0	145		135	
EBL	1	1700	103	.06*	142	.08
EBT	3	5100	914	.20	2184	.43*
EBR	0	0	126		28	
WBL	2	3400	149	.04	99	.03*
WBT	3	5100	1443	.31*	1191	.25
WBR	0	0	125		96	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .53 .67

141 . Jamboree Rd. at Main St.

P2040 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	409	.12*	427	.13
NBT	4	6800	1534	.23	2892	.43*
NBR	f		469		612	
SBL	2	3400	449	.13	285	.08*
SBT	4	6800	2637	.39*	1951	.29
SBR	1	1700	352	.21	262	.15
EBL	2	3400	165	.05	693	.20
EBT	3	5100	512	.10*	1192	.23*
EBR	f		413		665	
WBL	2	3400	546	.16*	494	.15*
WBT	3	5100	750	.15	701	.14
WBR	f		174		405	
Clearance Interval				.05*		.05*
Note: Assumes Right-Turn Overlap for SBR						

TOTAL CAPACITY UTILIZATION .82 .94

143 . Jamboree Rd. at I-405 NB Ramps

P2040 Pending WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2196	.43*	3471	.68*
NBR	f		681		630	
SBL	0	0	0		0	
SBT	4	6800	2209	.32	2283	.34
SBR	f		1412		970	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	3	5100	1775	.35*	1237	.24*
WBT	0	0	0		0	
WBR	f		857		629	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .83 .97

144 . Jamboree Rd. at I-405 SB Ramps

P2040 Pending WP

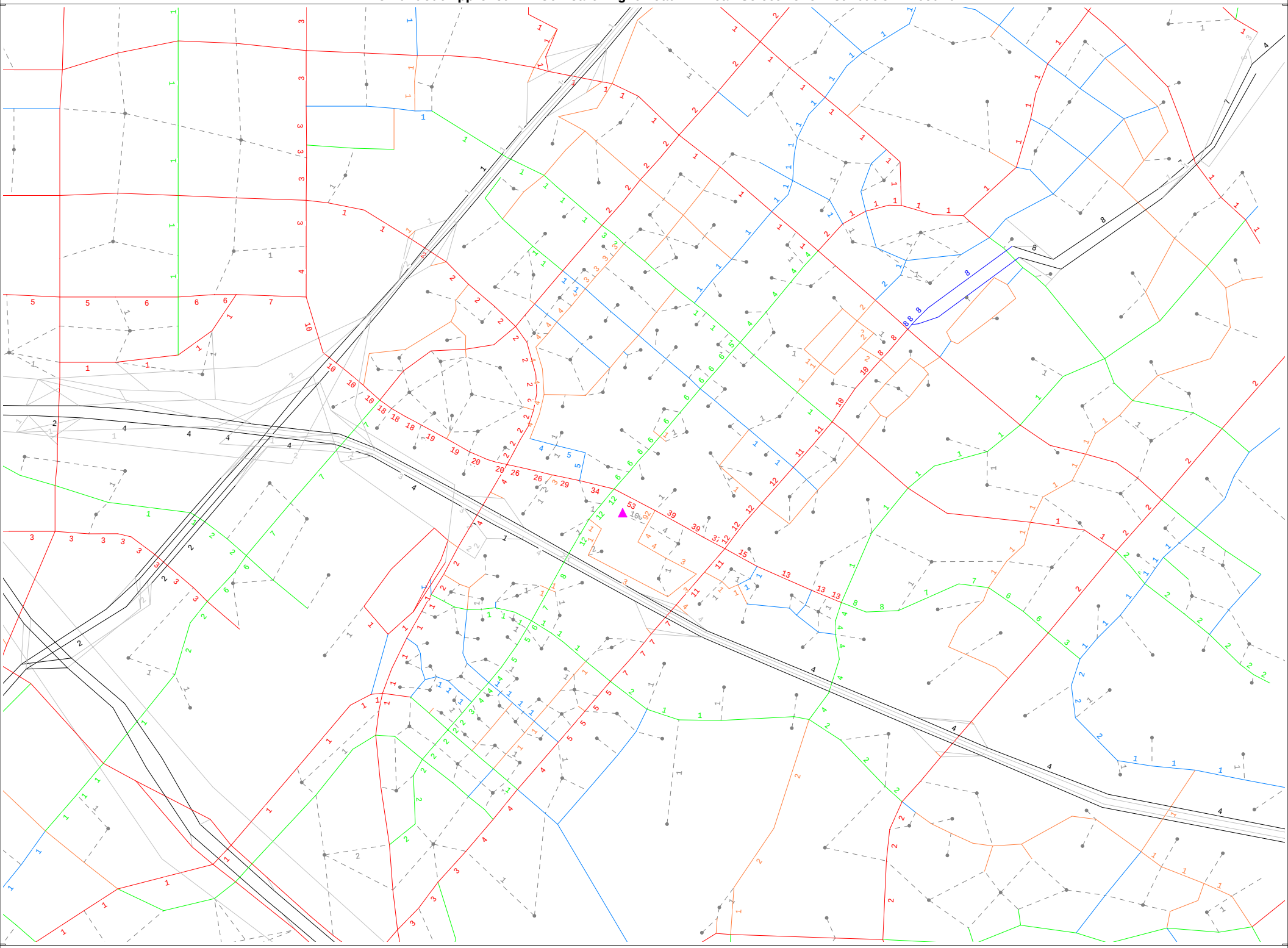
	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	2015	.40	3004	.59*
NBR	f		810		1590	
SBL	0	0	0		0	
SBT	4	6800	3571	.53*	2854	.42
SBR	f		385		700	
EBL	2.5		983	.29*	1066	[.23]*
EBT	0	8500	0		0	[.23]
EBR	2.5		1706	.33	1096	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment				EBR	.04*	
Clearance Interval					.05*	.05*

TOTAL CAPACITY UTILIZATION .91 .87

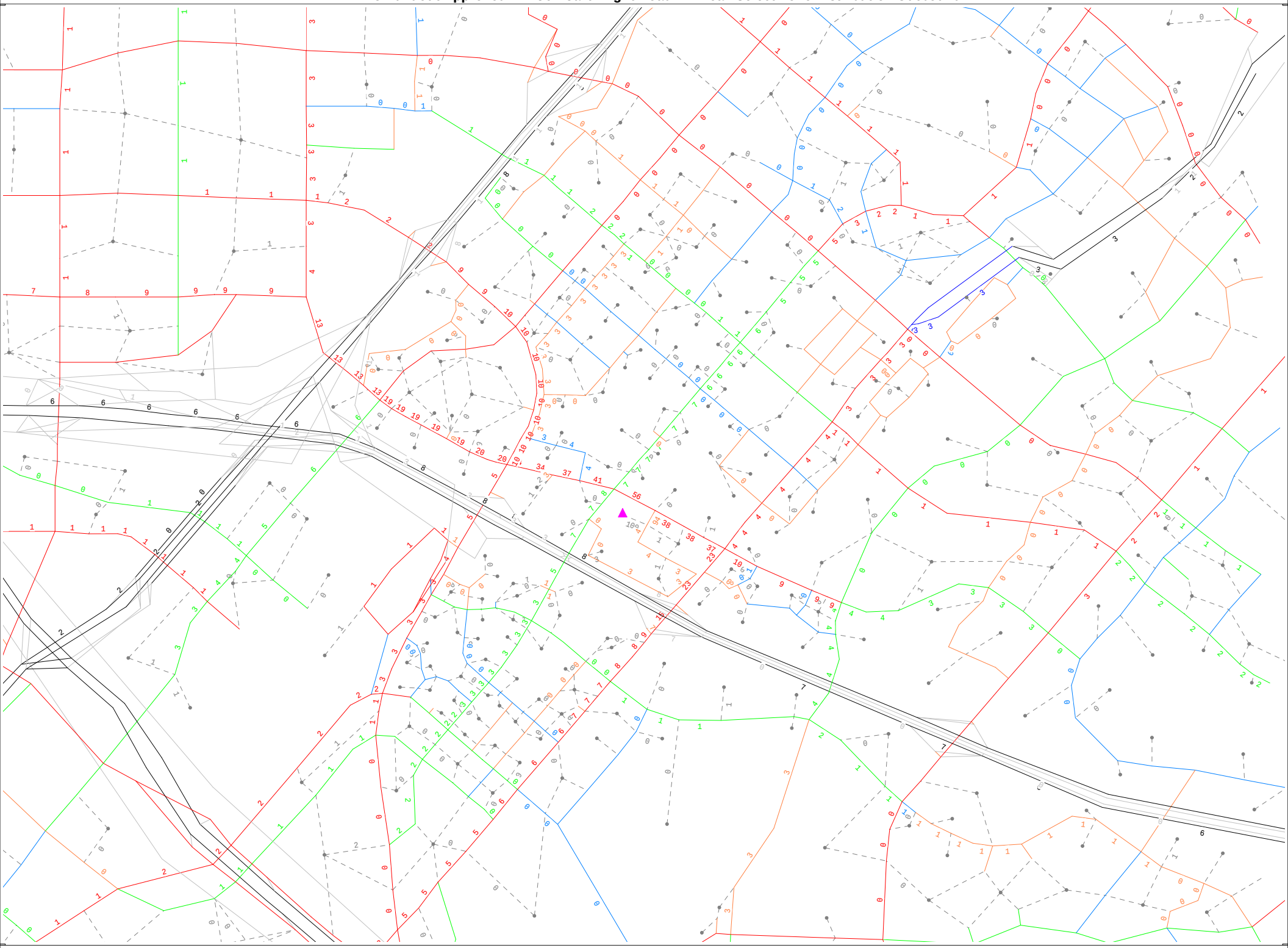
APPENDIX C

ITAM SELECT ZONE ASSIGNMENTS

ITAM 15 Buildout Approved - 17861 Cartwright Road AM Peak Select Zone Distribution Inbound



ITAM 15 Buildout Approved - 17861 Cartwright Road AM Peak Select Zone Distribution Outbound



cube

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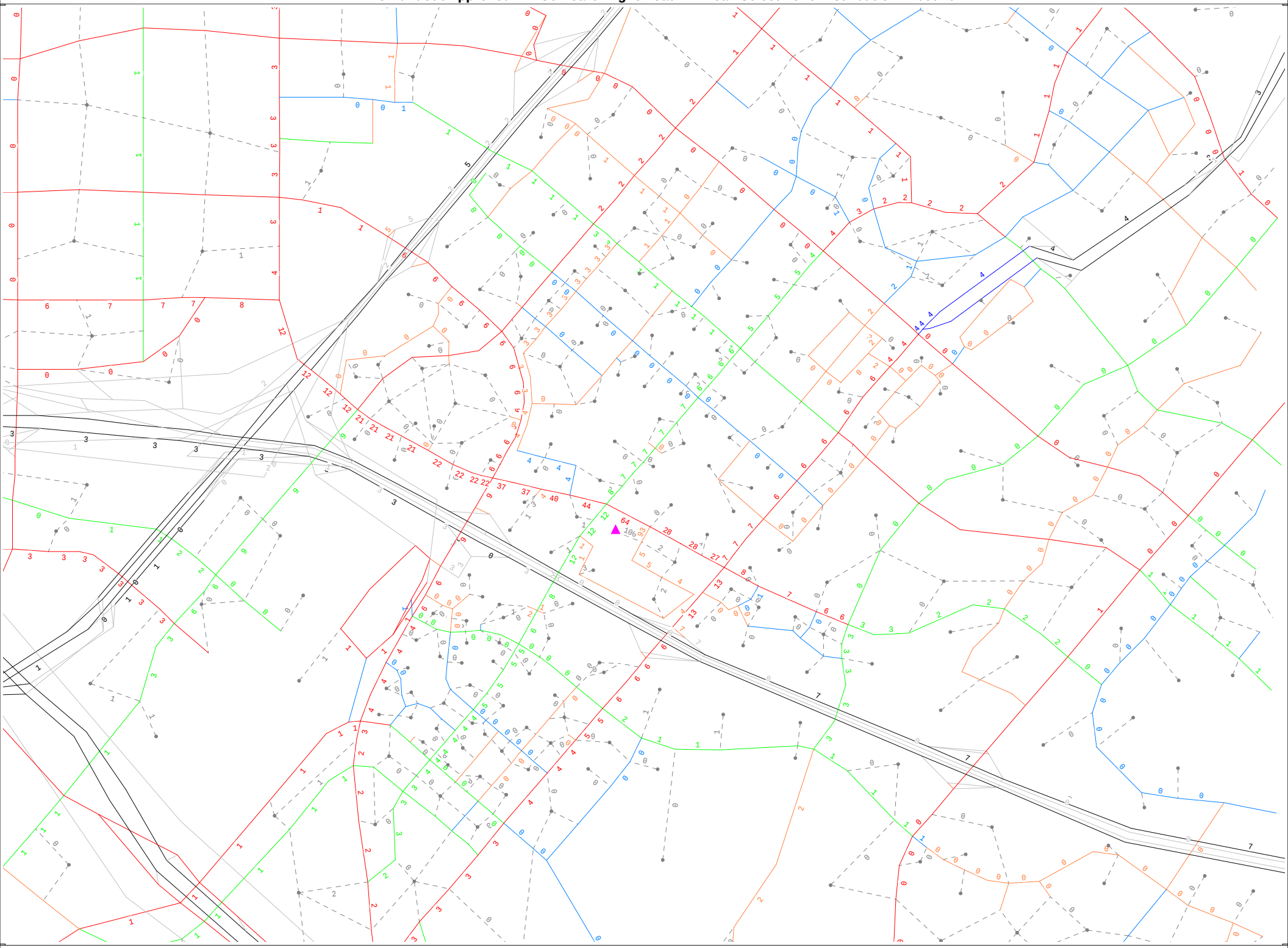
ITAM 15 Buildout Approved - 17861 Cartwright Road PM Peak Select Zone Distribution Inbound



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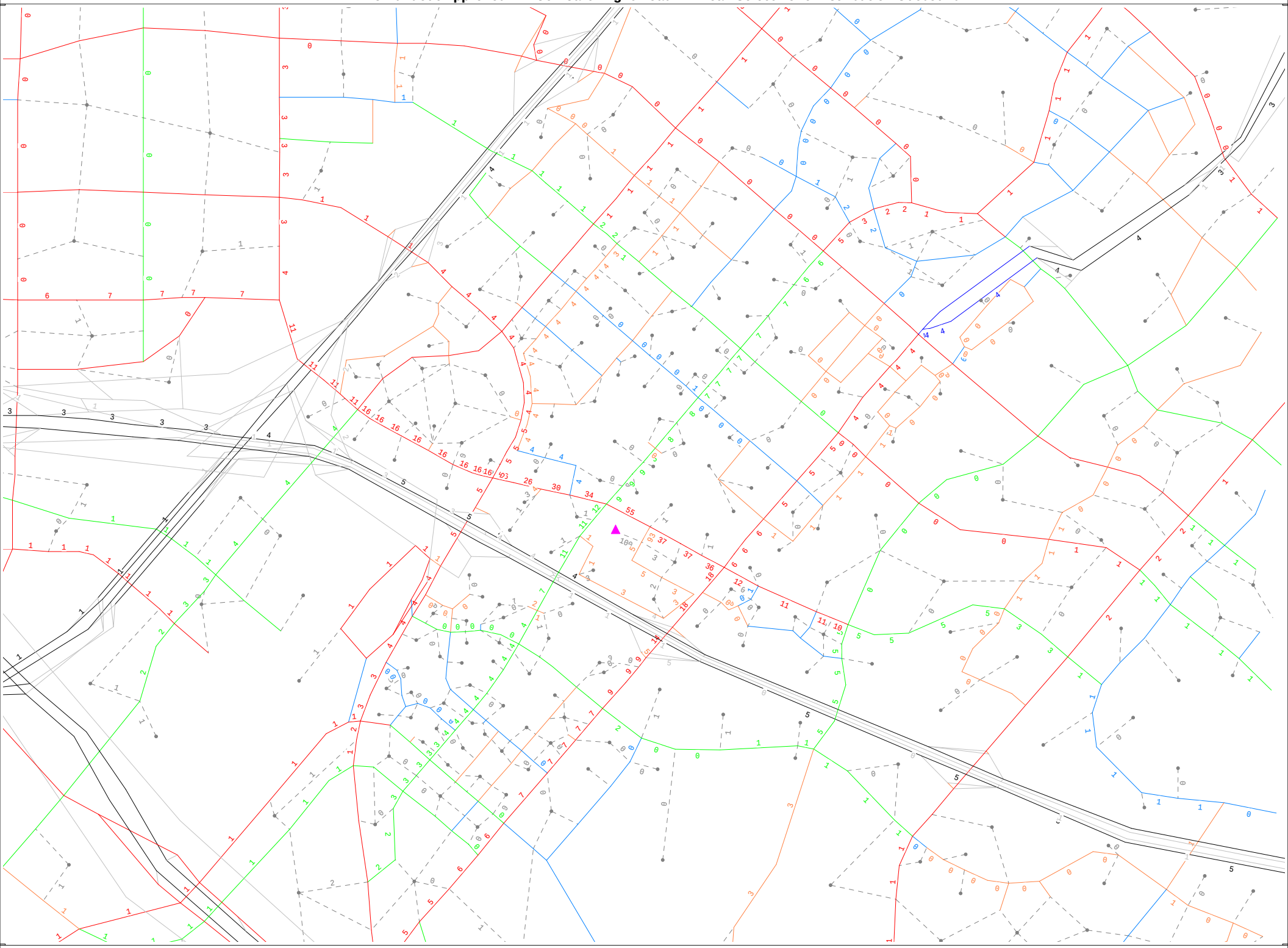
ITAM 15 Buildout Approved - 17861 Cartwright Road PM Peak Select Zone Distribution Outbound



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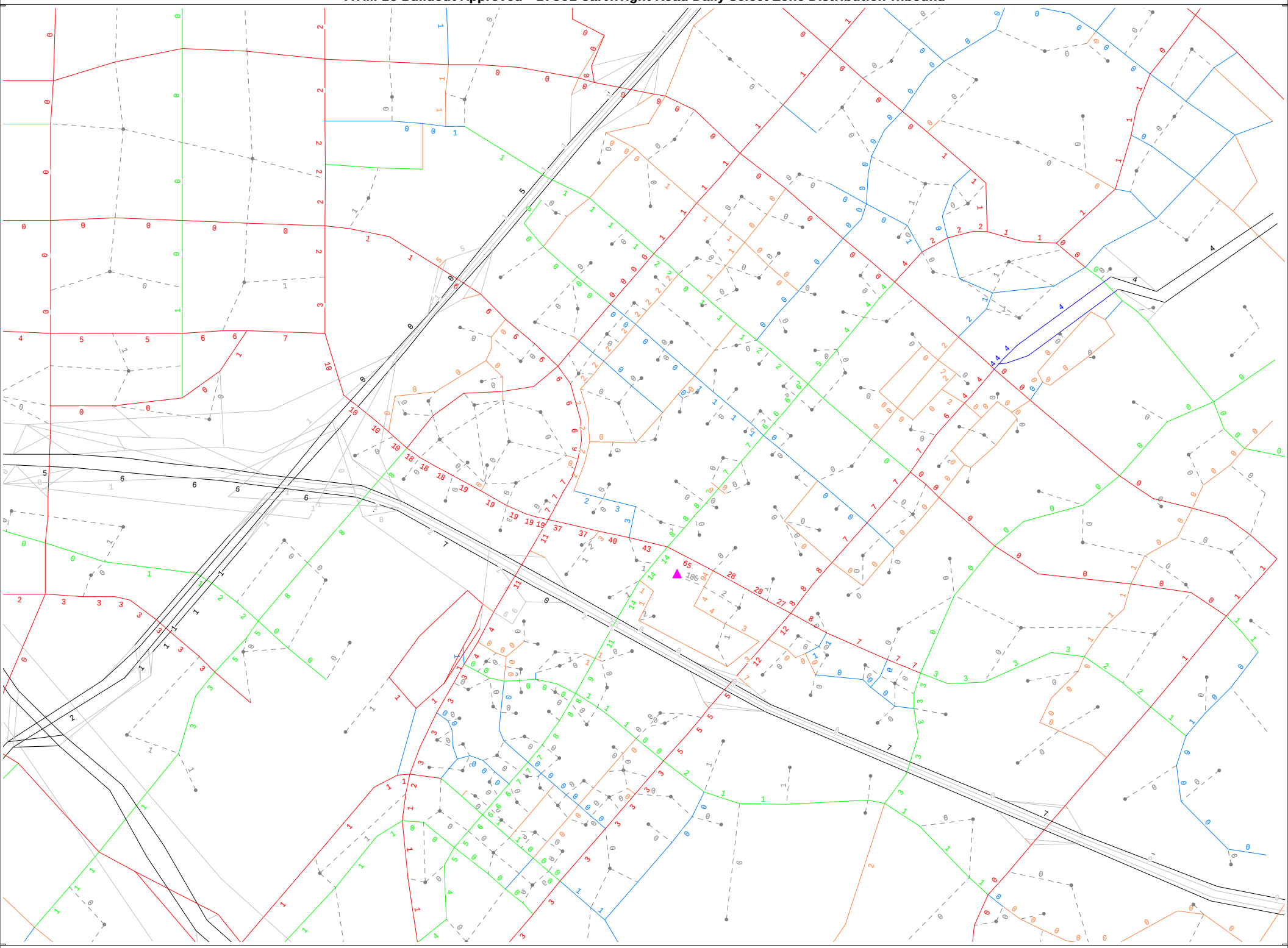
ITAM 15 Buildout Approved - 17861 Cartwright Road Daily Select Zone Distribution Inbound



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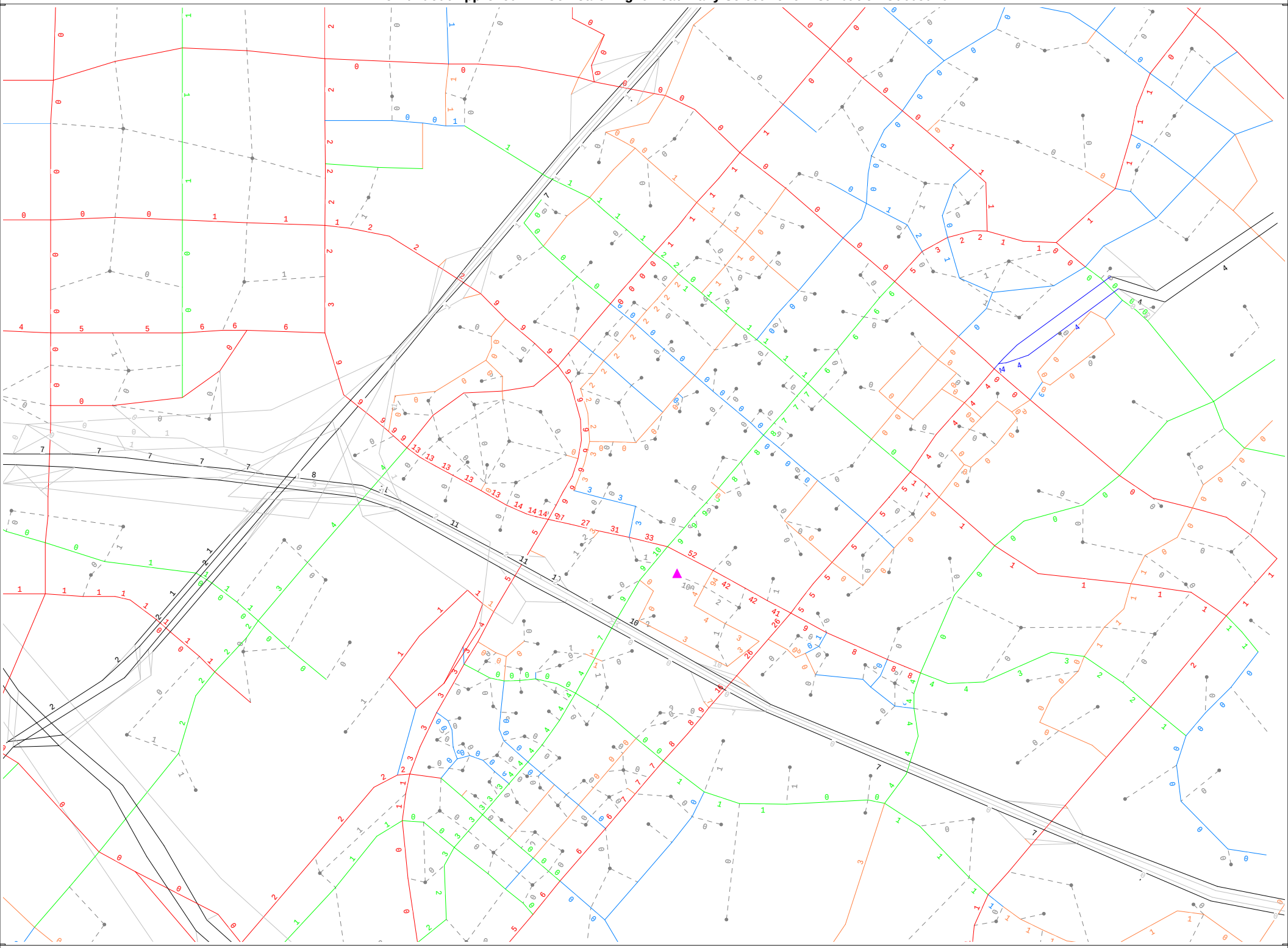
ITAM 15 Buildout Approved - 17861 Cartwright Road Daily Select Zone Distribution Outbound



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APPENDIX D

EXISTING TRAFFIC COUNTS

Existing Intersection Turning Movement Counts

		Turn Movements																							
		AM Peak Hour												PM Peak Hour											
Intersection		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	Gillette Avenue/Main Street																								
	2018	60	6	58	28	17	94	274	1,016	422	195	669	131	300	84	318	160	22	296	184	1,350	108	34	1,196	72
	2020	**62**	**6**	**60**	**29**	**18**	**98**	**285**	**1,057**	**439**	**203**	**696**	**136**	**312**	**87**	**331**	**166**	**23**	**308**	**191**	**1,404**	**112**	**35**	**1,244**	**75**
2	MacArthur Boulevard/Main Street																								
	2018	676	892	1,232	408	482	68	47	841	530	250	452	192	676	1,058	572	284	763	60	84	818	656	690	1,192	500
	2020	**703**	**928**	**1,281**	**424**	**501**	**71**	**49**	**875**	**551**	**260**	**470**	**200**	**703**	**1,100**	**595**	**295**	**794**	**62**	**87**	**851**	**682**	**718**	**1,240**	**520**
3	Von Karman Avenue/Main Street																								
	2018	186	350	114	121	1,122	379	168	578	436	329	595	91	411	962	442	126	469	257	399	1,159	244	94	660	138
	2020	**193**	**364**	**119**	**126**	**1,167**	**394**	**175**	**601**	**453**	**342**	**619**	**95**	**427**	**1,000**	**460**	**131**	**488**	**267**	**415**	**1,205**	**254**	**98**	**686**	**144**
4	Cartwright Road/Main Street																								
	2018	47	1	74	46	0	28	94	490	88	112	860	131	93	3	181	130	1	64	38	1,600	46	86	684	31
	2020	**49**	**1**	**77**	**48**	**0**	**29**	**98**	**510**	**92**	**116**	**894**	**136**	**97**	**3**	**188**	**135**	**1**	**67**	**40**	**1,664**	**48**	**89**	**711**	**32**
5	Jamboree Road/Main Street																								
	2018	366	1,242	390	326	2,434	234	126	296	230	550	633	142	209	2,486	672	242	1,549	162	521	1,025	586	516	392	334
	2020	**381**	**1,292**	**406**	**339**	**2,531**	**243**	**131**	**308**	**239**	**572**	**658**	**148**	**217**	**2,585**	**699**	**252**	**1,611**	**168**	**542**	**1,066**	**609**	**537**	**408**	**347**
6	Jamboree Road/I-405 NB Ramps																								
	2018	0	1,936	499	0	1,799	1,433	0	0	0	1,417	0	613	0	3,129	617	0	1,593	1,041	0	0	0	764	0	419
	2020	**0**	**2,013**	**519**	**0**	**1,871**	**1,490**	**0**	**0**	**0**	**1,474**	**0**	**638**	**0**	**3,254**	**642**	**0**	**1,657**	**1,083**	**0**	**0**	**0**	**795**	**0**	**436**
7	Jamboree Road/I-405 SB Ramps																								
	2018	0	1,302	371	0	2,985	205	1,201	0	1,449	0	0	0	0	2,561	828	0	1,911	489	1,217	0	638	0	0	0
	2020	**0**	**1,354**	**386**	**0**	**3,104**	**213**	**1,249**	**0**	**1,507**	**0**	**0**	**0**	**0**	**2,663**	**861**	**0**	**1,987**	**509**	**1,266**	**0**	**664**	**0**	**0**	**0**

Existing Roadway ADT Counts

	Roadway Segment	2018 ADT	2020 ADT
1	Jamboree Road from Main Street to I-405 NB Ramps	71,800	**74,700**
2	Jamboree Road from I-405 NB Ramps to I-405 SB Ramps	73,400	**76,300**
3	Main Street from MacArthur Boulevard to Gillette Avenue	32,500	**33,800**
4	Main Street from Gillette Avenue to Von Karman Avenue	32,500	**33,800**
5	Main Street from Von Karman Avenue to Cartwright Road	21,400	**22,300**
6	Main Street from Cartwright Road to Jamboree Road	21,400	**22,300**
7	Cartwright Road south of Main Street (2015 count)	2,900	**3,200**

*2018 counts obtained from the 2020 Citywide Circulation Phasing Analysis.

A 2 percent per year growth rate has been applied to the 2018 counts (4 percent total growth) to represent 2020 conditions.

APPENDIX E

HCM WORKSHEETS

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1474	0	638	0	2013	519	0	1871	1490
Future Volume (veh/h)	0	0	0	1474	0	638	0	2013	519	0	1871	1490
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1520	0	0	0	2075	0	0	1929	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1751	0		0	2355		0	2967	
Arrive On Green				0.39	0.00	0.00	0.00	0.52	0.00	0.00	0.52	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1520	0	0	0	2075	0	0	1929	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				31.2	0.0	0.0	0.0	40.3	0.0	0.0	24.4	0.0
Cycle Q Clear(g_c), s				31.2	0.0	0.0	0.0	40.3	0.0	0.0	24.4	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1751	0		0	2355		0	2967	
V/C Ratio(X)				0.87	0.00		0.00	0.88		0.00	0.65	
Avail Cap(c_a), veh/h				2157	0		0	2355		0	2967	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.62	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				28.2	0.0	0.0	0.0	21.5	0.0	0.0	17.7	0.0
Incr Delay (d2), s/veh				3.4	0.0	0.0	0.0	3.3	0.0	0.0	1.1	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
%ile BackOfQ(50%),veh/ln				10.8	0.0	0.0	0.0	13.0	0.0	0.0	7.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.6	0.0	0.0	0.0	24.8	0.0	0.0	18.8	0.0
LnGrp LOS				C	A		A	C		A	B	
Approach Vol, veh/h					1520	A		2075	A		1929	A
Approach Delay, s/veh					31.6			24.8			18.8	
Approach LOS					C			C			B	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		57.0				57.0		43.0				
Change Period (Y+Rc), s		5.5				5.5		4.0				
Max Green Setting (Gmax), s		42.5				42.5		48.0				
Max Q Clear Time (g_c+I1), s		42.3				26.4		33.2				
Green Ext Time (p_c), s		0.2				11.1		5.8				

Intersection Summary			
HCM 6th Ctrl Delay			24.6
HCM 6th LOS			C

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1249	0	1507	0	0	0	0	1354	386	0	3104	213
Future Volume (veh/h)	1249	0	1507	0	0	0	0	1354	386	0	3104	213
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1262	0	1522				0	1426	0	0	3135	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1458	0	1177				0	3084		0	2652	
Arrive On Green	0.47	0.00	0.47				0.00	0.46	0.00	0.00	0.46	0.00
Sat Flow, veh/h	3092	0	2496				0	6694	1418	0	5991	1418
Grp Volume(v), veh/h	1262	0	1522				0	1426	0	0	3135	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	51.0	0.0	66.0				0.0	20.4	0.0	0.0	64.5	0.0
Cycle Q Clear(g_c), s	51.0	0.0	66.0				0.0	20.4	0.0	0.0	64.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1458	0	1177				0	3084		0	2652	
V/C Ratio(X)	0.87	0.00	1.29				0.00	0.46		0.00	1.18	
Avail Cap(c_a), veh/h	1458	0	1177				0	3084		0	2652	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.57	0.00
Uniform Delay (d), s/veh	33.0	0.0	37.0				0.0	25.9	0.0	0.0	37.8	0.0
Incr Delay (d2), s/veh	5.7	0.0	138.5				0.0	0.5	0.0	0.0	84.4	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
%ile BackOfQ(50%),veh/ln	19.3	0.0	41.5				0.0	7.9	0.0	0.0	36.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.8	0.0	175.5				0.0	26.4	0.0	0.0	122.1	0.0
LnGrp LOS	D	A	F				A	C		A	F	
Approach Vol, veh/h		2784						1426	A		3135	A
Approach Delay, s/veh		113.5						26.4			122.1	
Approach LOS		F						C			F	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		70.0		70.0		70.0						
Change Period (Y+Rc), s		5.5		4.0		5.5						
Max Green Setting (Gmax), s		64.5		66.0		64.5						
Max Q Clear Time (g_c+I1), s		22.4		68.0		66.5						
Green Ext Time (p_c), s		12.4		0.0		0.0						

Intersection Summary			
HCM 6th Ctrl Delay			100.3
HCM 6th LOS			F

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

08/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	795	0	436	0	3254	642	0	1657	1083
Future Volume (veh/h)	0	0	0	795	0	436	0	3254	642	0	1657	1083
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				820	0	0	0	3355	0	0	1708	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				970	0		0	3221		0	4059	
Arrive On Green				0.22	0.00	0.00	0.00	0.71	0.00	0.00	0.71	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				820	0	0	0	3355	0	0	1708	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				21.0	0.0	0.0	0.0	84.6	0.0	0.0	14.9	0.0
Cycle Q Clear(g_c), s				21.0	0.0	0.0	0.0	84.6	0.0	0.0	14.9	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				970	0		0	3221		0	4059	
V/C Ratio(X)				0.85	0.00		0.00	1.04		0.00	0.42	
Avail Cap(c_a), veh/h				1461	0		0	3221		0	4059	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				45.1	0.0	0.0	0.0	17.7	0.0	0.0	7.4	0.0
Incr Delay (d2), s/veh				3.0	0.0	0.0	0.0	19.9	0.0	0.0	0.3	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
%ile BackOfQ(50%),veh/ln				7.8	0.0	0.0	0.0	28.0	0.0	0.0	3.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				48.2	0.0	0.0	0.0	37.6	0.0	0.0	7.7	0.0
LnGrp LOS				D	A		A	F		A	A	
Approach Vol, veh/h					820	A		3355	A		1708	A
Approach Delay, s/veh					48.2			37.6			7.7	
Approach LOS					D			D			A	

Timer - Assigned Phs	2		6	8
Phs Duration (G+Y+Rc), s	90.1		90.1	29.9
Change Period (Y+Rc), s	5.5		5.5	4.0
Max Green Setting (Gmax), s	71.5		71.5	39.0
Max Q Clear Time (g_c+I1), s	86.6		16.9	23.0
Green Ext Time (p_c), s	0.0		17.7	2.9

Intersection Summary		
HCM 6th Ctrl Delay		30.4
HCM 6th LOS		C

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

08/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1266	0	664	0	0	0	0	2663	861	0	1987	509
Future Volume (veh/h)	1266	0	664	0	0	0	0	2663	861	0	1987	509
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1279	0	671				0	2927	0	0	2007	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1092	0	882				0	3905		0	3358	
Arrive On Green	0.35	0.00	0.35				0.00	0.58	0.00	0.00	0.58	0.00
Sat Flow, veh/h	3092	0	2496				0	6694	1418	0	5991	1418
Grp Volume(v), veh/h	1279	0	671				0	2927	0	0	2007	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	53.0	0.0	35.7				0.0	48.6	0.0	0.0	33.5	0.0
Cycle Q Clear(g_c), s	53.0	0.0	35.7				0.0	48.6	0.0	0.0	33.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1092	0	882				0	3905		0	3358	
V/C Ratio(X)	1.17	0.00	0.76				0.00	0.75		0.00	0.60	
Avail Cap(c_a), veh/h	1092	0	882				0	3905		0	3358	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.84	0.00
Uniform Delay (d), s/veh	48.5	0.0	42.9				0.0	23.1	0.0	0.0	20.0	0.0
Incr Delay (d2), s/veh	86.8	0.0	3.9				0.0	1.4	0.0	0.0	0.7	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
%ile BackOfQ(50%),veh/ln	32.9	0.0	11.2				0.0	18.0	0.0	0.0	10.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	135.3	0.0	46.8				0.0	24.5	0.0	0.0	20.7	0.0
LnGrp LOS	F	A	D				A	C		A	C	
Approach Vol, veh/h		1950						2927	A		2007	A
Approach Delay, s/veh		104.9						24.5			20.7	
Approach LOS		F						C			C	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	93.0	57.0	93.0
Change Period (Y+Rc), s	5.5	4.0	5.5
Max Green Setting (Gmax), s	87.5	53.0	87.5
Max Q Clear Time (g_c+I1), s	50.6	55.0	35.5
Green Ext Time (p_c), s	31.3	0.0	23.3

Intersection Summary		
HCM 6th Ctrl Delay		46.1
HCM 6th LOS		D

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1474	0	630	0	2011	518	0	1875	1494
Future Volume (veh/h)	0	0	0	1474	0	630	0	2011	518	0	1875	1494
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1520	0	0	0	2073	0	0	1933	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1751	0		0	2355		0	2967	
Arrive On Green				0.39	0.00	0.00	0.00	0.52	0.00	0.00	0.52	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1520	0	0	0	2073	0	0	1933	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				31.2	0.0	0.0	0.0	40.3	0.0	0.0	24.5	0.0
Cycle Q Clear(g_c), s				31.2	0.0	0.0	0.0	40.3	0.0	0.0	24.5	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1751	0		0	2355		0	2967	
V/C Ratio(X)				0.87	0.00		0.00	0.88		0.00	0.65	
Avail Cap(c_a), veh/h				2157	0		0	2355		0	2967	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.63	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				28.2	0.0	0.0	0.0	21.5	0.0	0.0	17.7	0.0
Incr Delay (d2), s/veh				3.4	0.0	0.0	0.0	3.3	0.0	0.0	1.1	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
%ile BackOfQ(50%),veh/ln				10.8	0.0	0.0	0.0	13.0	0.0	0.0	7.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.6	0.0	0.0	0.0	24.8	0.0	0.0	18.8	0.0
LnGrp LOS				C	A		A	C		A	B	
Approach Vol, veh/h					1520	A		2073	A		1933	A
Approach Delay, s/veh					31.6			24.8			18.8	
Approach LOS					C			C			B	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		57.0				57.0		43.0				
Change Period (Y+Rc), s		5.5				5.5		4.0				
Max Green Setting (Gmax), s		42.5				42.5		48.0				
Max Q Clear Time (g_c+I1), s		42.3				26.5		33.2				
Green Ext Time (p_c), s		0.2				11.1		5.8				

Intersection Summary			
HCM 6th Ctrl Delay			24.6
HCM 6th LOS			C

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1245	0	1511	0	0	0	0	1355	383	0	3098	223
Future Volume (veh/h)	1245	0	1511	0	0	0	0	1355	383	0	3098	223
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1258	0	1526				0	1423	0	0	3129	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1458	0	1177				0	3084		0	2652	
Arrive On Green	0.47	0.00	0.47				0.00	0.46	0.00	0.00	0.46	0.00
Sat Flow, veh/h	3092	0	2496				0	6694	1418	0	5991	1418
Grp Volume(v), veh/h	1258	0	1526				0	1423	0	0	3129	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	50.8	0.0	66.0				0.0	20.4	0.0	0.0	64.5	0.0
Cycle Q Clear(g_c), s	50.8	0.0	66.0				0.0	20.4	0.0	0.0	64.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1458	0	1177				0	3084		0	2652	
V/C Ratio(X)	0.86	0.00	1.30				0.00	0.46		0.00	1.18	
Avail Cap(c_a), veh/h	1458	0	1177				0	3084		0	2652	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.57	0.00
Uniform Delay (d), s/veh	33.0	0.0	37.0				0.0	25.9	0.0	0.0	37.8	0.0
Incr Delay (d2), s/veh	5.6	0.0	140.0				0.0	0.5	0.0	0.0	83.4	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
%ile BackOfQ(50%),veh/ln	19.1	0.0	41.8				0.0	7.9	0.0	0.0	36.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.6	0.0	177.0				0.0	26.4	0.0	0.0	121.1	0.0
LnGrp LOS	D	A	F				A	C		A	F	
Approach Vol, veh/h		2784						1423	A		3129	A
Approach Delay, s/veh		114.4						26.4			121.1	
Approach LOS		F						C			F	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		70.0		70.0		70.0						
Change Period (Y+Rc), s		5.5		4.0		5.5						
Max Green Setting (Gmax), s		64.5		66.0		64.5						
Max Q Clear Time (g_c+I1), s		22.4		68.0		66.5						
Green Ext Time (p_c), s		12.4		0.0		0.0						

Intersection Summary			
HCM 6th Ctrl Delay			100.2
HCM 6th LOS			F

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	792	0	440	0	3263	640	0	1653	1084
Future Volume (veh/h)	0	0	0	792	0	440	0	3263	640	0	1653	1084
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				816	0	0	0	3364	0	0	1704	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				966	0		0	3225		0	4064	
Arrive On Green				0.21	0.00	0.00	0.00	0.71	0.00	0.00	0.71	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				816	0	0	0	3364	0	0	1704	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				20.9	0.0	0.0	0.0	84.7	0.0	0.0	14.8	0.0
Cycle Q Clear(g_c), s				20.9	0.0	0.0	0.0	84.7	0.0	0.0	14.8	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				966	0		0	3225		0	4064	
V/C Ratio(X)				0.84	0.00		0.00	1.04		0.00	0.42	
Avail Cap(c_a), veh/h				1461	0		0	3225		0	4064	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				45.2	0.0	0.0	0.0	17.6	0.0	0.0	7.4	0.0
Incr Delay (d2), s/veh				3.0	0.0	0.0	0.0	20.5	0.0	0.0	0.3	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
%ile BackOfQ(50%),veh/ln				7.8	0.0	0.0	0.0	28.2	0.0	0.0	3.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				48.2	0.0	0.0	0.0	38.1	0.0	0.0	7.7	0.0
LnGrp LOS				D	A		A	F		A	A	
Approach Vol, veh/h					816	A		3364	A		1704	A
Approach Delay, s/veh					48.2			38.1			7.7	
Approach LOS					D			D			A	

Timer - Assigned Phs	2		6		8	
Phs Duration (G+Y+Rc), s	90.2		90.2		29.8	
Change Period (Y+Rc), s	5.5		5.5		4.0	
Max Green Setting (Gmax), s	71.5		71.5		39.0	
Max Q Clear Time (g_c+I1), s	86.7		16.8		22.9	
Green Ext Time (p_c), s	0.0		17.6		2.9	

Intersection Summary		
HCM 6th Ctrl Delay		30.7
HCM 6th LOS		C

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1266	0	667	0	0	0	0	2670	862	0	1985	504
Future Volume (veh/h)	1266	0	667	0	0	0	0	2670	862	0	1985	504
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1279	0	674				0	2933	0	0	2005	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1092	0	882				0	3905		0	3358	
Arrive On Green	0.35	0.00	0.35				0.00	0.58	0.00	0.00	0.58	0.00
Sat Flow, veh/h	3092	0	2496				0	6694	1418	0	5991	1418
Grp Volume(v), veh/h	1279	0	674				0	2933	0	0	2005	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	53.0	0.0	35.9				0.0	48.7	0.0	0.0	33.4	0.0
Cycle Q Clear(g_c), s	53.0	0.0	35.9				0.0	48.7	0.0	0.0	33.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1092	0	882				0	3905		0	3358	
V/C Ratio(X)	1.17	0.00	0.76				0.00	0.75		0.00	0.60	
Avail Cap(c_a), veh/h	1092	0	882				0	3905		0	3358	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.84	0.00
Uniform Delay (d), s/veh	48.5	0.0	43.0				0.0	23.2	0.0	0.0	20.0	0.0
Incr Delay (d2), s/veh	86.8	0.0	4.0				0.0	1.4	0.0	0.0	0.7	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
%ile BackOfQ(50%),veh/ln	32.9	0.0	11.3				0.0	18.1	0.0	0.0	10.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	135.3	0.0	47.0				0.0	24.5	0.0	0.0	20.6	0.0
LnGrp LOS	F	A	D				A	C		A	C	
Approach Vol, veh/h		1953						2933	A		2005	A
Approach Delay, s/veh		104.8						24.5			20.6	
Approach LOS		F						C			C	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		93.0		57.0		93.0
Change Period (Y+Rc), s		5.5		4.0		5.5
Max Green Setting (Gmax), s		87.5		53.0		87.5
Max Q Clear Time (g_c+I1), s		50.7		55.0		35.4
Green Ext Time (p_c), s		31.3		0.0		23.3

Intersection Summary		
HCM 6th Ctrl Delay		46.2
HCM 6th LOS		D

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

08/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1522	0	722	0	2118	750	0	1968	1600
Future Volume (veh/h)	0	0	0	1522	0	722	0	2118	750	0	1968	1600
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1569	0	0	0	2184	0	0	2029	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1797	0		0	2308		0	2909	
Arrive On Green				0.40	0.00	0.00	0.00	0.51	0.00	0.00	0.51	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1569	0	0	0	2184	0	0	2029	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				32.2	0.0	0.0	0.0	45.3	0.0	0.0	26.9	0.0
Cycle Q Clear(g_c), s				32.2	0.0	0.0	0.0	45.3	0.0	0.0	26.9	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1797	0		0	2308		0	2909	
V/C Ratio(X)				0.87	0.00		0.00	0.95		0.00	0.70	
Avail Cap(c_a), veh/h				2157	0		0	2308		0	2909	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.48	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				27.7	0.0	0.0	0.0	23.4	0.0	0.0	18.9	0.0
Incr Delay (d2), s/veh				3.7	0.0	0.0	0.0	5.4	0.0	0.0	1.4	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
%ile BackOfQ(50%),veh/ln				11.1	0.0	0.0	0.0	15.0	0.0	0.0	8.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.4	0.0	0.0	0.0	28.8	0.0	0.0	20.3	0.0
LnGrp LOS				C	A		A	C		A	C	
Approach Vol, veh/h					1569	A		2184	A		2029	A
Approach Delay, s/veh					31.4			28.8			20.3	
Approach LOS					C			C			C	

Timer - Assigned Phs	2		6	8
Phs Duration (G+Y+Rc), s	56.0		56.0	44.0
Change Period (Y+Rc), s	5.5		5.5	4.0
Max Green Setting (Gmax), s	42.5		42.5	48.0
Max Q Clear Time (g_c+I1), s	47.3		28.9	34.2
Green Ext Time (p_c), s	0.0		10.2	5.8

Intersection Summary		
HCM 6th Ctrl Delay		26.5
HCM 6th LOS		C

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

08/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1130	0	1653	0	0	0	0	1840	600	0	3157	300
Future Volume (veh/h)	1130	0	1653	0	0	0	0	1840	600	0	3157	300
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1141	0	1670				0	2028	0	0	3189	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1458	0	1177				0	3084		0	2652	
Arrive On Green	0.47	0.00	0.47				0.00	0.46	0.00	0.00	0.46	0.00
Sat Flow, veh/h	3092	0	2496				0	6694	1418	0	5991	1418
Grp Volume(v), veh/h	1141	0	1670				0	2028	0	0	3189	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	43.3	0.0	66.0				0.0	32.8	0.0	0.0	64.5	0.0
Cycle Q Clear(g_c), s	43.3	0.0	66.0				0.0	32.8	0.0	0.0	64.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1458	0	1177				0	3084		0	2652	
V/C Ratio(X)	0.78	0.00	1.42				0.00	0.66		0.00	1.20	
Avail Cap(c_a), veh/h	1458	0	1177				0	3084		0	2652	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.52	0.00
Uniform Delay (d), s/veh	31.0	0.0	37.0				0.0	29.2	0.0	0.0	37.8	0.0
Incr Delay (d2), s/veh	2.9	0.0	193.7				0.0	1.1	0.0	0.0	93.1	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
%ile BackOfQ(50%),veh/ln	15.9	0.0	50.5				0.0	12.7	0.0	0.0	38.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.8	0.0	230.7				0.0	30.3	0.0	0.0	130.9	0.0
LnGrp LOS	C	A	F				A	C		A	F	
Approach Vol, veh/h		2811						2028	A		3189	A
Approach Delay, s/veh		150.8						30.3			130.9	
Approach LOS		F						C			F	

Timer - Assigned Phs	2		4		6
Phs Duration (G+Y+Rc), s	70.0		70.0		70.0
Change Period (Y+Rc), s	5.5		4.0		5.5
Max Green Setting (Gmax), s	64.5		66.0		64.5
Max Q Clear Time (g_c+I1), s	34.8		68.0		66.5
Green Ext Time (p_c), s	17.8		0.0		0.0

Intersection Summary		
HCM 6th Ctrl Delay		112.4
HCM 6th LOS		F

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

08/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	871	0	561	0	3199	690	0	1929	1000
Future Volume (veh/h)	0	0	0	871	0	561	0	3199	690	0	1929	1000
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				898	0	0	0	3298	0	0	1989	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1050	0		0	3140		0	3956	
Arrive On Green				0.23	0.00	0.00	0.00	0.69	0.00	0.00	0.69	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				898	0	0	0	3298	0	0	1989	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				23.0	0.0	0.0	0.0	82.5	0.0	0.0	19.8	0.0
Cycle Q Clear(g_c), s				23.0	0.0	0.0	0.0	82.5	0.0	0.0	19.8	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1050	0		0	3140		0	3956	
V/C Ratio(X)				0.86	0.00		0.00	1.05		0.00	0.50	
Avail Cap(c_a), veh/h				1461	0		0	3140		0	3956	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				44.0	0.0	0.0	0.0	18.8	0.0	0.0	9.0	0.0
Incr Delay (d2), s/veh				3.8	0.0	0.0	0.0	23.7	0.0	0.0	0.5	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
%ile BackOfQ(50%),veh/ln				8.6	0.0	0.0	0.0	29.2	0.0	0.0	5.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				47.8	0.0	0.0	0.0	42.5	0.0	0.0	9.4	0.0
LnGrp LOS				D	A		A	F		A	A	
Approach Vol, veh/h					898	A		3298	A		1989	A
Approach Delay, s/veh					47.8			42.5			9.4	
Approach LOS					D			D			A	

Timer - Assigned Phs	2		6		8	
Phs Duration (G+Y+Rc), s	88.0		88.0		32.0	
Change Period (Y+Rc), s	5.5		5.5		4.0	
Max Green Setting (Gmax), s	71.5		71.5		39.0	
Max Q Clear Time (g_c+I1), s	84.5		21.8		25.0	
Green Ext Time (p_c), s	0.0		22.5		3.1	

Intersection Summary		
HCM 6th Ctrl Delay		32.6
HCM 6th LOS		C

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

08/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1249	0	1042	0	0	0	0	2691	1290	0	2198	630
Future Volume (veh/h)	1249	0	1042	0	0	0	0	2691	1290	0	2198	630
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1262	0	1053				0	2537	0	0	2220	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1092	0	882				0	2929		0	3358	
Arrive On Green	0.35	0.00	0.35				0.00	0.58	0.00	0.00	0.58	0.00
Sat Flow, veh/h	3092	0	2496				0	5020	2836	0	5991	1418
Grp Volume(v), veh/h	1262	0	1053				0	2537	0	0	2220	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	53.0	0.0	53.0				0.0	63.8	0.0	0.0	39.2	0.0
Cycle Q Clear(g_c), s	53.0	0.0	53.0				0.0	63.8	0.0	0.0	39.2	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1092	0	882				0	2929		0	3358	
V/C Ratio(X)	1.16	0.00	1.19				0.00	0.87		0.00	0.66	
Avail Cap(c_a), veh/h	1092	0	882				0	2929		0	3358	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.77	0.00
Uniform Delay (d), s/veh	48.5	0.0	48.5				0.0	26.3	0.0	0.0	21.2	0.0
Incr Delay (d2), s/veh	80.5	0.0	98.4				0.0	3.7	0.0	0.0	0.8	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
%ile BackOfQ(50%),veh/ln	32.0	0.0	28.0				0.0	24.2	0.0	0.0	12.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	129.0	0.0	146.9				0.0	30.1	0.0	0.0	22.0	0.0
LnGrp LOS	F	A	F				A	C		A	C	
Approach Vol, veh/h		2315						2537	A		2220	A
Approach Delay, s/veh		137.1						30.1			22.0	
Approach LOS		F						C			C	

Timer - Assigned Phs	2		4		6	
Phs Duration (G+Y+Rc), s	93.0		57.0		93.0	
Change Period (Y+Rc), s	5.5		4.0		5.5	
Max Green Setting (Gmax), s	87.5		53.0		87.5	
Max Q Clear Time (g_c+I1), s	65.8		55.0		41.2	
Green Ext Time (p_c), s	17.8		0.0		26.1	

Intersection Summary		
HCM 6th Ctrl Delay		62.6
HCM 6th LOS		E

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1519	0	728	0	2122	750	0	1981	1600
Future Volume (veh/h)	0	0	0	1519	0	728	0	2122	750	0	1981	1600
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1566	0	0	0	2188	0	0	2042	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1794	0		0	2311		0	2912	
Arrive On Green				0.40	0.00	0.00	0.00	0.51	0.00	0.00	0.51	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1566	0	0	0	2188	0	0	2042	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				32.1	0.0	0.0	0.0	45.4	0.0	0.0	27.2	0.0
Cycle Q Clear(g_c), s				32.1	0.0	0.0	0.0	45.4	0.0	0.0	27.2	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1794	0		0	2311		0	2912	
V/C Ratio(X)				0.87	0.00		0.00	0.95		0.00	0.70	
Avail Cap(c_a), veh/h				2157	0		0	2311		0	2912	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.48	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				27.7	0.0	0.0	0.0	23.4	0.0	0.0	18.9	0.0
Incr Delay (d2), s/veh				3.7	0.0	0.0	0.0	5.4	0.0	0.0	1.4	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
%ile BackOfQ(50%),veh/ln				11.1	0.0	0.0	0.0	15.1	0.0	0.0	8.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.4	0.0	0.0	0.0	28.9	0.0	0.0	20.4	0.0
LnGrp LOS				C	A		A	C		A	C	
Approach Vol, veh/h					1566	A		2188	A		2042	A
Approach Delay, s/veh					31.4			28.9			20.4	
Approach LOS					C			C			C	

Timer - Assigned Phs	2		6		8	
Phs Duration (G+Y+Rc), s	56.1		56.1		43.9	
Change Period (Y+Rc), s	5.5		5.5		4.0	
Max Green Setting (Gmax), s	42.5		42.5		48.0	
Max Q Clear Time (g_c+I1), s	47.4		29.2		34.1	
Green Ext Time (p_c), s	0.0		10.1		5.8	

Intersection Summary		
HCM 6th Ctrl Delay		26.5
HCM 6th LOS		C

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1136	0	1653	0	0	0	0	1837	601	0	3163	300
Future Volume (veh/h)	1136	0	1653	0	0	0	0	1837	601	0	3163	300
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1147	0	1670				0	2028	0	0	3195	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1458	0	1177				0	3084		0	2652	
Arrive On Green	0.47	0.00	0.47				0.00	0.46	0.00	0.00	0.46	0.00
Sat Flow, veh/h	3092	0	2496				0	6694	1418	0	5991	1418
Grp Volume(v), veh/h	1147	0	1670				0	2028	0	0	3195	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	43.6	0.0	66.0				0.0	32.8	0.0	0.0	64.5	0.0
Cycle Q Clear(g_c), s	43.6	0.0	66.0				0.0	32.8	0.0	0.0	64.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1458	0	1177				0	3084		0	2652	
V/C Ratio(X)	0.79	0.00	1.42				0.00	0.66		0.00	1.20	
Avail Cap(c_a), veh/h	1458	0	1177				0	3084		0	2652	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.51	0.00
Uniform Delay (d), s/veh	31.1	0.0	37.0				0.0	29.2	0.0	0.0	37.8	0.0
Incr Delay (d2), s/veh	2.9	0.0	193.7				0.0	1.1	0.0	0.0	94.1	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
%ile BackOfQ(50%),veh/ln	16.1	0.0	50.5				0.0	12.7	0.0	0.0	38.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.0	0.0	230.7				0.0	30.3	0.0	0.0	131.8	0.0
LnGrp LOS	C	A	F				A	C		A	F	
Approach Vol, veh/h		2817						2028	A		3195	A
Approach Delay, s/veh		150.6						30.3			131.8	
Approach LOS		F						C			F	

Timer - Assigned Phs	2		4		6	
Phs Duration (G+Y+Rc), s	70.0		70.0		70.0	
Change Period (Y+Rc), s	5.5		4.0		5.5	
Max Green Setting (Gmax), s	64.5		66.0		64.5	
Max Q Clear Time (g_c+I1), s	34.8		68.0		66.5	
Green Ext Time (p_c), s	17.8		0.0		0.0	

Intersection Summary		
HCM 6th Ctrl Delay		112.8
HCM 6th LOS		F

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	871	0	561	0	3199	690	0	1929	1000
Future Volume (veh/h)	0	0	0	871	0	561	0	3199	690	0	1929	1000
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				898	0	0	0	3298	0	0	1989	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1050	0		0	3140		0	3956	
Arrive On Green				0.23	0.00	0.00	0.00	0.69	0.00	0.00	0.69	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				898	0	0	0	3298	0	0	1989	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				23.0	0.0	0.0	0.0	82.5	0.0	0.0	19.8	0.0
Cycle Q Clear(g_c), s				23.0	0.0	0.0	0.0	82.5	0.0	0.0	19.8	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1050	0		0	3140		0	3956	
V/C Ratio(X)				0.86	0.00		0.00	1.05		0.00	0.50	
Avail Cap(c_a), veh/h				1461	0		0	3140		0	3956	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				44.0	0.0	0.0	0.0	18.8	0.0	0.0	9.0	0.0
Incr Delay (d2), s/veh				3.8	0.0	0.0	0.0	23.7	0.0	0.0	0.5	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
%ile BackOfQ(50%),veh/ln				8.6	0.0	0.0	0.0	29.2	0.0	0.0	5.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				47.8	0.0	0.0	0.0	42.5	0.0	0.0	9.4	0.0
LnGrp LOS				D	A		A	F		A	A	
Approach Vol, veh/h					898	A		3298	A		1989	A
Approach Delay, s/veh					47.8			42.5			9.4	
Approach LOS					D			D			A	

Timer - Assigned Phs	2		6		8	
Phs Duration (G+Y+Rc), s	88.0		88.0		32.0	
Change Period (Y+Rc), s	5.5		5.5		4.0	
Max Green Setting (Gmax), s	71.5		71.5		39.0	
Max Q Clear Time (g_c+I1), s	84.5		21.8		25.0	
Green Ext Time (p_c), s	0.0		22.5		3.1	

Intersection Summary		
HCM 6th Ctrl Delay		32.6
HCM 6th LOS		C

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1240	0	1046	0	0	0	0	2700	1280	0	2194	630
Future Volume (veh/h)	1240	0	1046	0	0	0	0	2700	1280	0	2194	630
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1253	0	1057				0	2534	0	0	2216	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1092	0	882				0	2929		0	3358	
Arrive On Green	0.35	0.00	0.35				0.00	0.58	0.00	0.00	0.58	0.00
Sat Flow, veh/h	3092	0	2496				0	5020	2836	0	5991	1418
Grp Volume(v), veh/h	1253	0	1057				0	2534	0	0	2216	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	53.0	0.0	53.0				0.0	63.7	0.0	0.0	39.1	0.0
Cycle Q Clear(g_c), s	53.0	0.0	53.0				0.0	63.7	0.0	0.0	39.1	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1092	0	882				0	2929		0	3358	
V/C Ratio(X)	1.15	0.00	1.20				0.00	0.87		0.00	0.66	
Avail Cap(c_a), veh/h	1092	0	882				0	2929		0	3358	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.77	0.00
Uniform Delay (d), s/veh	48.5	0.0	48.5				0.0	26.3	0.0	0.0	21.2	0.0
Incr Delay (d2), s/veh	77.1	0.0	100.3				0.0	3.7	0.0	0.0	0.8	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
%ile BackOfQ(50%),veh/ln	31.4	0.0	28.2				0.0	24.1	0.0	0.0	12.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	125.6	0.0	148.8				0.0	30.0	0.0	0.0	22.0	0.0
LnGrp LOS	F	A	F				A	C		A	C	
Approach Vol, veh/h		2310						2534	A		2216	A
Approach Delay, s/veh		136.2						30.0			22.0	
Approach LOS		F						C			C	

Timer - Assigned Phs	2		4		6	
Phs Duration (G+Y+Rc), s	93.0		57.0		93.0	
Change Period (Y+Rc), s	5.5		4.0		5.5	
Max Green Setting (Gmax), s	87.5		53.0		87.5	
Max Q Clear Time (g_c+I1), s	65.7		55.0		41.1	
Green Ext Time (p_c), s	17.9		0.0		26.1	

Intersection Summary		
HCM 6th Ctrl Delay		62.2
HCM 6th LOS		E

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

08/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1496	0	738	0	2112	710	0	1954	1530
Future Volume (veh/h)	0	0	0	1496	0	738	0	2112	710	0	1954	1530
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1542	0	0	0	2177	0	0	2014	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1772	0		0	2334		0	2941	
Arrive On Green				0.39	0.00	0.00	0.00	0.51	0.00	0.00	0.51	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1542	0	0	0	2177	0	0	2014	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				31.6	0.0	0.0	0.0	44.5	0.0	0.0	26.3	0.0
Cycle Q Clear(g_c), s				31.6	0.0	0.0	0.0	44.5	0.0	0.0	26.3	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1772	0		0	2334		0	2941	
V/C Ratio(X)				0.87	0.00		0.00	0.93		0.00	0.68	
Avail Cap(c_a), veh/h				2157	0		0	2334		0	2941	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.49	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				27.9	0.0	0.0	0.0	22.9	0.0	0.0	18.4	0.0
Incr Delay (d2), s/veh				3.6	0.0	0.0	0.0	4.6	0.0	0.0	1.3	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
%ile BackOfQ(50%),veh/ln				10.9	0.0	0.0	0.0	14.6	0.0	0.0	7.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.5	0.0	0.0	0.0	27.4	0.0	0.0	19.7	0.0
LnGrp LOS				C	A		A	C		A	B	
Approach Vol, veh/h					1542	A		2177	A		2014	A
Approach Delay, s/veh					31.5			27.4			19.7	
Approach LOS					C			C			B	

Timer - Assigned Phs	2		6	8
Phs Duration (G+Y+Rc), s	56.6		56.6	43.4
Change Period (Y+Rc), s	5.5		5.5	4.0
Max Green Setting (Gmax), s	42.5		42.5	48.0
Max Q Clear Time (g_c+I1), s	46.5		28.3	33.6
Green Ext Time (p_c), s	0.0		10.5	5.8

Intersection Summary		
HCM 6th Ctrl Delay		25.8
HCM 6th LOS		C

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

08/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1167	0	1593	0	0	0	0	1753	620	0	3127	280
Future Volume (veh/h)	1167	0	1593	0	0	0	0	1753	620	0	3127	280
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1179	0	1609				0	1991	0	0	3159	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1458	0	1177				0	3084		0	2652	
Arrive On Green	0.47	0.00	0.47				0.00	0.46	0.00	0.00	0.46	0.00
Sat Flow, veh/h	3092	0	2496				0	6694	1418	0	5991	1418
Grp Volume(v), veh/h	1179	0	1609				0	1991	0	0	3159	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	45.6	0.0	66.0				0.0	32.0	0.0	0.0	64.5	0.0
Cycle Q Clear(g_c), s	45.6	0.0	66.0				0.0	32.0	0.0	0.0	64.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1458	0	1177				0	3084		0	2652	
V/C Ratio(X)	0.81	0.00	1.37				0.00	0.65		0.00	1.19	
Avail Cap(c_a), veh/h	1458	0	1177				0	3084		0	2652	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.53	0.00
Uniform Delay (d), s/veh	31.6	0.0	37.0				0.0	29.0	0.0	0.0	37.8	0.0
Incr Delay (d2), s/veh	3.5	0.0	170.8				0.0	1.1	0.0	0.0	88.2	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
%ile BackOfQ(50%),veh/ln	16.9	0.0	46.8				0.0	12.4	0.0	0.0	37.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.1	0.0	207.8				0.0	30.0	0.0	0.0	125.9	0.0
LnGrp LOS	D	A	F				A	C		A	F	
Approach Vol, veh/h		2788						1991	A		3159	A
Approach Delay, s/veh		134.8						30.0			125.9	
Approach LOS		F						C			F	

Timer - Assigned Phs	2		4		6
Phs Duration (G+Y+Rc), s	70.0		70.0		70.0
Change Period (Y+Rc), s	5.5		4.0		5.5
Max Green Setting (Gmax), s	64.5		66.0		64.5
Max Q Clear Time (g_c+I1), s	34.0		68.0		66.5
Green Ext Time (p_c), s	17.7		0.0		0.0

Intersection Summary		
HCM 6th Ctrl Delay		105.0
HCM 6th LOS		F

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

08/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	872	0	544	0	3146	700	0	1948	1000
Future Volume (veh/h)	0	0	0	872	0	544	0	3146	700	0	1948	1000
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				899	0	0	0	3243	0	0	2008	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1051	0		0	3139		0	3955	
Arrive On Green				0.23	0.00	0.00	0.00	0.69	0.00	0.00	0.69	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				899	0	0	0	3243	0	0	2008	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				23.0	0.0	0.0	0.0	82.4	0.0	0.0	20.1	0.0
Cycle Q Clear(g_c), s				23.0	0.0	0.0	0.0	82.4	0.0	0.0	20.1	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1051	0		0	3139		0	3955	
V/C Ratio(X)				0.86	0.00		0.00	1.03		0.00	0.51	
Avail Cap(c_a), veh/h				1461	0		0	3139		0	3955	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				44.0	0.0	0.0	0.0	18.8	0.0	0.0	9.0	0.0
Incr Delay (d2), s/veh				3.8	0.0	0.0	0.0	16.4	0.0	0.0	0.5	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
%ile BackOfQ(50%),veh/ln				8.6	0.0	0.0	0.0	27.0	0.0	0.0	5.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				47.8	0.0	0.0	0.0	35.2	0.0	0.0	9.5	0.0
LnGrp LOS				D	A		A	F		A	A	
Approach Vol, veh/h					899	A		3243	A		2008	A
Approach Delay, s/veh					47.8			35.2			9.5	
Approach LOS					D			D			A	

Timer - Assigned Phs	2		6	8
Phs Duration (G+Y+Rc), s	87.9		87.9	32.1
Change Period (Y+Rc), s	5.5		5.5	4.0
Max Green Setting (Gmax), s	71.5		71.5	39.0
Max Q Clear Time (g_c+I1), s	84.4		22.1	25.0
Green Ext Time (p_c), s	0.0		22.8	3.1

Intersection Summary		
HCM 6th Ctrl Delay		28.7
HCM 6th LOS		C

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

08/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1220	0	983	0	0	0	0	2670	1270	0	2207	630
Future Volume (veh/h)	1220	0	983	0	0	0	0	2670	1270	0	2207	630
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1232	0	993				0	2510	0	0	2229	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1092	0	882				0	2929		0	3358	
Arrive On Green	0.35	0.00	0.35				0.00	0.58	0.00	0.00	0.58	0.00
Sat Flow, veh/h	3092	0	2496				0	5020	2836	0	5991	1418
Grp Volume(v), veh/h	1232	0	993				0	2510	0	0	2229	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	53.0	0.0	53.0				0.0	62.5	0.0	0.0	39.5	0.0
Cycle Q Clear(g_c), s	53.0	0.0	53.0				0.0	62.5	0.0	0.0	39.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1092	0	882				0	2929		0	3358	
V/C Ratio(X)	1.13	0.00	1.13				0.00	0.86		0.00	0.66	
Avail Cap(c_a), veh/h	1092	0	882				0	2929		0	3358	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.77	0.00
Uniform Delay (d), s/veh	48.5	0.0	48.5				0.0	26.0	0.0	0.0	21.2	0.0
Incr Delay (d2), s/veh	69.5	0.0	71.2				0.0	3.5	0.0	0.0	0.8	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
%ile BackOfQ(50%),veh/ln	30.3	0.0	24.7				0.0	23.7	0.0	0.0	12.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	118.0	0.0	119.7				0.0	29.5	0.0	0.0	22.1	0.0
LnGrp LOS	F	A	F				A	C		A	C	
Approach Vol, veh/h		2225						2510	A		2229	A
Approach Delay, s/veh		118.8						29.5			22.1	
Approach LOS		F						C			C	

Timer - Assigned Phs	2		4		6
Phs Duration (G+Y+Rc), s	93.0		57.0		93.0
Change Period (Y+Rc), s	5.5		4.0		5.5
Max Green Setting (Gmax), s	87.5		53.0		87.5
Max Q Clear Time (g_c+I1), s	64.5		55.0		41.5
Green Ext Time (p_c), s	18.5		0.0		26.2

Intersection Summary		
HCM 6th Ctrl Delay		55.6
HCM 6th LOS		E

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1496	0	736	0	2107	711	0	1958	1532
Future Volume (veh/h)	0	0	0	1496	0	736	0	2107	711	0	1958	1532
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1542	0	0	0	2172	0	0	2019	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1772	0		0	2334		0	2941	
Arrive On Green				0.39	0.00	0.00	0.00	0.51	0.00	0.00	0.51	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1542	0	0	0	2172	0	0	2019	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				31.6	0.0	0.0	0.0	44.3	0.0	0.0	26.4	0.0
Cycle Q Clear(g_c), s				31.6	0.0	0.0	0.0	44.3	0.0	0.0	26.4	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1772	0		0	2334		0	2941	
V/C Ratio(X)				0.87	0.00		0.00	0.93		0.00	0.69	
Avail Cap(c_a), veh/h				2157	0		0	2334		0	2941	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.49	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				27.9	0.0	0.0	0.0	22.8	0.0	0.0	18.4	0.0
Incr Delay (d2), s/veh				3.6	0.0	0.0	0.0	4.4	0.0	0.0	1.3	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
%ile BackOfQ(50%),veh/ln				10.9	0.0	0.0	0.0	14.5	0.0	0.0	7.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.5	0.0	0.0	0.0	27.3	0.0	0.0	19.8	0.0
LnGrp LOS				C	A		A	C		A	B	
Approach Vol, veh/h					1542	A		2172	A		2019	A
Approach Delay, s/veh					31.5			27.3			19.8	
Approach LOS					C			C			B	

Timer - Assigned Phs	2		6	8
Phs Duration (G+Y+Rc), s	56.6		56.6	43.4
Change Period (Y+Rc), s	5.5		5.5	4.0
Max Green Setting (Gmax), s	42.5		42.5	48.0
Max Q Clear Time (g_c+I1), s	46.3		28.4	33.6
Green Ext Time (p_c), s	0.0		10.5	5.8

Intersection Summary		
HCM 6th Ctrl Delay		25.8
HCM 6th LOS		C

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1157	0	1602	0	0	0	0	1763	620	0	3128	280
Future Volume (veh/h)	1157	0	1602	0	0	0	0	1763	620	0	3128	280
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1169	0	1618				0	1998	0	0	3160	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1458	0	1177				0	3084		0	2652	
Arrive On Green	0.47	0.00	0.47				0.00	0.46	0.00	0.00	0.46	0.00
Sat Flow, veh/h	3092	0	2496				0	6694	1418	0	5991	1418
Grp Volume(v), veh/h	1169	0	1618				0	1998	0	0	3160	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	45.0	0.0	66.0				0.0	32.1	0.0	0.0	64.5	0.0
Cycle Q Clear(g_c), s	45.0	0.0	66.0				0.0	32.1	0.0	0.0	64.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1458	0	1177				0	3084		0	2652	
V/C Ratio(X)	0.80	0.00	1.38				0.00	0.65		0.00	1.19	
Avail Cap(c_a), veh/h	1458	0	1177				0	3084		0	2652	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.53	0.00
Uniform Delay (d), s/veh	31.4	0.0	37.0				0.0	29.0	0.0	0.0	37.8	0.0
Incr Delay (d2), s/veh	3.3	0.0	174.2				0.0	1.1	0.0	0.0	88.3	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
%ile BackOfQ(50%),veh/ln	16.6	0.0	47.4				0.0	12.5	0.0	0.0	37.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.8	0.0	211.2				0.0	30.1	0.0	0.0	126.1	0.0
LnGrp LOS	C	A	F				A	C		A	F	
Approach Vol, veh/h		2787						1998	A		3160	A
Approach Delay, s/veh		137.2						30.1			126.1	
Approach LOS		F						C			F	

Timer - Assigned Phs	2		4		6
Phs Duration (G+Y+Rc), s	70.0		70.0		70.0
Change Period (Y+Rc), s	5.5		4.0		5.5
Max Green Setting (Gmax), s	64.5		66.0		64.5
Max Q Clear Time (g_c+I1), s	34.1		68.0		66.5
Green Ext Time (p_c), s	17.7		0.0		0.0

Intersection Summary		
HCM 6th Ctrl Delay		105.8
HCM 6th LOS		F

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	867	0	555	0	3150	691	0	1946	991
Future Volume (veh/h)	0	0	0	867	0	555	0	3150	691	0	1946	991
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				894	0	0	0	3247	0	0	2006	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1046	0		0	3144		0	3961	
Arrive On Green				0.23	0.00	0.00	0.00	0.69	0.00	0.00	0.69	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				894	0	0	0	3247	0	0	2006	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				22.9	0.0	0.0	0.0	82.6	0.0	0.0	20.0	0.0
Cycle Q Clear(g_c), s				22.9	0.0	0.0	0.0	82.6	0.0	0.0	20.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1046	0		0	3144		0	3961	
V/C Ratio(X)				0.85	0.00		0.00	1.03		0.00	0.51	
Avail Cap(c_a), veh/h				1461	0		0	3144		0	3961	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				44.1	0.0	0.0	0.0	18.7	0.0	0.0	9.0	0.0
Incr Delay (d2), s/veh				3.8	0.0	0.0	0.0	16.3	0.0	0.0	0.5	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
%ile BackOfQ(50%),veh/ln				8.5	0.0	0.0	0.0	27.0	0.0	0.0	5.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				47.8	0.0	0.0	0.0	35.0	0.0	0.0	9.4	0.0
LnGrp LOS				D	A		A	F		A	A	
Approach Vol, veh/h					894	A		3247	A		2006	A
Approach Delay, s/veh					47.8			35.0			9.4	
Approach LOS					D			C			A	

Timer - Assigned Phs	2		6		8							
Phs Duration (G+Y+Rc), s	88.1		88.1		31.9							
Change Period (Y+Rc), s	5.5		5.5		4.0							
Max Green Setting (Gmax), s	71.5		71.5		39.0							
Max Q Clear Time (g_c+I1), s	84.6		22.0		24.9							
Green Ext Time (p_c), s	0.0		22.8		3.1							

Intersection Summary		
HCM 6th Ctrl Delay		28.5
HCM 6th LOS		C

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1221	0	986	0	0	0	0	2669	1280	0	2204	630
Future Volume (veh/h)	1221	0	986	0	0	0	0	2669	1280	0	2204	630
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1233	0	996				0	2517	0	0	2226	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1092	0	882				0	2929		0	3358	
Arrive On Green	0.35	0.00	0.35				0.00	0.58	0.00	0.00	0.58	0.00
Sat Flow, veh/h	3092	0	2496				0	5020	2836	0	5991	1418
Grp Volume(v), veh/h	1233	0	996				0	2517	0	0	2226	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	53.0	0.0	53.0				0.0	62.8	0.0	0.0	39.4	0.0
Cycle Q Clear(g_c), s	53.0	0.0	53.0				0.0	62.8	0.0	0.0	39.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1092	0	882				0	2929		0	3358	
V/C Ratio(X)	1.13	0.00	1.13				0.00	0.86		0.00	0.66	
Avail Cap(c_a), veh/h	1092	0	882				0	2929		0	3358	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.77	0.00
Uniform Delay (d), s/veh	48.5	0.0	48.5				0.0	26.1	0.0	0.0	21.2	0.0
Incr Delay (d2), s/veh	69.9	0.0	72.5				0.0	3.6	0.0	0.0	0.8	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
%ile BackOfQ(50%),veh/ln	30.3	0.0	24.8				0.0	23.8	0.0	0.0	12.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	118.4	0.0	121.0				0.0	29.7	0.0	0.0	22.0	0.0
LnGrp LOS	F	A	F				A	C		A	C	
Approach Vol, veh/h		2229						2517	A		2226	A
Approach Delay, s/veh		119.5						29.7			22.0	
Approach LOS		F						C			C	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		93.0		57.0		93.0						
Change Period (Y+Rc), s		5.5		4.0		5.5						
Max Green Setting (Gmax), s		87.5		53.0		87.5						
Max Q Clear Time (g_c+I1), s		64.8		55.0		41.4						
Green Ext Time (p_c), s		18.3		0.0		26.2						

Intersection Summary		
HCM 6th Ctrl Delay		56.0
HCM 6th LOS		E

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

08/03/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1705	0	787	0	2393	940	0	2055	1520
Future Volume (veh/h)	0	0	0	1705	0	787	0	2393	940	0	2055	1520
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1758	0	0	0	2467	0	0	2119	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1959	0		0	2144		0	2701	
Arrive On Green				0.44	0.00	0.00	0.00	0.47	0.00	0.00	0.47	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1758	0	0	0	2467	0	0	2119	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				36.2	0.0	0.0	0.0	46.9	0.0	0.0	30.9	0.0
Cycle Q Clear(g_c), s				36.2	0.0	0.0	0.0	46.9	0.0	0.0	30.9	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1959	0		0	2144		0	2701	
V/C Ratio(X)				0.90	0.00		0.00	1.15		0.00	0.78	
Avail Cap(c_a), veh/h				2157	0		0	2144		0	2701	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.25	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				26.1	0.0	0.0	0.0	26.5	0.0	0.0	22.3	0.0
Incr Delay (d2), s/veh				5.1	0.0	0.0	0.0	69.4	0.0	0.0	2.4	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
%ile BackOfQ(50%),veh/ln				12.6	0.0	0.0	0.0	28.6	0.0	0.0	9.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.3	0.0	0.0	0.0	96.0	0.0	0.0	24.7	0.0
LnGrp LOS				C	A		A	F		A	C	
Approach Vol, veh/h					1758	A		2467	A		2119	A
Approach Delay, s/veh					31.3			96.0			24.7	
Approach LOS					C			F			C	

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	52.4	52.4	47.6
Change Period (Y+Rc), s	5.5	5.5	4.0
Max Green Setting (Gmax), s	42.5	42.5	48.0
Max Q Clear Time (g_c+I1), s	48.9	32.9	38.2
Green Ext Time (p_c), s	0.0	7.8	5.3

Intersection Summary	
HCM 6th Ctrl Delay	54.2
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

08/03/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1164	0	2016	0	0	0	0	2266	660	0	3454	280
Future Volume (veh/h)	1164	0	2016	0	0	0	0	2266	660	0	3454	280
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1176	0	2036				0	2403	0	0	3489	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1458	0	1177				0	3084		0	2652	
Arrive On Green	0.47	0.00	0.47				0.00	0.46	0.00	0.00	0.46	0.00
Sat Flow, veh/h	3092	0	2496				0	6694	1418	0	5991	1418
Grp Volume(v), veh/h	1176	0	2036				0	2403	0	0	3489	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	45.4	0.0	66.0				0.0	42.3	0.0	0.0	64.5	0.0
Cycle Q Clear(g_c), s	45.4	0.0	66.0				0.0	42.3	0.0	0.0	64.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1458	0	1177				0	3084		0	2652	
V/C Ratio(X)	0.81	0.00	1.73				0.00	0.78		0.00	1.32	
Avail Cap(c_a), veh/h	1458	0	1177				0	3084		0	2652	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.42	0.00
Uniform Delay (d), s/veh	31.6	0.0	37.0				0.0	31.8	0.0	0.0	37.8	0.0
Incr Delay (d2), s/veh	3.5	0.0	332.2				0.0	2.0	0.0	0.0	143.2	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
%ile BackOfQ(50%),veh/ln	16.8	0.0	73.2				0.0	16.5	0.0	0.0	47.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.0	0.0	369.2				0.0	33.8	0.0	0.0	180.9	0.0
LnGrp LOS	D	A	F				A	C		A	F	
Approach Vol, veh/h		3212						2403	A		3489	A
Approach Delay, s/veh		246.8						33.8			180.9	
Approach LOS		F						C			F	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	70.0	70.0	70.0
Change Period (Y+Rc), s	5.5	4.0	5.5
Max Green Setting (Gmax), s	64.5	66.0	64.5
Max Q Clear Time (g_c+I1), s	44.3	68.0	66.5
Green Ext Time (p_c), s	16.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	165.3
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

08/03/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1050	0	543	0	3467	960	0	2300	970
Future Volume (veh/h)	0	0	0	1050	0	543	0	3467	960	0	2300	970
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1082	0	0	0	3574	0	0	2371	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1228	0		0	2959		0	3728	
Arrive On Green				0.27	0.00	0.00	0.00	0.65	0.00	0.00	0.65	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1082	0	0	0	3574	0	0	2371	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				27.7	0.0	0.0	0.0	77.7	0.0	0.0	29.6	0.0
Cycle Q Clear(g_c), s				27.7	0.0	0.0	0.0	77.7	0.0	0.0	29.6	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1228	0		0	2959		0	3728	
V/C Ratio(X)				0.88	0.00		0.00	1.21		0.00	0.64	
Avail Cap(c_a), veh/h				1461	0		0	2959		0	3728	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				41.7	0.0	0.0	0.0	21.1	0.0	0.0	12.7	0.0
Incr Delay (d2), s/veh				5.8	0.0	0.0	0.0	93.9	0.0	0.0	0.8	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
%ile BackOfQ(50%),veh/ln				10.5	0.0	0.0	0.0	48.0	0.0	0.0	8.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				47.6	0.0	0.0	0.0	115.0	0.0	0.0	13.5	0.0
LnGrp LOS				D	A		A	F		A	B	
Approach Vol, veh/h					1082	A		3574	A		2371	A
Approach Delay, s/veh					47.6			115.0			13.5	
Approach LOS					D			F			B	

Timer - Assigned Phs	2		6	8
Phs Duration (G+Y+Rc), s	83.2		83.2	36.8
Change Period (Y+Rc), s	5.5		5.5	4.0
Max Green Setting (Gmax), s	71.5		71.5	39.0
Max Q Clear Time (g_c+I1), s	79.7		31.6	29.7
Green Ext Time (p_c), s	0.0		26.3	3.1

Intersection Summary	
HCM 6th Ctrl Delay	70.4
HCM 6th LOS	E

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

08/03/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1189	0	1164	0	0	0	0	3281	1430	0	2756	630
Future Volume (veh/h)	1189	0	1164	0	0	0	0	3281	1430	0	2756	630
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1201	0	1176				0	4053	0	0	2784	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1092	0	882				0	3905		0	3358	
Arrive On Green	0.35	0.00	0.35				0.00	0.58	0.00	0.00	0.58	0.00
Sat Flow, veh/h	3092	0	2496				0	6694	1418	0	5991	1418
Grp Volume(v), veh/h	1201	0	1176				0	4053	0	0	2784	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	53.0	0.0	53.0				0.0	87.5	0.0	0.0	58.5	0.0
Cycle Q Clear(g_c), s	53.0	0.0	53.0				0.0	87.5	0.0	0.0	58.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1092	0	882				0	3905		0	3358	
V/C Ratio(X)	1.10	0.00	1.33				0.00	1.04		0.00	0.83	
Avail Cap(c_a), veh/h	1092	0	882				0	3905		0	3358	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.64	0.00
Uniform Delay (d), s/veh	48.5	0.0	48.5				0.0	31.2	0.0	0.0	25.2	0.0
Incr Delay (d2), s/veh	58.6	0.0	157.8				0.0	25.5	0.0	0.0	1.6	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
%ile BackOfQ(50%),veh/ln	28.6	0.0	35.3				0.0	38.7	0.0	0.0	18.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	107.1	0.0	206.3				0.0	56.8	0.0	0.0	26.8	0.0
LnGrp LOS	F	A	F				A	F		A	C	
Approach Vol, veh/h		2377						4053	A		2784	A
Approach Delay, s/veh		156.2						56.8			26.8	
Approach LOS		F						E			C	

Timer - Assigned Phs	2		4		6
Phs Duration (G+Y+Rc), s	93.0		57.0		93.0
Change Period (Y+Rc), s	5.5		4.0		5.5
Max Green Setting (Gmax), s	87.5		53.0		87.5
Max Q Clear Time (g_c+I1), s	89.5		55.0		60.5
Green Ext Time (p_c), s	0.0		0.0		23.0

Intersection Summary	
HCM 6th Ctrl Delay	73.4
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1704	0	779	0	2401	940	0	2056	1520
Future Volume (veh/h)	0	0	0	1704	0	779	0	2401	940	0	2056	1520
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1757	0	0	0	2475	0	0	2120	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1958	0		0	2144		0	2702	
Arrive On Green				0.44	0.00	0.00	0.00	0.47	0.00	0.00	0.47	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1757	0	0	0	2475	0	0	2120	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				36.2	0.0	0.0	0.0	46.9	0.0	0.0	30.9	0.0
Cycle Q Clear(g_c), s				36.2	0.0	0.0	0.0	46.9	0.0	0.0	30.9	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1958	0		0	2144		0	2702	
V/C Ratio(X)				0.90	0.00		0.00	1.15		0.00	0.78	
Avail Cap(c_a), veh/h				2157	0		0	2144		0	2702	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.25	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				26.1	0.0	0.0	0.0	26.5	0.0	0.0	22.3	0.0
Incr Delay (d2), s/veh				5.1	0.0	0.0	0.0	70.9	0.0	0.0	2.4	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
%ile BackOfQ(50%),veh/ln				12.6	0.0	0.0	0.0	28.8	0.0	0.0	9.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.3	0.0	0.0	0.0	97.4	0.0	0.0	24.7	0.0
LnGrp LOS				C	A		A	F		A	C	
Approach Vol, veh/h					1757	A		2475	A		2120	A
Approach Delay, s/veh					31.3			97.4			24.7	
Approach LOS					C			F			C	

Timer - Assigned Phs	2		6	8
Phs Duration (G+Y+Rc), s	52.4		52.4	47.6
Change Period (Y+Rc), s	5.5		5.5	4.0
Max Green Setting (Gmax), s	42.5		42.5	48.0
Max Q Clear Time (g_c+I1), s	48.9		32.9	38.2
Green Ext Time (p_c), s	0.0		7.8	5.3

Intersection Summary	
HCM 6th Ctrl Delay	54.8
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1171	0	2033	0	0	0	0	2259	670	0	3447	290
Future Volume (veh/h)	1171	0	2033	0	0	0	0	2259	670	0	3447	290
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1183	0	2054				0	2410	0	0	3482	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1458	0	1177				0	3084		0	2652	
Arrive On Green	0.47	0.00	0.47				0.00	0.46	0.00	0.00	0.46	0.00
Sat Flow, veh/h	3092	0	2496				0	6694	1418	0	5991	1418
Grp Volume(v), veh/h	1183	0	2054				0	2410	0	0	3482	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	45.9	0.0	66.0				0.0	42.5	0.0	0.0	64.5	0.0
Cycle Q Clear(g_c), s	45.9	0.0	66.0				0.0	42.5	0.0	0.0	64.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1458	0	1177				0	3084		0	2652	
V/C Ratio(X)	0.81	0.00	1.75				0.00	0.78		0.00	1.31	
Avail Cap(c_a), veh/h	1458	0	1177				0	3084		0	2652	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.42	0.00
Uniform Delay (d), s/veh	31.7	0.0	37.0				0.0	31.8	0.0	0.0	37.8	0.0
Incr Delay (d2), s/veh	3.6	0.0	339.0				0.0	2.0	0.0	0.0	142.0	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
%ile BackOfQ(50%),veh/ln	17.0	0.0	74.3				0.0	16.6	0.0	0.0	47.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.3	0.0	376.0				0.0	33.9	0.0	0.0	179.7	0.0
LnGrp LOS	D	A	F				A	C		A	F	
Approach Vol, veh/h		3237						2410	A		3482	A
Approach Delay, s/veh		251.5						33.9			179.7	
Approach LOS		F						C			F	

Timer - Assigned Phs	2		4		6
Phs Duration (G+Y+Rc), s	70.0		70.0		70.0
Change Period (Y+Rc), s	5.5		4.0		5.5
Max Green Setting (Gmax), s	64.5		66.0		64.5
Max Q Clear Time (g_c+I1), s	44.5		68.0		66.5
Green Ext Time (p_c), s	16.0		0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	166.7
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1046	0	539	0	3471	960	0	2304	970
Future Volume (veh/h)	0	0	0	1046	0	539	0	3471	960	0	2304	970
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1078	0	0	0	3578	0	0	2375	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1224	0		0	2962		0	3733	
Arrive On Green				0.27	0.00	0.00	0.00	0.65	0.00	0.00	0.65	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1078	0	0	0	3578	0	0	2375	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				27.5	0.0	0.0	0.0	77.8	0.0	0.0	29.6	0.0
Cycle Q Clear(g_c), s				27.5	0.0	0.0	0.0	77.8	0.0	0.0	29.6	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1224	0		0	2962		0	3733	
V/C Ratio(X)				0.88	0.00		0.00	1.21		0.00	0.64	
Avail Cap(c_a), veh/h				1461	0		0	2962		0	3733	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				41.8	0.0	0.0	0.0	21.1	0.0	0.0	12.6	0.0
Incr Delay (d2), s/veh				5.8	0.0	0.0	0.0	93.8	0.0	0.0	0.8	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
%ile BackOfQ(50%),veh/ln				10.4	0.0	0.0	0.0	48.0	0.0	0.0	8.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				47.5	0.0	0.0	0.0	114.9	0.0	0.0	13.5	0.0
LnGrp LOS				D	A		A	F		A	B	
Approach Vol, veh/h					1078	A		3578	A		2375	A
Approach Delay, s/veh					47.5			114.9			13.5	
Approach LOS					D			F			B	

Timer - Assigned Phs	2		6	8
Phs Duration (G+Y+Rc), s	83.3		83.3	36.7
Change Period (Y+Rc), s	5.5		5.5	4.0
Max Green Setting (Gmax), s	71.5		71.5	39.0
Max Q Clear Time (g_c+I1), s	79.8		31.6	29.5
Green Ext Time (p_c), s	0.0		26.4	3.1

Intersection Summary		
HCM 6th Ctrl Delay		70.3
HCM 6th LOS		E

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1194	0	1169	0	0	0	0	3280	1441	0	2755	631
Future Volume (veh/h)	1194	0	1169	0	0	0	0	3280	1441	0	2755	631
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1206	0	1181				0	4066	0	0	2783	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1092	0	882				0	3905		0	3358	
Arrive On Green	0.35	0.00	0.35				0.00	0.58	0.00	0.00	0.58	0.00
Sat Flow, veh/h	3092	0	2496				0	6694	1418	0	5991	1418
Grp Volume(v), veh/h	1206	0	1181				0	4066	0	0	2783	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	53.0	0.0	53.0				0.0	87.5	0.0	0.0	58.5	0.0
Cycle Q Clear(g_c), s	53.0	0.0	53.0				0.0	87.5	0.0	0.0	58.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1092	0	882				0	3905		0	3358	
V/C Ratio(X)	1.10	0.00	1.34				0.00	1.04		0.00	0.83	
Avail Cap(c_a), veh/h	1092	0	882				0	3905		0	3358	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.64	0.00
Uniform Delay (d), s/veh	48.5	0.0	48.5				0.0	31.2	0.0	0.0	25.2	0.0
Incr Delay (d2), s/veh	60.3	0.0	160.3				0.0	26.7	0.0	0.0	1.6	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
%ile BackOfQ(50%),veh/ln	28.9	0.0	35.6				0.0	39.0	0.0	0.0	18.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	108.8	0.0	208.8				0.0	57.9	0.0	0.0	26.8	0.0
LnGrp LOS	F	A	F				A	F		A	C	
Approach Vol, veh/h		2387						4066	A		2783	A
Approach Delay, s/veh		158.3						57.9			26.8	
Approach LOS		F						E			C	

Timer - Assigned Phs	2		4		6
Phs Duration (G+Y+Rc), s	93.0		57.0		93.0
Change Period (Y+Rc), s	5.5		4.0		5.5
Max Green Setting (Gmax), s	87.5		53.0		87.5
Max Q Clear Time (g_c+I1), s	89.5		55.0		60.5
Green Ext Time (p_c), s	0.0		0.0		23.0

Intersection Summary		
HCM 6th Ctrl Delay		74.5
HCM 6th LOS		E

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1718	0	784	0	2350	851	0	2126	1522
Future Volume (veh/h)	0	0	0	1718	0	784	0	2350	851	0	2126	1522
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1771	0	0	0	2423	0	0	2192	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1969	0		0	2133		0	2688	
Arrive On Green				0.44	0.00	0.00	0.00	0.47	0.00	0.00	0.47	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1771	0	0	0	2423	0	0	2192	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				36.5	0.0	0.0	0.0	46.7	0.0	0.0	32.8	0.0
Cycle Q Clear(g_c), s				36.5	0.0	0.0	0.0	46.7	0.0	0.0	32.8	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1969	0		0	2133		0	2688	
V/C Ratio(X)				0.90	0.00		0.00	1.14		0.00	0.82	
Avail Cap(c_a), veh/h				2157	0		0	2133		0	2688	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.31	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				26.1	0.0	0.0	0.0	26.7	0.0	0.0	22.9	0.0
Incr Delay (d2), s/veh				5.3	0.0	0.0	0.0	63.2	0.0	0.0	2.9	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
%ile BackOfQ(50%),veh/ln				12.7	0.0	0.0	0.0	27.2	0.0	0.0	10.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.3	0.0	0.0	0.0	89.9	0.0	0.0	25.8	0.0
LnGrp LOS				C	A		A	F		A	C	
Approach Vol, veh/h					1771	A		2423	A		2192	A
Approach Delay, s/veh					31.3			89.9			25.8	
Approach LOS					C			F			C	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		52.2				52.2		47.8				
Change Period (Y+Rc), s		5.5				5.5		4.0				
Max Green Setting (Gmax), s		42.5				42.5		48.0				
Max Q Clear Time (g_c+I1), s		48.7				34.8		38.5				
Green Ext Time (p_c), s		0.0				6.6		5.3				

Intersection Summary			
HCM 6th Ctrl Delay			51.6
HCM 6th LOS			D

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1175	0	2055	0	0	0	0	2118	681	0	3531	290
Future Volume (veh/h)	1175	0	2055	0	0	0	0	2118	681	0	3531	290
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1187	0	2076				0	2323	0	0	3567	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1458	0	1177				0	3084		0	2652	
Arrive On Green	0.47	0.00	0.47				0.00	0.46	0.00	0.00	0.46	0.00
Sat Flow, veh/h	3092	0	2496				0	6694	1418	0	5991	1418
Grp Volume(v), veh/h	1187	0	2076				0	2323	0	0	3567	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	46.1	0.0	66.0				0.0	40.1	0.0	0.0	64.5	0.0
Cycle Q Clear(g_c), s	46.1	0.0	66.0				0.0	40.1	0.0	0.0	64.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1458	0	1177				0	3084		0	2652	
V/C Ratio(X)	0.81	0.00	1.76				0.00	0.75		0.00	1.34	
Avail Cap(c_a), veh/h	1458	0	1177				0	3084		0	2652	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.38	0.00
Uniform Delay (d), s/veh	31.7	0.0	37.0				0.0	31.2	0.0	0.0	37.8	0.0
Incr Delay (d2), s/veh	3.7	0.0	347.4				0.0	1.8	0.0	0.0	156.2	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
%ile BackOfQ(50%),veh/ln	17.1	0.0	75.7				0.0	15.7	0.0	0.0	49.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.4	0.0	384.4				0.0	32.9	0.0	0.0	194.0	0.0
LnGrp LOS	D	A	F				A	C		A	F	
Approach Vol, veh/h		3263						2323	A		3567	A
Approach Delay, s/veh		257.5						32.9			194.0	
Approach LOS		F						C			F	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		70.0		70.0		70.0						
Change Period (Y+Rc), s		5.5		4.0		5.5						
Max Green Setting (Gmax), s		64.5		66.0		64.5						
Max Q Clear Time (g_c+I1), s		42.1		68.0		66.5						
Green Ext Time (p_c), s		17.0		0.0		0.0						

Intersection Summary			
HCM 6th Ctrl Delay			175.7
HCM 6th LOS			F

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1058	0	549	0	3511	880	0	2342	970
Future Volume (veh/h)	0	0	0	1058	0	549	0	3511	880	0	2342	970
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1091	0	0	0	3620	0	0	2414	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1236	0		0	2950		0	3718	
Arrive On Green				0.28	0.00	0.00	0.00	0.65	0.00	0.00	0.65	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1091	0	0	0	3620	0	0	2414	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				27.9	0.0	0.0	0.0	77.5	0.0	0.0	30.7	0.0
Cycle Q Clear(g_c), s				27.9	0.0	0.0	0.0	77.5	0.0	0.0	30.7	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1236	0		0	2950		0	3718	
V/C Ratio(X)				0.88	0.00		0.00	1.23		0.00	0.65	
Avail Cap(c_a), veh/h				1461	0		0	2950		0	3718	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				41.6	0.0	0.0	0.0	21.3	0.0	0.0	13.0	0.0
Incr Delay (d2), s/veh				5.9	0.0	0.0	0.0	102.4	0.0	0.0	0.9	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
%ile BackOfQ(50%),veh/ln				10.6	0.0	0.0	0.0	50.3	0.0	0.0	8.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				47.6	0.0	0.0	0.0	123.7	0.0	0.0	13.9	0.0
LnGrp LOS				D	A		A	F		A	B	
Approach Vol, veh/h					1091	A		3620	A		2414	A
Approach Delay, s/veh					47.6			123.7			13.9	
Approach LOS					D			F			B	

Timer - Assigned Phs	2		6		8							
Phs Duration (G+Y+Rc), s	83.0		83.0		37.0							
Change Period (Y+Rc), s	5.5		5.5		4.0							
Max Green Setting (Gmax), s	71.5		71.5		39.0							
Max Q Clear Time (g_c+I1), s	79.5		32.7		29.9							
Green Ext Time (p_c), s	0.0		26.5		3.1							

Intersection Summary		
HCM 6th Ctrl Delay		74.8
HCM 6th LOS		E

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1179	0	1184	0	0	0	0	3251	1490	0	2796	640
Future Volume (veh/h)	1179	0	1184	0	0	0	0	3251	1490	0	2796	640
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1191	0	1196				0	3010	0	0	2824	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1092	0	882				0	2929		0	3358	
Arrive On Green	0.35	0.00	0.35				0.00	0.58	0.00	0.00	0.58	0.00
Sat Flow, veh/h	3092	0	2496				0	5020	2836	0	5991	1418
Grp Volume(v), veh/h	1191	0	1196				0	3010	0	0	2824	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	53.0	0.0	53.0				0.0	87.5	0.0	0.0	60.2	0.0
Cycle Q Clear(g_c), s	53.0	0.0	53.0				0.0	87.5	0.0	0.0	60.2	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1092	0	882				0	2929		0	3358	
V/C Ratio(X)	1.09	0.00	1.36				0.00	1.03		0.00	0.84	
Avail Cap(c_a), veh/h	1092	0	882				0	2929		0	3358	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.62	0.00
Uniform Delay (d), s/veh	48.5	0.0	48.5				0.0	31.2	0.0	0.0	25.6	0.0
Incr Delay (d2), s/veh	55.2	0.0	167.7				0.0	24.2	0.0	0.0	1.7	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
%ile BackOfQ(50%),veh/ln	28.1	0.0	36.5				0.0	38.4	0.0	0.0	19.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	103.7	0.0	216.2				0.0	55.5	0.0	0.0	27.3	0.0
LnGrp LOS	F	A	F				A	F		A	C	
Approach Vol, veh/h		2387						3010	A		2824	A
Approach Delay, s/veh		160.1						55.5			27.3	
Approach LOS		F						E			C	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		93.0		57.0		93.0						
Change Period (Y+Rc), s		5.5		4.0		5.5						
Max Green Setting (Gmax), s		87.5		53.0		87.5						
Max Q Clear Time (g_c+I1), s		89.5		55.0		62.2						
Green Ext Time (p_c), s		0.0		0.0		22.0						

Intersection Summary		
HCM 6th Ctrl Delay		76.2
HCM 6th LOS		E

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1728	0	784	0	2350	851	0	2136	1512
Future Volume (veh/h)	0	0	0	1728	0	784	0	2350	851	0	2136	1512
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1781	0	0	0	2423	0	0	2202	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1976	0		0	2126		0	2678	
Arrive On Green				0.44	0.00	0.00	0.00	0.47	0.00	0.00	0.47	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1781	0	0	0	2423	0	0	2202	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				36.8	0.0	0.0	0.0	46.5	0.0	0.0	33.1	0.0
Cycle Q Clear(g_c), s				36.8	0.0	0.0	0.0	46.5	0.0	0.0	33.1	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1976	0		0	2126		0	2678	
V/C Ratio(X)				0.90	0.00		0.00	1.14		0.00	0.82	
Avail Cap(c_a), veh/h				2157	0		0	2126		0	2678	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.31	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				26.0	0.0	0.0	0.0	26.7	0.0	0.0	23.2	0.0
Incr Delay (d2), s/veh				5.4	0.0	0.0	0.0	65.0	0.0	0.0	3.0	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
%ile BackOfQ(50%),veh/ln				12.8	0.0	0.0	0.0	27.5	0.0	0.0	10.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.4	0.0	0.0	0.0	91.8	0.0	0.0	26.1	0.0
LnGrp LOS				C	A		A	F		A	C	
Approach Vol, veh/h					1781	A		2423	A		2202	A
Approach Delay, s/veh					31.4			91.8			26.1	
Approach LOS					C			F			C	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		52.0				52.0		48.0				
Change Period (Y+Rc), s		5.5				5.5		4.0				
Max Green Setting (Gmax), s		42.5				42.5		48.0				
Max Q Clear Time (g_c+I1), s		48.5				35.1		38.8				
Green Ext Time (p_c), s		0.0				6.3		5.2				

Intersection Summary			
HCM 6th Ctrl Delay			52.4
HCM 6th LOS			D

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1169	0	2055	0	0	0	0	2131	680	0	3545	290
Future Volume (veh/h)	1169	0	2055	0	0	0	0	2131	680	0	3545	290
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1181	0	2076				0	2332	0	0	3581	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1458	0	1177				0	3084		0	2652	
Arrive On Green	0.47	0.00	0.47				0.00	0.46	0.00	0.00	0.46	0.00
Sat Flow, veh/h	3092	0	2496				0	6694	1418	0	5991	1418
Grp Volume(v), veh/h	1181	0	2076				0	2332	0	0	3581	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	45.7	0.0	66.0				0.0	40.4	0.0	0.0	64.5	0.0
Cycle Q Clear(g_c), s	45.7	0.0	66.0				0.0	40.4	0.0	0.0	64.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1458	0	1177				0	3084		0	2652	
V/C Ratio(X)	0.81	0.00	1.76				0.00	0.76		0.00	1.35	
Avail Cap(c_a), veh/h	1458	0	1177				0	3084		0	2652	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.37	0.00
Uniform Delay (d), s/veh	31.6	0.0	37.0				0.0	31.2	0.0	0.0	37.8	0.0
Incr Delay (d2), s/veh	3.6	0.0	347.4				0.0	1.8	0.0	0.0	158.5	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
%ile BackOfQ(50%),veh/ln	17.0	0.0	75.7				0.0	15.7	0.0	0.0	50.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.2	0.0	384.4				0.0	33.0	0.0	0.0	196.3	0.0
LnGrp LOS	D	A	F				A	C		A	F	
Approach Vol, veh/h		3257						2332	A		3581	A
Approach Delay, s/veh		257.8						33.0			196.3	
Approach LOS		F						C			F	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		70.0		70.0		70.0						
Change Period (Y+Rc), s		5.5		4.0		5.5						
Max Green Setting (Gmax), s		64.5		66.0		64.5						
Max Q Clear Time (g_c+I1), s		42.4		68.0		66.5						
Green Ext Time (p_c), s		16.9		0.0		0.0						

Intersection Summary			
HCM 6th Ctrl Delay			176.6
HCM 6th LOS			F

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1054	0	545	0	3505	880	0	2346	970
Future Volume (veh/h)	0	0	0	1054	0	545	0	3505	880	0	2346	970
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1087	0	0	0	3613	0	0	2419	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1233	0		0	2954		0	3722	
Arrive On Green				0.27	0.00	0.00	0.00	0.65	0.00	0.00	0.65	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1087	0	0	0	3613	0	0	2419	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				27.8	0.0	0.0	0.0	77.6	0.0	0.0	30.7	0.0
Cycle Q Clear(g_c), s				27.8	0.0	0.0	0.0	77.6	0.0	0.0	30.7	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1233	0		0	2954		0	3722	
V/C Ratio(X)				0.88	0.00		0.00	1.22		0.00	0.65	
Avail Cap(c_a), veh/h				1461	0		0	2954		0	3722	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				41.7	0.0	0.0	0.0	21.2	0.0	0.0	12.9	0.0
Incr Delay (d2), s/veh				5.9	0.0	0.0	0.0	100.7	0.0	0.0	0.9	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
%ile BackOfQ(50%),veh/ln				10.5	0.0	0.0	0.0	49.9	0.0	0.0	8.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				47.6	0.0	0.0	0.0	121.9	0.0	0.0	13.8	0.0
LnGrp LOS				D	A		A	F		A	B	
Approach Vol, veh/h					1087	A		3613	A		2419	A
Approach Delay, s/veh					47.6			121.9			13.8	
Approach LOS					D			F			B	

Timer - Assigned Phs	2		6		8							
Phs Duration (G+Y+Rc), s	83.1		83.1		36.9							
Change Period (Y+Rc), s	5.5		5.5		4.0							
Max Green Setting (Gmax), s	71.5		71.5		39.0							
Max Q Clear Time (g_c+I1), s	79.6		32.7		29.8							
Green Ext Time (p_c), s	0.0		26.5		3.1							

Intersection Summary		
HCM 6th Ctrl Delay		73.8
HCM 6th LOS		E

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: Jamboree Road & I-405 SB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1183	0	1182	0	0	0	0	3247	1490	0	2798	640
Future Volume (veh/h)	1183	0	1182	0	0	0	0	3247	1490	0	2798	640
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1673	0	1673				0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h	1195	0	1194				0	3008	0	0	2826	0
Peak Hour Factor	0.99	0.99	0.99				0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1092	0	882				0	2929		0	3358	
Arrive On Green	0.35	0.00	0.35				0.00	0.58	0.00	0.00	0.58	0.00
Sat Flow, veh/h	3092	0	2496				0	5020	2836	0	5991	1418
Grp Volume(v), veh/h	1195	0	1194				0	3008	0	0	2826	0
Grp Sat Flow(s),veh/h/ln	1546	0	1248				0	1673	1418	0	1439	1418
Q Serve(g_s), s	53.0	0.0	53.0				0.0	87.5	0.0	0.0	60.3	0.0
Cycle Q Clear(g_c), s	53.0	0.0	53.0				0.0	87.5	0.0	0.0	60.3	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1092	0	882				0	2929		0	3358	
V/C Ratio(X)	1.09	0.00	1.35				0.00	1.03		0.00	0.84	
Avail Cap(c_a), veh/h	1092	0	882				0	2929		0	3358	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.62	0.00
Uniform Delay (d), s/veh	48.5	0.0	48.5				0.0	31.2	0.0	0.0	25.6	0.0
Incr Delay (d2), s/veh	56.6	0.0	166.7				0.0	24.0	0.0	0.0	1.7	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
%ile BackOfQ(50%),veh/ln	28.3	0.0	36.4				0.0	38.3	0.0	0.0	19.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	105.1	0.0	215.2				0.0	55.3	0.0	0.0	27.3	0.0
LnGrp LOS	F	A	F				A	F		A	C	
Approach Vol, veh/h		2389						3008	A		2826	A
Approach Delay, s/veh		160.1						55.3			27.3	
Approach LOS		F						E			C	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		93.0		57.0		93.0						
Change Period (Y+Rc), s		5.5		4.0		5.5						
Max Green Setting (Gmax), s		87.5		53.0		87.5						
Max Q Clear Time (g_c+I1), s		89.5		55.0		62.3						
Green Ext Time (p_c), s		0.0		0.0		21.9						

Intersection Summary		
HCM 6th Ctrl Delay		76.1
HCM 6th LOS		E

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

08/05/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1748	0	854	0	2186	680	0	2152	1420
Future Volume (veh/h)	0	0	0	1748	0	854	0	2186	680	0	2152	1420
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1802	0	0	0	2254	0	0	2219	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1992	0		0	2109		0	2658	
Arrive On Green				0.44	0.00	0.00	0.00	0.46	0.00	0.00	0.46	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1802	0	0	0	2254	0	0	2219	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				37.3	0.0	0.0	0.0	46.2	0.0	0.0	33.8	0.0
Cycle Q Clear(g_c), s				37.3	0.0	0.0	0.0	46.2	0.0	0.0	33.8	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1992	0		0	2109		0	2658	
V/C Ratio(X)				0.90	0.00		0.00	1.07		0.00	0.83	
Avail Cap(c_a), veh/h				2157	0		0	2109		0	2658	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.49	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				25.9	0.0	0.0	0.0	26.9	0.0	0.0	23.6	0.0
Incr Delay (d2), s/veh				5.6	0.0	0.0	0.0	36.4	0.0	0.0	3.3	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
%ile BackOfQ(50%),veh/ln				13.0	0.0	0.0	0.0	21.7	0.0	0.0	10.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.5	0.0	0.0	0.0	63.3	0.0	0.0	26.9	0.0
LnGrp LOS				C	A		A	F		A	C	
Approach Vol, veh/h					1802	A		2254	A		2219	A
Approach Delay, s/veh					31.5			63.3			26.9	
Approach LOS					C			E			C	

Timer - Assigned Phs	2		6		8	
Phs Duration (G+Y+Rc), s	51.7		51.7		48.3	
Change Period (Y+Rc), s	5.5		5.5		4.0	
Max Green Setting (Gmax), s	42.5		42.5		48.0	
Max Q Clear Time (g_c+I1), s	48.2		35.8		39.3	
Green Ext Time (p_c), s	0.0		5.9		5.1	

Intersection Summary		
HCM 6th Ctrl Delay		41.3
HCM 6th LOS		D

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis
7: Jamboree Road & I-405 SB Ramps

08/05/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	994	0	1696	0	0	0	0	1995	790	0	3491	375
Future Volume (vph)	994	0	1696	0	0	0	0	1995	790	0	3491	375
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	4.0	4.5	4.0					5.5	4.0		5.5	4.0
Lane Util. Factor	0.91	0.81	0.91					0.81	0.81		0.86	1.00
Frt	1.00	0.87	0.85					0.98	0.85		1.00	0.85
Flt Protected	0.95	0.99	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	2882	1171	2578					5297	1148		5733	1417
Flt Permitted	0.95	0.99	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	2882	1171	2578					5297	1148		5733	1417
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	1004	0	1713	0	0	0	0	2015	798	0	3526	379
RTOR Reduction (vph)	0	13	13	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	904	601	1186	0	0	0	0	2290	503	0	3526	379
Turn Type	Prot	NA	custom					NA	Free		NA	Free
Protected Phases	7	4						2			6	
Permitted Phases			7						Free			Free
Actuated Green, G (s)	50.0	50.0	50.0					70.5	130.0		70.5	130.0
Effective Green, g (s)	50.0	50.0	50.0					70.5	130.0		70.5	130.0
Actuated g/C Ratio	0.38	0.38	0.38					0.54	1.00		0.54	1.00
Clearance Time (s)	4.0	4.5	4.0					5.5			5.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0			3.0	
Lane Grp Cap (vph)	1108	450	991					2872	1148		3109	1417
v/s Ratio Prot	0.31	c0.51						0.43			c0.61	
v/s Ratio Perm			0.46						0.44			0.27
v/c Ratio	0.82	1.34	1.20					0.80	0.44		1.13	0.27
Uniform Delay, d1	35.9	40.0	40.0					24.0	0.0		29.8	0.0
Progression Factor	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	4.7	165.6	98.5					2.4	1.2		64.9	0.5
Delay (s)	40.6	205.6	138.5					26.4	1.2		94.7	0.5
Level of Service	D	F	F					C	A		F	A
Approach Delay (s)		121.1			0.0			21.9			85.5	
Approach LOS		F			A			C			F	

Intersection Summary				
HCM 2000 Control Delay	76.8	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.22			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	117.5%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

08/05/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1220	0	623	0	3407	630	0	2240	970
Future Volume (veh/h)	0	0	0	1220	0	623	0	3407	630	0	2240	970
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1258	0	0	0	3512	0	0	2309	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1373	0		0	2811		0	3542	
Arrive On Green				0.31	0.00	0.00	0.00	0.62	0.00	0.00	0.62	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1258	0	0	0	3512	0	0	2309	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				32.4	0.0	0.0	0.0	73.8	0.0	0.0	30.9	0.0
Cycle Q Clear(g_c), s				32.4	0.0	0.0	0.0	73.8	0.0	0.0	30.9	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1373	0		0	2811		0	3542	
V/C Ratio(X)				0.92	0.00		0.00	1.25		0.00	0.65	
Avail Cap(c_a), veh/h				1461	0		0	2811		0	3542	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				40.2	0.0	0.0	0.0	23.1	0.0	0.0	14.8	0.0
Incr Delay (d2), s/veh				9.0	0.0	0.0	0.0	112.5	0.0	0.0	0.9	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
%ile BackOfQ(50%),veh/ln				12.6	0.0	0.0	0.0	51.3	0.0	0.0	9.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				49.2	0.0	0.0	0.0	135.6	0.0	0.0	15.8	0.0
LnGrp LOS				D	A		A	F		A	B	
Approach Vol, veh/h					1258	A		3512	A		2309	A
Approach Delay, s/veh					49.2			135.6			15.8	
Approach LOS					D			F			B	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		79.3				79.3		40.7				
Change Period (Y+Rc), s		5.5				5.5		4.0				
Max Green Setting (Gmax), s		71.5				71.5		39.0				
Max Q Clear Time (g_c+I1), s		75.8				32.9		34.4				
Green Ext Time (p_c), s		0.0				24.9		2.3				

Intersection Summary		
HCM 6th Ctrl Delay		81.1
HCM 6th LOS		F

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis
7: Jamboree Road & I-405 SB Ramps

08/05/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1069	0	1073	0	0	0	0	2945	1532	0	2801	691
Future Volume (vph)	1069	0	1073	0	0	0	0	2945	1532	0	2801	691
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	4.0	4.5	4.0					5.5	4.0		5.5	4.0
Lane Util. Factor	0.91	0.81	0.91					0.81	0.81		0.86	1.00
Frt	1.00	0.92	0.85					0.97	0.85		1.00	0.85
Flt Protected	0.95	0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	2882	1210	2578					5241	1148		5733	1417
Flt Permitted	0.95	0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	2882	1210	2578					5241	1148		5733	1417
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	1080	0	1084	0	0	0	0	2975	1547	0	2829	698
RTOR Reduction (vph)	0	15	15	0	0	0	0	34	0	0	0	0
Lane Group Flow (vph)	886	428	820	0	0	0	0	3668	820	0	2829	698
Turn Type	Prot	NA	custom					NA	Free		NA	Free
Protected Phases	7	4						2			6	
Permitted Phases			7						Free			Free
Actuated Green, G (s)	36.0	36.0	36.0					84.5	130.0		84.5	130.0
Effective Green, g (s)	36.0	36.0	36.0					84.5	130.0		84.5	130.0
Actuated g/C Ratio	0.28	0.28	0.28					0.65	1.00		0.65	1.00
Clearance Time (s)	4.0	4.5	4.0					5.5			5.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0			3.0	
Lane Grp Cap (vph)	798	335	713					3406	1148		3726	1417
v/s Ratio Prot	0.31	c0.35						c0.70			0.49	
v/s Ratio Perm			0.32						0.71			0.49
v/c Ratio	1.11	1.28	1.15					1.08	0.71		0.76	0.49
Uniform Delay, d1	47.0	47.0	47.0					22.8	0.0		15.7	0.0
Progression Factor	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	66.6	145.8	83.1					40.9	3.8		1.5	1.2
Delay (s)	113.6	192.8	130.1					63.6	3.8		17.2	1.2
Level of Service	F	F	F					E	A		B	A
Approach Delay (s)		136.2			0.0			52.8			14.1	
Approach LOS		F			A			D			B	

Intersection Summary				
HCM 2000 Control Delay	57.1	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.14			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	92.5%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1744	0	857	0	2186	681	0	2160	1422
Future Volume (veh/h)	0	0	0	1744	0	857	0	2186	681	0	2160	1422
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1798	0	0	0	2254	0	0	2227	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1989	0		0	2112		0	2662	
Arrive On Green				0.44	0.00	0.00	0.00	0.46	0.00	0.00	0.46	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1798	0	0	0	2254	0	0	2227	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				37.2	0.0	0.0	0.0	46.2	0.0	0.0	33.9	0.0
Cycle Q Clear(g_c), s				37.2	0.0	0.0	0.0	46.2	0.0	0.0	33.9	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1989	0		0	2112		0	2662	
V/C Ratio(X)				0.90	0.00		0.00	1.07		0.00	0.84	
Avail Cap(c_a), veh/h				2157	0		0	2112		0	2662	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.49	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				25.9	0.0	0.0	0.0	26.9	0.0	0.0	23.6	0.0
Incr Delay (d2), s/veh				5.6	0.0	0.0	0.0	35.8	0.0	0.0	3.3	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
%ile BackOfQ(50%),veh/ln				12.9	0.0	0.0	0.0	21.6	0.0	0.0	10.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.5	0.0	0.0	0.0	62.6	0.0	0.0	26.9	0.0
LnGrp LOS				C	A		A	F		A	C	
Approach Vol, veh/h					1798	A		2254	A		2227	A
Approach Delay, s/veh					31.5			62.6			26.9	
Approach LOS					C			E			C	

Timer - Assigned Phs	2		6		8	
Phs Duration (G+Y+Rc), s	51.7		51.7		48.3	
Change Period (Y+Rc), s	5.5		5.5		4.0	
Max Green Setting (Gmax), s	42.5		42.5		48.0	
Max Q Clear Time (g_c+I1), s	48.2		35.9		39.2	
Green Ext Time (p_c), s	0.0		5.7		5.1	

Intersection Summary		
HCM 6th Ctrl Delay		41.0
HCM 6th LOS		D

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis
7: Jamboree Road & I-405 SB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1003	0	1687	0	0	0	0	1996	790	0	3490	375
Future Volume (vph)	1003	0	1687	0	0	0	0	1996	790	0	3490	375
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	4.0	4.5	4.0					5.5	4.0		5.5	4.0
Lane Util. Factor	0.91	0.81	0.91					0.81	0.81		0.86	1.00
Frt	1.00	0.87	0.85					0.98	0.85		1.00	0.85
Flt Protected	0.95	0.99	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	2882	1171	2578					5297	1148		5733	1417
Flt Permitted	0.95	0.99	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	2882	1171	2578					5297	1148		5733	1417
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	1013	0	1704	0	0	0	0	2016	798	0	3525	379
RTOR Reduction (vph)	0	13	13	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	912	599	1180	0	0	0	0	2291	503	0	3525	379
Turn Type	Prot	NA	custom					NA	Free		NA	Free
Protected Phases	7	4						2			6	
Permitted Phases			7						Free			Free
Actuated Green, G (s)	50.0	50.0	50.0					70.5	130.0		70.5	130.0
Effective Green, g (s)	50.0	50.0	50.0					70.5	130.0		70.5	130.0
Actuated g/C Ratio	0.38	0.38	0.38					0.54	1.00		0.54	1.00
Clearance Time (s)	4.0	4.5	4.0					5.5			5.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0			3.0	
Lane Grp Cap (vph)	1108	450	991					2872	1148		3109	1417
v/s Ratio Prot	0.32	c0.51						0.43			c0.61	
v/s Ratio Perm			0.46						0.44			0.27
v/c Ratio	0.82	1.33	1.19					0.80	0.44		1.13	0.27
Uniform Delay, d1	36.0	40.0	40.0					24.0	0.0		29.8	0.0
Progression Factor	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	5.1	163.7	96.0					2.4	1.2		64.8	0.5
Delay (s)	41.1	203.7	136.0					26.4	1.2		94.5	0.5
Level of Service	D	F	F					C	A		F	A
Approach Delay (s)		119.4			0.0			21.9			85.4	
Approach LOS		F			A			C			F	

Intersection Summary				
HCM 2000 Control Delay	76.2	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.22			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	117.2%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1223	0	618	0	3402	630	0	2237	970
Future Volume (veh/h)	0	0	0	1223	0	618	0	3402	630	0	2237	970
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1261	0	0	0	3507	0	0	2306	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1375	0		0	2809		0	3539	
Arrive On Green				0.31	0.00	0.00	0.00	0.61	0.00	0.00	0.61	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1261	0	0	0	3507	0	0	2306	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				32.5	0.0	0.0	0.0	73.8	0.0	0.0	30.9	0.0
Cycle Q Clear(g_c), s				32.5	0.0	0.0	0.0	73.8	0.0	0.0	30.9	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1375	0		0	2809		0	3539	
V/C Ratio(X)				0.92	0.00		0.00	1.25		0.00	0.65	
Avail Cap(c_a), veh/h				1461	0		0	2809		0	3539	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				40.2	0.0	0.0	0.0	23.1	0.0	0.0	14.8	0.0
Incr Delay (d2), s/veh				9.1	0.0	0.0	0.0	112.1	0.0	0.0	0.9	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
%ile BackOfQ(50%),veh/ln				12.6	0.0	0.0	0.0	51.2	0.0	0.0	9.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				49.3	0.0	0.0	0.0	135.2	0.0	0.0	15.8	0.0
LnGrp LOS				D	A		A	F		A	B	
Approach Vol, veh/h					1261	A		3507	A		2306	A
Approach Delay, s/veh					49.3			135.2			15.8	
Approach LOS					D			F			B	

Timer - Assigned Phs	2		6		8	
Phs Duration (G+Y+Rc), s	79.3		79.3		40.7	
Change Period (Y+Rc), s	5.5		5.5		4.0	
Max Green Setting (Gmax), s	71.5		71.5		39.0	
Max Q Clear Time (g_c+I1), s	75.8		32.9		34.5	
Green Ext Time (p_c), s	0.0		24.8		2.2	

Intersection Summary		
HCM 6th Ctrl Delay		81.0
HCM 6th LOS		F

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis
7: Jamboree Road & I-405 SB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1065	0	1077	0	0	0	0	2943	1533	0	2801	691
Future Volume (vph)	1065	0	1077	0	0	0	0	2943	1533	0	2801	691
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	4.0	4.5	4.0					5.5	4.0		5.5	4.0
Lane Util. Factor	0.91	0.81	0.91					0.81	0.81		0.86	1.00
Frt	1.00	0.92	0.85					0.97	0.85		1.00	0.85
Flt Protected	0.95	0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	2882	1210	2578					5241	1148		5733	1417
Flt Permitted	0.95	0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	2882	1210	2578					5241	1148		5733	1417
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	1076	0	1088	0	0	0	0	2973	1548	0	2829	698
RTOR Reduction (vph)	0	15	15	0	0	0	0	34	0	0	0	0
Lane Group Flow (vph)	882	429	823	0	0	0	0	3667	820	0	2829	698
Turn Type	Prot	NA	custom					NA	Free		NA	Free
Protected Phases	7	4						2			6	
Permitted Phases			7						Free			Free
Actuated Green, G (s)	36.0	36.0	36.0					84.5	130.0		84.5	130.0
Effective Green, g (s)	36.0	36.0	36.0					84.5	130.0		84.5	130.0
Actuated g/C Ratio	0.28	0.28	0.28					0.65	1.00		0.65	1.00
Clearance Time (s)	4.0	4.5	4.0					5.5			5.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0			3.0	
Lane Grp Cap (vph)	798	335	713					3406	1148		3726	1417
v/s Ratio Prot	0.31	c0.35						c0.70			0.49	
v/s Ratio Perm			0.32						0.71			0.49
v/c Ratio	1.11	1.28	1.15					1.08	0.71		0.76	0.49
Uniform Delay, d1	47.0	47.0	47.0					22.8	0.0		15.7	0.0
Progression Factor	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	64.7	147.1	84.8					40.8	3.8		1.5	1.2
Delay (s)	111.7	194.1	131.8					63.5	3.8		17.2	1.2
Level of Service	F	F	F					E	A		B	A
Approach Delay (s)		136.4			0.0			52.7			14.1	
Approach LOS		F			A			D			B	

Intersection Summary				
HCM 2000 Control Delay	57.1	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.14			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	92.4%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1769	0	862	0	2188	680	0	2211	1410
Future Volume (veh/h)	0	0	0	1769	0	862	0	2188	680	0	2211	1410
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1824	0	0	0	2256	0	0	2279	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				2008	0		0	2093		0	2637	
Arrive On Green				0.45	0.00	0.00	0.00	0.46	0.00	0.00	0.46	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1824	0	0	0	2256	0	0	2279	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				37.8	0.0	0.0	0.0	45.8	0.0	0.0	35.5	0.0
Cycle Q Clear(g_c), s				37.8	0.0	0.0	0.0	45.8	0.0	0.0	35.5	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				2008	0		0	2093		0	2637	
V/C Ratio(X)				0.91	0.00		0.00	1.08		0.00	0.86	
Avail Cap(c_a), veh/h				2157	0		0	2093		0	2637	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.49	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				25.7	0.0	0.0	0.0	27.1	0.0	0.0	24.3	0.0
Incr Delay (d2), s/veh				5.9	0.0	0.0	0.0	40.1	0.0	0.0	4.1	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
%ile BackOfQ(50%),veh/ln				13.2	0.0	0.0	0.0	22.3	0.0	0.0	11.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.6	0.0	0.0	0.0	67.2	0.0	0.0	28.4	0.0
LnGrp LOS				C	A		A	F		A	C	
Approach Vol, veh/h					1824	A		2256	A		2279	A
Approach Delay, s/veh					31.6			67.2			28.4	
Approach LOS					C			E			C	

Timer - Assigned Phs	2		6	8
Phs Duration (G+Y+Rc), s	51.3		51.3	48.7
Change Period (Y+Rc), s	5.5		5.5	4.0
Max Green Setting (Gmax), s	42.5		42.5	48.0
Max Q Clear Time (g_c+I1), s	47.8		37.5	39.8
Green Ext Time (p_c), s	0.0		4.5	4.9

Intersection Summary		
HCM 6th Ctrl Delay		43.1
HCM 6th LOS		D

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis
7: Jamboree Road & I-405 SB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	985	0	1704	0	0	0	0	2006	809	0	3562	384
Future Volume (vph)	985	0	1704	0	0	0	0	2006	809	0	3562	384
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	4.0	4.5	4.0					5.5	4.0		5.5	4.0
Lane Util. Factor	0.91	0.81	0.91					0.81	0.81		0.86	1.00
Frt	1.00	0.87	0.85					0.98	0.85		1.00	0.85
Flt Protected	0.95	0.99	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	2882	1171	2578					5293	1148		5733	1417
Flt Permitted	0.95	0.99	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	2882	1171	2578					5293	1148		5733	1417
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	995	0	1721	0	0	0	0	2026	817	0	3598	388
RTOR Reduction (vph)	0	13	13	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	895	603	1192	0	0	0	0	2315	507	0	3598	388
Turn Type	Prot	NA	custom					NA	Free		NA	Free
Protected Phases	7	4						2			6	
Permitted Phases			7						Free			Free
Actuated Green, G (s)	50.0	50.0	50.0					70.5	130.0		70.5	130.0
Effective Green, g (s)	50.0	50.0	50.0					70.5	130.0		70.5	130.0
Actuated g/C Ratio	0.38	0.38	0.38					0.54	1.00		0.54	1.00
Clearance Time (s)	4.0	4.5	4.0					5.5			5.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0			3.0	
Lane Grp Cap (vph)	1108	450	991					2870	1148		3109	1417
v/s Ratio Prot	0.31	c0.52						0.44			c0.63	
v/s Ratio Perm			0.46						0.44			0.27
v/c Ratio	0.81	1.34	1.20					0.81	0.44		1.16	0.27
Uniform Delay, d1	35.7	40.0	40.0					24.2	0.0		29.8	0.0
Progression Factor	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	4.4	167.5	101.0					2.5	1.2		74.8	0.5
Delay (s)	40.1	207.5	141.0					26.7	1.2		104.6	0.5
Level of Service	D	F	F					C	A		F	A
Approach Delay (s)		122.9			0.0			22.2			94.4	
Approach LOS		F			A			C			F	

Intersection Summary				
HCM 2000 Control Delay	81.0	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.24			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	118.9%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1231	0	632	0	3458	630	0	2279	970
Future Volume (veh/h)	0	0	0	1231	0	632	0	3458	630	0	2279	970
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1269	0	0	0	3565	0	0	2349	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1381	0		0	2803		0	3532	
Arrive On Green				0.31	0.00	0.00	0.00	0.61	0.00	0.00	0.61	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1269	0	0	0	3565	0	0	2349	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				32.7	0.0	0.0	0.0	73.6	0.0	0.0	32.0	0.0
Cycle Q Clear(g_c), s				32.7	0.0	0.0	0.0	73.6	0.0	0.0	32.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1381	0		0	2803		0	3532	
V/C Ratio(X)				0.92	0.00		0.00	1.27		0.00	0.67	
Avail Cap(c_a), veh/h				1461	0		0	2803		0	3532	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				40.1	0.0	0.0	0.0	23.2	0.0	0.0	15.1	0.0
Incr Delay (d2), s/veh				9.3	0.0	0.0	0.0	122.6	0.0	0.0	1.0	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
%ile BackOfQ(50%),veh/ln				12.7	0.0	0.0	0.0	53.8	0.0	0.0	9.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				49.5	0.0	0.0	0.0	145.8	0.0	0.0	16.1	0.0
LnGrp LOS				D	A		A	F		A	B	
Approach Vol, veh/h					1269	A		3565	A		2349	A
Approach Delay, s/veh					49.5			145.8			16.1	
Approach LOS					D			F			B	

Timer - Assigned Phs	2		6		8							
Phs Duration (G+Y+Rc), s	79.1		79.1		40.9							
Change Period (Y+Rc), s	5.5		5.5		4.0							
Max Green Setting (Gmax), s	71.5		71.5		39.0							
Max Q Clear Time (g_c+I1), s	75.6		34.0		34.7							
Green Ext Time (p_c), s	0.0		25.0		2.2							

Intersection Summary		
HCM 6th Ctrl Delay		86.4
HCM 6th LOS		F

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis
7: Jamboree Road & I-405 SB Ramps

11/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1054	0	1101	0	0	0	0	3006	1590	0	2849	700
Future Volume (vph)	1054	0	1101	0	0	0	0	3006	1590	0	2849	700
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	4.0	4.5	4.0					5.5	4.0		5.5	4.0
Lane Util. Factor	0.91	0.81	0.91					0.81	0.81		0.86	1.00
Frt	1.00	0.91	0.85					0.97	0.85		1.00	0.85
Flt Protected	0.95	0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	2882	1205	2578					5236	1148		5733	1417
Flt Permitted	0.95	0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	2882	1205	2578					5236	1148		5733	1417
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	1065	0	1112	0	0	0	0	3036	1606	0	2878	707
RTOR Reduction (vph)	0	15	15	0	0	0	0	35	0	0	0	0
Lane Group Flow (vph)	884	433	830	0	0	0	0	3772	835	0	2878	707
Turn Type	Prot	NA	custom					NA	Free		NA	Free
Protected Phases	7	4						2			6	
Permitted Phases			7						Free			Free
Actuated Green, G (s)	36.0	36.0	36.0					84.5	130.0		84.5	130.0
Effective Green, g (s)	36.0	36.0	36.0					84.5	130.0		84.5	130.0
Actuated g/C Ratio	0.28	0.28	0.28					0.65	1.00		0.65	1.00
Clearance Time (s)	4.0	4.5	4.0					5.5			5.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0			3.0	
Lane Grp Cap (vph)	798	333	713					3403	1148		3726	1417
v/s Ratio Prot	0.31	c0.36						c0.72			0.50	
v/s Ratio Perm			0.32						0.73			0.50
v/c Ratio	1.11	1.30	1.16					1.11	0.73		0.77	0.50
Uniform Delay, d1	47.0	47.0	47.0					22.8	0.0		16.0	0.0
Progression Factor	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	65.6	155.2	88.6					53.7	4.0		1.6	1.3
Delay (s)	112.6	202.2	135.6					76.5	4.0		17.6	1.3
Level of Service	F	F	F					E	A		B	A
Approach Delay (s)		140.0			0.0			63.4			14.4	
Approach LOS		F			A			E			B	

Intersection Summary				
HCM 2000 Control Delay	62.6	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.17			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	93.7%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

12/02/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1775	0	857	0	2196	681	0	2209	1412
Future Volume (veh/h)	0	0	0	1775	0	857	0	2196	681	0	2209	1412
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1830	0	0	0	2264	0	0	2277	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1999	0		0	2054		0	2589	
Arrive On Green				0.44	0.00	0.00	0.00	0.45	0.00	0.00	0.45	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1830	0	0	0	2264	0	0	2277	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				34.3	0.0	0.0	0.0	40.5	0.0	0.0	32.4	0.0
Cycle Q Clear(g_c), s				34.3	0.0	0.0	0.0	40.5	0.0	0.0	32.4	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1999	0		0	2054		0	2589	
V/C Ratio(X)				0.92	0.00		0.00	1.10		0.00	0.88	
Avail Cap(c_a), veh/h				2097	0		0	2054		0	2589	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.48	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				23.4	0.0	0.0	0.0	24.8	0.0	0.0	22.5	0.0
Incr Delay (d2), s/veh				6.6	0.0	0.0	0.0	50.1	0.0	0.0	4.7	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
%ile BackOfQ(50%),veh/ln				11.9	0.0	0.0	0.0	21.9	0.0	0.0	10.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				30.0	0.0	0.0	0.0	74.8	0.0	0.0	27.2	0.0
LnGrp LOS				C	A		A	F		A	C	
Approach Vol, veh/h					1830	A		2264	A		2277	A
Approach Delay, s/veh					30.0			74.8			27.2	
Approach LOS					C			E			C	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		46.0				46.0		44.0				
Change Period (Y+Rc), s		5.5				5.5		4.0				
Max Green Setting (Gmax), s		38.5				38.5		42.0				
Max Q Clear Time (g_c+I1), s		42.5				34.4		36.3				
Green Ext Time (p_c), s		0.0				3.7		3.7				

Intersection Summary		
HCM 6th Ctrl Delay		45.0
HCM 6th LOS		D

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis
7: Jamboree Road & I-405 SB Ramps

12/02/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	983	0	1706	0	0	0	0	2015	810	0	3571	385
Future Volume (vph)	983	0	1706	0	0	0	0	2015	810	0	3571	385
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	4.0	4.5	4.0					5.5	4.0		5.5	4.0
Lane Util. Factor	0.91	0.81	0.91					0.81	0.81		0.86	1.00
Frt	1.00	0.87	0.85					0.98	0.85		1.00	0.85
Flt Protected	0.95	0.99	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	2882	1171	2578					5293	1148		5733	1417
Flt Permitted	0.95	0.99	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	2882	1171	2578					5293	1148		5733	1417
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	993	0	1723	0	0	0	0	2035	818	0	3607	389
RTOR Reduction (vph)	0	14	14	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	894	602	1192	0	0	0	0	2323	507	0	3607	389
Turn Type	Prot	NA	custom					NA	Free		NA	Free
Protected Phases	7	4						2			6	
Permitted Phases			7						Free			Free
Actuated Green, G (s)	45.0	45.0	45.0					65.5	120.0		65.5	120.0
Effective Green, g (s)	45.0	45.0	45.0					65.5	120.0		65.5	120.0
Actuated g/C Ratio	0.38	0.38	0.38					0.55	1.00		0.55	1.00
Clearance Time (s)	4.0	4.5	4.0					5.5			5.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0			3.0	
Lane Grp Cap (vph)	1080	439	966					2889	1148		3129	1417
v/s Ratio Prot	0.31	c0.51						0.44			c0.63	
v/s Ratio Perm			0.46						0.44			0.27
v/c Ratio	0.83	1.37	1.23					0.80	0.44		1.15	0.27
Uniform Delay, d1	34.0	37.5	37.5					22.1	0.0		27.2	0.0
Progression Factor	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	5.3	180.7	114.2					2.5	1.2		72.8	0.5
Delay (s)	39.3	218.2	151.7					24.5	1.2		100.1	0.5
Level of Service	D	F	F					C	A		F	A
Approach Delay (s)		129.8			0.0			20.4			90.4	
Approach LOS		F			A			C			F	

Intersection Summary				
HCM 2000 Control Delay	80.7	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.25			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	119.1%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

HCM 6th Signalized Intersection Summary
6: Jamboree Road & I-405 NB Ramps

12/02/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1237	0	629	0	3471	630	0	2283	970
Future Volume (veh/h)	0	0	0	1237	0	629	0	3471	630	0	2283	970
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1673	0	1673	0	1673	1673	0	1673	1673
Adj Flow Rate, veh/h				1275	0	0	0	3578	0	0	2354	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1385	0		0	2799		0	3527	
Arrive On Green				0.31	0.00	0.00	0.00	0.61	0.00	0.00	0.61	0.00
Sat Flow, veh/h				4494	0	1418	0	4719	1418	0	5991	2496
Grp Volume(v), veh/h				1275	0	0	0	3578	0	0	2354	0
Grp Sat Flow(s),veh/h/ln				1498	0	1418	0	1523	1418	0	1439	1248
Q Serve(g_s), s				32.9	0.0	0.0	0.0	73.5	0.0	0.0	32.2	0.0
Cycle Q Clear(g_c), s				32.9	0.0	0.0	0.0	73.5	0.0	0.0	32.2	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1385	0		0	2799		0	3527	
V/C Ratio(X)				0.92	0.00		0.00	1.28		0.00	0.67	
Avail Cap(c_a), veh/h				1461	0		0	2799		0	3527	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				40.1	0.0	0.0	0.0	23.2	0.0	0.0	15.2	0.0
Incr Delay (d2), s/veh				9.5	0.0	0.0	0.0	125.5	0.0	0.0	1.0	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
%ile BackOfQ(50%),veh/ln				12.8	0.0	0.0	0.0	54.5	0.0	0.0	9.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				49.6	0.0	0.0	0.0	148.8	0.0	0.0	16.2	0.0
LnGrp LOS				D	A		A	F		A	B	
Approach Vol, veh/h					1275	A		3578	A		2354	A
Approach Delay, s/veh					49.6			148.8			16.2	
Approach LOS					D			F			B	

Timer - Assigned Phs	2		6		8							
Phs Duration (G+Y+Rc), s	79.0		79.0		41.0							
Change Period (Y+Rc), s	5.5		5.5		4.0							
Max Green Setting (Gmax), s	71.5		71.5		39.0							
Max Q Clear Time (g_c+I1), s	75.5		34.2		34.9							
Green Ext Time (p_c), s	0.0		25.0		2.1							

Intersection Summary		
HCM 6th Ctrl Delay		87.9
HCM 6th LOS		F

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis
7: Jamboree Road & I-405 SB Ramps

12/02/2020

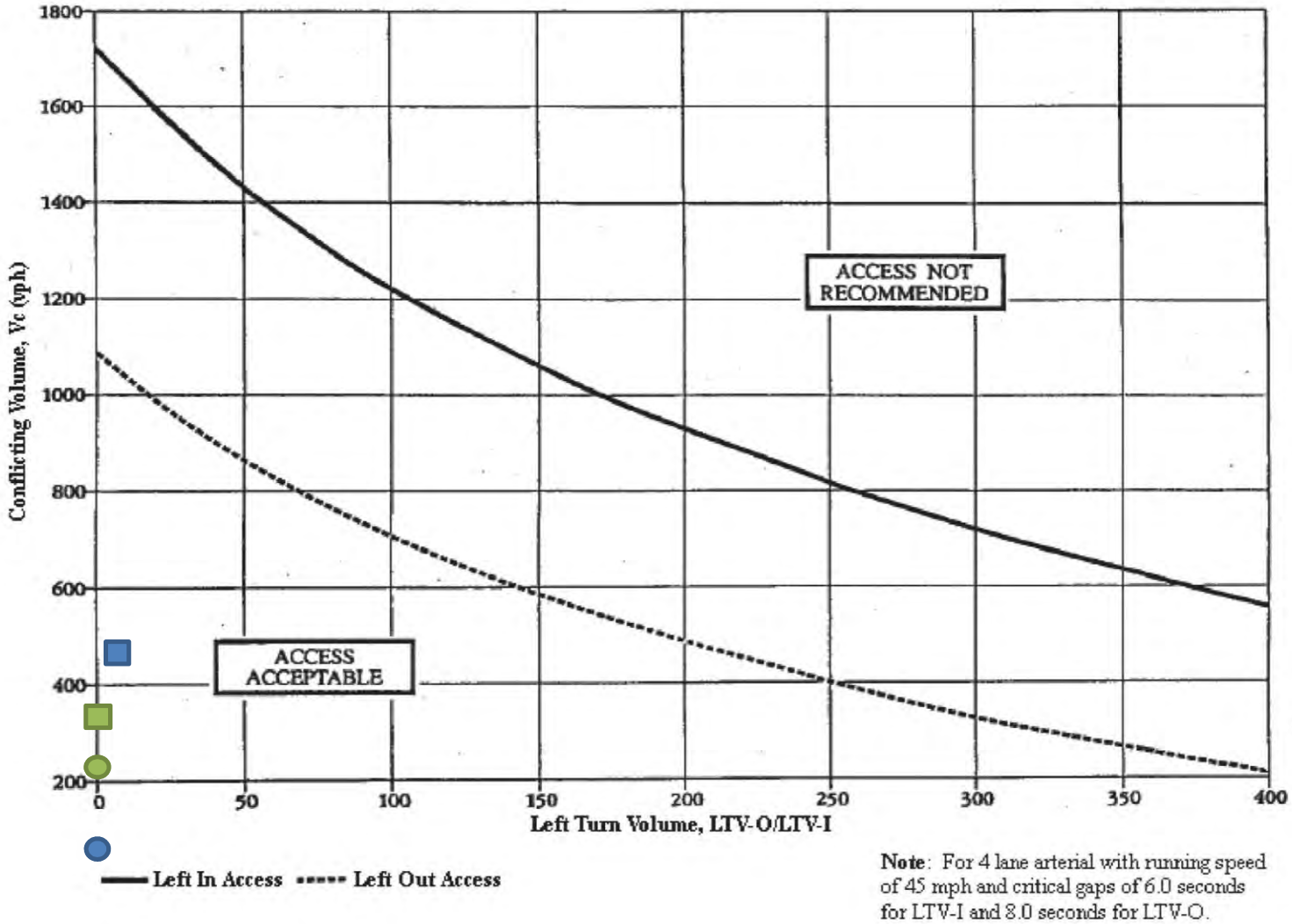
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1066	0	1096	0	0	0	0	3004	1590	0	2854	700
Future Volume (vph)	1066	0	1096	0	0	0	0	3004	1590	0	2854	700
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Total Lost time (s)	4.0	4.5	4.0					5.5	4.0		5.5	4.0
Lane Util. Factor	0.91	0.81	0.91					0.81	0.81		0.86	1.00
Frt	1.00	0.91	0.85					0.97	0.85		1.00	0.85
Flt Protected	0.95	0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	2882	1209	2578					5236	1148		5733	1417
Flt Permitted	0.95	0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	2882	1209	2578					5236	1148		5733	1417
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	1077	0	1107	0	0	0	0	3034	1606	0	2883	707
RTOR Reduction (vph)	0	15	15	0	0	0	0	35	0	0	0	0
Lane Group Flow (vph)	883	434	837	0	0	0	0	3770	835	0	2883	707
Turn Type	Prot	NA	custom					NA	Free		NA	Free
Protected Phases	7	4						2			6	
Permitted Phases			7						Free			Free
Actuated Green, G (s)	37.0	37.0	37.0					83.5	130.0		83.5	130.0
Effective Green, g (s)	37.0	37.0	37.0					83.5	130.0		83.5	130.0
Actuated g/C Ratio	0.28	0.28	0.28					0.64	1.00		0.64	1.00
Clearance Time (s)	4.0	4.5	4.0					5.5			5.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0			3.0	
Lane Grp Cap (vph)	820	344	733					3363	1148		3682	1417
v/s Ratio Prot	0.31	c0.36						c0.72			0.50	
v/s Ratio Perm			0.32						0.73			0.50
v/c Ratio	1.08	1.26	1.14					1.12	0.73		0.78	0.50
Uniform Delay, d1	46.5	46.5	46.5					23.2	0.0		16.7	0.0
Progression Factor	1.00	1.00	1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	54.2	139.1	79.7					59.0	4.0		1.7	1.3
Delay (s)	100.7	185.6	126.2					82.3	4.0		18.5	1.3
Level of Service	F	F	F					F	A		B	A
Approach Delay (s)		128.1			0.0			68.2			15.1	
Approach LOS		F			A			E			B	

Intersection Summary				
HCM 2000 Control Delay	62.4	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.17			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	93.9%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

APPENDIX F

TDP-3 FIGURES



LSA

SOURCE: *Highway Capacity Manual* , Special Report 209, TRB, Chapter 10.

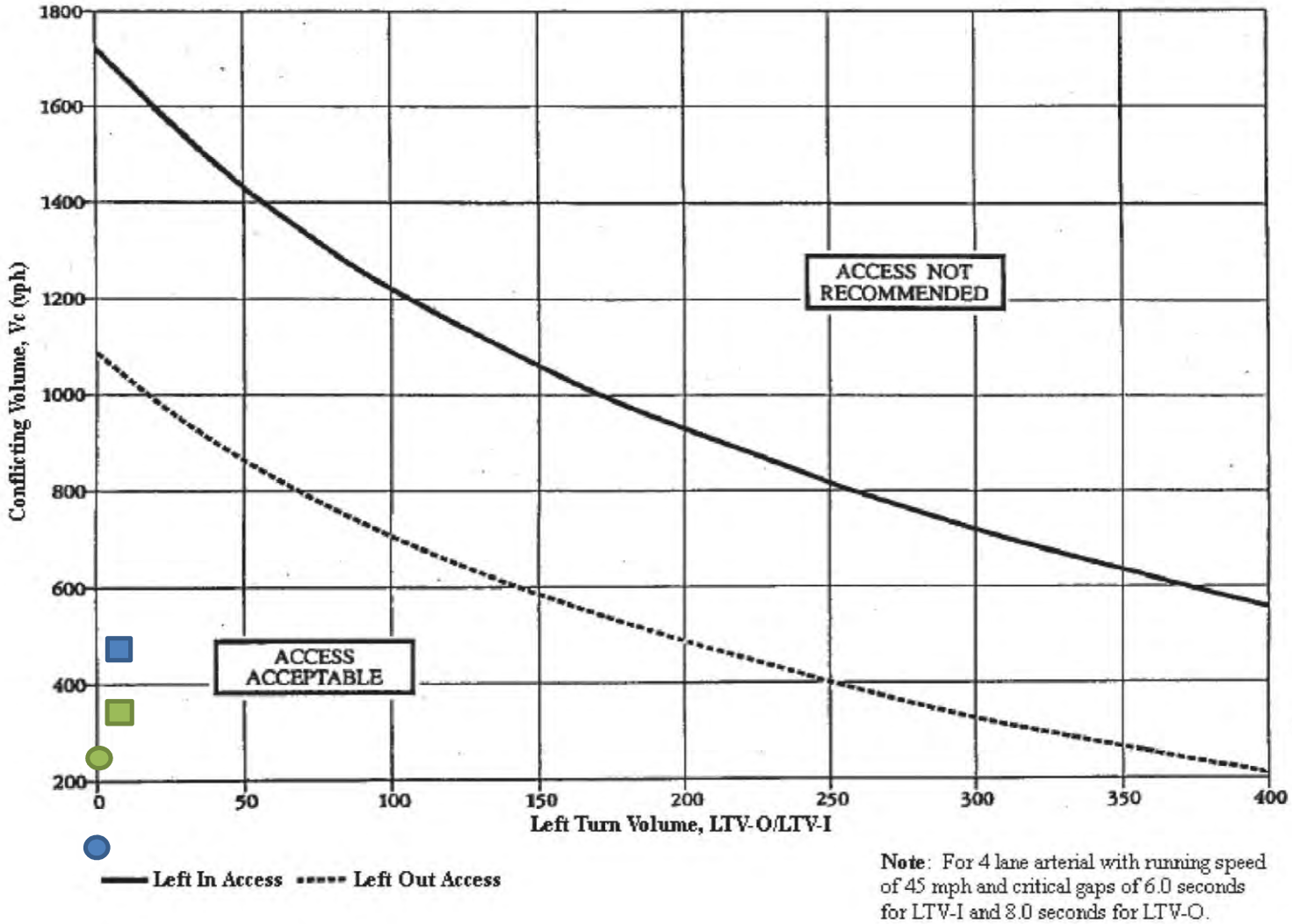
FIGURE F1

LEGEND

- Left In AM Peak Hour
- Left In PM Peak Hour
- Left Out AM Peak Hour
- Left Out PM Peak Hour

17861 Cartwright Road

TDP-3 Left-Turn Access Criteria - Cartwright Road Driveway (Existing)



LSA

SOURCE: *Highway Capacity Manual* , Special Report 209, TRB, Chapter 10.

FIGURE F2

LEGEND

- Left In AM Peak Hour
- Left In PM Peak Hour
- Left Out AM Peak Hour
- Left Out PM Peak Hour

17861 Cartwright Road

TDP-3 Left-Turn Access Criteria - Cartwright Road Driveway (Existing Plus Project)

APPENDIX G

REQUEST FOR DEVIATION FROM TDP-14

CARLSBAD
FRESNO
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

November 10, 2020

APPROVED 12/3/20
Sun-Sun T. Murillo

Sun-Sun Murillo, P.E.
Transportation Department
City of Irvine
One Civic Center Plaza
P.O. Box 19575
Irvine, CA 92623-9575

Subject: 17861 Cartwright Road (00817556-PPA): Request for Deviation from Transportation Design Procedure 14 (Driveway Lengths)

Dear Ms. Murillo:

LSA has prepared the following request for deviation from Transportation Design Procedure 14 (TDP-14; Driveway Lengths) for the project driveway along Cartwright Road. Based on TDP-14, this project driveway does not meet the minimum recommended driveway length. This request for deviation is based on data and analysis provided in the 17861 Cartwright Road (project) Traffic Study.

Reasons for Requesting the Deviation

As part of the Traffic Study, the City of Irvine (City) Transportation Design Procedures (TDPs) were reviewed to ensure that the proposed project is consistent with the City's design criteria. TDP-14 states that driveways should be of sufficient length to allow vehicles to enter the parking area without causing subsequent vehicles to back out onto City streets. The greater the peak-hour inbound traffic volume, the longer the driveway must be. The measurement of sufficient length is based on the distance from the back of the sidewalk or stop bar to the first intersecting parking space or traffic control measure on site. Per TDP-14, the minimum length of an unsignalized driveway should be 25 feet (ft) and should increase at a rate of 1 ft of storage per peak-hour inbound vehicle (in 25 ft increments).

Access to the project site will be provided via a full-access driveway on Cartwright Road that is shared with the adjacent parcel at 17801 Cartwright Road (Yogurtland Franchising, Inc.). Figure 2 of the Traffic Study (all figures attached) shows the driveway length. Figure 4 of the Traffic Study (attached) illustrates the peak-hour volumes at the project driveway.

The project driveway will provide approximately 15 ft of throat length (measured from the back of the Cartwright Road sidewalk to the first parking space located on site). The existing plus project (including Yogurtland Franchising, Inc.) inbound volumes are 19 a.m. and 16 p.m. peak-hour vehicles. Based on TDP-14, a driveway throat length of 25 ft should be provided. As such, TDP-14 is not met.

Specific Justification for Requesting the Proposed Design Feature

The project driveway cannot be lengthened without removal of parking and making significant changes to the proposed site layout, resulting in a less-desirable project. The project driveway cannot be relocated or reconfigured to meet TDP-14. In addition, the first on-site parking space will be dedicated to the United States Postal Service (USPS) for mail delivery once per day. This parking space will not be used by residents or guests of the proposed project.

Explanation of How the Proposal Meets the Intent of TDP-14 and Does Not Create Any Traffic Operations or Safety Issues

Figure 4 of the Traffic Study shows the inbound and outbound volumes at the project driveway, the inbound and outbound volumes at the opposing driveway (Sullivan) for the Metropolis Apartments, and the through volumes along Cartwright Road that include all traffic generated by the surrounding land uses in the project vicinity. As shown in this figure, Cartwright Road has low peak-hour volumes adjacent to the project site. Although the project driveway length is less than 25 ft, the project driveway will not create operational issues along Cartwright Road. The majority of inbound a.m. peak-hour vehicles will be residents, and the designated resident parking is located at the back of the site. Therefore, inbound project traffic is not likely to create queues or delays at the USPS parking space located 15 ft into the site.

Furthermore, LSA used the Highway Capacity Manual (HCM) methodology to determine the projected peak-hour levels of service (LOS) at the project driveway under Existing Plus Project conditions. Table A summarizes the results of the existing plus project condition analysis at the project driveway.

Table A: Project Driveway Level of Service Summary

Cartwright Road and Project Driveway–Sullivan	AM Peak Hour		PM Peak Hour	
	Delay (sec)	LOS	Delay (sec)	LOS
Existing Plus Project	12.4	B	14.7	B

LOS = level of service
sec = seconds

As shown in Table A, the project driveway would operate at satisfactory LOS B during both peak hours. Because the project driveway is expected to operate within the City's criteria for acceptable operations, the project can be implemented with minimal adverse impacts to the adjacent roadway.

Supporting Documentation and Justification for the Rationale of the Requested Deviation

The project was designed to conform to the City's standards; however, it is unable to provide the recommended driveway length per TDP-14. The project driveway is not expected to adversely affect the operation of the adjacent roadway, based on the justification above. Additionally, the project driveway will operate at satisfactory LOS in both peak hours; therefore, it is recommended that the project be approved for deviation from TDP-14.

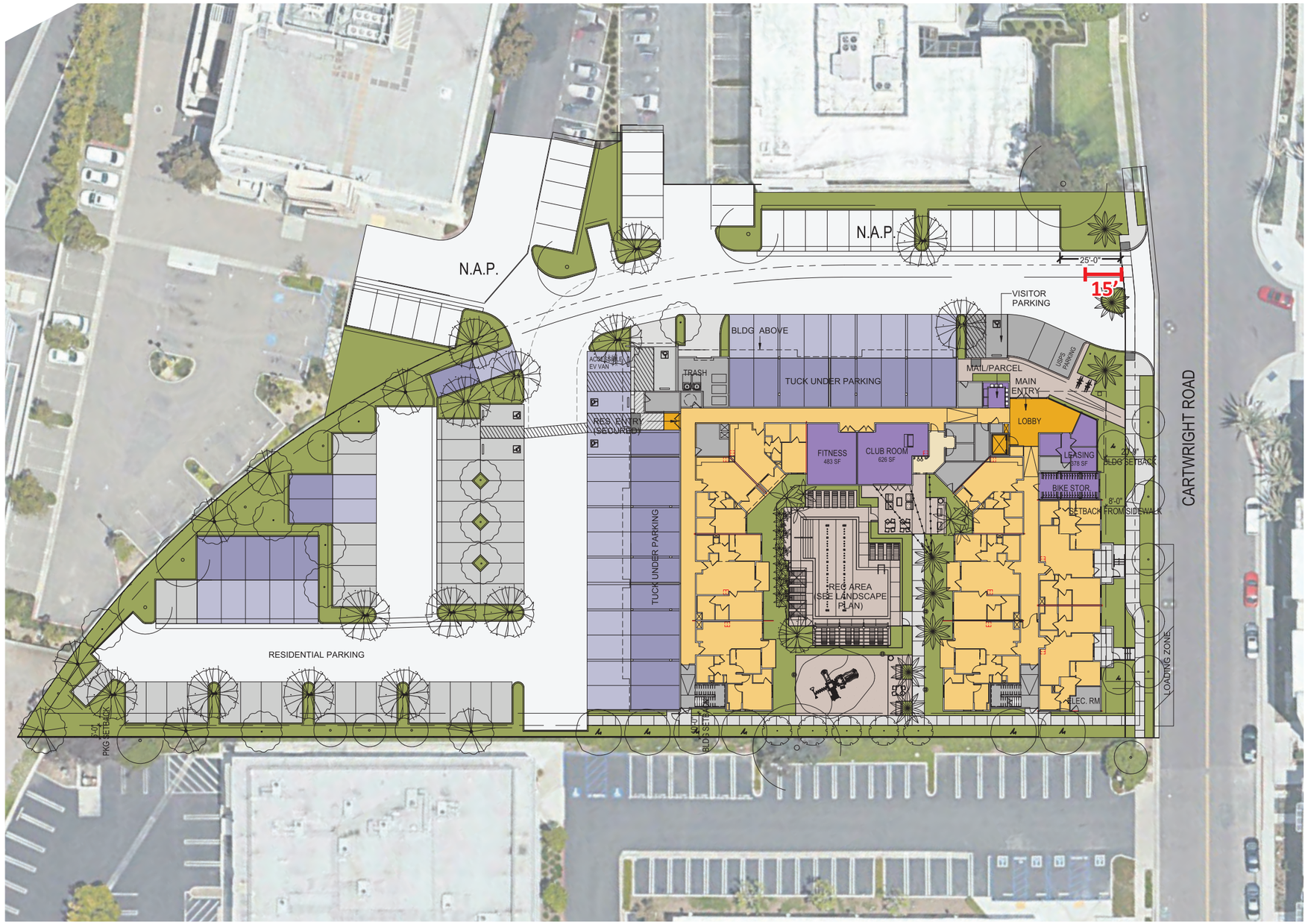
Thank you for your consideration of this TDP-14 deviation request for the project. If you have any questions, please call me at (949) 553-0666.

Sincerely,

LSA Associates, Inc.

Ken Wilhelm
Principal

Attachments: Figure 2 of the Traffic Study
Figure 4 of the Traffic Study
Project Driveway HCM Worksheets



LSA

FIGURE 2

N

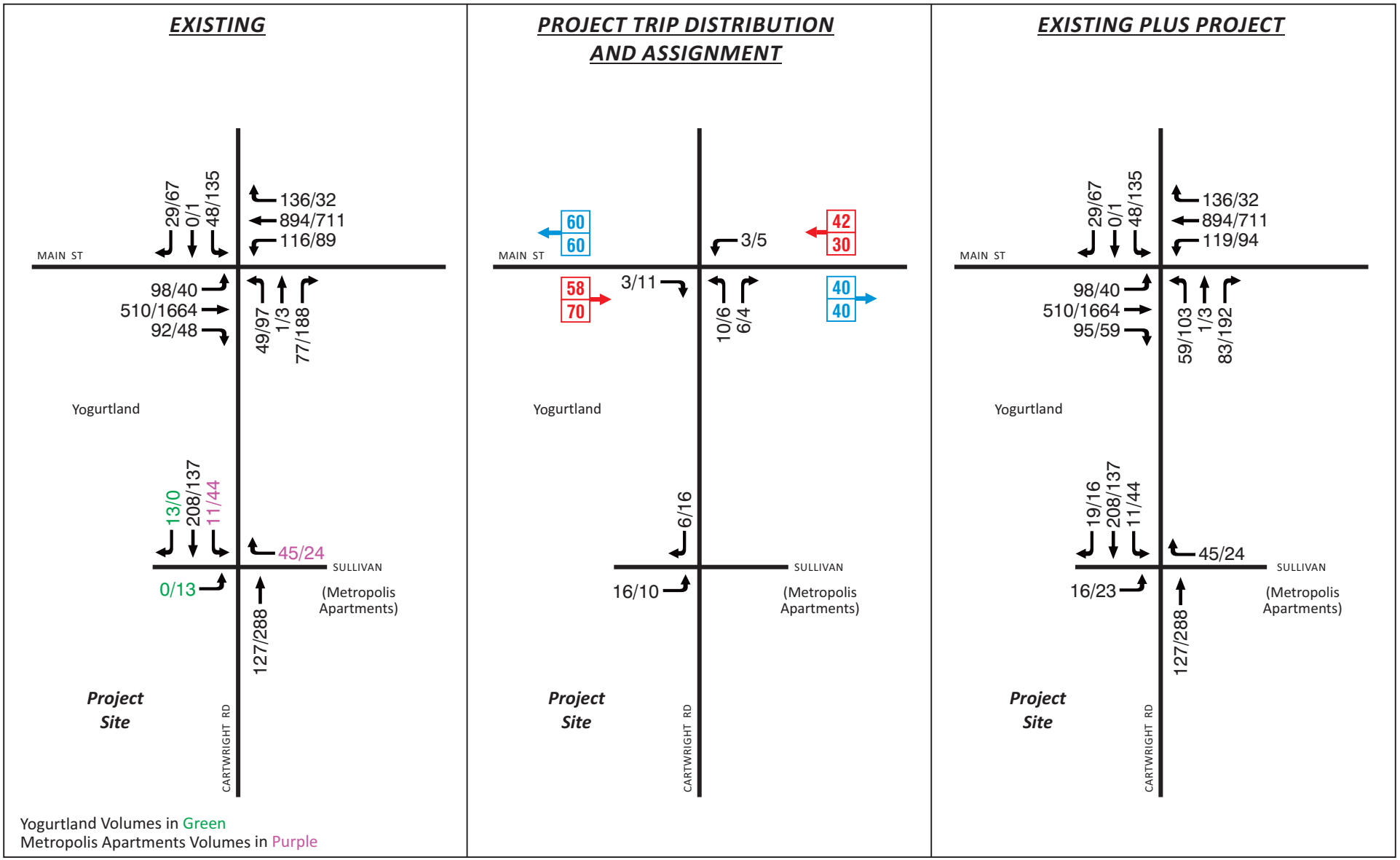
0 23 46
FEET

SOURCE: Fuscoe Engineering

I:\CGW2001\G\Site Plan.cdr (9/30/2020)

17861 Cartwright Road

Site Plan



LSA

LEGEND

XX/YY - AM/PM Peak Hour Volumes

AM / PM - Inbound Trip Distribution Percentages

AM / PM - Outbound Trip Distribution Percentages

N

SCHEMATIC - NOT TO SCALE

FIGURE 4

17861 Cartwright Road

Existing and Existing Plus Project Peak Hour Volumes

I:\CGW2001\G\Ex+Project Volumes.cdr (8/5/2020)

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	0	0	0	0	45	0	127	0	11	208	19
Future Vol, veh/h	16	0	0	0	0	45	0	127	0	11	208	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	0	0	0	49	0	138	0	12	226	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	424	399	237	399	409	138	247	0	0	138	0	0
Stage 1	261	261	-	138	138	-	-	-	-	-	-	-
Stage 2	163	138	-	261	271	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	540	539	802	561	532	910	1319	-	-	1446	-	-
Stage 1	744	692	-	865	782	-	-	-	-	-	-	-
Stage 2	839	782	-	744	685	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	507	534	802	557	527	910	1319	-	-	1446	-	-
Mov Cap-2 Maneuver	507	534	-	557	527	-	-	-	-	-	-	-
Stage 1	744	685	-	865	782	-	-	-	-	-	-	-
Stage 2	794	782	-	737	678	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.4	9.2	0	0.3
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1319	-	-	507	910	1446	-	-
HCM Lane V/C Ratio	-	-	-	0.034	0.054	0.008	-	-
HCM Control Delay (s)	0	-	-	12.4	9.2	7.5	0	-
HCM Lane LOS	A	-	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-

HCM 6th TWSC
1: Cartwright Road & Project Driveway/Sullivan 08/13/2020

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	0	0	0	0	24	0	288	0	44	137	16
Future Vol, veh/h	23	0	0	0	0	24	0	288	0	44	137	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	0	0	0	0	26	0	313	0	48	149	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	580	567	158	567	575	313	166	0	0	313	0	0
Stage 1	254	254	-	313	313	-	-	-	-	-	-	-
Stage 2	326	313	-	254	262	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	426	433	887	434	429	727	1412	-	-	1247	-	-
Stage 1	750	697	-	698	657	-	-	-	-	-	-	-
Stage 2	687	657	-	750	691	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	397	414	887	420	411	727	1412	-	-	1247	-	-
Mov Cap-2 Maneuver	397	414	-	420	411	-	-	-	-	-	-	-
Stage 1	750	667	-	698	657	-	-	-	-	-	-	-
Stage 2	662	657	-	718	661	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.7	10.1	0	1.8
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1412	-	-	397	727	1247	-	-
HCM Lane V/C Ratio	-	-	-	0.063	0.036	0.038	-	-
HCM Control Delay (s)	0	-	-	14.7	10.1	8	0	-
HCM Lane LOS	A	-	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0.1	-	-

APPENDIX H

OCTA AND ISHUTTLE INFORMATION

South County System Map

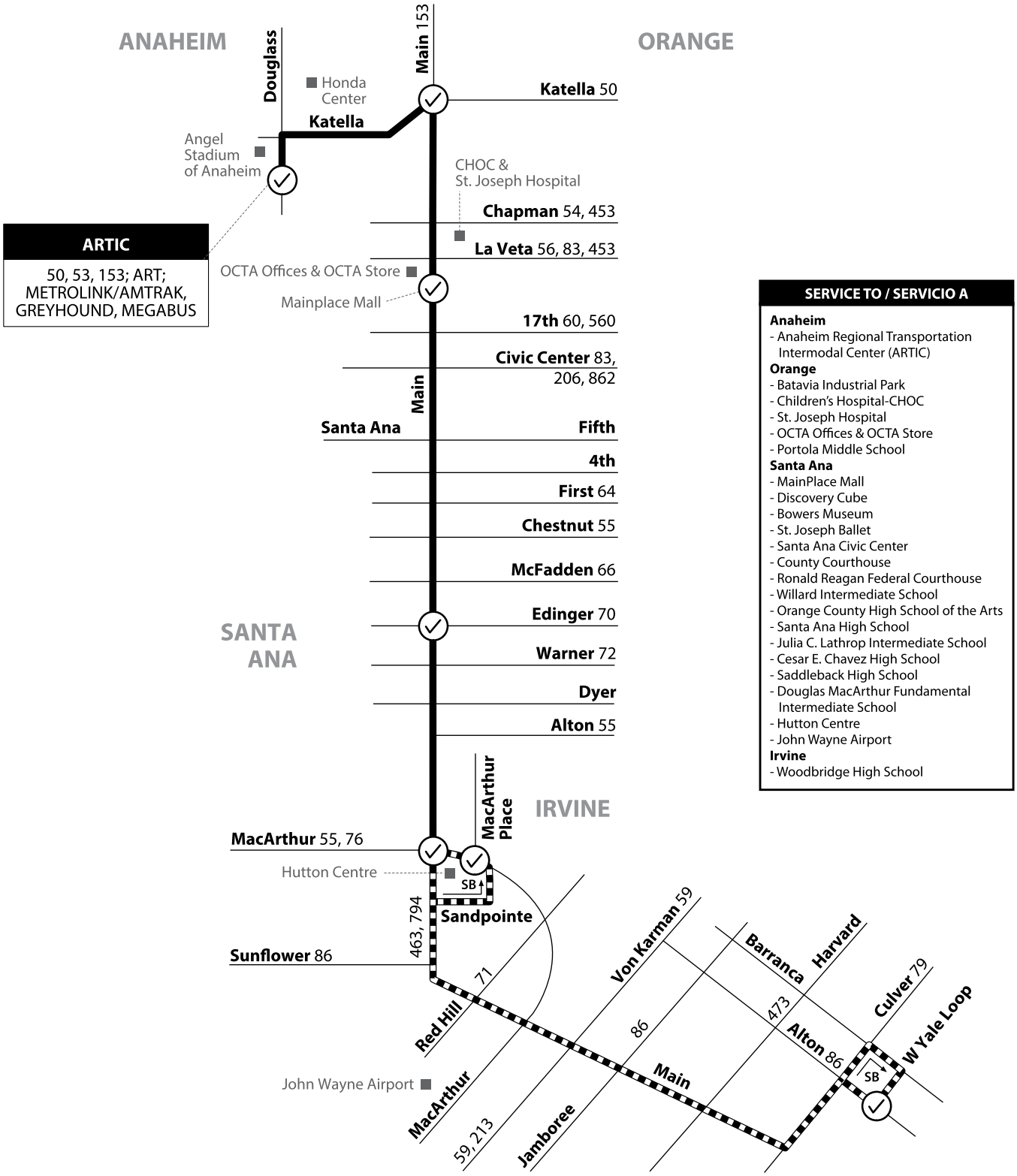
OCBUS
OCbus.com

- Routes offering 15 minutes (or less) weekday rush hour frequency
- Local Routes (1-99)
- Community Routes (100-199)
- OC Express Routes (200-299) Weekday Rush Hour Only
- Metrolink Stationlink Routes (400-499) Weekday Rush Hour Only
- Bravo Limited Stop Service (500-599)
- Xpress Stop Service
- Express Service (700-799) Weekday Rush Hour Only
- City Shuttle (800-899)
- Rail Stations
- OC Bus Transit Centers

Use West/Central County Ride Guide for routes serving West and Central County. | For Tustin, Villa Park, Anaheim Hills and Yorba Linda use the North County Ride Guide

Anaheim to Irvine
via Main St

53



ARTIC

50, 53, 153; ART; METROLINK/AMTRAK, GREYHOUND, MEGABUS

SERVICE TO / SERVICIO A

Anaheim
- Anaheim Regional Transportation Intermodal Center (ARTIC)

Orange
- Batavia Industrial Park
- Children's Hospital-CHOC
- St. Joseph Hospital
- OCTA Offices & OCTA Store
- Portola Middle School

Santa Ana
- MainPlace Mall
- Discovery Cube
- Bowers Museum
- St. Joseph Ballet
- Santa Ana Civic Center
- County Courthouse
- Ronald Reagan Federal Courthouse
- Willard Intermediate School
- Orange County High School of the Arts
- Santa Ana High School
- Julia C. Lathrop Intermediate School
- Cesar E. Chavez High School
- Saddleback High School
- Douglas MacArthur Fundamental Intermediate School
- Hutton Centre
- John Wayne Airport

Irvine
- Woodbridge High School

LEGEND
LEYENDA

Scheduled Departure | Regular Route 53 Routing | 53X Weekday Routing and Stops | No Service On Some Trips

N
MAP NOT TO SCALE

FT = Foothill Transit | ART = Anaheim Resort Transit

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Route 053/052820

53 Anaheim to Irvine

via Main St

Monday-Friday
NORTHBOUND To: Anaheim

Yale Loop & Alton	MacArthur Blvd & MacArthur Pl	Main & MacArthur (Santa Ana)	Main & Edinger	Santa Ana Mainplace	Katella & Main	Anaheim Regional Intermodal Transportation Center (ARTIC)
5:20	•••••	5:33	5:42	5:59	6:09	6:14
	5:47	5:48	5:57	6:14	6:24	6:29
	6:02	6:03	6:12	6:29	6:39	6:44
6:05	•••••	6:18	6:27	6:44	6:54	6:59
	6:32	6:33	6:42	6:59	7:09	7:14
	6:45	6:46	6:55	7:12	7:22	7:27
	6:58	6:59	7:08	7:25	7:35	7:40
6:59	•••••	7:12	7:21	7:38	7:48	7:53
	7:24	7:25	7:35	7:55	8:04	8:09
	7:39	7:40	7:50	8:10	8:19	8:24
7:39	•••••	7:54	8:04	8:24	8:33	8:38
	8:08	8:09	8:19	8:39	8:48	8:53
	8:23	8:24	8:34	8:54	9:03	9:08
8:24	•••••	8:39	8:49	9:09	9:18	9:23
	8:53	8:54	9:04	9:24	9:33	9:38
	9:08	9:09	9:19	9:39	9:48	9:53
9:09	•••••	9:24	9:34	9:54	10:03	10:08
	9:36	9:37	9:47	10:09	10:22	10:27
	9:51	9:52	10:02	10:24	10:37	10:42
9:52	•••••	10:07	10:17	10:39	10:52	10:57
	10:22	10:23	10:33	10:55	11:08	11:13
	10:38	10:39	10:49	11:12	11:23	11:28
10:34	•••••	10:54	11:04	11:27	11:38	11:43
	11:08	11:09	11:19	11:42	11:53	11:58
	11:23	11:24	11:34	11:57	12:08	12:13
11:19	•••••	11:39	11:49	12:12	12:23	12:28
	11:53	11:54	12:04	12:27	12:38	12:43
	12:08	12:09	12:19	12:42	12:53	12:58
12:04	•••••	12:24	12:34	12:57	1:08	1:13
	12:38	12:39	12:49	1:12	1:23	1:28
	12:52	12:53	1:03	1:26	1:37	1:42
12:47	•••••	1:07	1:17	1:40	1:51	1:56
	1:20	1:21	1:31	1:54	2:05	2:10
	1:34	1:35	1:45	2:08	2:19	2:24
1:29	•••••	1:49	1:59	2:22	2:33	2:38
	2:00	2:01	2:11	2:34	2:45	2:50
	2:12	2:13	2:23	2:46	2:57	3:02
	2:25	2:26	2:36	2:59	3:10	3:15
2:19	•••••	2:40	2:50	3:14	3:25	3:30
	2:53	2:54	3:04	3:28	3:39	3:44
	3:07	3:08	3:18	3:42	3:53	3:58
	3:21	3:22	3:32	3:56	4:07	4:12
3:14	•••••	3:35	3:45	4:09	4:20	4:25
	3:47	3:48	3:58	4:22	4:33	4:38
	4:00	4:01	4:12	4:32	4:42	4:47
3:53	•••••	4:14	4:25	4:45	4:55	5:00
	4:28	4:29	4:40	5:00	5:10	5:15
	4:43	4:44	4:55	5:15	5:25	5:30
4:31	•••••	4:52	5:03	5:23	5:33	5:38
4:39	•••••	5:00	5:11	5:31	5:41	5:46
	5:14	5:15	5:26	5:46	5:56	6:01
	5:26	5:27	5:38	5:58	6:08	6:13
	5:38	5:39	5:50	6:10	6:20	6:25
5:33	•••••	5:54	6:05	6:25	6:35	6:40
	6:08	6:09	6:20	6:40	6:50	6:55
	6:23	6:24	6:35	6:55	7:05	7:10
6:26	•••••	6:43	6:51	7:10	7:20	7:25
	6:56	6:57	7:05	7:24	7:34	7:39
	7:11	7:12	7:20	7:39	7:49	7:54
7:09	•••••	7:26	7:34	7:53	8:03	8:08
	7:38	7:39	7:47	8:06	8:16	8:21
	7:51	7:52	8:00	8:19	8:29	8:34
7:50	•••••	8:07	8:15	8:34	8:44	8:49
	8:36	8:37	8:45	9:04	9:14	9:19
8:50	•••••	9:07	9:15	9:34	9:44	9:49
	9:36	9:37	9:45	10:04	10:14	10:19
9:50	•••••	10:07	10:15	10:34	10:44	10:49
	10:36	10:37	10:45	11:04	11:14	11:19
10:50	•••••	11:07	11:15	11:34	11:44	11:49
	11:36	11:37	11:45	12:04	12:14	12:19

Monday-Friday
SOUTHBOUND To: Irvine

Anaheim Regional Intermodal Transportation Center (ARTIC)	Main & Katella	Santa Ana Mainplace	Main & Edinger	Main & MacArthur (Santa Ana)	MacArthur Blvd & MacArthur Pl	Yale Loop & Alton
5:43	5:47	5:56	6:11	6:20	•••••	6:41
6:03	6:07	6:16	6:31	6:40	6:43	
6:18	6:22	6:31	6:46	6:55	6:58	
6:31	6:35	6:44	6:59	7:08	•••••	7:29
6:42	6:46	6:55	7:13	7:23	7:26	
6:56	7:00	7:09	7:27	7:37	7:40	
7:10	7:14	7:23	7:41	7:51	•••••	8:12
7:24	7:28	7:37	7:55	8:05	8:08	
7:39	7:43	7:52	8:10	8:20	8:23	
7:54	7:58	8:07	8:25	8:35	•••••	8:56
8:09	8:13	8:22	8:40	8:50	8:53	
8:24	8:28	8:37	8:55	9:05	9:08	
8:39	8:43	8:52	9:10	9:20	•••••	9:41
8:54	8:58	9:07	9:25	9:35	9:38	
9:09	9:13	9:22	9:40	9:50	9:53	
9:23	9:27	9:36	9:54	10:04	•••••	10:25
9:37	9:41	9:50	10:08	10:18	10:21	
9:52	9:56	10:05	10:23	10:33	10:36	
10:07	10:11	10:20	10:38	10:48	•••••	11:09
10:22	10:26	10:35	10:53	11:03	11:06	
10:37	10:41	10:50	11:08	11:18	11:21	
10:52	10:56	11:05	11:23	11:33	•••••	11:54
11:07	11:11	11:20	11:38	11:48	11:51	
11:22	11:26	11:35	11:53	12:03	12:06	
11:29	11:33	11:45	12:06	12:17	•••••	12:37
11:40	11:44	11:56	12:17	12:28	12:31	
11:57	12:01	12:13	12:34	12:45	12:48	
12:11	12:15	12:27	12:48	12:59	•••••	1:19
12:25	12:29	12:41	1:02	1:13	1:16	
12:40	12:44	12:56	1:17	1:28	1:31	
12:55	12:59	1:11	1:32	1:43	•••••	2:03
1:10	1:14	1:26	1:47	1:58	2:01	
1:24	1:28	1:40	2:01	2:12	2:15	
1:38	1:42	1:54	2:15	2:26	•••••	2:46
1:52	1:56	2:08	2:29	2:40	2:43	
2:06	2:10	2:22	2:43	2:54	2:57	
2:20	2:24	2:36	2:57	3:08	3:11	
2:35	2:39	2:50	3:09	3:19	•••••	3:39
2:48	2:52	3:03	3:22	3:32	3:36	
3:01	3:05	3:16	3:35	3:45	3:49	
3:13	3:17	3:28	3:47	3:57	4:01	
3:25	3:29	3:40	3:59	4:09	•••••	4:29
3:40	3:44	3:55	4:14	4:24	4:28	
3:55	3:59	4:10	4:29	4:39	4:43	
4:10	4:14	4:25	4:44	4:54	•••••	5:14
4:24	4:28	4:39	4:58	5:08	5:12	
4:39	4:43	4:54	5:13	5:23	5:27	
4:54	4:58	5:09	5:29	5:39	•••••	5:57
5:09	5:13	5:24	5:44	5:54	5:57	
5:25	5:29	5:40	6:00	6:10	6:13	
5:40	5:44	5:55	6:15	6:25	•••••	6:43
5:56	6:00	6:11	6:31	6:41	6:44	
6:11	6:15	6:26	6:46	6:56	6:59	
6:23	6:27	6:38	6:58	7:08	7:11	
6:37	6:41	6:52	7:12	7:22	•••••	7:40
6:50	6:54	7:05	7:26	7:35	7:38	
7:05	7:09	7:20	7:41	7:50	7:53	
7:20	7:24	7:35	7:56	8:05	•••••	8:24
7:35	7:39	7:50	8:11	8:20	8:23	
8:05	8:09	8:20	8:41	8:50	8:53	
8:40	8:44	8:54	9:11	9:19	•••••	9:38
9:10	9:14	9:24	9:41	9:49	9:52	
9:40	9:44	9:54	10:11	10:19	•••••	10:38
10:10	10:14	10:24	10:41	10:49	10:52	
10:40	10:44	10:54	11:11	11:19	•••••	11:38
11:10	11:14	11:24	11:41	11:49	11:52	

F = Times are approximate/*Los horarios son aproximados.*

Saturday
NORTHBOUND To: Anaheim

West Yale Loop & Alton	MacArthur Blvd & MacArthur Pl	Main & MacArthur (Santa Ana)	Main & Edinger	Santa Ana MainPlace	Katella & Main **(F)**	Anaheim Regional Intermodal Transportation Center (ARTIC)
	5:47	5:48	5:57	6:14	6:24	6:29
	6:02	6:03	6:12	6:29	6:39	6:44
6:05	·····	6:18	6:27	6:44	6:54	6:59
	6:32	6:33	6:42	6:59	7:09	7:14
	6:45	6:46	6:55	7:12	7:22	7:27
	6:58	6:59	7:08	7:25	7:35	7:40
6:59	·····	7:12	7:21	7:38	7:48	7:53
	7:24	7:25	7:35	7:55	8:04	8:09
	7:39	7:40	7:50	8:10	8:19	8:24
7:39	·····	7:54	8:04	8:24	8:33	8:38
	8:08	8:09	8:19	8:39	8:48	8:53
	8:23	8:24	8:34	8:54	9:03	9:08
8:24	·····	8:39	8:49	9:09	9:18	9:23
	8:53	8:54	9:04	9:24	9:33	9:38
	9:08	9:09	9:19	9:39	9:48	9:53
9:09	·····	9:24	9:34	9:54	10:03	10:08
	9:36	9:37	9:47	10:09	10:22	10:27
	9:51	9:52	10:02	10:24	10:37	10:42
9:52	·····	10:07	10:17	10:39	10:52	10:57
	10:22	10:23	10:33	10:55	11:08	11:13
	10:38	10:39	10:49	11:12	11:23	11:28
10:34	·····	10:54	11:04	11:27	11:38	11:43
	11:08	11:09	11:19	11:42	11:53	11:58
	11:23	11:24	11:34	11:57	**12:08**	**12:13**
11:19	·····	11:39	11:49	**12:12**	**12:23**	**12:28**
	11:53	11:54	**12:04**	**12:27**	**12:38**	**12:43**
	12:08	**12:09**	**12:19**	**12:42**	**12:53**	**12:58**
12:04	·····	**12:24**	**12:34**	**12:57**	**1:08**	**1:13**
	12:38	**12:39**	**12:49**	**1:12**	**1:23**	**1:28**
	12:52	**12:53**	**1:03**	**1:26**	**1:37**	**1:42**
12:47	·····	**1:07**	**1:17**	**1:40**	**1:51**	**1:56**
	1:20	**1:21**	**1:31**	**1:54**	**2:05**	**2:10**
	1:34	**1:35**	**1:45**	**2:08**	**2:19**	**2:24**
1:29	·····	**1:49**	**1:59**	**2:22**	**2:33**	**2:38**
	2:00	**2:01**	**2:11**	**2:34**	**2:45**	**2:50**
	2:12	**2:13**	**2:23**	**2:46**	**2:57**	**3:02**
	2:25	**2:26**	**2:36**	**2:59**	**3:10**	**3:15**
2:19	·····	**2:40**	**2:50**	**3:14**	**3:25**	**3:30**
	2:53	**2:54**	**3:04**	**3:28**	**3:39**	**3:44**
	3:07	**3:08**	**3:18**	**3:42**	**3:53**	**3:58**
	3:21	**3:22**	**3:32**	**3:56**	**4:07**	**4:12**
3:14	·····	**3:35**	**3:45**	**4:09**	**4:20**	**4:25**
	3:47	**3:48**	**3:58**	**4:22**	**4:33**	**4:38**
	4:00	**4:01**	**4:12**	**4:32**	**4:42**	**4:47**
3:53	·····	**4:14**	**4:25**	**4:45**	**4:55**	**5:00**
	4:28	**4:29**	**4:40**	**5:00**	**5:10**	**5:15**
	4:43	**4:44**	**4:55**	**5:15**	**5:25**	**5:30**
4:39	·····	**5:00**	**5:11**	**5:31**	**5:41**	**5:46**
	5:14	**5:15**	**5:26**	**5:46**	**5:56**	**6:01**
	5:26	**5:27**	**5:38**	**5:58**	**6:08**	**6:13**
	5:38	**5:39**	**5:50**	**6:10**	**6:20**	**6:25**
5:33	·····	**5:54**	**6:05**	**6:25**	**6:35**	**6:40**
	6:08	**6:09**	**6:20**	**6:40**	**6:50**	**6:55**
	6:23	**6:24**	**6:35**	**6:55**	**7:05**	**7:10**
6:26	·····	**6:43**	**6:51**	**7:10**	**7:20**	**7:25**
	6:56	**6:57**	**7:05**	**7:24**	**7:34**	**7:39**
	7:11	**7:12**	**7:20**	**7:39**	**7:49**	**7:54**
7:09	·····	**7:26**	**7:34**	**7:53**	**8:03**	**8:08**
	7:38	**7:39**	**7:47**	**8:06**	**8:16**	**8:21**
	7:51	**7:52**	**8:00**	**8:19**	**8:29**	**8:34**
7:50	·····	**8:07**	**8:15**	**8:34**	**8:44**	**8:49**
	8:36	**8:37**	**8:45**	**9:04**	**9:14**	**9:19**
8:50	·····	**9:07**	**9:15**	**9:34**	**9:44**	**9:49**
	9:36	**9:37**	**9:45**	**10:04**	**10:14**	**10:19**
9:50	·····	**10:07**	**10:15**	**10:34**	**10:44**	**10:49**
	10:36	**10:37**	**10:45**	**11:04**	**11:14**	**11:19**
10:50	·····	**11:07**	**11:15**	**11:34**	**11:44**	**11:49**
	11:36	**11:37**	**11:45**	12:04	12:14	12:19

Saturday
SOUTHBOUND To: Irvine

Anaheim Regional Intermodal Transportation Center (ARTIC)	Main & Katella	Santa Ana MainPlace	Main & Edinger	Main & MacArthur (Santa Ana) **(F)**	MacArthur Blvd & MacArthur Pl	West Yale Loop & Alton
5:43	5:47	5:56	6:11	6:20	6:23	
6:03	6:07	6:16	6:31	6:40	6:43	
6:18	6:22	6:31	6:46	6:55	6:58	
6:31	6:35	6:44	6:59	7:08	·····	7:29
6:42	6:46	6:55	7:13	7:23	7:26	
6:56	7:00	7:09	7:27	7:37	7:40	
7:10	7:14	7:23	7:41	7:51	·····	8:12
7:24	7:28	7:37	7:55	8:05	8:08	
7:39	7:43	7:52	8:10	8:20	8:23	
7:54	7:58	8:07	8:25	8:35	·····	8:56
8:09	8:13	8:22	8:40	8:50	8:53	
8:24	8:28	8:37	8:55	9:05	9:08	
8:39	8:43	8:52	9:10	9:20	·····	9:41
8:54	8:58	9:07	9:25	9:35	9:38	
9:09	9:13	9:22	9:40	9:50	9:53	
9:23	9:27	9:36	9:54	10:04	·····	10:25
9:37	9:41	9:50	10:08	10:18	10:21	
9:52	9:56	10:05	10:23	10:33	10:36	
10:07	10:11	10:20	10:38	10:48	·····	11:09
10:22	10:26	10:35	10:53	11:03	11:06	
10:37	10:41	10:50	11:08	11:18	11:21	
10:52	10:56	11:05	11:23	11:33	·····	11:54
11:07	11:11	11:20	11:38	11:48	11:51	
11:22	11:26	11:35	11:53	**12:03**	**12:06**	
11:29	11:33	11:45	**12:06**	**12:17**	·····	**12:37**
11:40	11:44	11:56	**12:17**	**12:28**	**12:31**	
11:57	**12:01**	**12:13**	**12:34**	**12:45**	**12:48**	
12:11	**12:15**	**12:27**	**12:48**	**12:59**	·····	**1:19**
12:25	**12:29**	**12:41**	**1:02**	**1:13**	**1:16**	
12:40	**12:44**	**12:56**	**1:17**	**1:28**	**1:31**	
12:55	**12:59**	**1:11**	**1:32**	**1:43**	·····	**2:03**
1:10	**1:14**	**1:26**	**1:47**	**1:58**	**2:01**	
1:24	**1:28**	**1:40**	**2:01**	**2:12**	**2:15**	
1:38	**1:42**	**1:54**	**2:15**	**2:26**	·····	**2:46**
1:52	**1:56**	**2:08**	**2:29**	**2:40**	**2:43**	
2:06	**2:10**	**2:22**	**2:43**	**2:54**	**2:57**	
2:20	**2:24**	**2:36**	**2:57**	**3:08**	**3:11**	
2:35	**2:39**	**2:50**	**3:09**	**3:19**	·····	**3:39**
2:48	**2:52**	**3:03**	**3:22**	**3:32**	**3:36**	
3:01	**3:05**	**3:16**	**3:35**	**3:45**	**3:49**	
3:13	**3:17**	**3:28**	**3:47**	**3:57**	**4:01**	
3:25	**3:29**	**3:40**	**3:59**	**4:09**	·····	**4:29**
3:40	**3:44**	**3:55**	**4:14**	**4:24**	**4:28**	
3:55	**3:59**	**4:10**	**4:29**	**4:39**	**4:43**	
4:10	**4:14**	**4:25**	**4:44**	**4:54**	·····	**5:14**
4:24	**4:28**	**4:39**	**4:58**	**5:08**	**5:12**	
4:39	**4:43**	**4:54**	**5:13**	**5:23**	**5:27**	
4:54	**4:58**	**5:09**	**5:29**	**5:39**	·····	**5:57**
5:09	**5:13**	**5:24**	**5:44**	**5:54**	**5:57**	
5:25	**5:29**	**5:40**	**6:00**	**6:10**	**6:13**	
5:40	**5:44**	**5:55**	**6:15**	**6:25**	·····	**6:43**
5:56	**6:00**	**6:11**	**6:31**	**6:41**	**6:44**	
6:11	**6:15**	**6:26**	**6:46**	**6:56**	**6:59**	
6:23	**6:27**	**6:38**	**6:58**	**7:08**	**7:11**	
6:37	**6:41**	**6:52**	**7:12**	**7:22**	·····	**7:40**
6:50	**6:54**	**7:05**	**7:26**	**7:35**	**7:38**	
7:05	**7:09**	**7:20**	**7:41**	**7:50**	**7:53**	
7:20	**7:24**	**7:35**	**7:56**	**8:05**	·····	**8:24**
7:35	**7:39**	**7:50**	**8:11**	**8:20**	**8:23**	
8:05	**8:09**	**8:20**	**8:41**	**8:50**	**8:53**	
8:40	**8:44**	**8:54**	**9:11**	**9:19**	·····	**9:38**
9:10	**9:14**	**9:24**	**9:41**	**9:49**	**9:52**	
9:40	**9:44**	**9:54**	**10:11**	**10:19**	·····	**10:38**
10:10	**10:14**	**10:24**	**10:41**	**10:49**	**10:52**	
10:40	**10:44**	**10:54**	**11:11**	**11:19**	·····	**11:38**
11:10	**11:14**	**11:24**	**11:41**	**11:49**	**11:52**	

F = Times are approximate/*Los horarios son aproximados.*

53 Anaheim to Irvine

via Main St

Sunday & Holiday
NORTHBOUND To: Anaheim

West Yale Loop & Alton	MacArthur Blvd & MacArthur Pl	Main & MacArthur (Santa Ana)	Main & Edinger	Santa Ana MainPlace	Katella & Main **(F)**	Anaheim Regional Intermodal Transportation Center (ARTIC)
5:37	•••••	5:51	5:59	6:11	6:20	6:25
	6:11	6:12	6:20	6:33	6:43	6:48
	6:27	6:28	6:36	6:49	6:59	7:04
6:36	•••••	6:51	6:59	7:12	7:22	7:27
	7:10	7:11	7:19	7:32	7:42	7:47
	7:30	7:31	7:39	7:52	8:02	8:07
7:36	•••••	7:51	7:59	8:12	8:22	8:27
	8:08	8:09	8:18	8:33	8:42	8:47
	8:30	8:31	8:40	8:55	9:04	9:09
8:33	•••••	8:51	9:00	9:15	9:24	9:29
	9:10	9:11	9:20	9:35	9:44	9:49
	9:29	9:30	9:39	9:54	10:03	10:08
9:29	•••••	9:47	9:56	10:14	10:24	10:29
	10:04	10:05	10:14	10:32	10:42	10:47
	10:14	10:15	10:24	10:42	10:52	10:57
	10:29	10:30	10:39	10:57	11:07	11:12
10:33	•••••	10:51	11:00	11:18	11:28	11:33
	11:06	11:07	11:16	11:34	11:44	11:49
	11:22	11:23	11:32	11:50	**12:00**	**12:05**
	11:35	11:36	11:45	**12:03**	**12:13**	**12:18**
11:33	•••••	11:51	**12:00**	**12:18**	**12:28**	**12:33**
	12:05	**12:06**	**12:15**	**12:33**	**12:43**	**12:48**
	12:20	**12:21**	**12:30**	**12:48**	**12:58**	**1:03**
	12:35	**12:36**	**12:45**	**1:03**	**1:13**	**1:18**
12:33	•••••	**12:51**	**1:00**	**1:18**	**1:28**	**1:33**
	1:06	**1:07**	**1:16**	**1:34**	**1:44**	**1:49**
	1:21	**1:22**	**1:31**	**1:49**	**1:59**	**2:04**
	1:35	**1:36**	**1:45**	**2:03**	**2:13**	**2:18**
1:33	•••••	**1:51**	**2:00**	**2:18**	**2:28**	**2:33**
	2:05	**2:06**	**2:15**	**2:33**	**2:43**	**2:48**
	2:20	**2:21**	**2:30**	**2:48**	**2:58**	**3:03**
	2:31	**2:32**	**2:41**	**2:59**	**3:09**	**3:14**
2:29	•••••	**2:47**	**2:56**	**3:14**	**3:24**	**3:29**
	3:02	**3:03**	**3:12**	**3:30**	**3:40**	**3:45**
	3:17	**3:18**	**3:27**	**3:45**	**3:55**	**4:00**
	3:32	**3:33**	**3:42**	**4:00**	**4:10**	**4:15**
3:30	•••••	**3:48**	**3:57**	**4:15**	**4:25**	**4:30**
	4:02	**4:03**	**4:12**	**4:30**	**4:40**	**4:45**
	4:17	**4:18**	**4:27**	**4:45**	**4:55**	**5:00**
	4:34	**4:35**	**4:44**	**5:00**	**5:10**	**5:15**
4:33	•••••	**4:50**	**4:59**	**5:15**	**5:25**	**5:30**
	5:04	**5:05**	**5:14**	**5:30**	**5:40**	**5:45**
	5:19	**5:20**	**5:29**	**5:45**	**5:55**	**6:00**
	5:34	**5:35**	**5:44**	**6:00**	**6:10**	**6:15**
5:35	•••••	**5:53**	**6:01**	**6:15**	**6:25**	**6:30**
	6:06	**6:07**	**6:15**	**6:29**	**6:39**	**6:44**
	6:21	**6:22**	**6:30**	**6:44**	**6:54**	**6:59**
	6:36	**6:37**	**6:45**	**6:59**	**7:09**	**7:14**
6:34	•••••	**6:52**	**7:00**	**7:14**	**7:24**	**7:29**
	7:06	**7:07**	**7:15**	**7:29**	**7:39**	**7:44**
	7:21	**7:22**	**7:30**	**7:44**	**7:54**	**7:59**
	7:34	**7:35**	**7:43**	**7:57**	**8:07**	**8:12**
7:34	•••••	**7:52**	**8:00**	**8:14**	**8:24**	**8:29**
	8:12	**8:13**	**8:21**	**8:35**	**8:45**	**8:50**
	8:31	**8:32**	**8:40**	**8:52**	**9:01**	**9:06**
8:35	•••••	**8:52**	**9:00**	**9:12**	**9:21**	**9:26**
	9:21	**9:22**	**9:30**	**9:42**	**9:51**	**9:56**
9:35	•••••	**9:52**	**10:00**	**10:12**	**10:21**	**10:26**
	10:21	**10:22**	**10:30**	**10:42**	**10:51**	**10:56**
	11:21	**11:22**	**11:30**	**11:42**	**11:51**	**11:56**

Sunday & Holiday
SOUTHBOUND To: Irvine

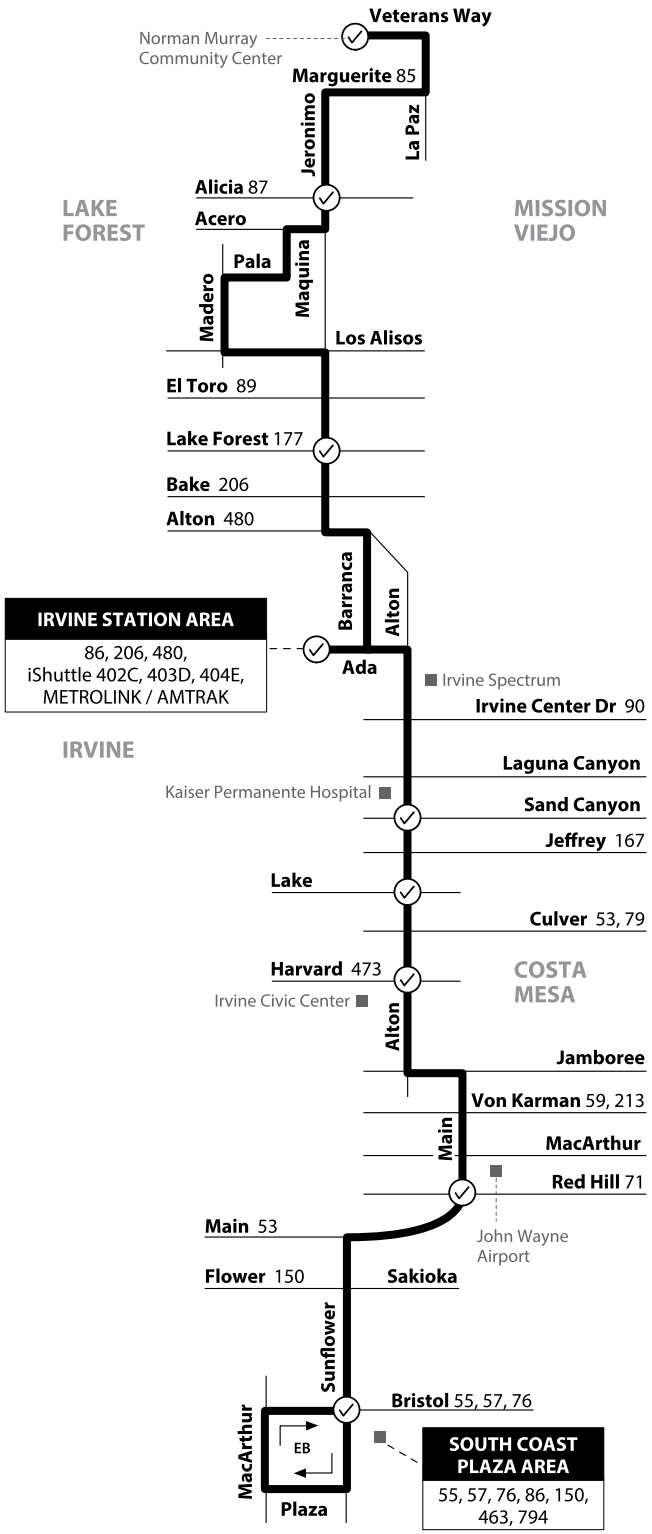
Anaheim Regional Intermodal Transportation Center (ARTIC)	Main & Katella	Santa Ana MainPlace	Main & Edinger	Main & MacArthur (Santa Ana) **(F)**	MacArthur Blvd & MacArthur Pl	West Yale Loop & Alton
5:59	6:03	6:11	6:25	6:32	•••••	6:51
6:19	6:23	6:31	6:45	6:52	6:56	
6:39	6:43	6:51	7:05	7:12	7:16	
6:59	7:03	7:11	7:25	7:32	•••••	7:51
7:14	7:18	7:26	7:42	7:50	7:54	
7:37	7:41	7:49	8:05	8:13	8:17	
7:57	8:01	8:09	8:25	8:33	•••••	8:52
8:17	8:21	8:29	8:45	8:53	8:57	
8:37	8:41	8:49	9:05	9:13	9:17	
8:57	9:01	9:09	9:25	9:33	•••••	9:52
9:09	9:13	9:22	9:40	9:50	9:55	
9:33	9:37	9:46	10:04	10:14	10:19	
9:54	9:58	10:07	10:25	10:35	•••••	10:55
10:15	10:19	10:27	10:43	10:51	10:56	
10:31	10:35	10:43	10:59	11:07	11:12	
10:42	10:46	10:54	11:10	11:18	11:23	
10:57	11:01	11:09	11:25	11:33	•••••	11:52
11:07	11:11	11:20	11:37	11:46	11:51	
11:22	11:26	11:36	11:54	**12:04**	**12:09**	
11:32	11:36	11:46	**12:04**	**12:14**	**12:19**	
11:52	11:56	**12:06**	**12:24**	**12:34**	•••••	**12:54**
12:13	**12:17**	**12:26**	**12:42**	**12:51**	**12:56**	
12:28	**12:32**	**12:41**	**12:57**	**1:06**	**1:11**	
12:41	**12:45**	**12:54**	**1:10**	**1:19**	**1:24**	
12:56	**1:00**	**1:09**	**1:25**	**1:34**	•••••	**1:54**
1:07	**1:11**	**1:21**	**1:39**	**1:49**	**1:53**	
1:19	**1:23**	**1:33**	**1:51**	**2:01**	**2:05**	
1:35	**1:39**	**1:49**	**2:07**	**2:17**	**2:21**	
1:53	**1:57**	**2:07**	**2:25**	**2:35**	•••••	**2:53**
2:06	**2:10**	**2:20**	**2:38**	**2:48**	**2:52**	
2:21	**2:25**	**2:35**	**2:53**	**3:03**	**3:07**	
2:36	**2:40**	**2:50**	**3:08**	**3:18**	**3:22**	
2:53	**2:57**	**3:07**	**3:25**	**3:35**	•••••	**3:53**
3:09	**3:13**	**3:22**	**3:39**	**3:48**	**3:52**	
3:24	**3:28**	**3:37**	**3:54**	**4:03**	**4:07**	
3:41	**3:45**	**3:54**	**4:11**	**4:20**	**4:24**	
3:55	**3:59**	**4:08**	**4:25**	**4:34**	•••••	**4:52**
4:10	**4:14**	**4:23**	**4:40**	**4:49**	**4:53**	
4:25	**4:29**	**4:38**	**4:55**	**5:04**	**5:08**	
4:40	**4:44**	**4:53**	**5:10**	**5:19**	**5:23**	
4:55	**4:59**	**5:08**	**5:25**	**5:34**	•••••	**5:52**
5:10	**5:14**	**5:23**	**5:40**	**5:49**	**5:53**	
5:25	**5:29**	**5:38**	**5:55**	**6:04**	**6:08**	
5:40	**5:44**	**5:53**	**6:10**	**6:19**	**6:23**	
5:55	**5:59**	**6:08**	**6:25**	**6:34**	•••••	**6:52**
6:10	**6:14**	**6:23**	**6:40**	**6:49**	**6:53**	
6:25	**6:29**	**6:38**	**6:55**	**7:04**	**7:08**	
6:40	**6:44**	**6:53**	**7:10**	**7:19**	**7:23**	
6:57	**7:01**	**7:10**	**7:27**	**7:36**	•••••	**7:54**
7:16	**7:20**	**7:28**	**7:44**	**7:51**	**7:56**	
7:27	**7:31**	**7:39**	**7:55**	**8:02**	**8:07**	
7:42	**7:46**	**7:54**	**8:10**	**8:17**	•••••	**8:35**
8:02	**8:06**	**8:14**	**8:30**	**8:37**	**8:42**	
8:22	**8:26**	**8:34**	**8:50**	**8:57**	**9:02**	
8:42	**8:46**	**8:54**	**9:10**	**9:17**	•••••	**9:35**
9:20	**9:24**	**9:31**	**9:44**	**9:51**	**9:56**	
9:46	**9:50**	**9:57**	**10:10**	**10:17**	•••••	**10:35**
10:16	**10:20**	**10:27**	**10:40**	**10:47**	**10:52**	
11:16	**11:20**	**11:27**	**11:40**	**11:47**	**11:52**	

F = Times are approximate/*Los horarios son aproximados.*

NOTE: No weekend service.
NOTA: *No hay servicio los fines de semana.*

Costa Mesa to Mission Viejo
via Alton Pkwy / Jeronimo Rd

86



LEGEND
LEYENDA

Scheduled Departure

Regular Routing

N

MAP NOT TO SCALE

Route 086/081819

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday - Friday
EASTBOUND To: Mission Viejo

Sunflower & Bristol	Main & Red Hill	Alton & Harvard	Alton & Lake	Alton & Sand Canyon	Irvine Station	Jeronimo & Lake Forest	Jeronimo & Alicia	Murray ommunity Center
5:42	5:51	6:01	6:07	6:15	6:25	6:36	6:47	6:56
6:35	6:47	7:00	7:06	7:15	7:29	7:40	7:57	8:06
7:35	7:49	8:02	8:09	8:18	8:32	8:43	8:56	9:04
8:37	8:51	9:04	9:11	9:20	9:34	9:44	9:57	10:06
9:47	9:59	10:12	10:19	10:28	10:42	10:52	11:06	11:14
10:47	10:58	11:11	11:17	11:23	11:36	11:46	11:59	**12:09**
11:45	11:56	**12:09**	**12:15**	**12:23**	**12:36**	**12:46**	**12:59**	**1:09**
12:53	**1:05**	**1:18**	**1:24**	**1:34**	**1:47**	**1:56**	**2:12**	**2:22**
1:52	**2:04**	**2:17**	**2:23**	**2:30**	**2:42**	**2:52**	**3:06**	**3:16**
2:51	**3:03**	**3:16**	**3:22**	**3:29**	**3:41**	**3:51**	**4:05**	**4:15**
4:04	**4:16**	**4:28**	**4:35**	**4:45**	**4:58**	**5:09**	**5:22**	**5:32**
5:07	**5:19**	**5:31**	**5:38**	**5:48**	**6:01**	**6:12**	**6:25**	**6:35**
6:11	**6:25**	**6:36**	**6:44**	**6:52**	**7:02**	**7:11**	**7:21**	**7:31**
7:11	**7:25**	**7:36**	**7:44**	**7:52**	**8:02**	**8:11**	**8:21**	**8:31**

Monday - Friday
WESTBOUND To: Costa Mesa

Murray Community Center	Jeronimo & Alicia	Jeronimo & Lake Forest	Irvine Station	Alton & Sand Canyon	Alton & Lake	Alton & Harvard	Main & Red Hill	Sunflower & Bristol
6:11	6:20	6:31	6:40	6:52	6:58	7:04	7:18	7:24
7:06	7:16	7:31	7:40	7:53	8:02	8:08	8:21	8:27
8:16	8:26	8:41	8:50	9:03	9:12	9:18	9:31	9:37
9:18	9:30	9:42	9:50	10:02	10:10	10:17	10:30	10:36
10:16	10:28	10:40	10:48	11:00	11:08	11:15	11:28	11:34
11:25	11:37	11:49	11:57	**12:09**	**12:17**	**12:24**	**12:37**	**12:43**
12:19	**12:31**	**12:45**	**12:53**	**1:07**	**1:14**	**1:21**	**1:34**	**1:41**
1:19	**1:31**	**1:45**	**1:53**	**2:07**	**2:14**	**2:21**	**2:34**	**2:41**
2:32	**2:44**	**2:58**	**3:06**	**3:20**	**3:27**	**3:34**	**3:47**	**3:54**
3:26	**3:38**	**3:52**	**4:01**	**4:16**	**4:28**	**4:35**	**4:49**	**4:57**
4:30	**4:42**	**4:56**	**5:05**	**5:20**	**5:32**	**5:39**	**5:53**	**6:01**
5:43	**5:53**	**6:04**	**6:13**	**6:25**	**6:34**	**6:41**	**6:55**	**7:01**
6:46	**6:57**	**7:06**	**7:13**	**7:25**	**7:33**	**7:40**	**7:51**	**7:57**
7:46	**7:56**	**8:05**	**8:13**	**8:24**	**8:31**	**8:36**	**8:47**	**8:53**

iSHUTTLE ROUTE 400A

Monday - Friday
NORTHBOUND To: Tustin Station

John Wayne Airport	Jamboree & Dupont	Von Karman & Morse	Von Karman & Alton	Tustin Metrolink Station
5:35	5:41	5:46	5:50	6:00
6:05	6:11	6:16	6:20	6:30
6:40	6:46	6:51	6:55	7:05
6:53	6:59	7:04	7:08	7:18
7:30	7:36	7:41	7:45	7:55
7:53	7:59	8:04	8:08	8:18
8:26	8:32	8:37	8:41	8:51
3:12	**3:18**	**3:23**	**3:27**	**3:37**
3:33	**3:39**	**3:44**	**3:48**	**3:58**
3:44	**3:50**	**3:55**	**3:59**	**4:09**
4:18	**4:24**	**4:29**	**4:33**	**4:43**
4:31	**4:39**	**4:47**	**4:56**	**5:08**
4:50	**4:56**	**5:05**	**5:12**	**5:23**
5:12	**5:18**	**5:24**	**5:32**	**5:42**
6:02	**6:09**	**6:16**	**6:21**	**6:32**

Monday - Friday
SOUTHBOUND To: John Wayne Airport

Connecting Metrolink Trains	Tustin Metrolink Station	Von Karman & Alton	Von Karman & Main	Jamboree & Dupont	John Wayne Airport
ML 603, 803	6:09	6:18	6:22	6:27	6:35
ML 603, 805	6:44	6:53	6:57	7:02	7:10
ML 683, 807	7:18	7:27	7:31	7:36	7:44
ML 682	7:26	7:35	7:39	7:44	7:52
ML 607	7:28	7:37	7:41	7:46	7:54
ML 809, 811	8:05	8:14	8:18	8:23	8:31
ML 685, 811	8:34	8:43	8:47	8:52	9:00
ML 687	9:00	9:09	9:13	9:18	9:26
	3:49	**3:58**	**4:02**	**4:07**	**4:15**
	4:24	**4:33**	**4:37**	**4:42**	**4:50**
	4:46	**4:55**	**4:59**	**5:04**	**5:12**
	4:53	**5:02**	**5:06**	**5:14**	**5:24**
	5:21	**5:30**	**5:34**	**5:39**	**5:47**
	5:34	**5:43**	**5:47**	**5:52**	**6:00**
	5:52	**6:01**	**6:05**	**6:10**	**6:18**
	6:50	**6:59**	**7:03**	**7:08**	**7:16**

iShuttle Fares

$1.00	Peak Commute Hours
FREE	Riders Presenting Valid Metrolink Pass/Ticket
FREE	Riders Presenting Valid OCTA Pre-paid Day Pass or Multi-day Pass
$5.00	Pre-Paid 10-Ride Card (Available for purchase from shuttle driver)

Routing and times are subject to change. For current schedules and additional information, please visit www.ocbus.com

iSHUTTLE ROUTE 401B

Monday - Friday
NORTHBOUND To: Tustin Station

2101 Business Center	Michelson & Carlson	Main & Park Plaza	Jamboree & Alton	Tustin Metrolink Station
6:46	6:51	6:57	7:00	7:05
6:59	7:04	7:10	7:13	7:18
7:36	7:41	7:47	7:50	7:55
7:58	8:03	8:09	8:12	8:18
8:31	8:36	8:42	8:45	8:51
3:10	**3:17**	**3:24**	**3:28**	**3:34**
3:34	**3:41**	**3:48**	**3:52**	**3:58**
3:45	**3:52**	**3:59**	**4:03**	**4:09**
4:17	**4:24**	**4:32**	**4:36**	**4:42**
4:18	**4:25**	**4:33**	**4:37**	**4:43**
4:39	**4:46**	**4:56**	**5:00**	**5:08**
4:46	**4:53**	**5:03**	**5:07**	**5:15**
5:13	**5:20**	**5:30**	**5:34**	**5:42**
6:09	**6:15**	**6:22**	**6:25**	**6:32**
6:56	**7:02**	**7:09**	**7:12**	**7:19**

Monday - Friday
SOUTHBOUND To: Business Center Dr.

Connecting Metrolink Trains	Tustin Metrolink Station	Jamboree & Alton	Main & Park Plaza	Michelson & Carlson	2101 Business Center
ML 603, 803	6:09	6:14	6:18	6:24	6:29
ML 603, 805	6:44	6:50	6:54	7:01	7:08
ML 683, 807	7:18	7:24	7:28	7:35	7:42
ML 607	7:28	7:34	7:38	7:45	7:52
ML 809, 811	8:05	8:12	8:17	8:24	8:32
ML 685, 811	8:34	8:41	8:46	8:53	9:01
ML 687	9:00	9:06	9:10	9:17	9:24
	2:40	**2:47**	**2:52**	**2:59**	**3:06**
	3:39	**3:46**	**3:51**	**3:58**	**4:05**
	4:03	**4:10**	**4:15**	**4:22**	**4:29**
	4:42	**4:49**	**4:54**	**5:01**	**5:08**
	4:53	**5:00**	**5:05**	**5:12**	**5:19**
	5:21	**5:29**	**5:34**	**5:41**	**5:48**
	5:34	**5:42**	**5:47**	**5:54**	**6:01**
	5:52	**6:00**	**6:05**	**6:12**	**6:19**
	6:50	**6:56**	**7:00**	**7:06**	**7:11**
	7:31	**7:37**	**7:41**	**7:47**	**7:52**

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