Appendix G Baxter Village Traffic Impact Analysis

Appendices

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Baxter Village

TRAFFIC IMPACT ANALYSIS
CITY OF WILDOMAR

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
DIF	Development Impact Fee
E+P	Existing Plus Project
HCM	Highway Capacity Manual
HOV	High Occupancy Vehicle
I	Interstate
ITE	Institute of Transportation Engineers
LOS	Level of Service
NCHRP	National Cooperative Highway Research Program
OPR	Office of Planning and Research
PeMS	Performance Measurement System
PHF	Peak Hour Factor
Project	Baxter Village
RBBD	Road and Bridge Benefit District
RCTC	Riverside County Transportation Commission
RivTAM	Riverside County Transportation Analysis Model
RTA	Riverside Transit Agency
RTP	Regional Transportation Plan
SB	Senate Bill
SCAG	Southern California Association of Governments
SCS	Sustainable Communities Strategy
SHS	State Highway System
TCR	Transportation Concept Report
TIA	Traffic Impact Analysis
TUMF	Transportation Uniform Mitigation Fee
VMT	Vehicle Miles Traveled
WRCOG	Western Riverside Council of Governments

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1 INTRODUCTION

This report presents the results of the traffic impact analysis (TIA) for the proposed Baxter Village ("Project"), which is located north of Baxter Road and east of White Street in the City of Wildomar, as shown on Exhibit 1-1.

The purpose of this TIA is to evaluate the potential circulation system deficiencies that may result from the development of the proposed Project, and to recommend improvements to achieve acceptable circulation system operational conditions. As the City of Wildomar does not have their own traffic study guidelines, the methodologies described are generally consistent the Riverside County Transportation Department Traffic Impact Analysis Preparation Guide and the California Department of Transportation (Caltrans) Guide for the Preparation of Traffic Impact Studies. (1) (2)

1.1 PROJECT OVERVIEW

The purpose of this TIA is to evaluate the potential circulation system deficiencies that may result from the development of the proposed Project, and to recommend improvements to achieve acceptable circulation system operational conditions. The Project is proposed to consist of the following uses:

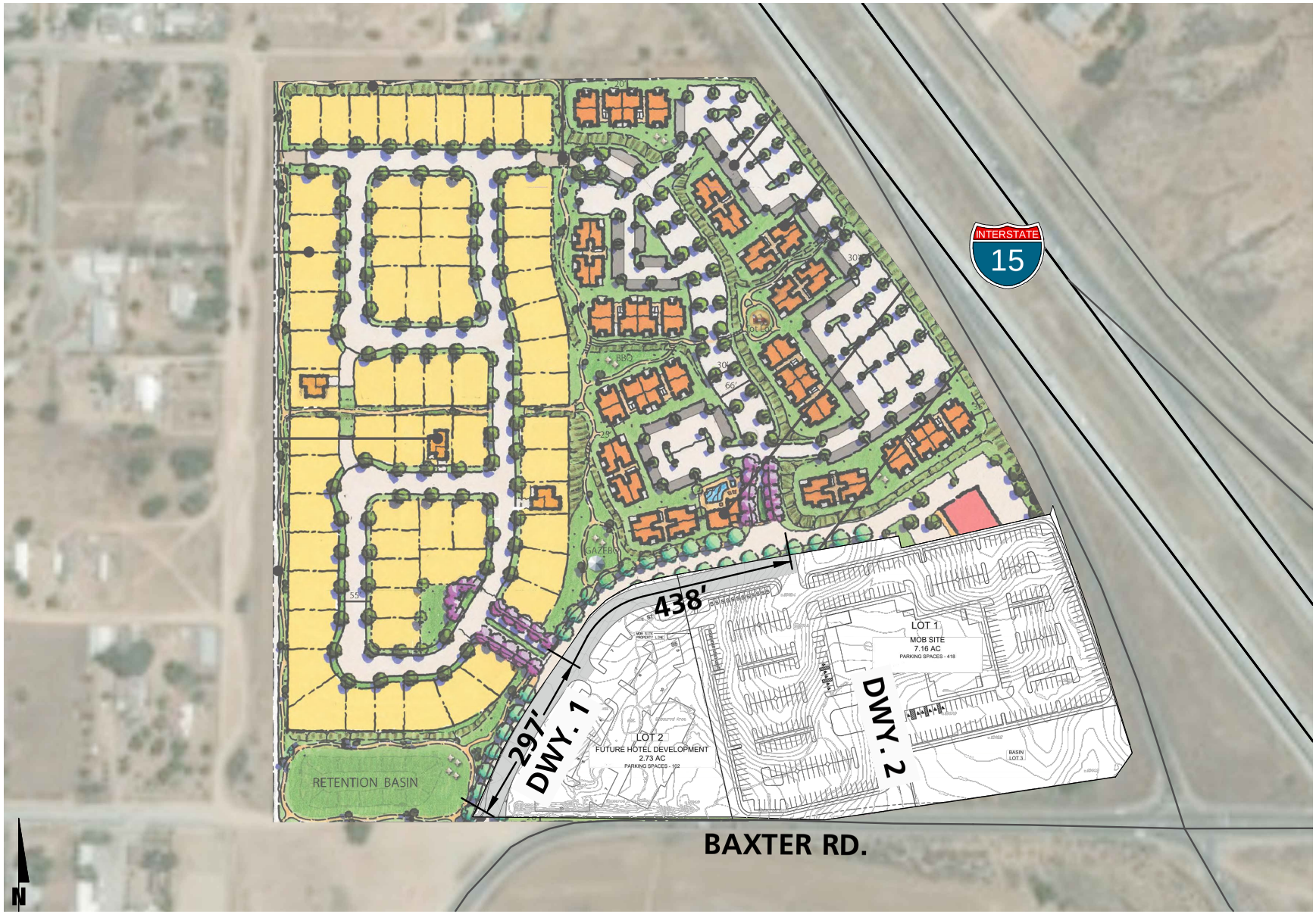
- 66 Dwelling Units of Single Family Detached (ITE Land Use Code 210)
- 204 Dwelling Units of Multi-Family Housing (Mid-Rise, 3-floors) (ITE Land Use Code 221)
- A 102-room hotel (ITE Land Use Code 310)
- 84,000 square feet of Medical-Dental Office (ITE Land Use Code 720)

Trips generated by the Project's proposed land uses have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017. (3) The proposed Project is anticipated to generate a total of 5,512 trip-ends per day, with 403 AM peak hour trips and 506 PM peak hour trips. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

For the purposes of this analysis, it is assumed that the Project will be constructed within a single phase of development and is anticipated to be fully built and occupied by Year 2021. The Project is proposed to have two driveways along Baxter Road. Driveway 1 (extension of Baxter Road) is proposed for full access while Driveway 2 is proposed for right-in/right-out access only. Regional access to the Project site will be accommodated via the I-15 Freeway at Baxter Road.

The results of this TIA have been compared to the results identified in the Baxter Village Traffic Impact Analysis, prepared by Urban Crossroads, Inc. in March 2015 (Revised) (referred to hereafter as the "2015 Traffic Study").

EXHIBIT 1-1: PRELIMINARY LAND USE PLAN



1.2 COMPARISON TO 2015 TRAFFIC IMPACT ANALYSIS

1.2.1 INTERSECTION ANALYSIS COMPARISON

A comparison of the intersection analysis from this TIA to the 2015 Traffic Study is shown in Table 1-1. As shown in Table 1-1, the following intersection is anticipated to operate at an acceptable Level of Service (LOS) under Existing (2019) and E+P traffic conditions for this TIA as compared to Existing (2013) and E+P traffic conditions from the 2015 Traffic Study:

- Monte Vista Dr. & Bundy Canyon Rd. (#7)

Although the following study area intersection was identified as deficient for Existing (2013) traffic conditions in the 2015 Traffic Study, there is a new deficiency during the PM peak hour (from LOS D to LOS E) for Existing (2019) traffic conditions:

- I-15 Southbound Ramps & Baxter Rd. (#5)

The following intersection is anticipated to operate at an acceptable LOS under Opening Year Cumulative (2021) With Project traffic conditions for this TIA, as compared to Opening Year Cumulative (2018) With Project traffic conditions from the 2015 Traffic Study:

- Monte Vista Dr. & Baxter Rd. (#8)

Although the following study area intersection was identified as deficient for Opening Year Cumulative (2018) With Project traffic conditions in the 2015 Traffic Study, there is a new deficiency during the AM peak hour (from LOS D to LOS E) for Opening Year Cumulative (2021) With Project traffic conditions:

- I-15 Northbound Ramps & Baxter Rd. (#6)

It should be noted, the two intersections identified above are anticipated to operate at an acceptable LOS as compared to the 2015 Traffic Study (which showed these locations as deficient) because of changes to the Highway Capacity Manual (HCM) methodology and analysis software (Synchro). At cross-street stop-controlled intersections, the current version of Synchro allows left turn movements from the minor street (stop controlled street) to be broken up into two stages. In other words, vehicles are realistically modeled since they can clear the conflicts for each direction of travel separately. <u>As such, the delay for cross-street stop-controlled intersections decreases compared to the 2015 Traffic Study</u> (where the Traffix analysis software had been utilized using HCM 2000), thus resulting in the intersections identified above as no longer deficient for the noted analysis scenarios.

Table 1-1

Intersection Analysis Comparison

#	Intersection	Traffic Control[2]	2015 TIA[3] Delay (secs.) ICU (v/c)[1] AM	2015 TIA[3] Delay (secs.) ICU (v/c)[1] PM	2015 TIA[3] Level of Service AM	2015 TIA[3] Level of Service PM	Baxter Village TIA Delay (secs.) ICU (v/c)[1] AM	Baxter Village TIA Delay (secs.) ICU (v/c)[1] PM	Baxter Village TIA Level of Service AM	Baxter Village TIA Level of Service PM	New Significant Impact?
			Existing (2013)				**Existing (2019)**				
1	Palomar St. & Central St.	TS	33.2	28.2	C	C	30.1	25.1	C	C	No
2	Driveway 1 & Baxter Rd.		Future Intersection				Future Intersection				--
3	Central St. & Baxter Rd	CSS	26.9	22.9	D	C	21.2	17.2	C	C	No
4	Driveway 2 & Baxter Rd.		Future Intersection				Future Intersection				--
5	I-15 SB Ramps & Baxter Rd.	AWS	**>50.0**	25.6	**F**	D	**>50.0**	**40.5**	**F**	**E**	No
6	I-15 NB Ramps & Baxter Rd.	AWS	13.8	16.2	B	C	17.1	18.9	C	C	No
7	Monte Vista Dr. & Bundy Canyon Rd.	CSS	27.5	**>50.0**	D	**F**	18.2	24.8	C	C	No[4]
8	Monte Vista Dr. & Baxter Rd.	CSS	22.1	11.5	C	B	17.6	10.9	C	B	No
			E+P				**E+P**				
1	Palomar St. & Central St.	TS	33.7	29.9	C	C	31.9	29.0	C	C	No
2	Driveway 1 & Baxter Rd.	**CSS**	9.3	10.0	A	B	10.0	10.2	B	B	No
3	Central St. & Baxter Rd	CSS	**>50.0**	**>50.0**	**F**	**F**	**>50.0**	**>50.0**	**F**	**F**	No
4	Driveway 2 & Baxter Rd.	**CSS**	12.1	16.2	B	C	13.2	19.0	B	C	No
5	I-15 SB Ramps & Baxter Rd.	AWS	**>50.0**	**>50.0**	**F**	**F**	**>50.0**	**>50.0**	**F**	**F**	No
6	I-15 NB Ramps & Baxter Rd.	AWS	16.5	23.5	C	C	25.8	31.1	D	D	No
7	Monte Vista Dr. & Bundy Canyon Rd.	CSS	34.4	**>50.0**	D	**F**	20.8	33.7	C	D	No[4]
8	Monte Vista Dr. & Baxter Rd.	CSS	26.5	13.3	D	B	19.8	12.4	C	B	No
			2018 With Project				**2021 With Project**				
1	Palomar St. & Central St.	TS	35.8	31.5	D	C	34.6	35.1	C	D	No
2	Driveway 1 & Baxter Rd.	**CSS**	9.3	10.0	A	A	9.9	10.1	A	B	No
3	Central St. & Baxter Rd	CSS	**>50.0**	**>50.0**	**F**	**F**	**>50.0**	**>50.0**	**F**	**F**	No
4	Driveway 2 & Baxter Rd.	**CSS**	13.1	19.5	B	C	14.0	22.4	B	C	No
5	I-15 SB Ramps & Baxter Rd.	AWS	**>50.0**	**>50.0**	**F**	**F**	**>50.0**	**>50.0**	**F**	**F**	No
6	I-15 NB Ramps & Baxter Rd.	AWS	29.0	**>50.0**	D	**F**	**48.5**	**>50.0**	**E**	**F**	No
7	Monte Vista Dr. & Bundy Canyon Rd.	CSS	**>50.0**	**>50.0**	**F**	**F**	**>50.0**	**>50.0**	**F**	**F**	No
8	Monte Vista Dr. & Baxter Rd.	CSS	**>50.0**	24.8	**F**	C	34.7	17.9	D	C	No[4]
			Post-2035 With Project				**2040 With Project**				
1	Palomar St. & Central St.	TS	**>80.0**	**74.1**	**F**	**E**	**>80.0**	**>80.0**	**F**	**F**	No
2	Driveway 1 & Baxter Rd.	**CSS**	12.7	11.7	B	B	11.1	11.0	B	B	No
3	Central St. & Baxter Rd	CSS	**>50.0**	**>50.0**	**F**	**F**	**>50.0**	**>50.0**	**F**	**F**	No
4	Driveway 2 & Baxter Rd.	**CSS**	15.3	**>50.0**	C	**F**	16.0	**>50.0**	C	**F**	No
5	I-15 SB Ramps & Baxter Rd.	AWS	**>50.0**	**>50.0**	**F**	**F**	**>50.0**	**>50.0**	**F**	**F**	No
6	I-15 NB Ramps & Baxter Rd.	AWS	**>50.0**	**>50.0**	**F**	**F**	**>50.0**	**>50.0**	**F**	**F**	No
7	Monte Vista Dr. & Bundy Canyon Rd.	CSS	**>50.0**	**>50.0**	**F**	**F**	**>50.0**	**>50.0**	**F**	**F**	No
8	Monte Vista Dr. & Baxter Rd.	CSS	**>50.0**	**>50.0**	**F**	**F**	**>50.0**	**>50.0**	**F**	**F**	No

[1] Per the Highway Capacity Manual (HCM) 2000 (2015 TIA) or 6th Edition (2019 TIA), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. HCM delay reported in seconds.

[2] TS = Traffic Signal; CSS = Cross-Street Stop; AWS = All-Way Stop; **CSS** = Improvement

[3] Baxter Village Traffic Impact Analysis, Urban Crossroads, Inc., March 2015 (Revised).

[4] Peak hour operations improve in the 2019 TIA because the latest HCM (6th Edition) allows for 2-stage left-turn maneuvers from the minor street. As such, delay improves in comparison to the 2015 TIA results.

Although the following study area intersection was identified as deficient for Post-2035 With Project traffic conditions in the 2015 Traffic Study, the LOS falls during the PM peak hour (from LOS E to LOS F) for Horizon Year (2040) With Project traffic conditions:

- Palomar St. & Central St. (#1)

The intersection analysis results for General Plan Buildout (2040) With Project traffic conditions for this TIA are consistent with the results of General Plan Buildout (Post-2035) With Project traffic conditions of the 2015 Traffic Study. As shown in Table 1-1, there are no new significant impacts in this TIA as compared to the 2015 Traffic Study. Improvement needs are discussed subsequently in Section 1.6 *Recommendations* of this report.

1.2.2 FREEWAY ANALYSIS COMPARISONS

A comparison of the freeway analysis from the current Baxter Village TIA to the 2015 Traffic Study is shown in Table 1-2. As shown in Table 1-2, the following freeway segment is anticipated to operate at an acceptable LOS under Opening Year Cumulative (2018) With Project traffic conditions in the 2015 Traffic Study, and is now anticipated to operate at an unacceptable LOS under Opening Year Cumulative (2021) With Project traffic conditions in this TIA:

- I-15 Freeway Northbound, South of Baxter Rd. (#8)

However, this freeway segment is anticipated to operate at an unacceptable LOS under General Plan Buildout (Post-2035) With Project from the 2015 Traffic Study and under General Plan Buildout (2040) With Project for this TIA. The deficiency at the freeway segment identified above is not a new deficiency compared to the 2015 Traffic Study, but instead is a deficiency that appears earlier than the 2015 Traffic Study. This is a result of regional growth and higher traffic volumes utilizing the I-15 Freeway, and not as a result of Project traffic.

The freeway analysis results of General Plan Buildout (2040) With Project traffic conditions for the current TIA are consistent with the General Plan Buildout (Post-2035) With Project traffic conditions found in the 2015 Traffic Study. As shown in Table 1-2, there are no new significant impacts in this TIA as compared to the 2015 Traffic Study.

1.3 ANALYSIS SCENARIOS

For the purposes of this traffic study, potential impacts to traffic and circulation have been assessed for each of the following conditions:

- Existing (2019) Conditions
- Existing plus Project (E+P) Conditions
- Opening Year Cumulative (2021) Without Project Conditions
- Opening Year Cumulative (2021) With Project Conditions
- General Plan Buildout (2040) Without Project Conditions
- General Plan Buildout (2040) With Project Conditions

Table 1-2

Freeway Analysis Comparison

#	Ramp or Segment	2015 TIA[1]				Baxter Village TIA				New Significant Impact?
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		
		Density[2]	LOS[3]	Density[2]	LOS[3]	Density[2]	LOS[3]	Density[2]	LOS[3]	
		Existing (2013)				**Existing (2019)**				
1	I-15 Freeway SB, North of Baxter Rd.	20.9	C	21.2	C	22.4	C	22.5	C	No
2	I-15 Freeway SB, Off-Ramp at Baxter Rd.	26.2	C	26.4	C	25.8	C	25.8	C	No
3	I-15 Freeway SB, On-Ramp at Baxter Rd.	22.4	C	21.8	C	24.2	C	23.8	C	No
4	I-15 Freeway SB, South of Baxter Rd.	21.7	C	21.5	C	24.0	C	23.7	C	No
5	I-15 Freeway NB, North of Baxter Rd.	19.2	C	25.9	C	20.5	C	29.8	D	No
6	I-15 Freeway NB, Off-Ramp at Baxter Rd.	23.2	C	31.3	D	21.6	C	27.8	C	No
7	I-15 Freeway NB, On-Ramp at Baxter Rd.	20.4	C	25.8	C	23.0	C	31.6	D	No
8	I-15 Freeway NB, South of Baxter Rd.	18.5	C	27.6	D	20.1	C	32.8	D	No
		E+P				**E+P**				
1	I-15 Freeway SB, North of Baxter Rd.	21.0	C	21.4	C	22.6	C	22.9	C	No
2	I-15 Freeway SB, Off-Ramp at Baxter Rd.	26.3	C	26.7	C	26.1	C	26.2	C	No
3	I-15 Freeway SB, On-Ramp at Baxter Rd.	22.7	C	22.0	C	24.6	C	24.2	C	No
4	I-15 Freeway SB, South of Baxter Rd.	22.0	C	21.7	C	24.3	C	24.1	C	No
5	I-15 Freeway NB, North of Baxter Rd.	19.4	C	26.1	D	20.7	C	30.3	D	No
6	I-15 Freeway NB, Off-Ramp at Baxter Rd.	23.3	C	31.6	D	22.0	C	28.2	D	No
7	I-15 Freeway NB, On-Ramp at Baxter Rd.	20.8	C	26.1	C	23.2	C	31.9	D	No
8	I-15 Freeway NB, South of Baxter Rd.	18.6	C	27.9	D	20.3	C	33.3	D	No
		2018 With Project				**2021 With Project**				
1	I-15 Freeway SB, North of Baxter Rd.	23.3	C	25.9	C	23.7	C	24.0	C	No
2	I-15 Freeway SB, Off-Ramp at Baxter Rd.	28.5	D	30.5	D	26.9	C	27.1	C	No
3	I-15 Freeway SB, On-Ramp at Baxter Rd.	25.2	D	26.4	C	25.9	C	25.5	C	No
4	I-15 Freeway SB, South of Baxter Rd.	24.5	C	26.5	D	25.8	C	25.4	C	No
5	I-15 Freeway NB, North of Baxter Rd.	23.4	C	28.8	D	21.7	C	32.2	D	No
6	I-15 Freeway NB, Off-Ramp at Baxter Rd.	27.2	C	33.8	D	22.9	C	29.4	D	No
7	I-15 Freeway NB, On-Ramp at Baxter Rd.	24.5	C	28.2	D	24.3	C	33.2	D	No
8	I-15 Freeway NB, South of Baxter Rd.	22.7	C	31.6	D	21.4	C	**36.2**	**E**	No[5]
		Post-2035 With Project				**2040 With Project**				
1	I-15 Freeway SB, North of Baxter Rd.	29.2	D	--[4]	**F**	**38.4**	**E**	**45.0**	**F**	No
2	I-15 Freeway SB, Off-Ramp at Baxter Rd.	33.2	D	**48.0**	**F**	34.7	D	**58.1**	**F**	No
3	I-15 Freeway SB, On-Ramp at Baxter Rd.	29.5	D	**45.5**	**F**	33.5	D	**55.7**	**F**	No
4	I-15 Freeway SB, South of Baxter Rd.	29.7	D	--[4]	**F**	**39.0**	**E**	**38.4**	**F**	No
5	I-15 Freeway NB, North of Baxter Rd.	--[4]	**F**	**35.3**	**E**	**38.4**	**F**	**42.5**	**F**	No
6	I-15 Freeway NB, Off-Ramp at Baxter Rd.	**42.1**	**F**	**36.2**	**E**	**47.9**	**F**	**35.1**	**F**	No
7	I-15 Freeway NB, On-Ramp at Baxter Rd.	**38.5**	**F**	32.8	D	**51.3**	**F**	**37.6**	**F**	No
8	I-15 Freeway NB, South of Baxter Rd.	--[4]	**F**	**37.0**	**E**	**45.0**	**F**	**45.0**	**F**	No

[1] Baxter Village Traffic Impact Analysis, Urban Crossroads, Inc., March 2015 (Revised).

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln).

[3] LOS = Level of Service

[4] HCS does not report density for freeway facilities operating at LOS F for the facilities analyzed using HCS Basic Freeway Segment analysis methodology. However, HCS does report density for freeway facilities operating at LOS F for the facilities analyzed using HCS Facility or Merge/Diverge analysis methodology. The 2015 TIA analyzed freeway facilities utilizing HCS Basic Freeway Segment and Merge/Diverge analysis methodology while the current Baxter Village TIA analyzes freeway facilities utilizing the HCS Freeway Facility analysis methodology using the latest HCM methodology (HCM 6th Edition).

[5] This freeway segment is anticipated to operate at an unacceptable LOS under General Plan Buildout (Post-2035) With Project from the 2015 Traffic Study and under General Plan Buildout (2040) With Project for this TIA. The deficiency at the freeway segment identified above is not a new deficiency compared to the 2015 Traffic Study, but instead is a deficiency that appears earlier than the 2015 Traffic Study. This is a result of regional growth and higher traffic volumes utilizing the I-15 Freeway, and not as a result of Project traffic. This applies to both 2021 and 2040 conditions.

1.3.1 EXISTING (2019) CONDITIONS

Information for Existing (2019) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared.

1.3.2 EXISTING PLUS PROJECT CONDITIONS

The Existing Plus Project (E+P) analysis determines circulation system deficiencies that would occur on the existing roadway system in the scenario of the Project being placed upon Existing conditions.

1.3.3 OPENING YEAR CUMULATIVE (2021) CONDITIONS

The Opening Year Cumulative (2021) conditions analysis determines the potential near-term cumulative circulation system deficiencies. To account for background traffic growth, traffic associated with other known cumulative development projects in conjunction with an ambient growth factor from Existing conditions of 4.04% (compounded growth of 2 percent per year over 2 years or $1.02^{2\ \text{years}}$) are included for Opening Year Cumulative traffic conditions. The list of cumulative development projects was compiled from information provided by the City of Wildomar, and is consistent with other recent studies in the study area.

1.3.4 GENERAL PLAN BUILDOUT (2040) CONDITIONS

The General Plan Buildout (2040) Without Project traffic conditions forecasts were derived from the Riverside County Transportation Analysis Model (RivTAM) modified to represent the General Plan Buildout of the City of Wildomar using accepted procedures for model forecast refinement and smoothing. The traffic forecasts reflect the area-wide growth anticipated between Existing conditions and General Plan Buildout conditions. The General Plan Buildout (2040) With Project traffic forecasts were determined by adding the Project traffic to the General Plan Buildout (2040) Without Project traffic forecasts from the RivTAM model.

The General Plan Buildout Without and With Project traffic conditions analyses will be utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF), Development Impact Fee (DIF) programs, Southwest Road and Bridge Benefit District (RBBD), or other approved funding mechanism can accommodate the long-range cumulative traffic at the target LOS identified in the City of Wildomar General Plan. (4)

1.4 STUDY AREA

1.4.1 INTERSECTIONS

The following 8 study area intersections shown on Exhibit 1-2 and listed in Table 1-3, were selected for this TIA based on consultation with City of Wildomar staff.

TABLE 1-3: INTERSECTION ANALYSIS LOCATIONS

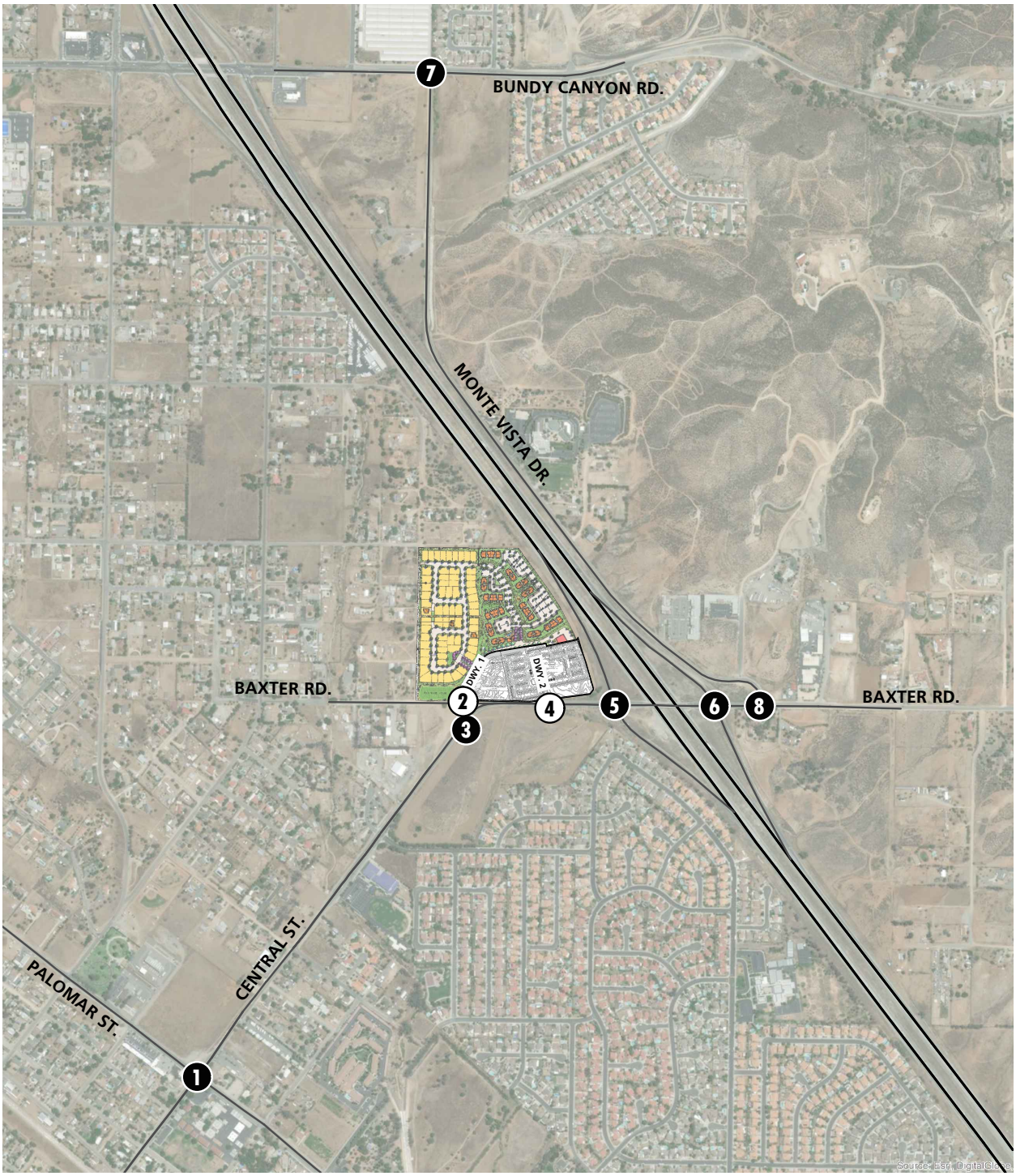
ID	Intersection Location	Jurisdiction	CMP?
1	Palomar St. & Central St.	City of Wildomar	No
2	Driveway 1 & Baxter Rd. – Future Intersection	City of Wildomar	No
3	Central St. & Baxter Rd	City of Wildomar	No
4	Driveway 2 & Baxter Rd. – Future Intersection	City of Wildomar	No
5	I-15 Southbound Ramps & Baxter Rd.	Caltrans, City of Wildomar	No
6	I-15 Northbound Ramps & Baxter Rd.	Caltrans, City of Wildomar	No
7	Monte Vista Dr. & Bundy Canyon Rd.	City of Wildomar	No
8	Monte Vista Dr. & Baxter Rd.	City of Wildomar	No

In general, the study area includes intersections where the Project is anticipated to contribute 50 or more peak hour trips. The "50 peak hour trip" criterion utilized by the City of Wildomar is consistent with the methodology employed by the County of Riverside, and generally represents a minimum number of trips at which a typical intersection would have the potential to be substantively impacted by a given development proposal. Although each intersection may have unique operating characteristics, this traffic engineering rule of thumb is a widely utilized tool for estimating a potential area of impact (i.e., study area).

Although there are more than 50 peak hour trips that are anticipated north and south of Central Street on Palomar Street, the proposed medical office use is anticipated to interact with existing residential uses along Palomar Street such that there would be fewer than 50 peak hour trips at Gruwell Street (Orange Street) and Clinton Keith Road. Gruwell Street is the first General Plan roadway to the north on Palomar Street and Clinton Keith Road is the first General Plan roadway to the south along Palomar Street. For this reason, additional study area intersections have not been evaluated for the purposes of this TIA.

The intent of a Congestion Management Program (CMP) is to more directly link land use, transportation, and air quality, thereby prompting reasonable growth management programs that will effectively utilize new transportation funds, alleviate traffic congestion and related impacts, and improve air quality. Counties within California have developed CMPs with varying methods and strategies to meet the intent of the CMP legislation. The County of Riverside CMP became effective with the passage of Proposition 111 in 1990 and updated most recently updated in 2011. The Riverside County Transportation Commission (RCTC) adopted the 2011 CMP for the County of Riverside in December 2011. (5) There are no intersection analysis locations within the study area that are identified as a CMP intersection.

EXHIBIT 1-2: LOCATION MAP



LEGEND:

- ❶ = EXISTING INTERSECTION ANALYSIS LOCATION
- ⓪ = FUTURE INTERSECTION ANALYSIS LOCATION

N

12651 - locmap.dwg

URBAN CROSSROADS

CITY OF WILDOMAR1.4.2 FREEWAY MAINLINE AND RAMP JUNCTION ANALYSIS

Study area freeway mainline analysis locations were selected based on Caltrans traffic study guidelines, which may require the analysis of State highway facilities. (2) Consistent with recent Caltrans guidance, and because deficiencies to freeway segments tend to dissipate with distance from the point of State Highway System (SHS) entry, quantitative study of freeway segments beyond those immediately adjacent to the point of entry typically is not required. As such, this study evaluates the following freeway segments adjacent to the point of entry to the SHS, where the Project is anticipated to contribute 50 or more one-way peak hour trips (see Table 1-4):

TABLE 1-4: FREEWAY FACILITY ANALYSIS LOCATIONS

ID	Freeway Facilities
1	I-15 Freeway Southbound, North of Baxter Rd.
2	I-15 Freeway Southbound, Off-Ramp at Baxter Rd.
3	I-15 Freeway Southbound, On-Ramp at Baxter Rd.
4	I-15 Freeway Southbound, South of Baxter Rd.
5	I-15 Freeway Northbound, North of Baxter Rd.
6	I-15 Freeway Northbound, Off-Ramp at Baxter Rd.
7	I-15 Freeway Northbound, On-Ramp at Baxter Rd.
8	I-15 Freeway Northbound, South of Baxter Rd.

1.5 PROJECT DEFICIENCIES

This section provides a summary of Project deficiencies. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 5 *E+P Traffic Conditions*, Section 6 *Opening Year Cumulative (2021) Traffic Conditions*, and Section 7 *General Plan Buildout (2040) Traffic Conditions* includes the detailed analysis. A summary of LOS results for all analysis scenarios is presented on Exhibit 1-3.

1.5.1 E+P CONDITIONS

Central Street & Baxter Road (#3) – This intersection was found to operate at an acceptable LOS (LOS D or better) during the peak hours under Existing traffic conditions. With the addition of Project traffic, this intersection is anticipated to operate at an unacceptable LOS during the one or more peak hours. Consistent with the City's significance criteria, the impact is considered significant.

I-15 Southbound Ramps & Baxter Road (#5) – This intersection was found to operate at an unacceptable LOS during the peak hours under Existing traffic conditions and is anticipated to continue to operate at an unacceptable LOS during the peak hours with the addition of Project traffic, resulting in a cumulative deficiency.

EXHIBIT 1-3: SUMMARY OF DEFICIENT INTERSECTIONS BY ANALYSIS SCENARIO

#	Intersection	Existing (2019)	E+P	Opening Year Cumulative (2021) Without Project	Opening Year Cumulative (2021) With Project	General Plan Buildout (2040) Without Project	General Plan Buildout (2040) With Project
1	Palomar St. & Central St.	A-D	A-D	A-D	A-D	F	F
2	Dwy. 1 & Baxter Rd.	NA	A-D	NA	A-D	NA	A-D
3	Central St. & Baxter Rd.	A-D	F	A-D	F	F	F
4	Dwy. 2 & Baxter Rd.	NA	A-D	NA	A-D	NA	A-D
5	I-15 SB Ramps & Baxter Rd.	F	F	F	F	F	F
6	I-15 NB Ramps & Baxter Rd.	A-D	A-D	D-E	D-E	F	F
7	Monte Vista Dr. & Bundy Canyon Rd.	A-D	A-D	F	F	F	F
8	Monte Vista Dr. & Baxter Rd.	A-D	A-D	A-D	A-D	F	F

LEGEND:

- AM PEAK HOUR
- PM PEAK HOUR
- LOS A-D
- LOS D-E
- LOS F
- NA - NOT AN ANALYSIS LOCATION FOR THIS SCENARIO

1.5.2 OPENING YEAR CUMULATIVE (2021) CONDITIONS

The following study area intersections are anticipated to operate at a deficient LOS during one or both peak hours for Opening Year Cumulative (2021) Without Project traffic conditions:

- I-15 Southbound Ramps & Baxter Rd. (#5) – LOS F AM and PM peak hours
- I-15 Northbound Ramps & Baxter Rd. (#6) – LOS E PM peak hour only
- Monte Vista Dr. & Bundy Canyon Rd. (#7) – LOS F AM and PM peak hours

The Project is anticipated to contribute to these deficiencies by adding traffic (as measured by 50 or more peak hours trips) to already deficient intersections resulting in an increase to peak hour delays. Cumulative deficiencies are not directly caused by the Project. The Project would, however, contribute traffic to these deficient facilities along with other cumulative development projects. With the addition of Project traffic, the following additional intersection is anticipated to operate at an unacceptable LOS during the peak hours under Opening Year Cumulative (2021) With Project traffic conditions:

- Central St. & Baxter Rd. (#3) – LOS F AM and PM peak hours

1.5.3 GENERAL PLAN BUILDOUT (2040) CONDITIONS

The following study area intersections are anticipated to operate at a deficient LOS during one or both peak hours for General Plan Buildout (2040) Without Project traffic conditions:

- Palomar St. & Central St. (#1) – LOS F AM and PM peak hours
- Central St. & Baxter Rd. (#3) – LOS F AM and PM peak hours
- I-15 Southbound Ramps & Baxter Rd. (#5) – LOS F AM and PM peak hours
- I-15 Northbound Ramps & Baxter Rd. (#6) – LOS F AM and PM peak hours
- Monte Vista Dr. & Bundy Canyon Rd. (#7) – LOS F AM and PM peak hours
- Monte Vista Dr. & Baxter Rd. (#8) – LOS F AM and PM peak hours

The Project is anticipated to contribute to these deficiencies by adding traffic (as measured by 50 or more peak hours trips) to already deficient intersections resulting in an increase to peak hour delays. Cumulative deficiencies are not directly caused by the Project. The Project would, however, contribute traffic to these deficient facilities along with other cumulative development projects. With the addition of Project traffic, the following additional intersection is anticipated to operate at an unacceptable LOS during the peak hours under General Plan Buildout (2040) With Project traffic conditions:

- Driveway 2 & Baxter St. (#4) – LOS F PM peak hour only

1.6 RECOMMENDATIONS

The following improvements are needed to address the cumulative deficiencies identified under E+P, Opening Year Cumulative (2021), and General Plan Buildout (2040) traffic conditions. For those recommended improvements listed in Table 1-5 and not constructed as part of the Project, the Applicant's responsibility for the Project's contributions to deficient traffic conditions is fulfilled by payment of fair share fees and/or payment of TUMF, DIF, and or RBBD fees that would be assigned to construction of the identified recommended improvements.

Mitigation Measure 1.1 – Central Street & Baxter Road (#3) – The following improvements are necessary to reduce the Project's impact to less than significant:

- Project to install a traffic signal.
- Project to restripe the southbound shared through-right turn lane as a left turn lane and construct a right turn lane.
- Project to construct an eastbound left turn lane.
- Project to construct a westbound right turn lane.

Mitigation Measure 2.1 – I-15 Southbound Ramps & Baxter Road (#5) – The following improvement is necessary to reduce the cumulative impact to less than significant:

- The Project shall mitigate through payment of TUMF fees.

The Project Applicant would be required to pay TUMF fees, DIF fees, RBBD fees, and fair share fees consistent with the City requirements for the improvements listed in Table 1-5 that are not constructed by the Project. Please refer to Section 8 *Local and Regional Funding Mechanisms*.

Table 1-5 identifies the improvements recommended for Opening Year Cumulative and Horizon Year traffic conditions are consistent with the improvements recommended in the 2015 Traffic Study for the same analysis scenarios. A rough order of magnitude cost has been prepared to determine the appropriate contribution value based upon the Project's fair share of traffic as part of the project approval process. Based on the Project fair share percentages, the Project's fair share cost is estimated at $80,872. These estimates are a rough order of magnitude only as they are intended only for discussion purposes and do not imply any legal responsibility or formula for contributions or mitigation.

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Table 1-5

Summary of Improvements by Analysis Scenario

#	Intersection Location	Jurisdiction	Recommended Improvements					Improvements in DIF, TUMF, etc.[1]	Project Responsibility[2]	Total Cost[4,5]	Project Fair Share[3]	Fair Share Cost[6]
			E+P	2021 With Project	2018 With Project (2015 TIA)	2040 With Project	Post-2035 With Project (2015 TIA)					
1	Palomar St. & Central St.	Wildomar	None	None	Same	Add 2nd NB through lane	Same	Yes (TUMF)	Fees	--	7.7%	--
						Add 2nd SB through lane	Same	Yes (TUMF)	Fees	--		--
						Add EB right turn lane	Same	No	Fair Share	$78,400		$6,057
						Add 2nd WB through lane	Same	Yes (TUMF)	Fees	--		--
										$78,400		**$6,057**
3	Central St. & Baxter Rd	Wildomar	Install a traffic signal	Same	Same	Same	Same	Yes (DIF)	Construct	--	25.2%	--
			Add SB left turn lane	Same	Same	Same	Same	No	Construct	--		--
			Add EB left turn lane	Same	Same	Same	Same	No	Construct	--		--
			Add WB right turn lane	Same	Same	Same	Same	No	Construct	--		--
						Add NB left turn lane	Same	No	Fair Share	$78,400		$19,722
						Add 2nd EB through lane	Same	Yes (TUMF)	Fees	--		--
						Add EB right turn lane	Same	No	Fair Share	$78,400		$19,722
						Add WB left turn lane	Same	No	Fair Share	$78,400		$19,722
						Add 2nd WB through lane	Same	Yes (TUMF)	Fees	--		--
										$235,200		**$59,167**
4	Driveway 2 & Baxter Rd.	Wildomar	None	None	Same	Add 2nd EB through lane	Same	Yes (TUMF)	Fees	--	--	--
						Add 2nd WB through lane	Same	Yes (TUMF)	Fees	--		--
										$0		**$0**
5	I-15 SB Ramps & Baxter Rd.	Wildomar, Caltrans	Install a traffic signal	Same	Same	Same	Same	Yes (TUMF)	Fees	--	--	--
				Add EB right turn lane	Same	Same	Same	Yes (TUMF)	Fees	--		--
						Add 2nd EB through lane	Same	Yes (TUMF)	Fees	--		--
						Add 2nd WB through lane	Same	Yes (TUMF)	Fees	--		--
										$0		**$0**
6	I-15 NB Ramps & Baxter Rd.	Wildomar, Caltrans	None	Install a traffic signal	Same	Same	Same	Yes (TUMF)	Fees	--	--	--
						Add 2nd EB through lane	Same	Yes (TUMF)	Fees	--		--
						Add 2nd WB through lane	Same	Yes (TUMF)	Fees	--		--
						Add WB right turn lane	Same	Yes (TUMF)	Fees	--		--
										$0		**$0**
7	Monte Vista Dr. & Bundy Canyon Rd.	Wildomar	None	Install a traffic signal	Same	Same	Same	Yes (DIF)	Fees	--	2.8%	--
				Add 2nd EB through lane	Same	Same	Same	Yes (TUMF, RBBD)	Fees	--		--
						Add NB left turn lane	Same	Yes (DIF)	Fees	--		--
						Add NB right turn lane	Same	Yes (DIF)	Fees	--		--
						Add 3rd EB through lane	Same	No	Fair Share	$282,240		$7,824
						Add EB right turn lane	Same	Yes (DIF)	Fees	--		--
						Add 2nd WB left turn lane	Same	Yes (DIF)	Fees	--		--
						Add 2nd WB through lane	Same	Yes (TUMF, RBBD)	Fees	--		--
						Add 3rd WB through lane	Same	No	Fair Share	$282,240		$7,824
										$564,480		**$15,648**

Table 1-5

Summary of Improvements by Analysis Scenario

#	Intersection Location	Jurisdiction	Recommended Improvements					Improvements in DIF, TUMF, etc.[1]	Project Responsibility[2]	Total Cost[4,5]	Project Fair Share[3]	Fair Share Cost[6]
			E+P	2021 With Project	2018 With Project (2015 TIA)	2040 With Project	Post-2035 With Project (2015 TIA)					
8	Monte Vista Dr. & Baxter Rd.	Wildomar	None	None	Same	Install a traffic signal	Same	Yes (DIF)	Fees	--	--	--
						Add SB right turn lane	Same	Yes (DIF)	Fees	--		--
						Add EB left turn lane	Same	Yes (DIF)	Fees	--		--
						Stripe the WB right turn lane and modify the traffic signal to implement overlap phasing	Same	Yes (DIF)	Fees	--		--
										$0		**$0**
									Total Project Fair Share Contribution to the City of Wildomar[6]	**$878,080**		**$80,872**

[1] Improvements included in Regional TUMF or City of Wildomar DIF programs have been identified as such.

[2] Identifies the Project's responsibility to construct an improvement or contribute fees or fair share towards the implementation of the improvement shown.

[3] Project fair share percentage for the improvements which are not already included in the City-wide DIF/County TUMF/County RBBD.

[4] Costs have been estimated using the data provided in Appendix "G" of the CMP (2003 Update) for preliminary construction costs. Appendix "G" costs escalated by a factor of 1.565 and per City direction Traffic Signals use $600,000. Costs are only calculated for improvements with a fair share responsibility (not for those that are to be constructed by the Project or those covered by fees).

[5] Program improvements constructed by project may be eligible for fee credit. In lieu fee payment is at discretion of City. Represents the fair share percentage for the Project during the most impacted peak hour.

[6] Rough order of magnitude fair share cost estimate.

[6] Total Project fair share contribution consists of the improvements which are not already included in the County's TUMF, City's DIF, or other pre-existing fee program for those intersections wholly or partially located within the City of Wildomar.

1.7 SITE ACCESS RECOMMENDATIONS

The following site adjacent roadway and site access improvements are necessary to facilitate site access. These improvements are required to be in place prior to occupancy. Exhibit 1-4 shows the improvements described below.

1.7.1 SITE ADJACENT ROADWAY RECOMMENDATIONS

Baxter Road – Baxter Road is an east-west oriented roadway located along the Project's southern boundary. Construct Baxter Road at its ultimate half-section width as an Arterial Highway (128-foot right-of-way) between Central Street and the Project's eastern boundary. In addition, construct the extension of Baxter Road to its ultimate cross-section width as a Local Street (60-foot right-of-way) from the edge of Central Avenue/Baxter Road to the Project entrance at Driveway 1. Construct the western extension of Baxter Road from Driveway 1 to White Street to its ultimate half-section as a Local Street (60-foot right-of-way). Improvements along the Project's frontage would be those required by final conditions of approval for the proposed Project and applicable City of Wildomar standards.

White Street – White Street is a north-south oriented roadway located along the Project's western boundary. Construct White Street at its ultimate half-section width as a Local Street (60-foot right-of-way) from the Project's northern boundary to Baxter Road. Improvements along the Project's frontage (east side of White Street) would be those required by final conditions of approval for the proposed Project and applicable City of Wildomar standards.

Wherever necessary, roadways adjacent to the Project, site access points and site-adjacent intersections will be constructed to be consistent with the identified roadway classifications and respective cross-sections in the City of Wildomar General Plan Circulation Element.

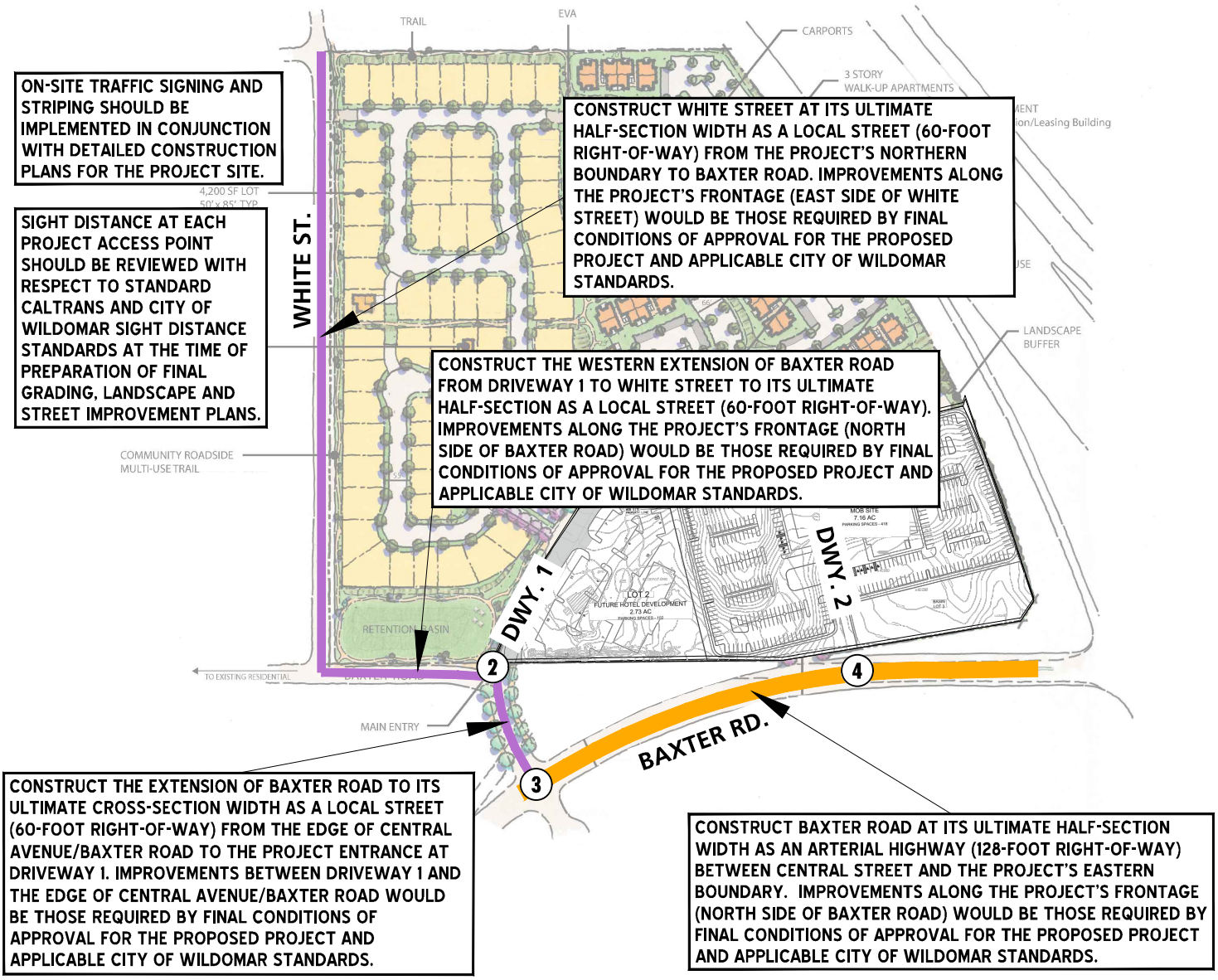
On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the Project site.

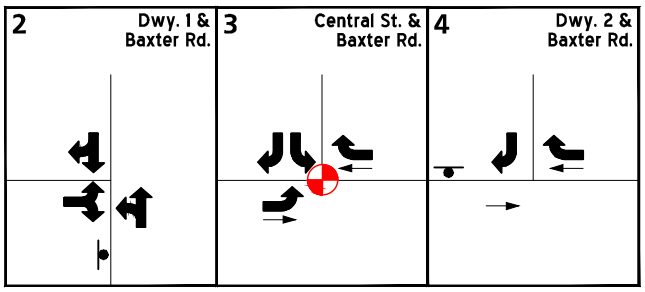
1.7.2 SITE ADJACENT ACCESS RECOMMENDATIONS

Driveway 1 & Baxter Road (#2) – The following improvements are necessary to accommodate site access and will be constructed by the Project as part of the Project design features:

- Install a stop control on the eastbound approach and add an eastbound shared left-right turn lane.
- Add a northbound shared left-through lane.
- Add a southbound shared through-right turn lane.

EXHIBIT 1-4: SITE ADJACENT ROADWAY AND SITE ACCESS RECOMMENDATIONS





LEGEND:

- = STOP SIGN
- = EXISTING LANE
- = LANE IMPROVEMENT
- = ARTERIAL HIGHWAY (4-LANES, 128-FOOT R.O.W.)
- = LOCAL STREET (2-LANES, 60-FOOT R.O.W.)
- = NEW TRAFFIC SIGNAL

N

Central Street & Baxter Road (#3) – The following improvements are necessary to accommodate site access and will be constructed by the Project as part of the Project design features:

- Install a traffic signal.
- Add a southbound left turn lane (restripe existing lane) and southbound right turn lane.
- Add an eastbound left turn lane.
- Add a westbound right turn lane.

Driveway 2 & Baxter Road (#4) – The following improvements are necessary to accommodate site access and will be constructed by the Project as part of the Project design features:

- Install a stop control on the southbound approach and add a southbound right turn lane.
- Add a westbound right turn lane.

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the Project site.

Sight distance at each Project access point should be reviewed with respect to Caltrans and City of Wildomar sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

1.8 SENATE BILL 743 – VEHICLE MILES TRAVELED (VMT)

Senate Bill 743 (SB 743), approved in 2013, endeavors to change the way transportation impacts will be determined according to the California Environmental Quality Act (CEQA). The Office of Planning and Research (OPR) has recommended the use of vehicle miles traveled (VMT) as the replacement for automobile delay-based LOS. In December 2018, the Natural Resources Agency finalized updates to CEQA Guidelines to incorporate SB 743 (i.e., VMT). While a lead agency has the option to immediately apply the new VMT based analysis methodology and thresholds for the purposes of evaluating transportation impacts, statewide application of the new guidelines is required July 1, 2020. The VMT assessment has been provided under a separate covered and in Appendix 1.1 of this TIA.

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2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. As the City of Wildomar does not have their own traffic study guidelines, the methodologies described are generally consistent the Riverside County Transportation Department Traffic Impact Analysis Preparation Guide. (1)

2.1 LEVEL OF SERVICE

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS A, representing completely free-flow conditions, to LOS F, representing breakdown in flow resulting in stop-and-go conditions. LOS E represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow.

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The Highway Capacity Manual (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (6) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The City of Wildomar requires signalized intersection operations analysis based on the methodology described in the HCM (6th Edition). (6) Intersection LOS operations are based on an intersection's average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections LOS is directly related to the average control delay per vehicle and is correlated to a LOS designation as described in Table 2-1.

TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A	F
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B	F

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00	C	F
Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.01 to 55.00	D	F
Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.01 to 80.00	E	F
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths	80.01 and up	F	F

Source: HCM 6th Edition

Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. Common practice for LOS analysis is to use a peak 15-minute rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g. PHF = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for all analysis scenarios. Per the HCM (6th Edition), PHF values over 0.95 often are indicative of high traffic volumes with capacity constraints on peak hour flows while lower PHF values are indicative of greater variability of flow during the peak hour. (6) In an effort to conduct a conservative analysis, a PHF of 0.92 has been utilized for new intersections.

California Department of Transportation (Caltrans)

Per the Caltrans Guide for the Preparation of Traffic Impact Studies, the traffic modeling and signal timing optimization software package Synchro (Version 10) has also been utilized to analyze signalized intersections under Caltrans' jurisdiction, which consists of the I-15 Freeway & Baxter Road freeway-to-arterial ramp intersections. (2)

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Wildomar and Caltrans requires the operations of unsignalized intersections be evaluated using the methodology described in the HCM (6th Edition). (6) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay Per Vehicle (Seconds)	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Little or no delays.	0 to 10.00	A	F
Short traffic delays.	10.01 to 15.00	B	F
Average traffic delays.	15.01 to 25.00	C	F
Long traffic delays.	25.01 to 35.00	D	F
Very long traffic delays.	35.01 to 50.00	E	F
Extreme traffic delays with intersection capacity exceeded.	> 50.00	F	F

Source: HCM 6th Edition

At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane.

2.3 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by the Caltrans and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TIA uses the signal warrant criteria presented in the latest edition of the Caltrans California Manual on Uniform Traffic Control Devices *(CA MUTCD)* for all study area intersections. (7)

The signal warrant criteria for Existing conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The Caltrans CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. (7) Specifically, this TIA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing study area intersections for all analysis scenarios. Warrant 3 is appropriate to use for this TIA because it provides specialized warrant criteria for intersections with rural characteristics (e.g. located in communities with populations of less than 10,000 persons or with adjacent major streets operating above 40 miles per hour). For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection.

Future intersections that do not currently exist have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets.

As shown in Table 2-3, traffic signal warrant analyses were performed for the following unsignalized study area intersections during the peak weekday conditions wherein the Project is anticipated to contribute the highest trips. Traffic signal warrant analysis has not been conducted at any signalized intersection or any future intersection that is anticipated to have restricted access, such as Driveway 2 on Baxter Road.

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
2	Driveway 1 & Baxter Rd. – Future Intersection	City of Wildomar
3	Central St. & Baxter Rd.	City of Wildomar
5	I-15 Southbound Ramps & Baxter Rd.	City of Wildomar, Caltrans
6	I-15 Northbound Ramps & Baxter Rd.	City of Wildomar, Caltrans
7	Monte Vista Dr. & Bundy Canyon Rd.	City of Wildomar
8	Monte Vista Dr. & Baxter Rd.	City of Wildomar

The Existing conditions traffic signal warrant analysis is presented in the subsequent section, Section 3 *Area Conditions* of this report. The traffic signal warrant analysis for future conditions is presented in Section 5 *E+P Traffic Conditions,* Section 6 *Opening Year Cumulative (2021) Traffic Conditions,* and Section 7 *General Plan Buildout (2040) Traffic Conditions* of this report.

It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with LOS. An intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

2.4 MINIMUM LEVEL OF SERVICE (LOS)

The City of Wildomar defines intersection performance deficiency standards consistent with those of the County of Riverside General Plan Circulation Element.

The definition of an intersection deficiency has been obtained from the County of Riverside General Plan. Riverside County General Plan Policy C 2.1 states that the County will maintain the following County-wide target LOS:

The following minimum target levels of service have been designated for the review of development proposals in the unincorporated areas of Riverside County with respect to transportation impacts on roadways designated in the Riverside County Circulation Plan which are currently County maintained, or are intended to be accepted into the County maintained roadway system:

- *LOS C shall apply to all development proposals in any area of the Riverside County not located within the boundaries of an Area Plan, as well as those areas located within the following Area Plans: REMAP, Eastern Coachella Valley, Desert Center, Palo Verde Valley, and those non-Community Development areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley and Temescal Canyon Area Plans.*
- *LOS D shall apply to all development proposals located within any of the following Area Plans: Eastvale, Jurupa, Highgrove, Reche Canyon/Badlands, Lakeview/Nuevo, Sun City/Menifee Valley,*

Harvest Valley/Winchester, Southwest Area, The Pass, San Jacinto Valley, Western Coachella Valley and those Community Development Areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley and Temescal Canyon Area Plans.

- *LOS E may be allowed by the Board of Supervisors within designated areas where transit-oriented development and walkable communities are proposed.*

The applicable minimum LOS utilized for the purposes of this analysis is LOS D per the City-wide target LOS for projects located within a Community Development Area.

2.5 FREEWAY OFF-RAMP QUEUING ANALYSIS

Consistent with Caltrans requirements, the 95th percentile queuing of vehicles has been assessed at the off-ramps to determine potential queuing deficiencies at the freeway ramp intersections at the I-15 Freeway and Baxter Road interchange. Specifically, the queuing analysis is utilized to identify any potential queuing and "spill back" onto the I-15 Freeway mainline from the off-ramps.

The traffic progression analysis tool and HCM intersection analysis program, Synchro, has been used to assess the potential deficiencies/needs of the intersections with traffic added from the proposed Project. Storage (turn-pocket) length recommendations at the ramps have been based upon the 95th percentile queue resulting from the Synchro progression analysis. A Synchro footnote indicates if the 95th percentile cycle exceeds capacity. Traffic is simulated for two complete cycles of the 95th percentile traffic in Synchro in order to account for the effects of spillover between cycles.

A vehicle is considered queued whenever it is traveling at less than 10 feet/second. A vehicle will only become queued when it is either at the stop bar or behind another queued vehicle. Although only the 95th percentile queue has been reported in the tables, the 50th percentile queue can be found in the appendix alongside the 95th percentile queue for each ramp location. The 95th percentile queue is derived from the average queue plus 1.65 standard deviations. The 95th percentile queue is not necessarily ever observed it is simply based on statistical calculations. In practice, the 95th percentile queue shown will rarely be exceeded and the queues shown with the footnote are acceptable for the design of storage bays.

2.6 FREEWAY MAINLINE SEGMENT ANALYSIS METHODOLOGY

Consistent with recent Caltrans guidance, the traffic study has evaluated the freeway segments on either side of Baxter Road where the Project is anticipated to contribute 50 or more peak hour one-way trips, in an effort to conduct a conservative analysis and overstate as opposed to understand potential deficiencies.

The freeway system in the study area has been broken into segments defined by the freeway-to-arterial interchange locations. The freeway segments have been evaluated in this TIA based upon peak hour directional volumes. The freeway segment analysis is based on the methodology described in the HCM and performed using HCS7 software. The performance measure preferred by Caltrans to calculate LOS is density. Density is expressed in terms of passenger cars per mile

per lane. Table 2-4 illustrates the freeway segment LOS descriptions for each density range utilized for this analysis.

TABLE 2-4: DESCRIPTION OF FREEWAY MAINLINE LOS

Level of Service	Description	Density Range (pc/mi/ln)[1]
A	Free-flow operations in which vehicles are relatively unimpeded in their ability to maneuver within the traffic stream. Effects of incidents are easily absorbed.	0.0 – 11.0
B	Relative free-flow operations in which vehicle maneuvers within the traffic stream are slightly restricted. Effects of minor incidents are easily absorbed.	11.1 – 18.0
C	Travel is still at relative free-flow speeds, but freedom to maneuver within the traffic stream is noticeably restricted. Minor incidents may be absorbed, but local deterioration in service will be substantial. Queues begin to form behind significant blockages.	18.1 – 26.0
D	Speeds begin to decline slightly and flows, and densities begin to increase more quickly. Freedom to maneuver is noticeably limited. Minor incidents can be expected to create queuing as the traffic stream has little space to absorb disruptions.	26.1 – 35.0
E	Operation at capacity. Vehicles are closely spaced with little room to maneuver. Any disruption in the traffic stream can establish a disruption wave that propagates throughout the upstream traffic flow. Any incident can be expected to produce a serious disruption in traffic flow and extensive queuing.	35.1 – 45.0
F	Breakdown in vehicle flow.	>45.0

[1] pc/mi/ln = passenger cars per mile per lane. Source: HCM (6th Edition)

The number of lanes for existing baseline conditions has been obtained from field observations conducted by Urban Crossroads in June 2019. These existing freeway geometrics have been utilized for Existing, E+P, Opening Year Cumulative (2021), and General Plan Buildout (2040) traffic conditions.

The I-15 Freeway mainline volume data was obtained from the Caltrans Performance Measurement System (PeMS) website for the segments of the I-15 Freeway south of Baxter Road. The data was obtained from October 2013. To replicate Existing (2019) traffic conditions, an ambient growth rate of 9.34 percent (1.5 percent per year, compounded annually – consistent with the methodology for Existing intersection counts) was utilized from the 2013 freeway volumes. It should be noted, Caltrans PeMS data for 2019 is unreliable and only based on historical data as opposed to actual traffic volumes, as the detectors on the I-15 freeway report 0 percent observed. (8)

2.7 FREEWAY MERGE/DIVERGE RAMP JUNCTION ANALYSIS

The freeway system in the study area has been broken into segments defined by freeway-to-arterial interchange locations where the Project is anticipated to contribute 50 or more peak hour trips at the I-15 Freeway and Baxter Road interchange (see Table 1-4). Although the HCM indicates the influence area for a merge/diverge junction is 1,500 feet, the analysis presented in this traffic study has been performed at all ramp locations with respect to the nearest on or off-

ramp at each interchange in an effort to be consistent with Caltrans guidance/comments on other projects Urban Crossroads has worked on in the region.

The freeway facility analysis is performed using the HCS7 software and analyzes the freeway facility as a whole, including both freeway segments and ramp junctions. The measure of effectiveness (reported in passenger car/mile/lane) are calculated based on the existing number of travel lanes, number of lanes at the on and off-ramps both at the analysis junction and at upstream and downstream locations (if applicable) and acceleration/deceleration lengths at each merge/diverge point. Table 2-5 presents the merge/diverge area level of service descriptions for each density range utilized for this analysis.

TABLE 2-5: DESCRIPTION OF FREEWAY MERGE AND DIVERGE LOS

Level of Service	Density Range (pc/mi/ln)[1]
A	≤10.0
B	10.0 – 20.0
C	20.0 – 28.0
D	28.0 – 35.0
E	>35.0
F	Demand Exceeds Capacity

[1] pc/mi/ln = passenger cars per mile per lane. Source: HCM (6th Edition)

Similar to the basic freeway segment analysis, the I-15 Freeway volume data was obtained from the Caltrans maintained PeMS website for the segments of the I-15 Freeway south of Baxter Road. The ramp data (per the count data presented in Appendix 3.1) was then utilized to flow conserve the mainline volumes to determine the remaining I-15 Freeway mainline segment volumes. Flow conservation checks ensure that traffic flows from north to south (and vice versa) of the interchange area with no unexplained loss of vehicles. The data was obtained from October 2013. As stated in Section 2.6 *Freeway Mainline Segment Analysis Methodology*, since the 2019 PeMS data is based only on historical data instead of currently observed traffic volumes, an ambient growth rate of 9.34 percent (1.5 percent per year, compounded annually) was applied to the 2013 freeway volumes to reflect Existing (2019) traffic conditions. (8)

2.8 THRESHOLDS OF SIGNIFICANCE

To determine whether the addition of project-related traffic at a study intersection would result in a significant project-related impact, the following thresholds of significance will be utilized:

- A significant project-related impact occurs at a study intersection if the addition of project-generated trips reduces the peak hour level of service of the study intersection to change from acceptable "pre-project" operation (LOS A, B, C or D) to deficient operation (LOS E or F);
- A significant project-related impact occurs at a study intersection if the addition of project-generated trips changes the pre-project delay by the value shown below in Table 2-6.

TABLE 2-6: CITY OF WILDOMAR INTERSECTION TRAFFIC LEVEL OF SERVICE STANDARD

Pre-Project LOS	Project-Related Delay Increase	Mitigation Measure
E or F	More than 5.0 seconds	Reduce delay increase to within 5.0 seconds

2.9 PROJECT FAIR SHARE CALCULATION METHODOLOGY

Improvements found to be included in the TUMF, RBBD, and/or DIF will be identified as such. For improvements that do not appear to be in either of the pre-existing fee programs, a fair share financial contribution based on the Project's proportional share may be imposed in order to mitigate the Project's share of deficiencies in lieu of construction. It should be noted that fair share calculations are for informational purposes only and the City Traffic Engineer will determine the appropriate improvements to be implemented by a project (to be identified in the conditions of approval).

If the intersection is currently operating at acceptable LOS under Existing traffic conditions, the Project's fair share cost of improvements would be determined based on the following equation, which is the ratio of Project traffic to new traffic, where new traffic is total future traffic less existing baseline traffic:

Project Fair Share % = Project Traffic / (2040 Total Traffic – Existing (2019) Traffic)

3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the City of Wildomar General Plan Circulation Network, a review of existing peak hour intersection operations, traffic signal warrant, and freeway facility operations analyses.

3.1 EXISTING CIRCULATION NETWORK

The study area includes a total of 8 existing and future intersections as shown previously on Exhibit 1-2. Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 GENERAL PLAN CIRCULATION AND INFRASTRUCTURE ELEMENT

Exhibit 3-2 shows the City of Wildomar General Plan Circulation and Infrastructure Element, Exhibit 3-3 illustrates the City of Wildomar General Plan roadway cross-sections.

3.3 BICYCLE & PEDESTRIAN FACILITIES

Exhibit 3-4 shows the City of Wildomar General Plan Trails Map, which shows there is a future Community Trail along Baxter Road within the study area. Field observations indicate nominal pedestrian and bicycle activity within the study area. Existing pedestrian facilities within the study area are shown on Exhibit 3-5. There are limited areas with existing sidewalks within the study area and there are no bike lanes/paths.

3.4 TRANSIT SERVICE

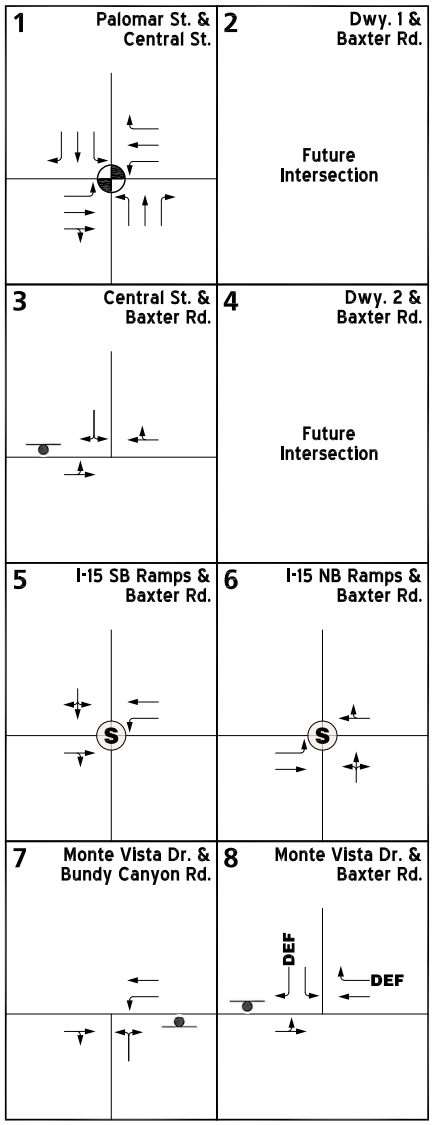
The study area is currently served by the Riverside Transit Agency (RTA). Exhibit 3-6 shows the existing transit routes. The study area is currently served by RTA Routes 8 and 23 along Palomar Street and Central Street. However, the Project site is not currently served by any RTA routes. Transit service is reviewed and updated by RTA periodically to address ridership, budget, and community demand needs. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate.

3.5 EXISTING (2019) TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in May 2019, while local schools were in session, for the following intersections:

- Central Street & Baxter Road
- I-15 Southbound Ramps & Baxter Road
- I-15 Northbound Ramps & Baxter Road

EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS



LEGEND:

- = TRAFFIC SIGNAL
- = ALL WAY STOP
- = STOP SIGN
- 4 = NUMBER OF LANES
- D = DIVIDED
- U = UNDIVIDED
- DEF = DEFACTO RIGHT TURN

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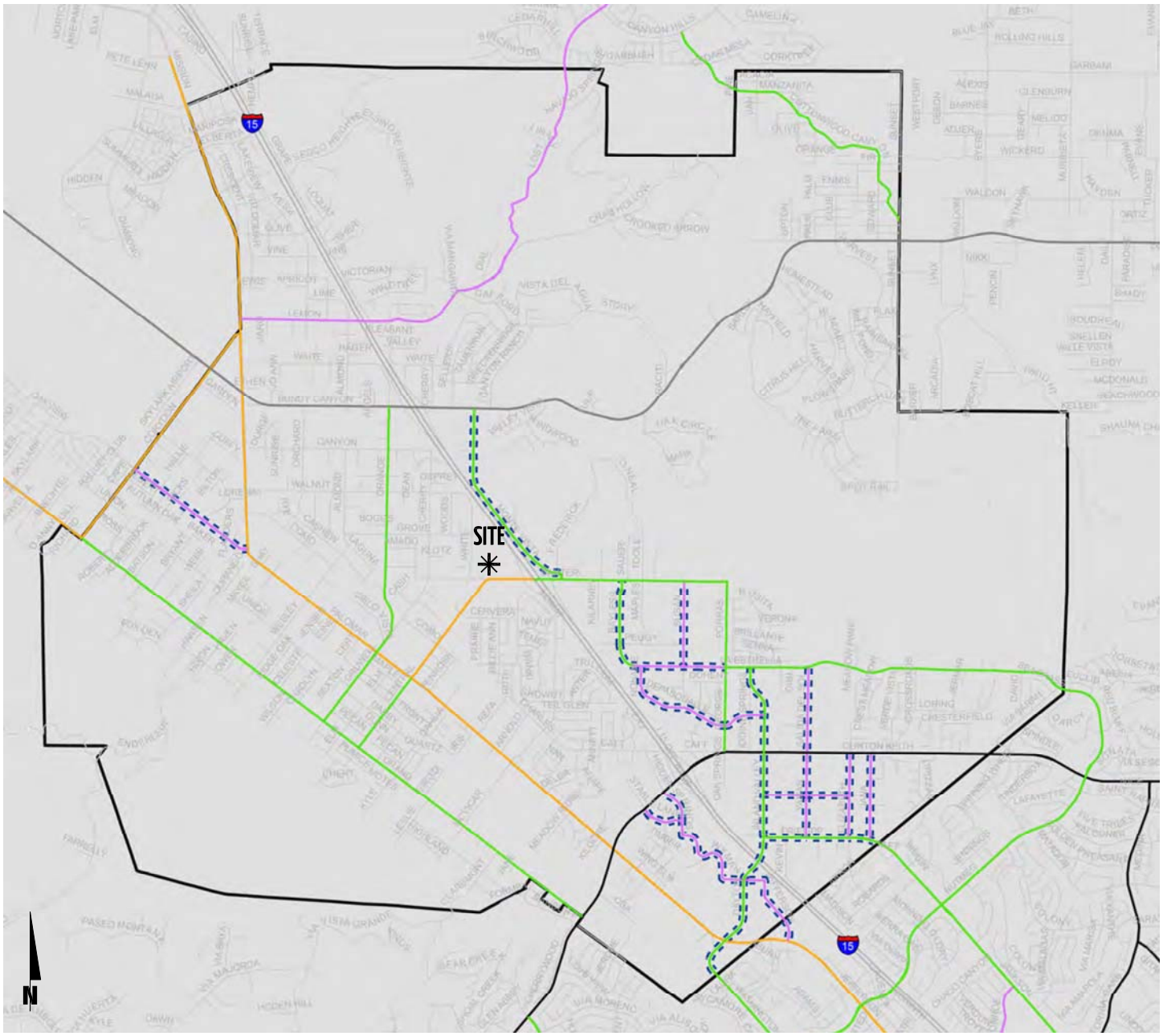
EXHIBIT 3-2: CITY OF WILDOMAR GENERAL PLAN CIRCULATION AND INFRASTRUCTURE ELEMENT



LEGEND:

- URBAN ARTERIAL
- ARTERIAL
- MAJOR
- SECONDARY
- COLLECTOR
- WILDOMAR CITY BOUNDARIES

NOTE: CITY OF WILDOMAR DRAFT GENERAL PLAN UPDATE JANUARY 2015

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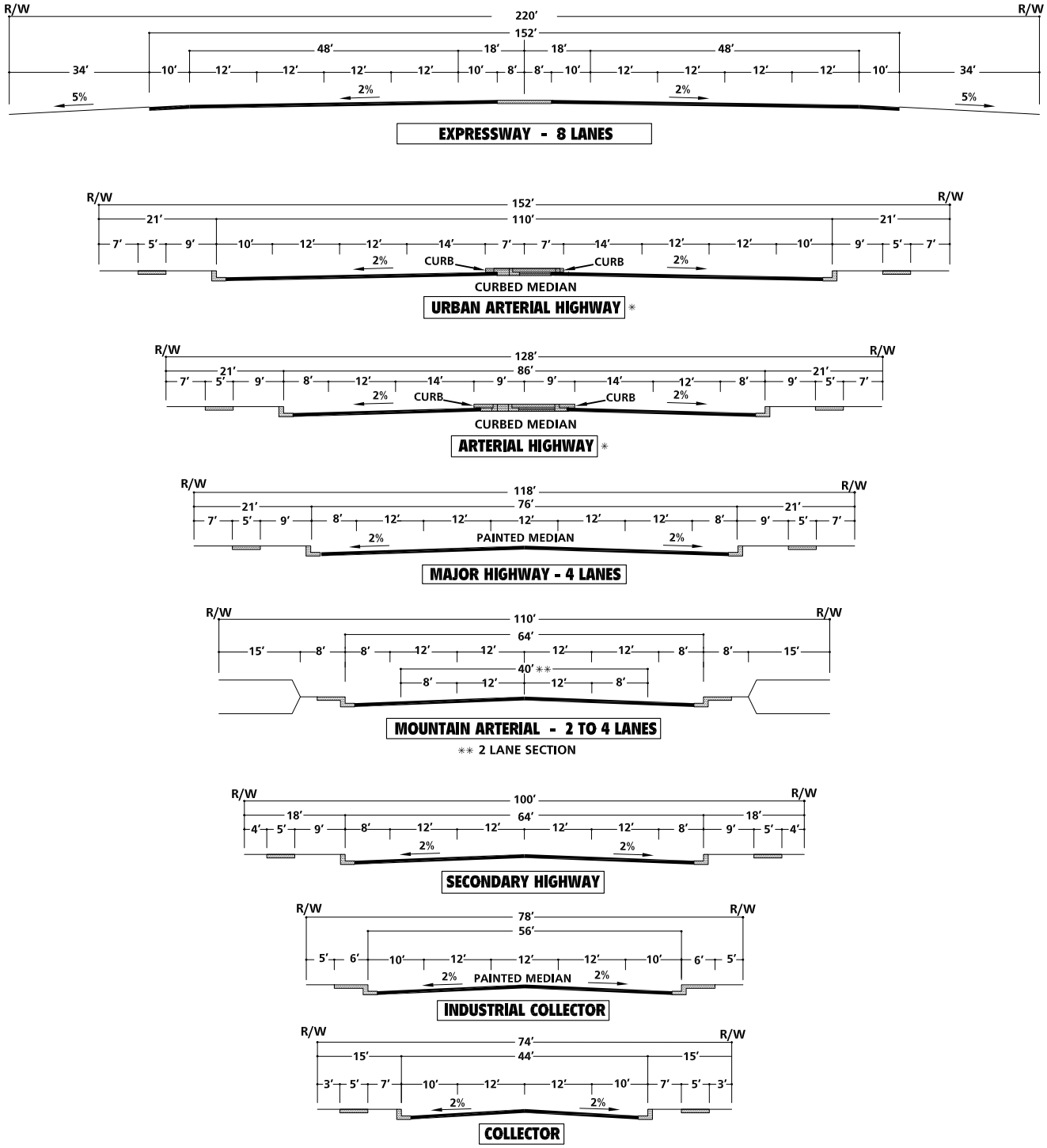
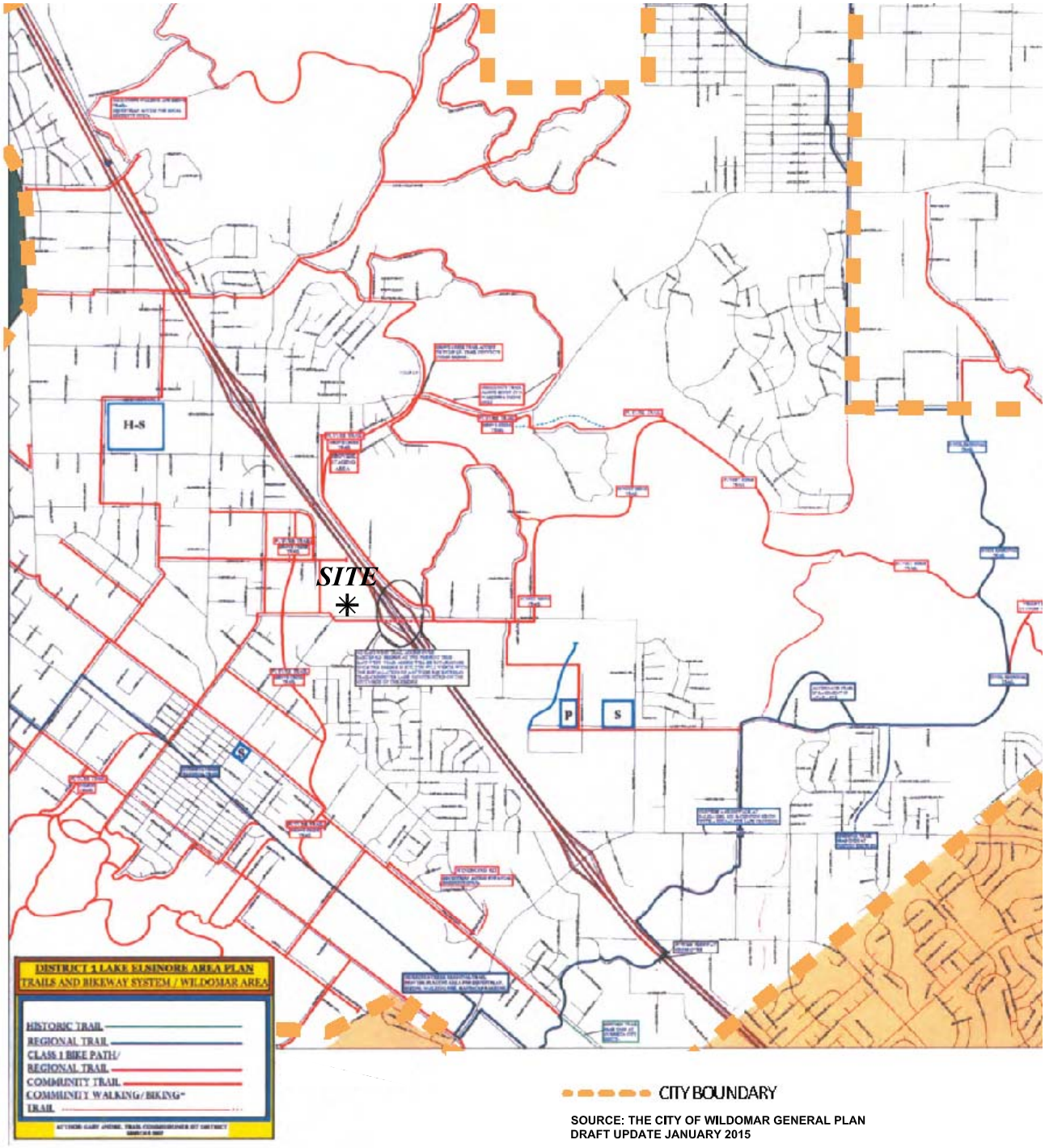
EXHIBIT 3-3: CITY OF WILDOMAR GENERAL PLAN ROADWAY CROSS-SECTIONS



* IMPROVEMENTS MAY BE RECONFIGURED TO ACCOMMODATE EXCLUSIVE TRANSIT LANES OR ALTERNATIVE LANE ARRANGEMENTS ADDITIONAL RIGHT OF WAY MAY BE REQUIRED AT INTERSECTIONS TO ACCOMMODATE ULTIMATE IMPROVEMENTS FOR STATE HIGHWAYS SHALL CONFORM TO CALTRANS DESIGN STANDARDS.

NOTE: THE CITY OF WILDOMAR HAS ADOPTED THE COUNTY OF RIVERSIDE'S GENERAL PLAN AND STANDARDS

EXHIBIT 3-4: CITY OF WILDOMAR GENERAL PLAN TRAILS MAP



SOURCE: THE CITY OF WILDOMAR GENERAL PLAN
DRAFT UPDATE JANUARY 2015

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EXHIBIT 3-5: EXISTING PEDESTRIAN FACILITIES

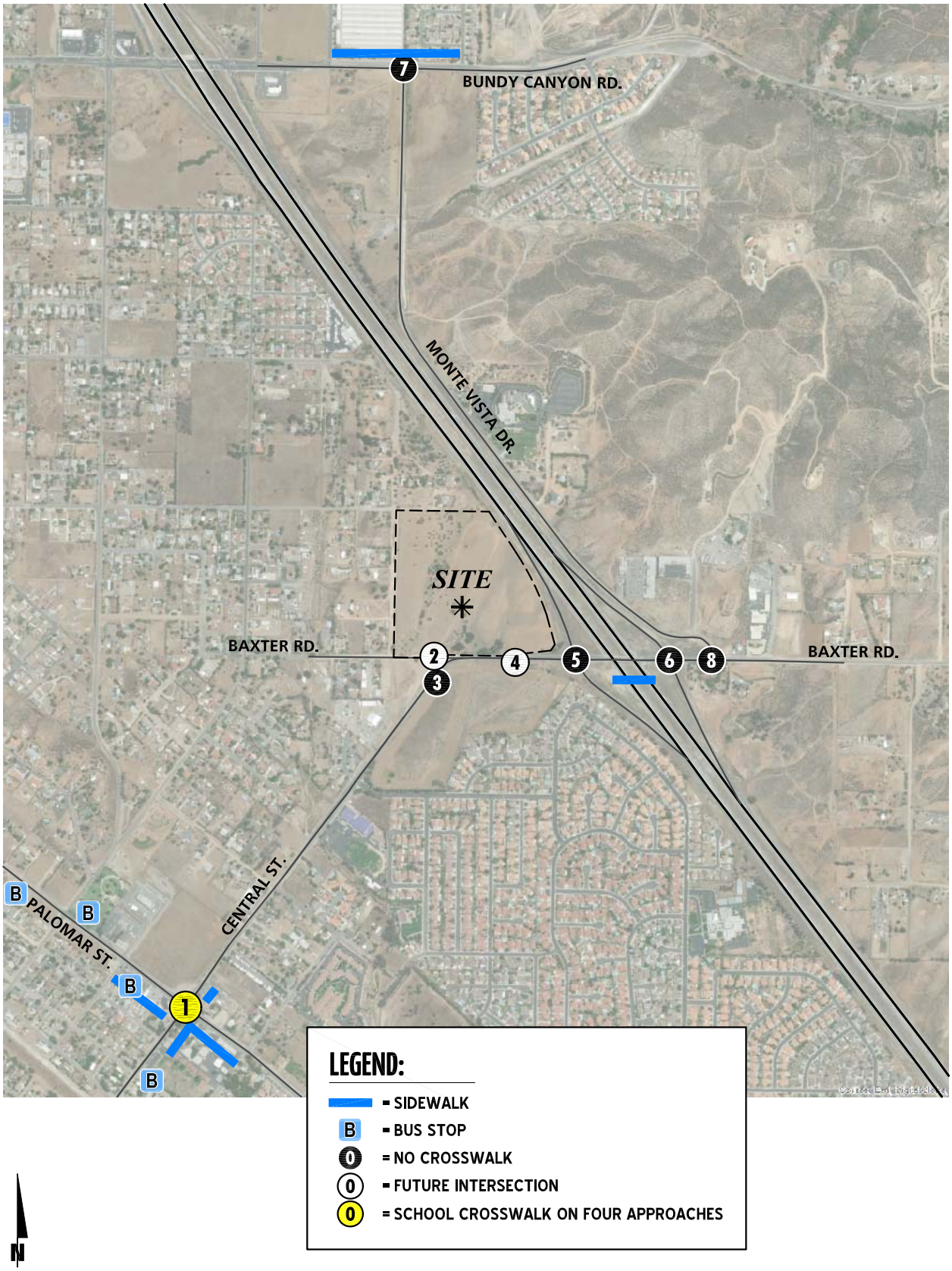

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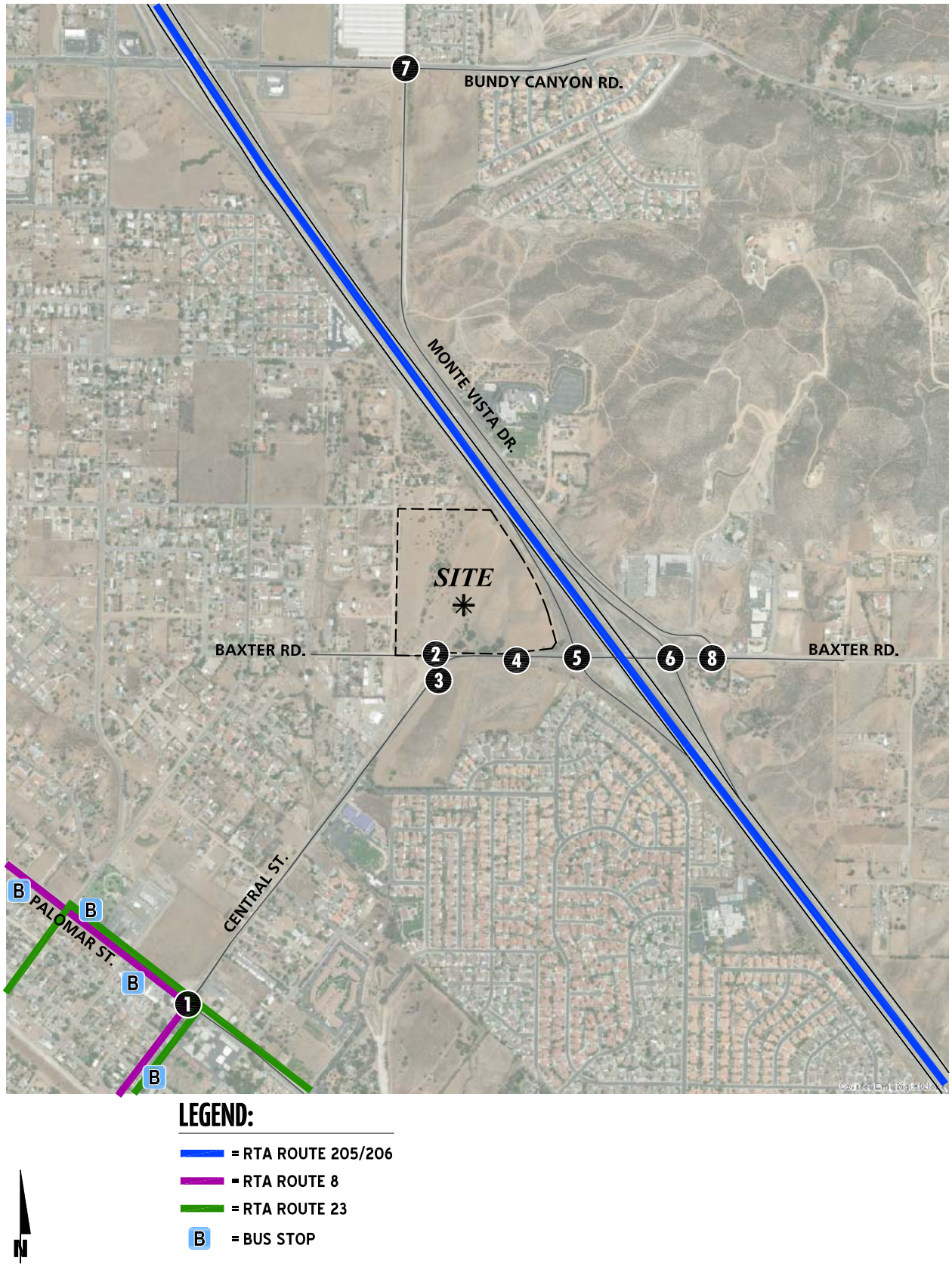
EXHIBIT 3-6: EXISTING TRANSIT ROUTES



The following peak hours were selected for analysis:

- Weekday AM Peak Hour (peak hour between 7:00 AM and 9:00 AM)
- Weekday PM Peak Hour (peak hour between 4:00 PM and 6:00 PM)

The weekday AM and weekday PM peak hour count data is representative of typical weekday peak hour traffic conditions in the study area. There were no observations made in the field that would indicate atypical traffic conditions on the count dates, such as construction activity or detour routes. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1. These raw turning volumes have been flow conserved between intersections with limited access, no access and where there are currently no uses generating traffic (e.g., between ramp-to-arterial intersections, etc.).

A comparison of the 2019 count data and the 2013 count data was conducted for the 3 surveyed locations. It was determined that the traffic counts grew on average 1.5 percent per year. As such, an ambient growth rate of 1.5 percent per year, compounded annually, was applied to the remaining 2013 traffic counts to reflect Existing (2019) baseline traffic conditions at all analysis locations.

Existing weekday average daily traffic (ADT) volumes on arterial highways throughout the study area are shown on Exhibit 3-7. Existing ADT volumes are based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 9.93 = Leg Volume

A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 10.07 percent. As such, the above equation utilizing a factor of 9.93 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 10.07 percent (i.e., 1/0.1007 = 9.93) and was assumed to sufficiently estimate average daily traffic (ADT) volumes for planning-level analyses. Existing weekday AM and PM traffic volumes are also shown on Exhibit 3-7.

3.6 EXISTING (2019) CONDITIONS INTERSECTION OPERATIONS ANALYSIS

Existing peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 3-1 which indicates that the existing study area intersections are currently operating at an acceptable LOS during the peak hours, with exception of the following intersection:

- I-15 Southbound Ramps & Baxter Rd. (#5) – LOS F AM peak hour; LOS E PM peak hour

Consistent with Table 3-1, a summary of the peak hour intersection LOS for Existing conditions are shown on Exhibit 3-8. The intersection operations analysis worksheets are included in Appendix 3.2 of this TIA.

EXHIBIT 3-7: EXISTING (2019) TRAFFIC VOLUMES

1 Palomar St. & Central St. 128(72) 338(188) 227(137) 138(232) 217(289) 68(67) 136(50) 321(257) 100(20) 67(54) 295(258) 83(70)	**2 Dwy. 1 & Baxter Rd.** Future Intersection
3 Central St. & Baxter Rd. 3(5) 3(2) 10(9) 512(700) 3(3) 817(566)	**4 Dwy. 2 & Baxter Rd.** Future Intersection
5 I-15 SB Ramps & Baxter Rd. 192(175) 1(3) 136(64) 331(536) 90(41) 346(193) 473(379)	**6 I-15 NB Ramps & Baxter Rd.** 146(57) 197(127) 246(126) 236(131) 224(450) 0(6) 64(44)
7 Monte Vista Dr. & Bundy Canyon Rd. 738(558) 167(66) 403(994) 95(20) 25(13) 65(46)	**8 Monte Vista Dr. & Baxter Rd.** 146(92) 130(38) 61(21) 196(91) 119(60) 180(115)

LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

10.0 = VEHICLES PER DAY (1000'S)

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EXHIBIT 3-8: EXISTING (2019) SUMMARY OF LOS

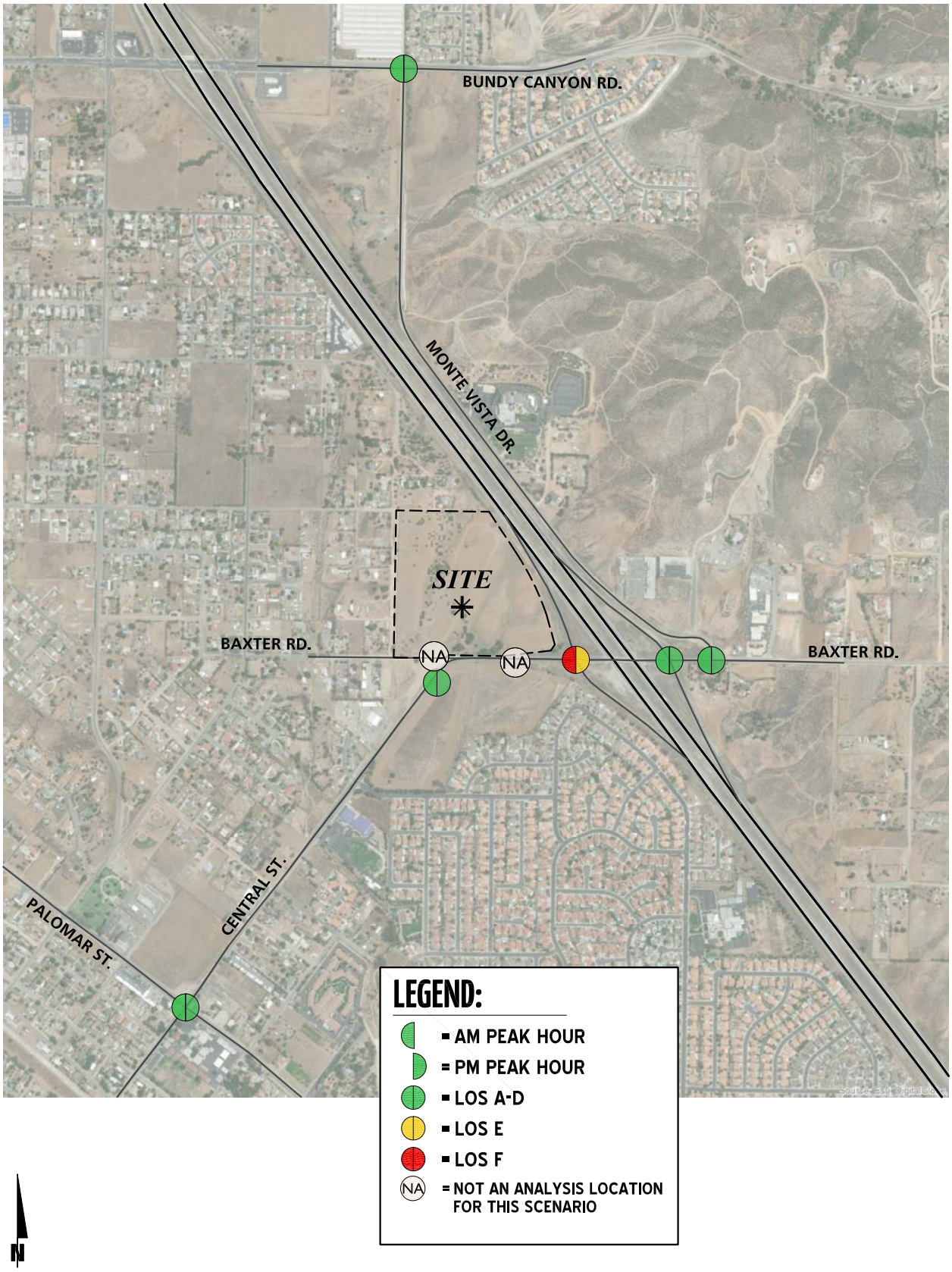

Table 3-1

Intersection Analysis for Existing (2019) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Existing (2019)[2]			
			Northbound			Southbound			Eastbound			Westbound			Delay[2] (secs.)		Level of Service	
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Palomar St. & Central St.	TS	1	1	1	1	1	1	1	2	0	1	1	1	30.1	25.1	C	C
2	Driveway 1 & Baxter Rd.		Future Intersection															
3	Central St. & Baxter Rd	CSS	0	0	0	0	1	0	0	1	0	0	1	0	21.2	17.2	C	C
4	Driveway 2 & Baxter Rd.		Future Intersection															
5	I-15 SB Ramps & Baxter Rd.	AWS	0	0	0	0	1	0	0	1	0	1	1	0	**>100.0**	**40.5**	**F**	**E**
6	I-15 NB Ramps & Baxter Rd.	AWS	0	1	0	0	0	0	1	1	0	0	1	0	17.1	18.9	C	C
7	Monte Vista Dr. & Bundy Canyon Rd.	CSS	0	1	0	0	0	0	0	1	0	1	1	0	18.2	24.8	C	C
8	Monte Vista Dr. & Baxter Rd.	CSS	0	0	0	1	0	d	0	1	0	0	1	d	17.6	10.9	C	B

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d = Defacto Right Turn Lane

A through lane shown opposite of a non-existent intersection leg denotes a shared left-right turn lane rather than an actual through lane.

2 Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. Delay and level of service calculated using the following analysis software:

Synchro 10 (HCM 6th Edition) for signalized and unsignalized intersections.

3 AWS = All-Way Stop; CSS = Cross Street Stop; TS = Traffic Signal

3.7 TRAFFIC SIGNAL WARRANTS ANALYSIS

The following unsignalized intersections currently warrant a traffic signal, based on Existing (2019) peak hour traffic volumes (see Appendix 3.3):

- I-15 Southbound Ramps & Baxter Rd. (#5)
- I-15 Northbound Ramps & Baxter Rd. (#6)
- Monte Vista Dr. & Bundy Canyon Rd. (#7)
- Monte Vista Dr. & Baxter Rd. (#8)

3.8 EXISTING (2019) OFF-RAMP QUEUING ANALYSIS

A queuing analysis was performed for the off-ramps at the I-15 Freeway and Baxter Road interchange to assess vehicle queues for the off ramps that may potentially result in deficient peak hour operations at the ramp-to-arterial intersections and may potentially "spill back" onto the I-15 Freeway mainline. Queuing analysis findings are presented in Table 3-2. It is important to note that off-ramp lengths are consistent with the measured distance between the intersection and the freeway mainline. As shown in Table 3-2, there are no movements that are currently experiencing queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows. Worksheets for Existing traffic conditions off-ramp queuing analysis are provided in Appendix 3.4.

3.9 EXISTING (2019) FREEWAY FACILITY ANALYSIS

Existing (2019) mainline directional volumes for the AM and PM peak hours are provided on Exhibit 3-9. As shown in Table 3-3, the study area freeway segments and merge/diverge ramp junctions analyzed for this study are currently operating at an acceptable LOS (i.e., LOS D or better) during the peak hours for Existing (2019) traffic conditions. Existing (2019) freeway facility analysis worksheets are provided in Appendix 3.5.

Table 3-2

Peak Hour Freeway Off-Ramp Queuing Summary for Existing (2019) Conditions

Intersection	Movement	Available Stacking Distance (Feet)	95th Percentile Queue (Feet)		Acceptable? [1]	
			AM Peak Hour	PM Peak Hour	AM	PM
I-15 SB Ramps & Baxter Rd.	SBL/T/R	1,300	128	60	Yes	Yes
I-15 NB Ramps & Baxter Rd.	NBL/T/R	1,650	93	188	Yes	Yes

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

Table 3-3

Freeway Facility Analysis for Existing (2019) Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	AM Peak Hour		PM Peak Hour	
				Density[2]	LOS[3]	Density[2]	LOS[3]
I-15	Southbound	North of Baxter Rd.	3	22.4	C	22.5	C
		Off-Ramp at Baxter Rd.	3	25.8	C	25.8	C
		On-Ramp at Baxter Rd.	3	24.2	C	23.8	C
		South of Baxter Rd.	3	24.0	C	23.7	C
	Northbound	North of Baxter Rd.	3	20.5	C	29.8	D
		On-Ramp at Baxter Rd.	3	21.6	C	27.8	C
		Off-Ramp at Baxter Rd.	3	23.0	C	31.6	D
		South of Baxter Rd.	3	20.1	C	32.8	D

[1] Number of lanes are in the specified direction and is based on existing conditions.

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln).

[3] LOS = Level of Service

EXHIBIT 3-9: EXISTING (2019) FREEWAY MAINLINE VOLUMES

LEGEND:

⟵ 100/200 = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)

N

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4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment onto the study area roadway network. The Project is proposed to consist of the following uses:

- 66 Dwelling Units of Single Family Detached (ITE Land Use Code 210)
- 204 Dwelling Units of Multi-Family Housing (Mid-Rise, 3-floors) (ITE Land Use Code 221)
- A 102-room hotel (ITE Land Use Code 310)
- 84,000 square feet of Medical-Dental Office (ITE Land Use Code 720)

For the purposes of this analysis, it is assumed that the Project will be constructed within a single phase of development and is anticipated to be fully built and occupied by Year 2021. The Project is proposed to have two driveways along Baxter Road. Driveway 1 is proposed for full access while Driveway 2 is proposed for right-in/right-out access only. Regional access to the Project site is provided via the I-15 Freeway at Baxter Road.

4.1 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development.

Trip generation rates and Project trip generation estimates are shown in Table 4-1. The trip generation rates used for this analysis are based upon information collected by the Institute of Transportation Engineers (ITE) as provided in their Trip Generation Manual, 10th Edition, 2017. As shown in Table 4-1, the Project is anticipated to generate a total of 5,512 weekday trip-ends per day, with 403 AM peak hour trips and 506 PM peak hour trips.

4.2 PROJECT TRIP DISTRIBUTION

Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute. The Project trip distribution was developed based on anticipated travel patterns to and from the Project site. There are no potential traffic impacts anticipated to local residential streets as project-related traffic is anticipated to primarily utilize the City's arterials (e.g., no cut-through traffic).

Project travel patterns were derived for each of the proposed land uses. Exhibit 4-1 shows the residential trip distribution patterns for the Project. Exhibit 4-2 shows the office trip distribution patterns for the Project, while Exhibit 4-3 shows the hotel trip distribution patterns for the Project.

Table 4-1

Project Trip Generation Summary

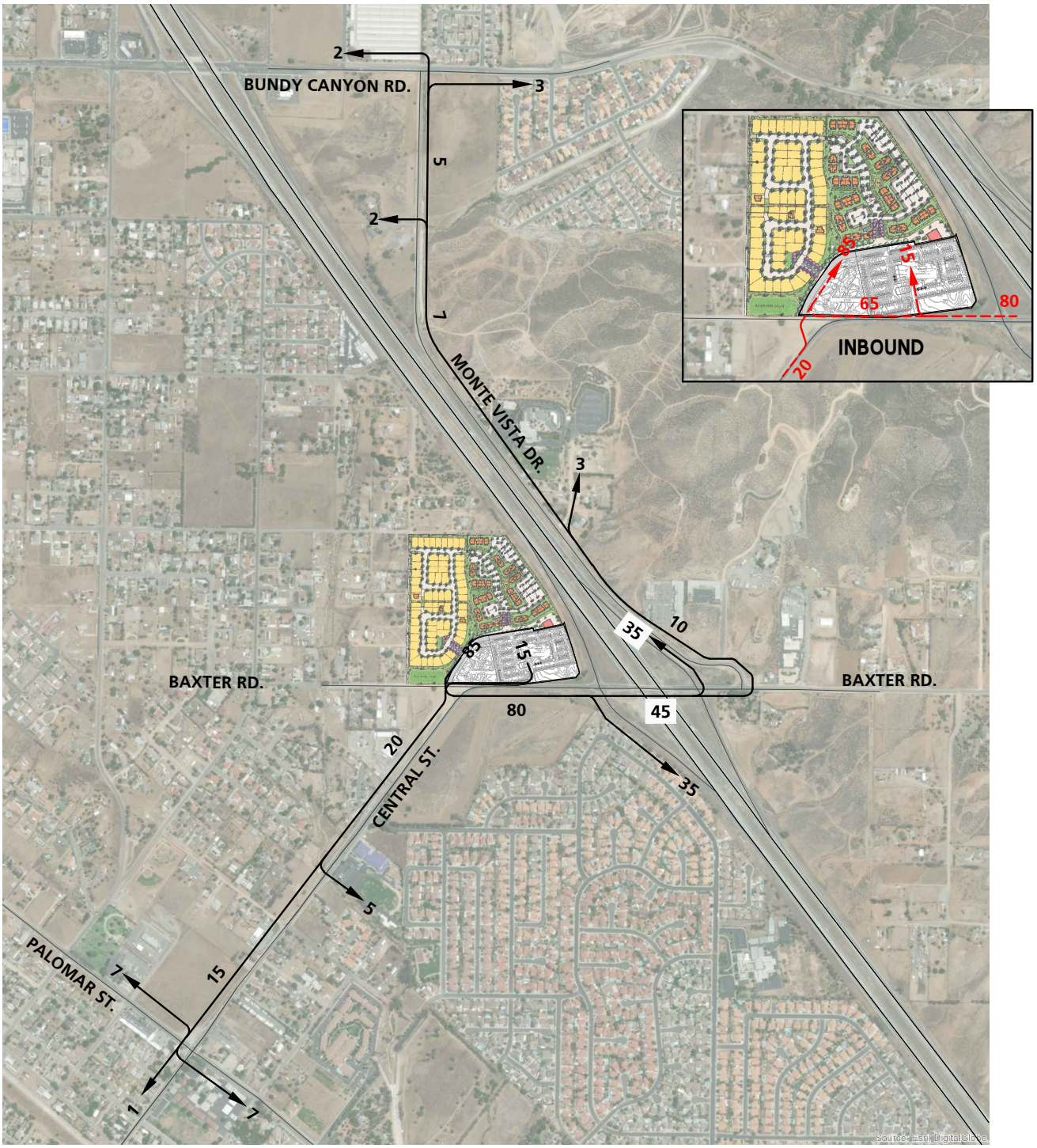
Project Trip Generation Rates									
	ITE LU		AM Peak Hour			PM Peak Hour			
Land Use[1]	Code	Units[2]	In	Out	Total	In	Out	Total	Daily
Single Family Detached Residential	210	DU	0.19	0.56	0.74	0.62	0.37	0.99	9.44
Multi-Family Housing (Mid-Rise, 3-floors)	221	DU	0.09	0.27	0.36	0.27	0.17	0.44	5.44
Hotel	310	RMS	0.28	0.19	0.47	0.31	0.29	0.60	8.36
Medical-Dental Office	720	TSF	2.17	0.61	2.78	0.97	2.49	3.46	34.80

Project Trip Generation									
			AM Peak Hour			PM Peak Hour			
Project	Quantity	Units[2]	In	Out	Total	In	Out	Total	Daily
Baxter Village Development									
Single Family Detached Residential	66	DU	12	37	49	41	24	65	623
Multi-Family Housing (Mid-Rise, 3-floors)	204	DU	19	54	73	55	35	90	1,110
Residential Subtotal:			*31*	*91*	*122*	*96*	*59*	*155*	*1,733*
Medical-Dental Office	84.000	TSF	182	51	233	81	209	290	2,924
Hotel	102	RMS	28	20	48	31	30	61	854
Medical Office and Hotel Subtotal:			*210*	*71*	*281*	*112*	*239*	*351*	*3,778*
Total Proposed Project:			***241***	***162***	***403***	***208***	***298***	***506***	***5,511***

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] DU = Dwelling Units; TSF = Thousand Square Feet; RMS = Rooms

EXHIBIT 4-1: PROJECT (RESIDENTIAL) TRIP DISTRIBUTION

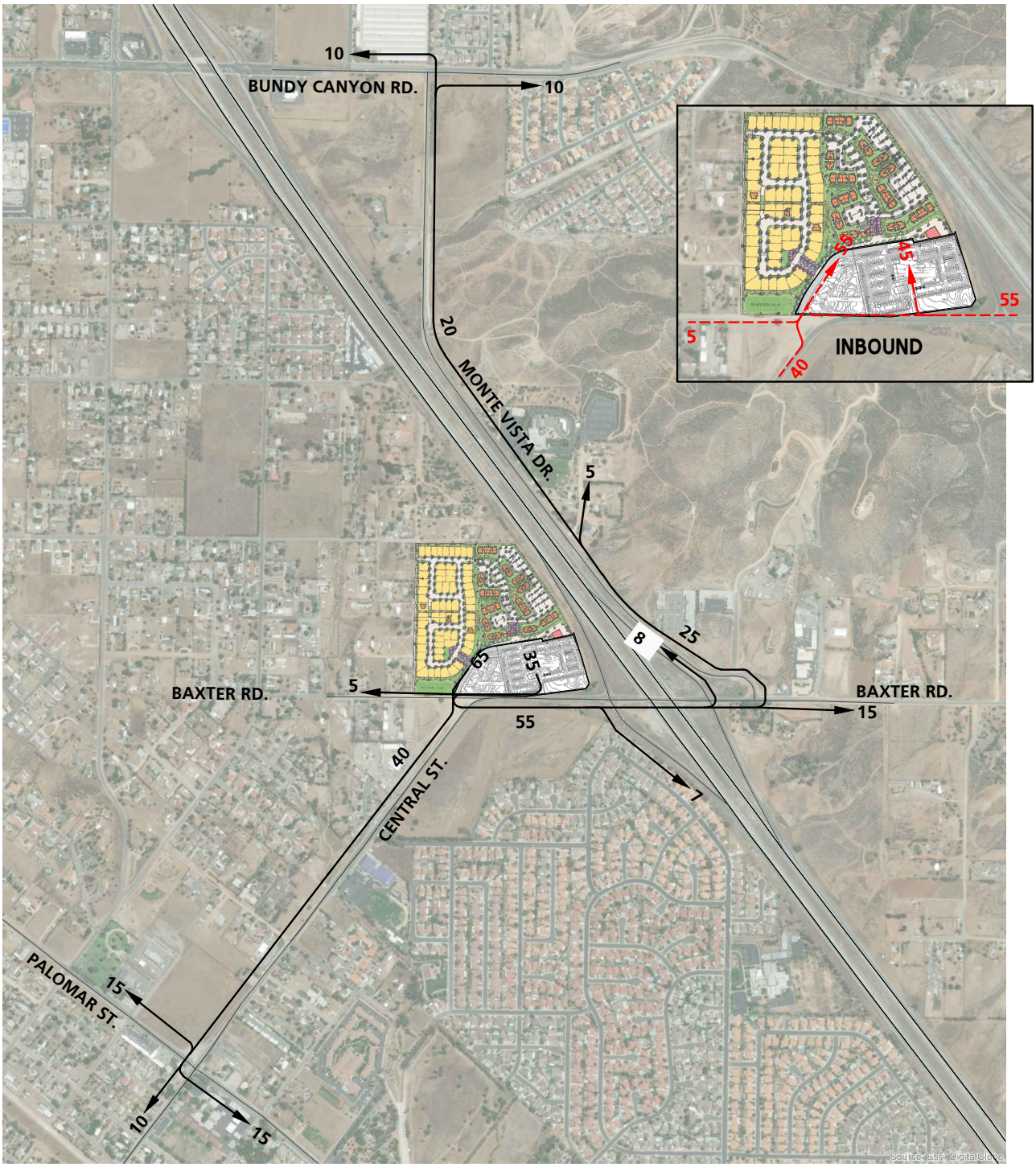


LEGEND:

10 = PERCENT TO/FROM PROJECT

N

EXHIBIT 4-2: PROJECT (OFFICE) TRIP DISTRIBUTION



LEGEND:

10 = PERCENT TO/FROM PROJECT

◄—— = OUTBOUND

◄- - - = INBOUND

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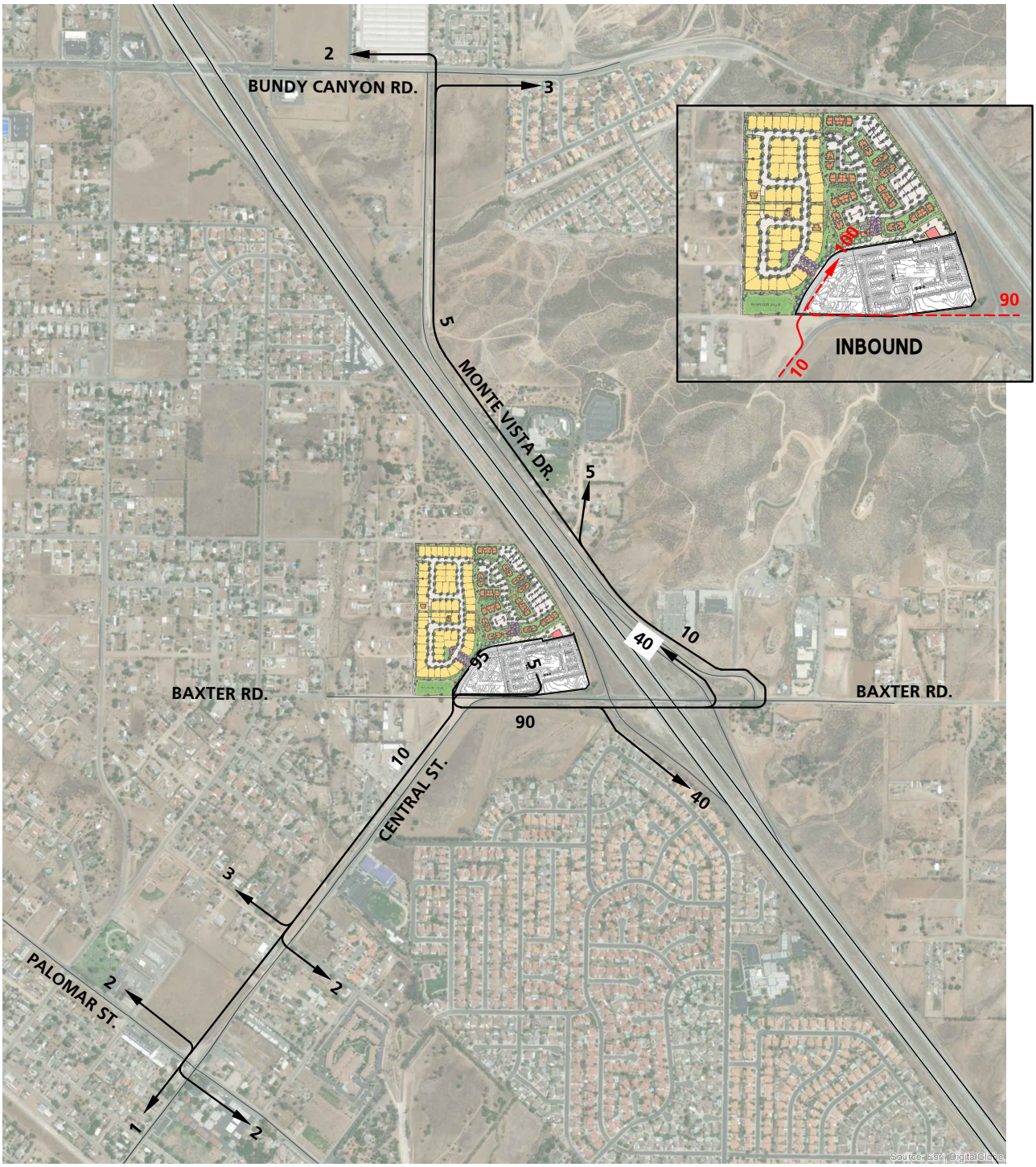
EXHIBIT 4-3: PROJECT (HOTEL) TRIP DISTRIBUTION



LEGEND:

10 = PERCENT TO/FROM PROJECT

◄—— = OUTBOUND

◄- - - = INBOUND

N

4.3 MODAL SPLIT

The traffic reducing potential of public transit, walking or bicycling have not been considered in this TIA. Essentially, the traffic projections are "conservative" in that these alternative travel modes might be able to reduce the forecasted traffic volumes.

4.4 PROJECT TRIP ASSIGNMENT

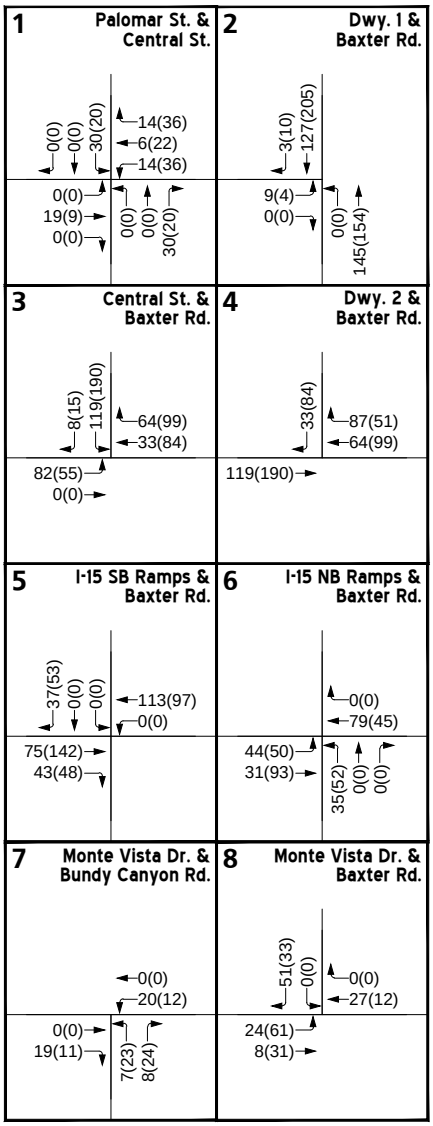
The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-4.

4.5 BACKGROUND TRAFFIC

Future year traffic forecasts have been based upon two years of background (ambient) growth at 2 percent per year for 2021 traffic conditions. The ambient growth factor is intended to approximate regional traffic growth. The total ambient growth is 4.04 percent for 2021 traffic conditions (compounded growth of 2 percent per year over 2 years or $1.02^{2\ \text{years}}$). This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies.

The currently adopted Southern California Association of Governments (SCAG) 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) (April 2016) growth forecasts for the City of Wildomar identifies projected growth in population of 33,000 in 2012 to 56,200 in 2040, or a 70.3 percent increase over the 28-year period. (9) The change in population equates to roughly a 1.92 percent growth rate per year, compounded annually. Similarly, growth over the same 28-year period in households is projected to increase by 79.2 percent, or a 2.11 percent growth rate per year, compounded annually. Finally, growth in employment over the same 28-year period is projected to increase by 170.0 percent, or a 3.61 percent growth rate per year, compounded annually.

EXHIBIT 4-4: PROJECT ONLY TRAFFIC VOLUMES



LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)

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Based on a comparison of Existing (2019) traffic volumes to the General Plan Buildout (2040) forecasts, the average growth rate is estimated at approximately 5.29 percent compounded annually between Existing (2019) and General Plan Buildout (2040) traffic conditions. The annual growth rate at each individual intersection is not lower than 3.99 percent (compounded annually) to as high as 6.46 percent (compounded annually) over the same time period. Therefore, the annual growth rate utilized for the purposes of this analysis would appear to conservatively approximate the anticipated regional growth in traffic volumes in the City of Wildomar for General Plan Buildout (2040) traffic conditions, especially when considered along with the addition of project-related traffic. As such, the growth in traffic volumes assumed in this traffic impact analysis would tend to overstate, as opposed to understate, the potential impacts to traffic and circulation.

4.6 CUMULATIVE DEVELOPMENT TRAFFIC

California Environmental Quality Act (CEQA) guidelines require that other reasonably foreseeable development projects which are either approved or being processed concurrently in the study area also be included as part of a cumulative analysis scenario. A cumulative project list was developed for the purposes of this analysis through consultation with Planning and Engineering staff from the City of Wildomar and is consistent with other recent studies in the study area.

Exhibit 4-5 illustrates the cumulative development location map. A summary of cumulative development projects and their proposed land uses are shown in Table 4-2. If applicable, the traffic generated by individual cumulative projects was manually added to the Opening Year Cumulative forecasts to ensure that traffic generated by the listed cumulative development projects in Table 4-2 are reflected as part of the background traffic. Cumulative ADT and peak hour intersection turning movement volumes are shown on Exhibits 4-6.

4.7 NEAR-TERM TRAFFIC FORECASTS

To provide a comprehensive assessment of potential transportation network deficiencies, a “buildup” analysis method was performed in support of this work effort. The “buildup” method was used to approximate E+P and Opening Year Cumulative traffic conditions and is intended to identify the near-term deficiencies on both the existing and planned near-term circulation system. The Opening Year Cumulative traffic condition includes background traffic, traffic generated by other cumulative development projects within the study area and the traffic generated by the proposed Project.

EXHIBIT 4-5: CUMULATIVE DEVELOPMENT LOCATION MAP

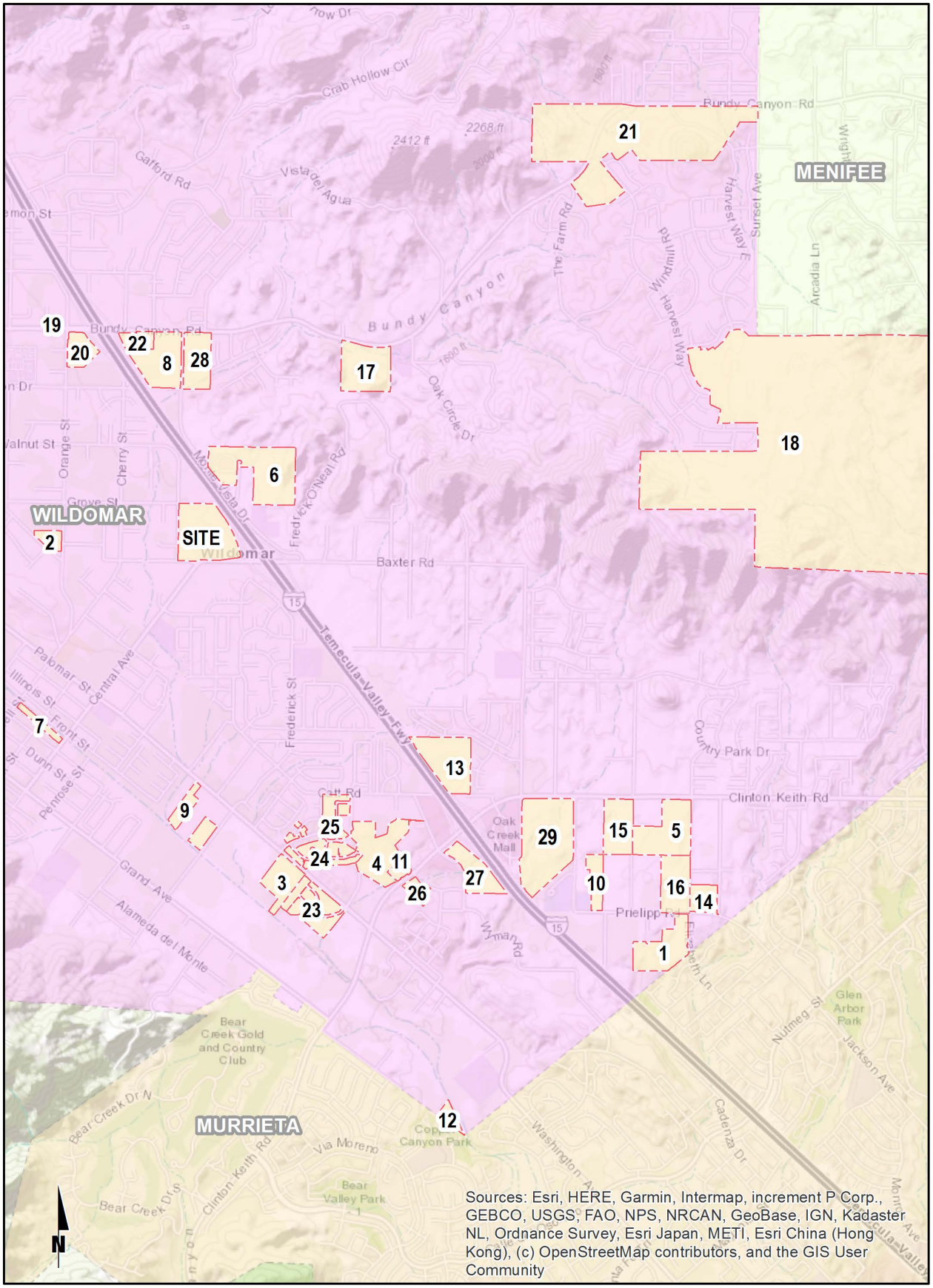
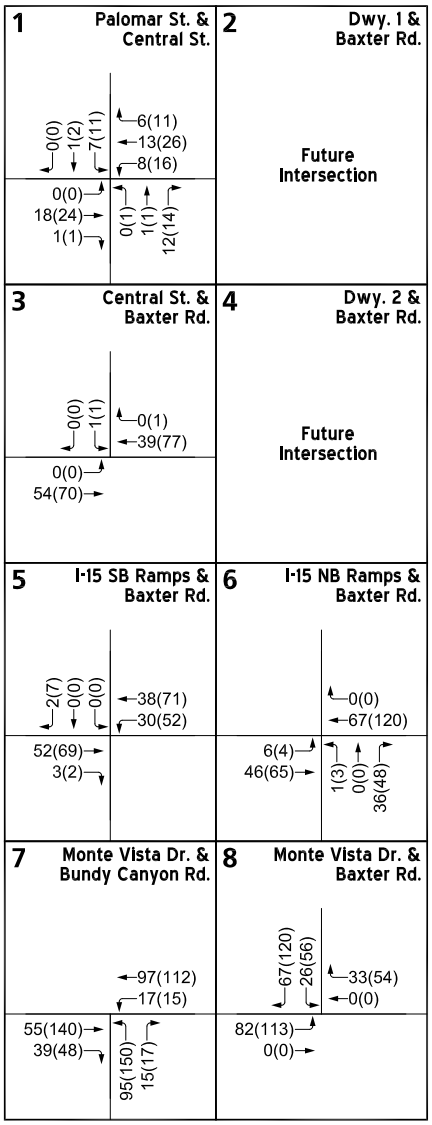


EXHIBIT 4-6: CUMULATIVE ONLY TRAFFIC VOLUMES



LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

10.0 = VEHICLES PER DAY (1000'S)

NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

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Table 4-2
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Cumulative Development Land Use Summary

#	Project/Location	Land Use[1]	Quantity	Units[2]
	CITY OF WILDOMAR			
1	Lennar Residential (TTM 36497, APN:380-280-004, 380-280-009 to 380-280-012)	SFDR	67	DU
2	Lesle Tract Map (TTM 36519, APN:367-170-029)	SFDR	10	DU
3	CV Communities (TTM 25122, TTM 32078, APN: 380-080-008,380-080-009, 380-140-001)	SFDR	157	DU
4	CV Communities (TTM 32535, APN:380-110-005, 380-110-006, 380-120-001, 380-120-002, 380-100-006, 380-100-005, 380-130-002, 380-130-018, 380-100-004)	SFDR	84	DU
5	Rancon Medical & Retail Center (PM 36492, APN:380-250-022)[3]	Business Park	267.450	TSF
		General Office	45.000	TSF
		Medical Office	33.400	TSF
		Shopping Center	17.100	TSF
		Fast Food Restaurant w/ Drive Thru	3.000	TSF
6	Cornerstone Church Pre-School Expansion (PUP No. 778)[4]	Pre-School/Day Care	180	STU
7	Elm Street Subdivision (TTM 33840, APN:376-043-027)	SFDR	14	DU
8	Wildomar Walmart	Free-Standing Discount Superstore	200.000	TSF
		Specialty Retail	3.900	TSF
		Fast Food w/Drive Thru	3.900	TSF
9	McVicar Residential Project (TTM 32035, APN:380-040-005, 380-040-007, 380-040-008, 380-040-012)	SFDR	49	DU
10	Inland Valley Medical (Case No. 08-0062, APN:380-250-001, 380-250-012,3 80-250-013, 380-250-013, 380-250-015, 380-250-017)	Medical Office	39.000	TSF
11	Auto Zone Retail Center (Case No. 10-0101, APN: 380-120-003, 380-120-004)	Automobile Parts Sale	29.767	TSF
12	Hoover Ranch Project (TTM 31895, APN:380-160-020)	SFDR	51	DU
13	Westpark Promenade Development (TPM 36122, APN:376-410-013, 376-410-023, 376-410-025)	Apartments	322	DU
		Shopping Center	86.000	TSF
14	Sienna Apartment Project (Case No. 13-0089, APN:380-290-029)	Apartments	180	DU
15	Clinton Keith Mixed-Use Development (APN:380-250-003)	High Turnover Sit-Down Restaurant	12.000	TSF
		Commercial Retail	8.000	TSF
		Medical Office	35.000	TSF
		Apartments	162	DU
16	Prielipp Residential Development (APN 380-250-023)	Condo/Townhomes	138	DU
		Assisted Living	54	Beds
		Skilled Nursing	32	Beds
17	Sehremelis PAR (TTM 29426, APN:367-250-007)	SFDR	80	DU
18	Spring Meadow Ranch PAR (Case No. 12-0399)	SFDR	1,192	DU
		Community Center Area	5.0	AC
		Open Space	42.0	AC
19	Subway (Case No. 10-0222, APN:366-390-026, 366-390-027)	Specialty Retail	10.500	TSF
20	Orange Bundy (TPM 30522, APN: 367-100-024, 367-100-026)	Retail	79.497	TSF
		Fast Food w/Drive Thru	1.500	TSF
		Gas Station w/ Market	6	VFP
21	Oak Creek Canyon (Case No. 11-0261, TTM 36388)	SFDR	275	DU
		Pharmacy	14.469	TSF
		Gas Station w/ Market/Car Wash	8	VFP
		Specialty Retail	2.550	TSF
22	Bundy Canyon Plaza (Case No. 08-0179, TPM 32257, APN:367-100-019)	Retail	33.800	TSF
		Fast Food w/Drive Thru	6.200	TSF
		Gas Station w/ Market	12	VFP
23	Lennar Homes Andalusia I (Case No. 12-0015, TTM 30839, 30939)	SFDR	55	DU
24	Meritage Homes (Case No. 11-0099, TTM 31499)	SFDR	74	DU
25	Lennar Homes Andalusia 2 (Case No. 12-0401, TTM 31837, APN: 380-410-001 to 380-410-019, 380-411-001 to 380-411-025)	SFDR	44	DU

Table 4-2
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Cumulative Development Land Use Summary

#	Project/Location	Land Use[1]	Quantity	Units[2]
26	Stable Lanes Retail Center (Case No. 08-0166, APN:380-120-012, 380-120-013)	Commercial/Retail	20.894	TSF
		Daycare Facility	9.305	TSF
27	Wildomar Square Retail Center (Case No. 08-0072, PM 36080, APN:380-110-045)	Shopping Center	46.600	TSF
28	Rancon Monte Vista Residential (TTM No. 31409, APN: 367-110-007, 367-110-008)	SFDR	126	DU
29	Oak Springs Ranch Specific Plan No. 340	SFDR	103	DU
		Apartments	312	DU

[1] SFDR = Single Family Detached Residential

[2] AC = Acres; DU = Dwelling Units; TSF = Thousand Square Feet; VFP = Vehicle Fueling Positions; STU = Students

[3] Source: Rancon Medical Education Center (Plot Plan 21603), Albert A. Webb Associates, April 2012.

[4] Source: Cornerstone Pre-School Expansion TIA (Revised), Urban Crossroads, Inc., September 2012.

The "buildup" approach combines existing traffic counts with a background ambient growth factor to forecast the near-term 2021 traffic conditions. An ambient growth factor of 4.04 percent accounts for background (area-wide) traffic increases that occur over time up to the year 2021 from the year 2019 (compounded 2 percent per year growth over a 2-year period). Traffic volumes generated by cumulative development projects are then added to assess the Opening Year Cumulative traffic conditions. Lastly, Project traffic is added to assess "With Project" traffic conditions. The 2021 roadway network is similar to the existing conditions roadway network with the exception of intersections proposed to be developed by the Project.

- Opening Year Cumulative Without Project
    - Existing 2019 volumes
    - Ambient growth traffic (4.04%)
    - Cumulative Development Project traffic
- Opening Year Cumulative With Project
    - Existing 2019 volumes
    - Ambient growth traffic (4.04%)
    - Cumulative Development Project traffic
    - Project traffic

4.8 GENERAL PLAN BUILDOUT (2040) VOLUME DEVELOPMENT

The General Plan Buildout (2040) With Project traffic conditions were derived from the RivTAM modified to represent General Plan Buildout conditions for the City of Wildomar using accepted procedures for model forecast refinement and smoothing. The traffic forecasts reflect the area-wide growth anticipated between Existing conditions and General Plan Buildout conditions.

In most instances the traffic model zone structure is not designed to provide accurate turning movements along arterial roadways unless refinement and reasonableness checking is performed. Therefore, the General Plan Buildout With Project peak hour forecasts were refined using the model derived long-range forecasts, along with existing peak hour traffic count data collected at each analysis location in May 2019, while local schools were in session, or adjusted from 2013 to reflect 2019 traffic conditions. Future estimated peak hour traffic data was used for new intersections and intersections with an anticipated change in travel patterns to further refine the General Plan Buildout With Project peak hour forecasts.

The refined future peak hour approach and departure volumes obtained from the model output data are then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program (NCHRP Report 255), along with initial estimates of turning movement proportions. A linear programming algorithm is used to calculate individual turning movements which match the known directional roadway segment forecast volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

Typically, the model growth is prorated and is subsequently added to the existing (base validation) traffic volumes to represent Long Range traffic conditions. However, review of the resulting model growth indicates negative growth for several study area intersections. In an effort to conduct a conservative analysis, reductions to traffic forecasts from either Existing (2019) or Opening Year Cumulative traffic conditions were not assumed as part of this analysis. Additional growth has also been applied on a movement-by-movement basis, where applicable, to estimate reasonable General Plan Buildout forecasts. General Plan Buildout turning volumes were compared to Opening Year Cumulative volumes in order to ensure a minimum growth as a part of the refinement process. The minimum growth includes any additional growth between Opening Year Cumulative and General Plan Buildout traffic conditions that is not accounted for by the traffic generated by cumulative development projects and ambient growth rates assumed between Existing (2019) and Opening Year Cumulative traffic conditions. Future estimated peak hour traffic data was used for new intersections and intersections with an anticipated change in travel patterns to further refine the General Plan Buildout peak hour forecasts.

The future General Plan Buildout Without Project peak hour turning movements were then reviewed by Urban Crossroads for reasonableness, and in some cases, were adjusted to achieve flow conservation, reasonable growth, and reasonable diversion between parallel routes. Flow conservation checks ensure that traffic flow between two closely spaced intersections, such as two freeway ramp locations, is verified in order to make certain that vehicles leaving one intersection are entering the adjacent intersection and that there is no unexplained loss of vehicles. The result of this traffic forecasting procedure is a series of traffic volumes which are suitable for traffic operations analysis. Post-processing worksheets are provided in Appendix 4.1.

5 E+P TRAFFIC CONDITIONS

This section discusses the traffic forecasts for Existing plus Project (E+P) conditions and the resulting intersection operations, traffic signal warrant, freeway facility operations analyses.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for E+P conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for E+P conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).

5.2 E+P TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus Project traffic. The ADT volumes and weekday AM and PM peak hour intersection turning movement volumes which can be expected for E+P traffic conditions are shown on Exhibit 5-1.

5.3 INTERSECTION OPERATIONS ANALYSIS

E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TIA. The intersection analysis results are summarized in Table 5-1, which indicates that the following intersection is anticipated to operate at an unacceptable LOS with the addition of Project:

- Central St. & Baxter Rd. (#3) – LOS F AM and PM peak hours

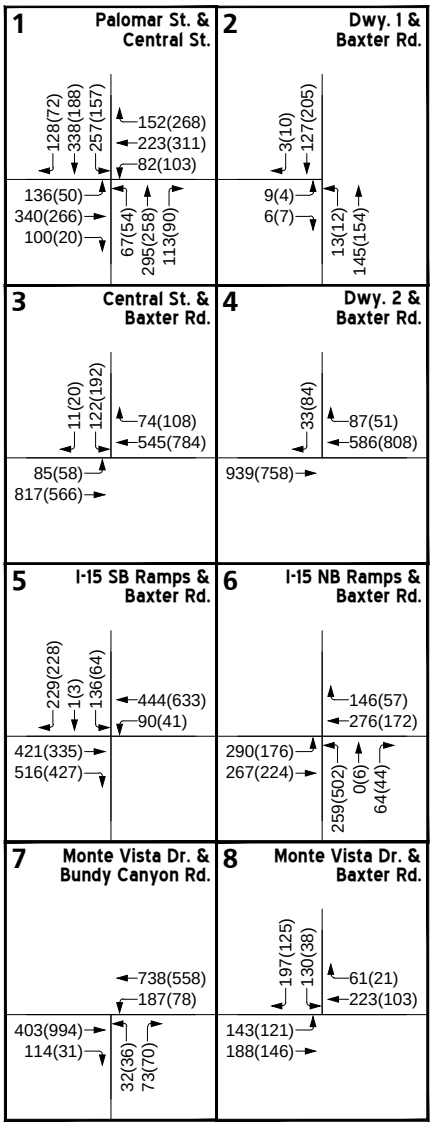
A summary of the peak hour intersection LOS for E+P conditions are shown on Exhibit 5-2. The intersection operations analysis worksheets for E+P traffic conditions are included in Appendix 5.1 of this TIA.

5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for E+P traffic conditions are based on existing peak hour intersection turning volumes and the addition of Project traffic. For E+P traffic conditions, with the addition of Project traffic, the following study area intersection is anticipated to meet the planning level daily volume warrant under E+P conditions (see Appendix 5.2):

- Central St. & Baxter Rd. (#3)

EXHIBIT 5-1: E+P TRAFFIC VOLUMES



LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)

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EXHIBIT 5-2: E+P SUMMARY OF LOS

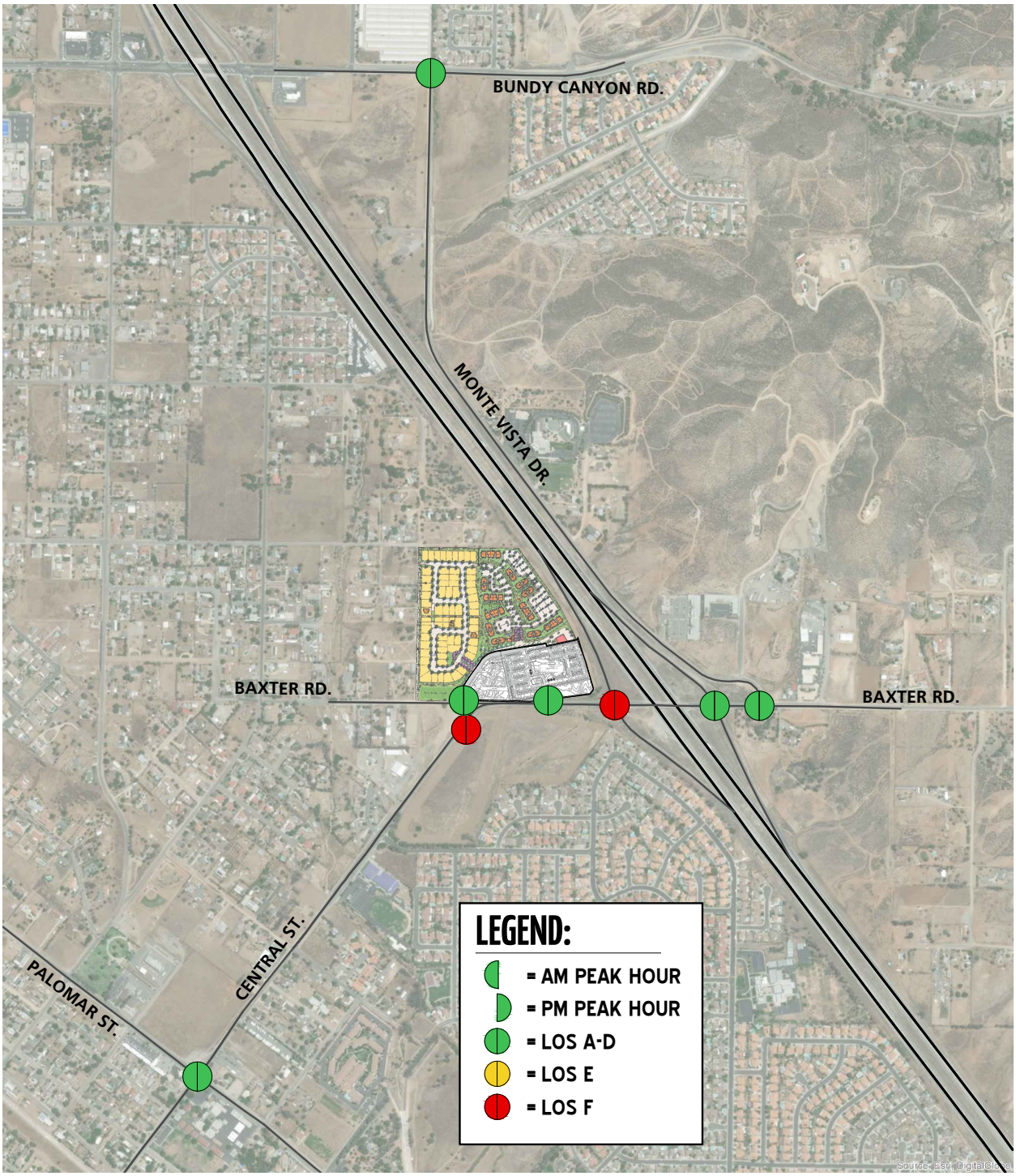

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Table 5-1

Intersection Analysis for E+P Conditions

#	Intersection	Traffic Control[2]	Existing (2019) Delay[1] (secs.) AM	Existing (2019) Delay[1] (secs.) PM	Existing (2019) Level of Service AM	Existing (2019) Level of Service PM	E+P Delay[1] (secs.) AM	E+P Delay[1] (secs.) PM	E+P Level of Service AM	E+P Level of Service PM
1	Palomar St. & Central St.	TS	30.1	25.1	C	C	31.9	29.0	C	C
2	Driveway 1 & Baxter Rd.	**CSS**	Future Intersection				10.0	10.2	B	B
3	Central St. & Baxter Rd	CSS	21.2	17.2	C	C	**>50.0**	**>50.0**	**F**	**F**
4	Driveway 2 & Baxter Rd.	**CSS**	Future Intersection				13.2	19.0	B	C
5	I-15 SB Ramps & Baxter Rd.	AWS	**>50.0**	**40.5**	**F**	**E**	**>50.0**	**>50.0**	**F**	**F**
6	I-15 NB Ramps & Baxter Rd.	AWS	17.1	18.9	C	C	25.8	31.1	D	D
7	Monte Vista Dr. & Bundy Canyon Rd.	CSS	18.2	24.8	C	C	20.8	33.7	C	D
8	Monte Vista Dr. & Baxter Rd.	CSS	17.6	10.9	C	B	19.8	12.4	C	B

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. Delay and level of service calculated using the following analysis software:

Synchro 10 (HCM 6th Edition) for signalized and unsignalized intersections.

2 CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal; **CSS** = Improvement

5.5 OFF-RAMP QUEUING ANALYSIS

Queuing analysis findings for E+P are presented in Table 5-2. As shown in Table 5-2 and consistent with Existing (2019) traffic conditions, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows with the addition of Project traffic. Worksheets for E+P traffic conditions off-ramp queuing analysis are provided in Appendix 5.3.

5.6 FREEWAY FACILITY ANALYSIS

E+P mainline directional volumes for the AM and PM peak hours are provided on Exhibit 5-3. As shown in Table 5-3 and consistent with Existing (2019) traffic conditions, all study area freeway mainline segments and merge/diverge ramp junctions are anticipated to continue to operate at an acceptable LOS (i.e., LOS D or better) during the peak hours for E+P traffic conditions. E+P freeway facility analysis worksheets are provided in Appendix 5.4.

5.7 PROJECT DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

This section provides a summary of Project deficiencies and recommended improvements. Based on the City of Wildomar deficiency criteria discussed in Section 2.8 *Thresholds of Significance*, the following intersections were found to be deficient. Improvements necessary to reduce project-related traffic deficiencies are also discussed below.

5.7.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

The effectiveness of the proposed recommended improvements is presented in Table 5-4 for E+P traffic conditions traffic conditions. The intersection operations analysis worksheets for E+P traffic conditions, with improvements, are included in Appendix 5.5 of this TIA.

Central Street & Baxter Road (#3) – The following improvements are necessary to improve the existing deficiency to acceptable levels:

- Install a traffic signal.
- Add a southbound left turn lane.
- Add an eastbound left turn lane.
- Add a westbound right turn lane.

I-15 Southbound Ramps & Baxter Road (#5) – The following improvement is necessary to improve the existing deficiency to acceptable levels:

- Install a traffic signal.

Table 5-2

Peak Hour Freeway Off-Ramp Queuing Summary for E+P Conditions

Intersection	Movement	Available Stacking Distance (Feet)	Existing (2019)				E+P			
			95th Percentile Queue (Feet)		Acceptable? [1]		95th Percentile Queue (Feet)		Acceptable? [1]	
			AM Peak	PM Peak	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM
I-15 SB Ramps & Baxter Rd.	SBL/T/R	1,300	128	60	Yes	Yes	173	88	Yes	Yes
I-15 NB Ramps & Baxter Rd.	NBL/T/R	1,650	93	188	Yes	Yes	135	318	Yes	Yes

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

Table 5-3

Freeway Facility Analysis for E+P Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	Existing (2019)				E+P			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Density[2]	LOS[3]	Density[2]	LOS[3]	Density[2]	LOS[3]	Density[2]	LOS[3]
I-15	Southbound	North of Baxter Rd.	3	22.4	C	22.5	C	22.6	C	22.9	C
		Off-Ramp at Baxter Rd.	3	25.8	C	25.8	C	26.1	C	26.2	C
		On-Ramp at Baxter Rd.	3	24.2	C	23.8	C	24.6	C	24.2	C
		South of Baxter Rd.	3	24.0	C	23.7	C	24.3	C	24.1	C
	Northbound	North of Baxter Rd.	3	20.5	C	29.8	D	20.7	C	30.3	D
		On-Ramp at Baxter Rd.	3	21.6	C	27.8	C	22.0	C	28.2	D
		Off-Ramp at Baxter Rd.	3	23.0	C	31.6	D	23.2	C	31.9	D
		South of Baxter Rd.	3	20.1	C	32.8	D	20.3	C	33.3	D

[1] Number of lanes are in the specified direction and is based on existing conditions.

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln).

[3] LOS = Level of Service

Table 5-4

Intersection Analysis for E+P Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
3	Central St. & Baxter Rd																	
	-Without Improvements	CSS	0	0	0	0	1	0	0	1	0	0	1	0	**>50.0**	**>50.0**	**F**	**F**
	-With Improvements	**TS**	0	0	0	**1**	**0**	**1**	**1**	1	0	0	1	**1**	12.5	14.8	B	B
5	I-15 SB Ramps & Baxter Rd.																	
	-Without Improvements	AWS	0	0	0	0	1	0	0	1	0	1	1	0	**>50.0**	**>50.0**	**F**	**F**
	-With Improvements	**TS**	0	0	0	0	1	0	0	1	0	1	1	0	51.2	37.1	D	D

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; **1** = Improvement

2 Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street-stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

3 CSS = Cross-Street Stop; AWS = All-Way Stop; TS = Traffic Signal; **TS** = Improvement

EXHIBIT 5-3: E+P FREEWAY MAINLINE VOLUMES

LEGEND:

⟵ **100/200** = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)

N

5.7.2 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously in Table 5-2, there are no anticipated peak hour queuing issues at the I-15 Freeway and Baxter Road interchange for E+P traffic conditions. As such, no improvements have been recommended.

5.7.3 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON FREEWAY FACILITIES

As shown previously in Table 5-3, the study area freeway mainline segments or merge/diverge ramp junctions are anticipated to operate at an acceptable LOS during the peak hours for E+P traffic conditions. As such, no improvements have been recommended.

6 OPENING YEAR CUMULATIVE (2021) TRAFFIC CONDITIONS

This section discusses the methods used to develop Opening Year Cumulative (2021) Without and With Project traffic forecasts, and the resulting intersection operations, traffic signal warrant, and freeway facility operations analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Opening Year Cumulative (2021) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for Opening Year Cumulative conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).

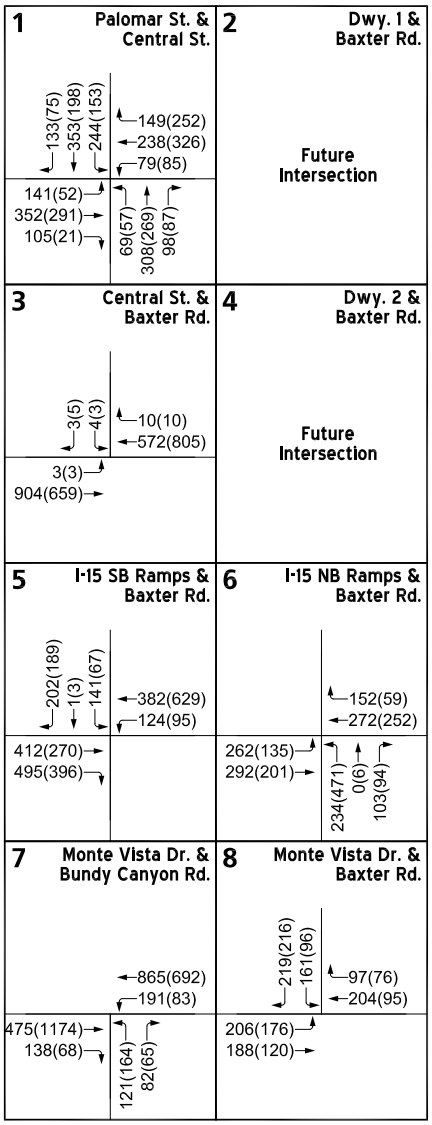
6.2 OPENING YEAR CUMULATIVE (2021) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus an ambient growth factor of 4.04% plus traffic from pending and approved but not yet constructed known development projects in the area. The weekday ADT, weekday AM and PM peak hour volumes which can be expected for Opening Year Cumulative (2021) Without Project traffic conditions are shown on Exhibit 6-1.

6.3 OPENING YEAR CUMULATIVE (2021) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes, an ambient growth factor of 4.04%, traffic from pending and approved but not yet constructed known development projects in the area and the addition of Project traffic. The weekday ADT, weekday AM and PM peak hour volumes which can be expected for Opening Year Cumulative (2021) With Project traffic conditions are shown on Exhibit 6-2.

EXHIBIT 6-1: OPENING YEAR CUMULATIVE (2021) WITHOUT PROJECT TRAFFIC VOLUMES



LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

10.0 = VEHICLES PER DAY (1000'S)

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EXHIBIT 6-2: OPENING YEAR CUMULATIVE (2021) WITH PROJECT TRAFFIC VOLUMES

1 Palomar St. & Central St.

133(75) 353(198) 274(173) ← 163(288) ← 244(348) ← 93(121)

141(52) → 371(300) → 105(21) ↓ 69(57) ↑ 308(269) ↱ 128(107)

2 Dwy. 1 & Baxter Rd.

3(10) 127(205) ↓ 9(4) ← 7(8) → 14(13) ↑ 145(154)

3 Central St. & Baxter Rd.

11(20) 123(193) ↑ 74(109) ← 605(889)

85(58) ↱ 904(659) →

4 Dwy. 2 & Baxter Rd.

33(84) ↑ 87(51) ← 647(915)

1027(852) →

5 I-15 SB Ramps & Baxter Rd.

239(242) 1(3) 141(67) ← 495(726) ← 124(95)

487(412) → 538(444) ↓

6 I-15 NB Ramps & Baxter Rd.

152(59) ← 351(297)

306(185) ↱ 323(294) → 269(523) ↑ 0(6) ↱ 103(94)

7 Monte Vista Dr. & Bundy Canyon Rd.

← 865(692) ← 211(95)

475(1174) → 157(79) ↓ 128(187) ↱ 90(89)

8 Monte Vista Dr. & Baxter Rd.

270(249) 161(96) ↑ 97(76) ← 231(107)

230(237) ↱ 196(151) →

LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

10.0 = VEHICLES PER DAY (1000'S)

N

6.4 INTERSECTION OPERATIONS ANALYSIS

6.4.1 OPENING YEAR CUMULATIVE (2021) WITHOUT PROJECT TRAFFIC CONDITIONS

LOS calculations were conducted for the study intersections to evaluate their operations under Opening Year Cumulative (2021) Without Project conditions with roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown in Table 6-1, the following study area intersections are anticipated to operate at an unacceptable LOS under Opening Year Cumulative (2021) Without Project traffic conditions:

- I-15 Southbound Ramps & Baxter Rd. (#5) – LOS F AM and PM peak hours
- I-15 Northbound Ramps & Baxter Rd. (#6) – LOS E PM peak hour only
- Monte Vista Dr. & Bundy Canyon Rd. (#7) – LOS F AM and PM peak hours

A summary of the peak hour intersection LOS for Opening Year Cumulative (2021) Without Project conditions is shown on Exhibit 6-3. The intersection operations analysis worksheets for Opening Year Cumulative (2021) Without Project traffic conditions are included in Appendix 6.1 of this TIA.

6.4.2 OPENING YEAR CUMULATIVE (2021) WITH PROJECT TRAFFIC CONDITIONS

As shown in Table 6-1 and illustrated on Exhibit 6-4, there following additional study area intersection is anticipated to operate at an unacceptable LOS with the addition of Project traffic, in addition to those intersections previously identified under Opening Year Cumulative (2021) Without Project traffic conditions:

- Central St. & Baxter Rd. (#3) – LOS F AM and PM peak hours

The intersection operations analysis worksheets for Opening Year Cumulative (2021) With Project traffic conditions are included in Appendix 6.2 of this TIA.

6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

For Opening Year Cumulative (2021) Without Project conditions, all unsignalized study area intersections have previously met a traffic signal warrant under Existing (2019) or E+P traffic conditions. With the addition of Project traffic, there are no future intersections anticipated to warrant a traffic signal (see Appendix 6.3).

6.6 OFF-RAMP QUEUING ANALYSIS

Queuing analysis findings for Opening Year Cumulative (2021) Without and With Project traffic conditions are shown in Table 6-2. As shown in Table 6-2 and consistent with Existing (2019) traffic conditions, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows for Opening Year Cumulative (2021) Without and With Project traffic conditions. Worksheets for Opening Year Cumulative (2021) Without and With Project traffic conditions off-ramp queuing analysis are provided in Appendices 6.4 and 6.5, respectively.

Table 6-1

Intersection Analysis for Opening Year Cumulative (2021) Conditions

#	Intersection	Traffic Control[2]	2021 Without Project Delay[1] (secs.) AM	2021 Without Project Delay[1] (secs.) PM	2021 Without Project Level of Service AM	2021 Without Project Level of Service PM	2021 With Project Delay[1] (secs.) AM	2021 With Project Delay[1] (secs.) PM	2021 With Project Level of Service AM	2021 With Project Level of Service PM
1	Palomar St. & Central St.	TS	32.0	28.0	C	C	34.6	35.1	C	D
2	Driveway 1 & Baxter Rd.	**CSS**	Future Intersection				9.9	10.1	A	B
3	Central St. & Baxter Rd	CSS	26.9	21.9	D	C	**>50.0**	**>50.0**	**F**	**F**
4	Driveway 2 & Baxter Rd.	**CSS**	Future Intersection				14.0	22.4	B	C
5	I-15 SB Ramps & Baxter Rd.	AWS	**>50.0**	**>50.0**	**F**	**F**	**>50.0**	**>50.0**	**F**	**F**
6	I-15 NB Ramps & Baxter Rd.	AWS	27.0	**39.0**	D	**E**	**48.5**	**>50.0**	**E**	**F**
7	Monte Vista Dr. & Bundy Canyon Rd.	CSS	**>50.0**	**>50.0**	**F**	**F**	**>50.0**	**>50.0**	**F**	**F**
8	Monte Vista Dr. & Baxter Rd.	CSS	29.7	14.8	D	B	34.7	17.9	D	C

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. Delay and level of service calculated using the following analysis software:

Synchro 10 (HCM 6th Edition) for signalized and unsignalized intersections.

2 CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal; **CSS** = Improvement

Table 6-2

Peak Hour Freeway Off-Ramp Queuing Summary for Opening Year Cumulative (2021) Conditions

Intersection	Movement	Available Stacking Distance (Feet)	2021 Without Project				2021 With Project			
			95th Percentile Queue (Feet)		Acceptable? [1]		95th Percentile Queue (Feet)		Acceptable? [1]	
			AM Peak	PM Peak	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM
I-15 SB Ramps & Baxter Rd.	SBL/T/R	1,300	145	70	Yes	Yes	188	98	Yes	Yes
I-15 NB Ramps & Baxter Rd.	NBL/T/R	1,650	148	378	Yes	Yes	205	563	Yes	Yes

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

EXHIBIT 6-3: OPENING YEAR CUMULATIVE (2021) WITHOUT PROJECT SUMMARY OF LOS

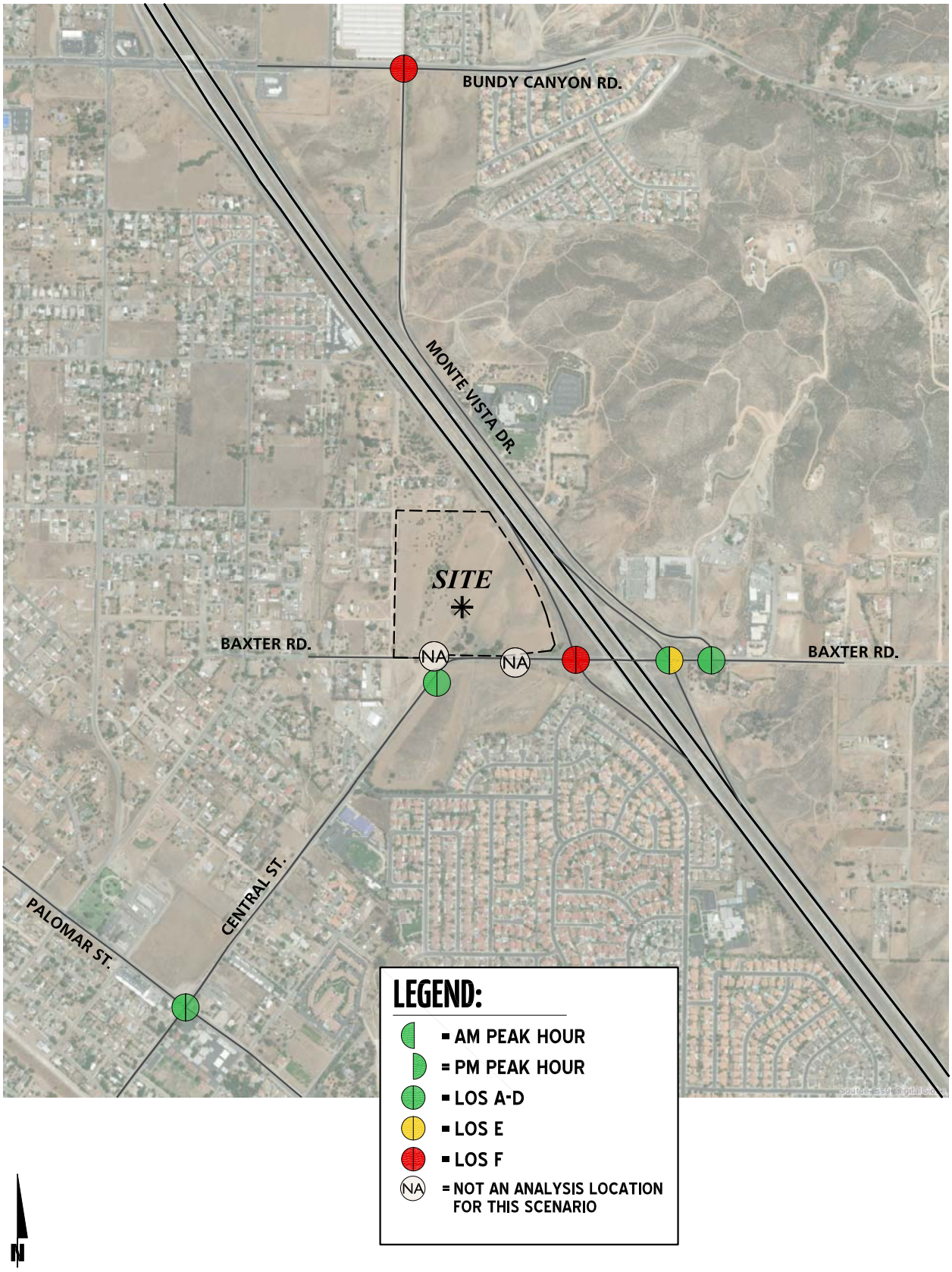
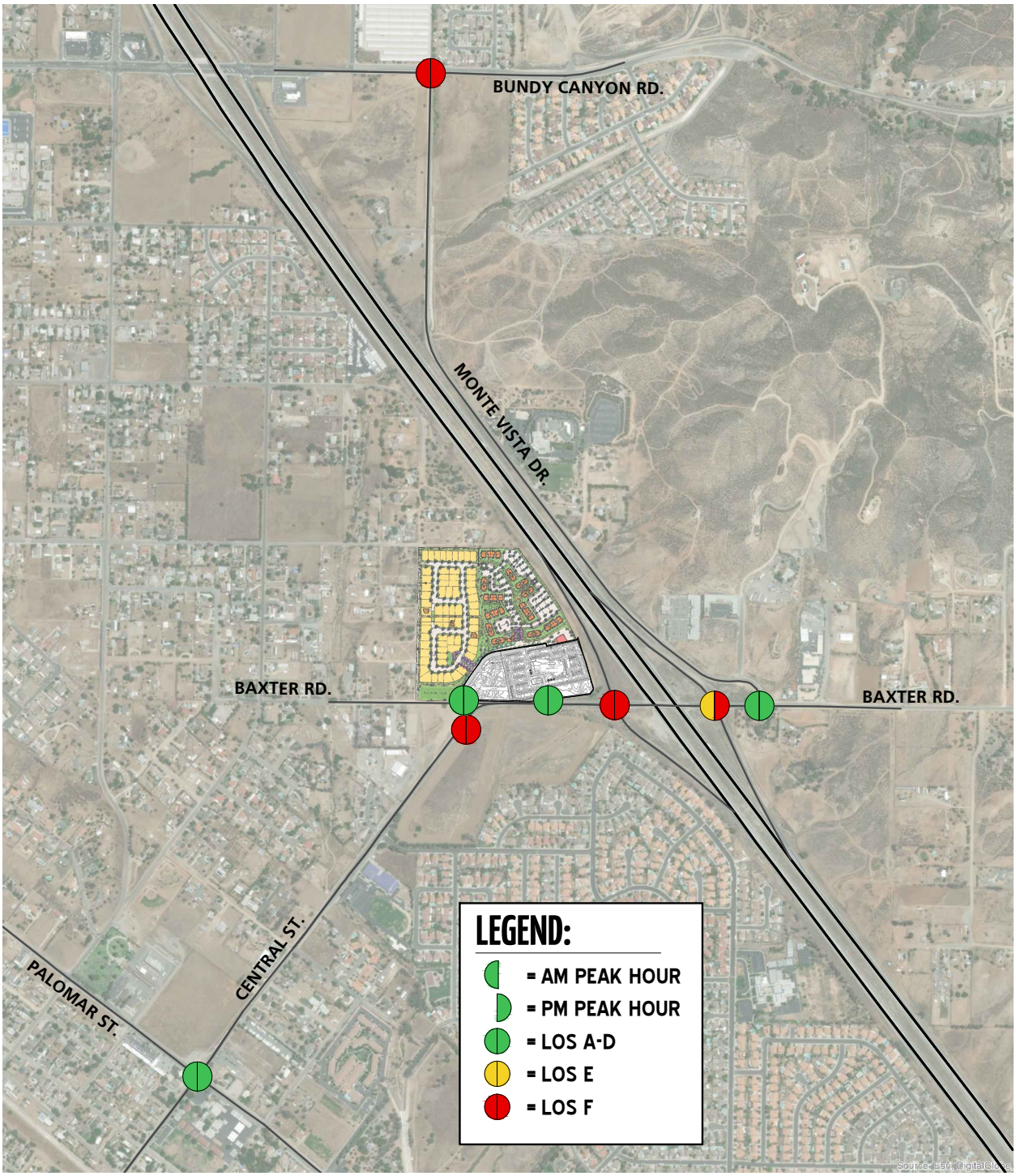


EXHIBIT 6-4: OPENING YEAR CUMULATIVE (2021) WITH PROJECT SUMMARY OF LOS



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6.7 FREEWAY FACILITY ANALYSIS

Opening Year Cumulative (2021) Without Project and With Project mainline directional volumes for the AM and PM peak hours are provided on Exhibits 6-5 and 6-6, respectively. As shown in Table 6-3, the following freeway mainline segment is anticipated to operate at an unacceptable LOS (i.e., LOS E or worse) during the peak hours for Opening Year Cumulative (2021) Without Project traffic conditions:

- I-15 Freeway Northbound, South of Baxter Road (#8) – LOS E PM peak hour only

With the addition of Project traffic, there are no additional freeway mainline segments or merge/diverge ramp junctions anticipated to operate at an unacceptable LOS, in addition to the facilities previously identified under Opening Year Cumulative (2021) Without Project traffic conditions. Opening Year Cumulative (2021) Without Project and With Project freeway facility analysis worksheets are provided in Appendix 6.6 and 6.7, respectively.

6.8 PROJECT DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

This section provides a summary of Project deficiencies and recommended improvements. Based on the City of Wildomar deficiency criteria discussed in Section 2.8 *Thresholds of Significance*, the following intersections were found to be deficient. Improvements necessary to reduce project-related traffic deficiencies are also discussed below.

6.8.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Improvement strategies have been recommended at intersections that have been identified as deficient in an effort to reduce each location's peak hour delay and improve the associated LOS grade to acceptable LOS. The effectiveness of the recommended improvement strategies discussed below to address Opening Year Cumulative (2021) traffic deficiencies are presented in Table 6-4 and described below.

Central Street & Baxter Road (#3) – The following improvements are necessary to improve the existing deficiency to acceptable levels:

- Install a traffic signal.
- Add a southbound left turn lane.
- Add an eastbound left turn lane.
- Add a westbound right turn lane.

I-15 Southbound Ramps & Baxter Road (#5) – The following improvements are necessary to improve the existing deficiency to acceptable levels:

- Install a traffic signal.
- Add an eastbound right turn lane.

EXHIBIT 6-5: OPENING YEAR CUMULATIVE (2021) WITHOUT PROJECT FREEWAY MAINLINE VOLUMES

LEGEND:

⟵ 100/200 = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)

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EXHIBIT 6-6: OPENING YEAR CUMULATIVE (2021) WITH PROJECT FREEWAY MAINLINE VOLUMES

LEGEND:

⟵ 100/200 = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)

N

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Table 6-3

Freeway Facility Analysis for Opening Year Cumulative (2021) Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	2021 Without Project				2021 With Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Density[2]	LOS[3]	Density[2]	LOS[3]	Density[2]	LOS[3]	Density[2]	LOS[3]
I-15	Southbound	North of Baxter Rd.	3	23.4	C	23.6	C	23.7	C	24.0	C
		Off-Ramp at Baxter Rd.	3	26.7	C	26.7	C	26.9	C	27.1	C
		On-Ramp at Baxter Rd.	3	25.5	C	25.2	C	25.9	C	25.5	C
		South of Baxter Rd.	3	25.4	C	25.3	C	25.8	C	25.4	C
	Northbound	North of Baxter Rd.	3	21.4	C	31.7	D	21.7	C	32.2	D
		On-Ramp at Baxter Rd.	3	22.5	C	29.0	D	22.9	C	29.4	D
		Off-Ramp at Baxter Rd.	3	24.1	C	32.8	D	24.3	C	33.2	D
		South of Baxter Rd.	3	21.2	C	**35.6**	**E**	21.4	C	**36.2**	**E**

* **BOLD** = Unacceptable Level of Service

[1] Number of lanes are in the specified direction and is based on existing conditions.

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln).

[3] LOS = Level of Service

Table 6-4

Intersection Analysis for Opening Year Cumulative (2021) Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
3	Central St. & Baxter Rd																	
	-Without Improvements	CSS	0	0	0	0	1	0	0	1	0	0	1	0	**>50.0**	**>50.0**	**F**	**F**
	-With Improvements	**TS**	0	0	0	**1**	**0**	**1**	**1**	1	0	0	1	**1**	13.1	16.3	B	B
5	I-15 SB Ramps & Baxter Rd.																	
	-Without Improvements	AWS	0	0	0	0	1	0	0	1	0	1	1	0	**>50.0**	**>50.0**	**F**	**F**
	-With Improvements	**TS**	0	0	0	0	1	0	0	1	**1**	1	1	0	29.1	38.3	C	D
6	I-15 NB Ramps & Baxter Rd.																	
	-Without Improvements	AWS	0	1	0	0	0	0	1	1	0	0	1	0	**48.5**	**>50.0**	**E**	**F**
	-With Improvements	**TS**	0	1	0	0	0	0	1	1	0	0	1	0	44.1	53.6	D	D
7	Monte Vista Dr. & Bundy Canyon Rd.																	
	-Without Improvements	CSS	0	1	0	0	0	0	0	1	0	1	1	0	**>50.0**	**>50.0**	**F**	**F**
	-With Improvements	**TS**	0	1	0	0	0	0	0	**2**	0	1	1	0	23.8	24.3	C	C

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; **1** = Improvement

2 Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street-stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

3 CSS = Cross-Street Stop; AWS = All-Way Stop; TS = Traffic Signal; **TS** = Improvement

I-15 Northbound Ramps & Baxter Road (#6) – The following improvement is necessary to improve the existing deficiency to acceptable levels:

- Install a traffic signal.

Monte Vista Drive & Bundy Canyon Road (#7) – The following improvements are necessary to improve the existing deficiency to acceptable levels:

- Install a traffic signal.
- Add a 2nd eastbound through lane.

Worksheets for Opening Year Cumulative (2021) With Project LOS With Improvements are provided in Appendix 6.8.

6.8.2 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously in Table 6-2, there are no anticipated peak hour queuing issues at the I-15 Freeway and Baxter Road interchange for Opening Year Cumulative (2021) traffic conditions. As such, no improvements have been recommended.

6.8.3 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON FREEWAY FACILITIES

As shown previously in Table 6-3, there is one study area freeway mainline segment that is anticipated to operate at an unacceptable LOS during the peak hours for Opening Year Cumulative (2021) traffic conditions.

At this time, Caltrans has no fee programs or other improvement programs in place to address the deficiencies caused by development projects in the City of Wildomar (or other neighboring jurisdictions) on SHS roadway segments. As such, no improvements have been recommended to address the Opening Year Cumulative (2021) traffic conditions deficiencies on the SHS, because there is no feasible mitigation available.

7 GENERAL PLAN BUILDOUT (2040) TRAFFIC CONDITIONS

This section discusses the methods used to develop General Plan Buildout (2040) Without and With Project traffic forecasts, and the resulting intersection operations, traffic signal warrant, and freeway facility operations analyses.

7.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for General Plan Buildout (2040) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for General Plan Buildout conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for General Plan Buildout conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages and driveways).
- The south leg of the intersection of Central Street and Baxter Road is assumed to be completed.

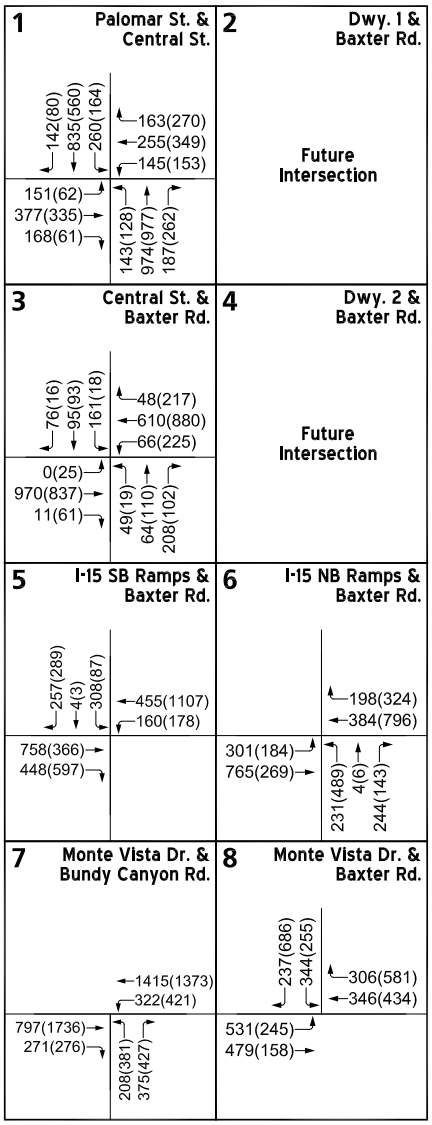
7.2 GENERAL PLAN BUILDOUT (2040) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the RivTAM. For additional information on the development of the General Plan Buildout (2040) Without Project traffic forecasts, see Section 4.8 *General Plan Buildout (2040) Volume Development* of this TIA. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for General Plan Buildout (2040) Without Project traffic conditions are shown on Exhibit 7-1.

7.3 GENERAL PLAN BUILDOUT (2040) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the RivTAM, plus Project traffic. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for General Plan Buildout With Project traffic conditions are shown on Exhibit 7-2.

EXHIBIT 7-1: GENERAL PLAN BUILDOUT (2040) WITHOUT PROJECT TRAFFIC VOLUMES



LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

10.0 = VEHICLES PER DAY (1000'S)

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EXHIBIT 7-2: GENERAL PLAN BUILDOUT (2040) WITH PROJECT TRAFFIC VOLUMES

1 Palomar St. & Central St.	2 Dwy. 1 & Baxter Rd.
142(80) 835(560) 290(184) / 177(306) 261(371) 159(189)	3(10) 127(205) /
151(62) 396(344) 168(61) / 143(128) 974(977) 217(282)	9(4) 258(127) / 88(274) 145(154)

3 Central St. & Baxter Rd.	4 Dwy. 2 & Baxter Rd.
84(31) 95(93) 280(208) / 112(316) 643(964) 66(225)	33(84) / 87(51) 776(1495)
82(80) 970(837) 11(61) / 49(19) 64(110) 208(102)	1325(1153)

5 I-15 SB Ramps & Baxter Rd.	6 I-15 NB Ramps & Baxter Rd.
294(342) 4(3) 308(87) / 568(1204) 160(178)	/ 198(324) 463(841)
833(508) 491(645) /	345(234) 796(362) / 266(541) 4(6) 244(143)

7 Monte Vista Dr. & Bundy Canyon Rd.	8 Monte Vista Dr. & Baxter Rd.
/ 1415(1373) 342(433)	288(719) 344(255) / 306(581) 373(446)
797(1736) 290(287) / 215(404) 383(451)	555(306) 487(189) /

LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

10.0 = VEHICLES PER DAY (1000'S)

N

7.4 INTERSECTION OPERATIONS ANALYSIS

7.3.1 GENERAL PLAN BUILDOUT (2040) WITHOUT PROJECT TRAFFIC CONDITIONS

LOS calculations were conducted for the study intersections to evaluate their operations under General Plan Buildout (2040) Without Project traffic conditions with roadway and intersection geometrics consistent with Section 7.1 *Roadway Improvements*. As shown in Table 7-1, the following study area intersections are anticipated to operate at an unacceptable LOS under General Plan Buildout (2040) Without Project traffic conditions:

- Palomar St. & Central St. (#1) – LOS F AM and PM peak hours
- Central St. & Baxter Rd. (#3) – LOS F AM and PM peak hours
- I-15 Southbound Ramps & Baxter Rd. (#5) – LOS F AM and PM peak hours
- I-15 Northbound Ramps & Baxter Rd. (#6) – LOS F AM and PM peak hours
- Monte Vista Dr. & Bundy Canyon Rd. (#7) – LOS F AM and PM peak hours
- Monte Vista Dr. & Baxter Rd. (#8) – LOS F AM and PM peak hours

A summary of the peak hour intersection LOS for General Plan Buildout (2040) Without Project conditions are shown on Exhibit 7-3. The intersection operations analysis worksheets for General Plan Buildout (2040) Without Project traffic conditions are included in Appendix 7.1.

7.3.2 GENERAL PLAN BUILDOUT (2040) WITH PROJECT TRAFFIC CONDITIONS

As shown in Table 7-1 and illustrated on Exhibit 7-4, with the addition of Project traffic, the following intersection is anticipated to result in an unacceptable LOS in addition to the intersections previously identified under General Plan Buildout (2040) Without Project traffic conditions:

- Driveway 2 & Baxter Rd. (#4) – LOS F PM peak hour only

The intersection operations analysis worksheets for General Plan Buildout (2040) With Project traffic conditions are included in Appendix 7.2 of this TIA.

7.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

For General Plan Buildout (2040) Without Project conditions, all existing unsignalized study area intersections have previously met a traffic signal warrant under Existing (2019) or E+P traffic conditions. With the addition of Project traffic, there are no future intersections anticipated to warrant a traffic signal (see Appendix 7.3).

Table 7-1

Intersection Analysis for General Plan Buildout (2040) Conditions

#	Intersection	Traffic Control[2]	2040 Without Project				2040 With Project			
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
1	Palomar St. & Central St.	TS	**>80.0**	**>80.0**	**F**	**F**	**>80.0**	**>80.0**	**F**	**F**
2	Driveway 1 & Baxter Rd.	**CSS**	Future Intersection				11.1	11.0	B	B
3	Central St. & Baxter Rd	CSS	**>50.0**	**>50.0**	**F**	**F**	**>50.0**	**>50.0**	**F**	**F**
4	Driveway 2 & Baxter Rd.	**CSS**	Future Intersection				16.0	**>50.0**	C	**F**
5	I-15 SB Ramps & Baxter Rd.	AWS	**>50.0**	**>50.0**	**F**	**F**	**>50.0**	**>50.0**	**F**	**F**
6	I-15 NB Ramps & Baxter Rd.	AWS	**>50.0**	**>50.0**	**F**	**F**	**>50.0**	**>50.0**	**F**	**F**
7	Monte Vista Dr. & Bundy Canyon Rd.	CSS	**>50.0**	**>50.0**	**F**	**F**	**>50.0**	**>50.0**	**F**	**F**
8	Monte Vista Dr. & Baxter Rd.	CSS	**>50.0**	**>50.0**	**F**	**F**	**>50.0**	**>50.0**	**F**	**F**

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. Delay and level of service calculated using the following analysis software:

Synchro 10 (HCM 6th Edition) for signalized and unsignalized intersections.

2 CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal; **CSS** = Improvement

EXHIBIT 7-3: GENERAL PLAN BUILDOUT (2040) WITHOUT PROJECT SUMMARY OF LOS

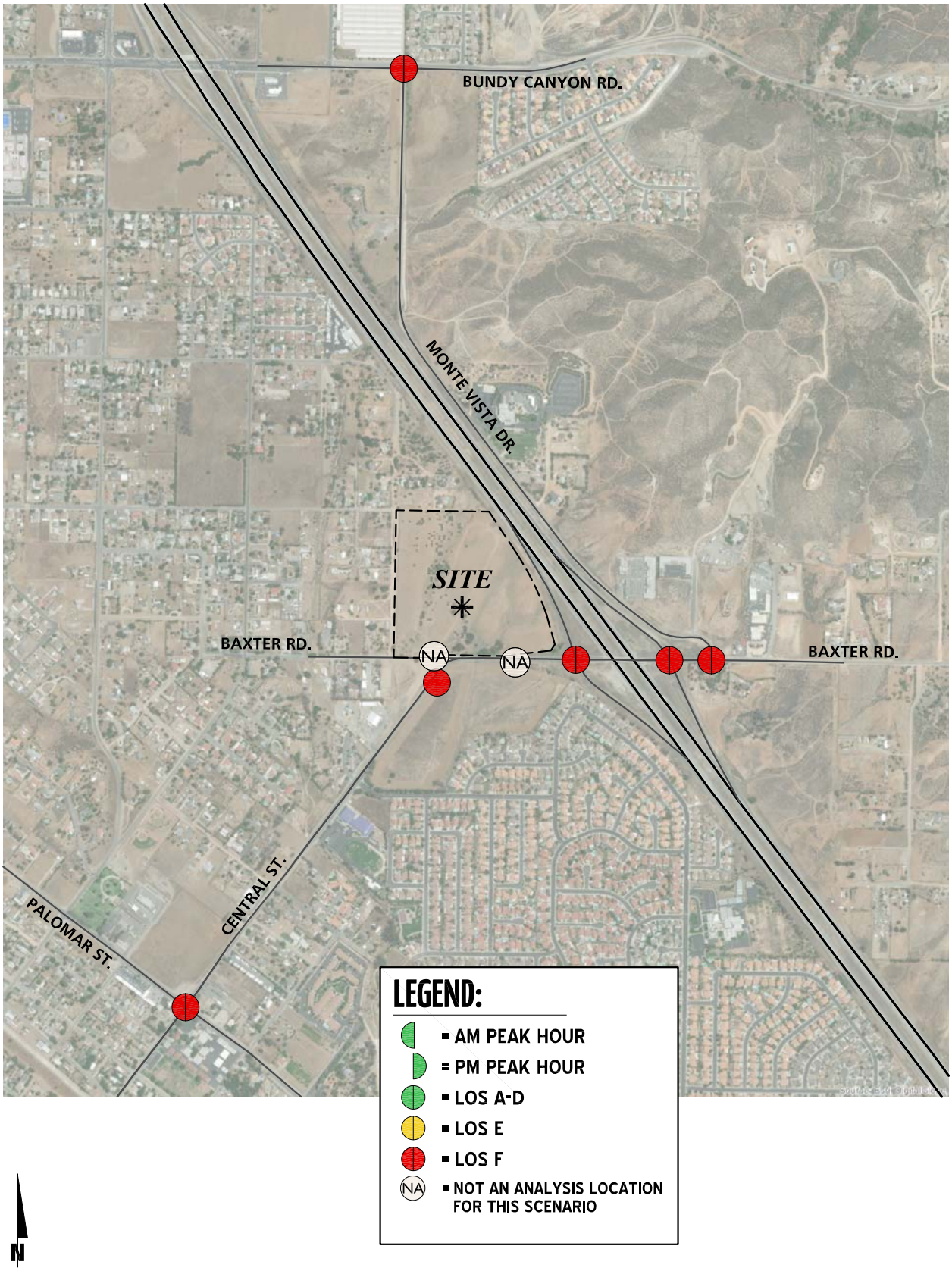
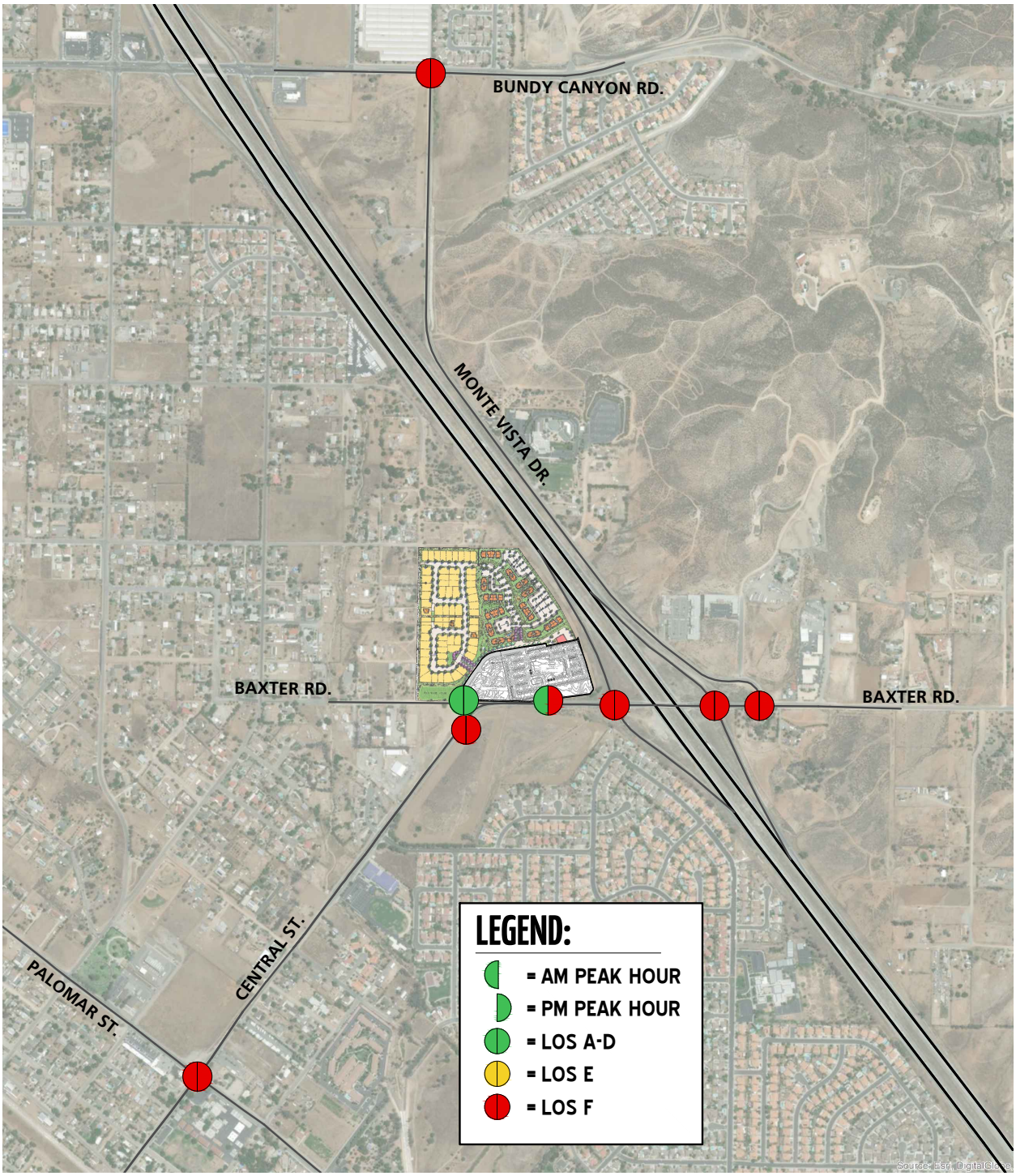


EXHIBIT 7-4: GENERAL PLAN BUILDOUT (2040) WITH PROJECT SUMMARY OF LOS



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7.6 OFF-RAMP QUEUING ANALYSIS

Queuing analysis findings for General Plan Buildout (2040) traffic conditions are presented in Table 7-2. As shown in Table 7-2, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows for General Plan Buildout (2040) Without and With Project traffic conditions. Worksheets for General Plan Buildout (2040) Without and With Project traffic conditions off-ramp queuing analysis are provided in Appendices 7.4 and 7.5, respectively.

7.7 FREEWAY FACILITY ANALYSIS

General Plan Buildout (2040) Without Project mainline directional volumes for the AM and PM peak hours are provided on Exhibit 7-5. As shown in Table 7-3, the following freeway segments or merge/diverge ramp junctions analyzed for this study are anticipated to operate at an unacceptable LOS (i.e., LOS E or worse) during the peak hours for General Plan Buildout (2040) Without Project traffic conditions:

- I-15 Freeway Southbound, North of Baxter Rd. (#1) – LOS E AM peak hour; LOS F PM peak hour
- I-15 Freeway Southbound, Off-Ramp at Baxter Rd. (#2) – LOS F PM peak hour only
- I-15 Freeway Southbound, On-Ramp at Baxter Rd. (#3) – LOS F PM peak hour only
- I-15 Freeway Southbound, South of Baxter Rd. (#4) – LOS E AM peak hour; LOS F PM peak hour
- I-15 Freeway Northbound, North of Baxter Rd. (#5) – LOS F AM and PM peak hours
- I-15 Freeway Northbound, On-Ramp at Baxter Rd. (#6) – LOS F AM and PM peak hours
- I-15 Freeway Northbound, Off-Ramp at Baxter Rd. (#7) – LOS F AM and PM peak hours
- I-15 Freeway Northbound, South of Baxter Rd. (#8) – LOS F AM and PM peak hours

General Plan Buildout (2040) With Project mainline directional volumes for the AM and PM peak hours are provided on Exhibit 7-6. There are no additional study area freeway segments anticipated to operate at an unacceptable LOS with the addition of Project traffic under General Plan Buildout (2040) With Project traffic conditions. General Plan Buildout (2040) Without Project and With Project freeway facility analysis worksheets are provided in Appendix 7.6 and 7.7, respectively.

7.8 GENERAL PLAN BUILDOUT (2040) DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

This section provides a summary of Project deficiencies and recommended improvements. Based on the City of Wildomar deficiency criteria discussed in Section 2.8 *Thresholds of Significance*, the following intersections were found to be deficient. Improvements necessary to reduce project-related traffic deficiencies are also discussed below.

Table 7-2

Peak Hour Freeway Off-Ramp Queuing Summary for General Plan Buildout (2040) Conditions

Intersection	Movement	Available Stacking Distance (Feet)	2040 Without Project				2040 With Project			
			95th Percentile Queue (Feet)		Acceptable? [1]		95th Percentile Queue (Feet)		Acceptable? [1]	
			AM Peak	PM Peak	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM
I-15 SB Ramps & Baxter Rd.	SBL/T/R	1,300	453	98	Yes	Yes	523	193	Yes	Yes
I-15 NB Ramps & Baxter Rd.	NBL/T/R	1,650	330	563	Yes	Yes	400	665	Yes	Yes

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

Table 7-3

Freeway Facility Analysis for General Plan Buildout (2040) Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	2040 Without Project				2040 With Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Density[2]	LOS[3]	Density[2]	LOS[3]	Density[2]	LOS[3]	Density[2]	LOS[3]
I-15	Southbound	North of Baxter Rd.	3	**37.9**	**E**	**45.0**	**F**	**38.4**	**E**	**45.0**	**F**
		Off-Ramp at Baxter Rd.	3	34.5	D	**57.6**	**F**	34.7	D	**58.1**	**F**
		On-Ramp at Baxter Rd.	3	33.2	D	**55.3**	**F**	33.5	D	**55.7**	**F**
		South of Baxter Rd.	3	**38.5**	**E**	**38.4**	**F**	**39.0**	**E**	**38.4**	**F**
	Northbound	North of Baxter Rd.	3	**38.4**	**F**	**42.5**	**F**	**38.4**	**F**	**42.5**	**F**
		On-Ramp at Baxter Rd.	3	**47.6**	**F**	**35.0**	**F**	**47.9**	**F**	**35.1**	**F**
		Off-Ramp at Baxter Rd.	3	**51.0**	**F**	**37.6**	**F**	**51.3**	**F**	**37.6**	**F**
		South of Baxter Rd.	3	**45.0**	**F**	**45.0**	**F**	**45.0**	**F**	**45.0**	**F**

* **BOLD** = Unacceptable Level of Service

[1] Number of lanes are in the specified direction and is based on existing conditions.

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln).

[3] LOS = Level of Service

EXHIBIT 7-5: GENERAL PLAN BUILDOUT (2040) WITHOUT PROJECT FREEWAY MAINLINE VOLUMES

LEGEND:

⟵ 100/200 = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)

N

EXHIBIT 7-6: GENERAL PLAN BUILDOUT (2040) WITH PROJECT FREEWAY MAINLINE VOLUMES

LEGEND:

⟵ 100/200 = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)

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URBAN CROSSROADS

7.8.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Improvement strategies have been recommended at intersections that have been identified as cumulatively impacted in an effort to reduce each location's peak hour delay and improve the associated LOS grade to acceptable LOS. The effectiveness of the recommended improvement strategies discussed below to address General Plan Buildout (2040) traffic deficiencies are presented in Table 7-4 and described below.

Palomar Street & Central Street (#1) – The following improvements are necessary to improve the existing deficiency to acceptable levels:

- Add a 2nd northbound through lane.
- Add a 2nd southbound through lane.
- Add an eastbound right turn lane.
- Add a 2nd westbound through lane.

Central Street & Baxter Road (#3) – The following improvements are necessary to improve the existing deficiency to acceptable levels:

- Install a traffic signal.
- Add a northbound left turn lane.
- Add a southbound left turn lane.
- Add an eastbound left turn lane.
- Add a 2nd eastbound through lane.
- Add an eastbound right turn lane.
- Add a westbound left turn lane.
- Add a 2nd westbound through lane.
- Add a westbound right turn lane.

Driveway 2 & Baxter Road (#4) – The following improvements are necessary to improve the existing deficiency to acceptable levels:

- Add a 2nd eastbound through lane.
- Add a 2nd westbound through lane.

It should be noted, the improvements at the intersection of Driveway 2 and Baxter Road are a continuation of the improvements at the adjacent intersections. These improvements should not be considered intersection improvements exclusive to this Project driveway, but rather as a roadway improvement recommended for General Plan Buildout (2040) traffic conditions.

Table 7-4

Intersection Analysis for General Plan Buildout (2040) Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Palomar St. & Central St.																	
	-Without Improvements	TS	1	1	1	1	1	1	1	2	0	1	1	1	**>80.0**	**>80.0**	**F**	**F**
	-With Improvements	TS	1	**2**	1	1	**2**	1	1	2	**1**	1	**2**	1	49.2	32.9	D	C
3	Central St. & Baxter Rd																	
	-Without Improvements	CSS	0	**1**	0	0	1	0	0	1	0	0	1	0	**>50.0**	**>50.0**	**F**	**F**
	-With Improvements	**TS**	**1**	**1**	0	**1**	1	0	**1**	**2**	**1**	**1**	**2**	**1**	39.2	46.4	D	D
4	Driveway 2 & Baxter Rd.																	
	-Without Improvements	CSS	0	0	0	0	0	**1**	0	1	0	0	1	0	16.0	**>50.0**	C	**F**
	-With Improvements[4]	CSS	0	0	0	0	0	**1**	0	**2**	0	0	**2**	0	12.1	21.5	B	C
5	I-15 SB Ramps & Baxter Rd.																	
	-Without Improvements	AWS	0	0	0	0	1	0	0	1	0	1	1	0	**>50.0**	**>50.0**	**F**	**F**
	-With Improvements	**TS**	0	0	0	0	1	0	0	**2**	**1**	1	**2**	0	48.9	53.7	D	D
6	I-15 NB Ramps & Baxter Rd.																	
	-Without Improvements	AWS	0	1	0	0	0	0	1	1	0	0	1	0	**>50.0**	**>50.0**	**F**	**F**
	-With Improvements	**TS**	0	1	0	0	0	0	1	**2**	0	0	**2**	**1**	48.1	43.5	D	D
7	Monte Vista Dr. & Bundy Canyon Rd.																	
	-Without Improvements	CSS	0	1	0	0	0	0	0	1	0	1	1	0	**>50.0**	**>50.0**	**F**	**F**
	-With Improvements	**TS**	**1**	1	**1**	0	0	0	0	**3**	**1**	**2**	**3**	0	19.9	28.6	B	C
8	Monte Vista Dr. & Baxter Rd.																	
	-Without Improvements	CSS	0	0	0	1	0	d	0	1	0	0	1	d	**>50.0**	**>50.0**	**F**	**F**
	-With Improvements	**TS**	0	0	0	**0**	**1**	**1**	**1**	1	0	0	1	**1>**	42.6	43.7	D	D

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; **1** = Improvement

2 Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street-stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

3 CSS = Cross-Street Stop; AWS = All-Way Stop; TS = Traffic Signal; **TS** = Improvement

4 Improvements are a continuation of the improvements at adjacent intersections and should not be considered intersection improvements exclusive to this Project driveway, but rather as a roadway improvement recommended for General Plan Buildout (2040) traffic conditions.

I-15 Southbound Ramps & Baxter Road (#5) – The following improvements are necessary to improve the existing deficiency to acceptable levels:

- Install a traffic signal.
- Add a 2nd eastbound through lane.
- Add an eastbound right turn lane.
- Add a 2nd westbound through lane.

I-15 Northbound Ramps & Baxter Road (#6) – The following improvements are necessary to improve the existing deficiency to acceptable levels:

- Install a traffic signal.
- Add a 2nd eastbound through lane.
- Add a 2nd westbound through lane.
- Add a westbound right turn lane.

Monte Vista Drive & Bundy Canyon Road (#7) – The following improvements are necessary to improve the existing deficiency to acceptable levels:

- Install a traffic signal.
- Add a northbound left turn lane.
- Add a northbound right turn lane.
- Add a 2nd eastbound through lane.
- Add a 3rd eastbound through lane.
- Add an eastbound right turn lane.
- Add a 2nd westbound left turn lane.
- Add a 2nd westbound through lane.
- Add a 3rd westbound through lane.

Monte Vista Drive & Baxter Road (#8) – The following improvements are necessary to improve the existing deficiency to acceptable levels:

- Install a traffic signal.
- Add a southbound right turn lane.
- Add an eastbound left turn lane.
- Stripe the westbound defacto right turn lane and modify the traffic signal to implement overlap phasing for the westbound right turn lane.

The intersection operations analysis worksheets for General Plan Buildout (2040) With Project traffic conditions, with improvements, are included in Appendix 7.8 of this TIA.

The Project Applicant shall participate in the funding of off-site improvements, including traffic signals that are needed to serve cumulative traffic conditions through the payment of WRCOG TUMF fees, City of Wildomar DIF fees, Southwest RBBD fees, or a fair share contribution as directed by the City. These fees are collected as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected population increases. Each of the improvements discussed above have been identified as being included as part of TUMF fee program, City DIF fee program, Southwest RBBD fee program, or fair share contribution in Section 8 *Local and Regional Funding Mechanisms* of this TIA.

7.8.2 Recommended Improvements To Address Deficiencies On Off-Ramp Queues

As shown previously in Table 7-2, there are no anticipated peak hour queuing issues at the I-15 Freeway and Baxter Road interchange for General Plan Buildout (2040) traffic conditions. As such, no improvements have been recommended.

7.8.3 Recommended Improvements To Address Deficiencies On Freeway Facilities

According to the Caltrans I-15 Transportation Concept Repot (TCR), the I-15 Freeway is anticipated to be constructed to include the addition of a carpool or High Occupancy Vehicle (HOV) lane. (10) For the purposes of this TIA, this improvement has been analyzed. Caltrans typically assumes a reduction of 14 percent to the freeway mainline through volumes in this region to account for vehicles utilizing the HOV lanes. The reduction to the I-15 Freeway mainline volumes has been applied to account for the proposed HOV lanes. The analysis has been performed assuming same on and off-ramp configurations as existing baseline conditions at the I-15 Freeway and Baxter Road interchange.

As shown in Table 7-5, the I-15 Freeway mainline segment operations are anticipated to improve operations with the proposed Caltrans HOV lanes. Worksheets for General Plan Buildout (2040) With Project conditions freeway mainline level of service analysis, with improvements, are provided in Appendix 7.9. Although the improvements have improved freeway facility operations, the following freeway segments and merge/diverge ramp junctions are anticipated to continue to operate at an unacceptable LOS during the weekday AM or PM peak hours with the improvements to the I-15 Freeway:

- I-15 Freeway Southbound, North of Baxter Rd. (#1) – LOS F PM peak hour only
- I-15 Freeway Southbound, Off-Ramp at Baxter Rd. (#2) – LOS F PM peak hour only
- I-15 Freeway Southbound, On-Ramp at Baxter Rd. (#3) – LOS F PM peak hour only
- I-15 Freeway Southbound, South of Baxter Rd. (#4) – LOS F PM peak hour only
- I-15 Freeway Northbound, North of Baxter Rd. (#5) – LOS F AM peak hour; LOS E PM peak hour
- I-15 Freeway Northbound, On-Ramp at Baxter Rd. (#6) – LOS F AM peak hour only
- I-15 Freeway Northbound, Off-Ramp at Baxter Rd. (#7) – LOS F AM peak hour only
- I-15 Freeway Northbound, South of Baxter Rd. (#8) – LOS F AM peak hour; LOS E PM peak hour

Table 7-5

Freeway Facility Analysis for General Plan Buildout (2040) Conditions With Improvements

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	Post-2040 With Project			
				AM Peak Hour		PM Peak Hour	
				Density[2]	LOS[3]	Density[2]	LOS[3]
I-15	Southbound	North of Baxter Rd.	3	30.3	D	**45.0**	**F**
		Off-Ramp at Baxter Rd.	3	31.4	D	**47.4**	**F**
		On-Ramp at Baxter Rd.	3	29.4	D	**46.0**	**F**
		South of Baxter Rd.	3	31.2	D	**38.4**	**F**
	Northbound	North of Baxter Rd.	3	**38.4**	**F**	**38.1**	**E**
		On-Ramp at Baxter Rd.	3	**38.8**	**F**	33.3	D
		Off-Ramp at Baxter Rd.	3	**40.8**	**F**	34.4	D
		South of Baxter Rd.	3	**45.0**	**F**	**39.8**	**E**

* **BOLD** = Unacceptable Level of Service

[1] Number of lanes are in the specified direction and is based on existing conditions.

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln).

[3] LOS = Level of Service

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8 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements within the City of Wildomar are funded through a combination of improvements constructed by the Project, development impact fee programs or fair share contributions, such as the City of Wildomar Development Impact Fee (DIF) program. Identification and timing of needed improvements is generally determined through local jurisdictions based upon a variety of factors.

8.1 CITY OF WILDOMAR DEVELOPMENT IMPACT FEE PROGRAM

The Project will also be subject to City of Wildomar's Development Impact Fee (DIF) program which includes a component for roads and signals. Chapter Three and Four of the City of Wildomar Development Impact Fee Nexus Report (April 2015) discusses the local (as opposed to regional) streets and signal improvements planned for the City through build-out of the existing City limits. (11)

8.2 TRANSPORTATION UNIFORM MITIGATION FEE (TUMF) PROGRAM

The TUMF program is administered by the Western Riverside Council of Governments (WRCOG) based upon a regional Nexus Study most recently updated in 2016 to address major changes in right of way acquisition and improvement cost factors. (12) WRCOG is currently in the process of completing a current Nexus Study update to the program. Final changes to network facilities, network cost allocations, and fee changes were not available at the time this assessment was prepared. This regional program was put into place to ensure that development pays its fair share and that funding is in place for construction of facilities needed to maintain the requisite level of service and critical to mobility in the region.

TUMF fees are imposed on new residential, industrial, and commercial development through application of the TUMF fee ordinance and fees are collected at the building or occupancy permit stage. In addition, an annual inflation adjustment is considered each year in February. In this way, TUMF fees are adjusted upwards on a regular basis to ensure that the development impact fees collected keep pace with construction and labor costs, etc.

Certain facilities forecast to be impacted by the Project are programmed for improvements through the TUMF program. The Project Applicant will be subject to the TUMF fee program and will pay the requisite TUMF fees at the rates then in effect pursuant to the TUMF Ordinance. The Project is located in the Southwest TUMF zone. WRCOG has a successful track record funding and overseeing the construction of improvements funded through the TUMF program. In total, the TUMF program is anticipated to generate nearly $5 billion in transportation projects for Western Riverside County.

8.3 SOUTHWEST ROAD AND BRIDGE BENEFIT DISTRICT (RBBD)

The City of Wildomar is anticipated to experience substantial growth. Extensive improvements are necessitated by new development within the region. In particular, Riverside County recognized the impact of this growth on the vicinity of the study area when it formed the Southwest RBBD. The proposed Project lies within Zone A of the Southwest RBBD. Zone A is generally bounded by the City of Lake Elsinore's southern boundary to the north, Corydon Road/Grand Avenue to the west, Sunset Avenue/Murrieta Road to the east, and the City of Murrieta's northern boundary to the south. As discussed above, the facilities improvements that will be ultimately constructed as a result of the collection of these fees and assessments are significant. They include:

Southwest Road and Bridge Benefits District (Zone A):

- Bundy Canyon Road improvements from Mission Trail to Sunset Avenue

8.4 FAIR SHARE CONTRIBUTION

Project mitigation may include a combination of fee payments to established programs (e.g., TUMF, and/or DIF, and/or RBBD), construction of specific improvements, payment of a fair share contribution toward future improvements or a combination of these approaches. Improvements constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate (to be determined at the City of Wildomar's discretion).

When off-site improvements are identified with a minor share of responsibility assigned to proposed development, the approving jurisdiction may elect to collect a fair share contribution or require the development to construct improvements. Detailed fair share calculations, for each peak hour, has been provided on in Table 8-1 for the applicable deficient intersections shown previously in Table 1-5. Improvements included in a defined program and constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate.

Table 8-1

Project Fair Share Calculations for Intersections

#	Intersection	Existing	Total Project	2040 With Project Volume	Total New Traffic	Project % of New Traffic
1	Palomar St. & Central St.					
	AM:	2,117	113	3,913	1,796	6.3%
	PM:	1,693	143	3,544	1,851	**7.7%**
3	Central St. & Baxter Rd					
	AM:	1,348	306	2,664	1,316	23.3%
	PM:	1,285	443	3,046	1,761	**25.2%**
7	Monte Vista Dr. & Bundy Canyon Rd.					
	AM:	1,494	54	3,442	1,948	**2.8%**
	PM:	1,696	70	4,684	2,988	2.3%

BOLD = Denotes highest fair share percentage.

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9 REFERENCES

1. **Riverside County Transportation Department.** *Traffic Impact Analysis Preparation Guide.* County of Riverside : s.n., April 2008.
2. **California Department of Transportation.** *Guide for the Preparation of Traffic Impact Studies.* December 2002.
3. **Institute of Transportation Engineers.** *Trip Generation Manual.* 10th Edition. 2017.
4. **County of Riverside.** *City of Widlomar General Plan.* City of Wildomar : s.n., 2003.
5. **Riverside County Transportation Commission.** *2011 Riverside County Congestion Management Program.* County of Riverside : RCTC, December 14, 2011.
6. **Transportation Research Board.** *Highway Capacity Manual (HCM).* s.l. : National Academy of Sciences, 2016.
7. **California Department of Transportation.** California Manual on Uniform Traffic Control Devices (MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CAMUTCD).* 2017.
8. **Transportation, California Department of.** *Freeway Performance Measurement (PeMS).* [Online] http://pems.dot.ca.gov/.
9. **Southern California Association of Governments.** *2016 Regional Transportation Plan.* April 2016.
10. **California Department of Transportation.** *Transportation Concept Report Interstate 15.* District 8 : s.n., September 2012.
11. **Colgan Consulting Corporation.** *City of Wildomar Impact Fee Study Update Report.* Wildomar : s.n., April 23, 2015.
12. **Western Riverside Council of Governments.** *TUMF Nexus Study, 2016 Program Update.* July 2017.

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APPENDIX 3.1:

EXISTING TRAFFIC COUNTS – MAY 2019

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INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
Tue, May 28, 19	LOCATION:	Wildomar	PROJECT #:	SC2233
	NORTH & SOUTH:	Central	LOCATION #:	1
	EAST & WEST:	Baxter	CONTROL:	SIGNAL

NOTES:

AM PM MD OTHER OTHER

N ◄ W E ► S

Add U-Turns to Left Turns

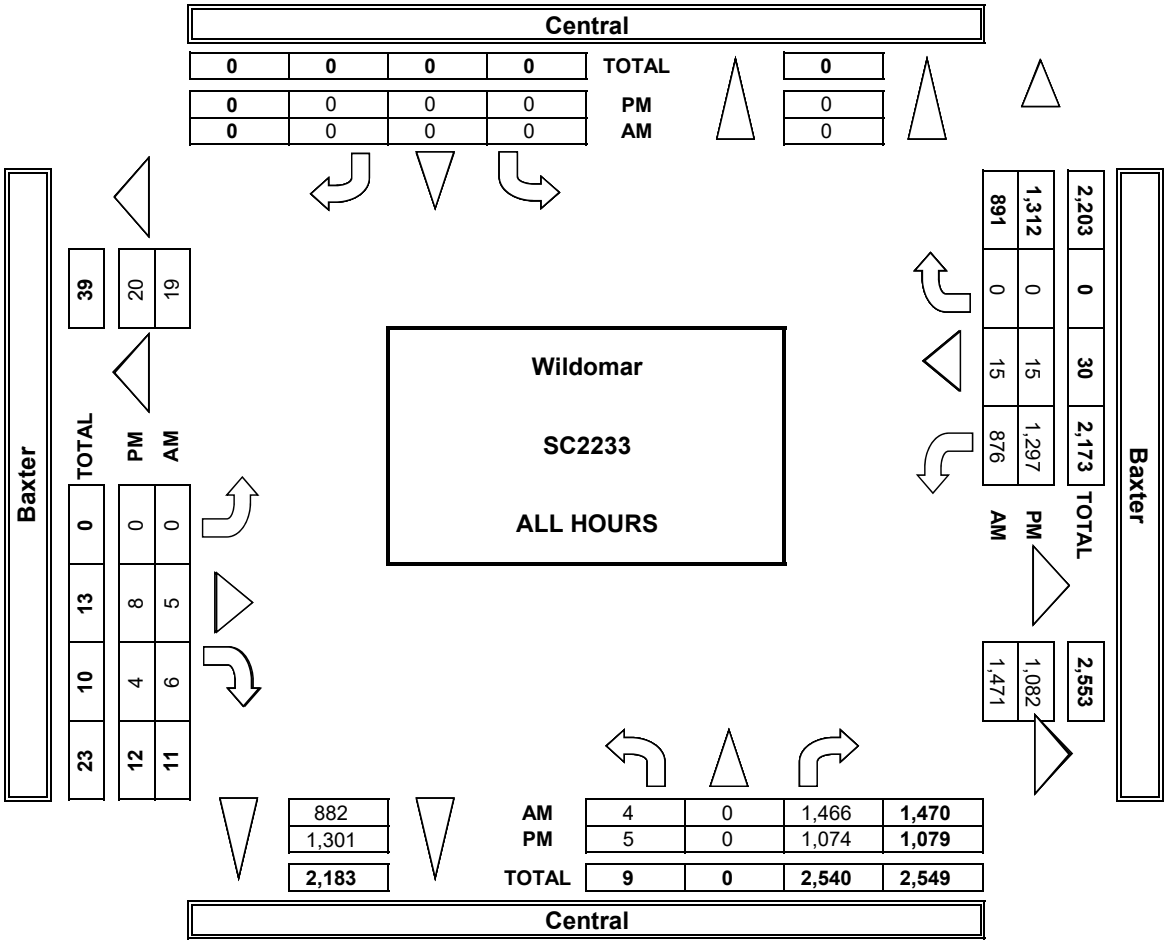
		NORTHBOUND Central			SOUTHBOUND Central			EASTBOUND Baxter			WESTBOUND Baxter			
	LANES:	NL 0	NT X	NR 1	SL X	ST X	SR X	EL X	ET 1	ER 0	WL 1	WT 0	WR X	TOTAL
AM	7:00 AM	0	0	183	0	0	0	0	0	0	136	1	0	320
	7:15 AM	2	0	185	0	0	0	0	0	0	121	4	0	312
	7:30 AM	0	0	242	0	0	0	0	3	0	116	3	0	364
	7:45 AM	1	0	207	0	0	0	0	0	3	139	2	0	352
	8:00 AM	0	0	173	0	0	0	0	0	1	101	1	0	276
	8:15 AM	0	0	165	0	0	0	0	1	0	96	2	0	264
	8:30 AM	1	0	173	0	0	0	0	0	1	88	1	0	264
	8:45 AM	0	0	138	0	0	0	0	1	1	79	1	0	220
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	4	0	1,466	0	0	0	0	5	6	876	15	0	2,372
	APPROACH %	0%	0%	100%	0%	0%	0%	0%	45%	55%	98%	2%	0%	
	APP/DEPART	1,470	/	0	0	/	882	11	/	1,471	891	/	19	0
	BEGIN PEAK HR		7:00 AM											
	VOLUMES	3	0	817	0	0	0	0	3	3	512	10	0	1,348
	APPROACH %	0%	0%	100%	0%	0%	0%	0%	50%	50%	98%	2%	0%	
	PEAK HR FACTOR		0.847			0.000			0.500			0.926		0.926
	APP/DEPART	820	/	0	0	/	515	6	/	820	522	/	13	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	2	0	139	0	0	0	0	2	1	168	3	0	315
	4:15 PM	0	0	141	0	0	0	0	3	0	169	2	0	315
	4:30 PM	1	0	142	0	0	0	0	0	0	178	2	0	323
	4:45 PM	0	0	144	0	0	0	0	0	1	185	2	0	332
	5:00 PM	0	0	117	0	0	0	0	2	0	169	0	0	288
	5:15 PM	0	0	106	0	0	0	0	0	0	184	4	0	294
	5:30 PM	0	0	146	0	0	0	0	1	1	134	1	0	283
	5:45 PM	2	0	139	0	0	0	0	0	1	110	1	0	253
	VOLUMES	5	0	1,074	0	0	0	0	8	4	1,297	15	0	2,403
	APPROACH %	0%	0%	100%	0%	0%	0%	0%	67%	33%	99%	1%	0%	
	APP/DEPART	1,079	/	0	0	/	1,301	12	/	1,082	1,312	/	20	0
	BEGIN PEAK HR		4:00 PM											
	VOLUMES	3	0	566	0	0	0	0	5	2	700	9	0	1,285
	APPROACH %	1%	0%	99%	0%	0%	0%	0%	71%	29%	99%	1%	0%	
	PEAK HR FACTOR		0.988			0.000			0.583			0.948		0.968
	APP/DEPART	569	/	0	0	/	702	7	/	571	709	/	12	0

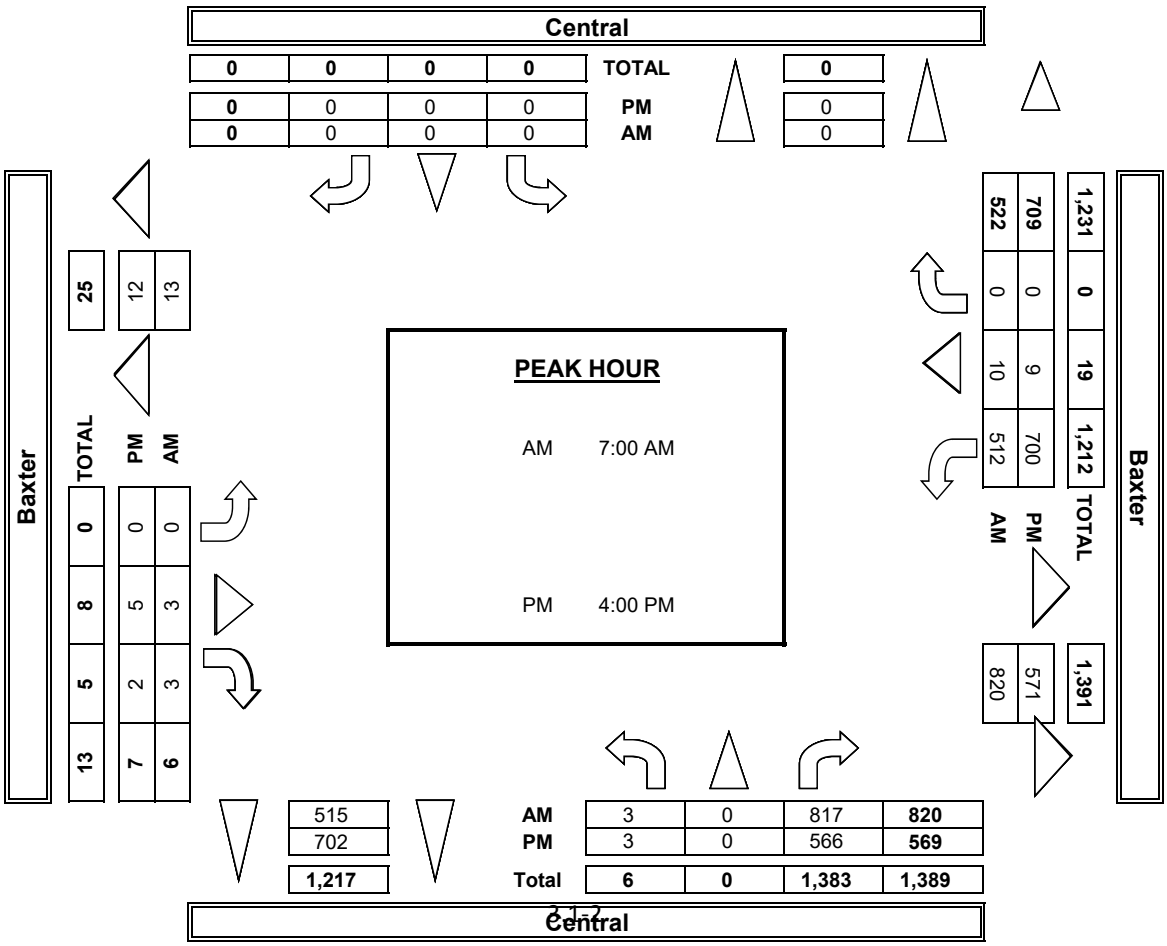
U-TURNS

NB	SB	EB	WB	TTL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Wildomar	PROJECT #:	SC2233
Tue, May 28, 19	NORTH & SOUTH:	I-15 SB Ramps	LOCATION #:	2
	EAST & WEST:	Baxter	CONTROL:	STOP ALL

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

Add U-Turns to Left Turns

		NORTHBOUND I-15 SB Ramps			SOUTHBOUND I-15 SB Ramps			EASTBOUND Baxter			WESTBOUND Baxter				U-TURNS					RTOR			
	LANES:	NL X	NT X	NR X	SL 0	ST 1	SR 1	EL X	ET 1	ER 0	WL 1	WT 1	WR X	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL	NRR X	SRR X	ERR X	WRR X
AM	7:00 AM	0	0	0	18	0	50	0	76	98	13	89	0	344	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	30	0	52	0	90	98	20	74	0	364	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	51	0	40	0	97	149	28	84	0	449	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	37	1	50	0	83	128	29	83	0	411	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	5	1	29	0	66	100	20	68	0	289	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	6	0	32	0	57	117	15	68	0	295	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	10	0	21	0	61	115	12	63	0	282	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	8	0	30	0	52	84	18	57	0	249	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	165	2	304	0	582	889	155	586	0	2,683	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	35%	0%	65%	0%	40%	60%	21%	79%	0%										
	APP/DEPART	0	/	0	471	/	1,046	1,471	/	747	741	/	890	0									
	BEGIN PEAK HR		7:00 AM																				
	VOLUMES	0	0	0	136	1	192	0	346	473	90	330	0	1,568						0	0	0	0
	APPROACH %	0%	0%	0%	41%	0%	58%	0%	42%	58%	21%	79%	0%										
	PEAK HR FACTOR		0.000			0.904			0.832			0.938		0.873									
	APP/DEPART	0	/	0	329	/	564	819	/	482	420	/	522	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	20	1	33	0	49	89	14	138	0	344	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	14	0	41	0	43	93	8	129	0	328	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	16	1	56	0	54	97	13	123	0	360	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	14	1	45	0	47	100	6	146	0	359	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	10	1	40	0	56	71	7	131	0	316	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	11	0	56	0	30	66	13	128	0	304	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	11	1	42	0	54	87	8	93	0	296	0	0	0	1	1	0	0	0	0
	5:45 PM	0	0	0	13	1	39	0	58	89	14	74	0	288	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	109	6	352	0	391	692	83	962	0	2,595	0	0	0	1	1	0	0	0	0
	APPROACH %	0%	0%	0%	23%	1%	75%	0%	36%	64%	8%	92%	0%										
	APP/DEPART	0	/	0	467	/	780	1,083	/	501	1,045	/	1,314	0									
	BEGIN PEAK HR		4:00 PM																				
	VOLUMES	0	0	0	64	3	175	0	193	379	41	536	0	1,391						0	0	0	0
	APPROACH %	0%	0%	0%	26%	1%	72%	0%	34%	66%	7%	93%	0%										
	PEAK HR FACTOR		0.000			0.829			0.947			0.949		0.966									
	APP/DEPART	0	/	0	242	/	423	572	/	257	577	/	711	0									

I-15 SB Ramps

NORTH SIDE

Baxter WEST SIDE EAST SIDE **Baxter**

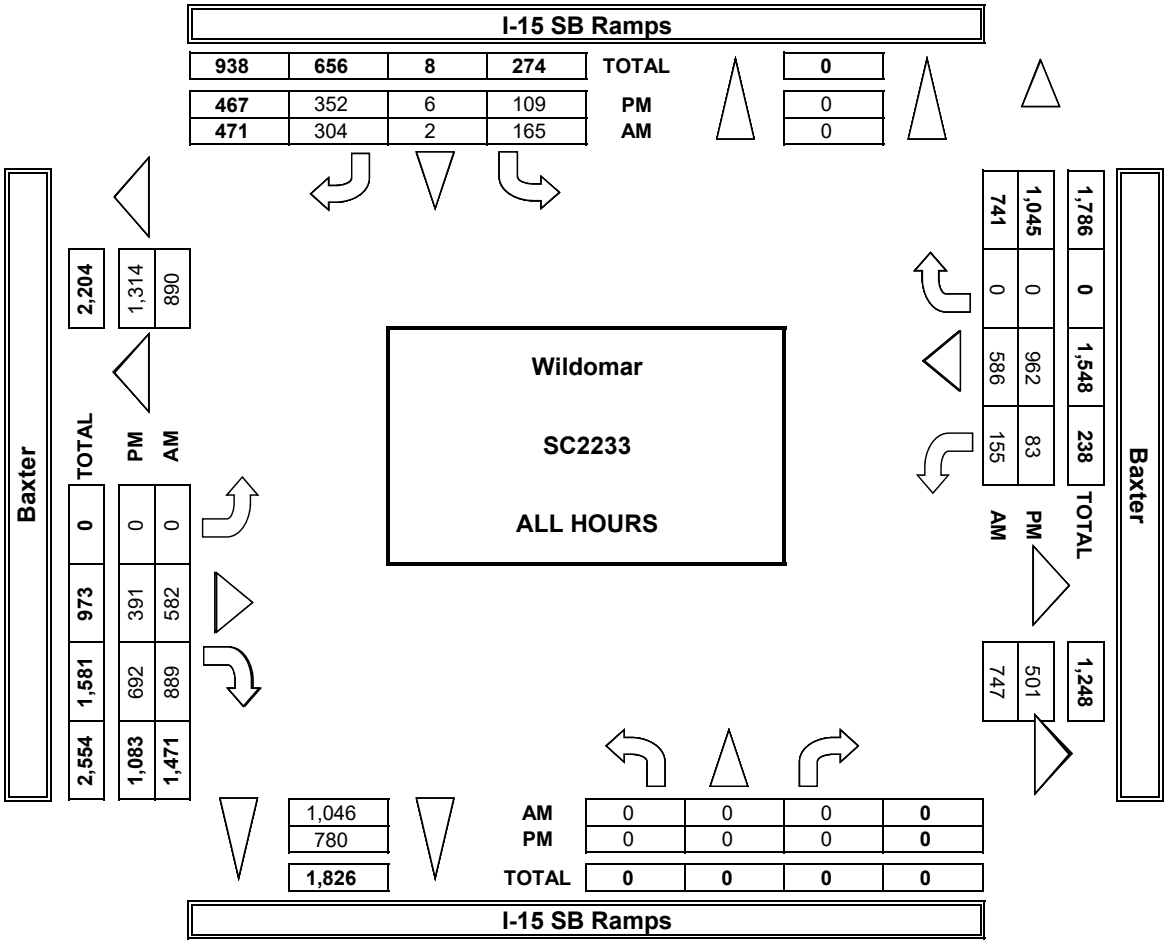
SOUTH SIDE

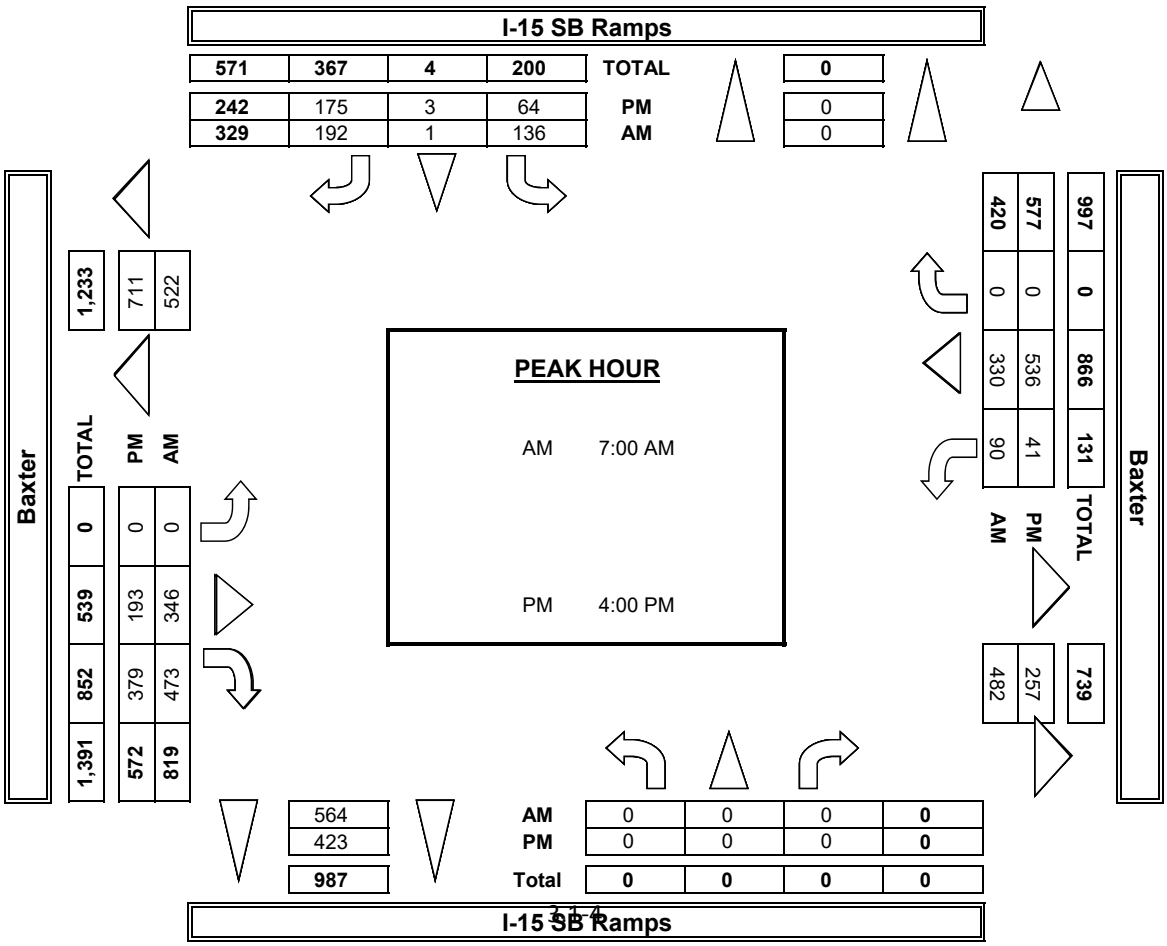
I-15 SB Ramps

		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		E SIDE	W SIDE	S SIDE	N SIDE	TOTAL	E SIDE	W SIDE	S SIDE	N SIDE	TOTAL	ES	WS	SS	NS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
	4:15 PM	1	0	0	1	2	0	0	0	0	0	1	0	0	1	2
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	1	0	0	3	4	0	0	0	2	2	1	0	0	1	2

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Wildomar	PROJECT #:	SC2233
5/28/19	NORTH & SOUTH:	I-15 SB Ramps	LOCATION #:	2
TUESDAY	EAST & WEST:	Baxter	CONTROL:	STOP ALL

CLASS 2:	NOTES:	AM		▲ N	
2-AXLE WORK VEHICLES/ TRUCKS		PM	◄ W		E ►
		MD			
		OTHER		S ▼	
		OTHER			

		NORTHBOUND I-15 SB Ramps			SOUTHBOUND I-15 SB Ramps			EASTBOUND Baxter			WESTBOUND Baxter				U-TURNS					RTOR			
	LANES:	NL X	NT X	NR X	SL 0	ST 1	SR 1	EL X	ET 1	ER 0	WL 1	WT 1	WR X	TOTAL	NB	SB	EB	WB	TTL	NRR X	SRR X	ERR X	WRR X
AM	7:00 AM	0	0	0	0	0	1	0	2	4	0	3	0	10	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	1	0	3	5	1	2	0	12	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	2	0	2	4	0	3	0	11	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	2	0	1	0	3	1	3	7	0	17	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	1	0	5	0	1	0	1	1	0	9	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	2	0	1	0	3	6	1	6	0	19	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	2	0	1	9	0	5	0	17	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	1	0	5	0	4	2	1	2	0	15	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	6	0	18	0	19	31	7	29	0	110	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	25%	0%	75%	0%	38%	62%	19%	81%	0%										
	APP/DEPART	0	/	0	24	/	38	50	/	25	36	/	47	0									
	BEGIN PEAK HR		7:45 AM																				
	VOLUMES	0	0	0	5	0	9	0	8	16	5	19	0	62						0	0	0	0
	APPROACH %	0%	0%	0%	36%	0%	64%	0%	33%	67%	21%	79%	0%										
	PEAK HR FACTOR		0.000			0.583			0.600			0.600		0.816									
	APP/DEPART	0	/	0	14	/	21	24	/	13	24	/	28	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	3	0	2	0	0	6	1	10	0	22	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	3	0	5	4	0	5	0	17	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	1	0	4	0	2	4	0	3	0	14	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	1	0	2	0	4	8	0	7	0	22	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	2	0	7	1	1	2	0	13	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	3	0	0	2	1	3	0	9	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	1	0	2	0	4	3	0	4	0	14	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	3	0	1	0	1	3	2	2	0	12	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	9	0	19	0	23	31	5	36	0	123	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	32%	0%	68%	0%	43%	57%	12%	88%	0%										
	APP/DEPART	0	/	0	28	/	36	54	/	32	41	/	55	0									
	BEGIN PEAK HR		4:00 PM																				
	VOLUMES	0	0	0	5	0	11	0	11	22	1	25	0	75						0	0	0	0
	APPROACH %	0%	0%	0%	31%	0%	69%	0%	33%	67%	4%	96%	0%										
	PEAK HR FACTOR		0.000			0.800			0.688			0.591		0.852									
	APP/DEPART	0	/	0	16	/	23	33	/	16	26	/	36	0									

I-15 SB Ramps

NORTH SIDE

Baxter WEST SIDE EAST SIDE **Baxter**

SOUTH SIDE

I-15 SB Ramps

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Wildomar	PROJECT #:	SC2233
5/28/19	NORTH & SOUTH:	I-15 SB Ramps	LOCATION #:	2
TUESDAY	EAST & WEST:	Baxter	CONTROL:	STOP ALL

CLASS 3:	NOTES:
3-AXLE TRUCKS	

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

	NORTHBOUND I-15 SB Ramps			SOUTHBOUND I-15 SB Ramps			EASTBOUND Baxter			WESTBOUND Baxter			
LANES:	NL X	NT X	NR X	SL 0	ST 1	SR 1	EL X	ET 1	ER 0	WL 1	WT 1	WR X	TOTAL
AM													
7:00 AM	0	0	0	1	0	1	0	2	1	0	0	0	5
7:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	1	1	0	2	0	4
7:45 AM	0	0	0	0	0	1	0	1	1	0	1	0	4
8:00 AM	0	0	0	0	0	1	0	0	2	0	2	0	5
8:15 AM	0	0	0	0	0	1	0	0	3	1	0	0	5
8:30 AM	0	0	0	0	0	0	0	0	5	0	1	0	6
8:45 AM	0	0	0	0	0	0	0	0	3	0	1	0	4
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	1	0	5	0	4	16	1	7	0	34
APPROACH %	0%	0%	0%	17%	0%	83%	0%	20%	80%	13%	88%	0%	
APP/DEPART	0	/	0	6	/	17	20	/	5	8	/	12	0
BEGIN PEAK HR		7:45 AM											
VOLUMES	0	0	0	0	0	2	0	0	13	1	4	0	20
APPROACH %	0%	0%	0%	0%	0%	100%	0%	0%	100%	20%	80%	0%	
PEAK HR FACTOR		0.000			0.500			0.650			0.625		0.833
APP/DEPART	0	/	0	2	/	14	13	/	0	5	/	6	0
PM													
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	1	2	0	4	0	7
4:15 PM	0	0	0	0	0	0	0	0	1	0	1	0	2
4:30 PM	0	0	0	0	1	0	0	1	1	0	0	0	3
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	2	0	0	0	0	2
5:30 PM	0	0	0	0	0	1	0	1	0	0	1	0	3
5:45 PM	0	0	0	0	0	1	0	1	0	0	1	0	3
VOLUMES	0	0	0	0	1	3	0	7	4	0	7	0	22
APPROACH %	0%	0%	0%	0%	25%	75%	0%	64%	36%	0%	100%	0%	
APP/DEPART	0	/	0	4	/	5	11	/	7	7	/	10	0
BEGIN PEAK HR		4:00 PM											
VOLUMES	0	0	0	0	1	1	0	2	4	0	5	0	13
APPROACH %	0%	0%	0%	0%	50%	50%	0%	33%	67%	0%	100%	0%	
PEAK HR FACTOR		0.000			0.500			0.500			0.313		0.464
APP/DEPART	0	/	0	2	/	5	6	/	2	5	/	6	0

U-TURNS

NB	SB	EB	WB	TTL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Wildomar	PROJECT #:	SC2233
5/28/19	NORTH & SOUTH:	I-15 SB Ramps	LOCATION #:	2
TUESDAY	EAST & WEST:	Baxter	CONTROL:	STOP ALL

CLASS 4:	NOTES:
4 OR MORE AXLE TRUCKS	

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

	NORTHBOUND I-15 SB Ramps			SOUTHBOUND I-15 SB Ramps			EASTBOUND Baxter			WESTBOUND Baxter			
LANES:	NL X	NT X	NR X	SL 0	ST 1	SR 1	EL X	ET 1	ER 0	WL 1	WT 1	WR X	TOTAL
AM													
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	2	2	0	0	0	4
7:30 AM	0	0	0	0	0	2	0	1	0	1	1	0	5
7:45 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
8:00 AM	0	0	0	0	0	0	0	1	1	0	2	0	4
8:15 AM	0	0	0	0	0	0	0	0	2	1	1	0	4
8:30 AM	0	0	0	0	0	0	0	1	1	0	1	0	3
8:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	1
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	2	0	6	7	2	6	0	23
APPROACH %	0%	0%	0%	0%	0%	100%	0%	46%	54%	25%	75%	0%	
APP/DEPART	0	/	0	2	/	9	13	/	6	8	/	8	0
BEGIN PEAK HR		7:15 AM											
VOLUMES	0	0	0	0	0	2	0	3	3	2	5	0	15
APPROACH %	0%	0%	0%	0%	0%	100%	0%	50%	50%	29%	71%	0%	
PEAK HR FACTOR		0.000			0.250			0.375			0.875		0.750
APP/DEPART	0	/	0	2	/	5	6	/	3	7	/	7	0
PM													
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	2	0	0	3	0	5
4:15 PM	0	0	0	0	0	0	0	2	0	0	3	0	5
4:30 PM	0	0	0	0	0	0	0	0	0	0	3	0	3
4:45 PM	0	0	0	1	0	2	0	0	0	0	2	0	5
5:00 PM	0	0	0	0	0	1	0	0	0	0	1	0	2
5:15 PM	0	0	0	0	0	2	0	0	0	0	1	0	3
5:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
VOLUMES	0	0	0	1	0	6	0	5	0	0	14	0	26
APPROACH %	0%	0%	0%	14%	0%	86%	0%	100%	0%	0%	100%	0%	
APP/DEPART	0	/	0	7	/	0	5	/	6	14	/	20	0
BEGIN PEAK HR		4:00 PM											
VOLUMES	0	0	0	1	0	2	0	4	0	0	11	0	18
APPROACH %	0%	0%	0%	33%	0%	67%	0%	100%	0%	0%	100%	0%	
PEAK HR FACTOR		0.000			0.250			0.500			0.917		0.900
APP/DEPART	0	/	0	3	/	0	4	/	5	11	/	13	0

U-TURNS				
NB	SB	EB	WB	TTL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Wildomar	PROJECT #:	SC2233
Tue, May 28, 19	NORTH & SOUTH:	I-15 NB Ramps	LOCATION #:	3
	EAST & WEST:	Baxter	CONTROL:	STOP ALL

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

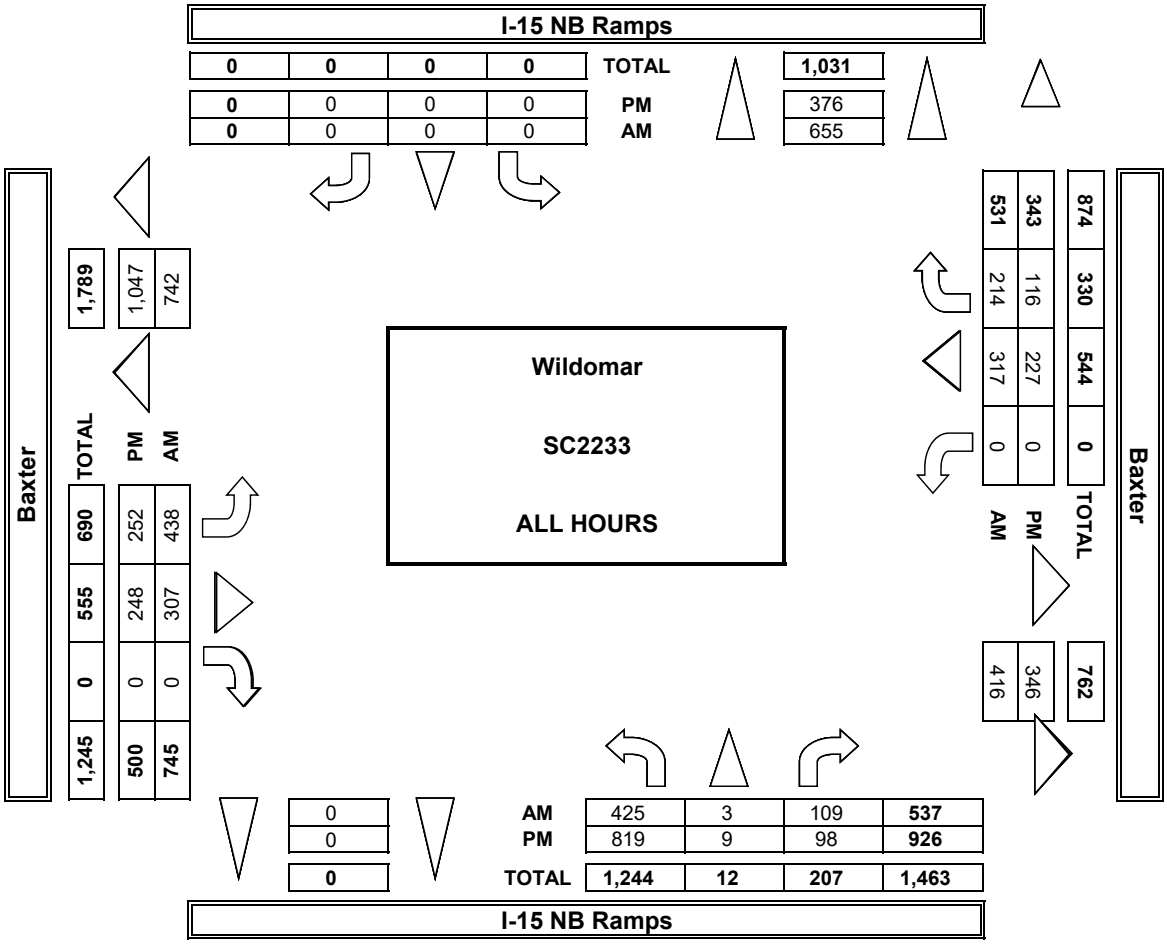
Add U-Turns to Left Turns

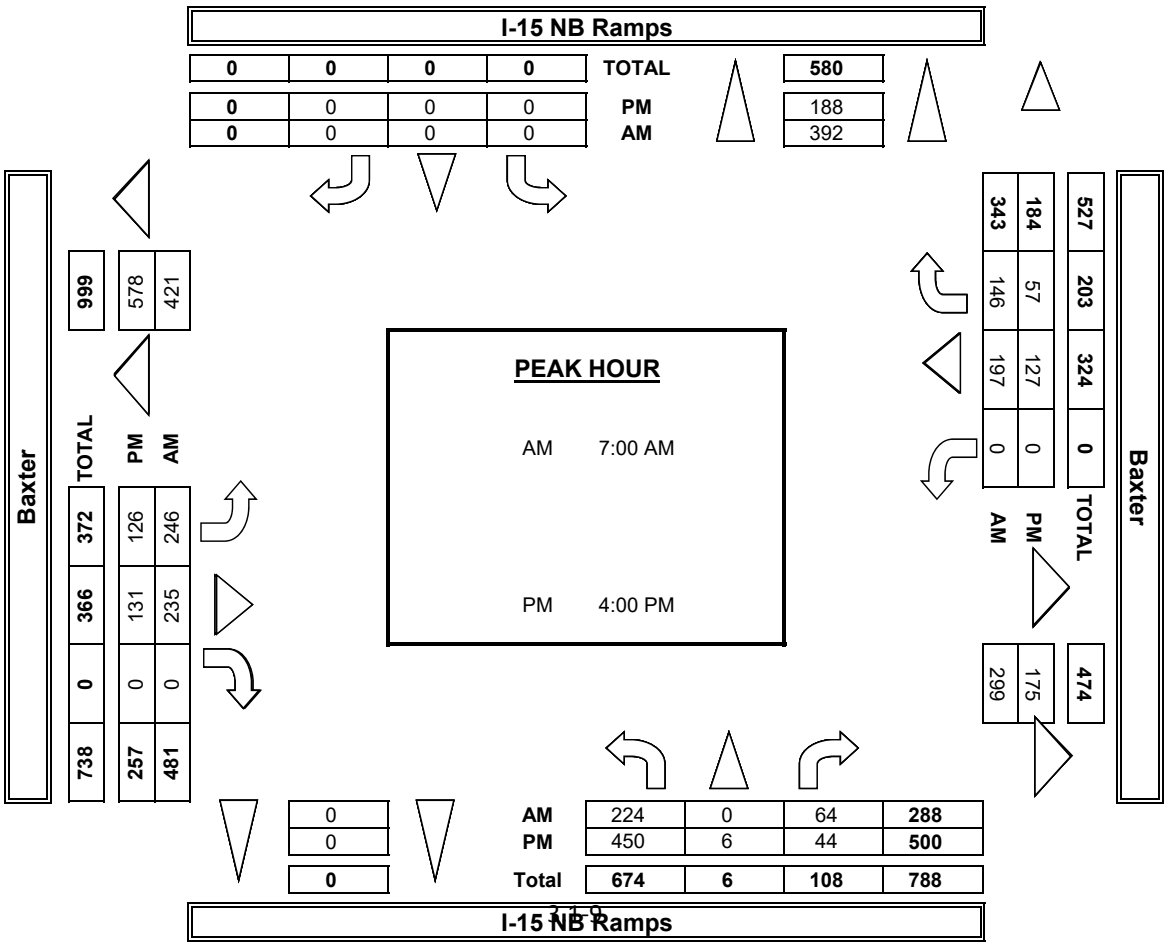
		NORTHBOUND I-15 NB Ramps			SOUTHBOUND I-15 NB Ramps			EASTBOUND Baxter			WESTBOUND Baxter				U-TURNS					RTOR			
	LANES:	NL 0	NT 1	NR 1	SL X	ST X	SR X	EL 1	ET 1	ER X	WL X	WT 1	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL	NRR X	SRR X	ERR X	WRR X
AM	7:00 AM	52	0	10	0	0	0	61	33	0	0	49	30	235	0	0	0	0	0	0	0	0	0
AM	7:15 AM	56	0	13	0	0	0	60	60	0	0	40	22	251	0	0	0	0	0	0	0	0	0
AM	7:30 AM	61	0	24	0	0	0	69	78	0	0	51	37	320	0	0	0	0	0	0	0	0	0
AM	7:45 AM	55	0	17	0	0	0	56	64	0	0	57	57	306	0	0	0	0	0	0	0	0	0
AM	8:00 AM	48	1	8	0	0	0	61	10	0	0	40	30	198	0	0	0	0	0	0	0	0	0
AM	8:15 AM	52	1	9	0	0	0	42	21	0	0	31	12	168	0	0	0	0	0	0	0	0	0
AM	8:30 AM	54	1	13	0	0	0	51	20	0	0	22	11	172	0	0	0	0	0	0	0	0	0
AM	8:45 AM	47	0	15	0	0	0	38	21	0	0	27	15	163	0	0	0	0	0	0	0	0	0
AM	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	VOLUMES	425	3	109	0	0	0	438	307	0	0	317	214	1,813	0	0	0	0	0	0	0	0	0
AM	APPROACH %	79%	1%	20%	0%	0%	0%	59%	41%	0%	0%	60%	40%										
AM	APP/DEPART	537	/	655	0	/	0	745	/	416	531	/	742	0									
AM	BEGIN PEAK HR		7:00 AM																				
AM	VOLUMES	224	0	64	0	0	0	246	235	0	0	197	146	1,112						0	0	0	0
AM	APPROACH %	78%	0%	22%	0%	0%	0%	51%	49%	0%	0%	57%	43%										
AM	PEAK HR FACTOR		0.847			0.000			0.818			0.752		0.869									
AM	APP/DEPART	288	/	392	0	/	0	481	/	299	343	/	421	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	114	1	8	0	0	0	30	39	0	0	38	11	241	0	0	1	0	1	0	0	0	0
PM	4:15 PM	110	0	13	0	0	0	33	24	0	0	27	14	221	0	0	0	0	0	0	0	0	0
PM	4:30 PM	103	3	12	0	0	0	32	38	0	0	33	15	236	0	0	0	0	0	0	0	0	0
PM	4:45 PM	123	2	11	0	0	0	31	30	0	0	29	17	243	0	0	0	0	0	0	0	0	0
PM	5:00 PM	118	0	9	0	0	0	35	31	0	0	20	9	222	0	0	0	0	0	0	0	0	0
PM	5:15 PM	118	0	14	0	0	0	17	24	0	0	23	7	203	0	0	0	0	0	0	0	0	0
PM	5:30 PM	79	1	13	0	0	0	34	31	0	0	24	17	199	0	0	0	0	0	0	0	0	0
PM	5:45 PM	54	2	18	0	0	0	40	31	0	0	33	26	204	0	0	0	0	0	0	0	0	0
PM	VOLUMES	819	9	98	0	0	0	252	248	0	0	227	116	1,769	0	0	1	0	1	0	0	0	0
PM	APPROACH %	88%	1%	11%	0%	0%	0%	50%	50%	0%	0%	66%	34%										
PM	APP/DEPART	926	/	376	0	/	0	500	/	346	343	/	1,047	0									
PM	BEGIN PEAK HR		4:00 PM																				
PM	VOLUMES	450	6	44	0	0	0	126	131	0	0	127	57	941						0	0	0	0
PM	APPROACH %	90%	1%	9%	0%	0%	0%	49%	51%	0%	0%	69%	31%										
PM	PEAK HR FACTOR		0.919			0.000			0.918			0.939		0.968									
PM	APP/DEPART	500	/	188	0	/	0	257	/	175	184	/	578	0									

		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		E SIDE	W SIDE	S SIDE	N SIDE	TOTAL	E SIDE	W SIDE	S SIDE	N SIDE	TOTAL	ES	WS	SS	NS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	7:15 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
AM	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	TOTAL	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
PM	4:15 PM	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1
PM	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	5:15 PM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
PM	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	TOTAL	0	0	1	2	3	0	0	0	2	2	0	0	1	0	1

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Wildomar	PROJECT #:	SC2233
5/28/19	NORTH & SOUTH:	I-15 NB Ramps	LOCATION #:	3
TUESDAY	EAST & WEST:	Baxter	CONTROL:	STOP ALL

CLASS 2:	NOTES:	AM		▲ N	
2-AXLE WORK VEHICLES/ TRUCKS		PM	◄ W		E ►
		MD			
		OTHER		S ▼	
		OTHER			

		NORTHBOUND I-15 NB Ramps			SOUTHBOUND I-15 NB Ramps			EASTBOUND Baxter			WESTBOUND Baxter				U-TURNS					RTOR			
	LANES:	NL 0	NT 1	NR 1	SL X	ST X	SR X	EL 1	ET 1	ER X	WL X	WT 1	WR 0	TOTAL	NB	SB	EB	WB	TTL	NRR X	SRR X	ERR X	WRR X
AM	7:00 AM	3	0	0	0	0	0	2	0	0	0	0	1	6	0	0	0	0	0	0	0	0	0
	7:15 AM	2	0	0	0	0	0	1	2	0	0	1	2	8	0	0	0	0	0	0	0	0	0
	7:30 AM	2	0	2	0	0	0	1	1	0	0	1	0	7	0	0	0	0	0	0	0	0	0
	7:45 AM	5	0	3	0	0	0	3	2	0	0	5	1	19	0	0	0	0	0	0	0	0	0
	8:00 AM	2	0	0	0	0	0	2	0	0	0	0	2	6	0	0	0	0	0	0	0	0	0
	8:15 AM	5	0	0	0	0	0	4	1	0	0	2	1	13	0	0	0	0	0	0	0	0	0
	8:30 AM	4	0	0	0	0	0	1	0	0	0	1	0	6	0	0	0	0	0	0	0	0	0
	8:45 AM	2	0	0	0	0	0	2	3	0	0	1	2	10	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	25	0	5	0	0	0	16	9	0	0	11	9	75	0	0	0	0	0	0	0	0	0
	APPROACH %	83%	0%	17%	0%	0%	0%	64%	36%	0%	0%	55%	45%										
	APP/DEPART	30	/	25	0	/	0	25	/	14	20	/	36	0									
	BEGIN PEAK HR		7:30 AM																				
	VOLUMES	14	0	5	0	0	0	10	4	0	0	8	4	45						0	0	0	0
	APPROACH %	74%	0%	26%	0%	0%	0%	71%	29%	0%	0%	67%	33%										
	PEAK HR FACTOR		0.594			0.000			0.700			0.500		0.592									
	APP/DEPART	19	/	14	0	/	0	14	/	9	12	/	22	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	9	1	1	0	0	0	1	2	0	0	2	0	16	0	0	1	0	1	0	0	0	0
	4:15 PM	3	0	1	0	0	0	2	3	0	0	2	0	11	0	0	0	0	0	0	0	0	0
	4:30 PM	3	0	2	0	0	0	1	2	0	0	0	0	8	0	0	0	0	0	0	0	0	0
	4:45 PM	3	1	0	0	0	0	2	3	0	0	3	2	14	0	0	0	0	0	0	0	0	0
	5:00 PM	1	0	2	0	0	0	6	1	0	0	2	0	12	0	0	0	0	0	0	0	0	0
	5:15 PM	1	0	0	0	0	0	0	0	0	0	3	0	4	0	0	0	0	0	0	0	0	0
	5:30 PM	2	0	0	0	0	0	2	3	0	0	2	1	10	0	0	0	0	0	0	0	0	0
	5:45 PM	2	1	1	0	0	0	1	3	0	0	2	0	10	0	0	0	0	0	0	0	0	0
	VOLUMES	24	3	7	0	0	0	15	17	0	0	16	3	85	0	0	1	0	1	0	0	0	0
	APPROACH %	71%	9%	21%	0%	0%	0%	47%	53%	0%	0%	84%	16%										
	APP/DEPART	34	/	20	0	/	0	32	/	24	19	/	41	0									
	BEGIN PEAK HR		4:00 PM																				
	VOLUMES	18	2	4	0	0	0	5	10	0	0	7	2	49						0	0	0	0
	APPROACH %	75%	8%	17%	0%	0%	0%	31%	63%	0%	0%	78%	22%										
	PEAK HR FACTOR		0.545			0.000			0.800			0.450		0.766									
	APP/DEPART	24	/	9	0	/	0	16	/	14	9	/	26	0									

I-15 NB Ramps

NORTH SIDE

Baxter WEST SIDE

EAST SIDE **Baxter**

SOUTH SIDE

I-15 NB Ramps

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Wildomar	PROJECT #:	SC2233
5/28/19	NORTH & SOUTH:	I-15 NB Ramps	LOCATION #:	3
TUESDAY	EAST & WEST:	Baxter	CONTROL:	STOP ALL

CLASS 3:	NOTES:
3-AXLE TRUCKS	

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND I-15 NB Ramps			SOUTHBOUND I-15 NB Ramps			EASTBOUND Baxter			WESTBOUND Baxter				U-TURNS					RTOR			
	LANES:	NL 0	NT 1	NR 1	SL X	ST X	SR X	EL 1	ET 1	ER X	WL X	WT 1	WR 0	TOTAL	NB	SB	EB	WB	TTL	NRR X	SRR X	ERR X	WRR X
AM	7:00 AM	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	1	0	0	0	2	0	3	0	0	0	0	0	0	0	0	0
	7:45 AM	1	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
	8:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	2	0	0	0	0	0	2	3	0	0	6	1	14	0	0	0	0	0	0	0	0	0
	APPROACH %	100%	0%	0%	0%	0%	0%	40%	60%	0%	0%	86%	14%										
	APP/DEPART	2	/	3	0	/	0	5	/	3	7	/	8	0									
	BEGIN PEAK HR		7:30 AM																				
	VOLUMES	1	0	0	0	0	0	2	0	0	0	5	1	9						0	0	0	0
	APPROACH %	100%	0%	0%	0%	0%	0%	100%	0%	0%	0%	83%	17%										
	PEAK HR FACTOR		0.250			0.000			0.500			0.500		0.750									
	APP/DEPART	1	/	3	0	/	0	2	/	0	6	/	6	0									
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	3	0	0	0	0	0	0	1	0	0	1	0	5	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	1	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0
	5:45 PM	1	0	0	0	0	0	1	0	0	0	0	2	4	0	0	0	0	0	0	0	0	0
	VOLUMES	4	0	0	0	0	0	5	2	0	0	3	2	16	0	0	0	0	0	0	0	0	0
	APPROACH %	100%	0%	0%	0%	0%	0%	71%	29%	0%	0%	60%	40%										
	APP/DEPART	4	/	7	0	/	0	7	/	2	5	/	7	0									
	BEGIN PEAK HR		5:00 PM																				
	VOLUMES	1	0	0	0	0	0	5	0	0	0	1	2	9						0	0	0	0
	APPROACH %	100%	0%	0%	0%	0%	0%	100%	0%	0%	0%	33%	67%										
	PEAK HR FACTOR		0.250			0.000			0.625			0.375		0.563									
	APP/DEPART	1	/	7	0	/	0	5	/	0	3	/	2	0									

I-15 NB Ramps

NORTH SIDE

Baxter WEST SIDE

EAST SIDE **Baxter**

SOUTH SIDE

I-15 NB Ramps

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Wildomar	PROJECT #:	SC2233
5/28/19	NORTH & SOUTH:	I-15 NB Ramps	LOCATION #:	3
TUESDAY	EAST & WEST:	Baxter	CONTROL:	STOP ALL

CLASS 4:	NOTES:
4 OR MORE AXLE TRUCKS	

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

	NORTHBOUND I-15 NB Ramps			SOUTHBOUND I-15 NB Ramps			EASTBOUND Baxter			WESTBOUND Baxter			
LANES:	NL 0	NT 1	NR 1	SL X	ST X	SR X	EL 1	ET 1	ER X	WL X	WT 1	WR 0	TOTAL
AM													
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	1	1	0	0	0	0	2
7:30 AM	0	0	0	0	0	0	1	0	0	0	2	0	3
7:45 AM	1	0	0	0	0	0	1	0	0	0	0	0	2
8:00 AM	1	0	1	0	0	0	0	1	0	0	1	0	4
8:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	2
8:30 AM	1	0	0	0	0	0	1	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	2	2
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	3	0	1	0	0	0	4	2	0	0	5	2	17
APPROACH %	75%	0%	25%	0%	0%	0%	67%	33%	0%	0%	71%	29%	
APP/DEPART	4	/	6	0	/	0	6	/	3	7	/	8	0
BEGIN PEAK HR		7:15 AM											
VOLUMES	2	0	1	0	0	0	2	1	0	0	5	0	11
APPROACH %	67%	0%	33%	0%	0%	0%	67%	33%	0%	0%	100%	0%	
PEAK HR FACTOR		0.375			0.000			0.375			0.625		0.688
APP/DEPART	3	/	2	0	/	0	3	/	2	5	/	7	0
PM													
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	2	0	0	0	0	0	2	0	0	0	1	1	6
4:15 PM	2	0	0	0	0	0	1	1	0	0	1	0	5
4:30 PM	2	0	0	0	0	0	0	0	0	0	1	0	3
4:45 PM	2	0	0	0	0	0	0	1	0	0	0	0	3
5:00 PM	0	0	1	0	0	0	0	0	0	0	1	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
5:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	1
5:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
VOLUMES	9	0	1	0	0	0	4	2	0	0	5	1	22
APPROACH %	90%	0%	10%	0%	0%	0%	67%	33%	0%	0%	83%	17%	
APP/DEPART	10	/	5	0	/	0	6	/	3	6	/	14	0
BEGIN PEAK HR		4:00 PM											
VOLUMES	8	0	0	0	0	0	3	2	0	0	3	1	17
APPROACH %	100%	0%	0%	0%	0%	0%	60%	40%	0%	0%	75%	25%	
PEAK HR FACTOR		1.000			0.000			0.625			0.500		0.708
APP/DEPART	8	/	4	0	/	0	5	/	2	4	/	11	0

U-TURNS

NB	SB	EB	WB	TTL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

APPENDIX 3.2:

EXISTING (2019) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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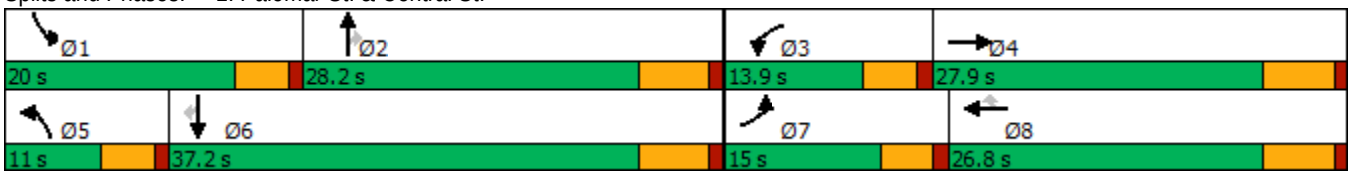
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	136	321	68	217	138	67	295	83	227	338	128
Future Volume (vph)	136	321	68	217	138	67	295	83	227	338	128
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	26.8	9.6	26.8	26.8	9.6	26.8	26.8	9.6	26.8	26.8
Total Split (s)	15.0	27.9	13.9	26.8	26.8	11.0	28.2	28.2	20.0	37.2	37.2
Total Split (%)	16.7%	31.0%	15.4%	29.8%	29.8%	12.2%	31.3%	31.3%	22.2%	41.3%	41.3%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	3.6	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	5.8	4.6	5.8	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 82.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Palomar St. & Central St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	321	100	68	217	138	67	295	83	227	338	128
Future Volume (veh/h)	136	321	100	68	217	138	67	295	83	227	338	128
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	148	349	109	74	236	150	73	321	90	247	367	139
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	184	568	175	95	304	258	94	563	477	288	767	650
Arrive On Green	0.10	0.21	0.21	0.05	0.16	0.16	0.05	0.30	0.30	0.16	0.41	0.41
Sat Flow, veh/h	1781	2676	823	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	148	230	228	74	236	150	73	321	90	247	367	139
Grp Sat Flow(s),veh/h/ln	1781	1777	1722	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.2	9.0	9.2	3.1	9.3	6.7	3.1	11.1	3.2	10.3	11.0	4.3
Cycle Q Clear(g_c), s	6.2	9.0	9.2	3.1	9.3	6.7	3.1	11.1	3.2	10.3	11.0	4.3
Prop In Lane	1.00		0.48	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	184	377	366	95	304	258	94	563	477	288	767	650
V/C Ratio(X)	0.80	0.61	0.62	0.78	0.78	0.58	0.78	0.57	0.19	0.86	0.48	0.21
Avail Cap(c_a), veh/h	242	513	497	216	513	435	149	563	477	358	767	650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	27.3	27.4	35.8	30.7	29.7	35.8	22.6	19.8	31.2	16.6	14.6
Incr Delay (d2), s/veh	10.3	1.6	1.7	5.0	4.3	2.1	5.2	4.2	0.9	13.4	2.1	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	3.7	3.6	1.4	4.2	2.5	1.4	5.0	1.2	5.2	4.6	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.9	28.9	29.1	40.8	35.0	31.7	41.0	26.7	20.7	44.6	18.7	15.4
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	B	B
Approach Vol, veh/h		606			460			484			753	
Approach Delay, s/veh		32.6			34.9			27.8			26.6	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	28.8	8.7	22.1	8.6	37.2	12.5	18.2
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	15.4	22.4	9.3	22.1	6.4	31.4	10.4	21.0
Max Q Clear Time (g_c+I1), s	12.3	13.1	5.1	11.2	5.1	13.0	8.2	11.3
Green Ext Time (p_c), s	0.1	1.4	0.0	1.8	0.0	2.3	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	30.1
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	817	512	10	3	3
Future Vol, veh/h	3	817	512	10	3	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	878	551	11	3	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	562	0	-	0	1441	557
Stage 1	-	-	-	-	557	-
Stage 2	-	-	-	-	884	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1009	-	-	-	146	530
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	404	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1009	-	-	-	145	530
Mov Cap-2 Maneuver	-	-	-	-	145	-
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	404	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	21.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1009	-	-	-	228
HCM Lane V/C Ratio	0.003	-	-	-	0.028
HCM Control Delay (s)	8.6	0	-	-	21.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Intersection Delay, s/veh	154.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	346	473	90	331	0	0	0	0	136	1	192
Future Vol, veh/h	0	346	473	90	331	0	0	0	0	136	1	192
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	0	5	4	6	6	0	0	0	0	2	0	5
Mvmt Flow	0	398	544	103	380	0	0	0	0	156	1	221
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	272.7	24.5	24.8
HCM LOS	F	C	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	41%
Vol Thru, %	42%	0%	100%	0%
Vol Right, %	58%	0%	0%	58%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	819	90	331	329
LT Vol	0	90	0	136
Through Vol	346	0	331	1
RT Vol	473	0	0	192
Lane Flow Rate	941	103	380	378
Geometry Grp	5	7	7	2
Degree of Util (X)	1.551	0.211	0.724	0.683
Departure Headway (Hd)	5.93	8.083	7.567	7.391
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	621	447	483	492
Service Time	3.971	5.783	5.267	5.391
HCM Lane V/C Ratio	1.515	0.23	0.787	0.768
HCM Control Delay	272.7	12.9	27.7	24.8
HCM Lane LOS	F	B	D	C
HCM 95th-tile Q	48.7	0.8	5.8	5.1

Intersection	
Intersection Delay, s/veh	17.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	246	236	0	0	197	146	224	0	64	0	0	0
Future Vol, veh/h	246	236	0	0	197	146	224	0	64	0	0	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	5	4	0	0	6	3	6	0	8	0	0	0
Mvmt Flow	283	271	0	0	226	168	257	0	74	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	15.9	18.2	17.9
HCM LOS	C	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	78%	100%	0%	0%
Vol Thru, %	0%	0%	100%	57%
Vol Right, %	22%	0%	0%	43%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	288	246	236	343
LT Vol	224	246	0	0
Through Vol	0	0	236	197
RT Vol	64	0	0	146
Lane Flow Rate	331	283	271	394
Geometry Grp	2	7	7	5
Degree of Util (X)	0.583	0.533	0.472	0.63
Departure Headway (Hd)	6.336	6.791	6.265	5.754
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	569	529	572	623
Service Time	4.395	4.559	4.032	3.817
HCM Lane V/C Ratio	0.582	0.535	0.474	0.632
HCM Control Delay	17.9	17.1	14.6	18.2
HCM Lane LOS	C	C	B	C
HCM 95th-tile Q	3.7	3.1	2.5	4.4

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	403	95	167	738	25	65
Future Vol, veh/h	403	95	167	738	25	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	175	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	463	109	192	848	29	75

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	572	0	1750	518
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	1232	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1001	-	94	558
Stage 1	-	-	-	-	598	-
Stage 2	-	-	-	-	275	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1001	-	76	558
Mov Cap-2 Maneuver	-	-	-	-	203	-
Stage 1	-	-	-	-	598	-
Stage 2	-	-	-	-	222	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	18.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	376	-	-	1001	-
HCM Lane V/C Ratio	0.275	-	-	0.192	-
HCM Control Delay (s)	18.2	-	-	9.4	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1.1	-	-	0.7	-

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	119	180	196	61	130	146
Future Vol, veh/h	119	180	196	61	130	146
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	145	220	239	74	159	178

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	313	0	-	0	749	239
Stage 1	-	-	-	-	239	-
Stage 2	-	-	-	-	510	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1247	-	-	-	379	800
Stage 1	-	-	-	-	801	-
Stage 2	-	-	-	-	603	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1247	-	-	-	329	800
Mov Cap-2 Maneuver	-	-	-	-	443	-
Stage 1	-	-	-	-	695	-
Stage 2	-	-	-	-	603	-

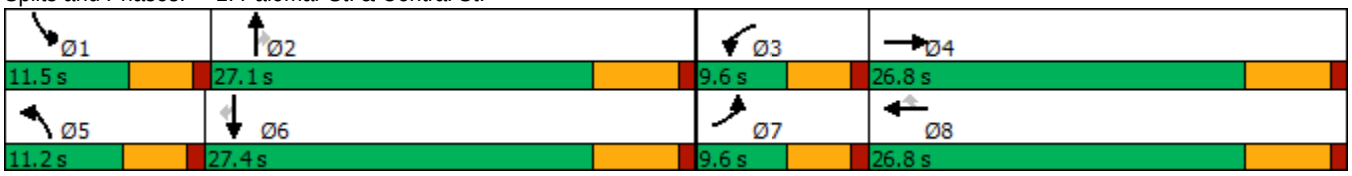
Approach	EB	WB	SB
HCM Control Delay, s	3.3	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1247	-	-	-	443	800
HCM Lane V/C Ratio	0.116	-	-	-	0.358	0.223
HCM Control Delay (s)	8.3	0	-	-	17.6	10.8
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.4	-	-	-	1.6	0.8

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	50	257	67	289	232	54	258	70	137	188	72
Future Volume (vph)	50	257	67	289	232	54	258	70	137	188	72
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	26.8	9.6	26.8	26.8	9.6	26.8	26.8	9.6	26.8	26.8
Total Split (s)	9.6	26.8	9.6	26.8	26.8	11.2	27.1	27.1	11.5	27.4	27.4
Total Split (%)	12.8%	35.7%	12.8%	35.7%	35.7%	14.9%	36.1%	36.1%	15.3%	36.5%	36.5%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	3.6	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	5.8	4.6	5.8	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 67.5
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Palomar St. & Central St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	257	20	67	289	232	54	258	70	137	188	72
Future Volume (veh/h)	50	257	20	67	289	232	54	258	70	137	188	72
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	51	262	20	68	295	237	55	263	71	140	192	73
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	83	660	50	97	384	325	86	614	521	176	709	601
Arrive On Green	0.05	0.20	0.20	0.05	0.21	0.21	0.05	0.33	0.33	0.10	0.38	0.38
Sat Flow, veh/h	1781	3348	254	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	51	138	144	68	295	237	55	263	71	140	192	73
Grp Sat Flow(s),veh/h/ln	1781	1777	1825	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.8	4.4	4.5	2.4	9.6	9.1	2.0	7.1	2.0	5.0	4.6	1.9
Cycle Q Clear(g_c), s	1.8	4.4	4.5	2.4	9.6	9.1	2.0	7.1	2.0	5.0	4.6	1.9
Prop In Lane	1.00		0.14	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	83	350	360	97	384	325	86	614	521	176	709	601
V/C Ratio(X)	0.62	0.39	0.40	0.70	0.77	0.73	0.64	0.43	0.14	0.79	0.27	0.12
Avail Cap(c_a), veh/h	137	576	591	137	606	513	181	614	521	190	709	601
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.4	22.7	22.7	30.1	24.3	24.1	30.3	17.0	15.3	28.6	13.9	13.1
Incr Delay (d2), s/veh	2.8	0.7	0.7	3.4	3.3	3.1	2.9	2.2	0.5	17.2	0.9	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.7	1.8	1.0	4.1	3.3	0.8	3.0	0.7	2.8	1.8	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.1	23.4	23.4	33.5	27.6	27.2	33.2	19.2	15.8	45.7	14.9	13.5
LnGrp LOS	C	C	C	C	C	C	C	B	B	D	B	B
Approach Vol, veh/h		333			600			389			405	
Approach Delay, s/veh		24.9			28.1			20.6			25.3	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	27.1	8.1	18.6	7.7	30.4	7.6	19.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	6.9	21.3	5.0	21.0	6.6	21.6	5.0	21.0
Max Q Clear Time (g_c+I1), s	7.0	9.1	4.4	6.5	4.0	6.6	3.8	11.6
Green Ext Time (p_c), s	0.0	1.2	0.0	1.2	0.0	1.0	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	25.1
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	566	700	9	2	5
Future Vol, veh/h	3	566	700	9	2	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	584	722	9	2	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	731	0	-	0	1317	727
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	590	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	873	-	-	-	174	424
Stage 1	-	-	-	-	478	-
Stage 2	-	-	-	-	554	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	873	-	-	-	173	424
Mov Cap-2 Maneuver	-	-	-	-	173	-
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	554	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	17.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	873	-	-	-	302
HCM Lane V/C Ratio	0.004	-	-	-	0.025
HCM Control Delay (s)	9.1	0	-	-	17.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Intersection Delay, s/veh	40.5
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	193	379	41	536	0	0	0	0	64	3	175
Future Vol, veh/h	0	193	379	41	536	0	0	0	0	64	3	175
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	0	9	7	2	8	0	0	0	0	9	33	8
Mvmt Flow	0	199	391	42	553	0	0	0	0	66	3	180
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	41.1	50.5	15.3
HCM LOS	E	F	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	26%
Vol Thru, %	34%	0%	100%	1%
Vol Right, %	66%	0%	0%	72%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	572	41	536	242
LT Vol	0	41	0	64
Through Vol	193	0	536	3
RT Vol	379	0	0	175
Lane Flow Rate	590	42	553	249
Geometry Grp	5	7	7	2
Degree of Util (X)	0.913	0.078	0.962	0.46
Departure Headway (Hd)	5.573	6.671	6.266	6.633
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	643	534	575	539
Service Time	3.655	4.454	4.048	4.73
HCM Lane V/C Ratio	0.918	0.079	0.962	0.462
HCM Control Delay	41.1	10	53.6	15.3
HCM Lane LOS	E	A	F	C
HCM 95th-tile Q	11.7	0.3	13	2.4

Intersection	
Intersection Delay, s/veh	18.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	126	131	0	0	127	57	450	6	44	0	0	0
Future Vol, veh/h	126	131	0	0	127	57	450	6	44	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	7	11	0	0	9	5	6	33	9	0	0	0
Mvmt Flow	130	135	0	0	131	59	464	6	45	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	11.7	11.8	25.2
HCM LOS	B	B	D

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	90%	100%	0%	0%
Vol Thru, %	1%	0%	100%	69%
Vol Right, %	9%	0%	0%	31%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	500	126	131	184
LT Vol	450	126	0	0
Through Vol	6	0	131	127
RT Vol	44	0	0	57
Lane Flow Rate	515	130	135	190
Geometry Grp	2	7	7	5
Degree of Util (X)	0.781	0.252	0.245	0.315
Departure Headway (Hd)	5.457	6.98	6.54	5.979
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	665	514	548	599
Service Time	3.492	4.729	4.289	4.028
HCM Lane V/C Ratio	0.774	0.253	0.246	0.317
HCM Control Delay	25.2	12.1	11.4	11.8
HCM Lane LOS	D	B	B	B
HCM 95th-tile Q	7.5	1	1	1.3

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	994	20	66	558	13	46
Future Vol, veh/h	994	20	66	558	13	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	175	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1117	22	74	627	15	52

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1139	0	1903	1128
Stage 1	-	-	-	-	1128	-
Stage 2	-	-	-	-	775	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	613	-	76	249
Stage 1	-	-	-	-	309	-
Stage 2	-	-	-	-	454	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	613	-	67	249
Mov Cap-2 Maneuver	-	-	-	-	239	-
Stage 1	-	-	-	-	309	-
Stage 2	-	-	-	-	399	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	24.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	247	-	-	613	-
HCM Lane V/C Ratio	0.268	-	-	0.121	-
HCM Control Delay (s)	24.8	-	-	11.7	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	1.1	-	-	0.4	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	60	115	91	21	38	92
Future Vol, veh/h	60	115	91	21	38	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	128	101	23	42	102

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	124	0	-	0	363	101
Stage 1	-	-	-	-	101	-
Stage 2	-	-	-	-	262	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1463	-	-	-	636	954
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	782	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1463	-	-	-	605	954
Mov Cap-2 Maneuver	-	-	-	-	650	-
Stage 1	-	-	-	-	878	-
Stage 2	-	-	-	-	782	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1463	-	-	-	650	954
HCM Lane V/C Ratio	0.046	-	-	-	0.065	0.107
HCM Control Delay (s)	7.6	0	-	-	10.9	9.2
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	0.4

APPENDIX 3.3:

EXISTING (2019) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing (2019) Conditions - Weekday AM Peak Hour**

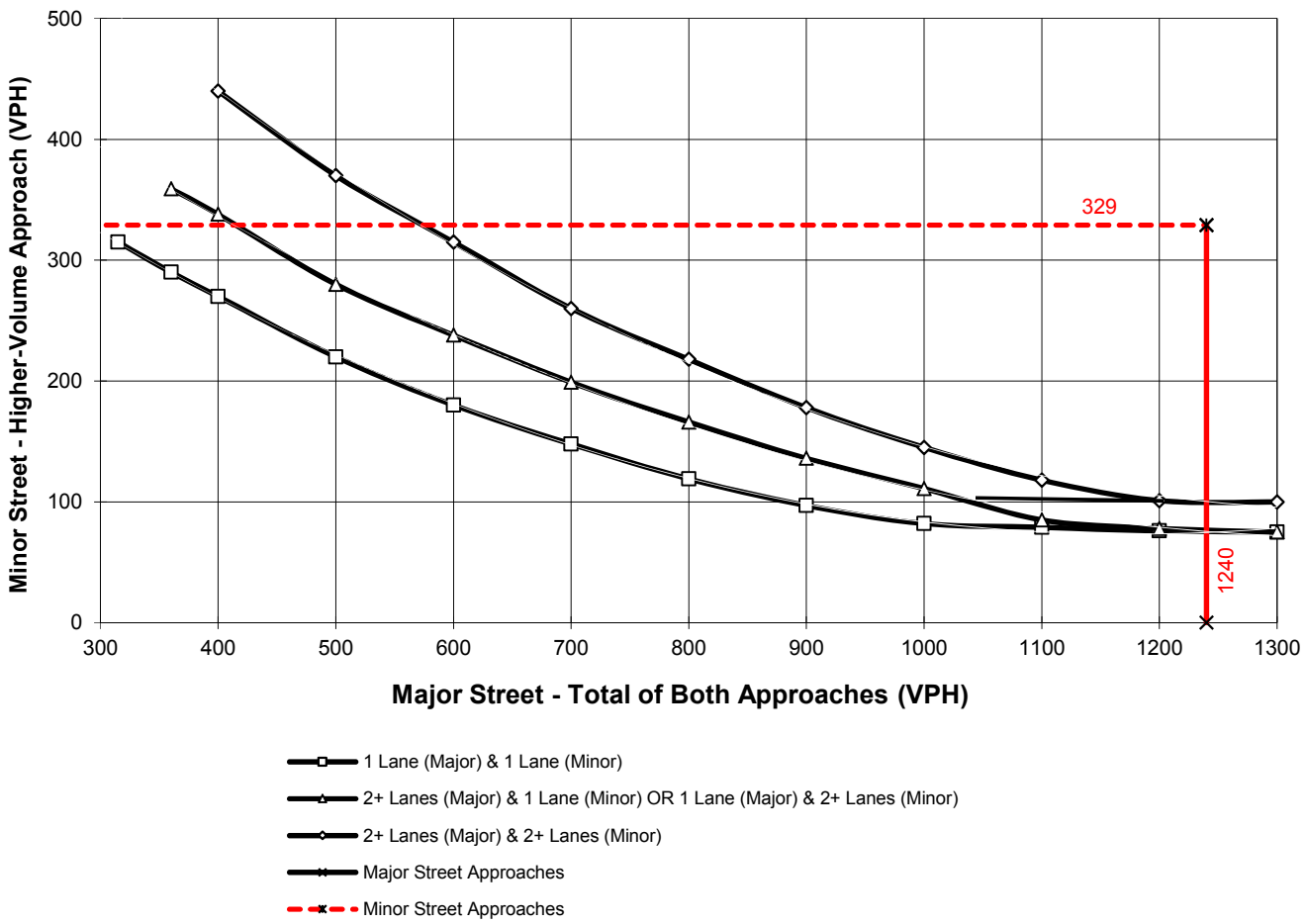
Major Street Name = **Baxter Rd.**

Total of Both Approaches (VPH) = **1240**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **I-15 SB Ramps**

High Volume Approach (VPH) = **329**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

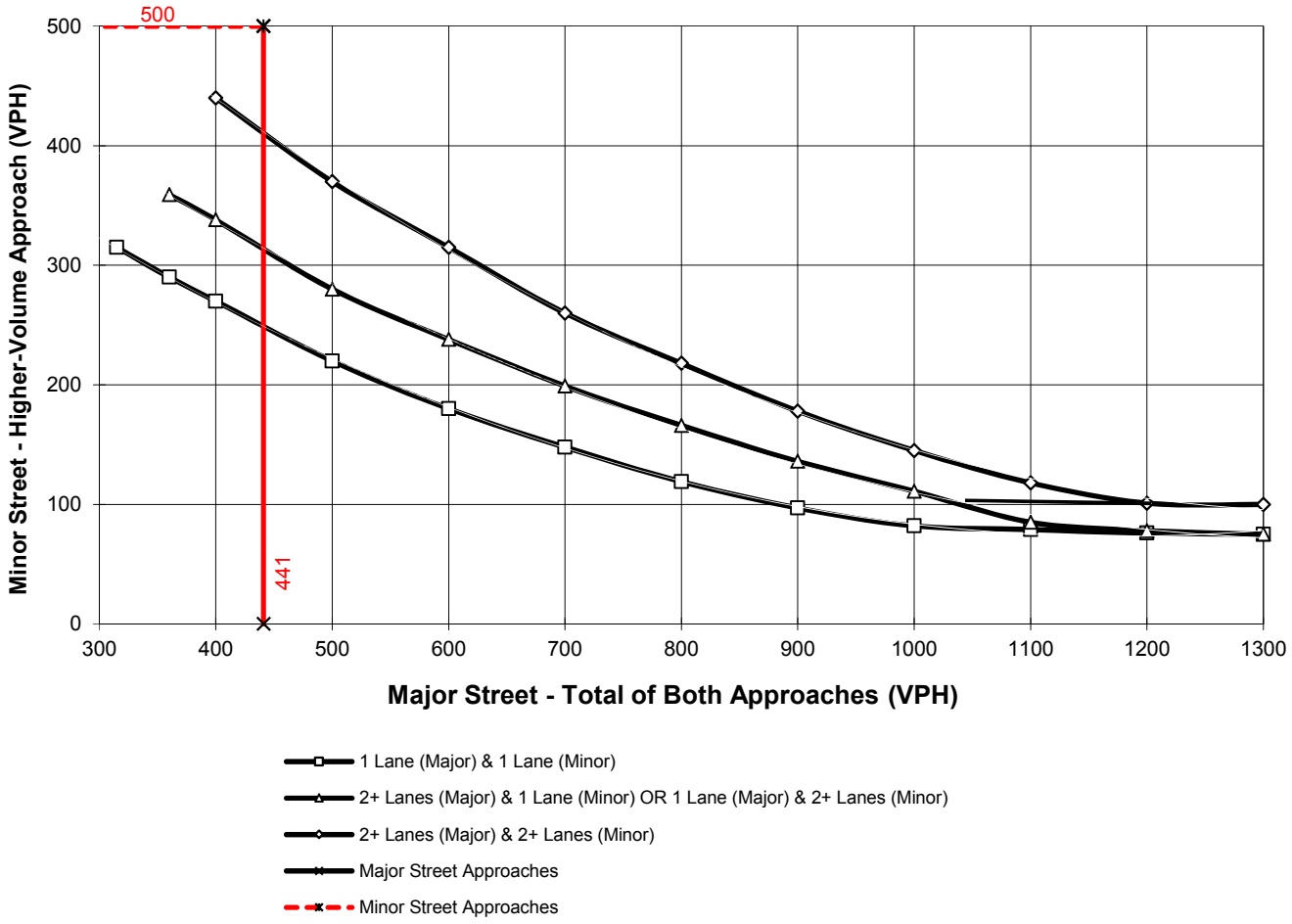
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing (2019) Conditions - Weekday PM Peak Hour**

Major Street Name = **Baxter Rd.**
Total of Both Approaches (VPH) = **441**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **I-15 NB Ramps**
High Volume Approach (VPH) = **500**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

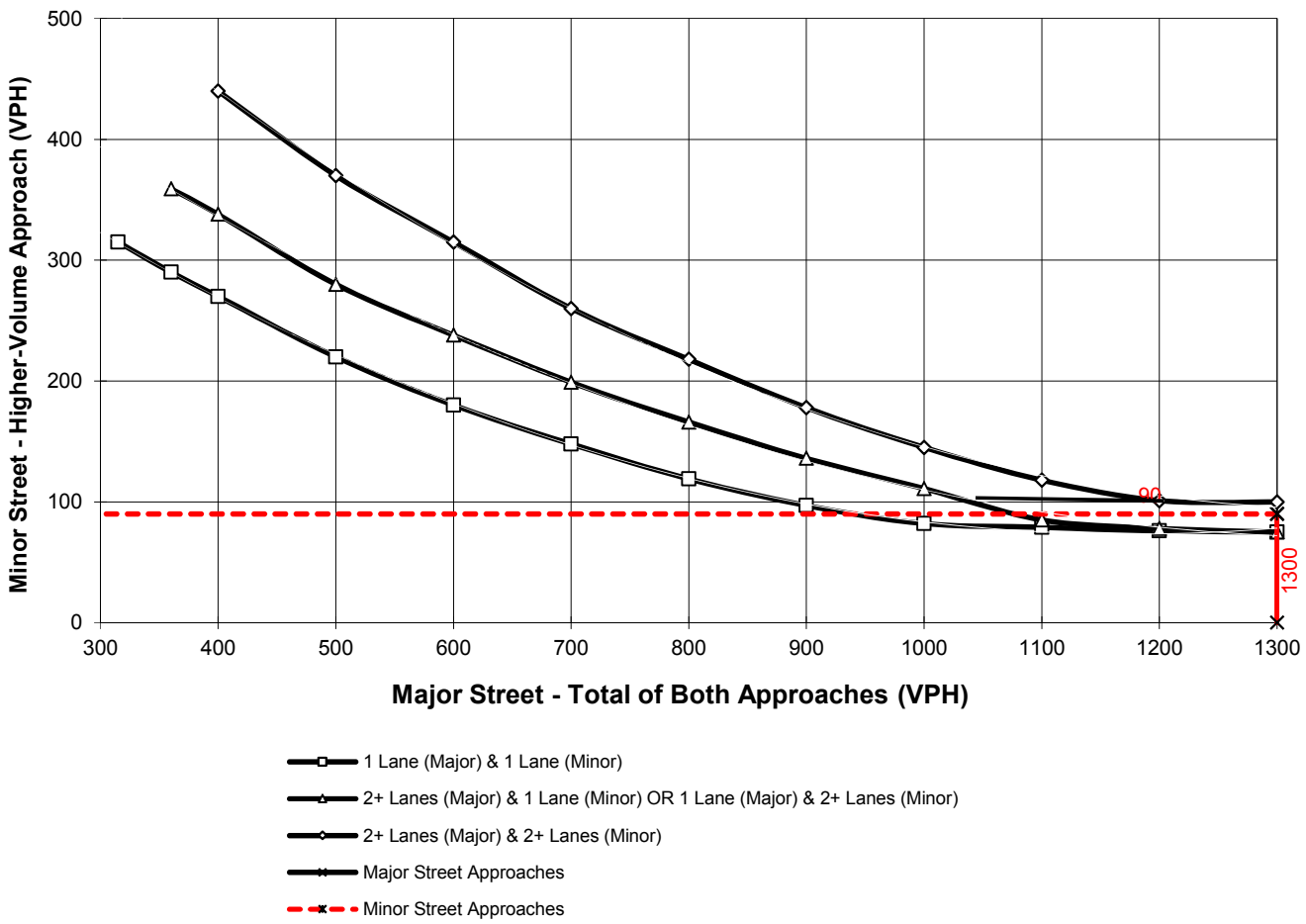
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing (2019) Conditions - Weekday AM Peak Hour**

Major Street Name = **Bundy Canyon Rd.**
Total of Both Approaches (VPH) = **1404**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Monte Vista Dr.**
High Volume Approach (VPH) = **90**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

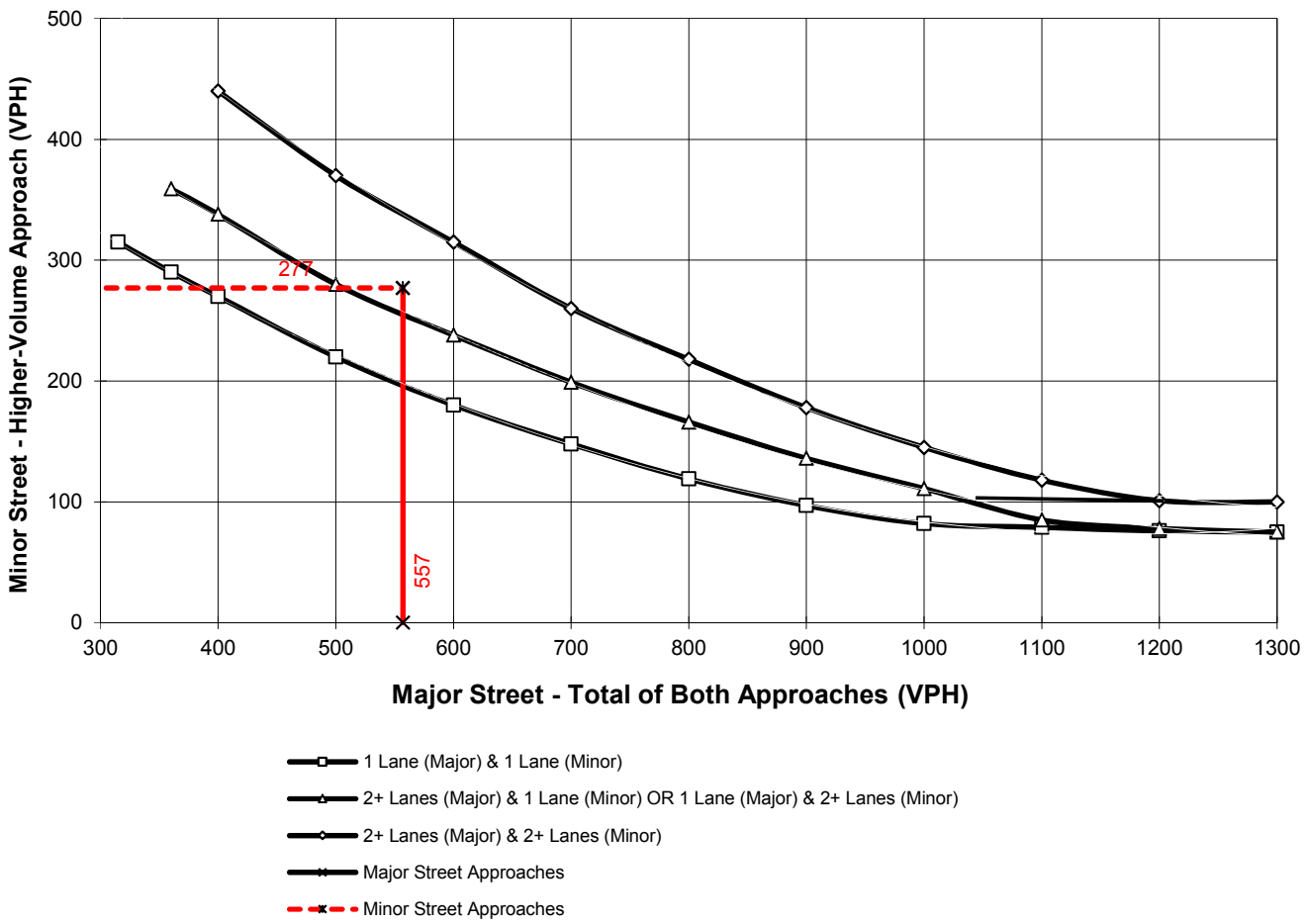
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing (2019) Conditions - Weekday AM Peak Hour**

Major Street Name = **Bundy Canyon Rd.**
Total of Both Approaches (VPH) = **557**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Monte Vista Dr.**
High Volume Approach (VPH) = **277**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

APPENDIX 3.4:

EXISTING (2019) CONDITIONS OFF-RAMP QUEUING ANALYSIS WORKSHEETS WITH IMPROVEMENTS

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Intersection	
Intersection Delay, s/veh	154.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	346	473	90	331	0	0	0	0	136	1	192
Future Vol, veh/h	0	346	473	90	331	0	0	0	0	136	1	192
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	0	5	4	6	6	0	0	0	0	2	0	5
Mvmt Flow	0	398	544	103	380	0	0	0	0	156	1	221
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	272.7	24.5	24.8
HCM LOS	F	C	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	41%
Vol Thru, %	42%	0%	100%	0%
Vol Right, %	58%	0%	0%	58%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	819	90	331	329
LT Vol	0	90	0	136
Through Vol	346	0	331	1
RT Vol	473	0	0	192
Lane Flow Rate	941	103	380	378
Geometry Grp	5	7	7	2
Degree of Util (X)	1.551	0.211	0.724	0.683
Departure Headway (Hd)	5.93	8.083	7.567	7.391
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	621	447	483	492
Service Time	3.971	5.783	5.267	5.391
HCM Lane V/C Ratio	1.515	0.23	0.787	0.768
HCM Control Delay	272.7	12.9	27.7	24.8
HCM Lane LOS	F	B	D	C
HCM 95th-tile Q	48.7	0.8	5.8	5.1

Intersection	
Intersection Delay, s/veh	17.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	246	236	0	0	197	146	224	0	64	0	0	0
Future Vol, veh/h	246	236	0	0	197	146	224	0	64	0	0	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	5	4	0	0	6	3	6	0	8	0	0	0
Mvmt Flow	283	271	0	0	226	168	257	0	74	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	15.9	18.2	17.9
HCM LOS	C	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	78%	100%	0%	0%
Vol Thru, %	0%	0%	100%	57%
Vol Right, %	22%	0%	0%	43%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	288	246	236	343
LT Vol	224	246	0	0
Through Vol	0	0	236	197
RT Vol	64	0	0	146
Lane Flow Rate	331	283	271	394
Geometry Grp	2	7	7	5
Degree of Util (X)	0.583	0.533	0.472	0.63
Departure Headway (Hd)	6.336	6.791	6.265	5.754
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	569	529	572	623
Service Time	4.395	4.559	4.032	3.817
HCM Lane V/C Ratio	0.582	0.535	0.474	0.632
HCM Control Delay	17.9	17.1	14.6	18.2
HCM Lane LOS	C	C	B	C
HCM 95th-tile Q	3.7	3.1	2.5	4.4

Intersection	
Intersection Delay, s/veh	40.5
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	193	379	41	536	0	0	0	0	64	3	175
Future Vol, veh/h	0	193	379	41	536	0	0	0	0	64	3	175
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	0	9	7	2	8	0	0	0	0	9	33	8
Mvmt Flow	0	199	391	42	553	0	0	0	0	66	3	180
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	41.1	50.5	15.3
HCM LOS	E	F	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	26%
Vol Thru, %	34%	0%	100%	1%
Vol Right, %	66%	0%	0%	72%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	572	41	536	242
LT Vol	0	41	0	64
Through Vol	193	0	536	3
RT Vol	379	0	0	175
Lane Flow Rate	590	42	553	249
Geometry Grp	5	7	7	2
Degree of Util (X)	0.913	0.078	0.962	0.46
Departure Headway (Hd)	5.573	6.671	6.266	6.633
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	643	534	575	539
Service Time	3.655	4.454	4.048	4.73
HCM Lane V/C Ratio	0.918	0.079	0.962	0.462
HCM Control Delay	41.1	10	53.6	15.3
HCM Lane LOS	E	A	F	C
HCM 95th-tile Q	11.7	0.3	13	2.4

Intersection	
Intersection Delay, s/veh	18.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	126	131	0	0	127	57	450	6	44	0	0	0
Future Vol, veh/h	126	131	0	0	127	57	450	6	44	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	7	11	0	0	9	5	6	33	9	0	0	0
Mvmt Flow	130	135	0	0	131	59	464	6	45	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	11.7	11.8	25.2
HCM LOS	B	B	D

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	90%	100%	0%	0%
Vol Thru, %	1%	0%	100%	69%
Vol Right, %	9%	0%	0%	31%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	500	126	131	184
LT Vol	450	126	0	0
Through Vol	6	0	131	127
RT Vol	44	0	0	57
Lane Flow Rate	515	130	135	190
Geometry Grp	2	7	7	5
Degree of Util (X)	0.781	0.252	0.245	0.315
Departure Headway (Hd)	5.457	6.98	6.54	5.979
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	665	514	548	599
Service Time	3.492	4.729	4.289	4.028
HCM Lane V/C Ratio	0.774	0.253	0.246	0.317
HCM Control Delay	25.2	12.1	11.4	11.8
HCM Lane LOS	D	B	B	B
HCM 95th-tile Q	7.5	1	1	1.3

APPENDIX 3.5:

EXISTING (2019) CONDITIONS FREEWAY FACILITY ANALYSIS WORKSHEETS WITH IMPROVEMENTS

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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Southbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	North of Baxter	3300	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2020	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	South of Baxter	4425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4551	7161	0.64	67.8	22.4	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.962	4551	372	7200	2100	0.63	0.18	64.8	60.7	23.4	25.8	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4161	7161	0.58	68.5	20.2	C

Segment 4: Merge

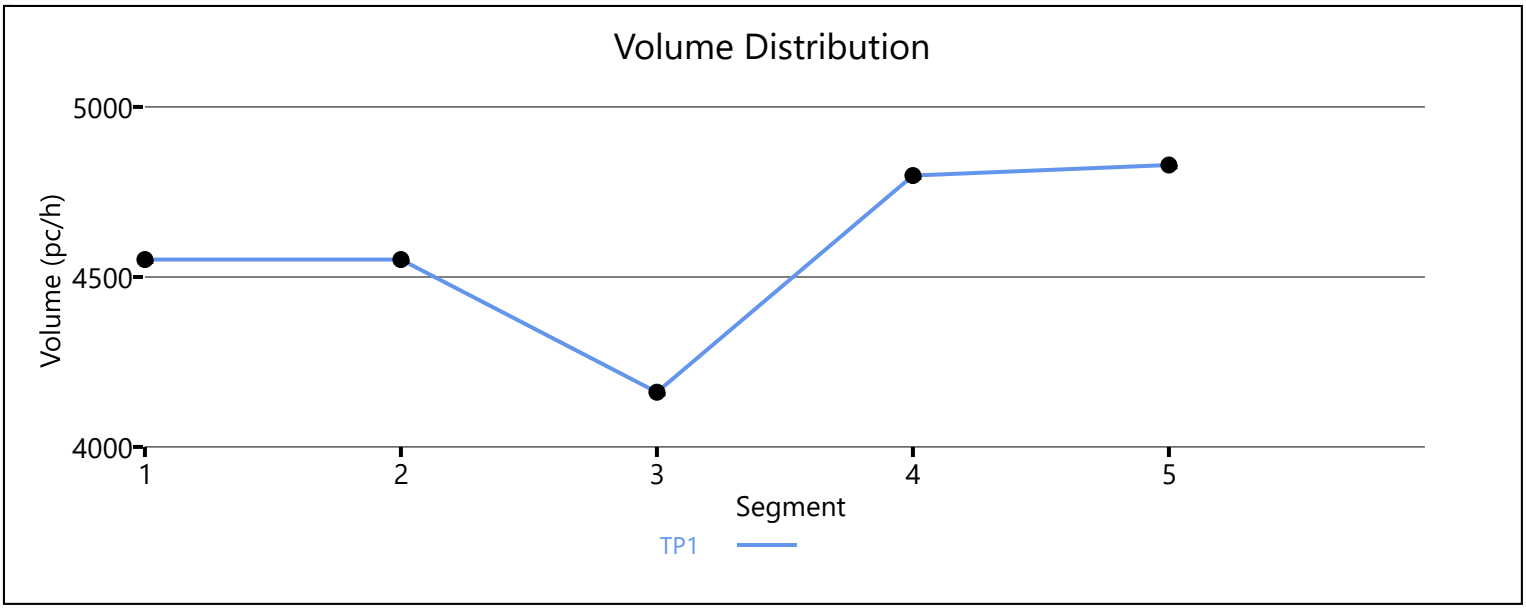
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.962	4798	637	7200	2100	0.67	0.30	62.4	60.7	25.6	24.2	C

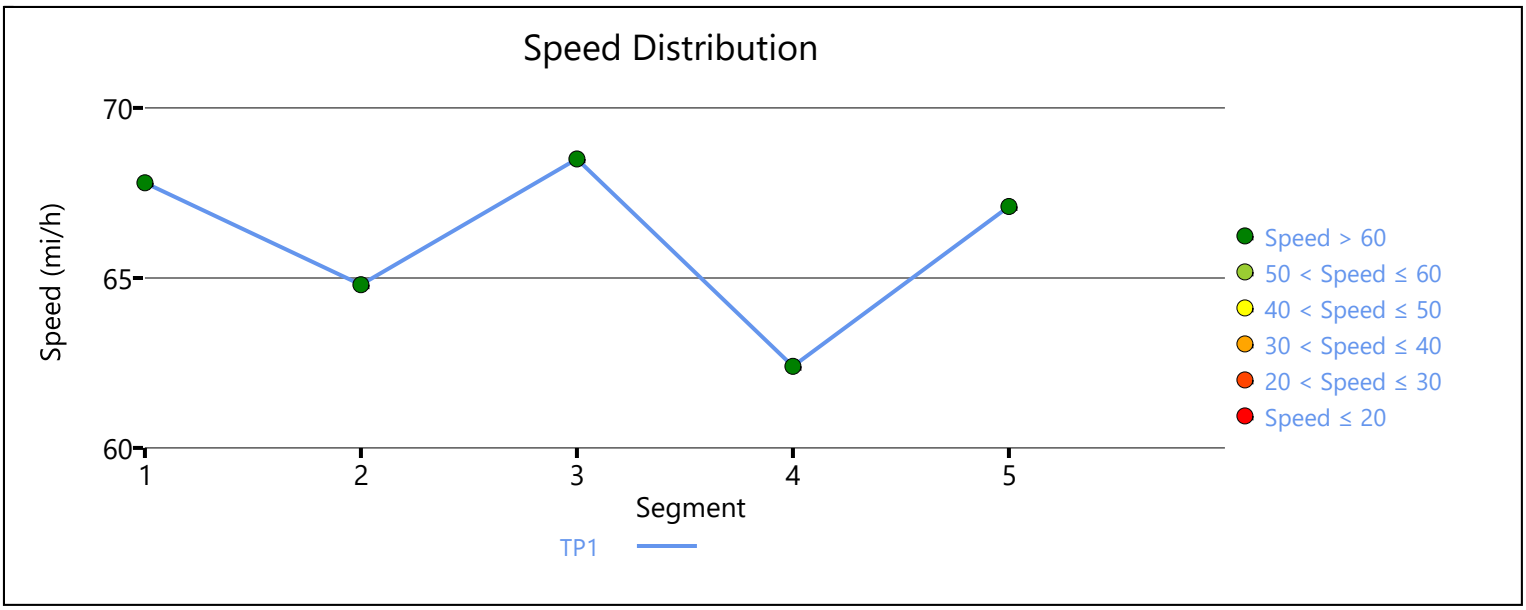
Segment 5: Basic

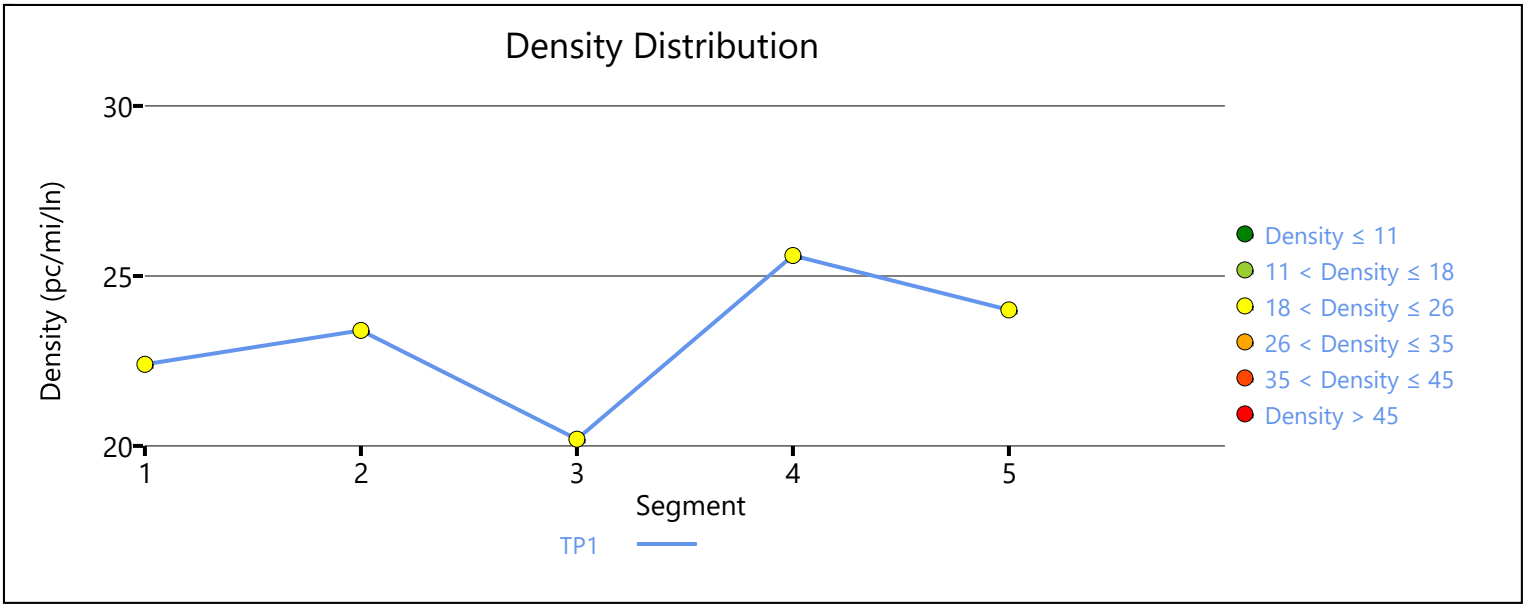
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4829	7161	0.67	67.1	24.0	C

Facility Time Period Results					
T	**Speed, mi/h**	**Density, pc/mi/ln**	**Density, veh/mi/ln**	**Travel Time, min**	**LOS**
1	66.6	23.1	21.2	2.2	C

Facility Overall Results			
Space Mean Speed, mi/h	66.6	Density, veh/mi/ln	21.2
Average Travel Time, min	2.2	Density, pc/mi/ln	23.1







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Northbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	South of Baxter	2680	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2220	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	North of Baxter	3425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4123	7161	0.58	68.5	20.1	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.935	4123	335	7200	2100	0.57	0.16	64.9	60.8	21.2	23.0	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	3781	7161	0.53	68.7	18.3	C

Segment 4: Merge

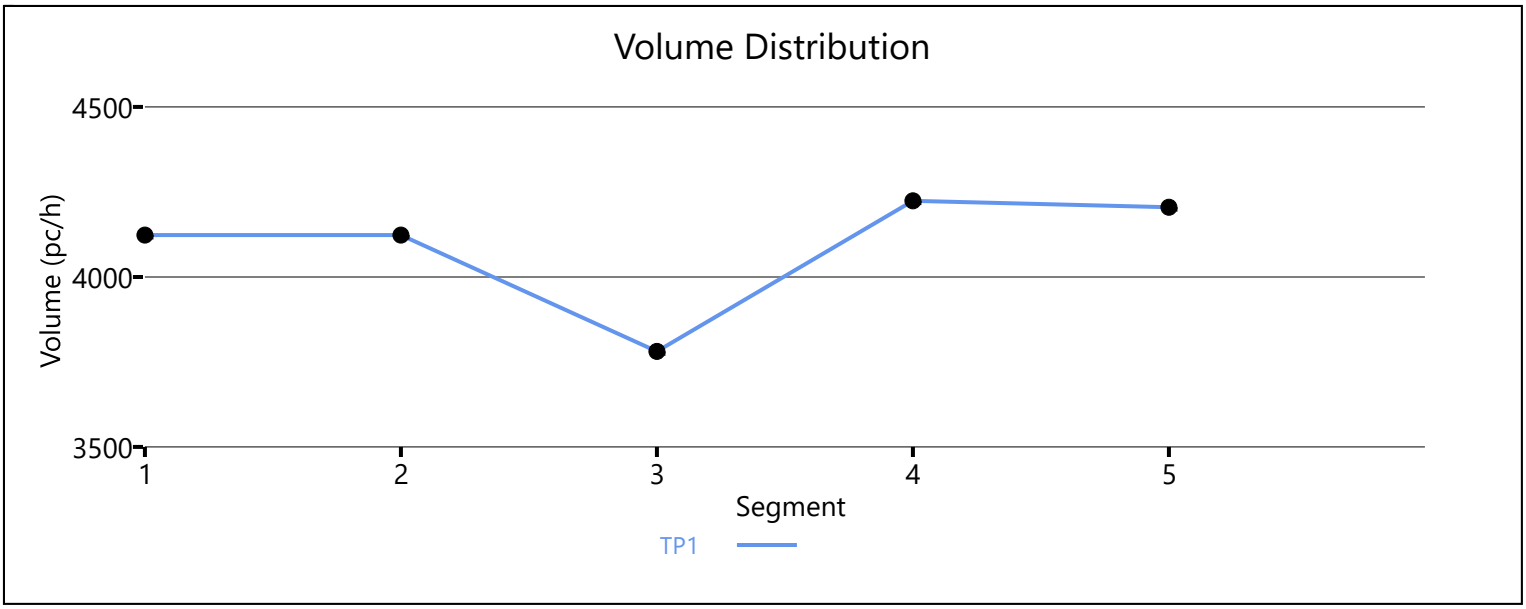
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.962	4224	443	7200	2100	0.59	0.21	63.0	61.3	22.3	21.6	C

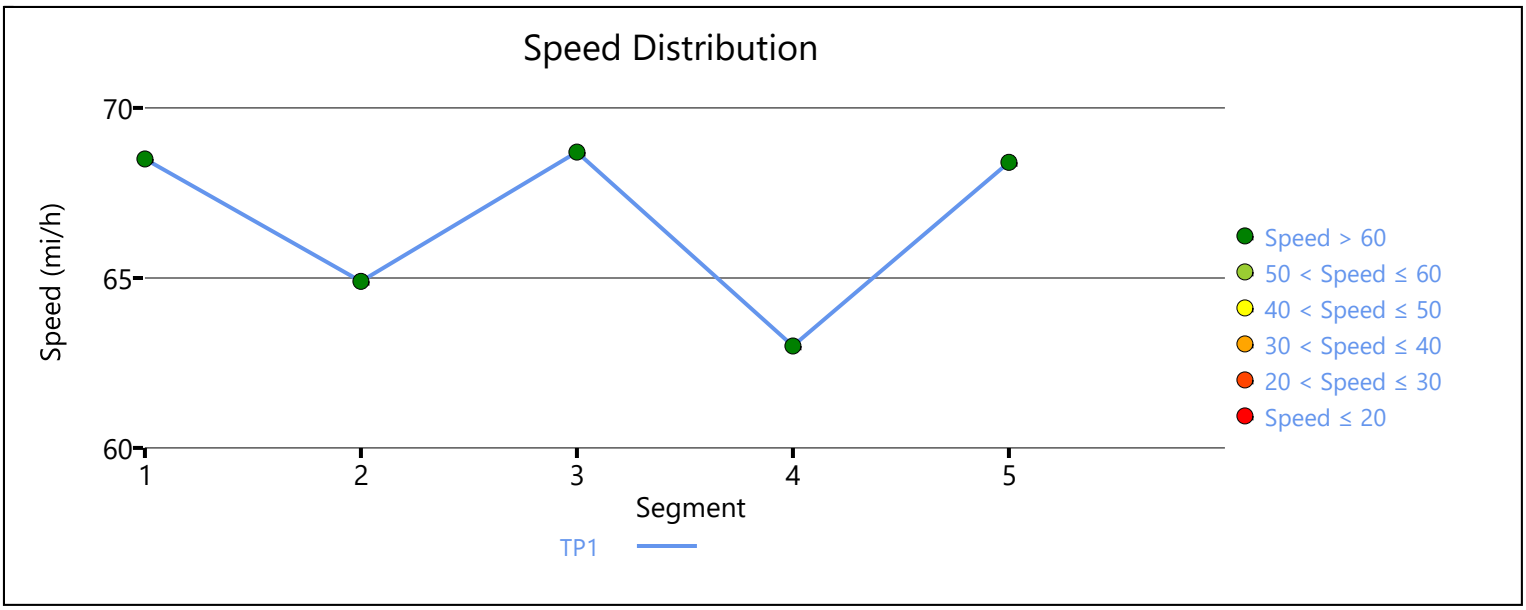
Segment 5: Basic

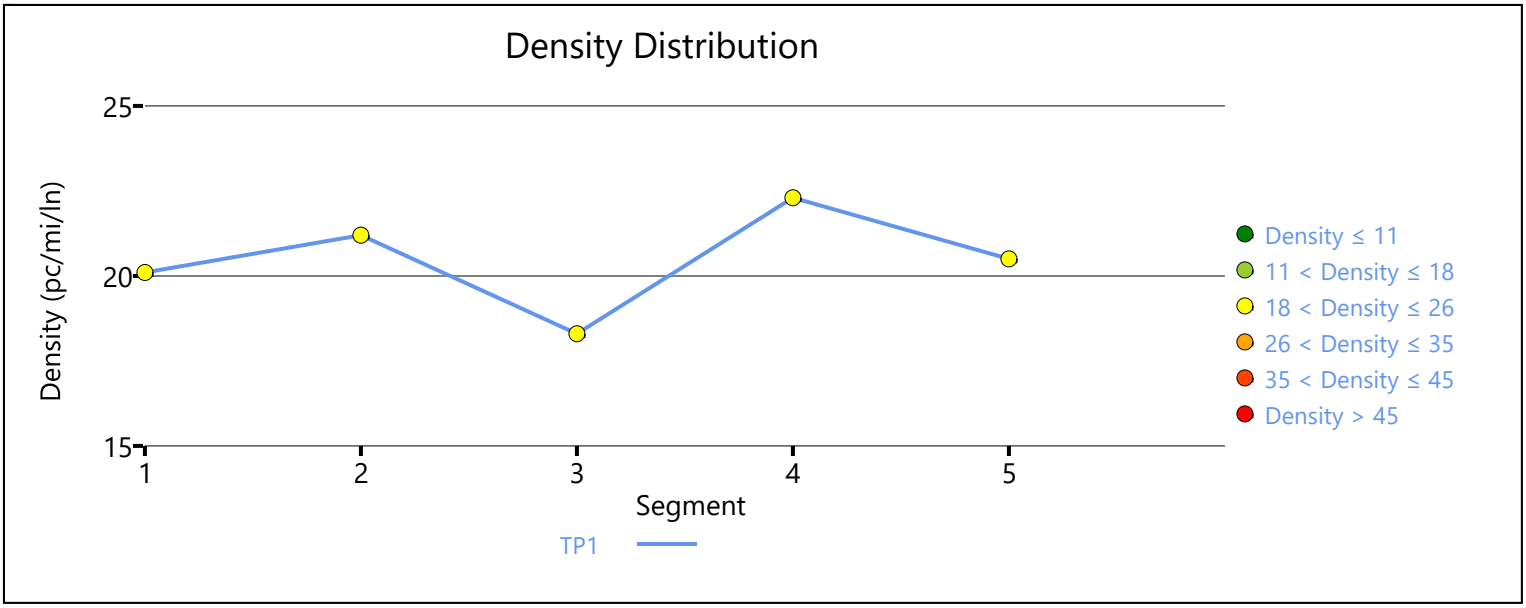
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.926	4205	7161	0.59	68.4	20.5	C

Facility Time Period Results					
T	**Speed, mi/h**	**Density, pc/mi/ln**	**Density, veh/mi/ln**	**Travel Time, min**	**LOS**
1	67.2	20.3	18.7	1.9	C

Facility Overall Results			
Space Mean Speed, mi/h	67.2	Density, veh/mi/ln	18.7
Average Travel Time, min	1.9	Density, pc/mi/ln	20.3







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Southbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	North of Baxter	3300	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2020	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	South of Baxter	4425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4575	7161	0.64	67.8	22.5	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.917	4575	287	7200	2100	0.64	0.14	65.0	60.9	23.5	25.8	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4289	7161	0.60	68.3	20.9	C

Segment 4: Merge

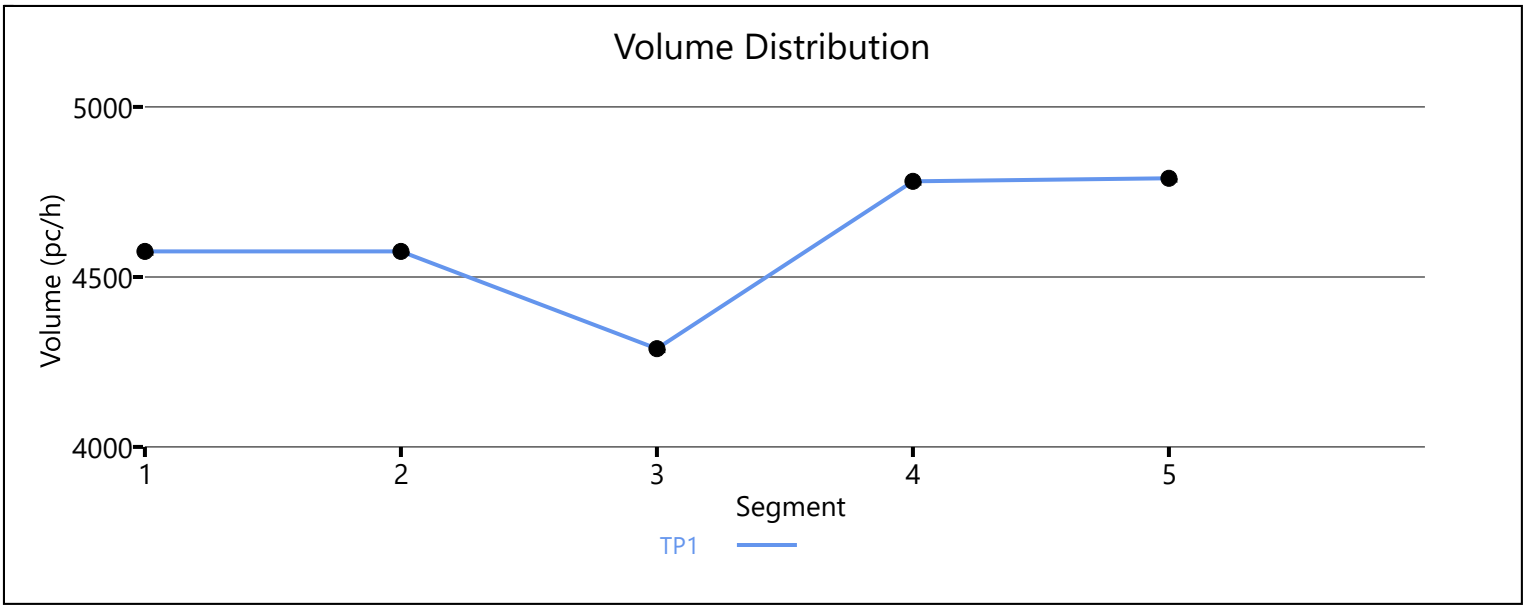
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.935	4781	492	7200	2100	0.66	0.23	62.5	60.9	25.5	23.8	C

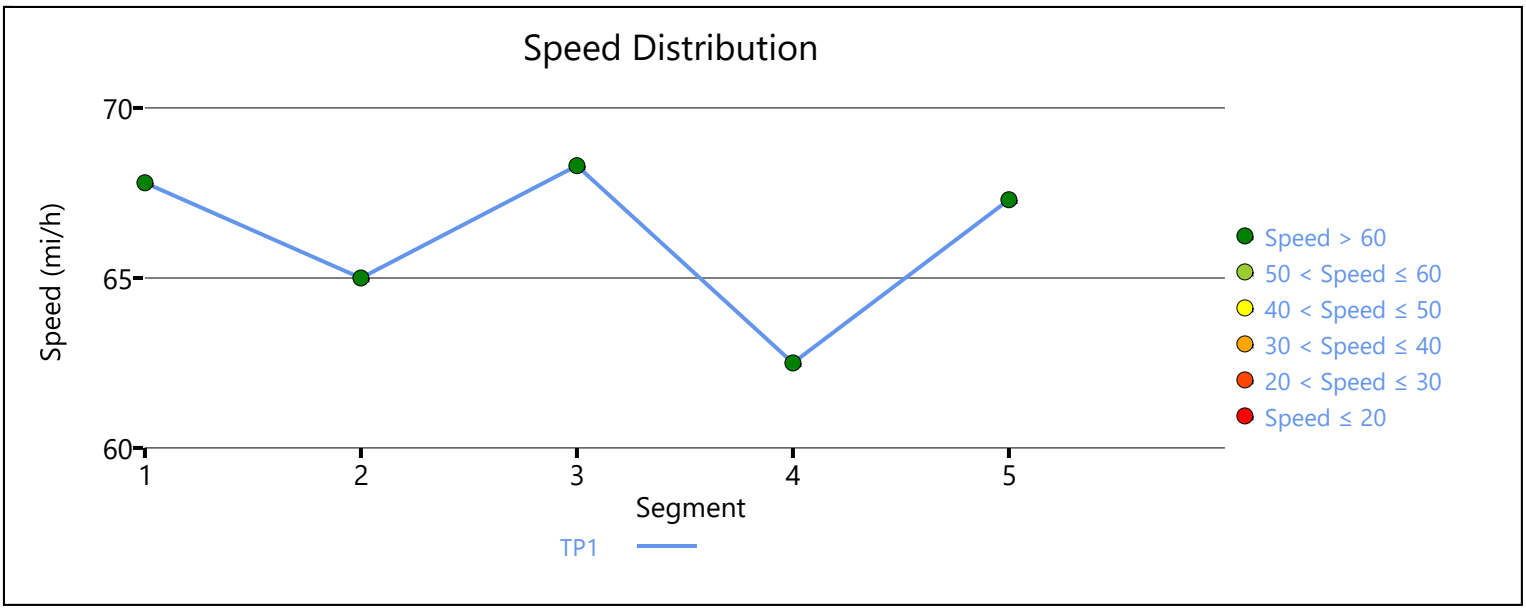
Segment 5: Basic

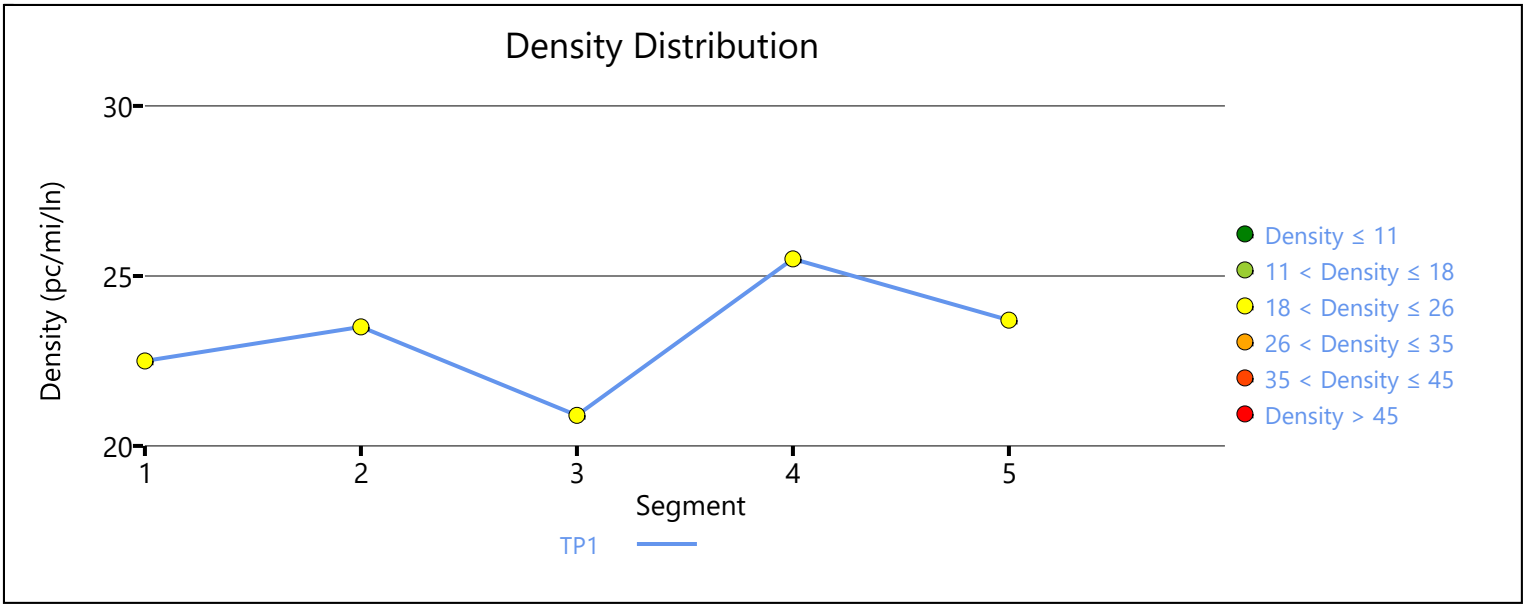
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4790	7161	0.67	67.3	23.7	C

Facility Time Period Results					
T	**Speed, mi/h**	**Density, pc/mi/ln**	**Density, veh/mi/ln**	**Travel Time, min**	**LOS**
1	66.7	23.1	21.2	2.2	C

Facility Overall Results			
Space Mean Speed, mi/h	66.7	Density, veh/mi/ln	21.2
Average Travel Time, min	2.2	Density, pc/mi/ln	23.1







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Existing (2019)
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Northbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	South of Baxter	2680	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2220	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	North of Baxter	3425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	6058	7161	0.85	61.6	32.8	D

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.952	6058	571	7200	2100	0.84	0.27	64.1	60.2	31.5	31.6	D

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	5466	7161	0.76	64.8	28.1	D

Segment 4: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.935	5686	220	7200	2100	0.79	0.10	61.1	59.4	31.0	27.8	C

Segment 5: Basic

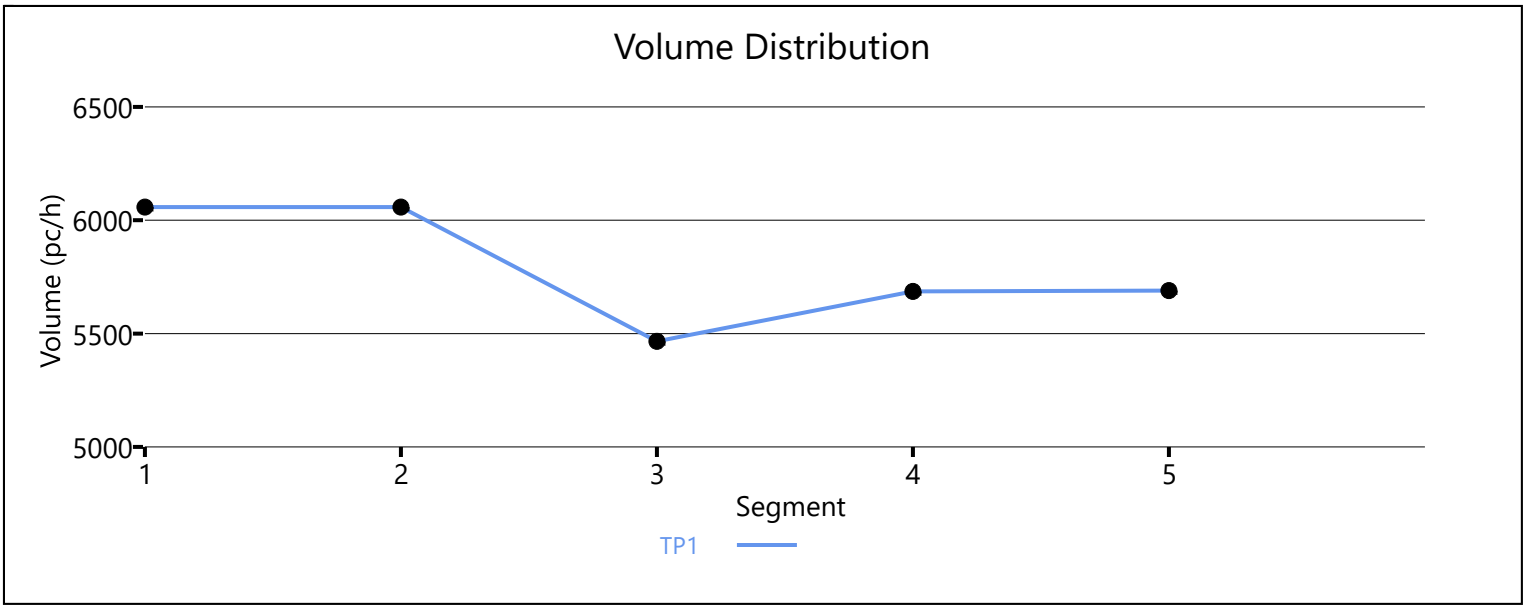
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	5690	7161	0.79	63.6	29.8	D

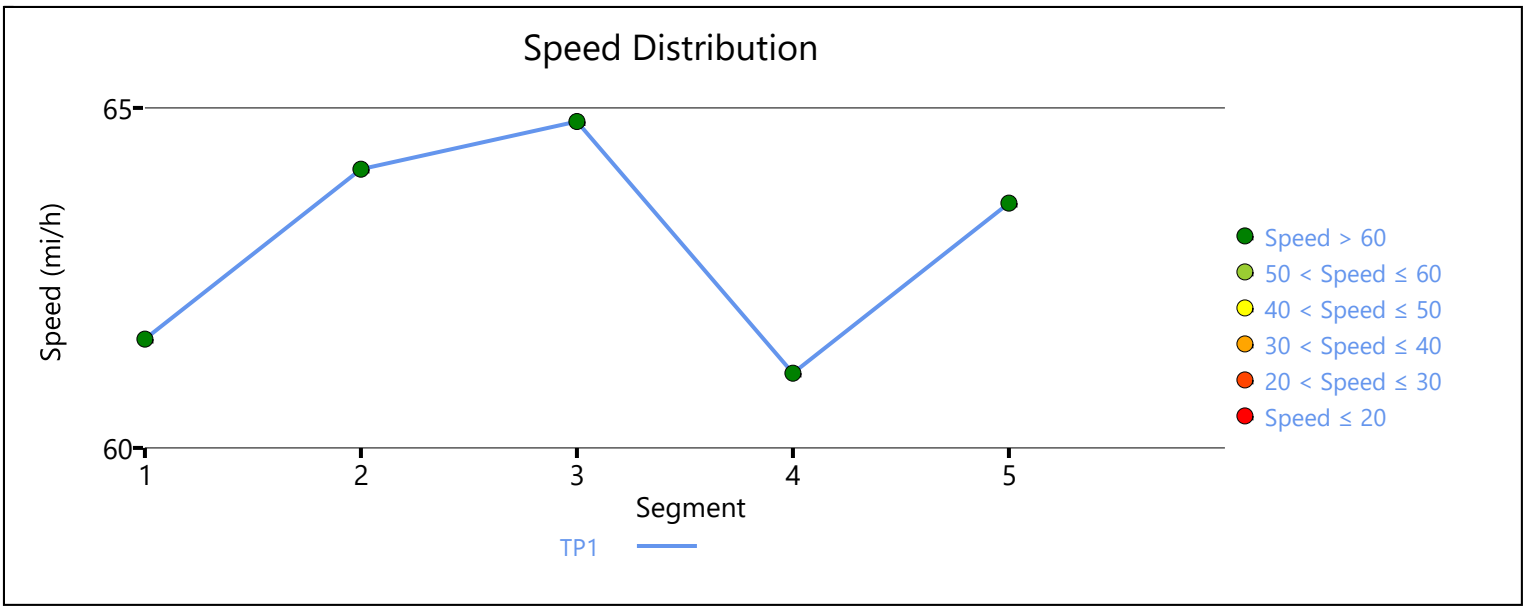
Facility Time Period Results

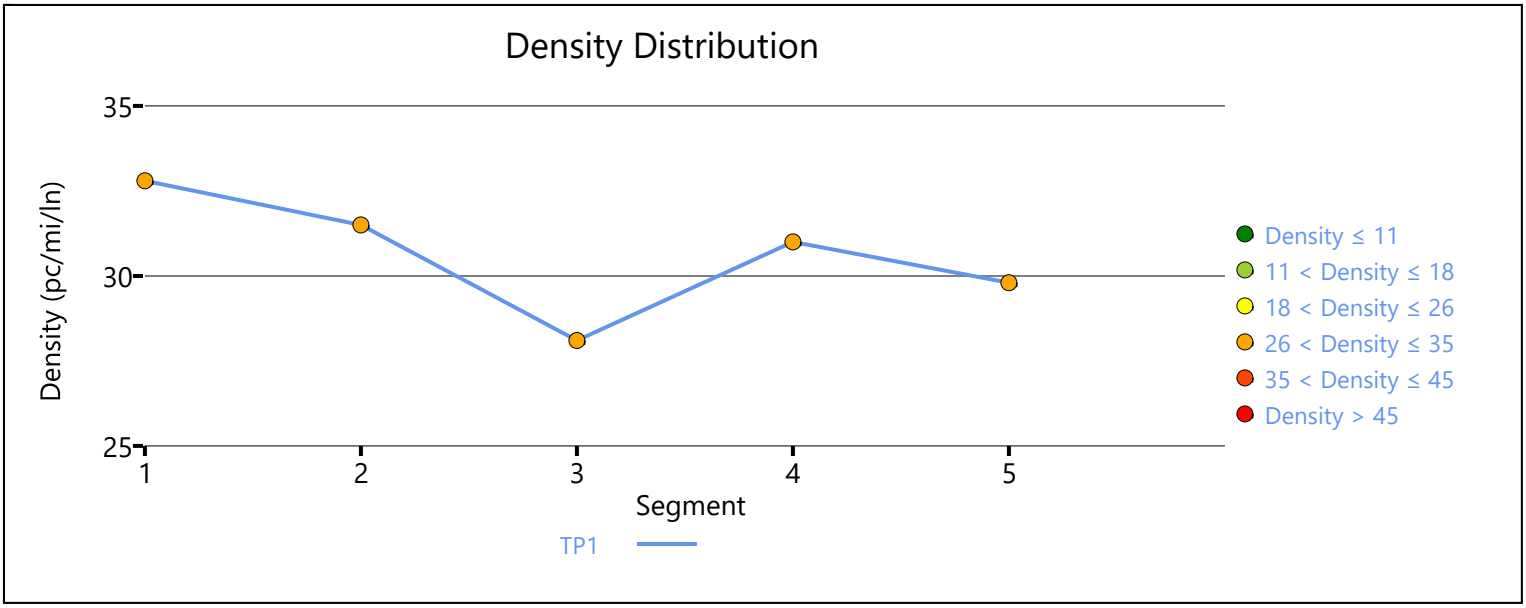
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	63.0	30.6	28.0	2.0	D

Facility Overall Results

Space Mean Speed, mi/h	63.0	Density, veh/mi/ln	28.0
Average Travel Time, min	2.0	Density, pc/mi/ln	30.6







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APPENDIX 4.1:

POST PROCESSING WORKSHEETS

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Project:	Baxter Village TIA	Job #:	12651
Scenario:	Gen Plan Buildout (2040)	Analyst:	CP
		Date:	43640

LOCATION: Palomar St. & Central St.
FORECAST YEAR: 2035

Palomar St. & Central St.

INDIVIDUAL TURN VOLUME GROWTH REVIEW

2019 APPROACH	TURNING MOVEMENT	AM PEAK HOUR INPUT DATA: EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	PM PEAK HOUR INPUT DATA: EXISTING COUNT	128 VOLUME	338 ERENCE	227 CHANGE
NORTH BOUND	Left	67	118	51	13600%	54	198	144	267%
	Through	295	836	541	32100%	258	955	697	270%
	Right	83	21	-62	10000%	70	113	43	61%
	NB Total	445	975	530	119%	382	1,266	884	231%
SOUTH BOUND	Left	227	68	-159	-70%	137	67	295	8300%
	Through	338	738	400	118%	188	562	374	199%
	Right	128	270	142	111%	72	94	22	31%
	SB Total	693	1,076	383	55%	397	723	326	82%
EAST BOUND	Left	136	334	198	146%	50	108	58	116%
	Through	321	69	-252	-79%	257	243	-14	-5%
	Right	100	158	58	58%	20	99	79	395%
	EB Total	557	561	4	1%	327	450	123	38%
WEST BOUND	Left	68	47	-21	-31%	67	82	15	22%
	Through	217	145	-72	-33%	289	154	-135	-47%
	Right	138	148	10	7%	232	124	-108	-47%
	WB Total	423	340	-83	-20%	588	360	-228	-39%
TOTAL ENTERING VOLUME		2,118	2,952	834	39%	1,694	2,799	1105	65%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES: AM	PM	PERCENT OF ADT: AM	PM	9307	ADT
North Leg	Inbound	1,076	723				
North Leg	Outbound	1,318	1,187		7363		
North Leg	**TOTAL**	**2,394**	**1,910**	**7%**	**6%**		**34,000**
						6516	
South Leg	Inbound	975	1,266				
South Leg	Outbound	943	743				
South Leg	**TOTAL**	**1,918**	**2,009**	**6%**	**6%**		**31,000**
East Leg	Inbound	340	360				
East Leg	Outbound	158	423				
East Leg	**TOTAL**	**498**	**783**	**3%**	**5%**		**17,000**
West Leg	Inbound	561	450				
West Leg	Outbound	533	446				
West Leg	**TOTAL**	**1,094**	**896**	**11%**	**9%**		**10,000**
OVERALL TOTAL		***5,904***	***5,598***	**6%**	***6%***		***92,000***

U:\UcJobs_12600-13000_12600\12651\Post Processing\[01 Palomar_Central.xls]Output (3)

Project:	Baxter Village TIA	Job #:	12651
Scenario:	Gen Plan Buildout (2040)	Analyst:	CP
		Date:	43640

LOCATION: Central Av. & Baxter Rd.
FORECAST YEAR: 2035

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	0	49	49	#DIV/0!	0	19	19	#DIV/0!
	Through	0	64	64	#DIV/0!	0	110	110	#DIV/0!
	Right	0	208	208	#DIV/0!	0	102	102	#DIV/0!
	NB Total	0	321	321	#DIV/0!	0	231	231	#DIV/0!
SOUTH BOUND	Left	1	353	352	35200%	1	141	140	14000%
	Through	0	95	95	#DIV/0!	0	93	93	#DIV/0!
	Right	1	84	83	8300%	1	26	25	2500%
	SB Total	2	532	530	26500%	2	260	258	12900%
EAST BOUND	Left	1	13	12	1200%	1	101	100	10000%
	Through	2	369	367	18350%	2	837	835	41750%
	Right	0	11	11	#DIV/0!	0	61	61	#DIV/0!
	EB Total	3	393	390	13000%	3	999	996	33200%
WEST BOUND	Left	0	66	66	#DIV/0!	0	225	225	#DIV/0!
	Through	2	523	521	26050%	2	575	573	28650%
	Right	1	75	74	7400%	1	370	369	36900%
	WB Total	3	664	661	22033%	3	1,170	1,167	38900%
TOTAL ENTERING VOLUME		8	1,910	1902	23775%	8	2,660	2652	33150%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	532	260			
North Leg	Outbound	152	581			
North Leg	**TOTAL**	**684**	**841**	**8%**	**9%**	**9,000**
South Leg	Inbound	321	231			
South Leg	Outbound	172	379			
South Leg	**TOTAL**	**493**	**610**	**7%**	**9%**	**7,000**
East Leg	Inbound	664	1,170			
East Leg	Outbound	930	1,080			
East Leg	**TOTAL**	**1,594**	**2,250**	**5%**	**7%**	**32,000**
West Leg	Inbound	393	999			
West Leg	Outbound	656	620			
West Leg	**TOTAL**	**1,049**	**1,619**	**4%**	**7%**	**24,000**
OVERALL TOTAL		***3,820***	***5,320***	**5%**	***7%***	***72,000***

U:\UcJobs_12600-13000_12600\12651\Post Processing\[03 Central_Baxter-Semi.xls]Output (3)

Project:	Baxter Village TIA	Job #:	12651
Scenario:	Gen Plan Buildout (2040)	Analyst:	CP
		Date:	43640

LOCATION: I-15 Southbound Ramps & Baxter Rd.
FORECAST YEAR: 2035

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	NB Total	0	0	0	#DIV/0!	0	0	0	#DIV/0!
SOUTH BOUND	Left	91	219	128	141%	64	70	6	9%
	Through	2	3	1	50%	3	4	1	33%
	Right	206	257	51	25%	175	154	-21	-12%
	SB Total	299	479	180	60%	242	228	-14	-6%
EAST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	392	645	253	65%	193	265	72	37%
	Right	363	416	53	15%	379	675	296	78%
	EB Total	755	1,061	306	41%	572	940	368	64%
WEST BOUND	Left	68	133	65	96%	41	117	76	185%
	Through	265	386	121	46%	536	945	409	76%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	WB Total	333	519	186	56%	577	1,062	485	84%
TOTAL ENTERING VOLUME		1,387	2,059	672	48%	1,391	2,230	839	60%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	479	228			
North Leg	Outbound	0	0			
North Leg	**TOTAL**	**479**	**228**	**20%**	**9%**	**2,403**
South Leg	Inbound	0	0			
South Leg	Outbound	552	796			
South Leg	**TOTAL**	**552**	**796**	**13%**	**19%**	**4,201**
East Leg	Inbound	519	1,062			
East Leg	Outbound	864	335			
East Leg	**TOTAL**	**1,383**	**1,397**	**11%**	**11%**	**12,742**
West Leg	Inbound	1,061	940			
West Leg	Outbound	643	1,099			
West Leg	**TOTAL**	**1,704**	**2,039**	**21%**	**25%**	**8,283**
OVERALL TOTAL		***4,118***	***4,460***	**15%**	***16%***	***27,629***

U:\UcJobs_12600-13000_12600\12651\Post Processing\[05 I-15 SB_Baxter.xls]Output (3)

Project:	Baxter Village TIA	Job #:	12651
Scenario:	Gen Plan Buildout (2040)	Analyst:	CP
		Date:	43640

LOCATION: I-15 Northbound Ramps & Baxter Rd.
FORECAST YEAR: 2035

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	224	291	67	30%	450	531	81	18%
	Through	0	0	0	#DIV/0!	6	6	0	0%
	Right	64	199	135	211%	44	93	49	111%
	NB Total	288	490	202	70%	500	630	130	26%
SOUTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	SB Total	0	0	0	#DIV/0!	0	0	0	#DIV/0!
EAST BOUND	Left	246	236	-10	-4%	126	106	-20	-16%
	Through	236	625	389	165%	131	215	84	64%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	EB Total	482	861	379	79%	257	321	64	25%
WEST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	197	323	126	64%	127	602	475	374%
	Right	146	207	61	42%	57	248	191	335%
	WB Total	343	530	187	55%	184	850	666	362%
TOTAL ENTERING VOLUME		1,113	1,881	768	69%	941	1,801	860	91%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	0	0			
North Leg	Outbound	443	360			
North Leg	**TOTAL**	**443**	**360**	**9%**	**7%**	**5,000**
South Leg	Inbound	490	630			
South Leg	Outbound	0	0			
South Leg	**TOTAL**	**490**	**630**	**6%**	**8%**	**8,000**
East Leg	Inbound	530	850			
East Leg	Outbound	824	308			
East Leg	**TOTAL**	**1,354**	**1,158**	**6%**	**5%**	**22,000**
West Leg	Inbound	861	321			
West Leg	Outbound	614	1,133			
West Leg	**TOTAL**	**1,475**	**1,454**	**7%**	**7%**	**20,000**
OVERALL TOTAL		***3,762***	***3,602***	***7%***	***7%***	***55,000***

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Project:	Baxter Village TIA	Job #:	12651
Scenario:	Gen Plan Buildout (2040)	Analyst:	CP
		Date:	43640

LOCATION: Monte Vista Dr. & Bundy Canyon Rd.
FORECAST YEAR: 2035

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	25	155	130	520%	13	271	258	1985%
	Through	0	0	0	#DIV/0!	4	0	-4	-100%
	Right	65	294	229	352%	46	338	292	635%
	NB Total	90	449	359	399%	63	609	546	867%
SOUTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	SB Total	0	0	0	#DIV/0!	0	0	0	#DIV/0!
EAST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	403	696	293	73%	994	1,552	558	56%
	Right	95	230	135	142%	20	211	191	955%
	EB Total	498	926	428	86%	1,014	1,763	749	74%
WEST BOUND	Left	167	290	123	74%	66	329	263	398%
	Through	738	1,255	517	70%	558	1,169	611	109%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	WB Total	905	1,545	640	71%	624	1,498	874	140%
TOTAL ENTERING VOLUME		1,493	2,920	1427	96%	1,701	3,870	2169	128%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	0	0			
North Leg	Outbound	0	0			
North Leg	**TOTAL**	**0**	**0**	**#DIV/0!**	**#DIV/0!**	**-**
South Leg	Inbound	449	609			
South Leg	Outbound	520	540			
South Leg	**TOTAL**	**969**	**1,149**	**6%**	**7%**	**16,000**
East Leg	Inbound	1,545	1,498			
East Leg	Outbound	990	1,890			
East Leg	**TOTAL**	**2,535**	**3,388**	**7%**	**9%**	**37,000**
West Leg	Inbound	926	1,763			
West Leg	Outbound	1,410	1,440			
West Leg	**TOTAL**	**2,336**	**3,203**	**6%**	**9%**	**37,000**
OVERALL TOTAL		***5,840***	***7,740***	**6%**	***9%***	***90,000***

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Project:	Baxter Village TIA	Job #:	12651
Scenario:	Gen Plan Buildout (2040)	Analyst:	CP
		Date:	43640

LOCATION: Monte Vista Dr. & Baxter Rd.
FORECAST YEAR: 2035

Monte Vista Drive (NS) / Baxter Road (EW)

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	NB Total	0	0	0	#DIV/0!	0	0	0	#DIV/0!
SOUTH BOUND	Left	130	295	165	127%	38	197	159	418%
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	146	215	69	47%	92	532	440	478%
	SB Total	276	510	234	85%	130	729	599	461%
EAST BOUND	Left	119	425	306	257%	60	220	160	267%
	Through	180	395	215	119%	115	70	-45	-39%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	EB Total	299	820	521	174%	175	290	115	66%
WEST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	196	315	119	61%	91	343	252	277%
	Right	61	245	184	302%	21	428	407	1938%
	WB Total	257	560	303	118%	112	771	659	588%
TOTAL ENTERING VOLUME		832	1,890	1058	127%	417	1,790	1373	329%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	510	729			
North Leg	Outbound	670	648			
North Leg	**TOTAL**	**1,180**	**1,377**	**7%**	**8%**	**18,000**
South Leg	Inbound	0	0			
South Leg	Outbound	0	0			
South Leg	**TOTAL**	**0**	**0**	**#DIV/0!**	**#DIV/0!**	**-**
East Leg	Inbound	560	771			
East Leg	Outbound	690	267			
East Leg	**TOTAL**	**1,250**	**1,038**	**6%**	**5%**	**20,000**
West Leg	Inbound	820	290			
West Leg	Outbound	530	875			
West Leg	**TOTAL**	**1,350**	**1,165**	**6%**	**5%**	**22,000**
OVERALL TOTAL		***3,780***	***3,580***	**6%**	***6%***	***60,000***

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APPENDIX 5.1:

E+P CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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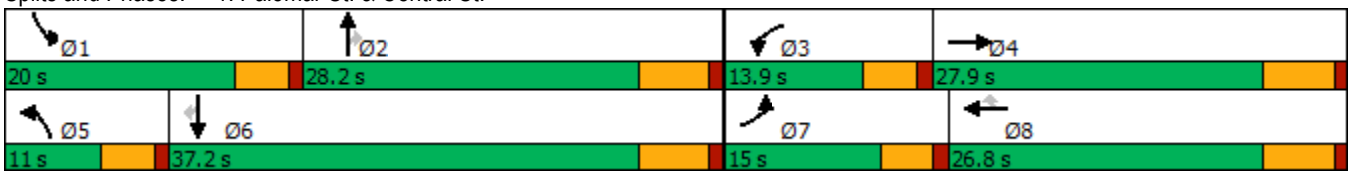
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	136	340	82	223	152	67	295	113	257	338	128
Future Volume (vph)	136	340	82	223	152	67	295	113	257	338	128
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	26.8	9.6	26.8	26.8	9.6	26.8	26.8	9.6	26.8	26.8
Total Split (s)	15.0	27.9	13.9	26.8	26.8	11.0	28.2	28.2	20.0	37.2	37.2
Total Split (%)	16.7%	31.0%	15.4%	29.8%	29.8%	12.2%	31.3%	31.3%	22.2%	41.3%	41.3%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	3.6	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	5.8	4.6	5.8	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	9.6	19.7	7.8	15.7	15.7	6.1	22.5	22.5	15.0	33.6	33.6
Actuated g/C Ratio	0.11	0.24	0.09	0.19	0.19	0.07	0.27	0.27	0.18	0.40	0.40
v/c Ratio	0.73	0.57	0.54	0.69	0.36	0.57	0.64	0.22	0.88	0.49	0.19
Control Delay	59.2	29.8	50.1	42.9	4.7	57.4	35.2	1.4	64.1	23.8	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.2	29.8	50.1	42.9	4.7	57.4	35.2	1.4	64.1	23.8	4.2
LOS	E	C	D	D	A	E	D	A	E	C	A
Approach Delay		36.8		31.5			30.3			34.6	
Approach LOS		D		C			C			C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 83.7	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 33.6	Intersection LOS: C
Intersection Capacity Utilization 66.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Palomar St. & Central St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	340	100	82	223	152	67	295	113	257	338	128
Future Volume (veh/h)	136	340	100	82	223	152	67	295	113	257	338	128
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	148	370	109	89	242	165	73	321	123	279	367	139
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	183	554	161	114	309	262	94	536	455	318	772	654
Arrive On Green	0.10	0.20	0.20	0.06	0.17	0.17	0.05	0.29	0.29	0.18	0.41	0.41
Sat Flow, veh/h	1781	2715	790	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	148	240	239	89	242	165	73	321	123	279	367	139
Grp Sat Flow(s),veh/h/ln	1781	1777	1728	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.3	9.7	10.0	3.8	9.7	7.6	3.2	11.5	4.7	11.9	11.2	4.4
Cycle Q Clear(g_c), s	6.3	9.7	10.0	3.8	9.7	7.6	3.2	11.5	4.7	11.9	11.2	4.4
Prop In Lane	1.00		0.46	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	183	363	353	114	309	262	94	536	455	318	772	654
V/C Ratio(X)	0.81	0.66	0.68	0.78	0.78	0.63	0.78	0.60	0.27	0.88	0.48	0.21
Avail Cap(c_a), veh/h	237	503	489	212	503	426	146	536	455	351	772	654
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	28.6	28.7	36.0	31.3	30.4	36.6	24.0	21.5	31.2	16.8	14.8
Incr Delay (d2), s/veh	11.2	2.1	2.3	4.2	4.3	2.5	5.2	4.9	1.5	18.7	2.1	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	4.0	4.0	1.7	4.4	2.9	1.4	5.3	1.8	6.4	4.6	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.5	30.7	31.0	40.2	35.6	32.9	41.7	28.9	23.0	50.0	18.8	15.5
LnGrp LOS	D	C	C	D	D	C	D	C	C	D	B	B
Approach Vol, veh/h		627			496			517			785	
Approach Delay, s/veh		34.3			35.5			29.3			29.3	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.6	28.2	9.6	21.7	8.7	38.0	12.6	18.7
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	15.4	22.4	9.3	22.1	6.4	31.4	10.4	21.0
Max Q Clear Time (g_c+I1), s	13.9	13.5	5.8	12.0	5.2	13.2	8.3	11.7
Green Ext Time (p_c), s	0.1	1.4	0.0	1.9	0.0	2.3	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	31.9
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	6	13	145	127	3
Future Vol, veh/h	9	6	13	145	127	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	7	14	158	138	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	326	140	141	0	-	0
Stage 1	140	-	-	-	-	-
Stage 2	186	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	668	908	1442	-	-	-
Stage 1	887	-	-	-	-	-
Stage 2	846	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	661	908	1442	-	-	-
Mov Cap-2 Maneuver	661	-	-	-	-	-
Stage 1	877	-	-	-	-	-
Stage 2	846	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1442	-	742	-	-
HCM Lane V/C Ratio	0.01	-	0.022	-	-
HCM Control Delay (s)	7.5	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	32.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	85	817	545	74	122	11
Future Vol, veh/h	85	817	545	74	122	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	91	878	586	80	131	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	666	0	-	0	1686	626
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	1060	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	923	-	-	-	~ 103	484
Stage 1	-	-	-	-	533	-
Stage 2	-	-	-	-	333	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	923	-	-	-	~ 83	484
Mov Cap-2 Maneuver	-	-	-	-	~ 83	-
Stage 1	-	-	-	-	430	-
Stage 2	-	-	-	-	333	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	$ 400.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	923	-	-	-	89
HCM Lane V/C Ratio	0.099	-	-	-	1.607
HCM Control Delay (s)	9.3	0	-	-	$ 400.8
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	11.4

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Vol, veh/h	0	939	586	87	0	33
Future Vol, veh/h	0	939	586	87	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	200	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1021	637	95	0	36

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	637
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	477
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	477
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	477
HCM Lane V/C Ratio	-	-	-	0.075
HCM Control Delay (s)	-	-	-	13.2
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.2

Intersection	
Intersection Delay, s/veh	249.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	421	516	90	444	0	0	0	0	136	1	229
Future Vol, veh/h	0	421	516	90	444	0	0	0	0	136	1	229
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	0	5	4	6	6	0	0	0	0	2	0	5
Mvmt Flow	0	484	593	103	510	0	0	0	0	156	1	263
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	438.8	64.1	34.7
HCM LOS	F	F	D

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	37%
Vol Thru, %	45%	0%	100%	0%
Vol Right, %	55%	0%	0%	63%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	937	90	444	366
LT Vol	0	90	0	136
Through Vol	421	0	444	1
RT Vol	516	0	0	229
Lane Flow Rate	1077	103	510	421
Geometry Grp	5	7	7	2
Degree of Util (X)	1.925	0.219	1.008	0.785
Departure Headway (Hd)	6.436	8.821	8.301	8.048
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	571	410	439	454
Service Time	4.487	6.521	6.001	6.048
HCM Lane V/C Ratio	1.886	0.251	1.162	0.927
HCM Control Delay	438.8	14	74.2	34.7
HCM Lane LOS	F	B	F	D
HCM 95th-tile Q	69.9	0.8	13	6.9

Intersection	
Intersection Delay, s/veh	25.8
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	290	267	0	0	276	146	259	0	64	0	0	0
Future Vol, veh/h	290	267	0	0	276	146	259	0	64	0	0	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	5	4	0	0	6	3	6	0	8	0	0	0
Mvmt Flow	333	307	0	0	317	168	298	0	74	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Righ	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	21.6	32.7	24.2
HCM LOS	C	D	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	80%	100%	0%	0%
Vol Thru, %	0%	0%	100%	65%
Vol Right, %	20%	0%	0%	35%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	323	290	267	422
LT Vol	259	290	0	0
Through Vol	0	0	267	276
RT Vol	64	0	0	146
Lane Flow Rate	371	333	307	485
Geometry Grp	2	7	7	5
Degree of Util (X)	0.698	0.681	0.582	0.83
Departure Headway (Hd)	6.771	7.352	6.823	6.163
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	531	493	531	582
Service Time	4.865	5.052	4.523	4.261
HCM Lane V/C Ratio	0.699	0.675	0.578	0.833
HCM Control Delay	24.2	24.3	18.6	32.7
HCM Lane LOS	C	C	C	D
HCM 95th-tile Q	5.4	5.1	3.7	8.6

Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	403	114	187	738	32	73
Future Vol, veh/h	403	114	187	738	32	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	175	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	463	131	215	848	37	84

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	594	0	1807	529
Stage 1	-	-	-	-	529	-
Stage 2	-	-	-	-	1278	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	982	-	87	550
Stage 1	-	-	-	-	591	-
Stage 2	-	-	-	-	262	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	982	-	68	550
Mov Cap-2 Maneuver	-	-	-	-	188	-
Stage 1	-	-	-	-	591	-
Stage 2	-	-	-	-	205	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	20.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	347	-	-	982	-
HCM Lane V/C Ratio	0.348	-	-	0.219	-
HCM Control Delay (s)	20.8	-	-	9.7	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1.5	-	-	0.8	-

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	143	188	223	61	130	197
Future Vol, veh/h	143	188	223	61	130	197
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	174	229	272	74	159	240

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	346	0	-	0	849	272
Stage 1	-	-	-	-	272	-
Stage 2	-	-	-	-	577	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1213	-	-	-	331	767
Stage 1	-	-	-	-	774	-
Stage 2	-	-	-	-	562	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1213	-	-	-	277	767
Mov Cap-2 Maneuver	-	-	-	-	400	-
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	562	-

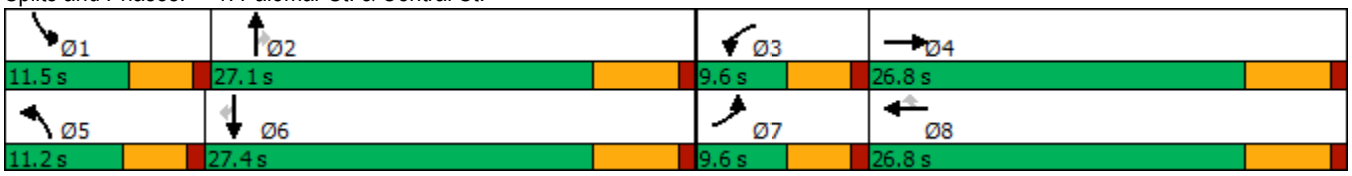
Approach	EB	WB	SB
HCM Control Delay, s	3.7	0	15
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1213	-	-	-	400	767
HCM Lane V/C Ratio	0.144	-	-	-	0.396	0.313
HCM Control Delay (s)	8.5	0	-	-	19.8	11.8
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.9	1.3

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	50	266	103	311	268	54	258	90	157	188	72
Future Volume (vph)	50	266	103	311	268	54	258	90	157	188	72
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	26.8	9.6	26.8	26.8	9.6	26.8	26.8	9.6	26.8	26.8
Total Split (s)	9.6	26.8	9.6	26.8	26.8	11.2	27.1	27.1	11.5	27.4	27.4
Total Split (%)	12.8%	35.7%	12.8%	35.7%	35.7%	14.9%	36.1%	36.1%	15.3%	36.5%	36.5%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	3.6	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	5.8	4.6	5.8	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	5.0	15.7	5.0	19.9	19.9	6.0	21.4	21.4	6.9	26.6	26.6
Actuated g/C Ratio	0.07	0.22	0.07	0.28	0.28	0.09	0.31	0.31	0.10	0.38	0.38
v/c Ratio	0.40	0.37	0.83	0.60	0.42	0.36	0.46	0.15	0.91	0.27	0.10
Control Delay	42.7	22.9	82.3	28.1	5.3	38.7	24.1	0.6	86.5	19.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.7	22.9	82.3	28.1	5.3	38.7	24.1	0.6	86.5	19.8	0.3
LOS	D	C	F	C	A	D	C	A	F	B	A
Approach Delay		25.9		27.3			20.8			41.6	
Approach LOS		C		C			C			D	

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 70	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 28.9	Intersection LOS: C
Intersection Capacity Utilization 60.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Palomar St. & Central St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	266	20	103	311	268	54	258	90	157	188	72
Future Volume (veh/h)	50	266	20	103	311	268	54	258	90	157	188	72
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	51	271	20	105	317	273	55	263	92	160	192	73
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	635	47	134	409	346	85	598	507	185	702	595
Arrive On Green	0.05	0.19	0.19	0.08	0.22	0.22	0.05	0.32	0.32	0.10	0.38	0.38
Sat Flow, veh/h	1781	3357	246	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	51	143	148	105	317	273	55	263	92	160	192	73
Grp Sat Flow(s),veh/h/ln	1781	1777	1826	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.9	4.7	4.8	3.9	10.6	10.8	2.0	7.4	2.8	5.9	4.8	2.0
Cycle Q Clear(g_c), s	1.9	4.7	4.8	3.9	10.6	10.8	2.0	7.4	2.8	5.9	4.8	2.0
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	82	336	346	134	409	346	85	598	507	185	702	595
V/C Ratio(X)	0.62	0.42	0.43	0.79	0.78	0.79	0.64	0.44	0.18	0.87	0.27	0.12
Avail Cap(c_a), veh/h	134	560	576	134	590	500	177	598	507	185	702	595
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.2	23.8	23.8	30.3	24.5	24.6	31.1	17.9	16.4	29.4	14.5	13.6
Incr Delay (d2), s/veh	2.9	0.8	0.8	23.9	4.0	5.3	3.0	2.3	0.8	31.5	1.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.9	1.9	2.4	4.6	4.1	0.9	3.2	1.0	3.9	1.9	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.1	24.6	24.7	54.2	28.5	29.9	34.2	20.3	17.1	60.9	15.4	14.0
LnGrp LOS	C	C	C	D	C	C	C	C	B	E	B	B
Approach Vol, veh/h		342			695			410			425	
Approach Delay, s/veh		26.1			32.9			21.4			32.3	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.5	27.1	9.6	18.4	7.8	30.8	7.7	20.4
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	6.9	21.3	5.0	21.0	6.6	21.6	5.0	21.0
Max Q Clear Time (g_c+I1), s	7.9	9.4	5.9	6.8	4.0	6.8	3.9	12.8
Green Ext Time (p_c), s	0.0	1.3	0.0	1.2	0.0	1.0	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	29.0
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	7	12	154	205	10
Future Vol, veh/h	4	7	12	154	205	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	8	13	167	223	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	422	229	234	0	-	0
Stage 1	229	-	-	-	-	-
Stage 2	193	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	588	810	1333	-	-	-
Stage 1	809	-	-	-	-	-
Stage 2	840	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	582	810	1333	-	-	-
Mov Cap-2 Maneuver	582	-	-	-	-	-
Stage 1	800	-	-	-	-	-
Stage 2	840	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1333	-	709	-	-
HCM Lane V/C Ratio	0.01	-	0.017	-	-
HCM Control Delay (s)	7.7	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	62.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	58	566	784	108	192	20
Future Vol, veh/h	58	566	784	108	192	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	584	808	111	198	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	919	0	-	0	1568	864
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	704	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	743	-	-	-	~ 122	354
Stage 1	-	-	-	-	413	-
Stage 2	-	-	-	-	490	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	743	-	-	-	~ 107	354
Mov Cap-2 Maneuver	-	-	-	-	~ 107	-
Stage 1	-	-	-	-	364	-
Stage 2	-	-	-	-	490	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	$ 502.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	743	-	-	-	115
HCM Lane V/C Ratio	0.08	-	-	-	1.908
HCM Control Delay (s)	10.3	0	-	-	$ 502.6
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	17.7

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Vol, veh/h	0	758	808	51	0	84
Future Vol, veh/h	0	758	808	51	0	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	200	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	824	878	55	0	91

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	878
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	347
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	347
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	19
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	347
HCM Lane V/C Ratio	-	-	-	0.263
HCM Control Delay (s)	-	-	-	19
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	1

Intersection	
Intersection Delay, s/veh	123.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	335	427	41	633	0	0	0	0	64	3	228
Future Vol, veh/h	0	335	427	41	633	0	0	0	0	64	3	228
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	0	9	7	2	8	0	0	0	0	9	33	8
Mvmt Flow	0	345	440	42	653	0	0	0	0	66	3	235
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	164.8	123.2	19.8
HCM LOS	F	F	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	22%
Vol Thru, %	44%	0%	100%	1%
Vol Right, %	56%	0%	0%	77%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	762	41	633	295
LT Vol	0	41	0	64
Through Vol	335	0	633	3
RT Vol	427	0	0	228
Lane Flow Rate	786	42	653	304
Geometry Grp	5	7	7	2
Degree of Util (X)	1.294	0.082	1.199	0.568
Departure Headway (Hd)	6.212	7.407	6.998	7.431
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	589	487	522	490
Service Time	4.212	5.107	4.698	5.431
HCM Lane V/C Ratio	1.334	0.086	1.251	0.62
HCM Control Delay	164.8	10.8	130.5	19.8
HCM Lane LOS	F	B	F	C
HCM 95th-tile Q	30.5	0.3	22.9	3.5

Intersection	
Intersection Delay, s/veh	31.1
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	176	224	0	0	172	57	502	6	44	0	0	0
Future Vol, veh/h	176	224	0	0	172	57	502	6	44	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	7	11	0	0	9	5	6	33	9	0	0	0
Mvmt Flow	181	231	0	0	177	59	518	6	45	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	15.1	14.7	49.5
HCM LOS	C	B	E

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	91%	100%	0%	0%
Vol Thru, %	1%	0%	100%	75%
Vol Right, %	8%	0%	0%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	552	176	224	229
LT Vol	502	176	0	0
Through Vol	6	0	224	172
RT Vol	44	0	0	57
Lane Flow Rate	569	181	231	236
Geometry Grp	2	7	7	5
Degree of Util (X)	0.948	0.376	0.45	0.433
Departure Headway (Hd)	5.995	7.451	7.009	6.609
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	603	479	510	541
Service Time	4.061	5.247	4.804	4.706
HCM Lane V/C Ratio	0.944	0.378	0.453	0.436
HCM Control Delay	49.5	14.7	15.5	14.7
HCM Lane LOS	E	B	C	B
HCM 95th-tile Q	12.7	1.7	2.3	2.2

Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	994	31	78	558	36	70
Future Vol, veh/h	994	31	78	558	36	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	175	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1117	35	88	627	40	79

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1152	0	1938	1135
Stage 1	-	-	-	-	1135	-
Stage 2	-	-	-	-	803	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	606	-	72	246
Stage 1	-	-	-	-	307	-
Stage 2	-	-	-	-	441	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	606	-	62	246
Mov Cap-2 Maneuver	-	-	-	-	232	-
Stage 1	-	-	-	-	307	-
Stage 2	-	-	-	-	377	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	33.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	241	-	-	606	-
HCM Lane V/C Ratio	0.494	-	-	0.145	-
HCM Control Delay (s)	33.7	-	-	11.9	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	2.5	-	-	0.5	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	121	146	103	21	38	125
Future Vol, veh/h	121	146	103	21	38	125
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	162	114	23	42	139

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	137	0	-	0	544	114
Stage 1	-	-	-	-	114	-
Stage 2	-	-	-	-	430	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1447	-	-	-	500	939
Stage 1	-	-	-	-	911	-
Stage 2	-	-	-	-	656	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1447	-	-	-	449	939
Mov Cap-2 Maneuver	-	-	-	-	531	-
Stage 1	-	-	-	-	818	-
Stage 2	-	-	-	-	656	-

Approach	EB	WB	SB
HCM Control Delay, s	3.5	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1447	-	-	-	531	939
HCM Lane V/C Ratio	0.093	-	-	-	0.08	0.148
HCM Control Delay (s)	7.7	0	-	-	12.4	9.5
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0.3	0.5

APPENDIX 5.2:

E+P CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS			E+P
				CALC	CP	DATE	06/25/19
Jurisdiction:	City of Wildomar			CHK	CP	DATE	06/25/19
Major Street:	Baxter Rd.			Critical Approach Speed (Major)			45 mph
Minor Street:	Driveway 1			Critical Approach Speed (Minor)			25 mph

Major Street Approach Lanes = **1** lane

Minor Street Approach Lanes **1** lane

Major Street Future ADT = **4,089** vpd

Minor Street Future ADT = **168** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……... [√]

or

In built up area of isolated community of < 10,000 population …….. [ ]

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN	RURAL	Minimum Requirements EADT			
	XX				
CONDITION A - Minimum Vehicular Volume					
Satisfied	Not Satisfied				
	XX				
Number of lanes for moving traffic on each approach		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **4,089**	*1* **168**	8,000	5,600	2,400	1,680
2 +	*1*	9,600	6,720	2,400	1,680
2 +	*2 +*	9,600	6,720	3,200	2,240
1	*2 +*	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic					
Satisfied	Not Satisfied				
	XX				
Number of lanes for moving traffic on each approach		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **4,089**	*1* **168**	12,000	8,400	1,200	850
2 +	*1*	14,400	10,080	1,200	850
2 +	*2 +*	14,400	10,080	1,600	1,120
1	*2 +*	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B					
Satisfied	Not Satisfied				
	XX	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more …..	**A** / **B**				
	10% / 20%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

URBAN CROSSROADS

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

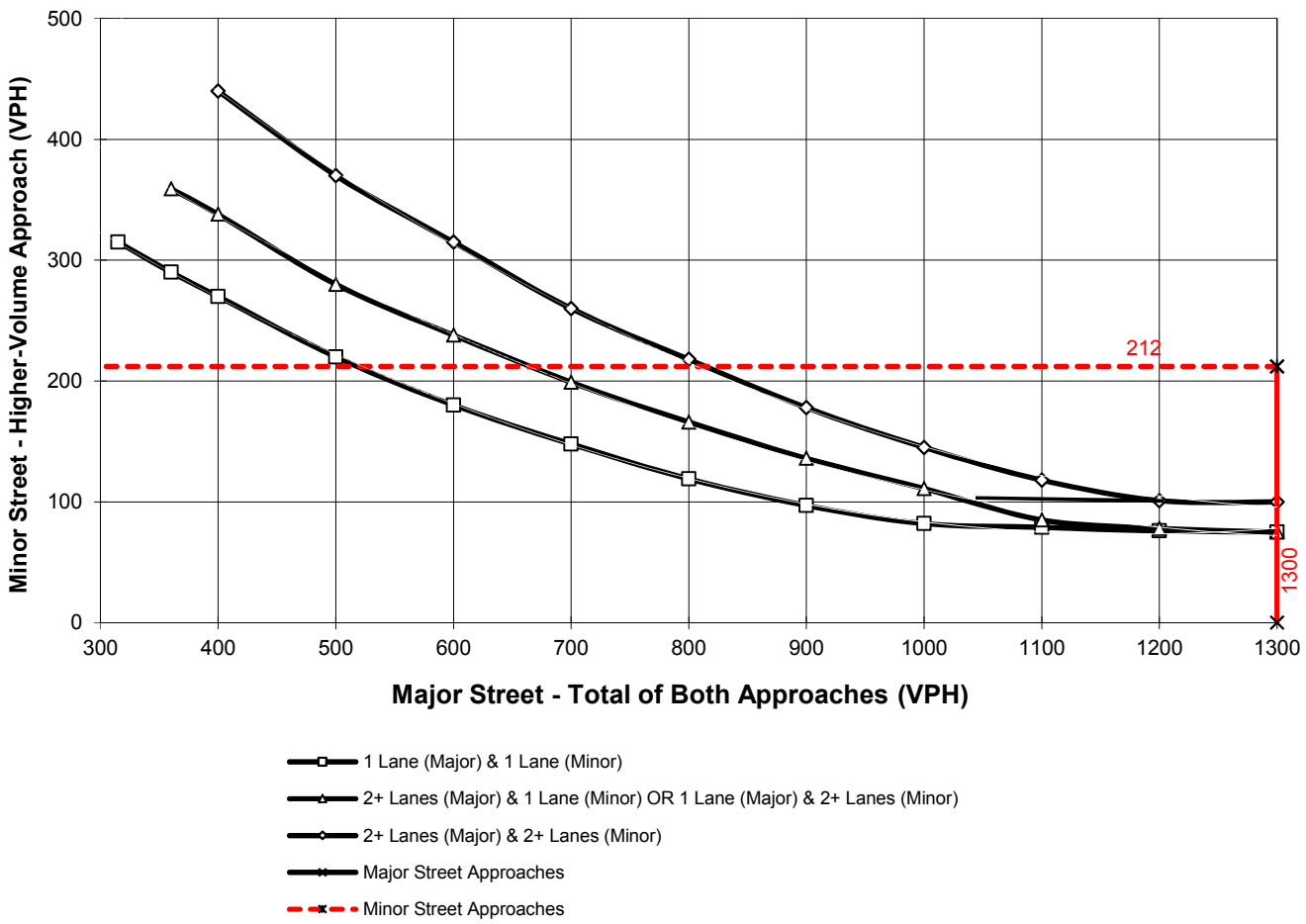
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **E+P Conditions - Weekday PM Peak Hour**

Major Street Name = **Baxter Rd.**
Total of Both Approaches (VPH) = **1516**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Central St.**
High Volume Approach (VPH) = **212**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

APPENDIX 5.3:

E+P CONDITIONS OFF-RAMP QUEUING ANALYSIS WORKSHEETS

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Intersection	
Intersection Delay, s/veh	249.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	421	516	90	444	0	0	0	0	136	1	229
Future Vol, veh/h	0	421	516	90	444	0	0	0	0	136	1	229
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	0	5	4	6	6	0	0	0	0	2	0	5
Mvmt Flow	0	484	593	103	510	0	0	0	0	156	1	263
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	438.8	64.1	34.7
HCM LOS	F	F	D

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	37%
Vol Thru, %	45%	0%	100%	0%
Vol Right, %	55%	0%	0%	63%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	937	90	444	366
LT Vol	0	90	0	136
Through Vol	421	0	444	1
RT Vol	516	0	0	229
Lane Flow Rate	1077	103	510	421
Geometry Grp	5	7	7	2
Degree of Util (X)	1.925	0.219	1.008	0.785
Departure Headway (Hd)	6.436	8.821	8.301	8.048
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	571	410	439	454
Service Time	4.487	6.521	6.001	6.048
HCM Lane V/C Ratio	1.886	0.251	1.162	0.927
HCM Control Delay	438.8	14	74.2	34.7
HCM Lane LOS	F	B	F	D
HCM 95th-tile Q	69.9	0.8	13	6.9

Intersection	
Intersection Delay, s/veh	25.8
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	290	267	0	0	276	146	259	0	64	0	0	0
Future Vol, veh/h	290	267	0	0	276	146	259	0	64	0	0	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	5	4	0	0	6	3	6	0	8	0	0	0
Mvmt Flow	333	307	0	0	317	168	298	0	74	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Righ	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	21.6	32.7	24.2
HCM LOS	C	D	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	80%	100%	0%	0%
Vol Thru, %	0%	0%	100%	65%
Vol Right, %	20%	0%	0%	35%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	323	290	267	422
LT Vol	259	290	0	0
Through Vol	0	0	267	276
RT Vol	64	0	0	146
Lane Flow Rate	371	333	307	485
Geometry Grp	2	7	7	5
Degree of Util (X)	0.698	0.681	0.582	0.83
Departure Headway (Hd)	6.771	7.352	6.823	6.163
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	531	493	531	582
Service Time	4.865	5.052	4.523	4.261
HCM Lane V/C Ratio	0.699	0.675	0.578	0.833
HCM Control Delay	24.2	24.3	18.6	32.7
HCM Lane LOS	C	C	C	D
HCM 95th-tile Q	5.4	5.1	3.7	8.6

Intersection	
Intersection Delay, s/veh	123.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	335	427	41	633	0	0	0	0	64	3	228
Future Vol, veh/h	0	335	427	41	633	0	0	0	0	64	3	228
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	0	9	7	2	8	0	0	0	0	9	33	8
Mvmt Flow	0	345	440	42	653	0	0	0	0	66	3	235
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	164.8	123.2	19.8
HCM LOS	F	F	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	22%
Vol Thru, %	44%	0%	100%	1%
Vol Right, %	56%	0%	0%	77%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	762	41	633	295
LT Vol	0	41	0	64
Through Vol	335	0	633	3
RT Vol	427	0	0	228
Lane Flow Rate	786	42	653	304
Geometry Grp	5	7	7	2
Degree of Util (X)	1.294	0.082	1.199	0.568
Departure Headway (Hd)	6.212	7.407	6.998	7.431
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	589	487	522	490
Service Time	4.212	5.107	4.698	5.431
HCM Lane V/C Ratio	1.334	0.086	1.251	0.62
HCM Control Delay	164.8	10.8	130.5	19.8
HCM Lane LOS	F	B	F	C
HCM 95th-tile Q	30.5	0.3	22.9	3.5

Intersection	
Intersection Delay, s/veh	31.1
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	176	224	0	0	172	57	502	6	44	0	0	0
Future Vol, veh/h	176	224	0	0	172	57	502	6	44	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	7	11	0	0	9	5	6	33	9	0	0	0
Mvmt Flow	181	231	0	0	177	59	518	6	45	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	15.1	14.7	49.5
HCM LOS	C	B	E

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	91%	100%	0%	0%
Vol Thru, %	1%	0%	100%	75%
Vol Right, %	8%	0%	0%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	552	176	224	229
LT Vol	502	176	0	0
Through Vol	6	0	224	172
RT Vol	44	0	0	57
Lane Flow Rate	569	181	231	236
Geometry Grp	2	7	7	5
Degree of Util (X)	0.948	0.376	0.45	0.433
Departure Headway (Hd)	5.995	7.451	7.009	6.609
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	603	479	510	541
Service Time	4.061	5.247	4.804	4.706
HCM Lane V/C Ratio	0.944	0.378	0.453	0.436
HCM Control Delay	49.5	14.7	15.5	14.7
HCM Lane LOS	E	B	C	B
HCM 95th-tile Q	12.7	1.7	2.3	2.2

APPENDIX 5.4:

E+P CONDITIONS FREEWAY FACILITY ANALYSIS WORKSHEETS

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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Southbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	North of Baxter	3300	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2020	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	South of Baxter	4425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4594	7161	0.64	67.8	22.6	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.962	4594	414	7200	2100	0.64	0.20	64.7	60.6	23.7	26.1	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4161	7161	0.58	68.5	20.2	C

Segment 4: Merge

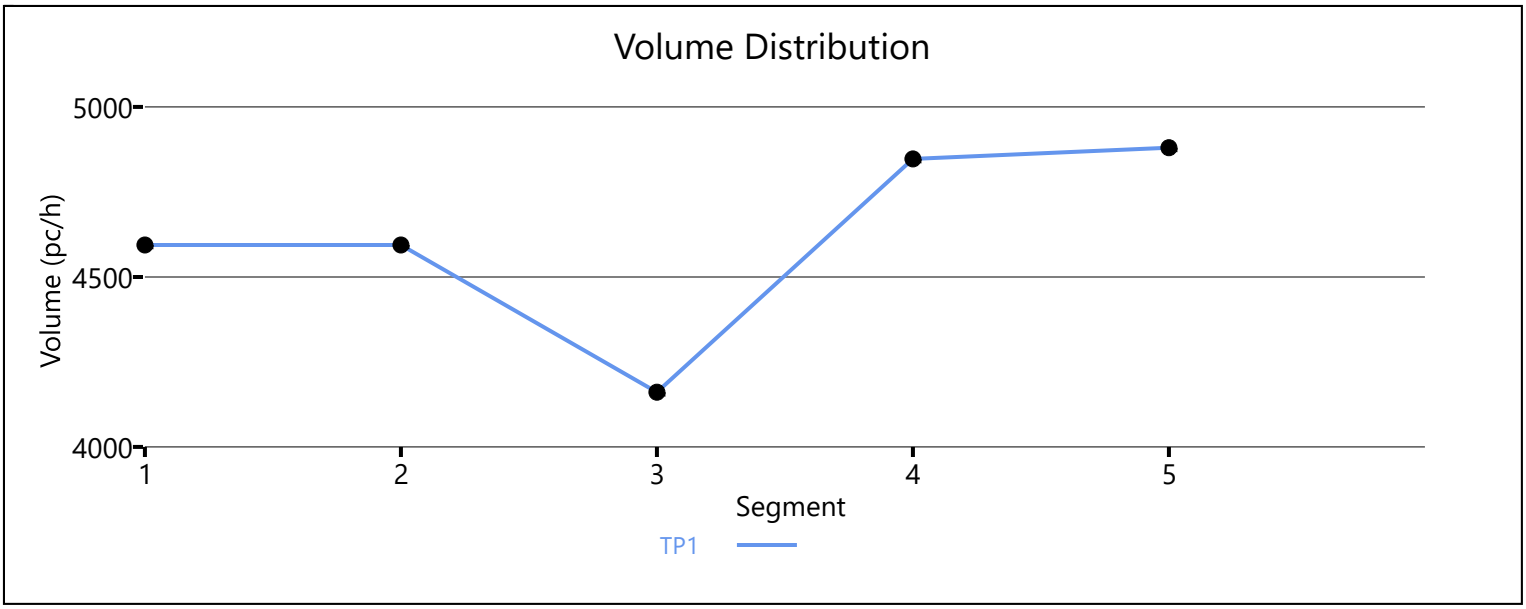
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.962	4847	686	7200	2100	0.67	0.33	62.3	60.6	25.9	24.6	C

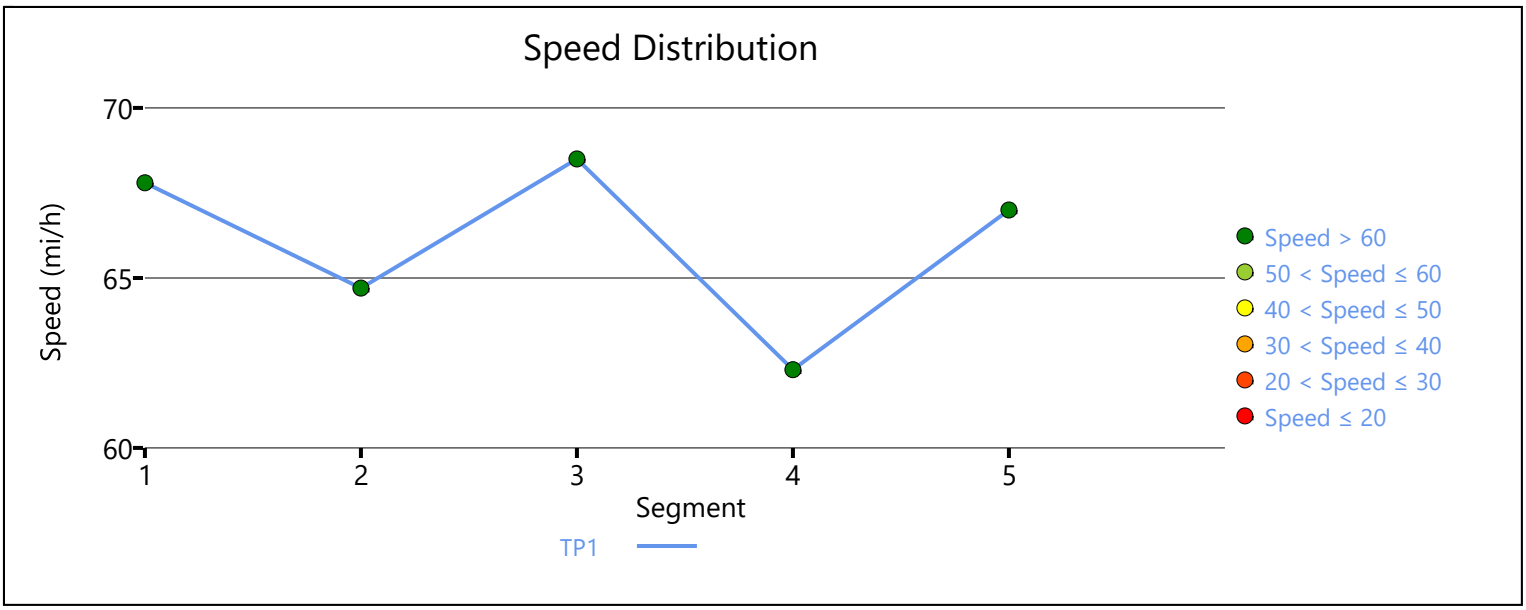
Segment 5: Basic

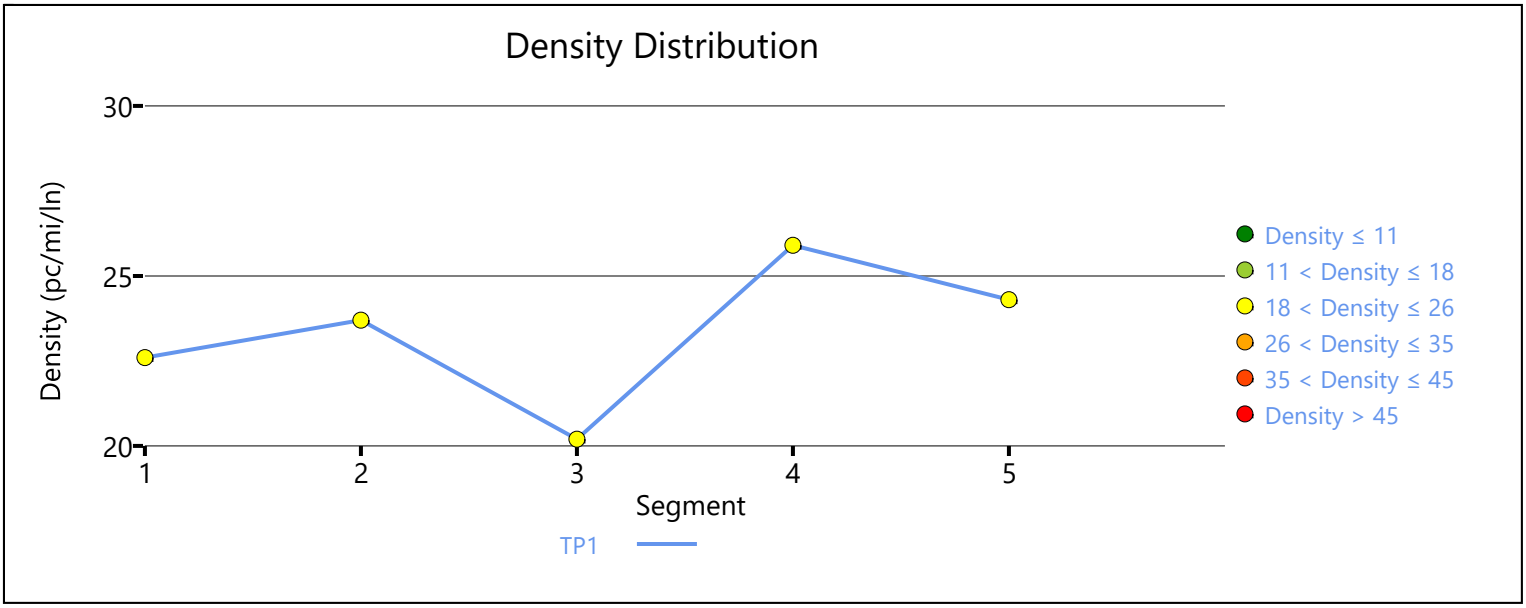
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4880	7161	0.68	67.0	24.3	C

Facility Time Period Results					
T	**Speed, mi/h**	**Density, pc/mi/ln**	**Density, veh/mi/ln**	**Travel Time, min**	**LOS**
1	66.5	23.3	21.4	2.2	C

Facility Overall Results			
Space Mean Speed, mi/h	66.5	Density, veh/mi/ln	21.4
Average Travel Time, min	2.2	Density, pc/mi/ln	23.3







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Northbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	South of Baxter	2680	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2220	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	North of Baxter	3425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4164	7161	0.58	68.5	20.3	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.943	4164	372	7200	2100	0.58	0.18	64.9	60.7	21.4	23.2	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	3781	7161	0.53	68.7	18.3	C

Segment 4: Merge

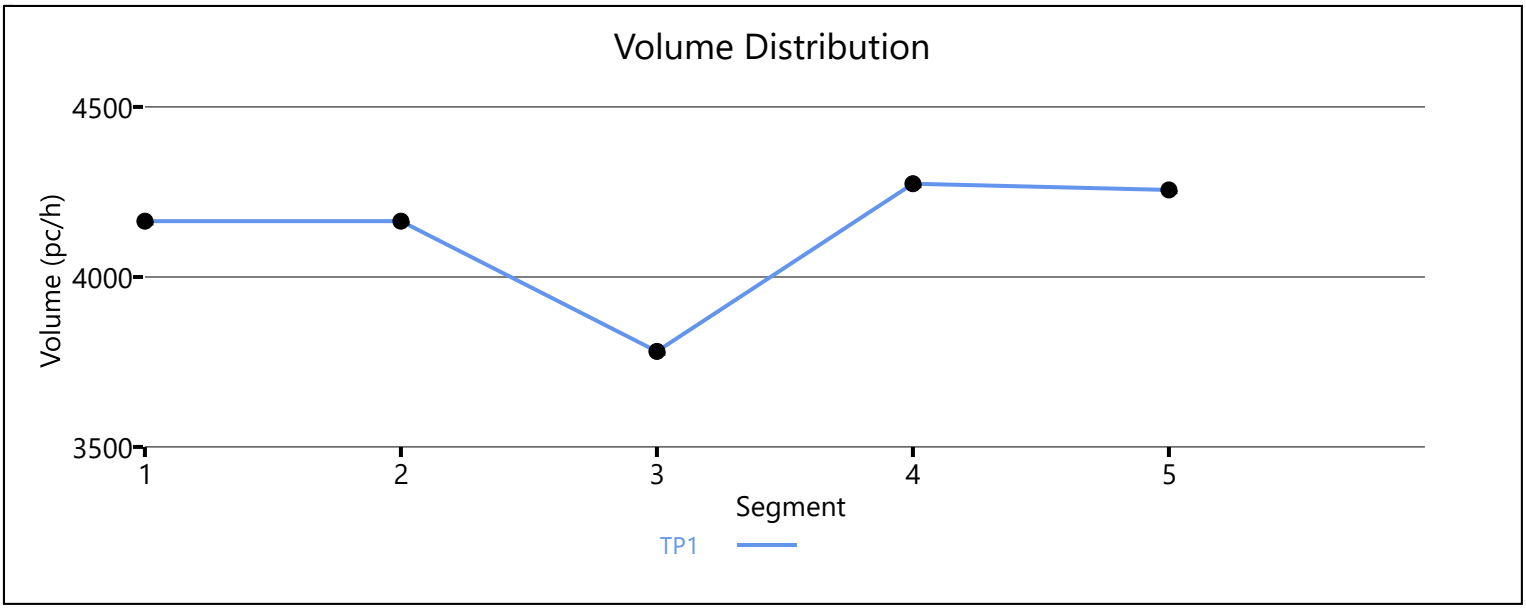
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.962	4274	493	7200	2100	0.59	0.23	62.9	61.2	22.6	22.0	C

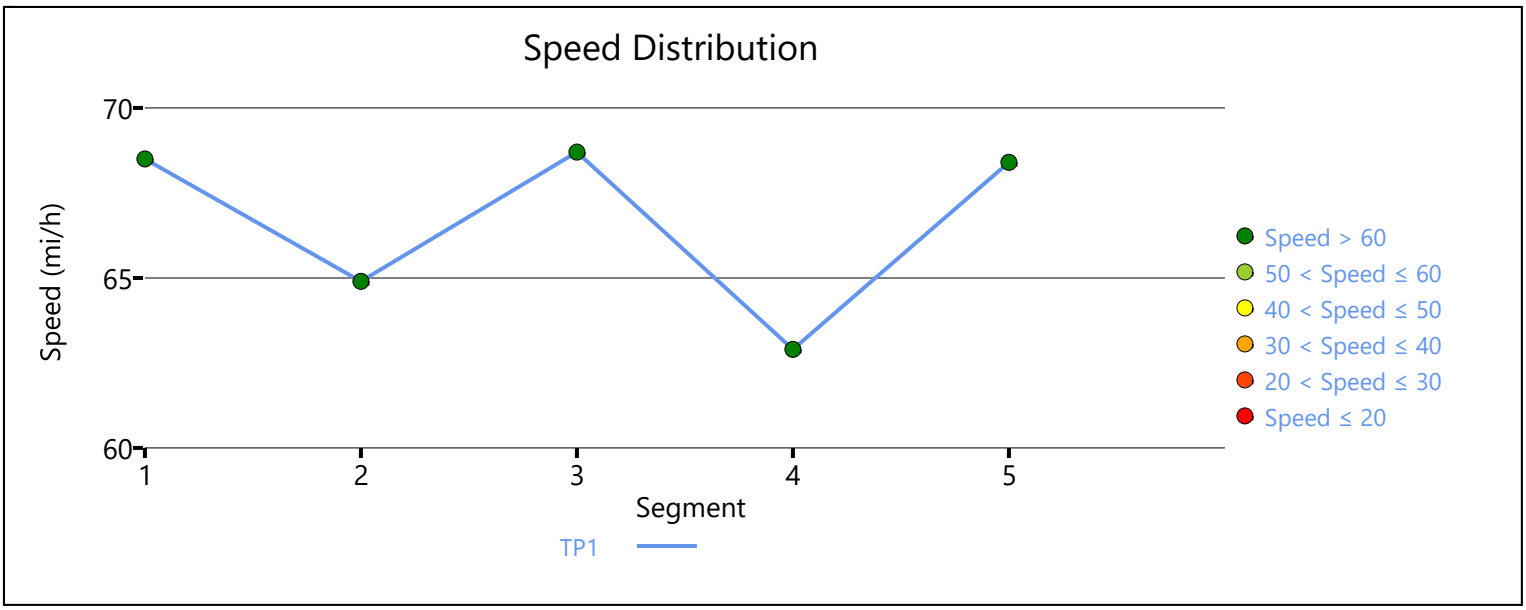
Segment 5: Basic

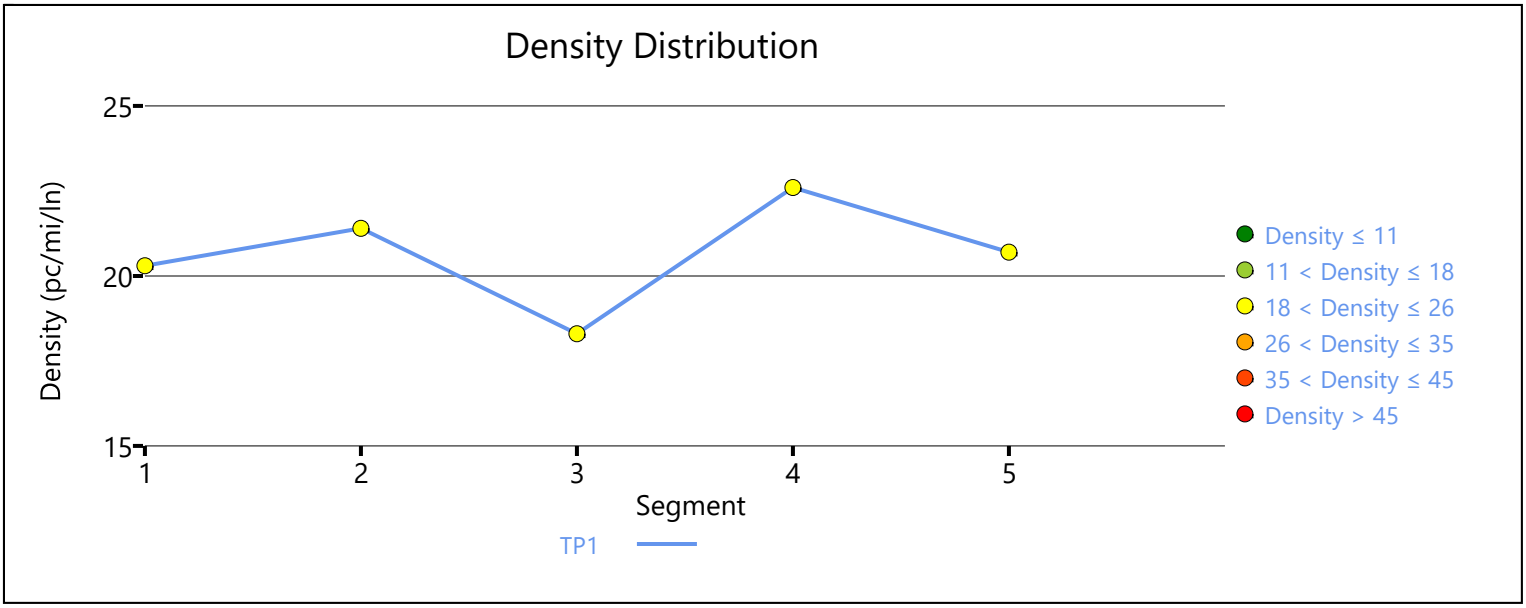
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.926	4256	7161	0.59	68.4	20.7	C

Facility Time Period Results					
T	**Speed, mi/h**	**Density, pc/mi/ln**	**Density, veh/mi/ln**	**Travel Time, min**	**LOS**
1	67.2	20.5	18.8	1.9	C

Facility Overall Results			
Space Mean Speed, mi/h	67.2	Density, veh/mi/ln	18.8
Average Travel Time, min	1.9	Density, pc/mi/ln	20.5







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Southbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	North of Baxter	3300	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2020	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	South of Baxter	4425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4638	7161	0.65	67.6	22.9	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.935	4638	343	7200	2100	0.64	0.16	64.9	60.8	23.8	26.2	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4289	7161	0.60	68.3	20.9	C

Segment 4: Merge

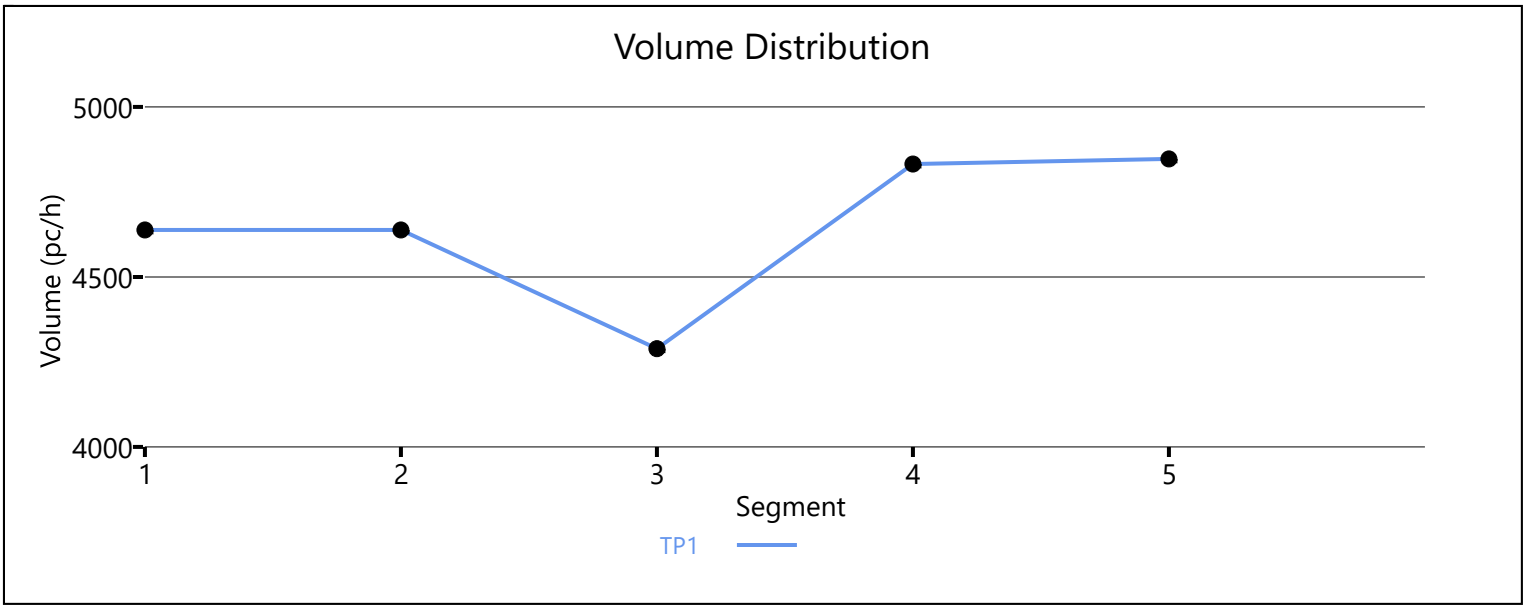
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.943	4832	543	7200	2100	0.67	0.26	62.4	60.7	25.8	24.2	C

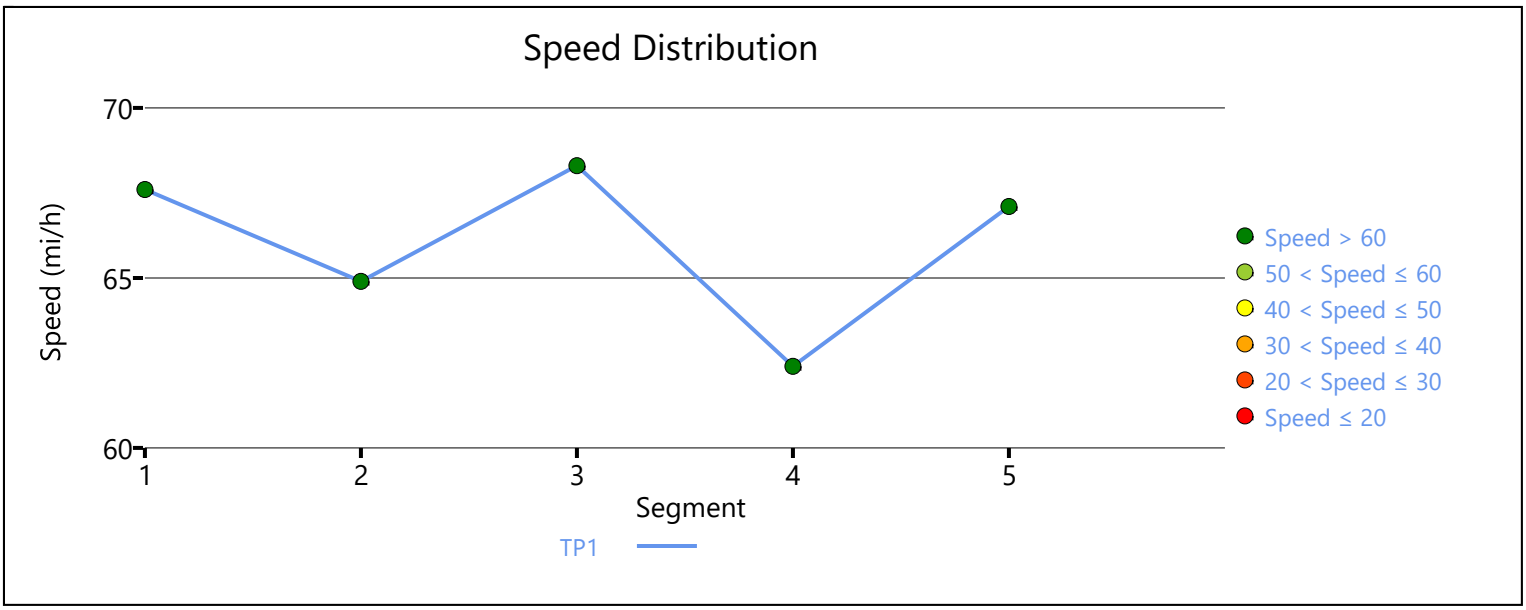
Segment 5: Basic

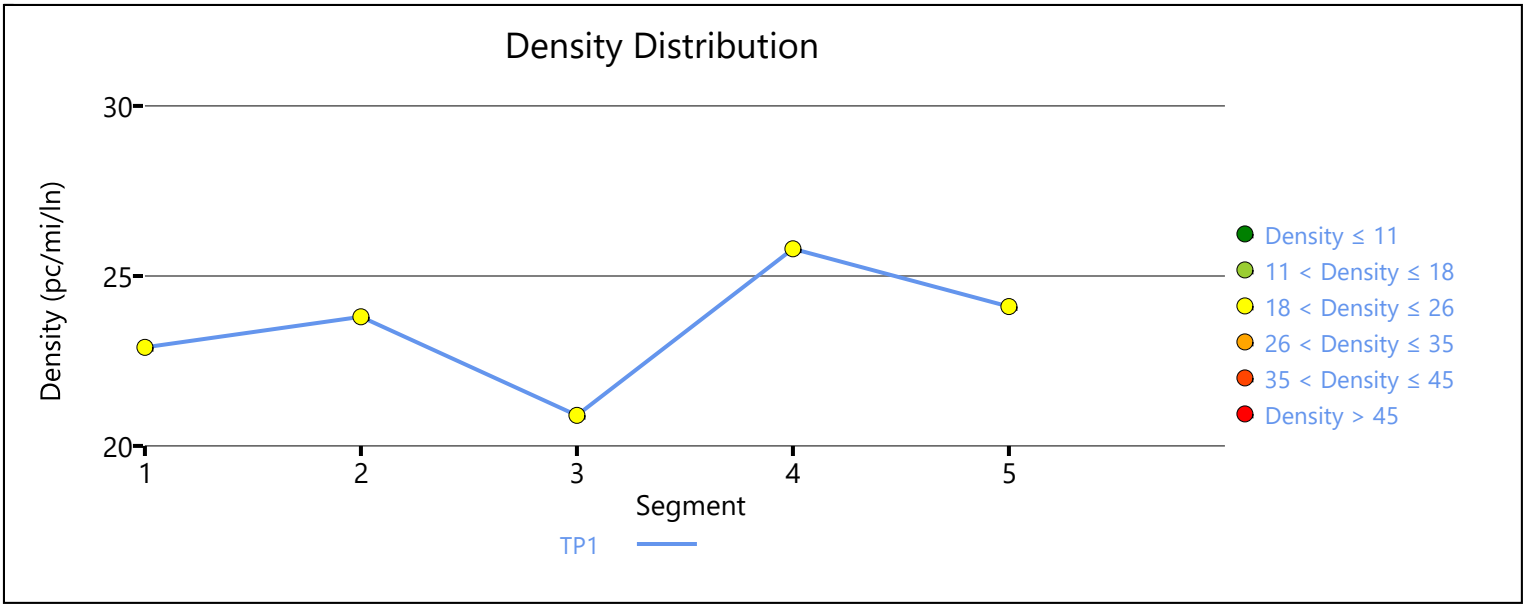
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4847	7161	0.68	67.1	24.1	C

Facility Time Period Results					
T	**Speed, mi/h**	**Density, pc/mi/ln**	**Density, veh/mi/ln**	**Travel Time, min**	**LOS**
1	66.5	23.5	21.5	2.2	C

Facility Overall Results			
Space Mean Speed, mi/h	66.5	Density, veh/mi/ln	21.5
Average Travel Time, min	2.2	Density, pc/mi/ln	23.5







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	E+P
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Northbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	South of Baxter	2680	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2220	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	North of Baxter	3425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	6120	7161	0.85	61.2	33.3	D

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.962	6120	624	7200	2100	0.85	0.30	64.0	60.1	31.9	31.9	D

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	5466	7161	0.76	64.8	28.1	D

Segment 4: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.943	5741	275	7200	2100	0.80	0.13	60.9	59.2	31.4	28.2	D

Segment 5: Basic

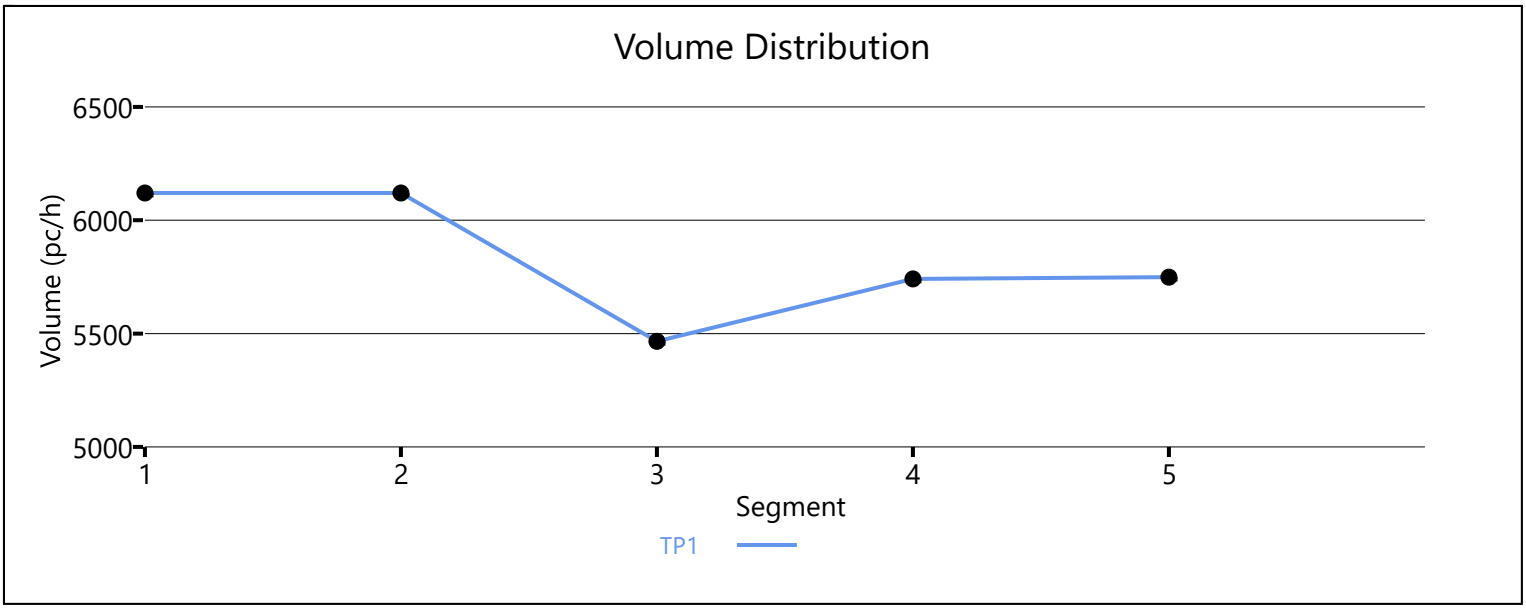
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	5749	7161	0.80	63.3	30.3	D

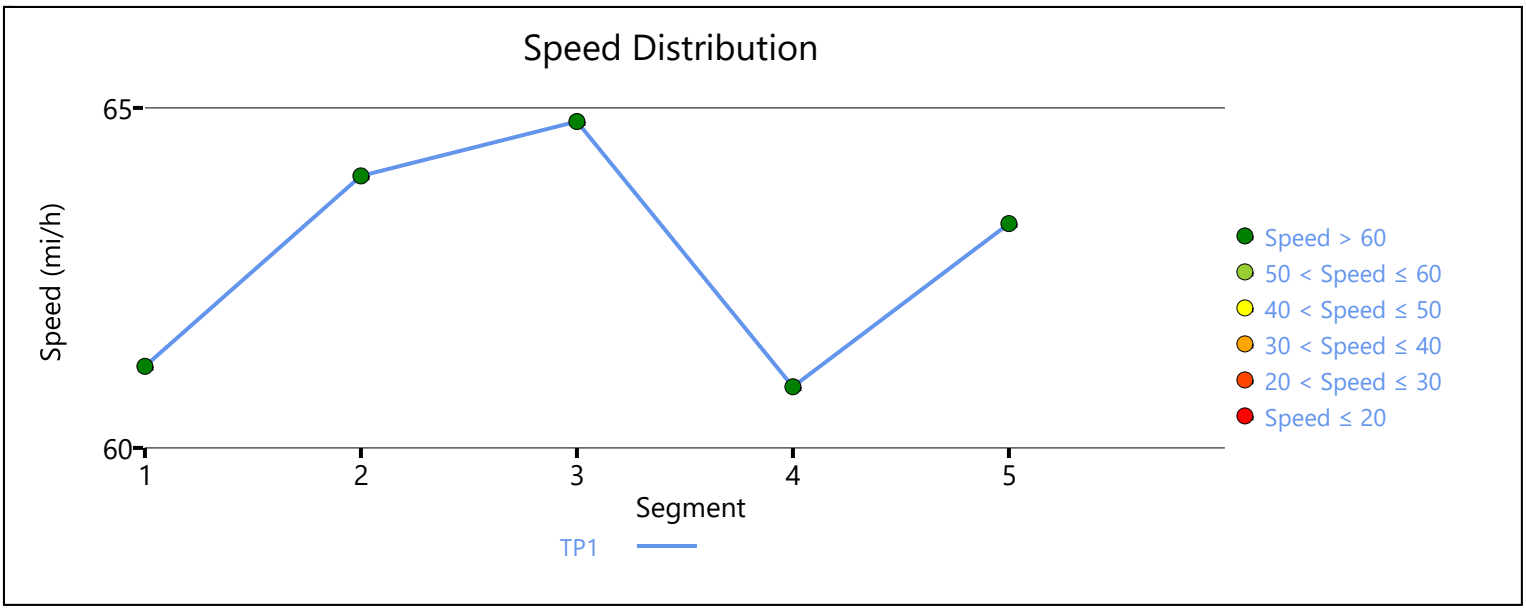
Facility Time Period Results

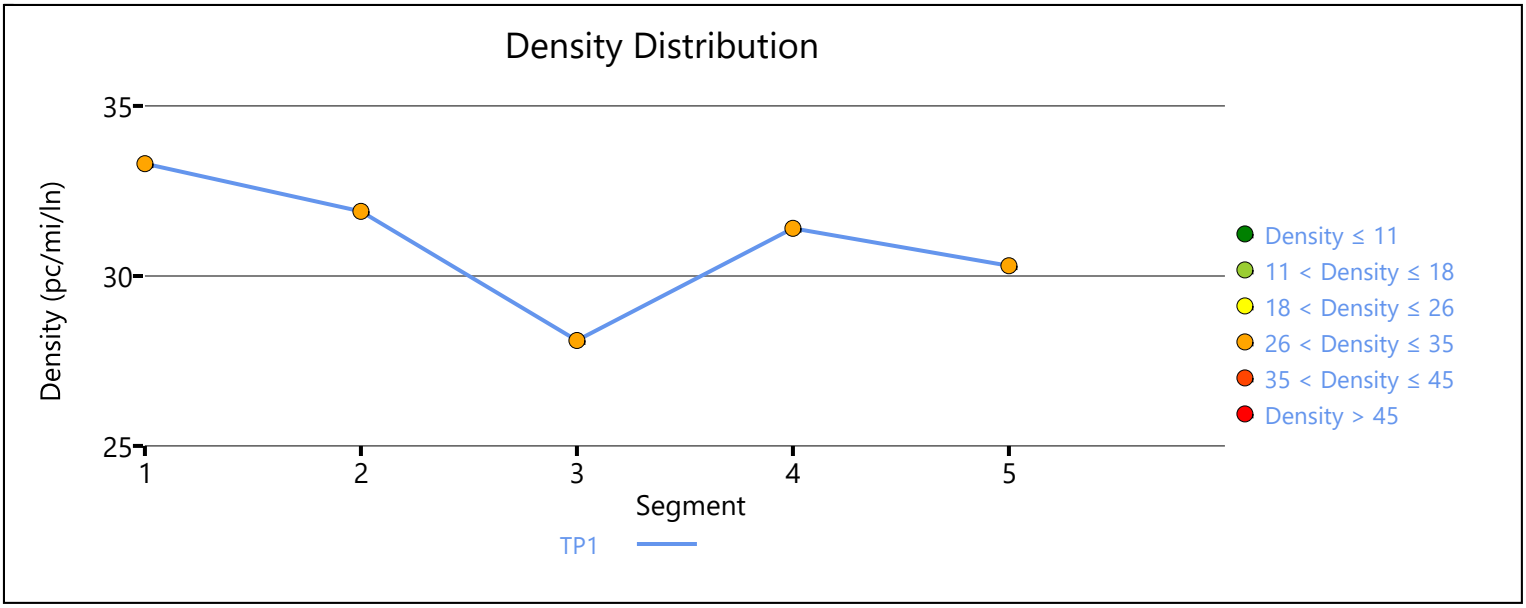
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	62.8	30.9	28.4	2.0	D

Facility Overall Results

Space Mean Speed, mi/h	62.8	Density, veh/mi/ln	28.4
Average Travel Time, min	2.0	Density, pc/mi/ln	30.9







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APPENDIX 5.5:

E+P CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS WITH IMPROVEMENTS

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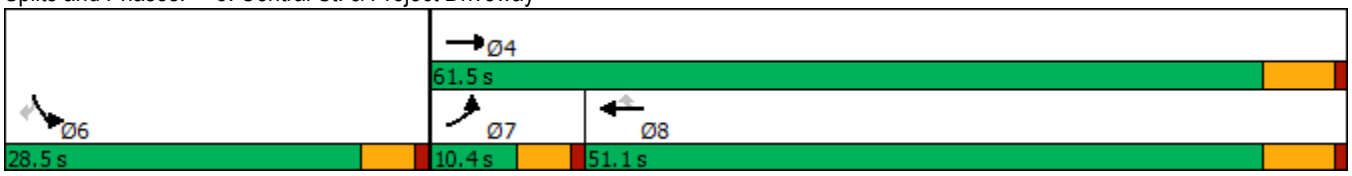
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	85	817	545	74	122	11
Future Volume (vph)	85	817	545	74	122	11
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	9.6	15.8	27.8	27.8	26.6	26.6
Total Split (s)	10.4	61.5	51.1	51.1	28.5	28.5
Total Split (%)	11.6%	68.3%	56.8%	56.8%	31.7%	31.7%
Yellow Time (s)	3.6	4.8	4.8	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	5.8	4.6	4.6
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Max	Max	Max	None	None
Act Effct Green (s)	5.8	55.7	45.3	45.3	11.8	11.8
Actuated g/C Ratio	0.07	0.72	0.58	0.58	0.15	0.15
v/c Ratio	0.69	0.66	0.54	0.08	0.49	0.05
Control Delay	64.6	9.4	12.6	2.4	36.9	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.6	9.4	12.6	2.4	36.9	15.2
LOS	E	A	B	A	D	B
Approach Delay		14.5	11.4		35.1	
Approach LOS		B	B		D	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 77.9	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 15.0	Intersection LOS: B
Intersection Capacity Utilization 60.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Central St. & Project Driveway



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	85	817	545	74	122	11
Future Volume (veh/h)	85	817	545	74	122	11
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	91	878	586	80	131	12
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	117	1378	1142	968	224	199
Arrive On Green	0.07	0.74	0.61	0.61	0.13	0.13
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	91	878	586	80	131	12
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	3.8	17.6	13.4	1.6	5.2	0.5
Cycle Q Clear(g_c), s	3.8	17.6	13.4	1.6	5.2	0.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	117	1378	1142	968	224	199
V/C Ratio(X)	0.78	0.64	0.51	0.08	0.59	0.06
Avail Cap(c_a), veh/h	137	1378	1142	968	563	501
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.8	4.9	8.4	6.0	31.2	29.1
Incr Delay (d2), s/veh	18.0	2.3	1.6	0.2	2.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	4.1	4.5	0.4	2.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	52.8	7.2	10.0	6.2	33.6	29.2
LnGrp LOS	D	A	B	A	C	C
Approach Vol, veh/h		969	666		143	
Approach Delay, s/veh		11.5	9.5		33.2	
Approach LOS		B	A		C	

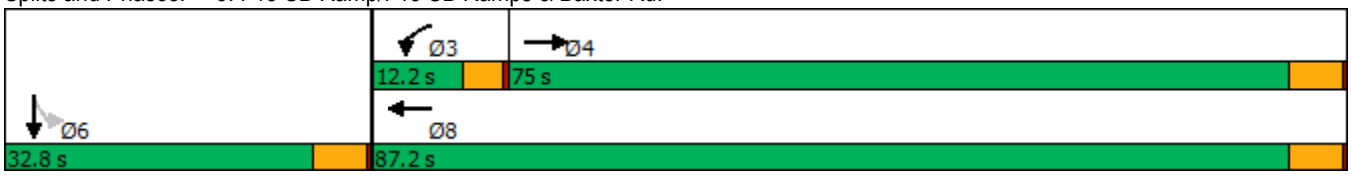
Timer - Assigned Phs		4		6	7	8
Phs Duration (G+Y+Rc), s		61.5		14.1	9.5	52.0
Change Period (Y+Rc), s		5.8		4.6	4.6	5.8
Max Green Setting (Gmax), s		55.7		23.9	5.8	45.3
Max Q Clear Time (g_c+I1), s		19.6		7.2	5.8	15.4
Green Ext Time (p_c), s		7.1		0.3	0.0	4.0

Intersection Summary	
HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

Lane Group	EBT	WBL	WBT	SBT
Lane Configurations				
Traffic Volume (vph)	421	90	444	1
Future Volume (vph)	421	90	444	1
Turn Type	NA	Prot	NA	NA
Protected Phases	4	3	8	6
Permitted Phases				
Detector Phase	4	3	8	6
Switch Phase				
Minimum Initial (s)	10.0	5.0	10.0	10.0
Minimum Split (s)	20.3	9.1	20.3	20.3
Total Split (s)	75.0	12.2	87.2	32.8
Total Split (%)	62.5%	10.2%	72.7%	27.3%
Yellow Time (s)	4.8	3.6	4.8	4.8
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	4.1	5.3	5.3
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	Max	None	Max	None
Act Effct Green (s)	69.7	8.1	81.9	27.5
Actuated g/C Ratio	0.58	0.07	0.68	0.23
v/c Ratio	1.04	0.87	0.40	0.97
Control Delay	62.1	108.2	9.5	75.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	62.1	108.2	9.5	75.6
LOS	E	F	A	E
Approach Delay	62.1		26.1	75.6
Approach LOS	E		C	E

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 120	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.04	
Intersection Signal Delay: 54.3	Intersection LOS: D
Intersection Capacity Utilization 92.7%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 5: I-15 SB Ramp/I-15 SB Ramps & Baxter Rd.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	421	516	90	444	0	0	0	0	136	1	229
Future Volume (veh/h)	0	421	516	90	444	0	0	0	0	136	1	229
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	0	1870	1870	1870	1870	0				1900	1900	1900
Adj Flow Rate, veh/h	0	484	445	103	510	0				156	1	263
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87				0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	2	2	0				0	0	0
Cap, veh/h	0	521	479	120	1277	0				143	1	241
Arrive On Green	0.00	0.58	0.58	0.07	0.68	0.00				0.23	0.23	0.23
Sat Flow, veh/h	0	897	825	1781	1870	0				624	4	1052
Grp Volume(v), veh/h	0	0	929	103	510	0				420	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1722	1781	1870	0				1680	0	0
Q Serve(g_s), s	0.0	0.0	58.9	6.9	14.3	0.0				27.5	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	58.9	6.9	14.3	0.0				27.5	0.0	0.0
Prop In Lane	0.00		0.48	1.00		0.00				0.37		0.63
Lane Grp Cap(c), veh/h	0	0	1000	120	1277	0				385	0	0
V/C Ratio(X)	0.00	0.00	0.93	0.86	0.40	0.00				1.09	0.00	0.00
Avail Cap(c_a), veh/h	0	0	1000	120	1277	0				385	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	22.9	55.4	8.3	0.0				46.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	15.8	40.5	0.9	0.0				72.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	25.4	4.4	5.2	0.0				18.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	38.6	95.8	9.3	0.0				118.9	0.0	0.0
LnGrp LOS	A	A	D	F	A	A				F	A	A
Approach Vol, veh/h		929			613						420	
Approach Delay, s/veh		38.6			23.8						118.9	
Approach LOS		D			C						F	

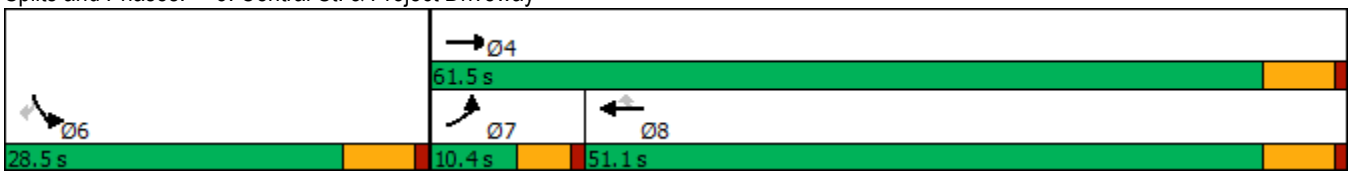
Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		12.2	75.0		32.8		87.2					
Change Period (Y+Rc), s		4.1	5.3		5.3		5.3					
Max Green Setting (Gmax), s		8.1	69.7		27.5		81.9					
Max Q Clear Time (g_c+I1), s		8.9	60.9		29.5		16.3					
Green Ext Time (p_c), s		0.0	4.3		0.0		3.2					

Intersection Summary	
HCM 6th Ctrl Delay	51.2
HCM 6th LOS	D

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	58	566	784	108	192	20
Future Volume (vph)	58	566	784	108	192	20
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	9.6	15.8	27.8	27.8	27.8	27.8
Total Split (s)	10.4	61.5	51.1	51.1	28.5	28.5
Total Split (%)	11.6%	68.3%	56.8%	56.8%	31.7%	31.7%
Yellow Time (s)	3.6	4.8	4.8	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	5.8	5.8	5.8
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Max	Max	Max	None	None
Act Effct Green (s)	5.6	55.8	47.6	47.6	14.5	14.5
Actuated g/C Ratio	0.07	0.68	0.58	0.58	0.18	0.18
v/c Ratio	0.50	0.46	0.75	0.12	0.63	0.07
Control Delay	52.7	8.1	20.4	2.6	40.6	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.7	8.1	20.4	2.6	40.6	12.2
LOS	D	A	C	A	D	B
Approach Delay		12.3	18.2		37.8	
Approach LOS		B	B		D	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 82	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 18.5	Intersection LOS: B
Intersection Capacity Utilization 68.5%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: Central St. & Project Driveway



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	566	784	108	192	20
Future Volume (veh/h)	58	566	784	108	192	20
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	60	584	808	111	198	22
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	83	1334	1136	963	247	220
Arrive On Green	0.05	0.71	0.61	0.61	0.14	0.14
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	60	584	808	111	198	22
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	2.6	10.2	23.3	2.3	8.4	0.9
Cycle Q Clear(g_c), s	2.6	10.2	23.3	2.3	8.4	0.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	83	1334	1136	963	247	220
V/C Ratio(X)	0.72	0.44	0.71	0.12	0.80	0.10
Avail Cap(c_a), veh/h	132	1334	1136	963	518	461
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.7	4.7	10.6	6.5	32.6	29.4
Incr Delay (d2), s/veh	4.4	1.0	3.8	0.2	6.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	2.7	8.2	0.7	4.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	41.1	5.7	14.4	6.7	38.6	29.6
LnGrp LOS	D	A	B	A	D	C
Approach Vol, veh/h		644	919		220	
Approach Delay, s/veh		9.0	13.5		37.7	
Approach LOS		A	B		D	

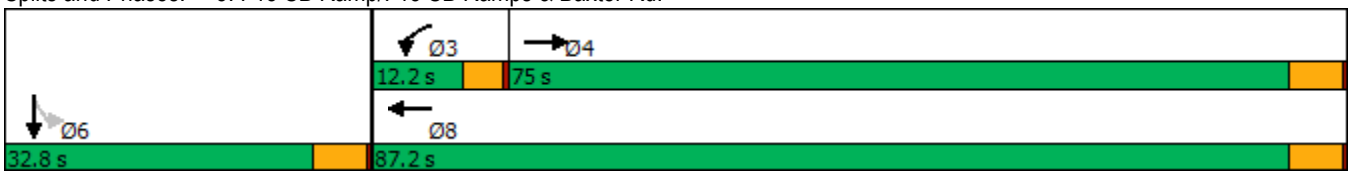
Timer - Assigned Phs		4		6	7	8
Phs Duration (G+Y+Rc), s		61.5		16.6	8.2	53.3
Change Period (Y+Rc), s		5.8		5.8	4.6	5.8
Max Green Setting (Gmax), s		55.7		22.7	5.8	45.3
Max Q Clear Time (g_c+I1), s		12.2		10.4	4.6	25.3
Green Ext Time (p_c), s		3.9		0.5	0.0	5.7

Intersection Summary	
HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Lane Group	EBT	WBL	WBT	SBT
Lane Configurations				
Traffic Volume (vph)	335	41	633	3
Future Volume (vph)	335	41	633	3
Turn Type	NA	Prot	NA	NA
Protected Phases	4	3	8	6
Permitted Phases				
Detector Phase	4	3	8	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	10.0
Minimum Split (s)	20.3	9.1	20.3	20.3
Total Split (s)	75.0	12.2	87.2	32.8
Total Split (%)	62.5%	10.2%	72.7%	27.3%
Yellow Time (s)	4.8	3.6	4.8	4.8
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	4.1	5.3	5.3
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	Max	None	Max	None
Act Effct Green (s)	75.6	6.8	82.5	18.4
Actuated g/C Ratio	0.68	0.06	0.74	0.17
v/c Ratio	0.69	0.39	0.50	0.83
Control Delay	16.3	62.8	8.6	43.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.3	62.8	8.6	43.8
LOS	B	E	A	D
Approach Delay	16.3		11.8	43.8
Approach LOS	B		B	D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 111.5	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 19.3	Intersection LOS: B
Intersection Capacity Utilization 78.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 5: I-15 SB Ramp/I-15 SB Ramps & Baxter Rd.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	335	427	41	633	0	0	0	0	64	3	228
Future Volume (veh/h)	0	335	427	41	633	0	0	0	0	64	3	228
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	0	1767	1767	1870	1781	0				1900	1411	1900
Adj Flow Rate, veh/h	0	345	440	42	653	0				66	3	235
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	9	9	2	8	0				0	33	0
Cap, veh/h	0	435	555	56	1216	0				61	3	217
Arrive On Green	0.00	0.62	0.62	0.03	0.68	0.00				0.23	0.23	0.23
Sat Flow, veh/h	0	705	899	1781	1781	0				266	12	948
Grp Volume(v), veh/h	0	0	785	42	653	0				304	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1605	1781	1781	0				1227	0	0
Q Serve(g_s), s	0.0	0.0	44.0	2.8	22.0	0.0				27.5	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	44.0	2.8	22.0	0.0				27.5	0.0	0.0
Prop In Lane	0.00		0.56	1.00		0.00				0.22		0.77
Lane Grp Cap(c), veh/h	0	0	990	56	1216	0				281	0	0
V/C Ratio(X)	0.00	0.00	0.79	0.75	0.54	0.00				1.08	0.00	0.00
Avail Cap(c_a), veh/h	0	0	990	120	1216	0				281	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	17.2	57.7	9.5	0.0				46.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	6.5	7.3	1.7	0.0				77.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	15.9	1.3	7.8	0.0				14.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	23.7	65.0	11.3	0.0				123.2	0.0	0.0
LnGrp LOS	A	A	C	E	B	A				F	A	A
Approach Vol, veh/h		785			695						304	
Approach Delay, s/veh		23.7			14.5						123.2	
Approach LOS		C			B						F	

Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		7.9	79.3		32.8		87.2					
Change Period (Y+Rc), s		4.1	5.3		5.3		5.3					
Max Green Setting (Gmax), s		8.1	69.7		27.5		81.9					
Max Q Clear Time (g_c+I1), s		4.8	46.0		29.5		24.0					
Green Ext Time (p_c), s		0.0	5.9		0.0		4.6					

Intersection Summary	
HCM 6th Ctrl Delay	37.1
HCM 6th LOS	D

APPENDIX 6.1:

OPENING YEAR CUMULATIVE (2021) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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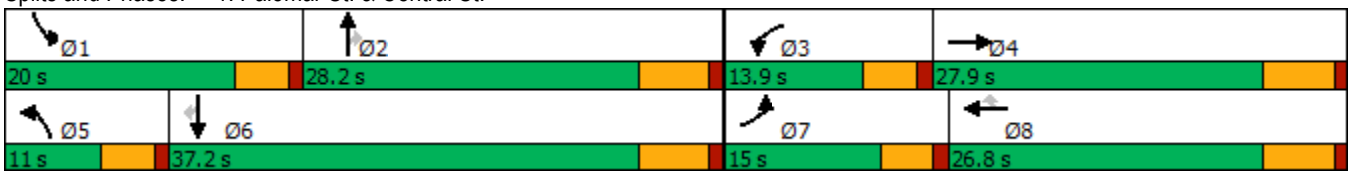
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	141	352	79	238	149	69	308	98	244	353	133
Future Volume (vph)	141	352	79	238	149	69	308	98	244	353	133
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	26.8	9.6	26.8	26.8	9.6	26.8	26.8	9.6	26.8	26.8
Total Split (s)	15.0	27.9	13.9	26.8	26.8	11.0	28.2	28.2	20.0	37.2	37.2
Total Split (%)	16.7%	31.0%	15.4%	29.8%	29.8%	12.2%	31.3%	31.3%	22.2%	41.3%	41.3%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	3.6	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	5.8	4.6	5.8	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	9.7	20.5	7.7	16.3	16.3	6.1	22.5	22.5	14.6	33.3	33.3
Actuated g/C Ratio	0.12	0.24	0.09	0.19	0.19	0.07	0.27	0.27	0.17	0.40	0.40
v/c Ratio	0.75	0.58	0.53	0.72	0.35	0.59	0.67	0.19	0.86	0.52	0.20
Control Delay	61.0	29.6	50.0	43.8	4.4	59.2	36.8	0.7	62.3	24.7	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.0	29.6	50.0	43.8	4.4	59.2	36.8	0.7	62.3	24.7	4.5
LOS	E	C	D	D	A	E	D	A	E	C	A
Approach Delay		37.0		32.3			32.6			33.6	
Approach LOS		D		C			C			C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 84.1	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 34.0	Intersection LOS: C
Intersection Capacity Utilization 67.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Palomar St. & Central St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	352	105	79	238	149	69	308	98	244	353	133
Future Volume (veh/h)	141	352	105	79	238	149	69	308	98	244	353	133
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	153	383	114	86	259	162	75	335	107	265	384	145
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	189	589	173	111	325	276	96	533	451	304	751	637
Arrive On Green	0.11	0.22	0.22	0.06	0.17	0.17	0.05	0.28	0.28	0.17	0.40	0.40
Sat Flow, veh/h	1781	2708	796	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	153	250	247	86	259	162	75	335	107	265	384	145
Grp Sat Flow(s),veh/h/ln	1781	1777	1727	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.6	10.1	10.3	3.7	10.4	7.4	3.3	12.3	4.1	11.4	12.2	4.7
Cycle Q Clear(g_c), s	6.6	10.1	10.3	3.7	10.4	7.4	3.3	12.3	4.1	11.4	12.2	4.7
Prop In Lane	1.00		0.46	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	189	387	376	111	325	276	96	533	451	304	751	637
V/C Ratio(X)	0.81	0.65	0.66	0.78	0.80	0.59	0.78	0.63	0.24	0.87	0.51	0.23
Avail Cap(c_a), veh/h	236	499	485	211	499	423	145	533	451	349	751	637
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.4	28.0	28.1	36.3	31.2	29.9	36.7	24.5	21.6	31.8	17.7	15.5
Incr Delay (d2), s/veh	12.6	1.8	2.1	4.4	5.0	2.0	6.9	5.5	1.2	17.1	2.5	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	4.1	4.1	1.7	4.8	2.8	1.5	5.7	1.5	6.0	5.1	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.0	29.8	30.2	40.7	36.2	31.9	43.6	30.0	22.8	48.9	20.2	16.3
LnGrp LOS	D	C	C	D	D	C	D	C	C	D	C	B
Approach Vol, veh/h		650			507			517			794	
Approach Delay, s/veh		34.0			35.6			30.5			29.1	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	28.2	9.5	22.9	8.9	37.4	12.9	19.5
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	15.4	22.4	9.3	22.1	6.4	31.4	10.4	21.0
Max Q Clear Time (g_c+I1), s	13.4	14.3	5.7	12.3	5.3	14.2	8.6	12.4
Green Ext Time (p_c), s	0.1	1.3	0.0	1.9	0.0	2.4	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	32.0
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	904	572	10	4	3
Future Vol, veh/h	3	904	572	10	4	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	972	615	11	4	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	626	0	-	0	1599	621
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	978	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	956	-	-	-	117	487
Stage 1	-	-	-	-	536	-
Stage 2	-	-	-	-	364	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	956	-	-	-	116	487
Mov Cap-2 Maneuver	-	-	-	-	116	-
Stage 1	-	-	-	-	532	-
Stage 2	-	-	-	-	364	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	26.9
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	956	-	-	-	172
HCM Lane V/C Ratio	0.003	-	-	-	0.044
HCM Control Delay (s)	8.8	0	-	-	26.9
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Intersection Delay, s/veh	211
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	412	495	124	382	0	0	0	0	141	1	202
Future Vol, veh/h	0	412	495	124	382	0	0	0	0	141	1	202
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	0	5	4	6	6	0	0	0	0	2	0	5
Mvmt Flow	0	474	569	143	439	0	0	0	0	162	1	232
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	378.3	35	29
HCM LOS	F	D	D

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	41%
Vol Thru, %	45%	0%	100%	0%
Vol Right, %	55%	0%	0%	59%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	907	124	382	344
LT Vol	0	124	0	141
Through Vol	412	0	382	1
RT Vol	495	0	0	202
Lane Flow Rate	1043	143	439	395
Geometry Grp	5	7	7	2
Degree of Util (X)	1.79	0.296	0.85	0.728
Departure Headway (Hd)	6.181	8.481	7.963	7.818
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	594	426	457	467
Service Time	4.223	6.181	5.663	5.818
HCM Lane V/C Ratio	1.756	0.336	0.961	0.846
HCM Control Delay	378.3	14.7	41.6	29
HCM Lane LOS	F	B	E	D
HCM 95th-tile Q	63.3	1.2	8.5	5.8

Intersection	
Intersection Delay, s/veh	27
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	262	292	0	0	272	152	234	0	103	0	0	0
Future Vol, veh/h	262	292	0	0	272	152	234	0	103	0	0	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	5	4	0	0	6	3	6	0	8	0	0	0
Mvmt Flow	301	336	0	0	313	175	269	0	118	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	21.4	35.5	25.4
HCM LOS	C	E	D

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	69%	100%	0%	0%
Vol Thru, %	0%	0%	100%	64%
Vol Right, %	31%	0%	0%	36%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	337	262	292	424
LT Vol	234	262	0	0
Through Vol	0	0	292	272
RT Vol	103	0	0	152
Lane Flow Rate	387	301	336	487
Geometry Grp	2	7	7	5
Degree of Util (X)	0.72	0.621	0.642	0.853
Departure Headway (Hd)	6.805	7.419	6.89	6.303
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	535	488	527	580
Service Time	4.805	5.134	4.605	4.303
HCM Lane V/C Ratio	0.723	0.617	0.638	0.84
HCM Control Delay	25.4	21.6	21.2	35.5
HCM Lane LOS	D	C	C	E
HCM 95th-tile Q	5.9	4.2	4.5	9.3

Intersection	
Int Delay, s/veh	16.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	475	138	191	865	121	82
Future Vol, veh/h	475	138	191	865	121	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	175	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	546	159	220	994	139	94

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	705	0	2060	626
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	1434	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	893	-	~ 60	484
Stage 1	-	-	-	-	533	-
Stage 2	-	-	-	-	220	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	893	-	~ 45	484
Mov Cap-2 Maneuver	-	-	-	-	152	-
Stage 1	-	-	-	-	533	-
Stage 2	-	-	-	-	166	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	143
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	210	-	-	893	-
HCM Lane V/C Ratio	1.111	-	-	0.246	-
HCM Control Delay (s)	143	-	-	10.3	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	10.9	-	-	1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	8.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	206	188	204	97	161	219
Future Vol, veh/h	206	188	204	97	161	219
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	251	229	249	118	196	267

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	367	0	-	0	980	249
Stage 1	-	-	-	-	249	-
Stage 2	-	-	-	-	731	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1192	-	-	-	277	790
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	476	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1192	-	-	-	210	790
Mov Cap-2 Maneuver	-	-	-	-	336	-
Stage 1	-	-	-	-	601	-
Stage 2	-	-	-	-	476	-

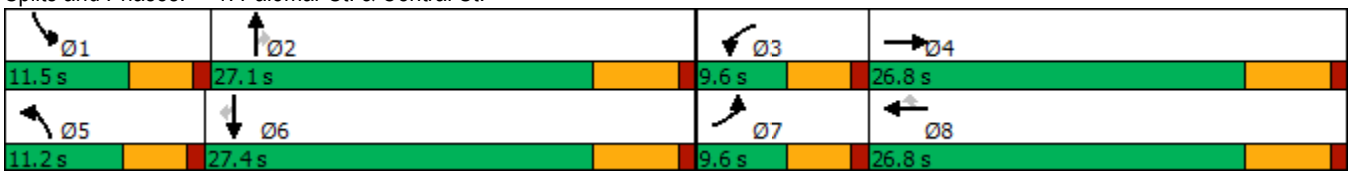
Approach	EB	WB	SB
HCM Control Delay, s	4.6	0	19.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1192	-	-	-	336	790
HCM Lane V/C Ratio	0.211	-	-	-	0.584	0.338
HCM Control Delay (s)	8.8	0	-	-	29.7	11.9
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q(veh)	0.8	-	-	-	3.5	1.5

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	52	291	85	326	252	57	269	87	153	198	75
Future Volume (vph)	52	291	85	326	252	57	269	87	153	198	75
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	26.8	9.6	26.8	26.8	9.6	26.8	26.8	9.6	26.8	26.8
Total Split (s)	9.6	26.8	9.6	26.8	26.8	11.2	27.1	27.1	11.5	27.4	27.4
Total Split (%)	12.8%	35.7%	12.8%	35.7%	35.7%	14.9%	36.1%	36.1%	15.3%	36.5%	36.5%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	3.6	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	5.8	4.6	5.8	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	5.1	15.8	5.1	17.9	17.9	6.1	21.6	21.6	7.0	27.1	27.1
Actuated g/C Ratio	0.07	0.23	0.07	0.26	0.26	0.09	0.32	0.32	0.10	0.40	0.40
v/c Ratio	0.40	0.39	0.66	0.68	0.43	0.37	0.46	0.14	0.86	0.27	0.10
Control Delay	42.6	22.9	60.3	31.2	5.6	38.8	23.9	0.5	75.8	19.9	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.6	22.9	60.3	31.2	5.6	38.8	23.9	0.5	75.8	19.9	0.3
LOS	D	C	E	C	A	D	C	A	E	B	A
Approach Delay		25.7		25.2			21.0			36.5	
Approach LOS		C		C			C			D	

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 68.3	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 26.9	Intersection LOS: C
Intersection Capacity Utilization 61.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Palomar St. & Central St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	291	21	85	326	252	57	269	87	153	198	75
Future Volume (veh/h)	52	291	21	85	326	252	57	269	87	153	198	75
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	53	297	21	87	333	257	58	274	89	156	202	77
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	83	698	49	111	417	354	88	594	503	183	694	588
Arrive On Green	0.05	0.21	0.21	0.06	0.22	0.22	0.05	0.32	0.32	0.10	0.37	0.37
Sat Flow, veh/h	1781	3368	237	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	53	156	162	87	333	257	58	274	89	156	202	77
Grp Sat Flow(s),veh/h/ln	1781	1777	1828	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.0	5.1	5.2	3.2	11.3	10.1	2.1	7.9	2.7	5.8	5.1	2.2
Cycle Q Clear(g_c), s	2.0	5.1	5.2	3.2	11.3	10.1	2.1	7.9	2.7	5.8	5.1	2.2
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	83	368	379	111	417	354	88	594	503	183	694	588
V/C Ratio(X)	0.64	0.42	0.43	0.78	0.80	0.73	0.66	0.46	0.18	0.85	0.29	0.13
Avail Cap(c_a), veh/h	133	556	572	133	585	496	175	594	503	183	694	588
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.4	23.1	23.1	31.0	24.6	24.2	31.4	18.3	16.6	29.6	14.9	14.0
Incr Delay (d2), s/veh	3.0	0.8	0.8	17.9	5.2	3.2	3.2	2.6	0.8	28.7	1.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.0	2.1	1.8	5.0	3.7	0.9	3.4	1.0	3.7	2.1	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.4	23.9	23.9	48.9	29.9	27.4	34.5	20.9	17.3	58.3	15.9	14.4
LnGrp LOS	C	C	C	D	C	C	C	C	B	E	B	B
Approach Vol, veh/h		371			677			421			435	
Approach Delay, s/veh		25.4			31.4			22.0			30.9	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.5	27.1	8.8	19.7	7.9	30.7	7.7	20.8
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	6.9	21.3	5.0	21.0	6.6	21.6	5.0	21.0
Max Q Clear Time (g_c+I1), s	7.8	9.9	5.2	7.2	4.1	7.1	4.0	13.3
Green Ext Time (p_c), s	0.0	1.3	0.0	1.3	0.0	1.0	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	28.0
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	659	805	10	3	5
Future Vol, veh/h	3	659	805	10	3	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	679	830	10	3	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	840	0	-	0	1520	835
Stage 1	-	-	-	-	835	-
Stage 2	-	-	-	-	685	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	795	-	-	-	131	368
Stage 1	-	-	-	-	426	-
Stage 2	-	-	-	-	500	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	795	-	-	-	130	368
Mov Cap-2 Maneuver	-	-	-	-	130	-
Stage 1	-	-	-	-	423	-
Stage 2	-	-	-	-	500	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	21.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	795	-	-	-	221
HCM Lane V/C Ratio	0.004	-	-	-	0.038
HCM Control Delay (s)	9.5	0	-	-	21.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Intersection Delay, s/veh	83.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	270	396	95	629	0	0	0	0	67	3	189
Future Vol, veh/h	0	270	396	95	629	0	0	0	0	67	3	189
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	0	9	7	2	8	0	0	0	0	9	33	8
Mvmt Flow	0	278	408	98	648	0	0	0	0	69	3	195
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	89.7	101.1	17.2
HCM LOS	F	F	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	26%
Vol Thru, %	41%	0%	100%	1%
Vol Right, %	59%	0%	0%	73%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	666	95	629	259
LT Vol	0	95	0	67
Through Vol	270	0	629	3
RT Vol	396	0	0	189
Lane Flow Rate	687	98	648	267
Geometry Grp	5	7	7	2
Degree of Util (X)	1.098	0.186	1.161	0.503
Departure Headway (Hd)	5.974	7.037	6.63	7.172
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	611	513	551	505
Service Time	3.974	4.737	4.33	5.172
HCM Lane V/C Ratio	1.124	0.191	1.176	0.529
HCM Control Delay	89.7	11.3	114.7	17.2
HCM Lane LOS	F	B	F	C
HCM 95th-tile Q	19.9	0.7	21.8	2.8

Intersection	
Intersection Delay, s/veh	39
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	135	201	0	0	252	59	471	6	94	0	0	0
Future Vol, veh/h	135	201	0	0	252	59	471	6	94	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	7	11	0	0	9	5	6	33	9	0	0	0
Mvmt Flow	139	207	0	0	260	61	486	6	97	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	15	19.6	63.6
HCM LOS	B	C	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	82%	100%	0%	0%
Vol Thru, %	1%	0%	100%	81%
Vol Right, %	16%	0%	0%	19%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	571	135	201	311
LT Vol	471	135	0	0
Through Vol	6	0	201	252
RT Vol	94	0	0	59
Lane Flow Rate	589	139	207	321
Geometry Grp	2	7	7	5
Degree of Util (X)	1.007	0.303	0.426	0.602
Departure Headway (Hd)	6.161	7.843	7.399	6.755
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	595	458	487	535
Service Time	4.161	5.6	5.156	4.805
HCM Lane V/C Ratio	0.99	0.303	0.425	0.6
HCM Control Delay	63.6	14	15.6	19.6
HCM Lane LOS	F	B	C	C
HCM 95th-tile Q	15.1	1.3	2.1	3.9

Intersection	
Int Delay, s/veh	28.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1174	68	83	692	164	65
Future Vol, veh/h	1174	68	83	692	164	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	175	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1319	76	93	778	184	73

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1395	0	2321	1357
Stage 1	-	-	-	-	1357	-
Stage 2	-	-	-	-	964	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	490	-	~ 41	182
Stage 1	-	-	-	-	240	-
Stage 2	-	-	-	-	370	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	490	-	~ 33	182
Mov Cap-2 Maneuver	-	-	-	-	~ 178	-
Stage 1	-	-	-	-	240	-
Stage 2	-	-	-	-	300	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	274.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	179	-	-	490	-
HCM Lane V/C Ratio	1.437	-	-	0.19	-
HCM Control Delay (s)	274.2	-	-	14.1	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	15.9	-	-	0.7	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	176	120	95	76	96	216
Future Vol, veh/h	176	120	95	76	96	216
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	196	133	106	84	107	240

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	190	0	-	0	631	106
Stage 1	-	-	-	-	106	-
Stage 2	-	-	-	-	525	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1384	-	-	-	445	948
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	593	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1384	-	-	-	377	948
Mov Cap-2 Maneuver	-	-	-	-	472	-
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	593	-

Approach	EB	WB	SB
HCM Control Delay, s	4.8	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1384	-	-	-	472	948
HCM Lane V/C Ratio	0.141	-	-	-	0.226	0.253
HCM Control Delay (s)	8	0	-	-	14.8	10.1
HCM Lane LOS	A	A	-	-	B	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.9	1

APPENDIX 6.2:

OPENING YEAR CUMULATIVE (2021) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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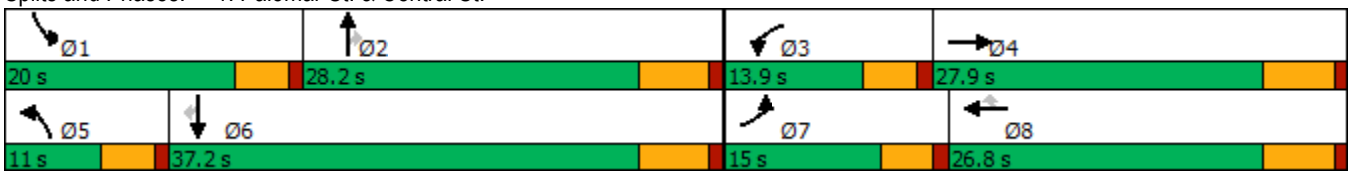
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	141	371	93	244	163	69	308	128	274	353	133
Future Volume (vph)	141	371	93	244	163	69	308	128	274	353	133
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	26.8	9.6	26.8	26.8	9.6	26.8	26.8	9.6	26.8	26.8
Total Split (s)	15.0	27.9	13.9	26.8	26.8	11.0	28.2	28.2	20.0	37.2	37.2
Total Split (%)	16.7%	31.0%	15.4%	29.8%	29.8%	12.2%	31.3%	31.3%	22.2%	41.3%	41.3%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	3.6	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	5.8	4.6	5.8	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	9.7	20.4	8.1	16.6	16.6	6.1	22.5	22.5	15.4	33.9	33.9
Actuated g/C Ratio	0.11	0.24	0.10	0.20	0.20	0.07	0.26	0.26	0.18	0.40	0.40
v/c Ratio	0.76	0.61	0.60	0.73	0.38	0.60	0.68	0.25	0.93	0.52	0.20
Control Delay	61.9	30.8	53.3	44.7	5.6	60.0	37.5	2.3	72.8	24.7	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.9	30.8	53.3	44.7	5.6	60.0	37.5	2.3	72.8	24.7	4.5
LOS	E	C	D	D	A	E	D	A	E	C	A
Approach Delay		37.9		33.5			31.7			38.5	
Approach LOS		D		C			C			D	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 85.1	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 35.9	Intersection LOS: D
Intersection Capacity Utilization 69.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Palomar St. & Central St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	371	105	93	244	163	69	308	128	274	353	133
Future Volume (veh/h)	141	371	105	93	244	163	69	308	128	274	353	133
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	153	403	114	101	265	177	75	335	139	298	384	145
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	188	573	160	129	329	279	96	515	436	334	765	648
Arrive On Green	0.11	0.21	0.21	0.07	0.18	0.18	0.05	0.28	0.28	0.19	0.41	0.41
Sat Flow, veh/h	1781	2742	767	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	153	260	257	101	265	177	75	335	139	298	384	145
Grp Sat Flow(s),veh/h/ln	1781	1777	1732	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.8	11.0	11.2	4.5	11.1	8.4	3.4	12.9	5.7	13.3	12.4	4.8
Cycle Q Clear(g_c), s	6.8	11.0	11.2	4.5	11.1	8.4	3.4	12.9	5.7	13.3	12.4	4.8
Prop In Lane	1.00		0.44	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	188	371	362	129	329	279	96	515	436	334	765	648
V/C Ratio(X)	0.81	0.70	0.71	0.78	0.81	0.64	0.78	0.65	0.32	0.89	0.50	0.22
Avail Cap(c_a), veh/h	228	483	471	204	483	409	140	515	436	337	765	648
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.6	29.8	29.9	37.1	32.2	31.1	38.0	26.0	23.4	32.2	17.9	15.6
Incr Delay (d2), s/veh	14.2	3.0	3.5	3.9	6.2	2.4	8.8	6.3	1.9	23.5	2.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	4.7	4.7	2.0	5.2	3.2	1.6	6.1	2.2	7.5	5.2	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.8	32.9	33.3	41.0	38.4	33.5	46.8	32.3	25.3	55.7	20.2	16.4
LnGrp LOS	D	C	C	D	D	C	D	C	C	E	C	B
Approach Vol, veh/h		670			543			549			827	
Approach Delay, s/veh		36.9			37.3			32.5			32.4	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.9	28.2	10.5	22.8	9.0	39.1	13.2	20.1
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	15.4	22.4	9.3	22.1	6.4	31.4	10.4	21.0
Max Q Clear Time (g_c+I1), s	15.3	14.9	6.5	13.2	5.4	14.4	8.8	13.1
Green Ext Time (p_c), s	0.0	1.4	0.0	1.9	0.0	2.3	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	34.6
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	7	14	145	127	3
Future Vol, veh/h	9	7	14	145	127	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	8	15	158	138	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	328	140	141	0	-	0
Stage 1	140	-	-	-	-	-
Stage 2	188	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	666	908	1442	-	-	-
Stage 1	887	-	-	-	-	-
Stage 2	844	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	659	908	1442	-	-	-
Mov Cap-2 Maneuver	659	-	-	-	-	-
Stage 1	877	-	-	-	-	-
Stage 2	844	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1442	-	749	-	-
HCM Lane V/C Ratio	0.011	-	0.023	-	-
HCM Control Delay (s)	7.5	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	48.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	85	904	605	74	123	11
Future Vol, veh/h	85	904	605	74	123	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	91	972	651	80	132	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	731	0	-	0	1845	691
Stage 1	-	-	-	-	691	-
Stage 2	-	-	-	-	1154	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	873	-	-	-	~ 82	445
Stage 1	-	-	-	-	497	-
Stage 2	-	-	-	-	300	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	873	-	-	-	~ 63	445
Mov Cap-2 Maneuver	-	-	-	-	~ 63	-
Stage 1	-	-	-	-	384	-
Stage 2	-	-	-	-	300	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	$ 647.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	873	-	-	-	68
HCM Lane V/C Ratio	0.105	-	-	-	2.119
HCM Control Delay (s)	9.6	0	-	-	$ 647.1
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	13.5

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Vol, veh/h	0	1027	647	87	0	33
Future Vol, veh/h	0	1027	647	87	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	200	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1116	703	95	0	36

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	703
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	438
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	438
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	438
HCM Lane V/C Ratio	-	-	-	0.082
HCM Control Delay (s)	-	-	-	14
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	297.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	487	538	124	495	0	0	0	0	141	1	239
Future Vol, veh/h	0	487	538	124	495	0	0	0	0	141	1	239
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	0	5	4	6	6	0	0	0	0	2	0	5
Mvmt Flow	0	560	618	143	569	0	0	0	0	162	1	275
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	514	97	38.9
HCM LOS	F	F	E

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	37%
Vol Thru, %	48%	0%	100%	0%
Vol Right, %	52%	0%	0%	63%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1025	124	495	381
LT Vol	0	124	0	141
Through Vol	487	0	495	1
RT Vol	538	0	0	239
Lane Flow Rate	1178	143	569	438
Geometry Grp	5	7	7	2
Degree of Util (X)	2.093	0.306	1.143	0.815
Departure Headway (Hd)	6.686	9.114	8.593	8.319
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	554	398	427	438
Service Time	4.686	6.814	6.293	6.319
HCM Lane V/C Ratio	2.126	0.359	1.333	1
HCM Control Delay	514	15.8	117.3	38.9
HCM Lane LOS	F	C	F	E
HCM 95th-tile Q	78.9	1.3	17.7	7.5

Intersection	
Intersection Delay, s/veh	48.5
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	306	323	0	0	351	152	269	0	103	0	0	0
Future Vol, veh/h	306	323	0	0	351	152	269	0	103	0	0	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	5	4	0	0	6	3	6	0	8	0	0	0
Mvmt Flow	352	371	0	0	403	175	309	0	118	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	29.6	81.2	36.2
HCM LOS	D	F	E

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	72%	100%	0%	0%
Vol Thru, %	0%	0%	100%	70%
Vol Right, %	28%	0%	0%	30%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	372	306	323	503
LT Vol	269	306	0	0
Through Vol	0	0	323	351
RT Vol	103	0	0	152
Lane Flow Rate	428	352	371	578
Geometry Grp	2	7	7	5
Degree of Util (X)	0.828	0.751	0.739	1.06
Departure Headway (Hd)	7.204	7.955	7.423	6.601
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	505	457	490	549
Service Time	5.204	5.655	5.123	4.678
HCM Lane V/C Ratio	0.848	0.77	0.757	1.053
HCM Control Delay	36.2	31	28.3	81.2
HCM Lane LOS	E	D	D	F
HCM 95th-tile Q	8.2	6.3	6.1	16.8

Intersection	
Int Delay, s/veh	24.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	475	157	211	865	128	90
Future Vol, veh/h	475	157	211	865	128	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	175	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	546	180	243	994	147	103

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	726	0	2116	636
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	1480	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	877	-	~ 56	478
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	209	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	877	-	~ 40	478
Mov Cap-2 Maneuver	-	-	-	-	~ 139	-
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	151	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	203.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	197	-	-	877	-
HCM Lane V/C Ratio	1.272	-	-	0.277	-
HCM Control Delay (s)	203.6	-	-	10.7	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	13.6	-	-	1.1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	9.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	230	196	231	97	161	270
Future Vol, veh/h	230	196	231	97	161	270
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	280	239	282	118	196	329

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	400	0	-	0	1081	282
Stage 1	-	-	-	-	282	-
Stage 2	-	-	-	-	799	-
Critical Hdwy	4.12	-	-	-	6.1	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1159	-	-	-	265	757
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	443	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1159	-	-	-	~ 191	757
Mov Cap-2 Maneuver	-	-	-	-	310	-
Stage 1	-	-	-	-	552	-
Stage 2	-	-	-	-	443	-

Approach	EB	WB	SB
HCM Control Delay, s	4.9	0	21.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1159	-	-	-	310	757
HCM Lane V/C Ratio	0.242	-	-	-	0.633	0.435
HCM Control Delay (s)	9.1	0	-	-	34.7	13.4
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q(veh)	0.9	-	-	-	4	2.2

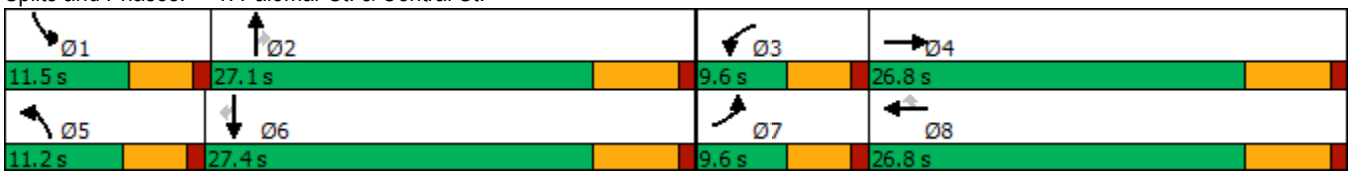
Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	52	300	121	348	288	57	269	107	173	198	75
Future Volume (vph)	52	300	121	348	288	57	269	107	173	198	75
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	26.8	9.6	26.8	26.8	9.6	26.8	26.8	9.6	26.8	26.8
Total Split (s)	9.6	26.8	9.6	26.8	26.8	11.2	27.1	27.1	11.5	27.4	27.4
Total Split (%)	12.8%	35.7%	12.8%	35.7%	35.7%	14.9%	36.1%	36.1%	15.3%	36.5%	36.5%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	3.6	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	5.8	4.6	5.8	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	5.0	16.1	5.0	20.3	20.3	6.0	21.4	21.4	6.9	26.7	26.7
Actuated g/C Ratio	0.07	0.23	0.07	0.29	0.29	0.09	0.30	0.30	0.10	0.38	0.38
v/c Ratio	0.42	0.41	0.98	0.66	0.45	0.38	0.48	0.18	1.02	0.29	0.11
Control Delay	43.7	23.5	113.8	29.9	6.2	39.5	24.6	1.6	111.2	20.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.7	23.5	113.8	29.9	6.2	39.5	24.6	1.6	111.2	20.2	0.3
LOS	D	C	F	C	A	D	C	A	F	C	A
Approach Delay		26.3		34.3			20.9			52.1	
Approach LOS		C		C			C			D	

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 70.4	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 33.9	Intersection LOS: C
Intersection Capacity Utilization 63.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Palomar St. & Central St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	300	21	121	348	288	57	269	107	173	198	75
Future Volume (veh/h)	52	300	21	121	348	288	57	269	107	173	198	75
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	53	306	21	123	355	294	58	274	109	177	202	77
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	83	699	48	131	438	371	87	585	496	180	683	579
Arrive On Green	0.05	0.21	0.21	0.07	0.23	0.23	0.05	0.31	0.31	0.10	0.37	0.37
Sat Flow, veh/h	1781	3375	230	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	53	160	167	123	355	294	58	274	109	177	202	77
Grp Sat Flow(s),veh/h/ln	1781	1777	1829	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.0	5.4	5.4	4.7	12.2	11.9	2.2	8.0	3.5	6.8	5.2	2.2
Cycle Q Clear(g_c), s	2.0	5.4	5.4	4.7	12.2	11.9	2.2	8.0	3.5	6.8	5.2	2.2
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	83	368	379	131	438	371	87	585	496	180	683	579
V/C Ratio(X)	0.64	0.44	0.44	0.94	0.81	0.79	0.67	0.47	0.22	0.98	0.30	0.13
Avail Cap(c_a), veh/h	131	548	564	131	577	489	173	585	496	180	683	579
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.9	23.5	23.6	31.4	24.7	24.5	31.8	18.8	17.3	30.5	15.4	14.4
Incr Delay (d2), s/veh	3.0	0.8	0.8	59.9	6.5	6.5	3.2	2.7	1.0	61.0	1.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.1	2.2	4.0	5.6	4.6	0.9	3.5	1.2	5.7	2.1	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.0	24.3	24.4	91.3	31.2	31.0	35.1	21.5	18.3	91.5	16.5	14.9
LnGrp LOS	C	C	C	F	C	C	D	C	B	F	B	B
Approach Vol, veh/h		380			772			441			456	
Approach Delay, s/veh		25.8			40.7			22.5			45.3	
Approach LOS		C			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.5	27.1	9.6	19.9	7.9	30.7	7.8	21.7
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	6.9	21.3	5.0	21.0	6.6	21.6	5.0	21.0
Max Q Clear Time (g_c+I1), s	8.8	10.0	6.7	7.4	4.2	7.2	4.0	14.2
Green Ext Time (p_c), s	0.0	1.3	0.0	1.3	0.0	1.0	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	35.1
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	8	13	154	205	10
Future Vol, veh/h	4	8	13	154	205	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	9	14	167	223	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	424	229	234	0	-	0
Stage 1	229	-	-	-	-	-
Stage 2	195	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	587	810	1333	-	-	-
Stage 1	809	-	-	-	-	-
Stage 2	838	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	580	810	1333	-	-	-
Mov Cap-2 Maneuver	580	-	-	-	-	-
Stage 1	799	-	-	-	-	-
Stage 2	838	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1333	-	715	-	-
HCM Lane V/C Ratio	0.011	-	0.018	-	-
HCM Control Delay (s)	7.7	0	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	93.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	58	659	889	109	193	20
Future Vol, veh/h	58	659	889	109	193	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	679	916	112	199	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1028	0	-	0	1771	972
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	799	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	676	-	-	-	~ 91	306
Stage 1	-	-	-	-	367	-
Stage 2	-	-	-	-	443	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	676	-	-	-	~ 78	306
Mov Cap-2 Maneuver	-	-	-	-	~ 78	-
Stage 1	-	-	-	-	315	-
Stage 2	-	-	-	-	443	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	$ 842.7
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	676	-	-	-	84
HCM Lane V/C Ratio	0.088	-	-	-	2.625
HCM Control Delay (s)	10.8	0	-	-	$ 842.7
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	21

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Vol, veh/h	0	852	915	51	0	84
Future Vol, veh/h	0	852	915	51	0	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	200	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	926	995	55	0	91

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	995
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	297
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	297
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	22.4
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	297
HCM Lane V/C Ratio	-	-	-	0.307
HCM Control Delay (s)	-	-	-	22.4
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	1.3

Intersection	
Intersection Delay, s/veh	185.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	412	444	95	726	0	0	0	0	67	3	242
Future Vol, veh/h	0	412	444	95	726	0	0	0	0	67	3	242
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	0	9	7	2	8	0	0	0	0	9	33	8
Mvmt Flow	0	425	458	98	748	0	0	0	0	69	3	249
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	243	187.2	21.8
HCM LOS	F	F	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	21%
Vol Thru, %	48%	0%	100%	1%
Vol Right, %	52%	0%	0%	78%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	856	95	726	312
LT Vol	0	95	0	67
Through Vol	412	0	726	3
RT Vol	444	0	0	242
Lane Flow Rate	882	98	748	322
Geometry Grp	5	7	7	2
Degree of Util (X)	1.478	0.193	1.394	0.601
Departure Headway (Hd)	6.468	7.684	7.275	7.778
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	574	470	509	466
Service Time	4.468	5.384	4.975	5.778
HCM Lane V/C Ratio	1.537	0.209	1.47	0.691
HCM Control Delay	243	12.2	210.1	21.8
HCM Lane LOS	F	B	F	C
HCM 95th-tile Q	40.8	0.7	32.4	3.9

Intersection	
Intersection Delay, s/veh	64
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	185	294	0	0	297	59	523	6	94	0	0	0
Future Vol, veh/h	185	294	0	0	297	59	523	6	94	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	7	11	0	0	9	5	6	33	9	0	0	0
Mvmt Flow	191	303	0	0	306	61	539	6	97	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	20.7	25.7	119.2
HCM LOS	C	D	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	84%	100%	0%	0%
Vol Thru, %	1%	0%	100%	83%
Vol Right, %	15%	0%	0%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	623	185	294	356
LT Vol	523	185	0	0
Through Vol	6	0	294	297
RT Vol	94	0	0	59
Lane Flow Rate	642	191	303	367
Geometry Grp	2	7	7	5
Degree of Util (X)	1.173	0.411	0.625	0.695
Departure Headway (Hd)	6.575	8.434	7.988	7.437
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	559	429	455	488
Service Time	4.584	6.134	5.688	5.437
HCM Lane V/C Ratio	1.148	0.445	0.666	0.752
HCM Control Delay	119.2	16.9	23.1	25.7
HCM Lane LOS	F	C	C	D
HCM 95th-tile Q	22.5	2	4.2	5.3

Intersection	
Int Delay, s/veh	50.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1174	79	95	692	187	89
Future Vol, veh/h	1174	79	95	692	187	89
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	175	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1319	89	107	778	210	100

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1408	0	2356	1364
Stage 1	-	-	-	-	1364	-
Stage 2	-	-	-	-	992	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	485	-	~ 39	181
Stage 1	-	-	-	-	238	-
Stage 2	-	-	-	-	359	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	485	-	~ 30	181
Mov Cap-2 Maneuver	-	-	-	-	~ 172	-
Stage 1	-	-	-	-	238	-
Stage 2	-	-	-	-	280	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	$ 415.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	175	-	-	485	-
HCM Lane V/C Ratio	1.772	-	-	0.22	-
HCM Control Delay (s)	$ 415.1	-	-	14.5	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	22.1	-	-	0.8	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	237	151	107	76	96	249
Future Vol, veh/h	237	151	107	76	96	249
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	263	168	119	84	107	277

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	203	0	-	0	813	119
Stage 1	-	-	-	-	119	-
Stage 2	-	-	-	-	694	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1369	-	-	-	348	933
Stage 1	-	-	-	-	906	-
Stage 2	-	-	-	-	496	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1369	-	-	-	274	933
Mov Cap-2 Maneuver	-	-	-	-	385	-
Stage 1	-	-	-	-	714	-
Stage 2	-	-	-	-	496	-

Approach	EB	WB	SB
HCM Control Delay, s	5	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1369	-	-	-	385	933
HCM Lane V/C Ratio	0.192	-	-	-	0.277	0.297
HCM Control Delay (s)	8.3	0	-	-	17.9	10.5
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	-	-	-	1.1	1.2

APPENDIX 6.3:

OPENING YEAR CUMULATIVE (2021) WITH PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

DIST	CO	RTE	PM		TRAFFIC CONDITIONS		**2021 WP**
				CALC	CP	DATE	06/25/19
Jurisdiction:	**City of Wildomar**			CHK	CP	DATE	06/25/19
Major Street:	**Baxter Rd.**				Critical Approach Speed (Major)		45 mph
Minor Street:	**Driveway 1**				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes **1** lane

Major Street Future ADT = **4,102** vpd Minor Street Future ADT = **181** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……... [√]

or **RURAL (R)**

In built up area of isolated community of < 10,000 population …….. [ ]

(Based on Estimated Average Daily Traffic - See Note)

URBAN	RURAL	Minimum Requirements EADT			
	XX				
CONDITION A - Minimum Vehicular Volume					
Satisfied	Not Satisfied	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
	XX				
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **4,102**	*1* **181**	8,000	5,600	2,400	1,680
2 +	*1*	9,600	6,720	2,400	1,680
2 +	*2 +*	9,600	6,720	3,200	2,240
1	*2 +*	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic					
Satisfied	Not Satisfied	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
	XX				
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **4,102**	*1* **181**	12,000	8,400	1,200	850
2 +	*1*	14,400	10,080	1,200	850
2 +	*2 +*	14,400	10,080	1,600	1,120
1	*2 +*	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B					
Satisfied	Not Satisfied	2 CONDITIONS 80%		2 CONDITIONS 80%	
	XX				
No one condition satisfied, but following conditions fulfilled 80% of more …..	**A** 11% / **B** 21%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

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APPENDIX 6.4:

OPENING YEAR CUMULATIVE (2021) WITHOUT PROJECT OFF-RAMP QUEUING ANALYSIS WORKSHEETS

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Intersection	
Intersection Delay, s/veh	211
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	412	495	124	382	0	0	0	0	141	1	202
Future Vol, veh/h	0	412	495	124	382	0	0	0	0	141	1	202
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	0	5	4	6	6	0	0	0	0	2	0	5
Mvmt Flow	0	474	569	143	439	0	0	0	0	162	1	232
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	378.3	35	29
HCM LOS	F	D	D

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	41%
Vol Thru, %	45%	0%	100%	0%
Vol Right, %	55%	0%	0%	59%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	907	124	382	344
LT Vol	0	124	0	141
Through Vol	412	0	382	1
RT Vol	495	0	0	202
Lane Flow Rate	1043	143	439	395
Geometry Grp	5	7	7	2
Degree of Util (X)	1.79	0.296	0.85	0.728
Departure Headway (Hd)	6.181	8.481	7.963	7.818
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	594	426	457	467
Service Time	4.223	6.181	5.663	5.818
HCM Lane V/C Ratio	1.756	0.336	0.961	0.846
HCM Control Delay	378.3	14.7	41.6	29
HCM Lane LOS	F	B	E	D
HCM 95th-tile Q	63.3	1.2	8.5	5.8

Intersection	
Intersection Delay, s/veh	27
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	262	292	0	0	272	152	234	0	103	0	0	0
Future Vol, veh/h	262	292	0	0	272	152	234	0	103	0	0	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	5	4	0	0	6	3	6	0	8	0	0	0
Mvmt Flow	301	336	0	0	313	175	269	0	118	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	21.4	35.5	25.4
HCM LOS	C	E	D

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	69%	100%	0%	0%
Vol Thru, %	0%	0%	100%	64%
Vol Right, %	31%	0%	0%	36%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	337	262	292	424
LT Vol	234	262	0	0
Through Vol	0	0	292	272
RT Vol	103	0	0	152
Lane Flow Rate	387	301	336	487
Geometry Grp	2	7	7	5
Degree of Util (X)	0.72	0.621	0.642	0.853
Departure Headway (Hd)	6.805	7.419	6.89	6.303
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	535	488	527	580
Service Time	4.805	5.134	4.605	4.303
HCM Lane V/C Ratio	0.723	0.617	0.638	0.84
HCM Control Delay	25.4	21.6	21.2	35.5
HCM Lane LOS	D	C	C	E
HCM 95th-tile Q	5.9	4.2	4.5	9.3

Intersection	
Intersection Delay, s/veh	83.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	270	396	95	629	0	0	0	0	67	3	189
Future Vol, veh/h	0	270	396	95	629	0	0	0	0	67	3	189
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	0	9	7	2	8	0	0	0	0	9	33	8
Mvmt Flow	0	278	408	98	648	0	0	0	0	69	3	195
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	89.7	101.1	17.2
HCM LOS	F	F	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	26%
Vol Thru, %	41%	0%	100%	1%
Vol Right, %	59%	0%	0%	73%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	666	95	629	259
LT Vol	0	95	0	67
Through Vol	270	0	629	3
RT Vol	396	0	0	189
Lane Flow Rate	687	98	648	267
Geometry Grp	5	7	7	2
Degree of Util (X)	1.098	0.186	1.161	0.503
Departure Headway (Hd)	5.974	7.037	6.63	7.172
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	611	513	551	505
Service Time	3.974	4.737	4.33	5.172
HCM Lane V/C Ratio	1.124	0.191	1.176	0.529
HCM Control Delay	89.7	11.3	114.7	17.2
HCM Lane LOS	F	B	F	C
HCM 95th-tile Q	19.9	0.7	21.8	2.8

Intersection	
Intersection Delay, s/veh	39
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	135	201	0	0	252	59	471	6	94	0	0	0
Future Vol, veh/h	135	201	0	0	252	59	471	6	94	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	7	11	0	0	9	5	6	33	9	0	0	0
Mvmt Flow	139	207	0	0	260	61	486	6	97	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	15	19.6	63.6
HCM LOS	B	C	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	82%	100%	0%	0%
Vol Thru, %	1%	0%	100%	81%
Vol Right, %	16%	0%	0%	19%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	571	135	201	311
LT Vol	471	135	0	0
Through Vol	6	0	201	252
RT Vol	94	0	0	59
Lane Flow Rate	589	139	207	321
Geometry Grp	2	7	7	5
Degree of Util (X)	1.007	0.303	0.426	0.602
Departure Headway (Hd)	6.161	7.843	7.399	6.755
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	595	458	487	535
Service Time	4.161	5.6	5.156	4.805
HCM Lane V/C Ratio	0.99	0.303	0.425	0.6
HCM Control Delay	63.6	14	15.6	19.6
HCM Lane LOS	F	B	C	C
HCM 95th-tile Q	15.1	1.3	2.1	3.9

APPENDIX 6.5:

OPENING YEAR CUMULATIVE (2021) WITH PROJECT OFF-RAMP QUEUING ANALYSIS WORKSHEETS

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Intersection	
Intersection Delay, s/veh	297.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	487	538	124	495	0	0	0	0	141	1	239
Future Vol, veh/h	0	487	538	124	495	0	0	0	0	141	1	239
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	0	5	4	6	6	0	0	0	0	2	0	5
Mvmt Flow	0	560	618	143	569	0	0	0	0	162	1	275
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	514	97	38.9
HCM LOS	F	F	E

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	37%
Vol Thru, %	48%	0%	100%	0%
Vol Right, %	52%	0%	0%	63%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1025	124	495	381
LT Vol	0	124	0	141
Through Vol	487	0	495	1
RT Vol	538	0	0	239
Lane Flow Rate	1178	143	569	438
Geometry Grp	5	7	7	2
Degree of Util (X)	2.093	0.306	1.143	0.815
Departure Headway (Hd)	6.686	9.114	8.593	8.319
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	554	398	427	438
Service Time	4.686	6.814	6.293	6.319
HCM Lane V/C Ratio	2.126	0.359	1.333	1
HCM Control Delay	514	15.8	117.3	38.9
HCM Lane LOS	F	C	F	E
HCM 95th-tile Q	78.9	1.3	17.7	7.5

Intersection	
Intersection Delay, s/veh	48.5
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	306	323	0	0	351	152	269	0	103	0	0	0
Future Vol, veh/h	306	323	0	0	351	152	269	0	103	0	0	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	5	4	0	0	6	3	6	0	8	0	0	0
Mvmt Flow	352	371	0	0	403	175	309	0	118	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	29.6	81.2	36.2
HCM LOS	D	F	E

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	72%	100%	0%	0%
Vol Thru, %	0%	0%	100%	70%
Vol Right, %	28%	0%	0%	30%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	372	306	323	503
LT Vol	269	306	0	0
Through Vol	0	0	323	351
RT Vol	103	0	0	152
Lane Flow Rate	428	352	371	578
Geometry Grp	2	7	7	5
Degree of Util (X)	0.828	0.751	0.739	1.06
Departure Headway (Hd)	7.204	7.955	7.423	6.601
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	505	457	490	549
Service Time	5.204	5.655	5.123	4.678
HCM Lane V/C Ratio	0.848	0.77	0.757	1.053
HCM Control Delay	36.2	31	28.3	81.2
HCM Lane LOS	E	D	D	F
HCM 95th-tile Q	8.2	6.3	6.1	16.8

Intersection	
Intersection Delay, s/veh	185.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	412	444	95	726	0	0	0	0	67	3	242
Future Vol, veh/h	0	412	444	95	726	0	0	0	0	67	3	242
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	0	9	7	2	8	0	0	0	0	9	33	8
Mvmt Flow	0	425	458	98	748	0	0	0	0	69	3	249
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	243	187.2	21.8
HCM LOS	F	F	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	21%
Vol Thru, %	48%	0%	100%	1%
Vol Right, %	52%	0%	0%	78%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	856	95	726	312
LT Vol	0	95	0	67
Through Vol	412	0	726	3
RT Vol	444	0	0	242
Lane Flow Rate	882	98	748	322
Geometry Grp	5	7	7	2
Degree of Util (X)	1.478	0.193	1.394	0.601
Departure Headway (Hd)	6.468	7.684	7.275	7.778
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	574	470	509	466
Service Time	4.468	5.384	4.975	5.778
HCM Lane V/C Ratio	1.537	0.209	1.47	0.691
HCM Control Delay	243	12.2	210.1	21.8
HCM Lane LOS	F	B	F	C
HCM 95th-tile Q	40.8	0.7	32.4	3.9

Intersection	
Intersection Delay, s/veh	64
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	185	294	0	0	297	59	523	6	94	0	0	0
Future Vol, veh/h	185	294	0	0	297	59	523	6	94	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	7	11	0	0	9	5	6	33	9	0	0	0
Mvmt Flow	191	303	0	0	306	61	539	6	97	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	20.7	25.7	119.2
HCM LOS	C	D	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	84%	100%	0%	0%
Vol Thru, %	1%	0%	100%	83%
Vol Right, %	15%	0%	0%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	623	185	294	356
LT Vol	523	185	0	0
Through Vol	6	0	294	297
RT Vol	94	0	0	59
Lane Flow Rate	642	191	303	367
Geometry Grp	2	7	7	5
Degree of Util (X)	1.173	0.411	0.625	0.695
Departure Headway (Hd)	6.575	8.434	7.988	7.437
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	559	429	455	488
Service Time	4.584	6.134	5.688	5.437
HCM Lane V/C Ratio	1.148	0.445	0.666	0.752
HCM Control Delay	119.2	16.9	23.1	25.7
HCM Lane LOS	F	C	C	D
HCM 95th-tile Q	22.5	2	4.2	5.3

APPENDIX 6.6:

OPENING YEAR CUMULATIVE (2021) WITHOUT PROJECT FREEWAY FACILITY ANALYSIS WORKSHEETS

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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year (2021) Cumulative Without Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Southbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	North of Baxter	3300	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2020	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	South of Baxter	4425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4737	7161	0.66	67.4	23.4	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.962	4737	389	7200	2100	0.66	0.19	64.8	60.7	24.4	26.7	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4329	7161	0.60	68.3	21.1	C

Segment 4: Merge

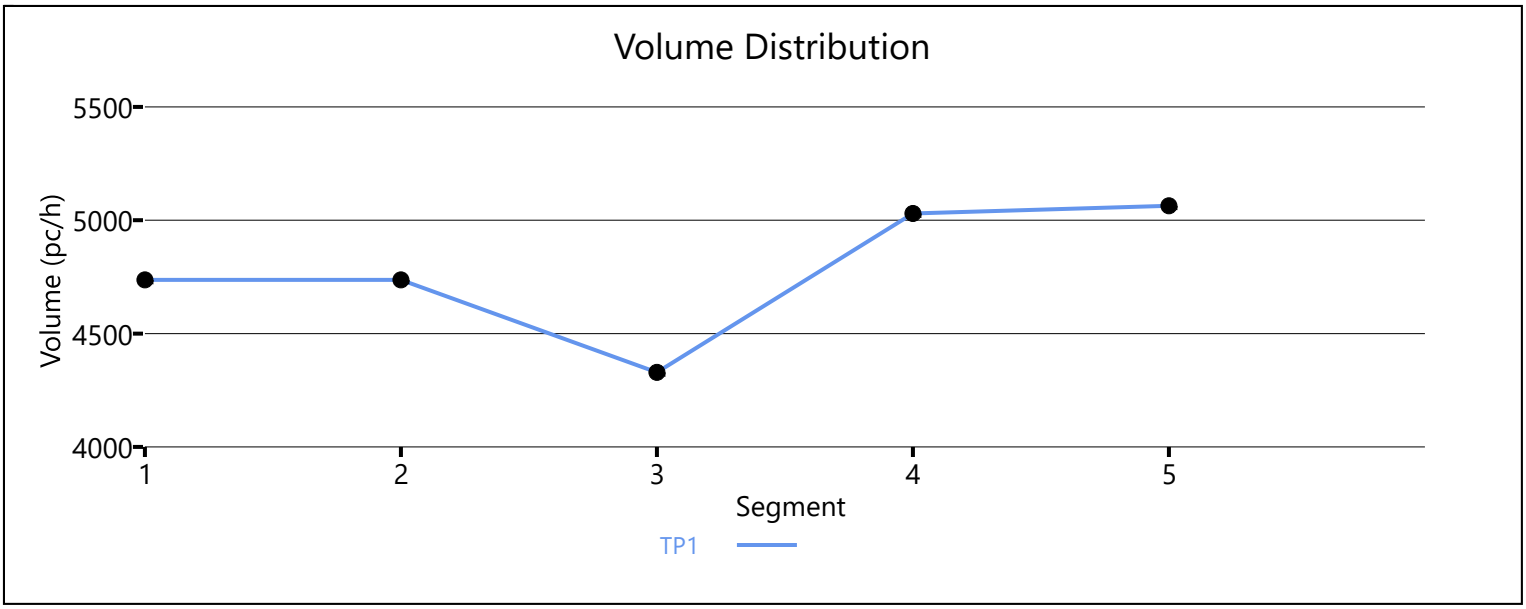
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.962	5030	701	7200	2100	0.70	0.33	62.0	60.3	27.0	25.5	C

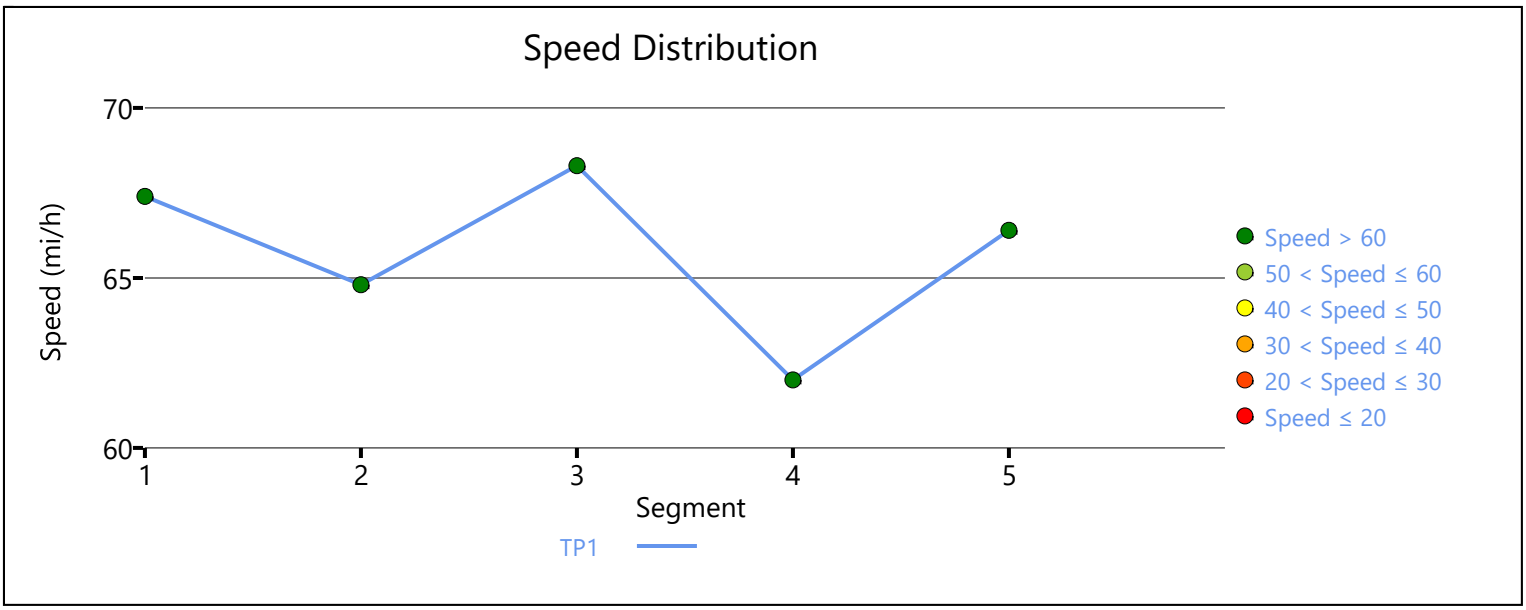
Segment 5: Basic

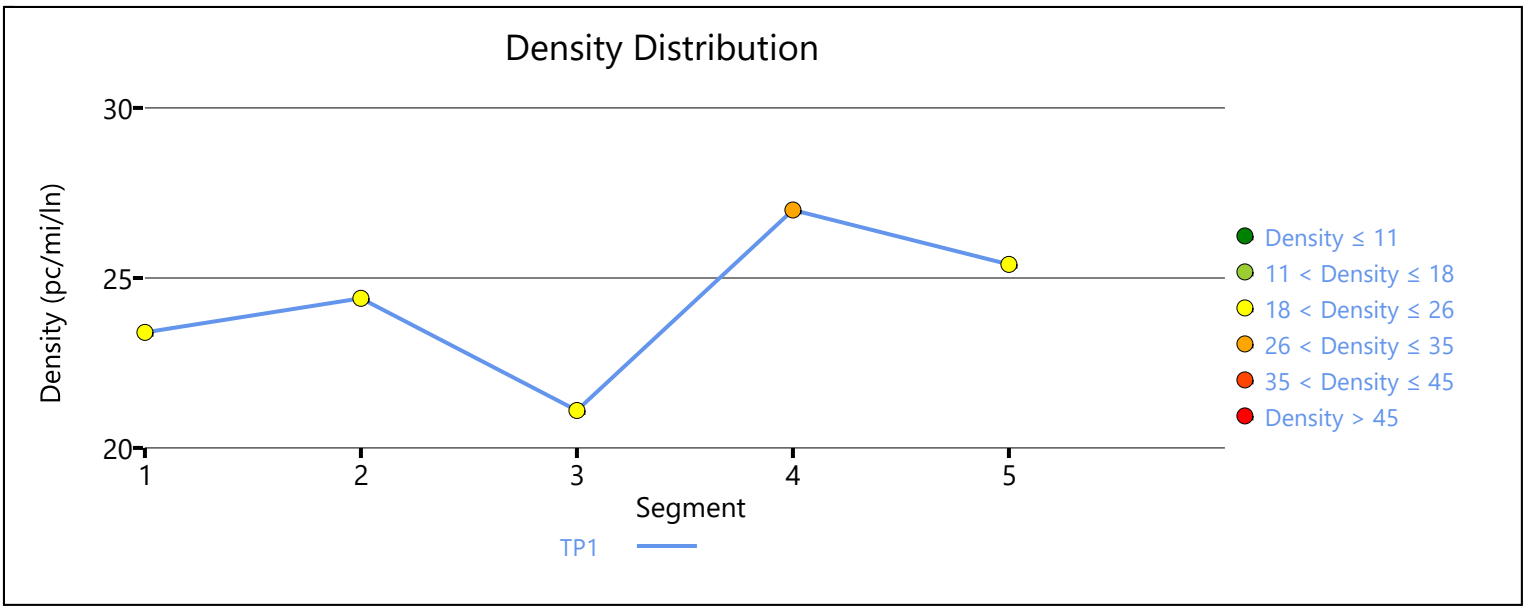
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	5064	7161	0.71	66.4	25.4	C

Facility Time Period Results					
T	**Speed, mi/h**	**Density, pc/mi/ln**	**Density, veh/mi/ln**	**Travel Time, min**	**LOS**
1	66.2	24.3	22.3	2.2	C

Facility Overall Results			
Space Mean Speed, mi/h	66.2	Density, veh/mi/ln	22.3
Average Travel Time, min	2.2	Density, pc/mi/ln	24.3







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year (2021) Cumulative Without Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Northbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	South of Baxter	2680	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2220	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	North of Baxter	3425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4334	7161	0.61	68.2	21.2	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.943	4334	388	7200	2100	0.60	0.18	64.8	60.7	22.3	24.1	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	3934	7161	0.55	68.7	19.1	C

Segment 4: Merge

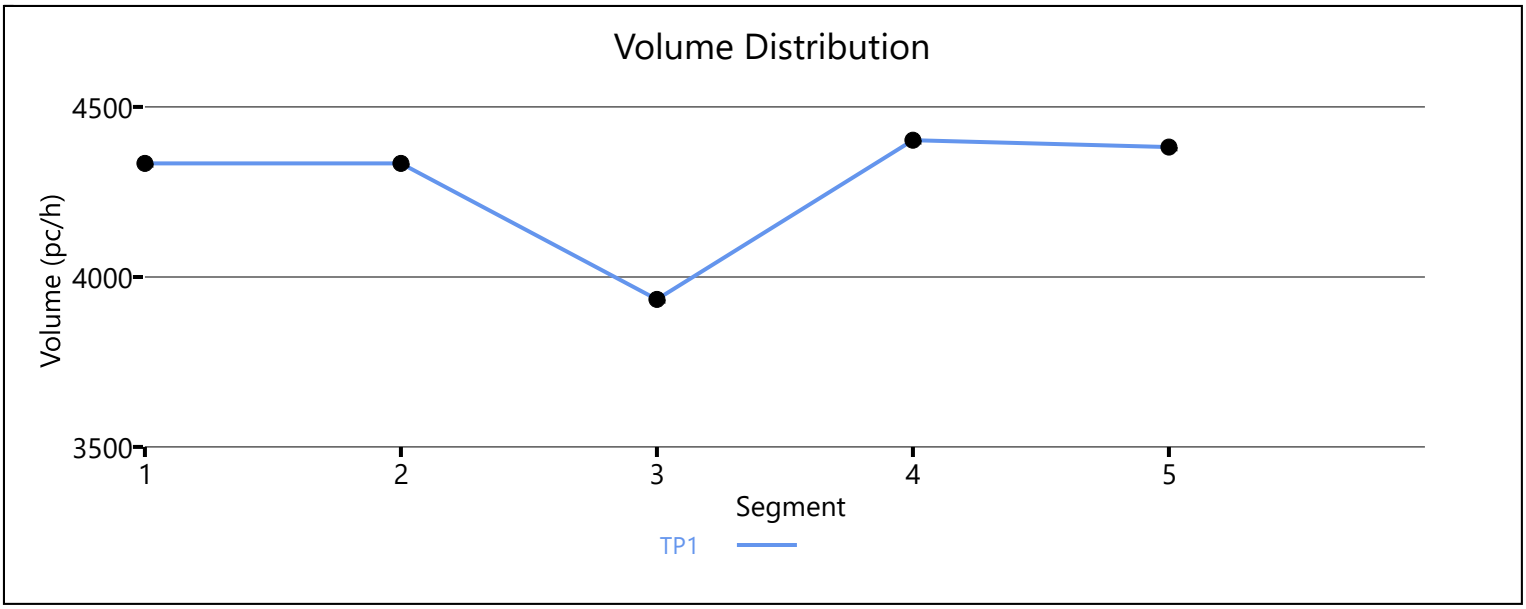
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.962	4402	468	7200	2100	0.61	0.22	62.8	61.1	23.4	22.5	C

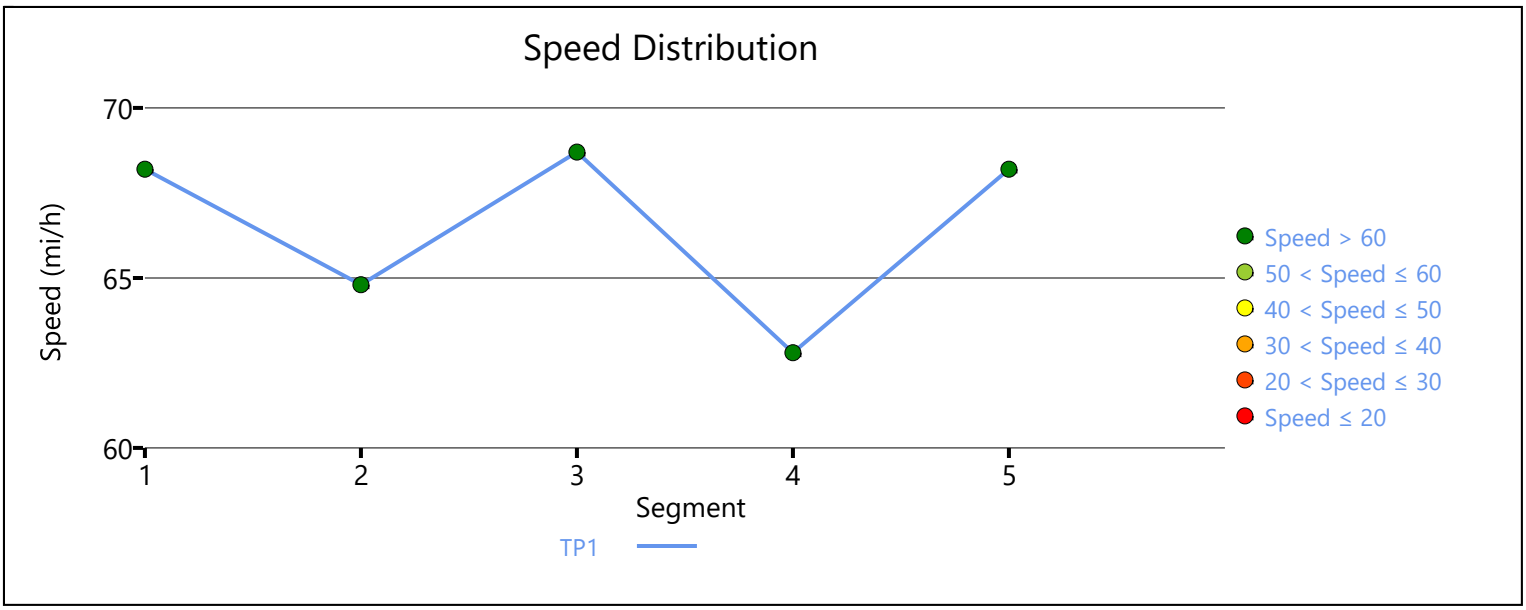
Segment 5: Basic

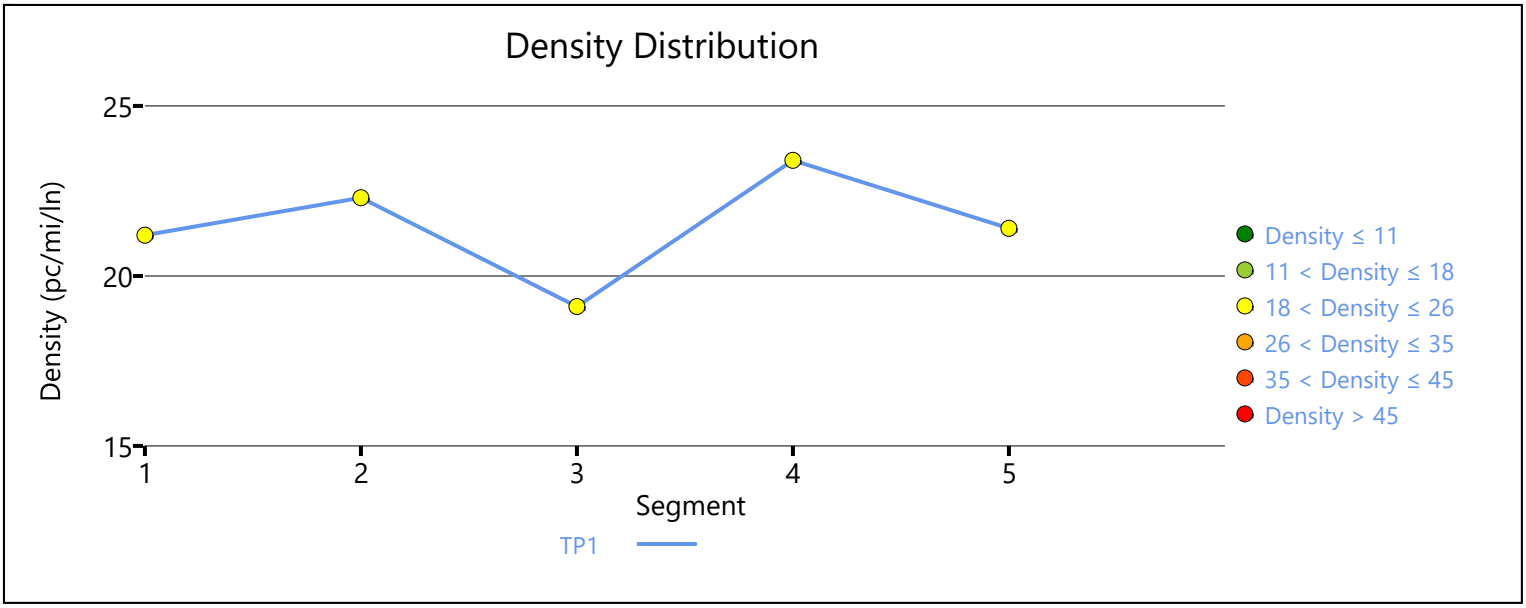
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.926	4382	7161	0.61	68.2	21.4	C

Facility Time Period Results					
T	**Speed, mi/h**	**Density, pc/mi/ln**	**Density, veh/mi/ln**	**Travel Time, min**	**LOS**
1	67.0	21.3	19.6	1.9	C

Facility Overall Results			
Space Mean Speed, mi/h	67.0	Density, veh/mi/ln	19.6
Average Travel Time, min	1.9	Density, pc/mi/ln	21.3







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year (2021) Cumulative Without Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Southbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	North of Baxter	3300	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2020	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	South of Baxter	4425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4769	7161	0.67	67.3	23.6	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.926	4769	304	7200	2100	0.66	0.14	65.0	60.9	24.5	26.7	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4462	7161	0.62	68.0	21.9	C

Segment 4: Merge

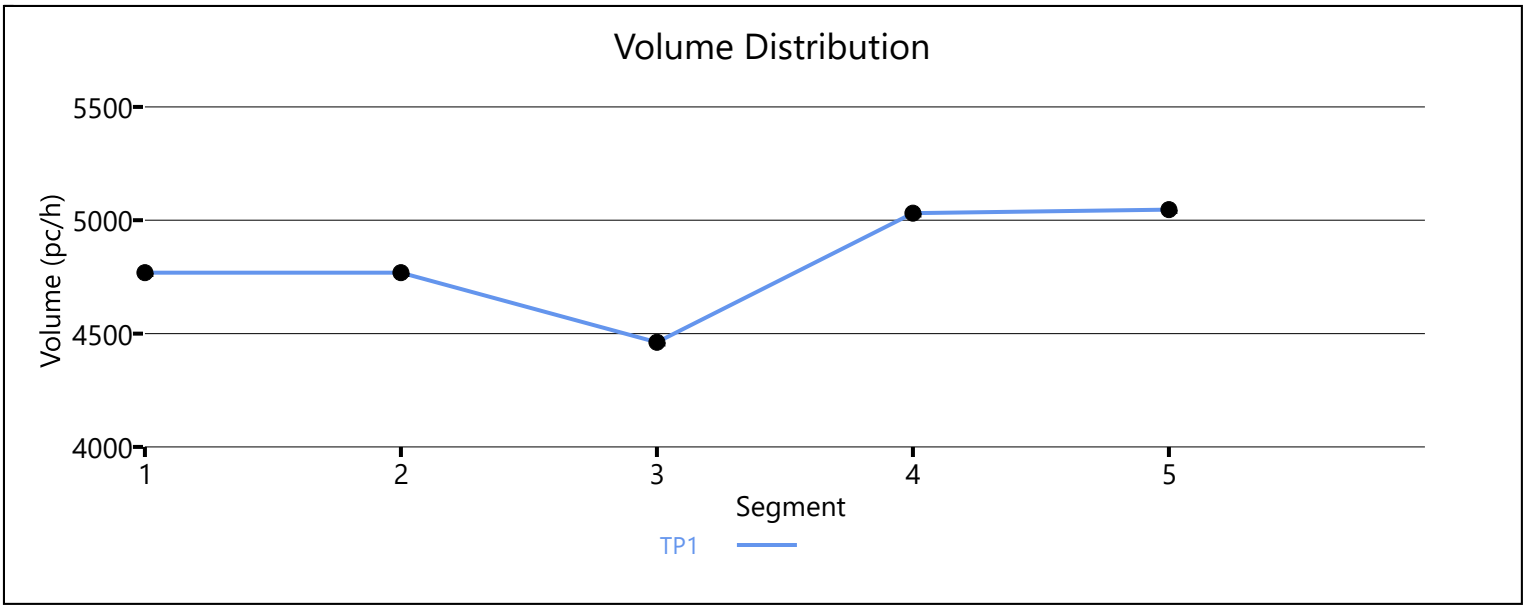
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.943	5031	569	7200	2100	0.70	0.27	62.1	60.4	27.0	25.2	C

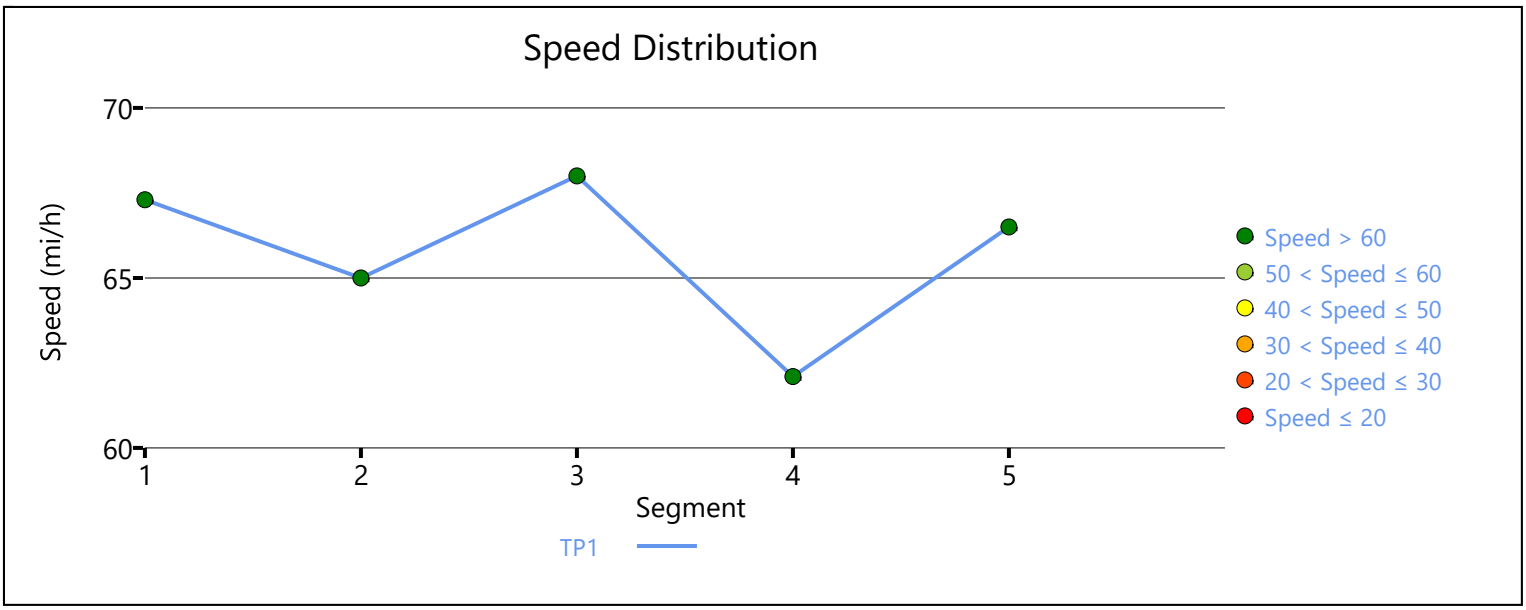
Segment 5: Basic

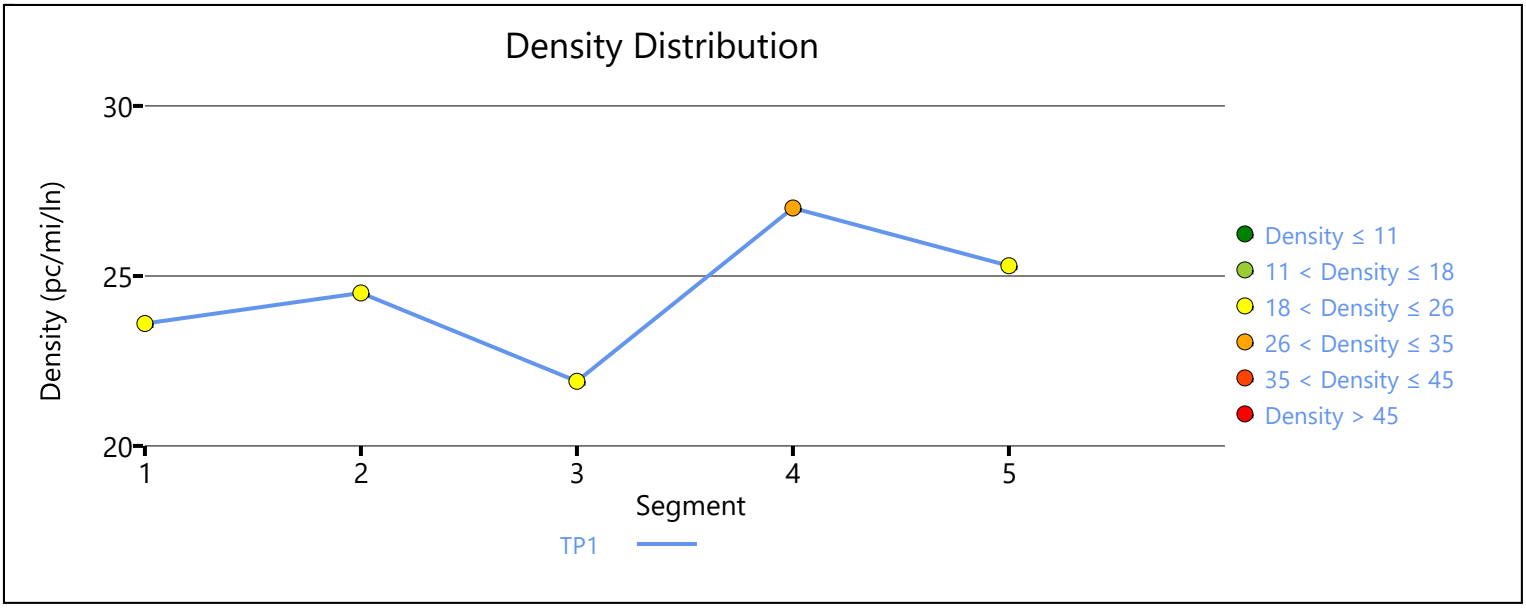
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	5047	7161	0.70	66.5	25.3	C

Facility Time Period Results					
T	**Speed, mi/h**	**Density, pc/mi/ln**	**Density, veh/mi/ln**	**Travel Time, min**	**LOS**
1	66.2	24.4	22.4	2.2	C

Facility Overall Results			
Space Mean Speed, mi/h	66.2	Density, veh/mi/ln	22.4
Average Travel Time, min	2.2	Density, pc/mi/ln	24.4







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year (2021) Cumulative Without Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Northbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	South of Baxter	2680	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2220	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	North of Baxter	3425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	6363	7161	0.89	59.5	35.6	E

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.962	6363	645	7200	2100	0.88	0.31	63.8	60.0	33.2	32.8	D

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	5686	7161	0.79	63.7	29.7	D

Segment 4: Merge

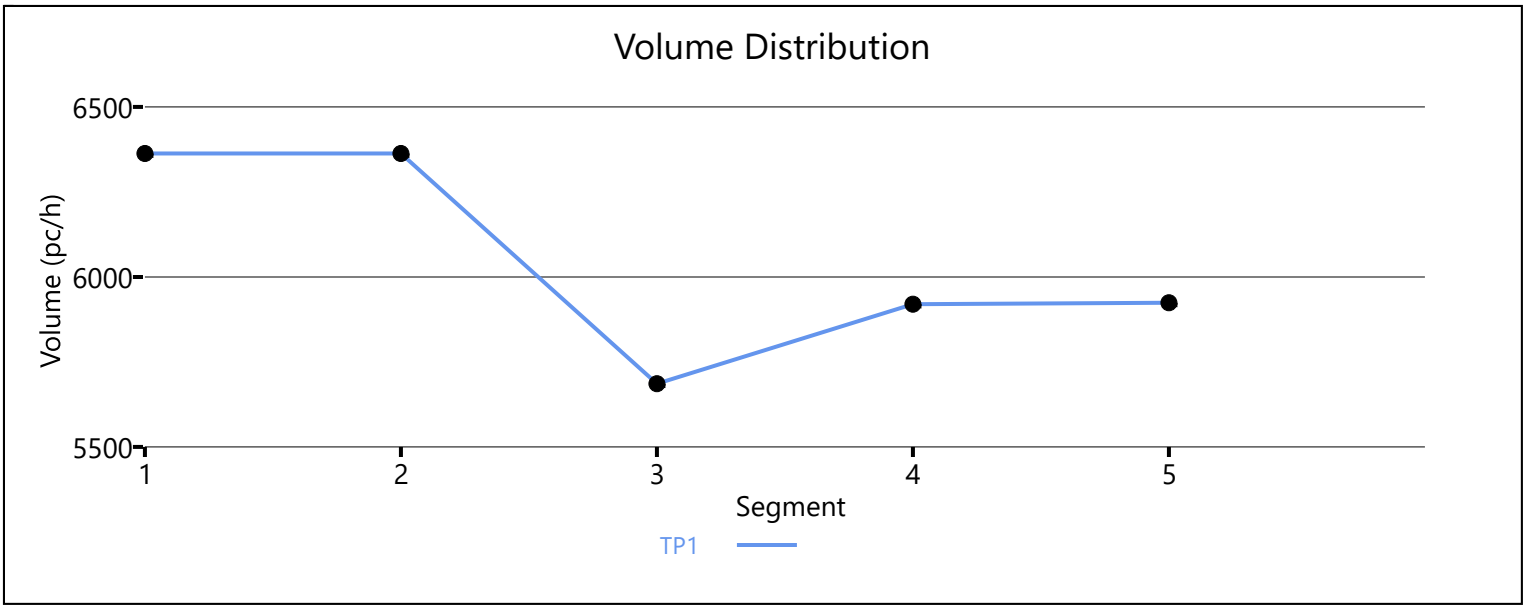
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.935	5920	234	7200	2100	0.82	0.11	60.6	58.8	32.6	29.0	D

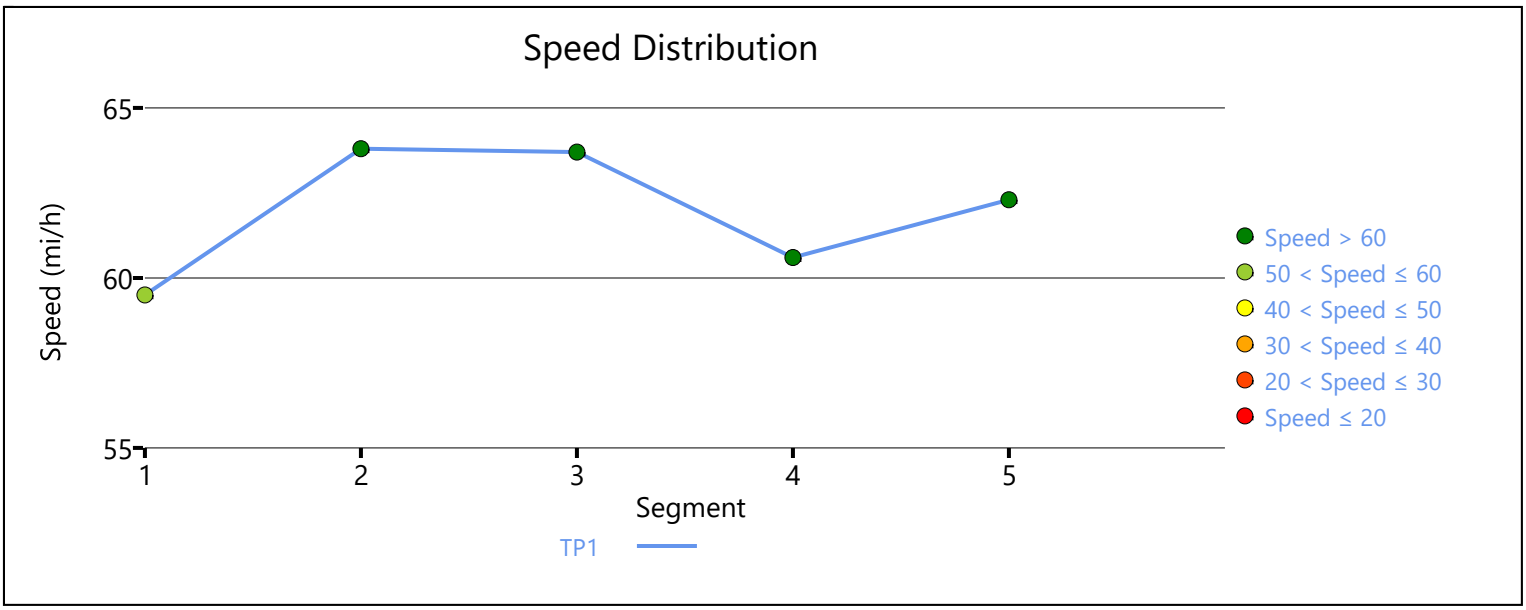
Segment 5: Basic

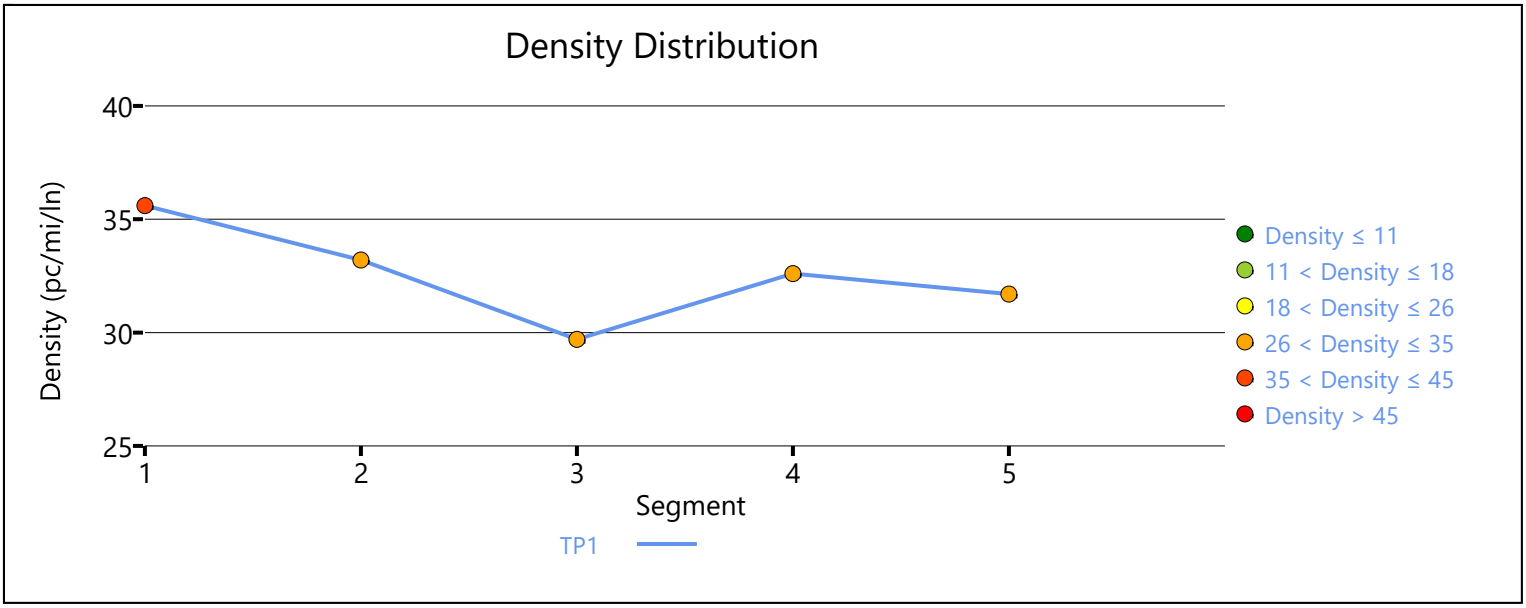
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	5924	7161	0.83	62.3	31.7	D

Facility Time Period Results					
T	**Speed, mi/h**	**Density, pc/mi/ln**	**Density, veh/mi/ln**	**Travel Time, min**	**LOS**
1	61.8	32.6	29.8	2.1	D

Facility Overall Results			
Space Mean Speed, mi/h	61.8	Density, veh/mi/ln	29.8
Average Travel Time, min	2.1	Density, pc/mi/ln	32.6







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APPENDIX 6.7:

OPENING YEAR CUMULATIVE (2021) WITH PROJECT FREEWAY FACILITY ANALYSIS WORKSHEETS

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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year (2021) Cumulative With Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Southbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	North of Baxter	3300	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2020	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	South of Baxter	4425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4780	7161	0.67	67.3	23.7	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.962	4780	430	7200	2100	0.66	0.20	64.7	60.6	24.6	26.9	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4329	7161	0.60	68.3	21.1	C

Segment 4: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.962	5078	749	7200	2100	0.71	0.36	61.9	60.1	27.3	25.9	C

Segment 5: Basic

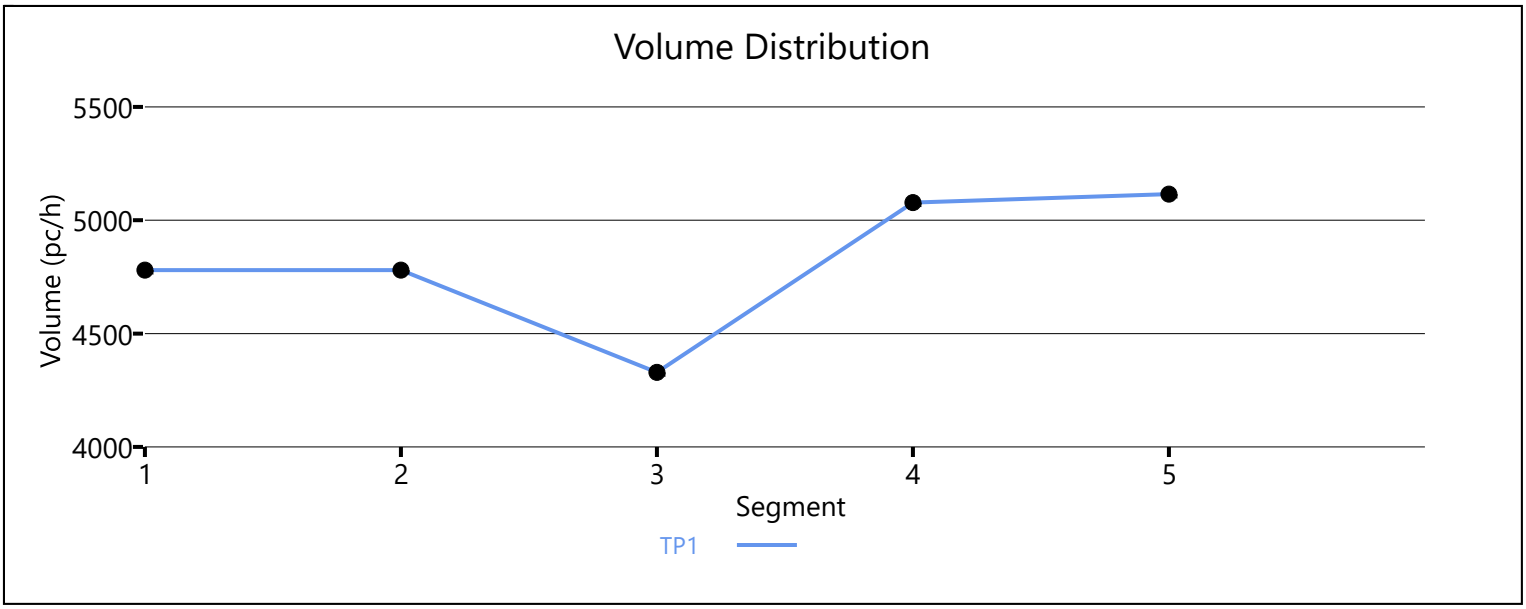
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	5115	7161	0.71	66.2	25.8	C

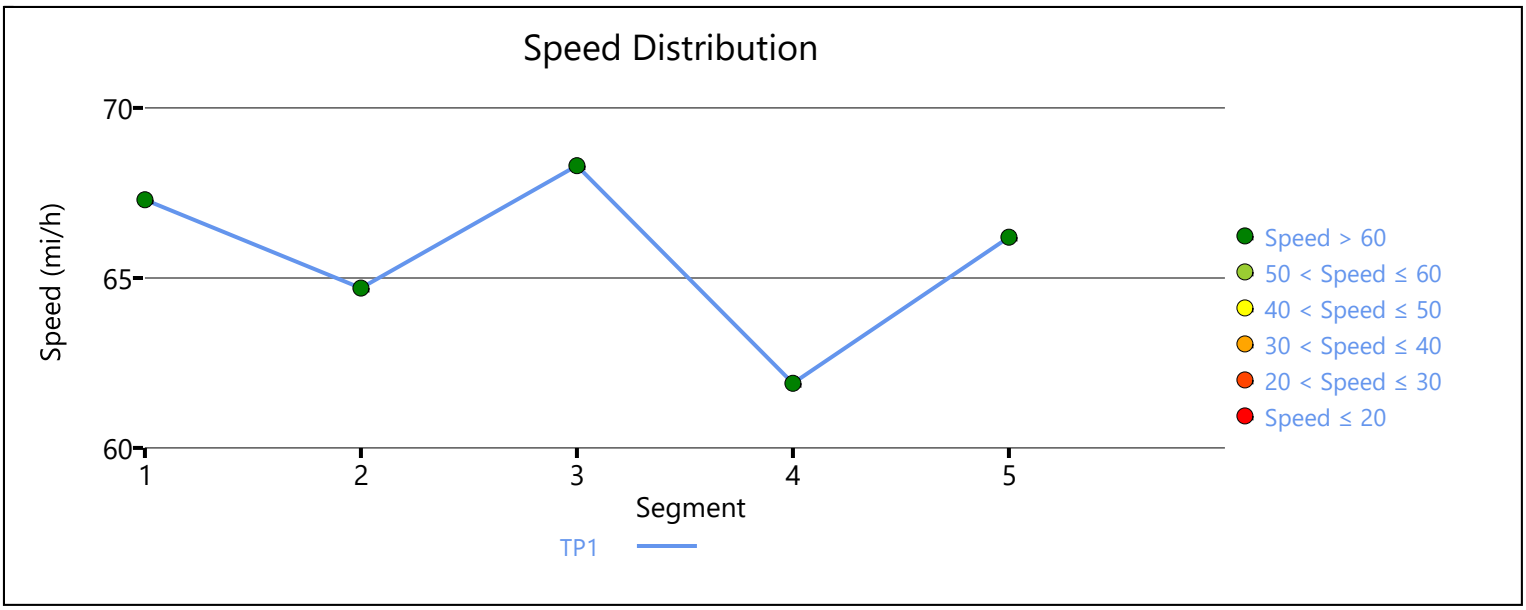
Facility Time Period Results

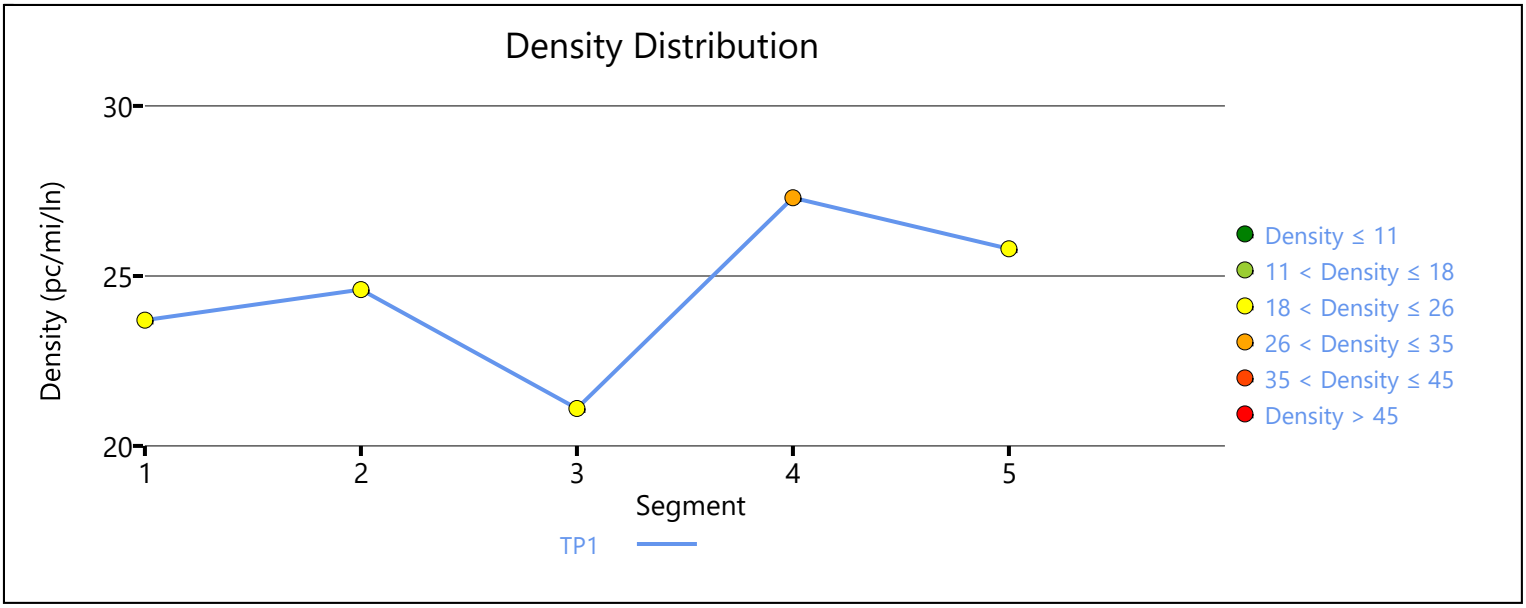
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	66.0	24.6	22.5	2.2	C

Facility Overall Results

Space Mean Speed, mi/h	66.0	Density, veh/mi/ln	22.5
Average Travel Time, min	2.2	Density, pc/mi/ln	24.6







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year (2021) Cumulative With Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Northbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	South of Baxter	2680	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2220	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	North of Baxter	3425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4375	7161	0.61	68.2	21.4	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.952	4375	425	7200	2100	0.61	0.20	64.7	60.6	22.5	24.3	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	3934	7161	0.55	68.7	19.1	C

Segment 4: Merge

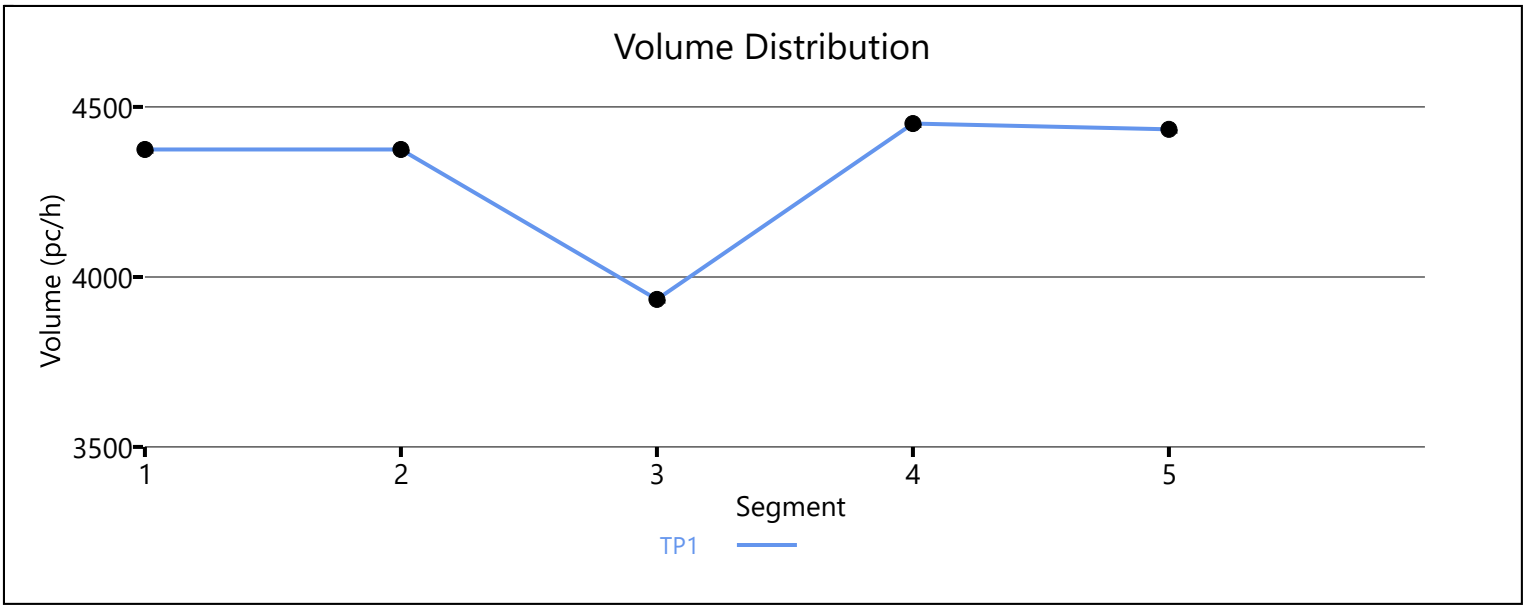
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.962	4451	517	7200	2100	0.62	0.25	62.7	61.0	23.7	22.9	C

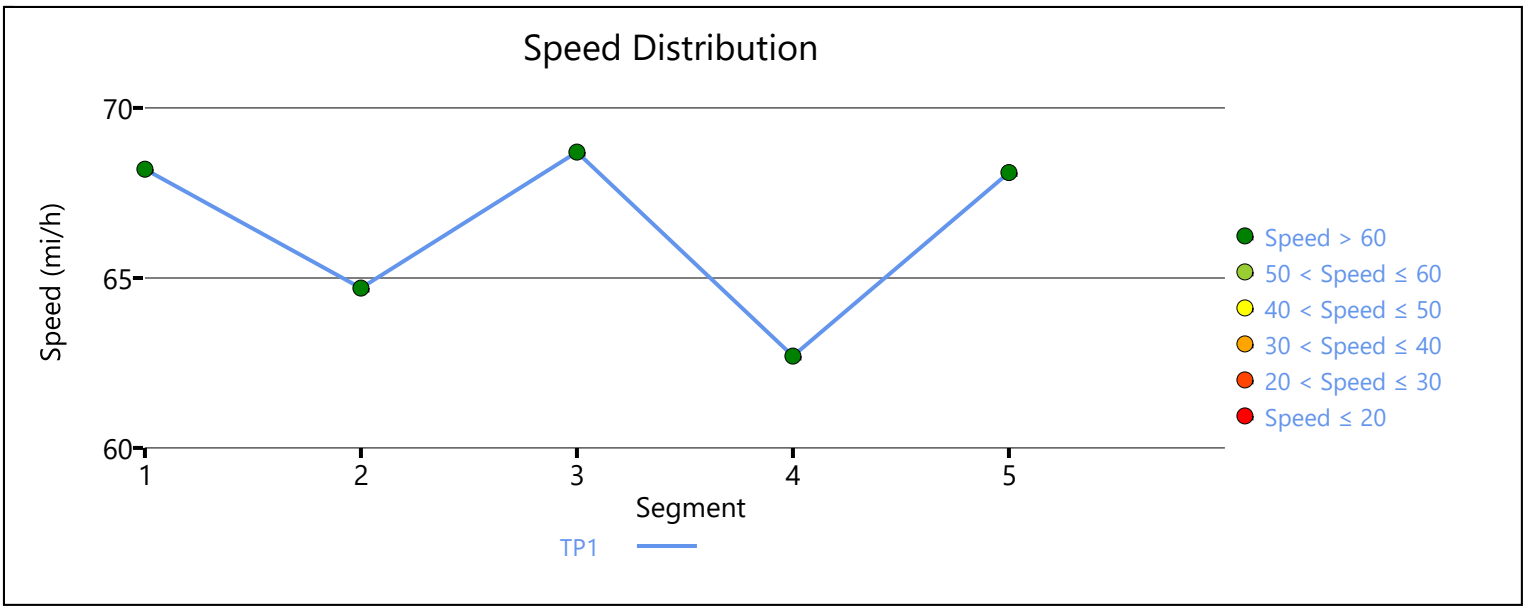
Segment 5: Basic

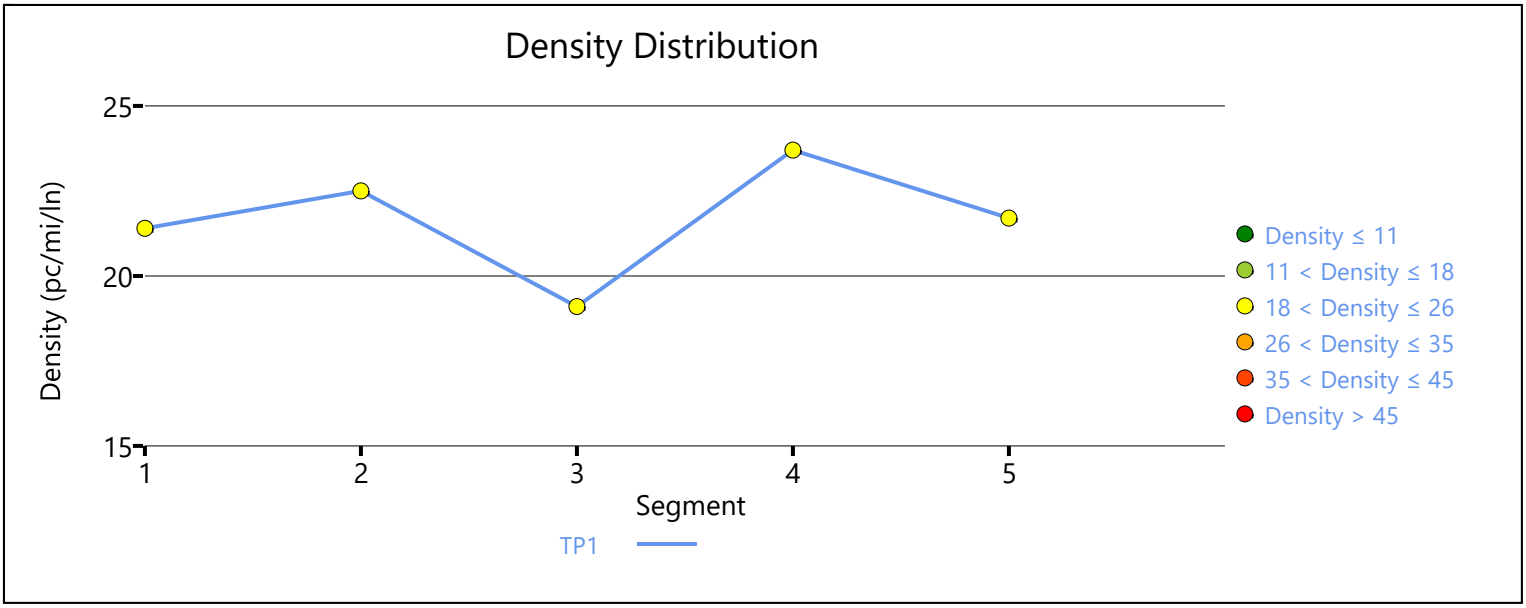
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.926	4434	7161	0.62	68.1	21.7	C

Facility Time Period Results					
T	**Speed, mi/h**	**Density, pc/mi/ln**	**Density, veh/mi/ln**	**Travel Time, min**	**LOS**
1	67.0	21.5	19.8	1.9	C

Facility Overall Results			
Space Mean Speed, mi/h	67.0	Density, veh/mi/ln	19.8
Average Travel Time, min	1.9	Density, pc/mi/ln	21.5







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year (2021) Cumulative With Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Southbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	North of Baxter	3300	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2020	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	South of Baxter	4425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4831	7161	0.67	67.1	24.0	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.935	4831	363	7200	2100	0.67	0.17	64.8	60.7	24.9	27.1	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	4462	7161	0.62	68.0	21.9	C

Segment 4: Merge

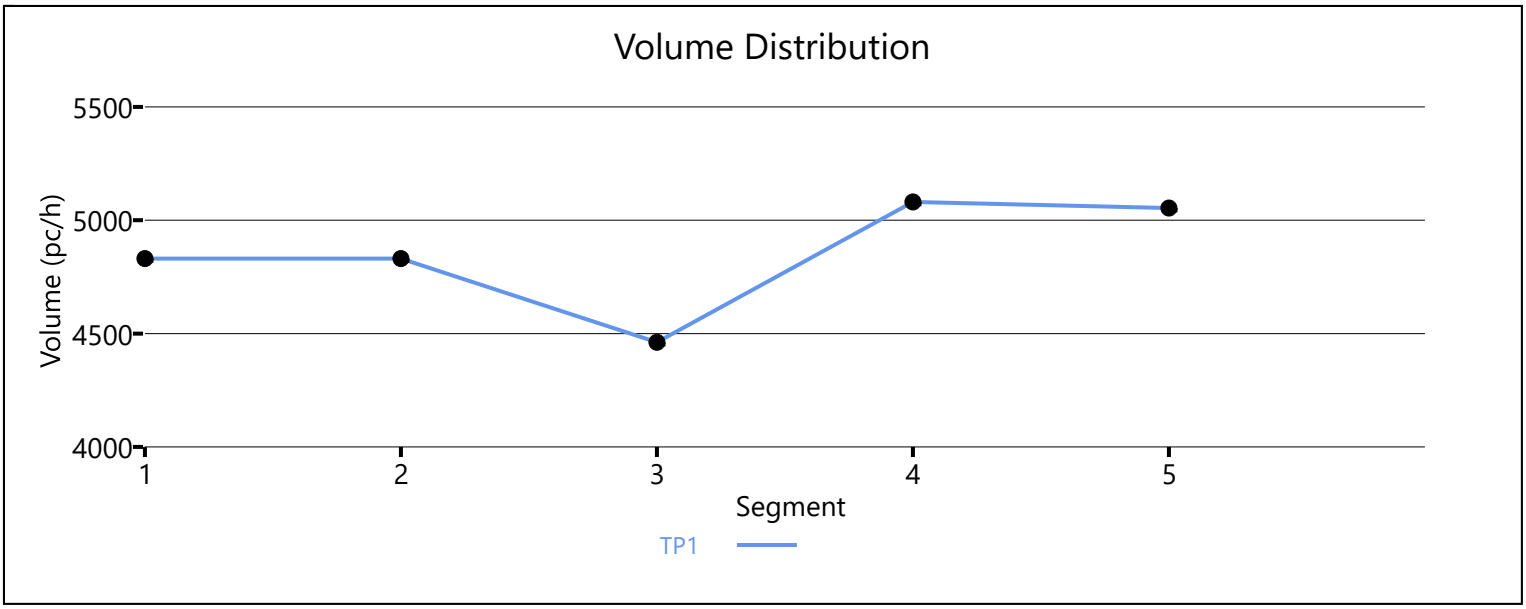
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.952	5081	619	7200	2100	0.71	0.29	62.0	60.3	27.3	25.5	C

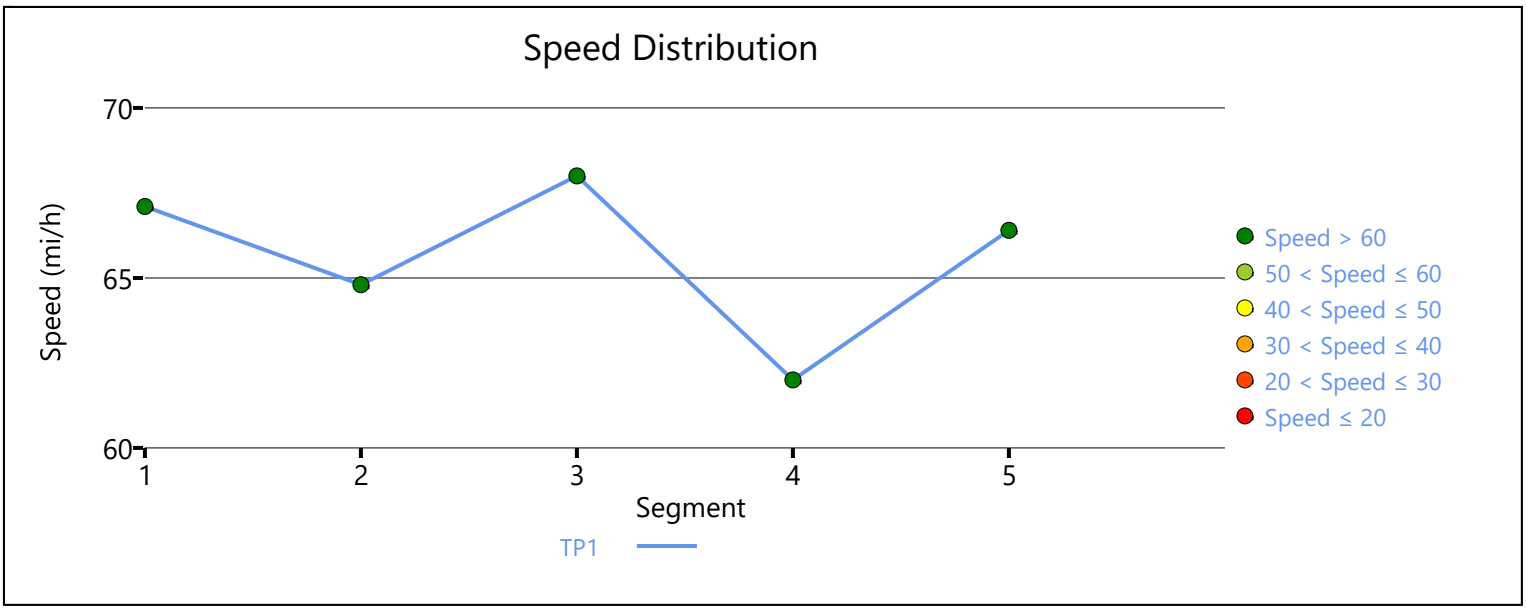
Segment 5: Basic

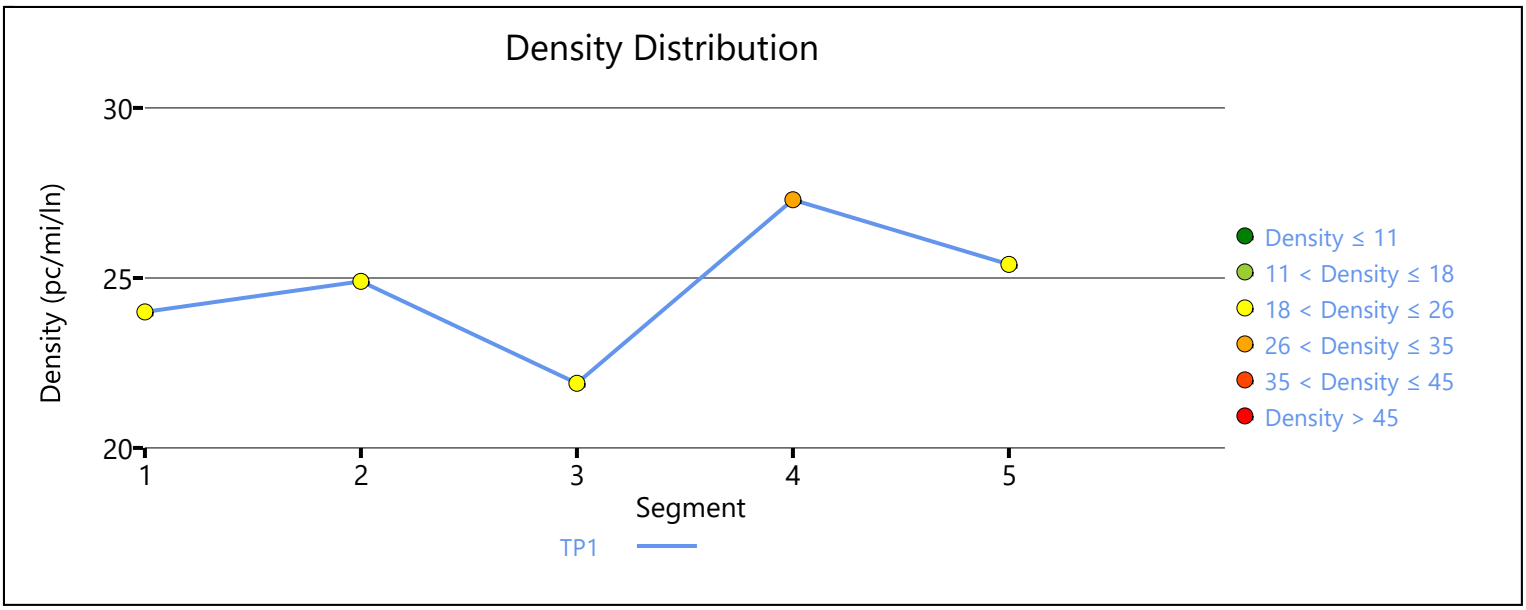
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.926	5054	7161	0.71	66.4	25.4	C

Facility Time Period Results					
T	**Speed, mi/h**	**Density, pc/mi/ln**	**Density, veh/mi/ln**	**Travel Time, min**	**LOS**
1	66.0	24.7	22.7	2.2	C

Facility Overall Results			
Space Mean Speed, mi/h	66.0	Density, veh/mi/ln	22.7
Average Travel Time, min	2.2	Density, pc/mi/ln	24.7







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Opening Year (2021) Cumulative With Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Northbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	South of Baxter	2680	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2220	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	North of Baxter	3425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	6425	7161	0.90	59.1	36.2	E

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.962	6425	704	7200	2100	0.89	0.34	63.7	59.9	33.6	33.2	D

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	5686	7161	0.79	63.7	29.7	D

Segment 4: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.943	5975	289	7200	2100	0.83	0.14	60.4	58.6	33.0	29.4	D

Segment 5: Basic

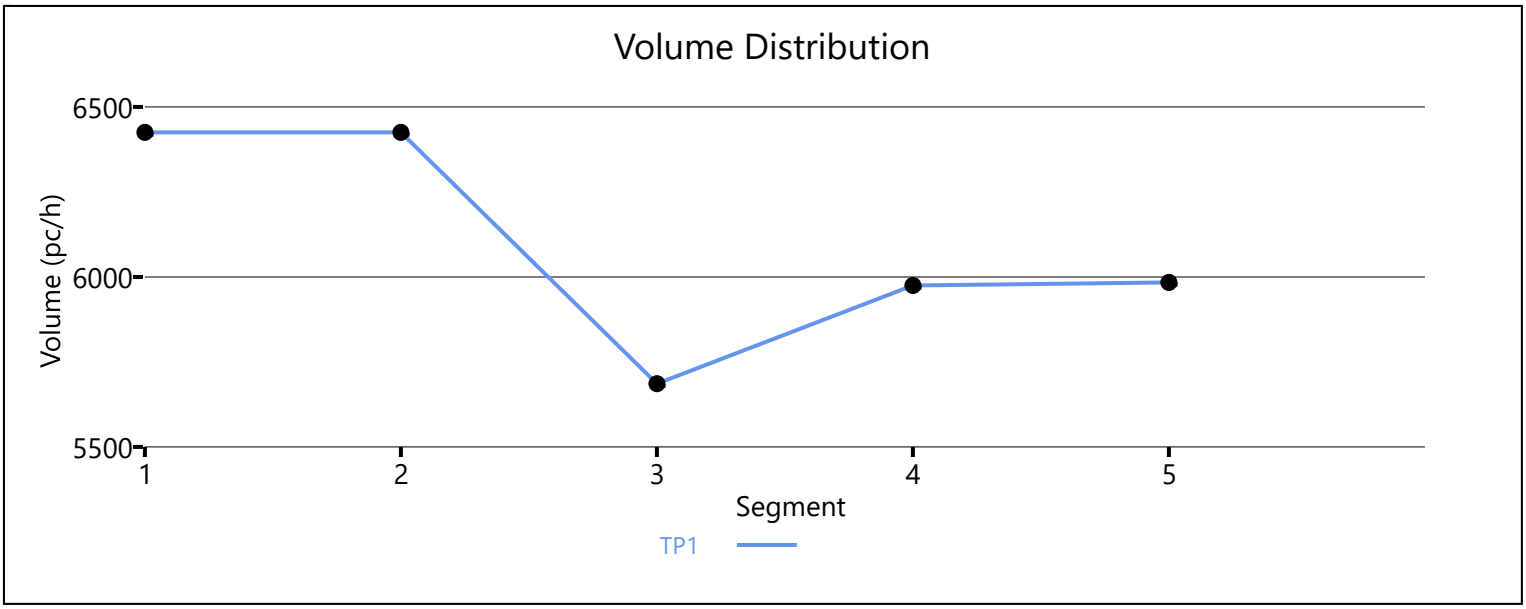
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	5984	7161	0.84	62.0	32.2	D

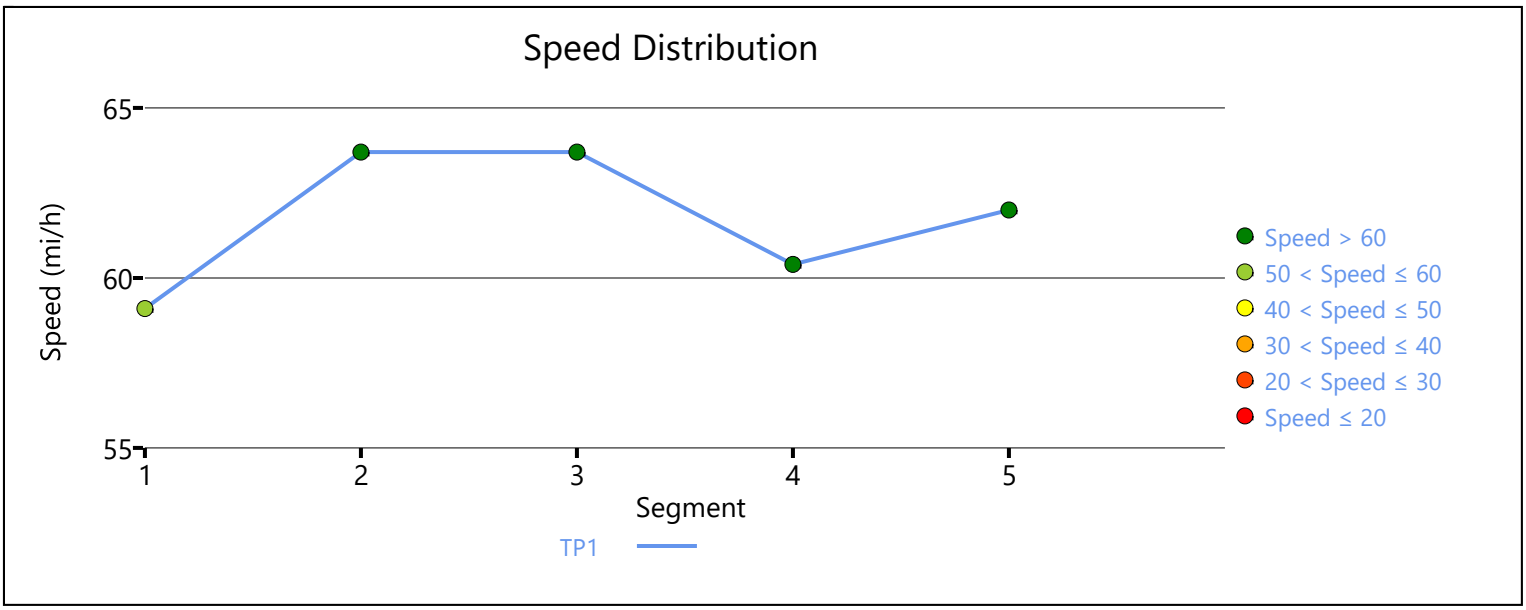
Facility Time Period Results

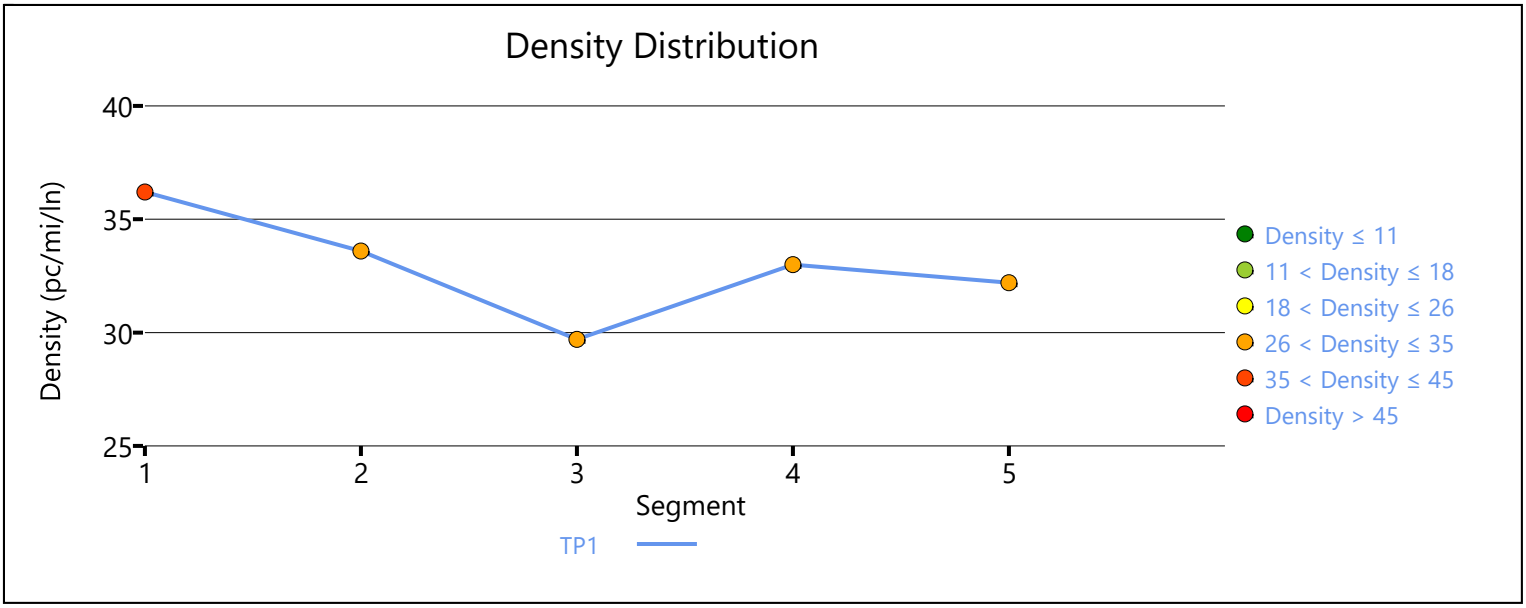
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	61.6	33.0	30.2	2.1	D

Facility Overall Results

Space Mean Speed, mi/h	61.6	Density, veh/mi/ln	30.2
Average Travel Time, min	2.1	Density, pc/mi/ln	33.0







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APPENDIX 6.8:

OPENING YEAR CUMULATIVE (2021) WITH PROJECT INTERSECTION OPERATIONS ANALYSIS WORKSHEETS WITH IMPROVEMENTS

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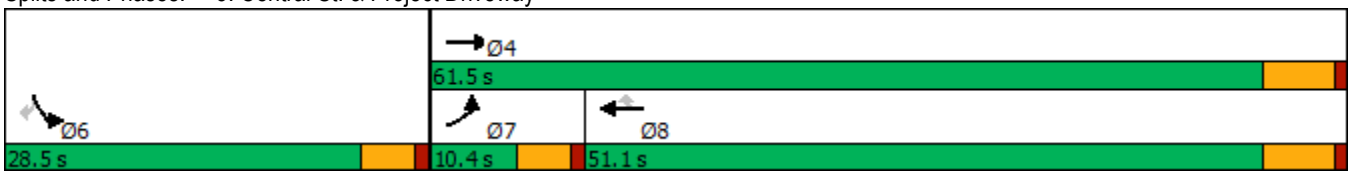
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	85	904	605	74	123	11
Future Volume (vph)	85	904	605	74	123	11
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	9.6	15.8	27.8	27.8	26.6	26.6
Total Split (s)	10.4	61.5	51.1	51.1	28.5	28.5
Total Split (%)	11.6%	68.3%	56.8%	56.8%	31.7%	31.7%
Yellow Time (s)	3.6	4.8	4.8	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	5.8	4.6	4.6
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Max	Max	Max	None	None
Act Effct Green (s)	5.8	55.7	45.3	45.3	11.8	11.8
Actuated g/C Ratio	0.07	0.72	0.58	0.58	0.15	0.15
v/c Ratio	0.69	0.73	0.60	0.08	0.49	0.05
Control Delay	64.6	11.2	13.8	2.4	37.0	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.6	11.2	13.8	2.4	37.0	15.2
LOS	E	B	B	A	D	B
Approach Delay		15.8	12.6		35.2	
Approach LOS		B	B		D	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 77.9	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 16.0	Intersection LOS: B
Intersection Capacity Utilization 64.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: Central St. & Project Driveway



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	85	904	605	74	123	11
Future Volume (veh/h)	85	904	605	74	123	11
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	91	972	651	80	132	12
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	117	1378	1142	967	224	199
Arrive On Green	0.07	0.74	0.61	0.61	0.13	0.13
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	91	972	651	80	132	12
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	3.8	21.5	15.7	1.6	5.3	0.5
Cycle Q Clear(g_c), s	3.8	21.5	15.7	1.6	5.3	0.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	117	1378	1142	967	224	199
V/C Ratio(X)	0.78	0.71	0.57	0.08	0.59	0.06
Avail Cap(c_a), veh/h	137	1378	1142	967	563	501
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.8	5.5	8.8	6.0	31.2	29.1
Incr Delay (d2), s/veh	18.0	3.1	2.1	0.2	2.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	5.2	5.3	0.4	2.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	52.8	8.5	10.9	6.2	33.7	29.2
LnGrp LOS	D	A	B	A	C	C
Approach Vol, veh/h		1063	731		144	
Approach Delay, s/veh		12.3	10.4		33.3	
Approach LOS		B	B		C	

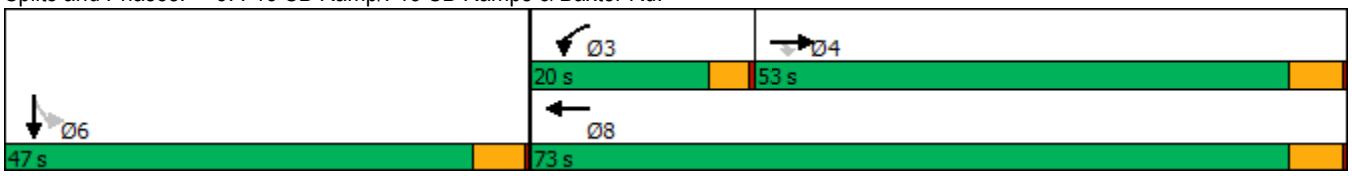
Timer - Assigned Phs		4		6	7	8
Phs Duration (G+Y+Rc), s		61.5		14.1	9.5	52.0
Change Period (Y+Rc), s		5.8		4.6	4.6	5.8
Max Green Setting (Gmax), s		55.7		23.9	5.8	45.3
Max Q Clear Time (g_c+I1), s		23.5		7.3	5.8	17.7
Green Ext Time (p_c), s		8.4		0.3	0.0	4.5

Intersection Summary	
HCM 6th Ctrl Delay	13.1
HCM 6th LOS	B

Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Configurations					
Traffic Volume (vph)	487	538	124	495	1
Future Volume (vph)	487	538	124	495	1
Turn Type	NA	Perm	Prot	NA	NA
Protected Phases	4		3	8	6
Permitted Phases		4			
Detector Phase	4	4	3	8	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	20.3	20.3	9.1	20.3	20.3
Total Split (s)	53.0	53.0	20.0	73.0	47.0
Total Split (%)	44.2%	44.2%	16.7%	60.8%	39.2%
Yellow Time (s)	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	4.1	5.3	5.3
Lead/Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes		
Recall Mode	Max	Max	None	Max	None
Act Effct Green (s)	51.6	51.6	12.3	68.1	29.0
Actuated g/C Ratio	0.48	0.48	0.11	0.63	0.27
v/c Ratio	0.63	0.69	0.71	0.48	0.86
Control Delay	27.5	18.0	66.0	13.7	47.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.5	18.0	66.0	13.7	47.9
LOS	C	B	E	B	D
Approach Delay	22.5			24.2	47.9
Approach LOS	C			C	D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 107.7	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 27.8	Intersection LOS: C
Intersection Capacity Utilization 79.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 5: I-15 SB Ramp/I-15 SB Ramps & Baxter Rd.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	487	538	124	495	0	0	0	0	141	1	239
Future Volume (veh/h)	0	487	538	124	495	0	0	0	0	141	1	239
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	0	1870	1870	1870	1870	0				1900	1900	1900
Adj Flow Rate, veh/h	0	560	470	143	569	0				162	1	275
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87				0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	2	2	0				0	0	0
Cap, veh/h	0	901	763	172	1151	0				179	1	304
Arrive On Green	0.00	0.48	0.48	0.10	0.62	0.00				0.29	0.29	0.29
Sat Flow, veh/h	0	1870	1585	1781	1870	0				621	4	1054
Grp Volume(v), veh/h	0	560	470	143	569	0				438	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	1585	1781	1870	0				1679	0	0
Q Serve(g_s), s	0.0	24.4	24.0	8.7	18.5	0.0				27.6	0.0	0.0
Cycle Q Clear(g_c), s	0.0	24.4	24.0	8.7	18.5	0.0				27.6	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				0.37		0.63
Lane Grp Cap(c), veh/h	0	901	763	172	1151	0				484	0	0
V/C Ratio(X)	0.00	0.62	0.62	0.83	0.49	0.00				0.90	0.00	0.00
Avail Cap(c_a), veh/h	0	901	763	257	1151	0				637	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	21.1	21.0	48.8	11.7	0.0				37.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	3.2	3.7	8.5	1.5	0.0				13.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.6	9.0	4.1	7.2	0.0				12.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	24.3	24.7	57.3	13.2	0.0				51.4	0.0	0.0
LnGrp LOS	A	C	C	E	B	A				D	A	A
Approach Vol, veh/h		1030			712						438	
Approach Delay, s/veh		24.5			22.1						51.4	
Approach LOS		C			C						D	

Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		14.7	58.3		37.0		73.0					
Change Period (Y+Rc), s		4.1	5.3		5.3		5.3					
Max Green Setting (Gmax), s		15.9	47.7		41.7		67.7					
Max Q Clear Time (g_c+I1), s		10.7	26.4		29.6		20.5					
Green Ext Time (p_c), s		0.1	5.1		2.1		3.7					

Intersection Summary	
HCM 6th Ctrl Delay	29.1
HCM 6th LOS	C

Lane Group	EBL	EBT	WBT	NBT
Lane Configurations				
Traffic Volume (vph)	306	323	351	0
Future Volume (vph)	306	323	351	0
Turn Type	Prot	NA	NA	NA
Protected Phases	7	4	8	2
Permitted Phases				
Detector Phase	7	4	8	2
Switch Phase				
Minimum Initial (s)	5.0	10.0	10.0	10.0
Minimum Split (s)	9.6	20.8	20.8	20.8
Total Split (s)	33.0	81.0	48.0	39.0
Total Split (%)	27.5%	67.5%	40.0%	32.5%
Yellow Time (s)	3.6	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	5.8
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	Max	Max	None
Act Effct Green (s)	26.0	75.4	44.7	29.5
Actuated g/C Ratio	0.22	0.65	0.38	0.25
v/c Ratio	0.92	0.31	0.85	0.91
Control Delay	74.1	10.6	47.1	60.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	74.1	10.6	47.1	60.0
LOS	E	B	D	E
Approach Delay		41.5	47.1	60.0
Approach LOS		D	D	E

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 116.5	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 47.9	Intersection LOS: D
Intersection Capacity Utilization 79.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 6: I-15 NB Ramps & Baxter Rd.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	306	323	0	0	351	152	269	0	103	0	0	0
Future Volume (veh/h)	306	323	0	0	351	152	269	0	103	0	0	0
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	1826	1841	0	0	1811	1811	1900	1900	1900			
Adj Flow Rate, veh/h	352	371	0	0	403	131	309	0	89			
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87			
Percent Heavy Veh, %	5	4	0	0	6	6	0	0	0			
Cap, veh/h	379	1201	0	0	517	168	338	0	97			
Arrive On Green	0.22	0.65	0.00	0.00	0.39	0.39	0.25	0.00	0.25			
Sat Flow, veh/h	1739	1841	0	0	1309	426	1367	0	394			
Grp Volume(v), veh/h	352	371	0	0	0	534	398	0	0			
Grp Sat Flow(s),veh/h/ln	1739	1841	0	0	0	1734	1761	0	0			
Q Serve(g_s), s	22.9	10.1	0.0	0.0	0.0	31.0	25.4	0.0	0.0			
Cycle Q Clear(g_c), s	22.9	10.1	0.0	0.0	0.0	31.0	25.4	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		0.25	0.78		0.22			
Lane Grp Cap(c), veh/h	379	1201	0	0	0	685	435	0	0			
V/C Ratio(X)	0.93	0.31	0.00	0.00	0.00	0.78	0.92	0.00	0.00			
Avail Cap(c_a), veh/h	428	1201	0	0	0	685	507	0	0			
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	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	44.2	8.7	0.0	0.0	0.0	30.5	42.2	0.0	0.0			
Incr Delay (d2), s/veh	24.1	0.7	0.0	0.0	0.0	8.6	19.6	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	12.0	3.7	0.0	0.0	0.0	13.8	12.9	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.3	9.4	0.0	0.0	0.0	39.1	61.8	0.0	0.0			
LnGrp LOS	E	A	A	A	A	D	E	A	A			
Approach Vol, veh/h		723			534			398				
Approach Delay, s/veh		38.1			39.1			61.8				
Approach LOS		D			D			E				

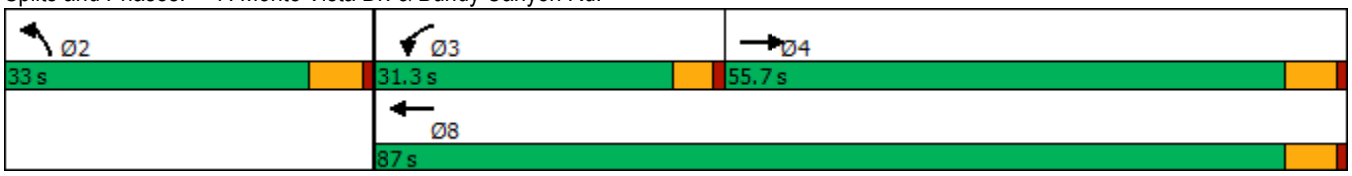
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		34.3		81.0			29.7	51.3				
Change Period (Y+Rc), s		5.8		5.8			4.6	5.8				
Max Green Setting (Gmax), s		33.2		75.2			28.4	42.2				
Max Q Clear Time (g_c+I1), s		27.4		12.1			24.9	33.0				
Green Ext Time (p_c), s		1.1		2.2			0.2	2.2				

Intersection Summary												
HCM 6th Ctrl Delay			44.1									
HCM 6th LOS			D									

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Traffic Volume (vph)	475	211	865	128
Future Volume (vph)	475	211	865	128
Turn Type	NA	Prot	NA	Prot
Protected Phases	4	3	8	2
Permitted Phases				
Detector Phase	4	3	8	2
Switch Phase				
Minimum Initial (s)	10.0	5.0	10.0	10.0
Minimum Split (s)	22.8	9.6	15.8	22.8
Total Split (s)	55.7	31.3	87.0	33.0
Total Split (%)	46.4%	26.1%	72.5%	27.5%
Yellow Time (s)	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	4.6	5.8	5.8
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	Max	None	Max	None
Act Effct Green (s)	57.3	19.4	81.3	19.7
Actuated g/C Ratio	0.51	0.17	0.72	0.17
v/c Ratio	0.41	0.80	0.74	0.78
Control Delay	18.7	63.8	14.8	56.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.7	63.8	14.8	56.4
LOS	B	E	B	E
Approach Delay	18.7		24.4	56.4
Approach LOS	B		C	E

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 112.7	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 26.1	Intersection LOS: C
Intersection Capacity Utilization 67.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 7: Monte Vista Dr. & Bundy Canyon Rd.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	475	157	211	865	128	90
Future Volume (veh/h)	475	157	211	865	128	90
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	546	180	243	994	147	103
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1403	461	274	1363	166	116
Arrive On Green	0.53	0.53	0.15	0.73	0.17	0.17
Sat Flow, veh/h	2722	863	1781	1870	993	696
Grp Volume(v), veh/h	368	358	243	994	251	0
Grp Sat Flow(s),veh/h/ln	1777	1715	1781	1870	1695	0
Q Serve(g_s), s	13.6	13.7	14.9	34.3	16.1	0.0
Cycle Q Clear(g_c), s	13.6	13.7	14.9	34.3	16.1	0.0
Prop In Lane		0.50	1.00		0.59	0.41
Lane Grp Cap(c), veh/h	949	916	274	1363	283	0
V/C Ratio(X)	0.39	0.39	0.89	0.73	0.89	0.00
Avail Cap(c_a), veh/h	949	916	427	1363	414	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	15.3	15.3	46.2	8.7	45.4	0.0
Incr Delay (d2), s/veh	1.2	1.3	9.2	3.5	14.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	5.2	7.1	11.6	7.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.5	16.5	55.4	12.2	60.1	0.0
LnGrp LOS	B	B	E	B	E	A
Approach Vol, veh/h	726			1237	251	
Approach Delay, s/veh	16.5			20.7	60.1	
Approach LOS	B			C	E	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		24.4	21.7	65.3		87.0
Change Period (Y+Rc), s		5.8	4.6	5.8		5.8
Max Green Setting (Gmax), s		27.2	26.7	49.9		81.2
Max Q Clear Time (g_c+I1), s		18.1	16.9	15.7		36.3
Green Ext Time (p_c), s		0.5	0.2	4.5		9.4

Intersection Summary	
HCM 6th Ctrl Delay	23.8
HCM 6th LOS	C

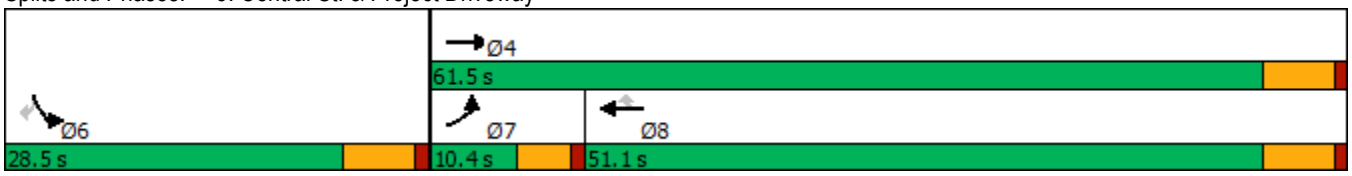
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	58	659	889	109	193	20
Future Volume (vph)	58	659	889	109	193	20
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	9.6	15.8	27.8	27.8	27.8	27.8
Total Split (s)	10.4	61.5	51.1	51.1	28.5	28.5
Total Split (%)	11.6%	68.3%	56.8%	56.8%	31.7%	31.7%
Yellow Time (s)	3.6	4.8	4.8	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	5.8	5.8	5.8
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Max	Max	Max	None	None
Act Effct Green (s)	5.6	55.8	47.6	47.6	14.6	14.6
Actuated g/C Ratio	0.07	0.68	0.58	0.58	0.18	0.18
v/c Ratio	0.50	0.54	0.85	0.12	0.64	0.07
Control Delay	52.7	9.1	26.0	2.8	40.7	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.7	9.1	26.0	2.8	40.7	12.2
LOS	D	A	C	A	D	B
Approach Delay		12.7	23.4		37.9	
Approach LOS		B	C		D	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 82	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 21.0	Intersection LOS: C
Intersection Capacity Utilization 68.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: Central St. & Project Driveway



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	659	889	109	193	20
Future Volume (veh/h)	58	659	889	109	193	20
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	60	679	916	112	199	22
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	83	1333	1136	962	248	220
Arrive On Green	0.05	0.71	0.61	0.61	0.14	0.14
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	60	679	916	112	199	22
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	2.6	12.8	29.5	2.3	8.5	0.9
Cycle Q Clear(g_c), s	2.6	12.8	29.5	2.3	8.5	0.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	83	1333	1136	962	248	220
V/C Ratio(X)	0.72	0.51	0.81	0.12	0.80	0.10
Avail Cap(c_a), veh/h	132	1333	1136	962	517	460
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.8	5.1	11.8	6.5	32.6	29.4
Incr Delay (d2), s/veh	4.4	1.4	6.2	0.2	6.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	3.4	10.9	0.7	4.0	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	41.2	6.5	18.0	6.7	38.6	29.6
LnGrp LOS	D	A	B	A	D	C
Approach Vol, veh/h		739	1028		221	
Approach Delay, s/veh		9.3	16.8		37.7	
Approach LOS		A	B		D	

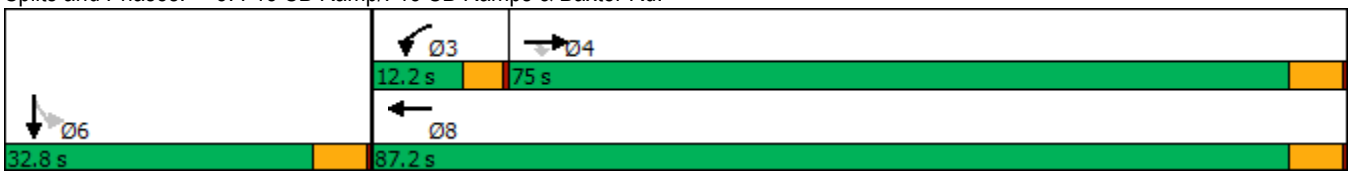
Timer - Assigned Phs		4		6	7	8
Phs Duration (G+Y+Rc), s		61.5		16.7	8.2	53.3
Change Period (Y+Rc), s		5.8		5.8	4.6	5.8
Max Green Setting (Gmax), s		55.7		22.7	5.8	45.3
Max Q Clear Time (g_c+I1), s		14.8		10.5	4.6	31.5
Green Ext Time (p_c), s		4.8		0.5	0.0	5.7

Intersection Summary	
HCM 6th Ctrl Delay	16.3
HCM 6th LOS	B

Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Configurations					
Traffic Volume (vph)	412	444	95	726	3
Future Volume (vph)	412	444	95	726	3
Turn Type	NA	Perm	Prot	NA	NA
Protected Phases	4		3	8	6
Permitted Phases		4			
Detector Phase	4	4	3	8	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	10.0
Minimum Split (s)	20.3	20.3	9.1	20.3	20.3
Total Split (s)	75.0	75.0	12.2	87.2	32.8
Total Split (%)	62.5%	62.5%	10.2%	72.7%	27.3%
Yellow Time (s)	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	4.1	5.3	5.3
Lead/Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes		
Recall Mode	Max	Max	None	Max	None
Act Effct Green (s)	70.1	70.1	8.0	82.2	19.2
Actuated g/C Ratio	0.63	0.63	0.07	0.73	0.17
v/c Ratio	0.39	0.42	0.78	0.58	0.85
Control Delay	12.7	3.4	90.8	10.2	46.5
Queue Delay	0.0	0.0	0.0	0.4	0.0
Total Delay	12.7	3.4	90.8	10.6	46.5
LOS	B	A	F	B	D
Approach Delay	7.9			19.9	46.5
Approach LOS	A			B	D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 112	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 18.9	Intersection LOS: B
Intersection Capacity Utilization 78.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 5: I-15 SB Ramp/I-15 SB Ramps & Baxter Rd.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	412	444	95	726	0	0	0	0	67	3	242
Future Volume (veh/h)	0	412	444	95	726	0	0	0	0	67	3	242
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	0	1767	1796	1870	1781	0				1900	1411	1900
Adj Flow Rate, veh/h	0	425	458	98	748	0				69	3	249
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	9	7	2	8	0				0	33	0
Cap, veh/h	0	1026	884	120	1216	0				60	3	218
Arrive On Green	0.00	0.58	0.58	0.07	0.68	0.00				0.23	0.23	0.23
Sat Flow, veh/h	0	1767	1522	1781	1781	0				264	11	951
Grp Volume(v), veh/h	0	425	458	98	748	0				321	0	0
Grp Sat Flow(s),veh/h/ln	0	1767	1522	1781	1781	0				1227	0	0
Q Serve(g_s), s	0.0	15.9	21.6	6.5	27.6	0.0				27.5	0.0	0.0
Cycle Q Clear(g_c), s	0.0	15.9	21.6	6.5	27.6	0.0				27.5	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				0.21		0.78
Lane Grp Cap(c), veh/h	0	1026	884	120	1216	0				281	0	0
V/C Ratio(X)	0.00	0.41	0.52	0.82	0.62	0.00				1.14	0.00	0.00
Avail Cap(c_a), veh/h	0	1026	884	120	1216	0				281	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	13.9	15.1	55.2	10.4	0.0				46.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.2	2.2	31.6	2.3	0.0				97.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.2	7.4	3.9	9.8	0.0				15.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.1	17.2	86.8	12.8	0.0				143.9	0.0	0.0
LnGrp LOS	A	B	B	F	B	A				F	A	A
Approach Vol, veh/h		883			846						321	
Approach Delay, s/veh		16.2			21.3						143.9	
Approach LOS		B			C						F	

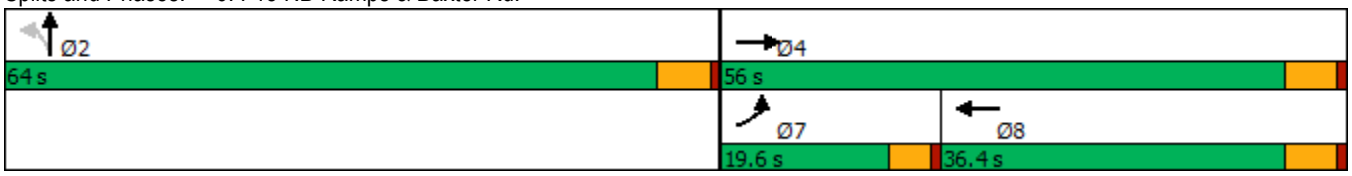
Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		12.2	75.0		32.8		87.2					
Change Period (Y+Rc), s		4.1	5.3		5.3		5.3					
Max Green Setting (Gmax), s		8.1	69.7		27.5		81.9					
Max Q Clear Time (g_c+I1), s		8.5	23.6		29.5		29.6					
Green Ext Time (p_c), s		0.0	4.5		0.0		5.7					

Intersection Summary	
HCM 6th Ctrl Delay	38.3
HCM 6th LOS	D

Lane Group	EBL	EBT	WBT	NBT
Lane Configurations				
Traffic Volume (vph)	185	294	297	6
Future Volume (vph)	185	294	297	6
Turn Type	Prot	NA	NA	NA
Protected Phases	7	4	8	2
Permitted Phases				
Detector Phase	7	4	8	2
Switch Phase				
Minimum Initial (s)	5.0	10.0	10.0	10.0
Minimum Split (s)	9.6	20.8	20.8	20.8
Total Split (s)	19.6	56.0	36.4	64.0
Total Split (%)	16.3%	46.7%	30.3%	53.3%
Yellow Time (s)	3.6	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	5.8
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	Max	Max	None
Act Effct Green (s)	14.5	50.7	31.5	44.7
Actuated g/C Ratio	0.14	0.47	0.29	0.42
v/c Ratio	0.84	0.37	0.72	0.91
Control Delay	77.1	21.9	44.8	46.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	77.1	21.9	44.8	46.7
LOS	E	C	D	D
Approach Delay		43.3	44.8	46.7
Approach LOS		D	D	D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 107.1	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 45.1	Intersection LOS: D
Intersection Capacity Utilization 78.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 6: I-15 NB Ramps & Baxter Rd.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	294	0	0	297	59	523	6	94	0	0	0
Future Volume (veh/h)	185	294	0	0	297	59	523	6	94	0	0	0
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	1796	1737	0	0	1767	1767	1900	1411	1900			
Adj Flow Rate, veh/h	191	303	0	0	306	46	539	6	72			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	7	11	0	0	9	9	0	33	0			
Cap, veh/h	216	735	0	0	387	58	554	6	74			
Arrive On Green	0.13	0.42	0.00	0.00	0.26	0.26	0.48	0.48	0.48			
Sat Flow, veh/h	1711	1737	0	0	1500	226	1158	13	155			
Grp Volume(v), veh/h	191	303	0	0	0	352	617	0	0			
Grp Sat Flow(s),veh/h/ln	1711	1737	0	0	0	1726	1325	0	0			
Q Serve(g_s), s	13.0	14.4	0.0	0.0	0.0	22.5	53.8	0.0	0.0			
Cycle Q Clear(g_c), s	13.0	14.4	0.0	0.0	0.0	22.5	53.8	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		0.13	0.87		0.12			
Lane Grp Cap(c), veh/h	216	735	0	0	0	446	634	0	0			
V/C Ratio(X)	0.88	0.41	0.00	0.00	0.00	0.79	0.97	0.00	0.00			
Avail Cap(c_a), veh/h	216	735	0	0	0	446	650	0	0			
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	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	50.9	23.9	0.0	0.0	0.0	41.0	30.1	0.0	0.0			
Incr Delay (d2), s/veh	31.0	1.7	0.0	0.0	0.0	13.3	28.1	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	7.3	6.0	0.0	0.0	0.0	10.9	20.7	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.9	25.6	0.0	0.0	0.0	54.3	58.3	0.0	0.0			
LnGrp LOS	F	C	A	A	A	D	E	A	A			
Approach Vol, veh/h		494			352			617				
Approach Delay, s/veh		47.4			54.3			58.3				
Approach LOS		D			D			E				

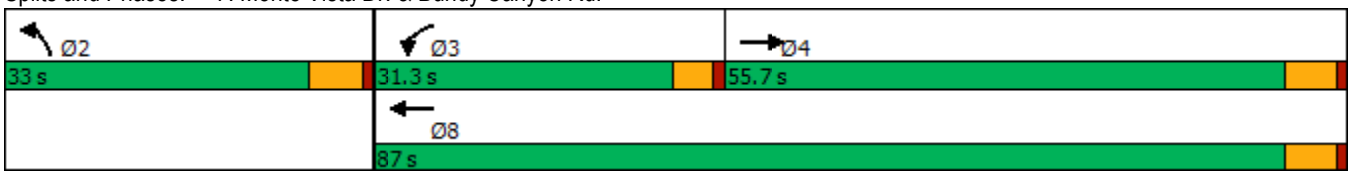
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		62.6		56.0			19.6	36.4				
Change Period (Y+Rc), s		5.8		5.8			4.6	5.8				
Max Green Setting (Gmax), s		58.2		50.2			15.0	30.6				
Max Q Clear Time (g_c+I1), s		55.8		16.4			15.0	24.5				
Green Ext Time (p_c), s		0.9		1.7			0.0	1.0				

Intersection Summary												
HCM 6th Ctrl Delay			53.6									
HCM 6th LOS			D									

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Traffic Volume (vph)	1174	95	692	187
Future Volume (vph)	1174	95	692	187
Turn Type	NA	Prot	NA	Prot
Protected Phases	4	3	8	2
Permitted Phases				
Detector Phase	4	3	8	2
Switch Phase				
Minimum Initial (s)	10.0	5.0	10.0	10.0
Minimum Split (s)	22.8	9.6	15.8	22.8
Total Split (s)	55.7	31.3	87.0	33.0
Total Split (%)	46.4%	26.1%	72.5%	27.5%
Yellow Time (s)	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	4.6	5.8	5.8
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	Max	None	Max	None
Act Effct Green (s)	65.2	11.5	81.3	23.6
Actuated g/C Ratio	0.56	0.10	0.70	0.20
v/c Ratio	0.72	0.61	0.60	0.85
Control Delay	22.7	65.7	12.1	64.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	22.7	65.7	12.1	64.3
LOS	C	E	B	E
Approach Delay	22.7		18.6	64.3
Approach LOS	C		B	E

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 116.5	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 26.3	Intersection LOS: C
Intersection Capacity Utilization 69.5%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 7: Monte Vista Dr. & Bundy Canyon Rd.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1174	79	95	692	187	89
Future Volume (veh/h)	1174	79	95	692	187	89
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	1319	89	107	778	210	100
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1982	133	133	1312	230	109
Arrive On Green	0.59	0.59	0.07	0.70	0.20	0.20
Sat Flow, veh/h	3472	227	1781	1870	1157	551
Grp Volume(v), veh/h	692	716	107	778	311	0
Grp Sat Flow(s),veh/h/ln	1777	1829	1781	1870	1713	0
Q Serve(g_s), s	30.5	30.8	6.8	24.6	20.6	0.0
Cycle Q Clear(g_c), s	30.5	30.8	6.8	24.6	20.6	0.0
Prop In Lane		0.12	1.00		0.68	0.32
Lane Grp Cap(c), veh/h	1043	1073	133	1312	340	0
V/C Ratio(X)	0.66	0.67	0.80	0.59	0.91	0.00
Avail Cap(c_a), veh/h	1043	1073	411	1312	402	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.2	16.2	52.7	8.8	45.4	0.0
Incr Delay (d2), s/veh	3.3	3.3	4.2	2.0	22.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.0	12.4	3.1	8.8	10.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.5	19.5	56.9	10.8	68.3	0.0
LnGrp LOS	B	B	E	B	E	A
Approach Vol, veh/h	1408			885	311	
Approach Delay, s/veh	19.5			16.4	68.3	
Approach LOS	B			B	E	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		28.8	13.3	73.7		87.0
Change Period (Y+Rc), s		5.8	4.6	5.8		5.8
Max Green Setting (Gmax), s		27.2	26.7	49.9		81.2
Max Q Clear Time (g_c+I1), s		22.6	8.8	32.8		26.6
Green Ext Time (p_c), s		0.4	0.1	8.4		6.0

Intersection Summary	
HCM 6th Ctrl Delay	24.3
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

APPENDIX 7.1:

GENERAL PLAN BUILDOUT (2040) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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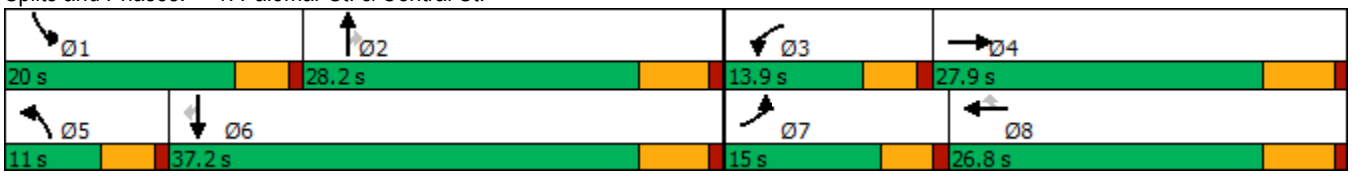
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	151	377	145	255	163	143	974	187	260	835	142
Future Volume (vph)	151	377	145	255	163	143	974	187	260	835	142
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	26.8	9.6	26.8	26.8	9.6	26.8	26.8	9.6	26.8	26.8
Total Split (s)	15.0	27.9	13.9	26.8	26.8	11.0	28.2	28.2	20.0	37.2	37.2
Total Split (%)	16.7%	31.0%	15.4%	29.8%	29.8%	12.2%	31.3%	31.3%	22.2%	41.3%	41.3%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	3.6	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	5.8	4.6	5.8	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	9.9	18.5	9.2	17.7	17.7	6.4	22.7	22.7	15.2	31.5	31.5
Actuated g/C Ratio	0.11	0.21	0.11	0.20	0.20	0.07	0.26	0.26	0.18	0.36	0.36
v/c Ratio	0.81	0.76	0.84	0.73	0.37	1.18	2.17	0.36	0.91	1.34	0.23
Control Delay	67.8	34.5	75.3	43.8	5.4	176.4	554.9	6.4	70.1	189.7	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.8	34.5	75.3	43.8	5.4	176.4	554.9	6.4	70.1	189.7	5.3
LOS	E	C	E	D	A	F	F	A	E	F	A
Approach Delay		41.7		40.8			434.9			143.4	
Approach LOS		D		D			F			F	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 86.4	
Natural Cycle: 140	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 2.17	
Intersection Signal Delay: 209.6	Intersection LOS: F
Intersection Capacity Utilization 106.8%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: Palomar St. & Central St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	377	168	145	255	163	143	974	187	260	835	142
Future Volume (veh/h)	151	377	168	145	255	163	143	974	187	260	835	142
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	164	410	183	158	277	177	155	1059	203	283	908	154
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	198	500	221	192	383	325	133	491	416	318	685	581
Arrive On Green	0.11	0.21	0.21	0.11	0.20	0.20	0.07	0.26	0.26	0.18	0.37	0.37
Sat Flow, veh/h	1781	2398	1058	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	164	302	291	158	277	177	155	1059	203	283	908	154
Grp Sat Flow(s),veh/h/ln	1781	1777	1680	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	7.7	13.9	14.2	7.4	11.8	8.6	6.4	22.5	9.3	13.3	31.4	5.8
Cycle Q Clear(g_c), s	7.7	13.9	14.2	7.4	11.8	8.6	6.4	22.5	9.3	13.3	31.4	5.8
Prop In Lane	1.00		0.63	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	198	371	350	192	383	325	133	491	416	318	685	581
V/C Ratio(X)	0.83	0.82	0.83	0.82	0.72	0.55	1.17	2.16	0.49	0.89	1.32	0.27
Avail Cap(c_a), veh/h	216	458	433	193	458	388	133	491	416	320	685	581
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.3	32.3	32.5	37.4	31.8	30.5	39.6	31.6	26.7	34.4	27.1	19.1
Incr Delay (d2), s/veh	19.3	9.1	10.6	22.7	4.5	1.4	129.2	526.6	4.0	24.3	156.2	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	6.5	6.4	4.3	5.5	3.2	7.4	81.2	3.7	7.5	42.2	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.6	41.4	43.1	60.1	36.3	31.9	168.9	558.2	30.8	58.7	183.4	20.2
LnGrp LOS	E	D	D	E	D	C	F	F	C	E	F	C
Approach Vol, veh/h		757			612			1417			1345	
Approach Delay, s/veh		45.3			41.2			440.0			138.5	
Approach LOS		D			D			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.9	28.3	13.8	23.7	11.0	37.2	14.1	23.4
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	15.4	22.4	9.3	22.1	6.4	31.4	10.4	21.0
Max Q Clear Time (g_c+I1), s	15.3	24.5	9.4	16.2	8.4	33.4	9.7	13.8
Green Ext Time (p_c), s	0.0	0.0	0.0	1.7	0.0	0.0	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	210.4
HCM 6th LOS	F

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	970	11	66	610	48	49	64	208	161	95	76
Future Vol, veh/h	0	970	11	66	610	48	49	64	208	161	95	76
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	92	92	93	93	92	92	92	93	92	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1043	12	72	656	52	53	70	226	173	103	82

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	708	0	0	1055	0	0	1968	1901	1049	2023	1881	682
Stage 1	-	-	-	-	-	-	1049	1049	-	826	826	-
Stage 2	-	-	-	-	-	-	919	852	-	1197	1055	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	891	-	-	660	-	-	~ 47	~ 69	276	~ 43	~ 71	450
Stage 1	-	-	-	-	-	-	275	304	-	366	387	-
Stage 2	-	-	-	-	-	-	325	376	-	227	302	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	891	-	-	660	-	-	-	~ 57	276	-	~ 58	450
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 57	-	-	~ 58	-
Stage 1	-	-	-	-	-	-	275	304	-	366	317	-
Stage 2	-	-	-	-	-	-	147	308	-	~ 32	302	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	891	-	-	660	-	-	-
HCM Lane V/C Ratio	-	-	-	-	0.109	-	-	-
HCM Control Delay (s)	-	0	-	-	11.1	0	-	-
HCM Lane LOS	-	A	-	-	B	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-	0.4	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Intersection Delay, s/veh	403.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	758	448	160	455	0	0	0	0	308	4	257
Future Vol, veh/h	0	758	448	160	455	0	0	0	0	308	4	257
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	5	4	6	6	0	0	0	0	2	0	5
Mvmt Flow	0	824	487	174	495	0	0	0	0	335	4	279
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	699.7	77.6	127.3
HCM LOS	F	F	F

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	54%
Vol Thru, %	63%	0%	100%	1%
Vol Right, %	37%	0%	0%	45%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1206	160	455	569
LT Vol	0	160	0	308
Through Vol	758	0	455	4
RT Vol	448	0	0	257
Lane Flow Rate	1311	174	495	618
Geometry Grp	5	7	7	2
Degree of Util (X)	2.504	0.396	1.058	1.166
Departure Headway (Hd)	7.564	10.927	10.397	8.951
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	498	332	356	414
Service Time	5.564	8.627	8.097	6.951
HCM Lane V/C Ratio	2.633	0.524	1.39	1.493
HCM Control Delay	699.7	20.6	97.7	127.3
HCM Lane LOS	F	C	F	F
HCM 95th-tile Q	94.2	1.8	13	18.1

Intersection	
Intersection Delay, s/veh	194.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	301	765	0	0	384	198	231	4	244	0	0	0
Future Vol, veh/h	301	765	0	0	384	198	231	4	244	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	5	4	0	0	6	3	6	0	8	0	0	0
Mvmt Flow	327	832	0	0	417	215	251	4	265	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	278.6	145.2	67.8
HCM LOS	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	48%	100%	0%	0%
Vol Thru, %	1%	0%	100%	66%
Vol Right, %	51%	0%	0%	34%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	479	301	765	582
LT Vol	231	301	0	0
Through Vol	4	0	765	384
RT Vol	244	0	0	198
Lane Flow Rate	521	327	832	633
Geometry Grp	2	7	7	5
Degree of Util (X)	0.996	0.744	1.771	1.232
Departure Headway (Hd)	7.541	8.639	8.104	7.391
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	484	422	457	493
Service Time	5.541	6.339	5.804	5.391
HCM Lane V/C Ratio	1.076	0.775	1.821	1.284
HCM Control Delay	67.8	32.5	375.5	145.2
HCM Lane LOS	F	D	F	F
HCM 95th-tile Q	13.2	6	48.9	23.6

Intersection	
Int Delay, s/veh	563

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	797	271	322	1415	208	375
Future Vol, veh/h	797	271	322	1415	208	375
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	175	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	866	295	350	1538	226	408

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1161	0	3252	1014
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	2238	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	602	-	~ 10	~ 290
Stage 1	-	-	-	-	350	-
Stage 2	-	-	-	-	~ 87	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	602	-	~ 4	~ 290
Mov Cap-2 Maneuver	-	-	-	-	~ 34	-
Stage 1	-	-	-	-	350	-
Stage 2	-	-	-	-	~ 36	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.5	$ 3261.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	79	-	-	602	-
HCM Lane V/C Ratio	8.021	-	-	0.581	-
HCM Control Delay (s)	$ 3261.5	-	-	18.9	-
HCM Lane LOS	F	-	-	C	-
HCM 95th %tile Q(veh)	72.6	-	-	3.7	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	564.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	531	479	346	306	344	237
Future Vol, veh/h	531	479	346	306	344	237
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	577	521	376	333	374	258

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	709	0	-	0	2051	376
Stage 1	-	-	-	-	376	-
Stage 2	-	-	-	-	1675	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	890	-	-	-	~ 61	670
Stage 1	-	-	-	-	694	-
Stage 2	-	-	-	-	~ 167	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	890	-	-	-	~ 5	670
Mov Cap-2 Maneuver	-	-	-	-	~ 43	-
Stage 1	-	-	-	-	~ 61	-
Stage 2	-	-	-	-	~ 167	-

Approach	EB	WB	SB
HCM Control Delay, s	8.5	0	$ 2163.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	890	-	-	-	43	670
HCM Lane V/C Ratio	0.649	-	-	-	8.696	0.384
HCM Control Delay (s)	16.2	0	-	$	3643.9	13.7
HCM Lane LOS	C	A	-	-	F	B
HCM 95th %tile Q(veh)	4.9	-	-	-	44.5	1.8

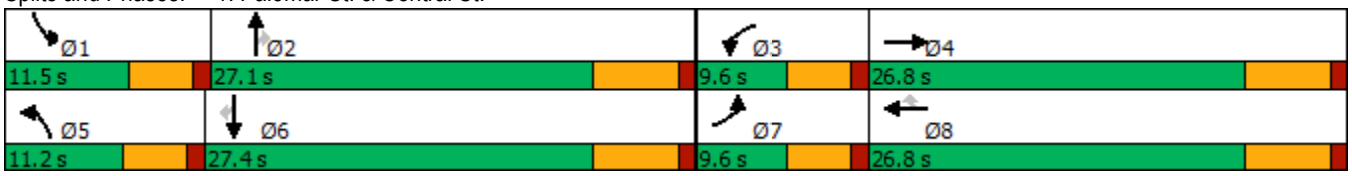
Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	62	335	153	349	270	128	977	262	164	560	80
Future Volume (vph)	62	335	153	349	270	128	977	262	164	560	80
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	26.8	9.6	26.8	26.8	9.6	26.8	26.8	9.6	26.8	26.8
Total Split (s)	9.6	26.8	9.6	26.8	26.8	11.2	27.1	27.1	11.5	27.4	27.4
Total Split (%)	12.8%	35.7%	12.8%	35.7%	35.7%	14.9%	36.1%	36.1%	15.3%	36.5%	36.5%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	3.6	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	5.8	4.6	5.8	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	5.0	17.3	5.0	19.5	19.5	6.6	21.4	21.4	6.9	21.7	21.7
Actuated g/C Ratio	0.07	0.24	0.07	0.27	0.27	0.09	0.30	0.30	0.10	0.30	0.30
v/c Ratio	0.51	0.47	1.26	0.70	0.45	0.80	1.79	0.45	0.98	1.01	0.14
Control Delay	49.4	23.1	200.6	32.6	6.5	69.6	385.7	10.8	102.0	69.9	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.4	23.1	200.6	32.6	6.5	69.6	385.7	10.8	102.0	69.9	0.5
LOS	D	C	F	C	A	E	F	B	F	E	A
Approach Delay		26.7		56.7			284.3			69.5	
Approach LOS		C		E			F			E	

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 71.5	
Natural Cycle: 140	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.79	
Intersection Signal Delay: 147.2	Intersection LOS: F
Intersection Capacity Utilization 100.4%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: Palomar St. & Central St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	335	61	153	349	270	128	977	262	164	560	80
Future Volume (veh/h)	62	335	61	153	349	270	128	977	262	164	560	80
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	63	342	62	156	356	276	131	997	267	167	571	82
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	91	637	114	130	437	370	165	582	493	179	596	505
Arrive On Green	0.05	0.21	0.21	0.07	0.23	0.23	0.09	0.31	0.31	0.10	0.32	0.32
Sat Flow, veh/h	1781	3010	540	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	63	200	204	156	356	276	131	997	267	167	571	82
Grp Sat Flow(s),veh/h/ln	1781	1777	1773	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.4	6.9	7.0	5.0	12.3	11.1	4.9	21.3	9.6	6.4	20.5	2.5
Cycle Q Clear(g_c), s	2.4	6.9	7.0	5.0	12.3	11.1	4.9	21.3	9.6	6.4	20.5	2.5
Prop In Lane	1.00		0.30	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	91	376	375	130	437	370	165	582	493	179	596	505
V/C Ratio(X)	0.69	0.53	0.54	1.20	0.81	0.75	0.79	1.71	0.54	0.93	0.96	0.16
Avail Cap(c_a), veh/h	130	545	544	130	573	486	172	582	493	179	596	505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.0	24.0	24.0	31.7	24.8	24.4	30.4	23.6	19.6	30.6	22.9	16.8
Incr Delay (d2), s/veh	3.5	1.2	1.2	142.3	6.8	4.4	19.4	328.6	4.2	46.9	27.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.7	2.8	7.1	5.7	4.1	2.8	61.2	3.6	4.8	12.3	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.5	25.2	25.3	174.1	31.6	28.8	49.8	352.2	23.8	77.5	50.6	17.4
LnGrp LOS	D	C	C	F	C	C	D	F	C	E	D	B
Approach Vol, veh/h		467			788			1395			820	
Approach Delay, s/veh		26.6			58.8			260.9			52.7	
Approach LOS		C			E			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.5	27.1	9.6	20.3	11.0	27.6	8.1	21.8
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	6.9	21.3	5.0	21.0	6.6	21.6	5.0	21.0
Max Q Clear Time (g_c+I1), s	8.4	23.3	7.0	9.0	6.9	22.5	4.4	14.3
Green Ext Time (p_c), s	0.0	0.0	0.0	1.6	0.0	0.0	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	134.3
HCM 6th LOS	F

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	837	61	225	880	217	19	110	102	18	93	16
Future Vol, veh/h	25	837	61	225	880	217	19	110	102	18	93	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	92	92	97	97	92	92	92	97	92	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	863	66	245	907	224	21	120	111	19	101	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1131	0	0	929	0	0	2516	2569	896	2573	2490	1019
Stage 1	-	-	-	-	-	-	948	948	-	1509	1509	-
Stage 2	-	-	-	-	-	-	1568	1621	-	1064	981	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	618	-	-	736	-	-	~ 19	~ 26	339	~ 17	~ 29	288
Stage 1	-	-	-	-	-	-	313	339	-	150	183	-
Stage 2	-	-	-	-	-	-	139	161	-	270	328	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	618	-	-	736	-	-	-	~ 1	339	-	~ 1	288
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 1	-	-	~ 1	-
Stage 1	-	-	-	-	-	-	285	309	-	137	~ 7	-
Stage 2	-	-	-	-	-	-	-	~ 6	-	102	299	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	2.2		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	618	-	-	736	-	-	-
HCM Lane V/C Ratio	-	0.042	-	-	0.332	-	-	-
HCM Control Delay (s)	-	11.1	0	-	12.3	0	-	-
HCM Lane LOS	-	B	A	-	B	A	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-	1.5	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Intersection Delay, s/veh	185.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	412	444	95	726	0	0	0	0	67	3	242
Future Vol, veh/h	0	412	444	95	726	0	0	0	0	67	3	242
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	0	9	7	2	8	0	0	0	0	9	33	8
Mvmt Flow	0	425	458	98	748	0	0	0	0	69	3	249
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	243	187.2	21.8
HCM LOS	F	F	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	21%
Vol Thru, %	48%	0%	100%	1%
Vol Right, %	52%	0%	0%	78%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	856	95	726	312
LT Vol	0	95	0	67
Through Vol	412	0	726	3
RT Vol	444	0	0	242
Lane Flow Rate	882	98	748	322
Geometry Grp	5	7	7	2
Degree of Util (X)	1.478	0.193	1.394	0.601
Departure Headway (Hd)	6.468	7.684	7.275	7.778
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	574	470	509	466
Service Time	4.468	5.384	4.975	5.778
HCM Lane V/C Ratio	1.537	0.209	1.47	0.691
HCM Control Delay	243	12.2	210.1	21.8
HCM Lane LOS	F	B	F	C
HCM 95th-tile Q	40.8	0.7	32.4	3.9

Intersection	
Intersection Delay, s/veh	64
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	185	294	0	0	297	59	523	6	94	0	0	0
Future Vol, veh/h	185	294	0	0	297	59	523	6	94	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	7	11	0	0	9	5	6	33	9	0	0	0
Mvmt Flow	191	303	0	0	306	61	539	6	97	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	20.7	25.7	119.2
HCM LOS	C	D	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	84%	100%	0%	0%
Vol Thru, %	1%	0%	100%	83%
Vol Right, %	15%	0%	0%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	623	185	294	356
LT Vol	523	185	0	0
Through Vol	6	0	294	297
RT Vol	94	0	0	59
Lane Flow Rate	642	191	303	367
Geometry Grp	2	7	7	5
Degree of Util (X)	1.173	0.411	0.625	0.695
Departure Headway (Hd)	6.575	8.434	7.988	7.437
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	559	429	455	488
Service Time	4.584	6.134	5.688	5.437
HCM Lane V/C Ratio	1.148	0.445	0.666	0.752
HCM Control Delay	119.2	16.9	23.1	25.7
HCM Lane LOS	F	C	C	D
HCM 95th-tile Q	22.5	2	4.2	5.3

Intersection	
Int Delay, s/veh	956.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1736	276	421	1373	381	427
Future Vol, veh/h	1736	276	421	1373	381	427
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	175	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1887	300	458	1492	414	464

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2187	0	4445	2037
Stage 1	-	-	-	-	2037	-
Stage 2	-	-	-	-	2408	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	~ 242	-	~ 2	~ 71
Stage 1	-	-	-	-	~ 110	-
Stage 2	-	-	-	-	~ 71	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	~ 242	-	0	~ 71
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	~ 110	-
Stage 2	-	-	-	-	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	105.7	$ 5226.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	71	-	-	~ 242	-
HCM Lane V/C Ratio	12.37	-	-	1.891	-
HCM Control Delay (s)	$ 5226.7	-	-	$ 450.2	-
HCM Lane LOS	F	-	-	F	-
HCM 95th %tile Q(veh)	104.1	-	-	32.3	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	64

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	245	158	434	581	255	686
Future Vol, veh/h	245	158	434	581	255	686
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	266	172	472	632	277	746

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1104	0	-	0	1176	472
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	704	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	632	-	-	-	~ 211	~ 592
Stage 1	-	-	-	-	628	-
Stage 2	-	-	-	-	490	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	632	-	-	-	~ 113	~ 592
Mov Cap-2 Maneuver	-	-	-	-	~ 231	-
Stage 1	-	-	-	-	336	-
Stage 2	-	-	-	-	490	-

Approach	EB	WB	SB
HCM Control Delay, s	9	0	156.5
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	632	-	-	-	231	592
HCM Lane V/C Ratio	0.421	-	-	-	1.2	1.26
HCM Control Delay (s)	14.8	0	-	-	167.7	152.3
HCM Lane LOS	B	A	-	-	F	F
HCM 95th %tile Q(veh)	2.1	-	-	-	13.5	28.9

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

APPENDIX 7.2:

GENERAL PLAN BUILDOUT (2040) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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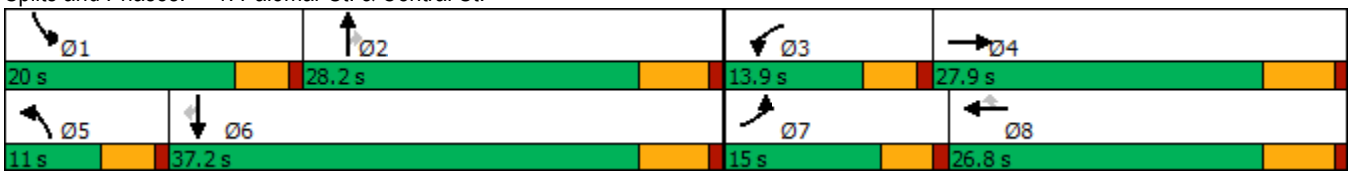
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	151	396	159	261	177	143	974	217	290	835	142
Future Volume (vph)	151	396	159	261	177	143	974	217	290	835	142
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	26.8	9.6	26.8	26.8	9.6	26.8	26.8	9.6	26.8	26.8
Total Split (s)	15.0	27.9	13.9	26.8	26.8	11.0	28.2	28.2	20.0	37.2	37.2
Total Split (%)	16.7%	31.0%	15.4%	29.8%	29.8%	12.2%	31.3%	31.3%	22.2%	41.3%	41.3%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	3.6	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	5.8	4.6	5.8	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	10.0	18.9	9.3	18.2	18.2	6.4	22.4	22.4	15.4	31.4	31.4
Actuated g/C Ratio	0.12	0.22	0.11	0.21	0.21	0.07	0.26	0.26	0.18	0.36	0.36
v/c Ratio	0.81	0.78	0.92	0.73	0.39	1.19	2.20	0.42	1.00	1.35	0.23
Control Delay	68.3	35.7	88.4	43.7	6.5	179.1	569.8	9.0	90.8	193.4	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.3	35.7	88.4	43.7	6.5	179.1	569.8	9.0	90.8	193.4	5.3
LOS	E	D	F	D	A	F	F	A	F	F	A
Approach Delay		42.6		44.6			436.8			148.9	
Approach LOS		D		D			F			F	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 86.9	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 2.20	
Intersection Signal Delay: 211.7	Intersection LOS: F
Intersection Capacity Utilization 109.8%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 1: Palomar St. & Central St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	396	168	159	261	177	143	974	217	290	835	142
Future Volume (veh/h)	151	396	168	159	261	177	143	974	217	290	835	142
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	164	430	183	173	284	192	155	1059	236	315	908	154
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	198	519	219	192	392	332	132	486	412	318	681	577
Arrive On Green	0.11	0.21	0.21	0.11	0.21	0.21	0.07	0.26	0.26	0.18	0.36	0.36
Sat Flow, veh/h	1781	2436	1026	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	164	312	301	173	284	192	155	1059	236	315	908	154
Grp Sat Flow(s),veh/h/ln	1781	1777	1686	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	7.8	14.5	14.7	8.3	12.2	9.4	6.4	22.4	11.2	15.2	31.4	5.9
Cycle Q Clear(g_c), s	7.8	14.5	14.7	8.3	12.2	9.4	6.4	22.4	11.2	15.2	31.4	5.9
Prop In Lane	1.00		0.61	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	198	378	359	192	392	332	132	486	412	318	681	577
V/C Ratio(X)	0.83	0.83	0.84	0.90	0.72	0.58	1.17	2.18	0.57	0.99	1.33	0.27
Avail Cap(c_a), veh/h	215	455	432	192	455	386	132	486	412	318	681	577
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.5	32.4	32.5	38.0	31.8	30.7	39.9	31.9	27.8	35.4	27.4	19.3
Incr Delay (d2), s/veh	19.7	10.2	11.7	37.7	4.8	1.6	132.2	538.0	5.7	47.7	160.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	6.9	6.7	5.4	5.7	3.5	7.5	81.9	4.6	10.4	42.8	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.2	42.6	44.2	75.8	36.6	32.3	172.1	569.9	33.5	83.1	187.5	20.5
LnGrp LOS	E	D	D	E	D	C	F	F	C	F	F	C
Approach Vol, veh/h		777			649			1450			1377	
Approach Delay, s/veh		46.3			45.7			440.1			144.9	
Approach LOS		D			D			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	28.2	13.9	24.2	11.0	37.2	14.2	23.9
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	15.4	22.4	9.3	22.1	6.4	31.4	10.4	21.0
Max Q Clear Time (g_c+I1), s	17.2	24.4	10.3	16.7	8.4	33.4	9.8	14.2
Green Ext Time (p_c), s	0.0	0.0	0.0	1.6	0.0	0.0	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	212.4
HCM 6th LOS	F

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	258	88	145	127	3
Future Vol, veh/h	9	258	88	145	127	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	280	96	158	138	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	490	140	141	0	-	0
Stage 1	140	-	-	-	-	-
Stage 2	350	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	537	908	1442	-	-	-
Stage 1	887	-	-	-	-	-
Stage 2	713	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	498	908	1442	-	-	-
Mov Cap-2 Maneuver	498	-	-	-	-	-
Stage 1	822	-	-	-	-	-
Stage 2	713	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	2.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1442	-	883	-	-
HCM Lane V/C Ratio	0.066	-	0.329	-	-
HCM Control Delay (s)	7.7	0	11.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.4	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	82	970	11	66	643	112	49	64	208	280	95	84
Future Vol, veh/h	82	970	11	66	643	112	49	64	208	280	95	84
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	92	92	93	93	92	92	92	93	92	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	88	1043	12	72	691	120	53	70	226	301	103	90

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	811	0	0	1055	0	0	2217	2180	1049	2268	2126	751
Stage 1	-	-	-	-	-	-	1225	1225	-	895	895	-
Stage 2	-	-	-	-	-	-	992	955	-	1373	1231	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	815	-	-	660	-	-	~ 31	~ 46	276	~ 29	~ 50	411
Stage 1	-	-	-	-	-	-	219	251	-	335	359	-
Stage 2	-	-	-	-	-	-	296	337	-	~ 180	250	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	815	-	-	660	-	-	-	~ 27	276	-	~ 29	411
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 27	-	-	~ 29	-
Stage 1	-	-	-	-	-	-	162	185	-	~ 247	286	-
Stage 2	-	-	-	-	-	-	117	268	-	~ 15	185	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.9		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	815	-	-	660	-	-	-
HCM Lane V/C Ratio	-	0.108	-	-	0.109	-	-	-
HCM Control Delay (s)	-	10	0	-	11.1	0	-	-
HCM Lane LOS	-	A	A	-	B	A	-	-
HCM 95th %tile Q(veh)	-	0.4	-	-	0.4	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↗		↗
Traffic Vol, veh/h	0	1325	776	87	0	33
Future Vol, veh/h	0	1325	776	87	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	200	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1440	843	95	0	36

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	843
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	364
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	364
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	364
HCM Lane V/C Ratio	-	-	-	0.099
HCM Control Delay (s)	-	-	-	16
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	490.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	833	491	160	568	0	0	0	0	308	4	294
Future Vol, veh/h	0	833	491	160	568	0	0	0	0	308	4	294
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	5	4	6	6	0	0	0	0	2	0	5
Mvmt Flow	0	905	534	174	617	0	0	0	0	335	4	320
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	824.7	156.5	160.6
HCM LOS	F	F	F

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	51%
Vol Thru, %	63%	0%	100%	1%
Vol Right, %	37%	0%	0%	49%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1324	160	568	606
LT Vol	0	160	0	308
Through Vol	833	0	568	4
RT Vol	491	0	0	294
Lane Flow Rate	1439	174	617	659
Geometry Grp	5	7	7	2
Degree of Util (X)	2.781	0.396	1.32	1.251
Departure Headway (Hd)	7.991	11.657	11.124	9.301
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	475	311	333	395
Service Time	5.991	9.357	8.824	7.301
HCM Lane V/C Ratio	3.029	0.559	1.853	1.668
HCM Control Delay	824.7	21.8	194.4	160.6
HCM Lane LOS	F	C	F	F
HCM 95th-tile Q	104.8	1.8	20.7	20.9

Intersection	
Intersection Delay, s/veh	226.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	345	796	0	0	463	198	266	4	244	0	0	0
Future Vol, veh/h	345	796	0	0	463	198	266	4	244	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	5	4	0	0	6	3	6	0	8	0	0	0
Mvmt Flow	375	865	0	0	503	215	289	4	265	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	296.4	213	90.2
HCM LOS	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	52%	100%	0%	0%
Vol Thru, %	1%	0%	100%	70%
Vol Right, %	47%	0%	0%	30%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	514	345	796	661
LT Vol	266	345	0	0
Through Vol	4	0	796	463
RT Vol	244	0	0	198
Lane Flow Rate	559	375	865	718
Geometry Grp	2	7	7	5
Degree of Util (X)	1.073	0.85	1.835	1.398
Departure Headway (Hd)	7.689	9.083	8.545	7.517
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	475	401	433	489
Service Time	5.689	6.783	6.245	5.517
HCM Lane V/C Ratio	1.177	0.935	1.998	1.468
HCM Control Delay	90.2	46	404.9	213
HCM Lane LOS	F	E	F	F
HCM 95th-tile Q	16	8.1	49.8	31.7

Intersection	
Int Delay, s/veh	714.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	797	290	342	1415	215	383
Future Vol, veh/h	797	290	342	1415	215	383
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	175	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	866	315	372	1538	234	416

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1181	0	3306	1024
Stage 1	-	-	-	-	1024	-
Stage 2	-	-	-	-	2282	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	591	-	~ 9	~ 286
Stage 1	-	-	-	-	347	-
Stage 2	-	-	-	-	~ 82	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	591	-	~ 3	~ 286
Mov Cap-2 Maneuver	-	-	-	-	~ 28	-
Stage 1	-	-	-	-	347	-
Stage 2	-	-	-	-	~ 30	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.1	$ 4101.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	66	-	-	591	-
HCM Lane V/C Ratio	9.848	-	-	0.629	-
HCM Control Delay (s)	$ 4101.2	-	-	20.8	-
HCM Lane LOS	F	-	-	C	-
HCM 95th %tile Q(veh)	76.2	-	-	4.4	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	2791.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	555	487	373	306	344	288
Future Vol, veh/h	555	487	373	306	344	288
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	603	529	405	333	374	313

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	738	0	-	0	2140	405
Stage 1	-	-	-	-	405	-
Stage 2	-	-	-	-	1735	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	868	-	-	-	~ 54	646
Stage 1	-	-	-	-	673	-
Stage 2	-	-	-	-	~ 156	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	868	-	-	-	~ 1	646
Mov Cap-2 Maneuver	-	-	-	-	~ 9	-
Stage 1	-	-	-	-	~ 11	-
Stage 2	-	-	-	-	~ 156	-

Approach	EB	WB	SB
HCM Control Delay, s	9.6	0	$ 10377.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	868	-	-	-	9	646
HCM Lane V/C Ratio	0.695	-	-	-	41.546	0.485
HCM Control Delay (s)	18	0	-	$	19051.7	15.7
HCM Lane LOS	C	A	-	-	F	C
HCM 95th %tile Q(veh)	5.8	-	-	-	48.5	2.7

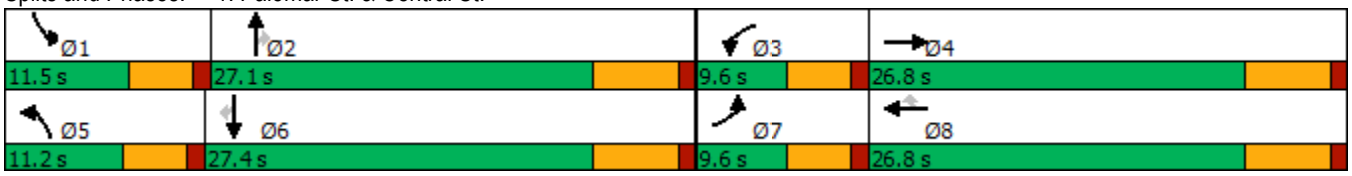
Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	62	344	189	371	306	128	977	282	184	560	80
Future Volume (vph)	62	344	189	371	306	128	977	282	184	560	80
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	26.8	9.6	26.8	26.8	9.6	26.8	26.8	9.6	26.8	26.8
Total Split (s)	9.6	26.8	9.6	26.8	26.8	11.2	27.1	27.1	11.5	27.4	27.4
Total Split (%)	12.8%	35.7%	12.8%	35.7%	35.7%	14.9%	36.1%	36.1%	15.3%	36.5%	36.5%
Yellow Time (s)	3.6	4.8	3.6	4.8	4.8	3.6	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	4.6	5.8	5.8	4.6	5.8	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	5.0	18.0	5.0	20.2	20.2	6.6	21.4	21.4	6.9	21.7	21.7
Actuated g/C Ratio	0.07	0.25	0.07	0.28	0.28	0.09	0.30	0.30	0.10	0.30	0.30
v/c Ratio	0.51	0.47	1.57	0.73	0.49	0.81	1.81	0.49	1.11	1.02	0.14
Control Delay	49.9	23.0	321.5	33.9	7.5	71.1	393.0	12.2	138.7	72.9	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.9	23.0	321.5	33.9	7.5	71.1	393.0	12.2	138.7	72.9	0.5
LOS	D	C	F	C	A	E	F	B	F	E	A
Approach Delay		26.6		87.4			285.8			80.5	
Approach LOS		C		F			F			F	

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 72.2	
Natural Cycle: 140	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.81	
Intersection Signal Delay: 155.5	Intersection LOS: F
Intersection Capacity Utilization 102.6%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: Palomar St. & Central St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	344	61	189	371	306	128	977	282	184	560	80
Future Volume (veh/h)	62	344	61	189	371	306	128	977	282	184	560	80
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	63	351	62	193	379	312	131	997	288	188	571	82
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	90	674	118	128	457	387	165	573	486	177	585	496
Arrive On Green	0.05	0.22	0.22	0.07	0.24	0.24	0.09	0.31	0.31	0.10	0.31	0.31
Sat Flow, veh/h	1781	3023	529	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	63	205	208	193	379	312	131	997	288	188	571	82
Grp Sat Flow(s),veh/h/ln	1781	1777	1775	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.4	7.0	7.2	5.0	13.3	12.9	5.0	21.3	10.7	6.9	21.0	2.6
Cycle Q Clear(g_c), s	2.4	7.0	7.2	5.0	13.3	12.9	5.0	21.3	10.7	6.9	21.0	2.6
Prop In Lane	1.00		0.30	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	90	396	396	128	457	387	165	573	486	177	585	496
V/C Ratio(X)	0.70	0.52	0.53	1.51	0.83	0.81	0.79	1.74	0.59	1.06	0.98	0.17
Avail Cap(c_a), veh/h	128	537	536	128	565	479	169	573	486	177	585	496
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	23.7	23.8	32.2	24.9	24.7	30.9	24.1	20.4	31.3	23.6	17.3
Incr Delay (d2), s/veh	3.6	1.0	1.1	263.8	8.3	8.0	20.1	339.9	5.2	85.4	31.6	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	2.8	2.8	11.4	6.3	5.1	2.9	62.2	4.2	6.9	13.1	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.1	24.8	24.8	296.0	33.2	32.7	50.9	364.0	25.7	116.7	55.2	18.0
LnGrp LOS	D	C	C	F	C	C	D	F	C	F	E	B
Approach Vol, veh/h		476			884			1416			841	
Approach Delay, s/veh		26.3			90.4			266.2			65.3	
Approach LOS		C			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.5	27.1	9.6	21.3	11.0	27.6	8.1	22.8
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	6.9	21.3	5.0	21.0	6.6	21.6	5.0	21.0
Max Q Clear Time (g_c+I1), s	8.9	23.3	7.0	9.2	7.0	23.0	4.4	15.3
Green Ext Time (p_c), s	0.0	0.0	0.0	1.7	0.0	0.0	0.0	1.6

Intersection Summary	
HCM 6th Ctrl Delay	145.0
HCM 6th LOS	F

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	127	274	154	205	10
Future Vol, veh/h	4	127	274	154	205	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	138	298	167	223	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	992	229	234	0	-	0
Stage 1	229	-	-	-	-	-
Stage 2	763	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	272	810	1333	-	-	-
Stage 1	809	-	-	-	-	-
Stage 2	460	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	205	810	1333	-	-	-
Mov Cap-2 Maneuver	205	-	-	-	-	-
Stage 1	610	-	-	-	-	-
Stage 2	460	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	5.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1333	-	743	-	-
HCM Lane V/C Ratio	0.223	-	0.192	-	-
HCM Control Delay (s)	8.5	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.9	-	0.7	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	837	61	225	964	316	19	110	102	208	93	31
Future Vol, veh/h	80	837	61	225	964	316	19	110	102	208	93	31
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	92	92	97	97	92	92	92	97	92	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	82	863	66	245	994	326	21	120	111	214	101	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1320	0	0	929	0	0	2774	2870	896	2823	2740	1157
Stage 1	-	-	-	-	-	-	1060	1060	-	1647	1647	-
Stage 2	-	-	-	-	-	-	1714	1810	-	1176	1093	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	524	-	-	736	-	-	~ 12	~ 17	339	~ 11	~ 20	239
Stage 1	-	-	-	-	-	-	271	301	-	~ 125	157	-
Stage 2	-	-	-	-	-	-	114	130	-	233	290	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	524	-	-	736	-	-	-	0	339	-	0	239
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-	-	0	-
Stage 1	-	-	-	-	-	-	182	202	-	~ 84	0	-
Stage 2	-	-	-	-	-	-	-	0	-	~ 43	195	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	1.9		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	524	-	-	736	-	-	-
HCM Lane V/C Ratio	-	0.157	-	-	0.332	-	-	-
HCM Control Delay (s)	-	13.1	0	-	12.3	0	-	-
HCM Lane LOS	-	B	A	-	B	A	-	-
HCM 95th %tile Q(veh)	-	0.6	-	-	1.5	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Vol, veh/h	0	1153	1495	51	0	84
Future Vol, veh/h	0	1153	1495	51	0	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	200	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1253	1625	55	0	91

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	1625
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	126
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	126
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	86.3
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	126
HCM Lane V/C Ratio	-	-	-	0.725
HCM Control Delay (s)	-	-	-	86.3
HCM Lane LOS	-	-	-	F
HCM 95th %tile Q(veh)	-	-	-	4.1

Intersection	
Intersection Delay, s/veh	507.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	508	645	178	1204	0	0	0	0	87	3	342
Future Vol, veh/h	0	508	645	178	1204	0	0	0	0	87	3	342
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	0	9	7	2	8	0	0	0	0	9	33	8
Mvmt Flow	0	524	665	184	1241	0	0	0	0	90	3	353
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	546.8	619.8	42.6
HCM LOS	F	F	E

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	20%
Vol Thru, %	44%	0%	100%	1%
Vol Right, %	56%	0%	0%	79%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1153	178	1204	432
LT Vol	0	178	0	87
Through Vol	508	0	1204	3
RT Vol	645	0	0	342
Lane Flow Rate	1189	184	1241	445
Geometry Grp	5	7	7	2
Degree of Util (X)	2.16	0.393	2.518	0.83
Departure Headway (Hd)	7.75	9.173	8.758	8.844
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	487	395	434	414
Service Time	5.75	6.873	6.458	6.844
HCM Lane V/C Ratio	2.441	0.466	2.859	1.075
HCM Control Delay	546.8	17.7	708.8	42.6
HCM Lane LOS	F	C	F	E
HCM 95th-tile Q	72.5	1.8	82.7	7.7

Intersection	
Intersection Delay, s/veh	358.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	234	362	0	0	841	324	541	6	143	0	0	0
Future Vol, veh/h	234	362	0	0	841	324	541	6	143	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	7	11	0	0	9	5	6	33	9	0	0	0
Mvmt Flow	241	373	0	0	867	334	558	6	147	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	39.1	610.8	207.9
HCM LOS	E	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	78%	100%	0%	0%
Vol Thru, %	1%	0%	100%	72%
Vol Right, %	21%	0%	0%	28%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	690	234	362	1165
LT Vol	541	234	0	0
Through Vol	6	0	362	841
RT Vol	143	0	0	324
Lane Flow Rate	711	241	373	1201
Geometry Grp	2	7	7	5
Degree of Util (X)	1.373	0.551	0.807	2.302
Departure Headway (Hd)	8.914	11.425	10.966	8.027
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	413	318	332	468
Service Time	6.914	9.125	8.666	6.027
HCM Lane V/C Ratio	1.722	0.758	1.123	2.566
HCM Control Delay	207.9	27.3	46.8	610.8
HCM Lane LOS	F	D	E	F
HCM 95th-tile Q	26.6	3.1	6.8	78

Intersection	
Int Delay, s/veh	1058

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1736	287	433	1373	404	451
Future Vol, veh/h	1736	287	433	1373	404	451
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	175	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1887	312	471	1492	439	490

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2199	0	4477	2043
Stage 1	-	-	-	-	2043	-
Stage 2	-	-	-	-	2434	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	~ 239	-	~ 2	~ 71
Stage 1	-	-	-	-	~ 109	-
Stage 2	-	-	-	-	~ 69	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	~ 239	-	0	~ 71
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	~ 109	-
Stage 2	-	-	-	-	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	116.3	$ 5550.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	71	-	-	~ 239	-
HCM Lane V/C Ratio	13.089	-	-	1.969	-
HCM Control Delay (s)	$ 5550.3	-	-	$ 484.9	-
HCM Lane LOS	F	-	-	F	-
HCM 95th %tile Q(veh)	110.4	-	-	34.1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	93.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	306	189	446	581	255	719
Future Vol, veh/h	306	189	446	581	255	719
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	333	205	485	632	277	782

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1117	0	-	0	1356	485
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	871	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	625	-	-	-	~ 165	~ 582
Stage 1	-	-	-	-	619	-
Stage 2	-	-	-	-	410	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	625	-	-	-	~ 66	~ 582
Mov Cap-2 Maneuver	-	-	-	-	~ 168	-
Stage 1	-	-	-	-	~ 247	-
Stage 2	-	-	-	-	410	-

Approach	EB	WB	SB
HCM Control Delay, s	10.6	0	233.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	625	-	-	-	168	582
HCM Lane V/C Ratio	0.532	-	-	-	1.65	1.343
HCM Control Delay (s)	17.1	0	-	-	$ 365.7	186.7
HCM Lane LOS	C	A	-	-	F	F
HCM 95th %tile Q(veh)	3.1	-	-	-	19.1	33.6

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

APPENDIX 7.3:

GENERAL PLAN BUILDOUT (2040) WITH PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		**2040 WP**	
				CALC	CP	DATE	06/25/19
Jurisdiction:	**City of Wildomar**			CHK	CP	DATE	06/25/19
Major Street:	**Baxter Rd.**			Critical Approach Speed (Major)		45	mph
Minor Street:	**Driveway 1**			Critical Approach Speed (Minor)		25	mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes **1** lane

Major Street Future ADT = **5,135** vpd Minor Street Future ADT = **1,714** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. [√]

or **RURAL (R)**

In built up area of isolated community of < 10,000 population …… [ ]

(Based on Estimated Average Daily Traffic - See Note)

URBAN	RURAL	Minimum Requirements EADT			
	XX				
CONDITION A - Minimum Vehicular Volume					
Satisfied	Not Satisfied	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
	XX				
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **5,135**	*1* **1,714**	8,000	5,600	2,400	1,680 *
2 +	*1*	9,600	6,720	2,400	1,680
2 +	*2 +*	9,600	6,720	3,200	2,240
1	*2 +*	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic					
Satisfied	Not Satisfied	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
	XX				
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **5,135**	*1* **1,714**	12,000	8,400	1,200	850 *
2 +	*1*	14,400	10,080	1,200	850
2 +	*2 +*	14,400	10,080	1,600	1,120
1	*2 +*	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B					
Satisfied	Not Satisfied	2 CONDITIONS 80%		2 CONDITIONS 80%	
	XX				
No one condition satisfied, but following conditions fulfilled 80% of more …..	**A** 92% / **B** 61%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

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APPENDIX 7.4:

GENERAL PLAN BUILDOUT (2040) WITHOUT PROJECT OFF-RAMP QUEUING ANALYSIS WORKSHEETS

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Intersection	
Intersection Delay, s/veh	403.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	758	448	160	455	0	0	0	0	308	4	257
Future Vol, veh/h	0	758	448	160	455	0	0	0	0	308	4	257
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	5	4	6	6	0	0	0	0	2	0	5
Mvmt Flow	0	824	487	174	495	0	0	0	0	335	4	279
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	699.7	77.6	127.3
HCM LOS	F	F	F

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	54%
Vol Thru, %	63%	0%	100%	1%
Vol Right, %	37%	0%	0%	45%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1206	160	455	569
LT Vol	0	160	0	308
Through Vol	758	0	455	4
RT Vol	448	0	0	257
Lane Flow Rate	1311	174	495	618
Geometry Grp	5	7	7	2
Degree of Util (X)	2.504	0.396	1.058	1.166
Departure Headway (Hd)	7.564	10.927	10.397	8.951
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	498	332	356	414
Service Time	5.564	8.627	8.097	6.951
HCM Lane V/C Ratio	2.633	0.524	1.39	1.493
HCM Control Delay	699.7	20.6	97.7	127.3
HCM Lane LOS	F	C	F	F
HCM 95th-tile Q	94.2	1.8	13	18.1

Intersection	
Intersection Delay, s/veh	194.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	301	765	0	0	384	198	231	4	244	0	0	0
Future Vol, veh/h	301	765	0	0	384	198	231	4	244	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	5	4	0	0	6	3	6	0	8	0	0	0
Mvmt Flow	327	832	0	0	417	215	251	4	265	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	278.6	145.2	67.8
HCM LOS	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	48%	100%	0%	0%
Vol Thru, %	1%	0%	100%	66%
Vol Right, %	51%	0%	0%	34%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	479	301	765	582
LT Vol	231	301	0	0
Through Vol	4	0	765	384
RT Vol	244	0	0	198
Lane Flow Rate	521	327	832	633
Geometry Grp	2	7	7	5
Degree of Util (X)	0.996	0.744	1.771	1.232
Departure Headway (Hd)	7.541	8.639	8.104	7.391
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	484	422	457	493
Service Time	5.541	6.339	5.804	5.391
HCM Lane V/C Ratio	1.076	0.775	1.821	1.284
HCM Control Delay	67.8	32.5	375.5	145.2
HCM Lane LOS	F	D	F	F
HCM 95th-tile Q	13.2	6	48.9	23.6

Intersection	
Intersection Delay, s/veh	185.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	412	444	95	726	0	0	0	0	67	3	242
Future Vol, veh/h	0	412	444	95	726	0	0	0	0	67	3	242
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	0	9	7	2	8	0	0	0	0	9	33	8
Mvmt Flow	0	425	458	98	748	0	0	0	0	69	3	249
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	243	187.2	21.8
HCM LOS	F	F	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	21%
Vol Thru, %	48%	0%	100%	1%
Vol Right, %	52%	0%	0%	78%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	856	95	726	312
LT Vol	0	95	0	67
Through Vol	412	0	726	3
RT Vol	444	0	0	242
Lane Flow Rate	882	98	748	322
Geometry Grp	5	7	7	2
Degree of Util (X)	1.478	0.193	1.394	0.601
Departure Headway (Hd)	6.468	7.684	7.275	7.778
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	574	470	509	466
Service Time	4.468	5.384	4.975	5.778
HCM Lane V/C Ratio	1.537	0.209	1.47	0.691
HCM Control Delay	243	12.2	210.1	21.8
HCM Lane LOS	F	B	F	C
HCM 95th-tile Q	40.8	0.7	32.4	3.9

Intersection	
Intersection Delay, s/veh	64
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	185	294	0	0	297	59	523	6	94	0	0	0
Future Vol, veh/h	185	294	0	0	297	59	523	6	94	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	7	11	0	0	9	5	6	33	9	0	0	0
Mvmt Flow	191	303	0	0	306	61	539	6	97	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	20.7	25.7	119.2
HCM LOS	C	D	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	84%	100%	0%	0%
Vol Thru, %	1%	0%	100%	83%
Vol Right, %	15%	0%	0%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	623	185	294	356
LT Vol	523	185	0	0
Through Vol	6	0	294	297
RT Vol	94	0	0	59
Lane Flow Rate	642	191	303	367
Geometry Grp	2	7	7	5
Degree of Util (X)	1.173	0.411	0.625	0.695
Departure Headway (Hd)	6.575	8.434	7.988	7.437
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	559	429	455	488
Service Time	4.584	6.134	5.688	5.437
HCM Lane V/C Ratio	1.148	0.445	0.666	0.752
HCM Control Delay	119.2	16.9	23.1	25.7
HCM Lane LOS	F	C	C	D
HCM 95th-tile Q	22.5	2	4.2	5.3

APPENDIX 7.5:

GENERAL PLAN BUILDOUT (2040) WITH PROJECT OFF-RAMP QUEUING ANALYSIS WORKSHEETS

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Intersection	
Intersection Delay, s/veh	490.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	833	491	160	568	0	0	0	0	308	4	294
Future Vol, veh/h	0	833	491	160	568	0	0	0	0	308	4	294
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	5	4	6	6	0	0	0	0	2	0	5
Mvmt Flow	0	905	534	174	617	0	0	0	0	335	4	320
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	824.7	156.5	160.6
HCM LOS	F	F	F

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	51%
Vol Thru, %	63%	0%	100%	1%
Vol Right, %	37%	0%	0%	49%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1324	160	568	606
LT Vol	0	160	0	308
Through Vol	833	0	568	4
RT Vol	491	0	0	294
Lane Flow Rate	1439	174	617	659
Geometry Grp	5	7	7	2
Degree of Util (X)	2.781	0.396	1.32	1.251
Departure Headway (Hd)	7.991	11.657	11.124	9.301
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	475	311	333	395
Service Time	5.991	9.357	8.824	7.301
HCM Lane V/C Ratio	3.029	0.559	1.853	1.668
HCM Control Delay	824.7	21.8	194.4	160.6
HCM Lane LOS	F	C	F	F
HCM 95th-tile Q	104.8	1.8	20.7	20.9

Intersection	
Intersection Delay, s/veh	226.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	345	796	0	0	463	198	266	4	244	0	0	0
Future Vol, veh/h	345	796	0	0	463	198	266	4	244	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	5	4	0	0	6	3	6	0	8	0	0	0
Mvmt Flow	375	865	0	0	503	215	289	4	265	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	296.4	213	90.2
HCM LOS	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	52%	100%	0%	0%
Vol Thru, %	1%	0%	100%	70%
Vol Right, %	47%	0%	0%	30%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	514	345	796	661
LT Vol	266	345	0	0
Through Vol	4	0	796	463
RT Vol	244	0	0	198
Lane Flow Rate	559	375	865	718
Geometry Grp	2	7	7	5
Degree of Util (X)	1.073	0.85	1.835	1.398
Departure Headway (Hd)	7.689	9.083	8.545	7.517
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	475	401	433	489
Service Time	5.689	6.783	6.245	5.517
HCM Lane V/C Ratio	1.177	0.935	1.998	1.468
HCM Control Delay	90.2	46	404.9	213
HCM Lane LOS	F	E	F	F
HCM 95th-tile Q	16	8.1	49.8	31.7

Intersection	
Intersection Delay, s/veh	507.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	508	645	178	1204	0	0	0	0	87	3	342
Future Vol, veh/h	0	508	645	178	1204	0	0	0	0	87	3	342
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	0	9	7	2	8	0	0	0	0	9	33	8
Mvmt Flow	0	524	665	184	1241	0	0	0	0	90	3	353
Number of Lanes	0	1	0	1	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	546.8	619.8	42.6
HCM LOS	F	F	E

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	20%
Vol Thru, %	44%	0%	100%	1%
Vol Right, %	56%	0%	0%	79%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1153	178	1204	432
LT Vol	0	178	0	87
Through Vol	508	0	1204	3
RT Vol	645	0	0	342
Lane Flow Rate	1189	184	1241	445
Geometry Grp	5	7	7	2
Degree of Util (X)	2.16	0.393	2.518	0.83
Departure Headway (Hd)	7.75	9.173	8.758	8.844
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	487	395	434	414
Service Time	5.75	6.873	6.458	6.844
HCM Lane V/C Ratio	2.441	0.466	2.859	1.075
HCM Control Delay	546.8	17.7	708.8	42.6
HCM Lane LOS	F	C	F	E
HCM 95th-tile Q	72.5	1.8	82.7	7.7

Intersection	
Intersection Delay, s/veh	358.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	234	362	0	0	841	324	541	6	143	0	0	0
Future Vol, veh/h	234	362	0	0	841	324	541	6	143	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	7	11	0	0	9	5	6	33	9	0	0	0
Mvmt Flow	241	373	0	0	867	334	558	6	147	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	39.1	610.8	207.9
HCM LOS	E	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	78%	100%	0%	0%
Vol Thru, %	1%	0%	100%	72%
Vol Right, %	21%	0%	0%	28%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	690	234	362	1165
LT Vol	541	234	0	0
Through Vol	6	0	362	841
RT Vol	143	0	0	324
Lane Flow Rate	711	241	373	1201
Geometry Grp	2	7	7	5
Degree of Util (X)	1.373	0.551	0.807	2.302
Departure Headway (Hd)	8.914	11.425	10.966	8.027
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	413	318	332	468
Service Time	6.914	9.125	8.666	6.027
HCM Lane V/C Ratio	1.722	0.758	1.123	2.566
HCM Control Delay	207.9	27.3	46.8	610.8
HCM Lane LOS	F	D	E	F
HCM 95th-tile Q	26.6	3.1	6.8	78

APPENDIX 7.6:

GENERAL PLAN BUILDOUT (2040) WITHOUT PROJECT FREEWAY FACILITY ANALYSIS WORKSHEETS

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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Post-2040 Without Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Southbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	North of Baxter	3300	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2020	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	South of Baxter	4425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.935	6585	7161	0.92	57.9	37.9	E

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.935	0.971	6585	637	7200	2100	0.91	0.30	63.8	60.1	34.4	34.5	D

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.926	5981	7161	0.84	62.0	32.2	D

Segment 4: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.926	0.952	6680	699	7200	2100	0.93	0.33	57.7	55.2	38.6	33.2	D

Segment 5: Basic

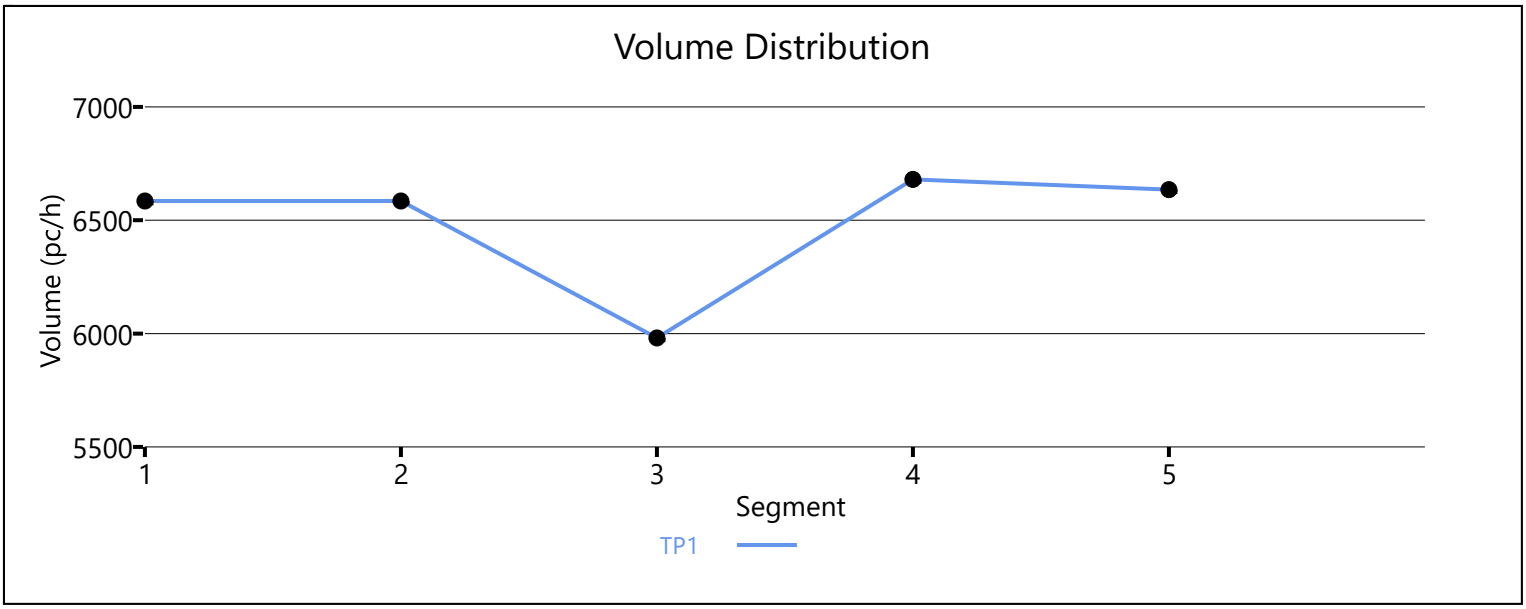
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.935	6635	7161	0.93	57.5	38.5	E

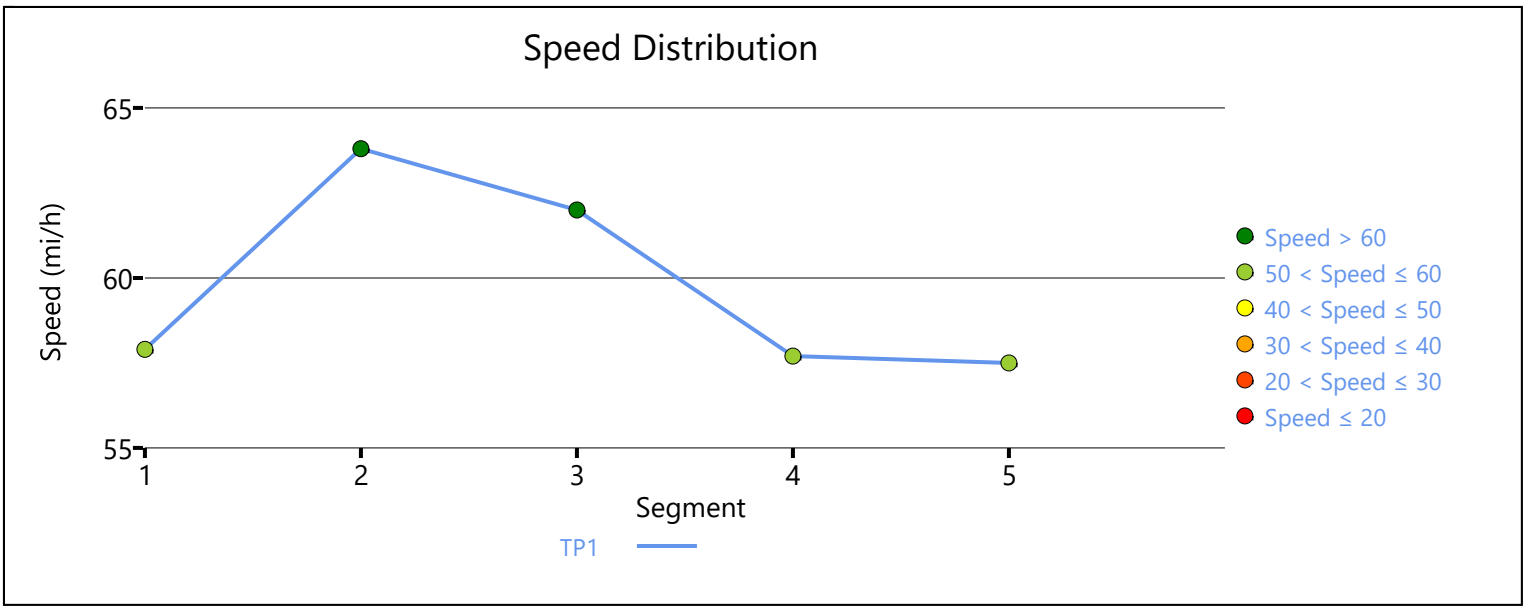
Facility Time Period Results

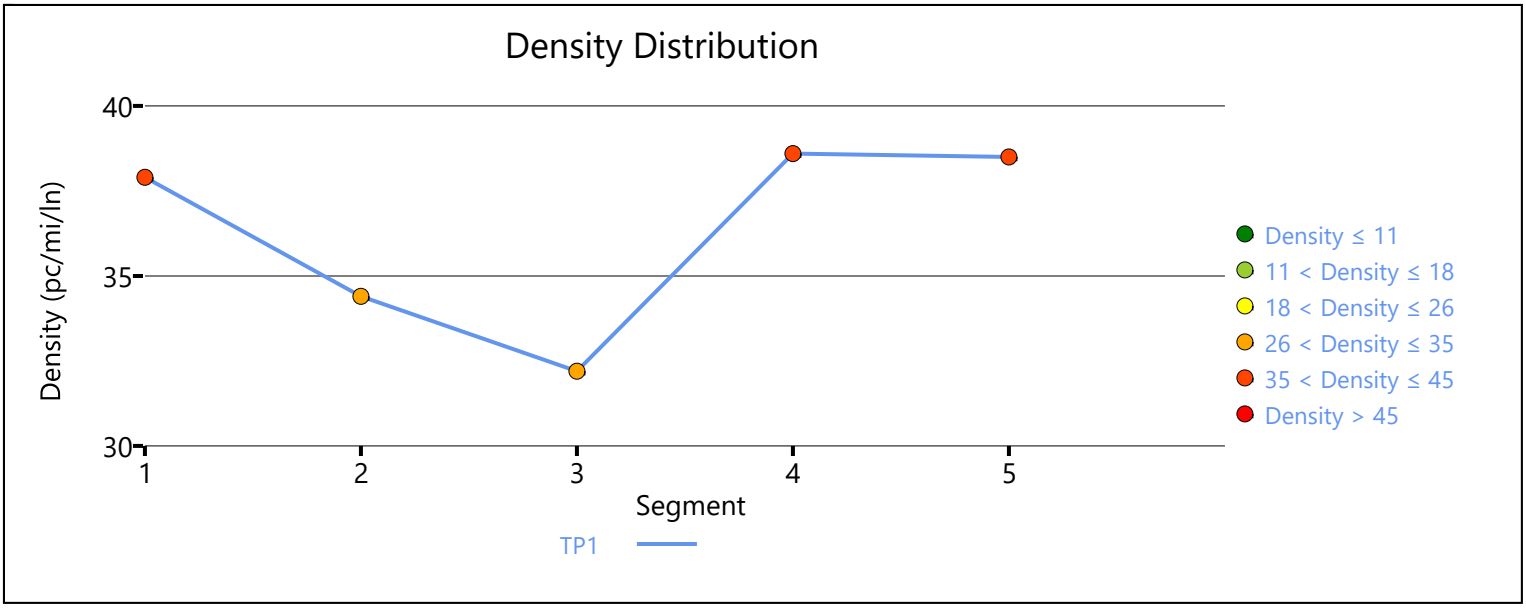
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	58.9	36.9	34.4	2.5	E

Facility Overall Results

Space Mean Speed, mi/h	58.9	Density, veh/mi/ln	34.4
Average Travel Time, min	2.5	Density, pc/mi/ln	36.9







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Post-2040 Without Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Northbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	South of Baxter	2680	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2220	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	North of Baxter	3425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.952	8722	7161	1.22	53.0	45.0	F

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.952	0.952	6793	547	7200	2100	1.21	0.26	43.0	60.3	52.6	51.0	F

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.952	6137	7161	1.14	32.6	62.7	F

Segment 4: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.952	0.962	6668	568	7200	2100	1.21	0.27	40.1	17.0	55.4	47.6	F

Segment 5: Basic

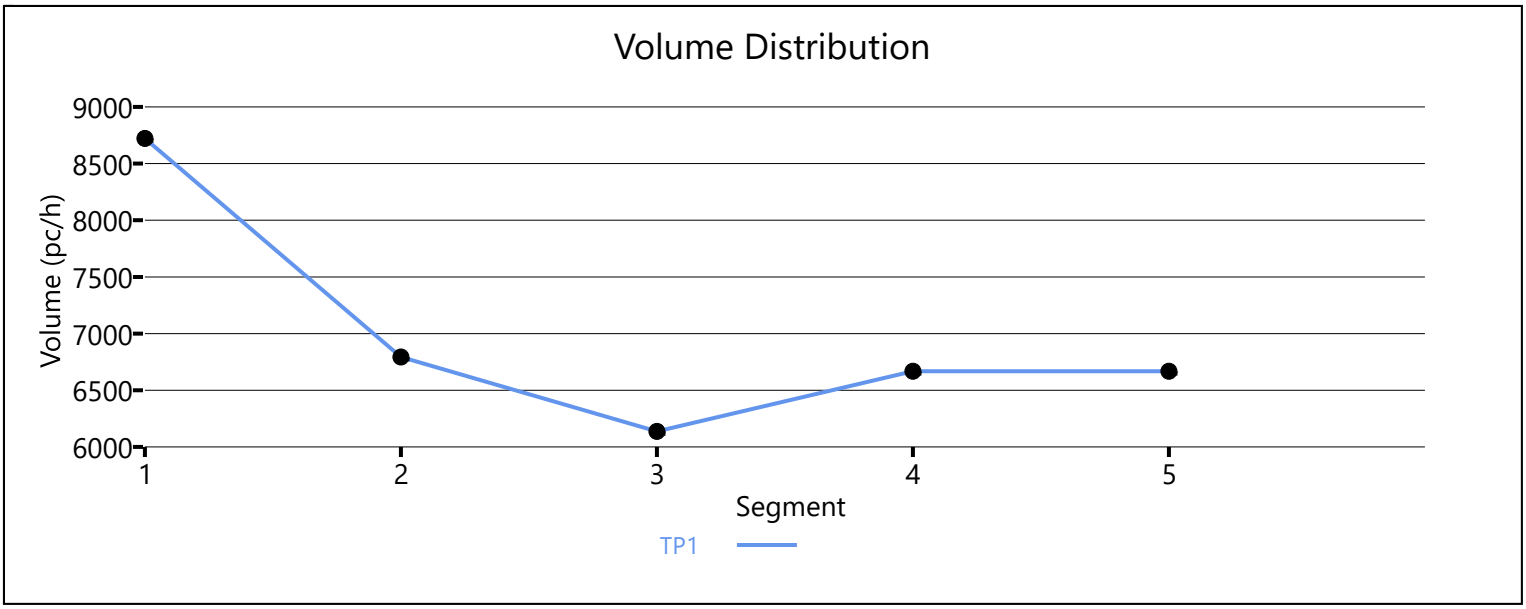
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.952	6668	7161	1.22	57.9	38.4	F

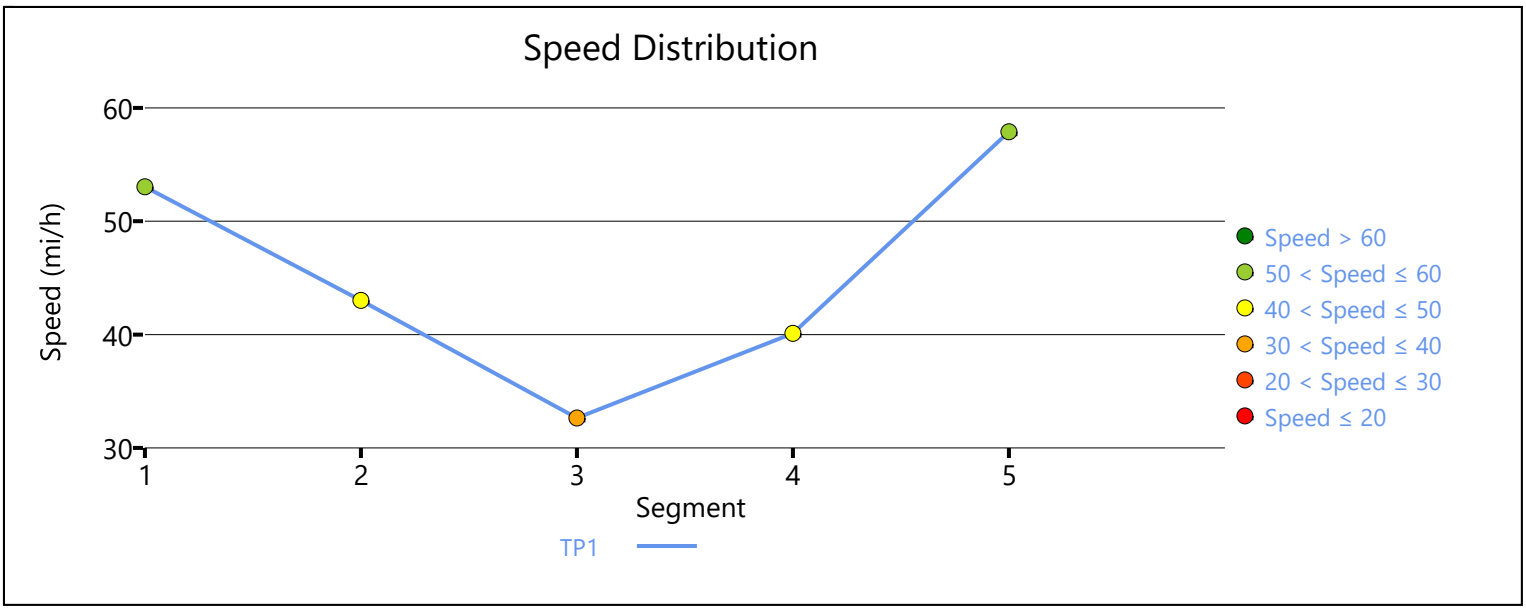
Facility Time Period Results

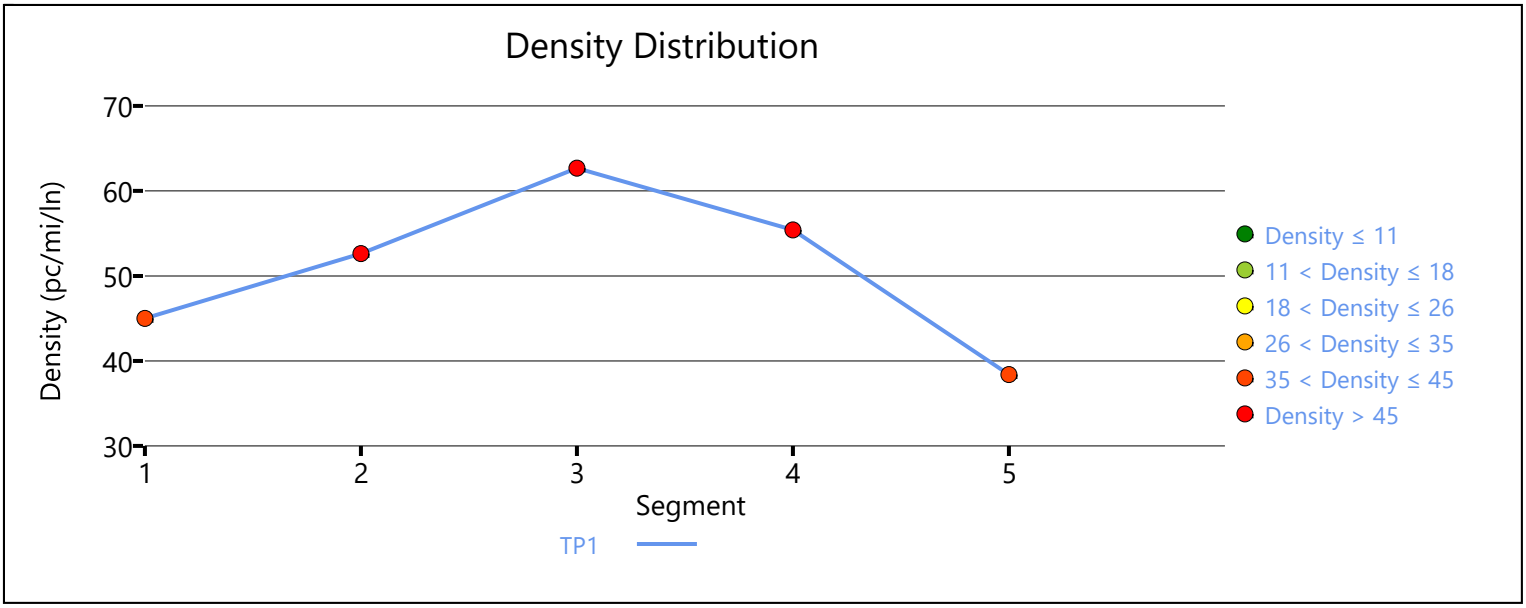
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	43.8	50.4	48.0	2.9	F

Facility Overall Results

Space Mean Speed, mi/h	43.8	Density, veh/mi/ln	48.0
Average Travel Time, min	2.9	Density, pc/mi/ln	50.4







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Post-2040 Without Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Southbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	North of Baxter	3300	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2020	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	South of Baxter	4425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.952	9398	7161	1.31	53.0	45.0	F

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.952	0.935	6395	441	7200	2100	1.31	0.21	35.2	60.5	60.5	57.6	F

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.952	5826	7161	1.25	27.7	70.1	F

Segment 4: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.952	0.962	6668	879	7200	2100	1.37	0.42	40.1	0.0	55.4	55.3	F

Segment 5: Basic

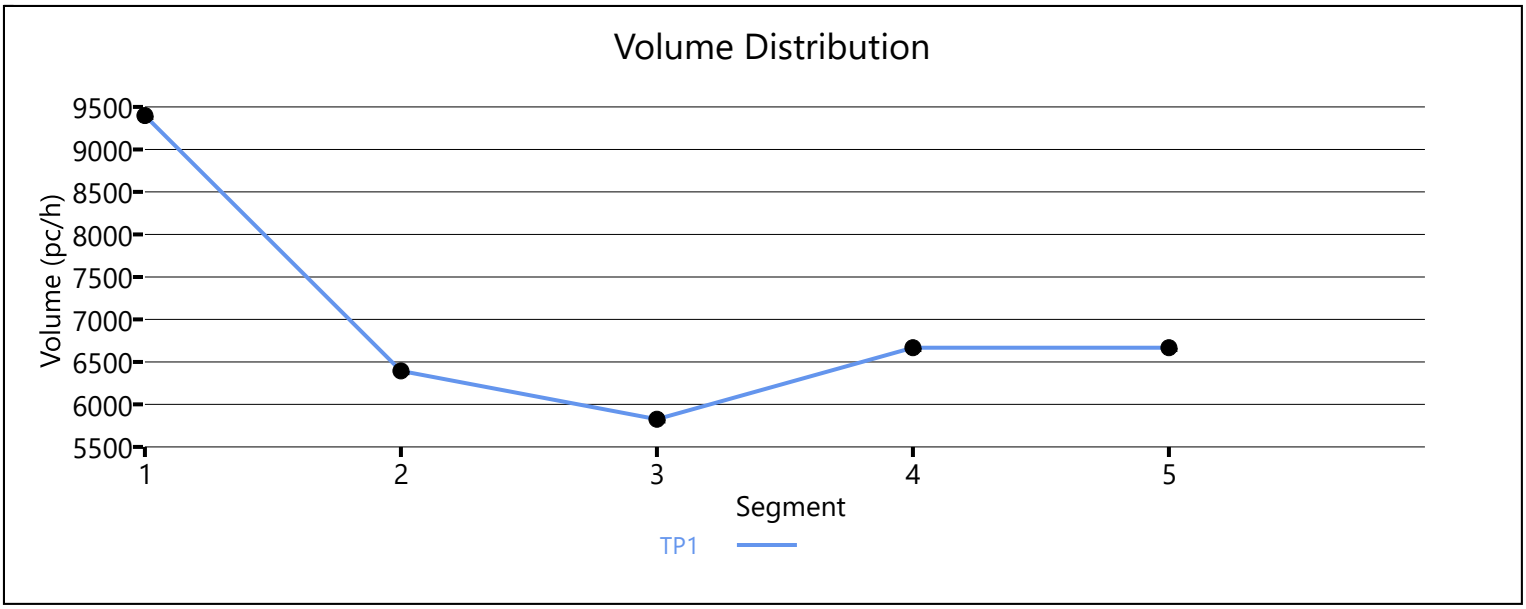
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.952	6668	7161	1.38	57.9	38.4	F

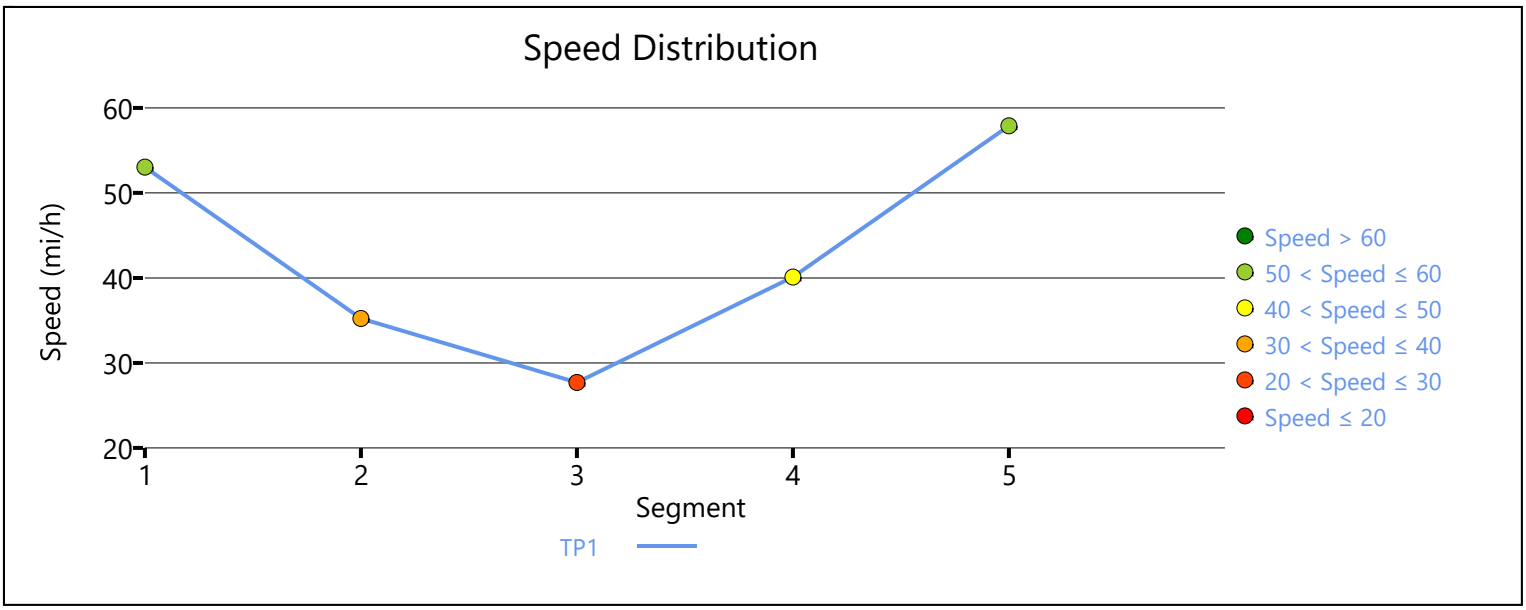
Facility Time Period Results

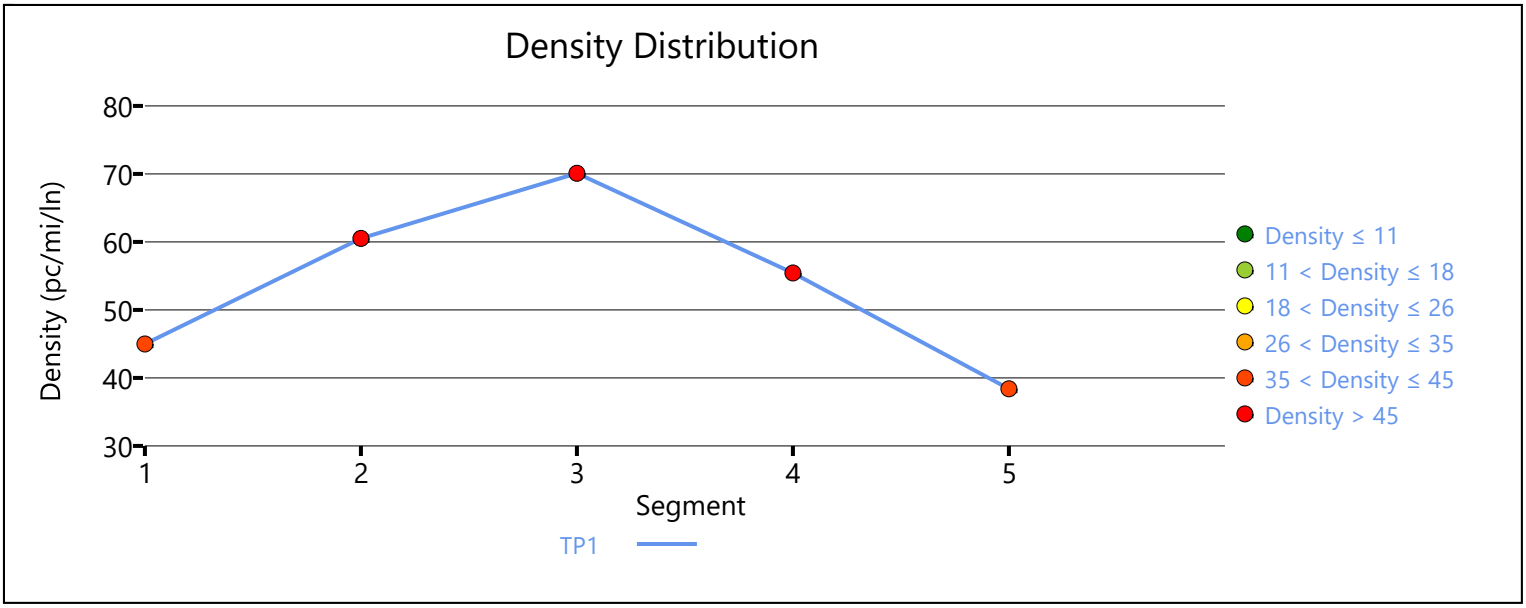
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	40.3	53.4	50.8	3.6	F

Facility Overall Results

Space Mean Speed, mi/h	40.3	Density, veh/mi/ln	50.8
Average Travel Time, min	3.6	Density, pc/mi/ln	53.4







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Post-2040 Without Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Northbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	South of Baxter	2680	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2220	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	North of Baxter	3425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.926	7691	7161	1.07	53.0	45.0	F

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.926	0.962	7161	721	7200	2100	1.07	0.34	63.3	59.8	37.7	37.6	F

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	6440	7161	0.98	59.6	36.0	E

Segment 4: Merge

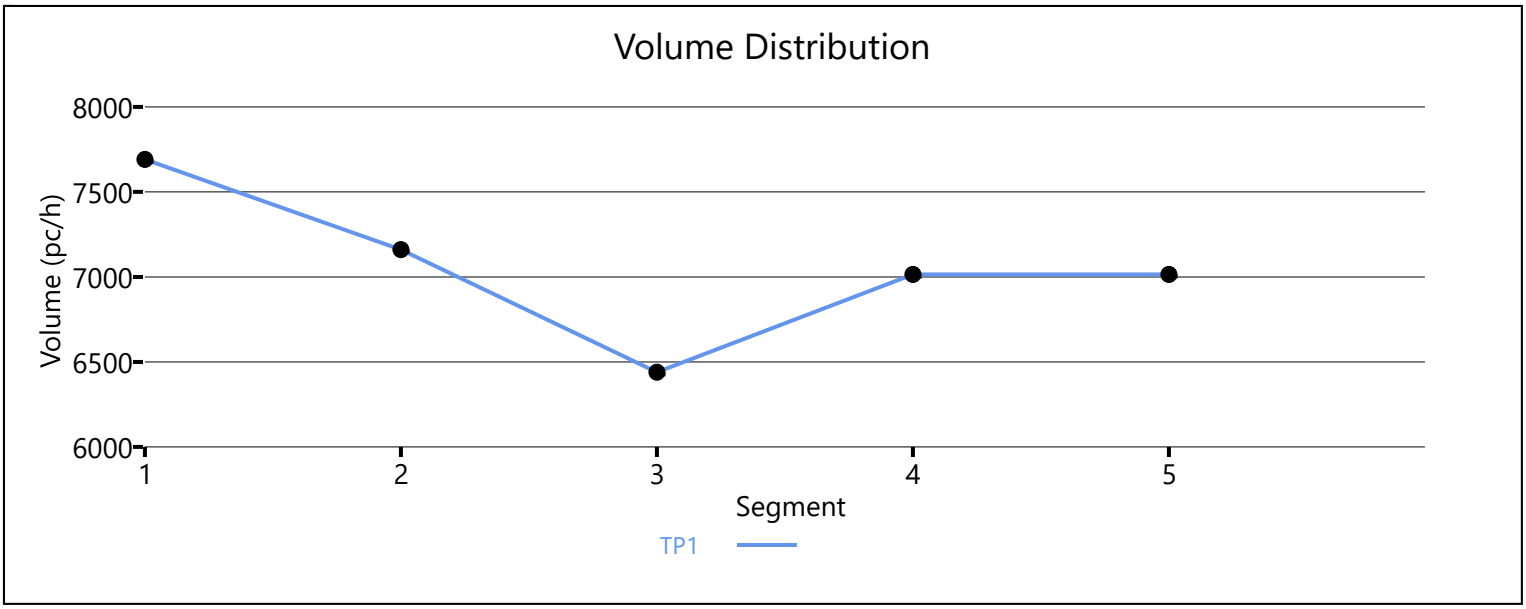
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.971	7015	575	7200	2100	1.05	0.27	56.5	53.8	41.4	35.0	F

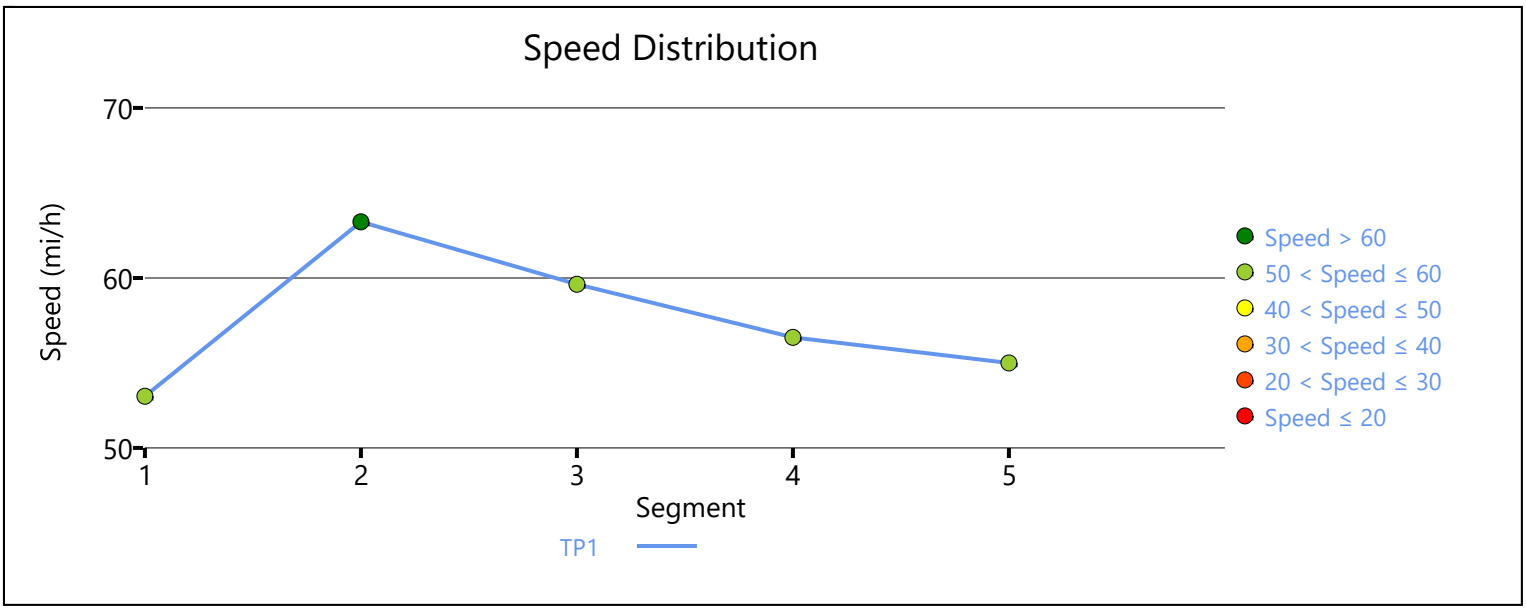
Segment 5: Basic

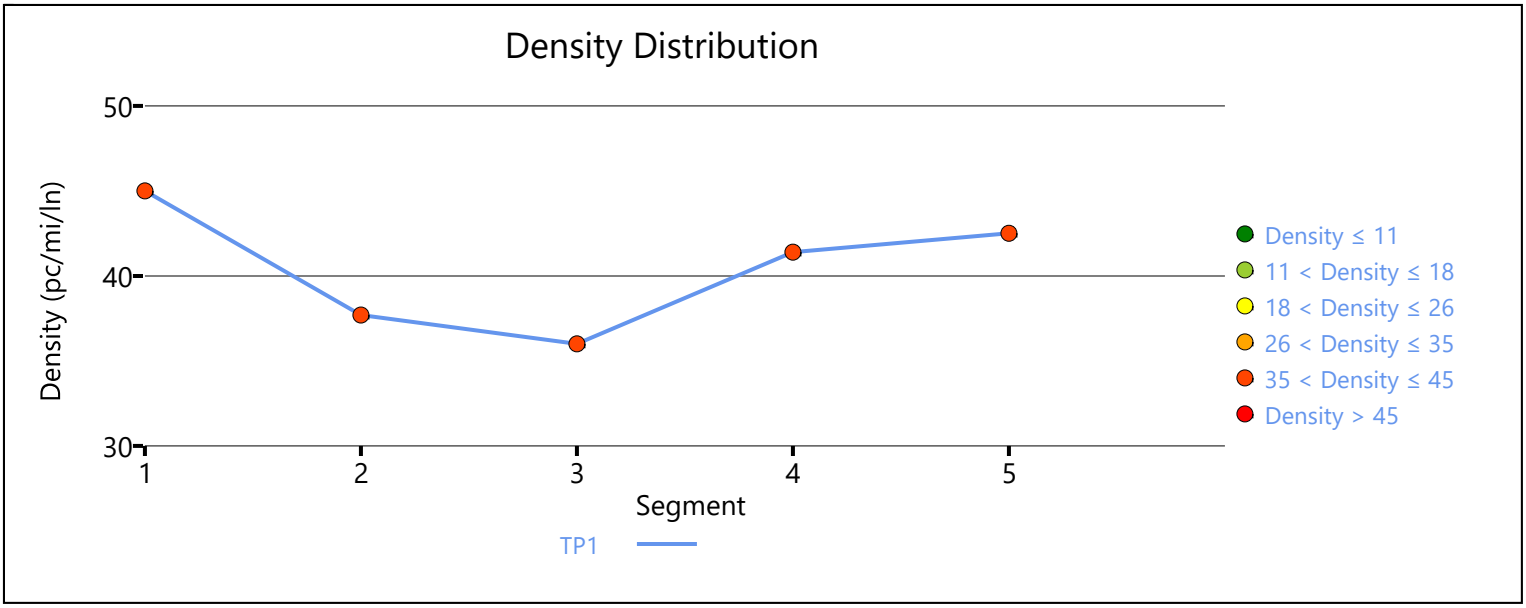
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.926	7015	7161	1.05	55.0	42.5	F

Facility Time Period Results					
T	**Speed, mi/h**	**Density, pc/mi/ln**	**Density, veh/mi/ln**	**Travel Time, min**	**LOS**
1	56.7	40.9	37.8	2.3	F

Facility Overall Results			
Space Mean Speed, mi/h	56.7	Density, veh/mi/ln	37.8
Average Travel Time, min	2.3	Density, pc/mi/ln	40.9







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APPENDIX 7.7:

GENERAL PLAN BUILDOUT (2040) WITH PROJECT FREEWAY FACILITY ANALYSIS WORKSHEETS

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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Post-2040 With Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Southbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	North of Baxter	3300	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2020	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	South of Baxter	4425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.935	6628	7161	0.93	57.6	38.4	E

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.935	0.971	6628	678	7200	2100	0.92	0.32	63.7	59.9	34.7	34.7	D

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.926	5981	7161	0.84	62.0	32.2	D

Segment 4: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.926	0.962	6721	740	7200	2100	0.93	0.35	57.5	54.9	39.0	33.5	D

Segment 5: Basic

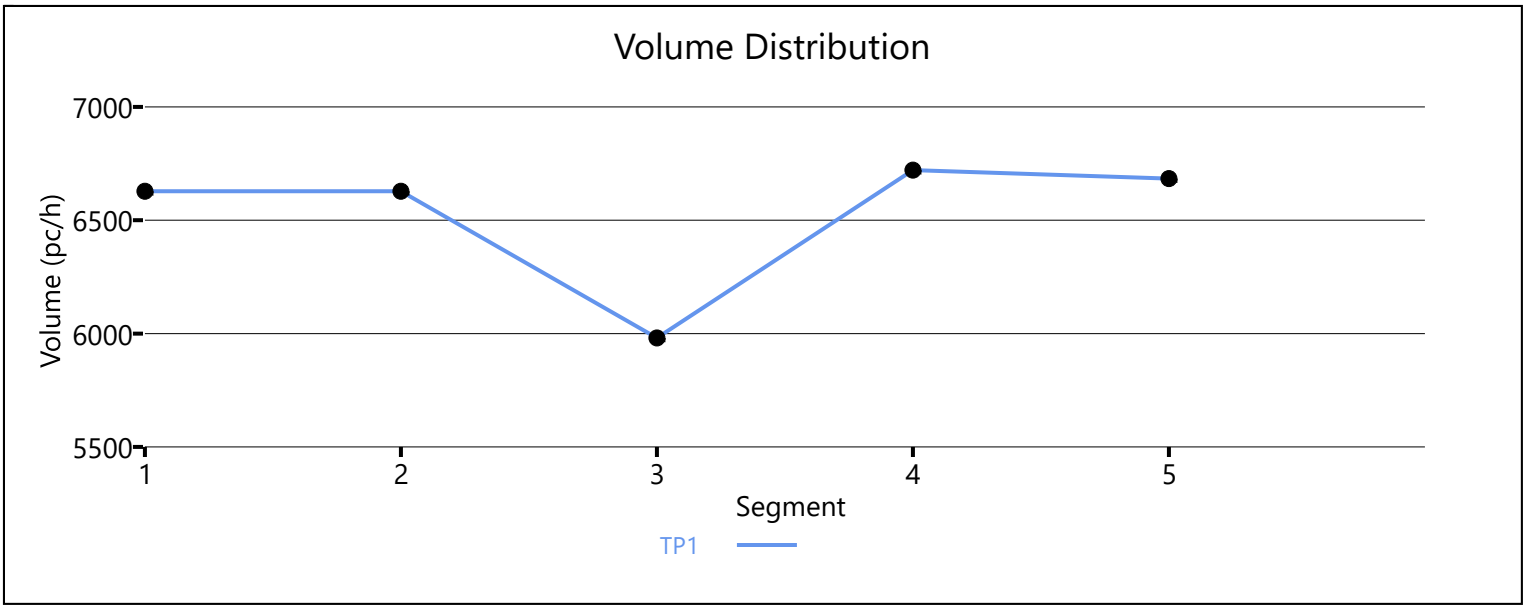
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.935	6684	7161	0.93	57.1	39.0	E

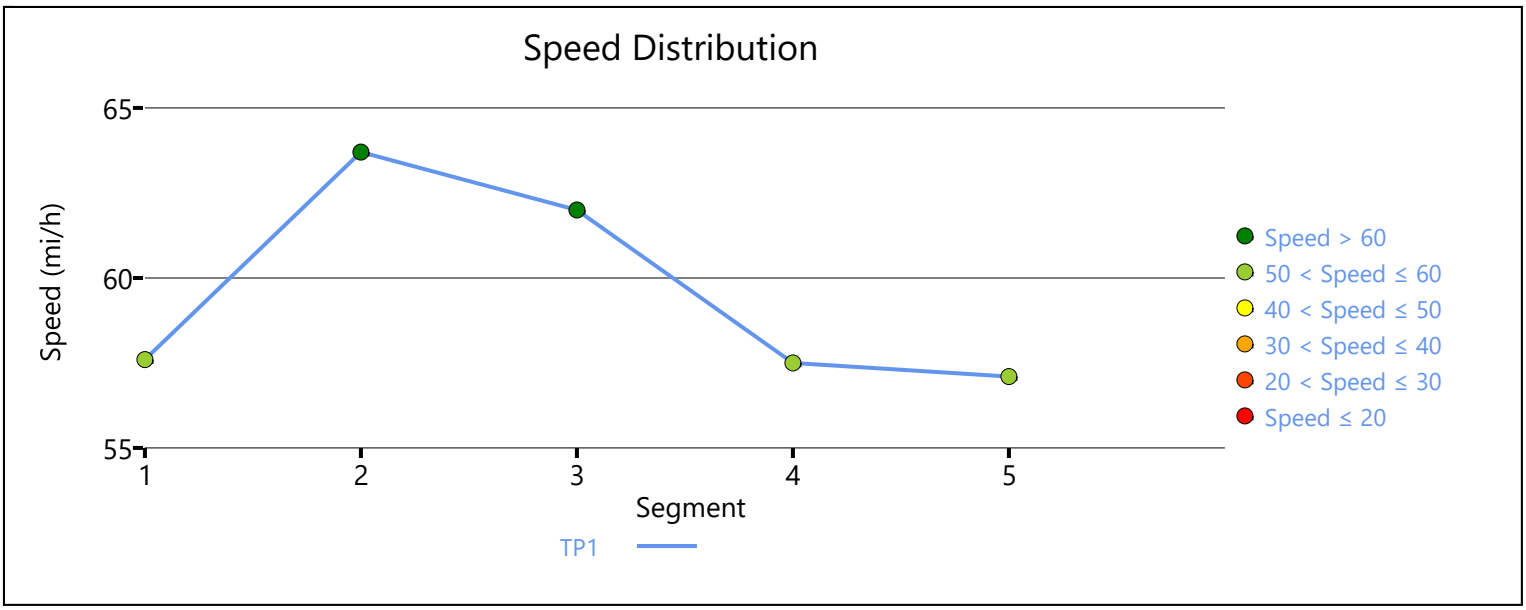
Facility Time Period Results

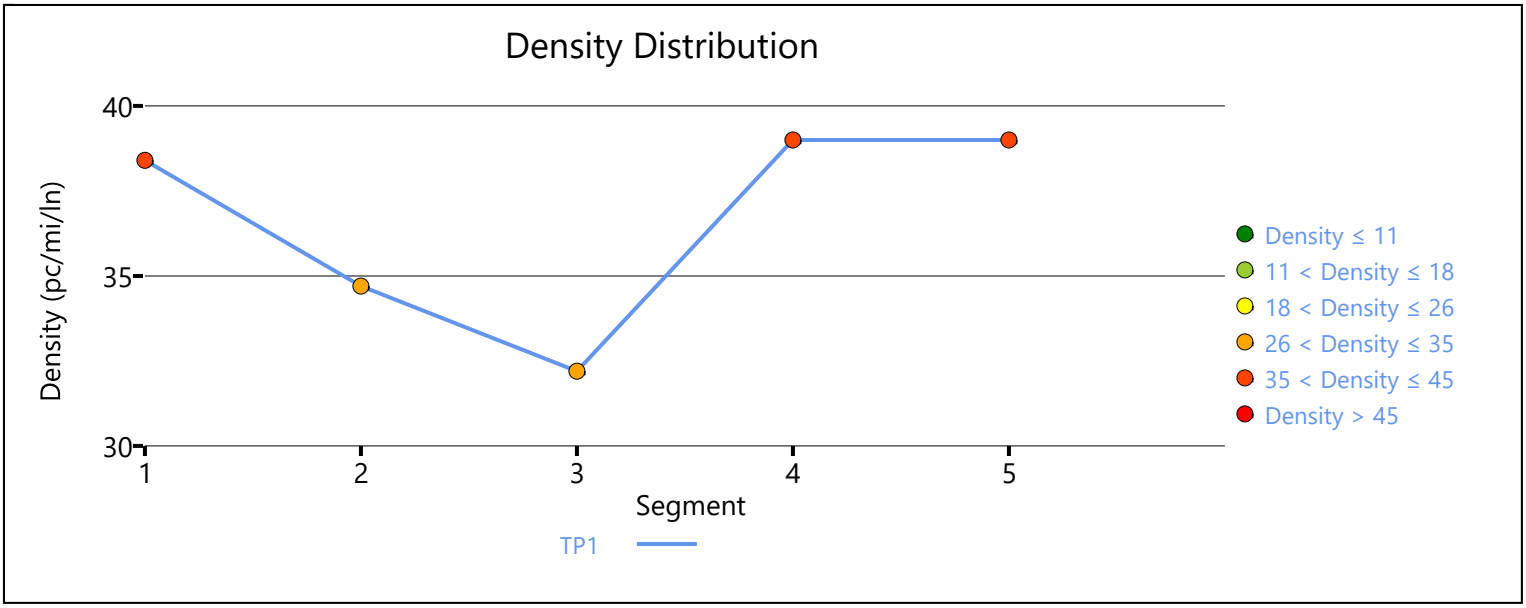
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	58.7	37.3	34.8	2.5	E

Facility Overall Results

Space Mean Speed, mi/h	58.7	Density, veh/mi/ln	34.8
Average Travel Time, min	2.5	Density, pc/mi/ln	37.3







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Post-2040 With Project
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Northbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	South of Baxter	2680	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2220	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	North of Baxter	3425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.952	8762	7161	1.22	53.0	45.0	F

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.952	0.962	6788	581	7200	2100	1.22	0.28	42.9	60.2	52.7	51.3	F

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.952	6093	7161	1.14	32.0	63.4	F

Segment 4: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.952	0.971	6668	612	7200	2100	1.22	0.29	40.1	14.9	55.4	47.9	F

Segment 5: Basic

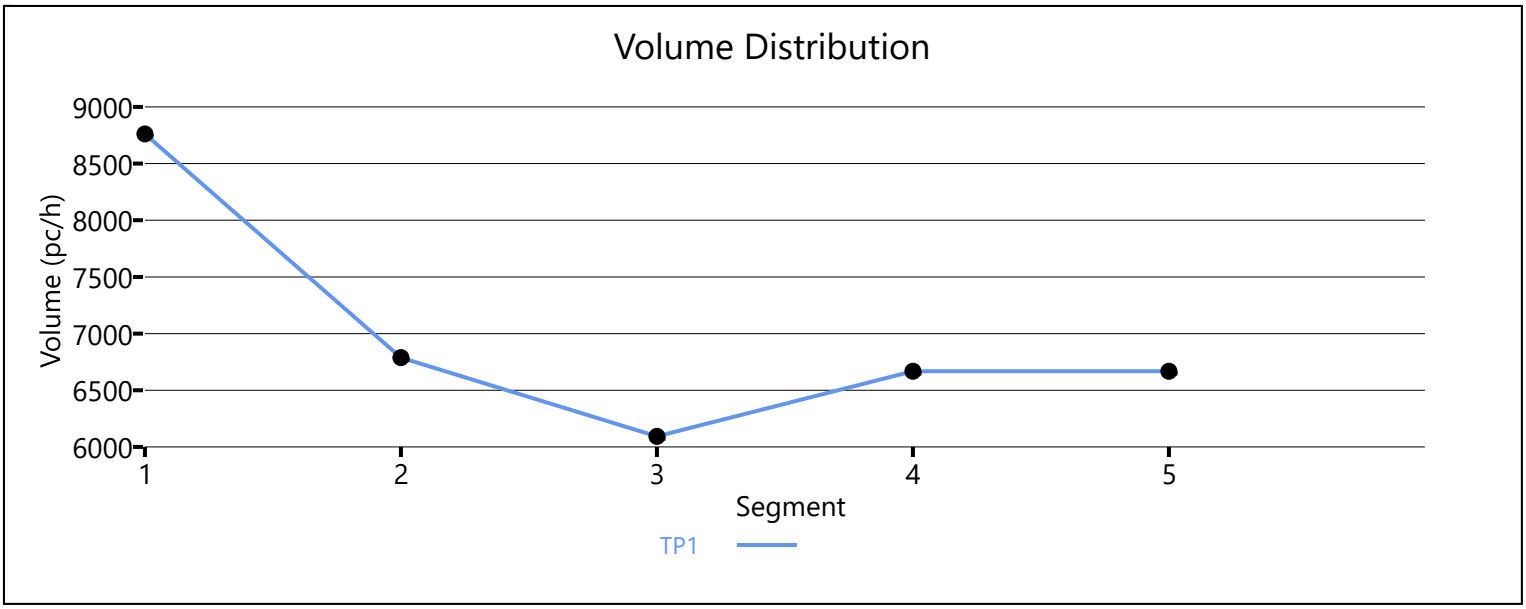
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.952	6668	7161	1.23	57.9	38.4	F

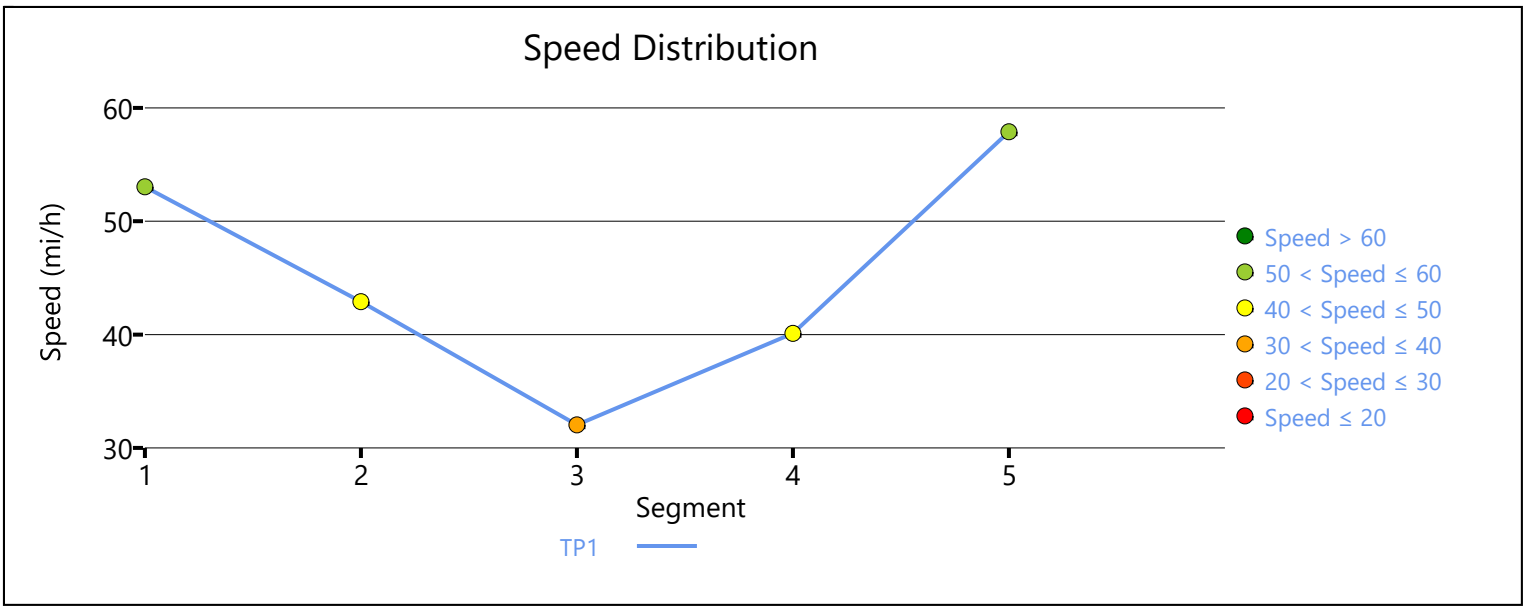
Facility Time Period Results

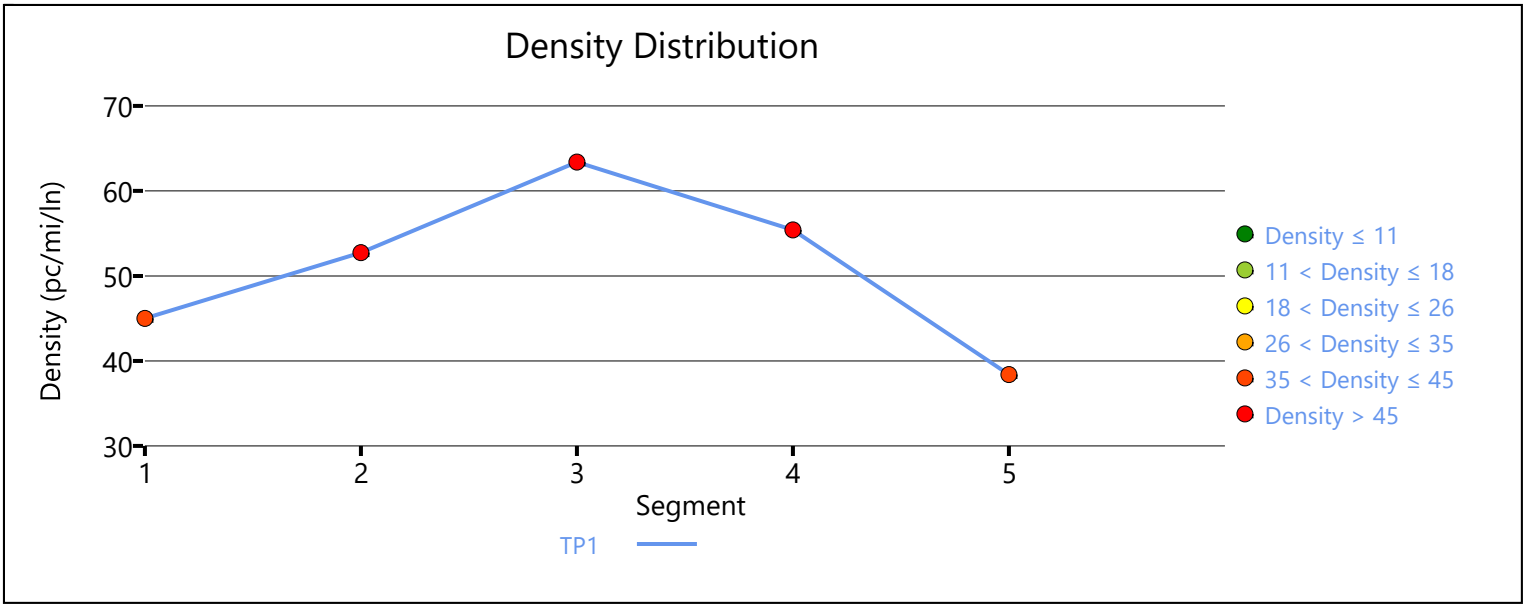
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	43.5	50.6	48.2	3.0	F

Facility Overall Results

Space Mean Speed, mi/h	43.5	Density, veh/mi/ln	48.2
Average Travel Time, min	3.0	Density, pc/mi/ln	50.6







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Post-2040 With Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Southbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	North of Baxter	3300	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2020	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	South of Baxter	4425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.952	9458	7161	1.32	53.0	45.0	F

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.952	0.943	6404	498	7200	2100	1.31	0.24	35.4	60.4	60.4	58.1	F

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.952	5772	7161	1.25	27.1	71.0	F

Segment 4: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.952	0.962	6668	933	7200	2100	1.37	0.44	40.1	0.0	55.4	55.7	F

Segment 5: Basic

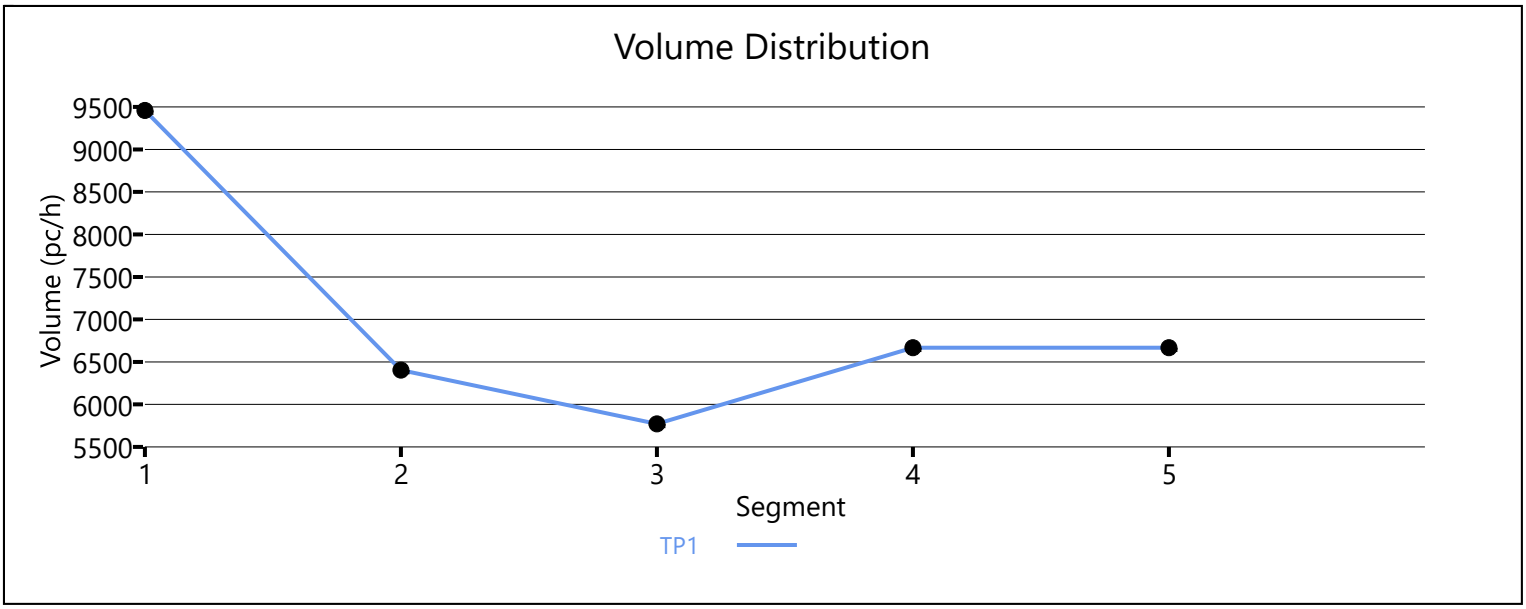
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.952	6668	7161	1.38	57.9	38.4	F

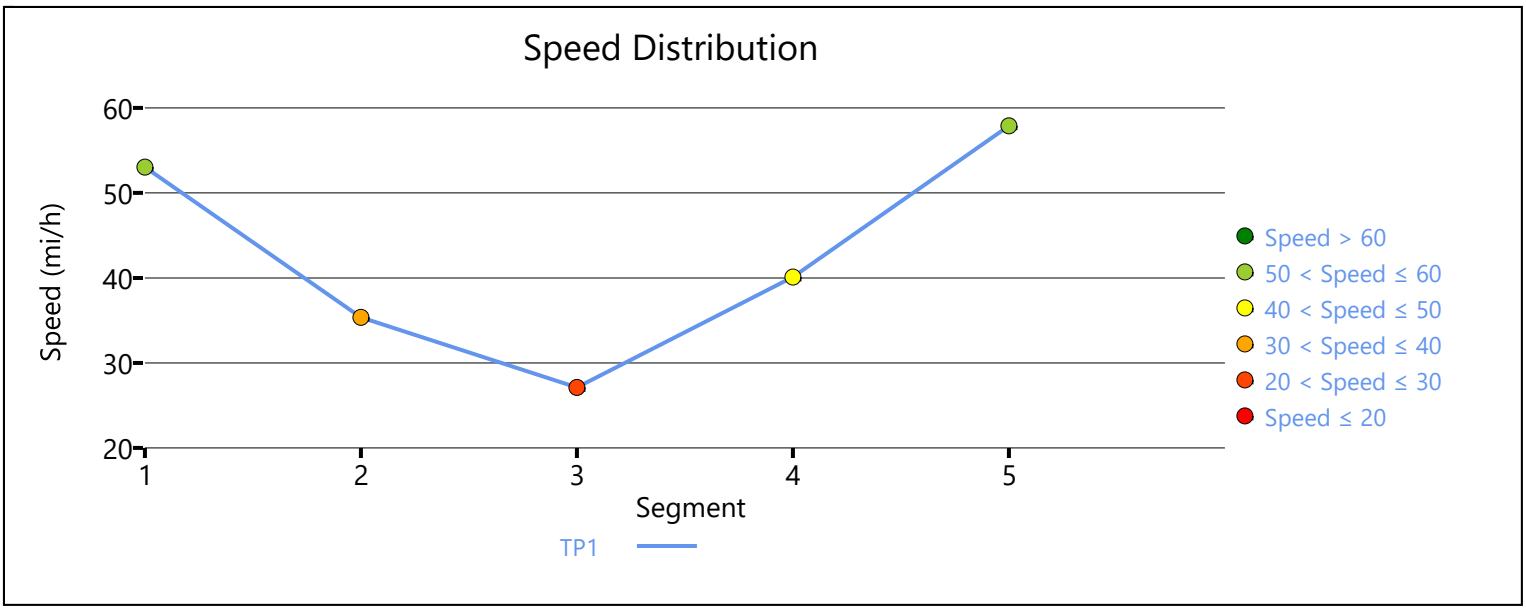
Facility Time Period Results

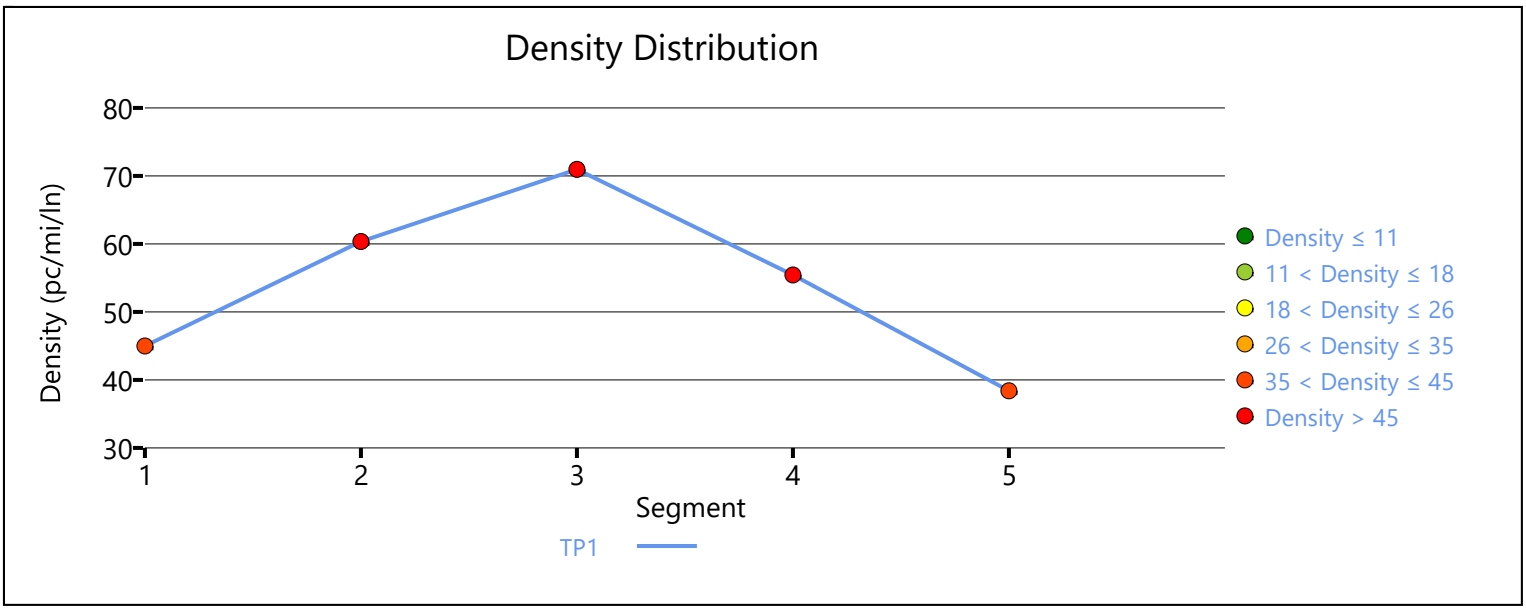
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	40.2	53.5	50.9	3.6	F

Facility Overall Results

Space Mean Speed, mi/h	40.2	Density, veh/mi/ln	50.9
Average Travel Time, min	3.6	Density, pc/mi/ln	53.5







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Post-2040 With Project
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Northbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	South of Baxter	2680	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2220	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	North of Baxter	3425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.926	7752	7161	1.08	53.0	45.0	F

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.926	0.962	7161	780	7200	2100	1.08	0.37	63.3	59.7	37.7	37.6	F

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	6381	7161	0.98	60.1	35.4	E

Segment 4: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.971	7012	631	7200	2100	1.06	0.30	56.4	53.6	41.4	35.1	F

Segment 5: Basic

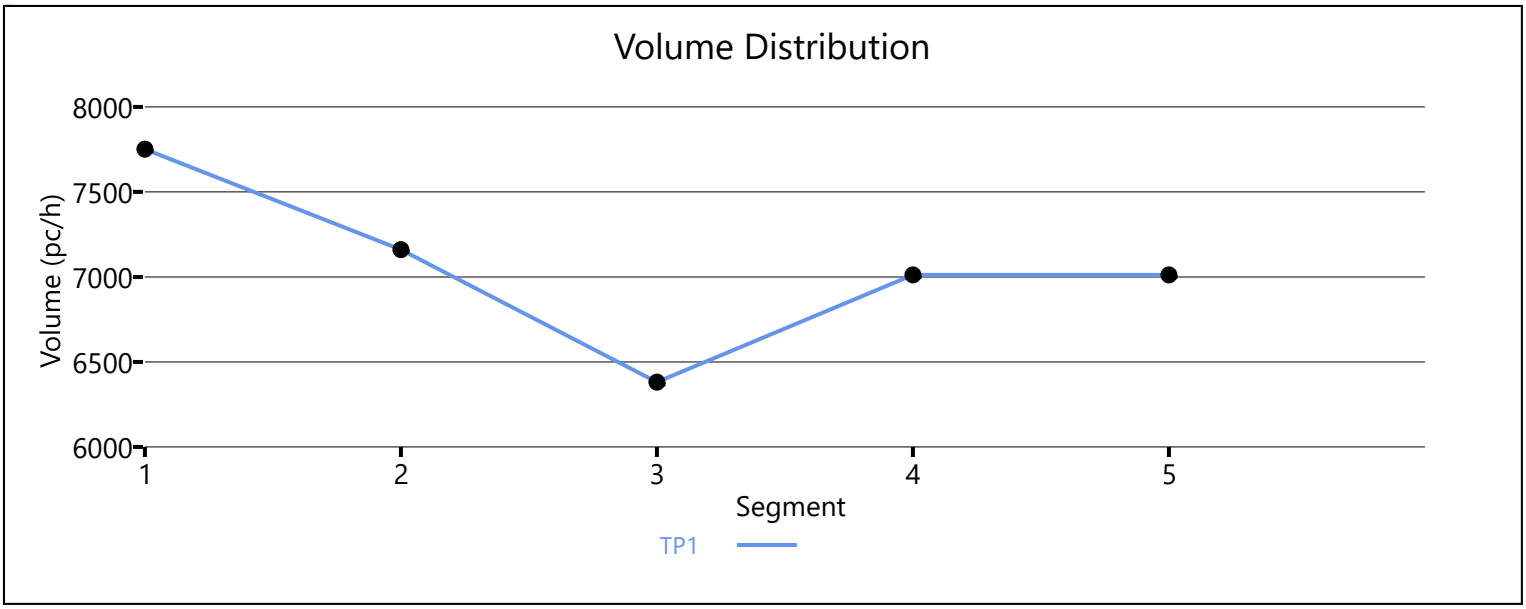
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.926	7012	7161	1.06	55.0	42.5	F

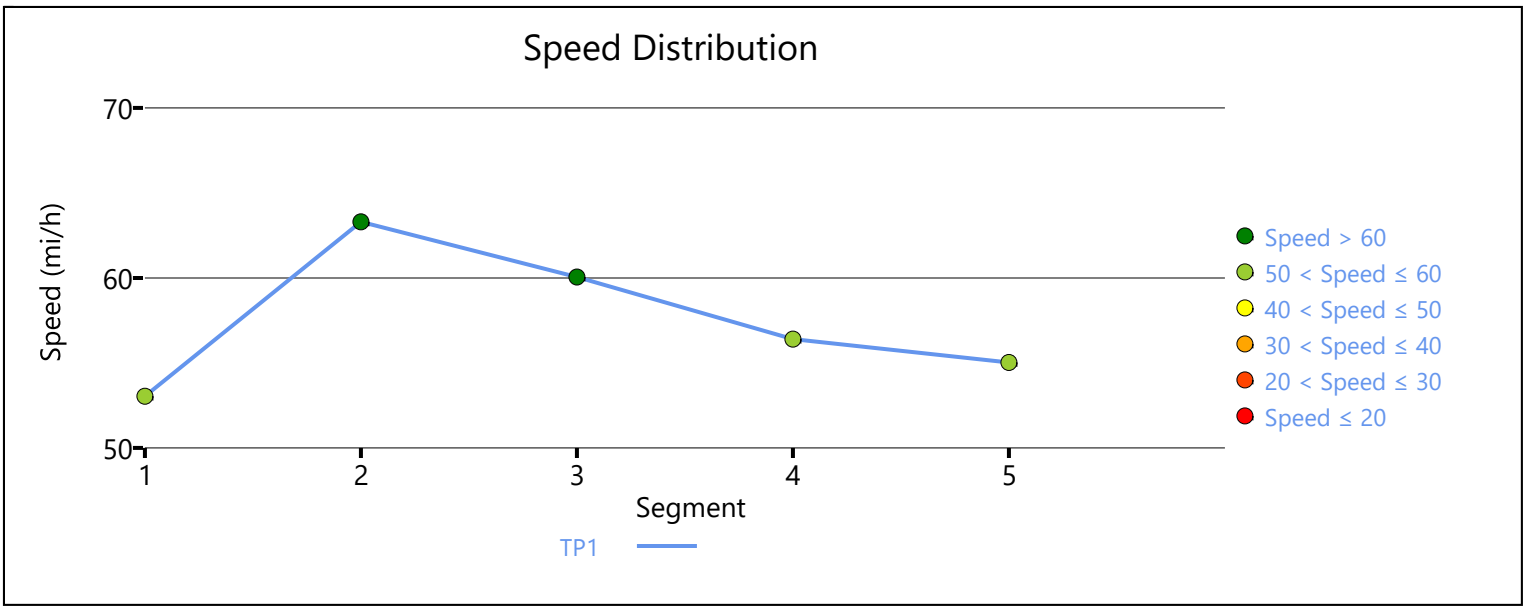
Facility Time Period Results

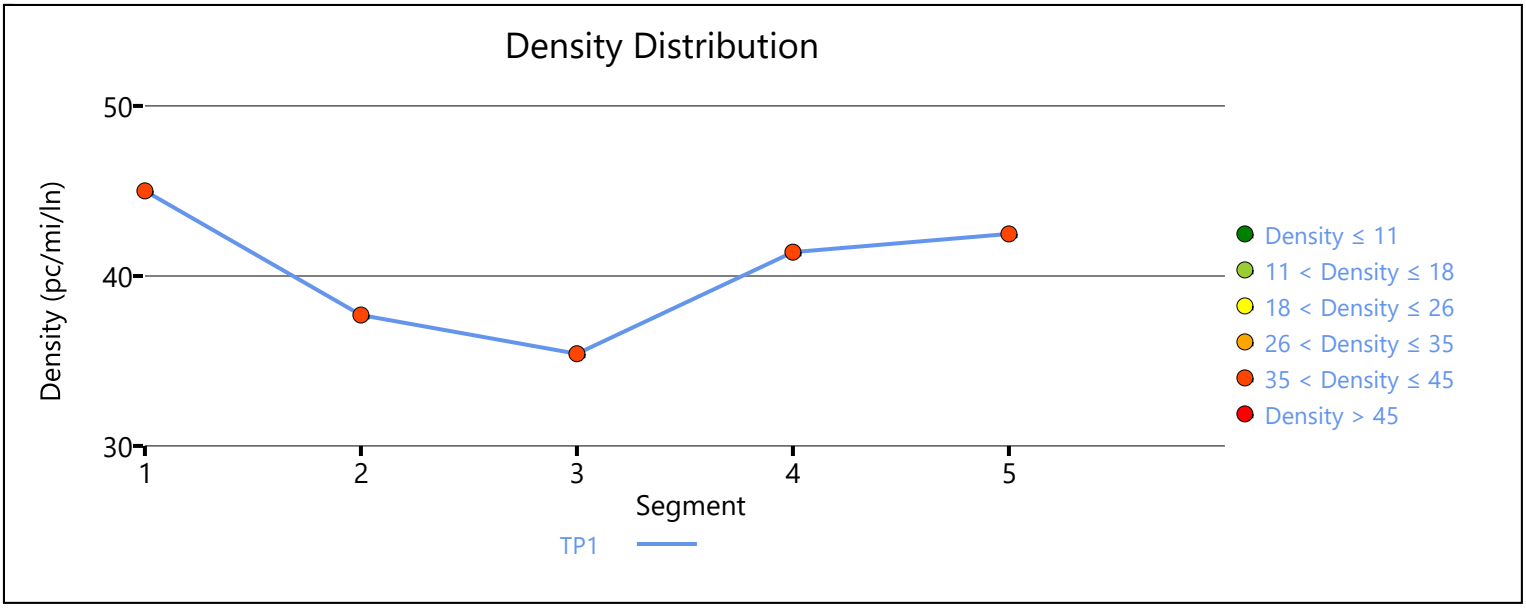
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	56.7	40.8	37.7	2.3	F

Facility Overall Results

Space Mean Speed, mi/h	56.7	Density, veh/mi/ln	37.7
Average Travel Time, min	2.3	Density, pc/mi/ln	40.8







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APPENDIX 7.8:

GENERAL PLAN BUILDOUT (2040) WITH PROJECT INTERSECTION OPERATIONS ANALYSIS WORKSHEETS WITH IMPROVEMENTS

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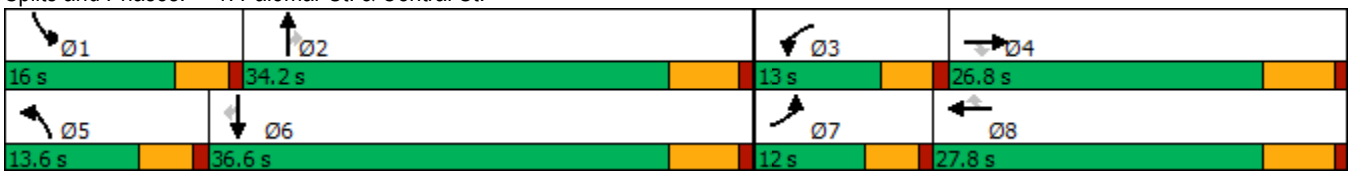
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	396	168	159	261	177	143	974	217	290	835	142
Future Volume (vph)	151	396	168	159	261	177	143	974	217	290	835	142
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	26.8	26.8	9.6	26.8	26.8	9.6	26.8	26.8	9.6	26.8	26.8
Total Split (s)	12.0	26.8	26.8	13.0	27.8	27.8	13.6	34.2	34.2	16.0	36.6	36.6
Total Split (%)	13.3%	29.8%	29.8%	14.4%	30.9%	30.9%	15.1%	38.0%	38.0%	17.8%	40.7%	40.7%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	4.8	3.6	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	5.8	4.6	5.8	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	7.4	16.0	16.0	8.4	17.0	17.0	9.0	28.5	28.5	11.4	30.9	30.9
Actuated g/C Ratio	0.09	0.19	0.19	0.10	0.20	0.20	0.11	0.33	0.33	0.13	0.36	0.36
v/c Ratio	1.06	0.65	0.41	0.99	0.40	0.41	0.83	0.90	0.38	1.33	0.71	0.23
Control Delay	132.4	36.7	7.7	107.8	31.2	7.3	73.9	39.0	11.1	206.5	27.4	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	132.4	36.7	7.7	107.8	31.2	7.3	73.9	39.0	11.1	206.5	27.4	5.3
LOS	F	D	A	F	C	A	E	D	B	F	C	A
Approach Delay		50.1			44.5			38.2			65.9	
Approach LOS		D			D			D			E	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 85.1	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.33	
Intersection Signal Delay: 50.3	Intersection LOS: D
Intersection Capacity Utilization 80.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Palomar St. & Central St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	396	168	159	261	177	143	974	217	290	835	142
Future Volume (veh/h)	151	396	168	159	261	177	143	974	217	290	835	142
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	164	430	137	173	284	144	155	1059	177	315	908	116
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	585	261	181	628	280	189	1222	545	246	1335	595
Arrive On Green	0.09	0.16	0.16	0.10	0.18	0.18	0.11	0.34	0.34	0.14	0.38	0.38
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	164	430	137	173	284	144	155	1059	177	315	908	116
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	7.4	9.5	6.5	8.0	5.9	6.8	7.0	23.0	6.8	11.4	17.7	4.1
Cycle Q Clear(g_c), s	7.4	9.5	6.5	8.0	5.9	6.8	7.0	23.0	6.8	11.4	17.7	4.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	160	585	261	181	628	280	189	1222	545	246	1335	595
V/C Ratio(X)	1.03	0.74	0.53	0.95	0.45	0.51	0.82	0.87	0.32	1.28	0.68	0.19
Avail Cap(c_a), veh/h	160	904	403	181	947	422	194	1222	545	246	1335	595
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.6	32.8	31.6	36.9	30.4	30.8	36.1	25.3	20.0	35.6	21.6	17.4
Incr Delay (d2), s/veh	78.7	1.8	1.6	53.2	0.5	1.5	21.4	8.4	1.6	153.9	2.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	4.0	2.5	5.9	2.4	2.5	4.0	10.1	2.5	15.1	7.1	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	116.3	34.6	33.2	90.1	30.9	32.3	57.5	33.7	21.6	189.5	24.4	18.1
LnGrp LOS	F	C	C	F	C	C	E	C	C	F	C	B
Approach Vol, veh/h		731			601			1391			1339	
Approach Delay, s/veh		52.7			48.3			34.8			62.7	
Approach LOS		D			D			C			E	

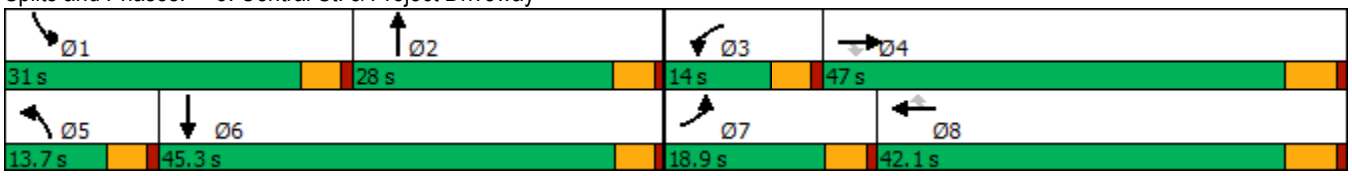
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	34.2	13.0	19.4	13.4	36.8	12.0	20.4
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	11.4	28.4	8.4	21.0	9.0	30.8	7.4	22.0
Max Q Clear Time (g_c+I1), s	13.4	25.0	10.0	11.5	9.0	19.7	9.4	8.8
Green Ext Time (p_c), s	0.0	2.2	0.0	2.1	0.0	4.6	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	49.2
HCM 6th LOS	D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	82	970	11	66	643	112	49	64	280	95
Future Volume (vph)	82	970	11	66	643	112	49	64	280	95
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	27.8	27.8	9.6	27.8	27.8	9.6	26.7	9.6	26.6
Total Split (s)	18.9	47.0	47.0	14.0	42.1	42.1	13.7	28.0	31.0	45.3
Total Split (%)	15.8%	39.2%	39.2%	11.7%	35.1%	35.1%	11.4%	23.3%	25.8%	37.8%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	4.8	3.6	3.7	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	5.8	4.6	4.7	4.6	4.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None
Act Effct Green (s)	9.7	42.2	42.2	7.9	40.5	40.5	7.4	17.2	21.4	33.9
Actuated g/C Ratio	0.09	0.40	0.40	0.07	0.38	0.38	0.07	0.16	0.20	0.32
v/c Ratio	0.55	0.74	0.02	0.55	0.51	0.17	0.43	0.81	0.85	0.33
Control Delay	62.0	34.3	0.0	67.6	30.4	1.2	62.8	43.7	63.9	24.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.0	34.3	0.0	67.6	30.4	1.2	62.8	43.7	63.9	24.7
LOS	E	C	A	E	C	A	E	D	E	C
Approach Delay		36.1			29.4			46.6		48.6
Approach LOS		D			C			D		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 106.3	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 37.5	Intersection LOS: D
Intersection Capacity Utilization 79.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Central St. & Project Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	970	11	66	643	112	49	64	208	280	95	84
Future Volume (veh/h)	82	970	11	66	643	112	49	64	208	280	95	84
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	88	1043	12	72	691	120	53	70	226	301	103	90
Peak Hour Factor	0.93	0.93	0.92	0.92	0.93	0.93	0.92	0.92	0.92	0.93	0.92	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	112	1355	604	92	1316	587	68	77	249	332	319	279
Arrive On Green	0.06	0.38	0.38	0.05	0.37	0.37	0.04	0.20	0.20	0.19	0.35	0.35
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	389	1255	1781	921	805
Grp Volume(v), veh/h	88	1043	12	72	691	120	53	0	296	301	0	193
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	0	1644	1781	0	1726
Q Serve(g_s), s	5.3	27.8	0.5	4.3	16.4	5.6	3.2	0.0	19.0	17.9	0.0	8.9
Cycle Q Clear(g_c), s	5.3	27.8	0.5	4.3	16.4	5.6	3.2	0.0	19.0	17.9	0.0	8.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.76	1.00		0.47
Lane Grp Cap(c), veh/h	112	1355	604	92	1316	587	68	0	326	332	0	598
V/C Ratio(X)	0.79	0.77	0.02	0.78	0.53	0.20	0.78	0.00	0.91	0.91	0.00	0.32
Avail Cap(c_a), veh/h	236	1355	604	155	1316	587	150	0	354	435	0	650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.9	29.3	20.9	50.6	26.6	23.2	51.5	0.0	42.4	43.0	0.0	26.0
Incr Delay (d2), s/veh	4.5	4.3	0.1	5.3	1.5	0.8	6.9	0.0	25.2	16.3	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	11.9	0.2	2.0	6.9	2.1	1.5	0.0	9.9	9.4	0.0	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.5	33.6	20.9	55.9	28.1	24.0	58.4	0.0	67.5	59.4	0.0	26.3
LnGrp LOS	D	C	C	E	C	C	E	A	E	E	A	C
Approach Vol, veh/h		1143			883			349			494	
Approach Delay, s/veh		35.0			29.8			66.2			46.4	
Approach LOS		D			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.8	26.1	10.2	47.0	8.7	42.1	11.4	45.8
Change Period (Y+Rc), s	4.6	* 4.7	4.6	5.8	4.6	* 4.7	4.6	5.8
Max Green Setting (Gmax), s	26.4	* 23	9.4	41.2	9.1	* 41	14.3	36.3
Max Q Clear Time (g_c+I1), s	19.9	21.0	6.3	29.8	5.2	10.9	7.3	18.4
Green Ext Time (p_c), s	0.3	0.4	0.0	5.1	0.0	1.3	0.0	4.4

Intersection Summary	
HCM 6th Ctrl Delay	39.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↱			↱
Traffic Vol, veh/h	0	1325	776	87	0	33
Future Vol, veh/h	0	1325	776	87	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1440	843	95	0	36

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	469
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	541
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	541
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

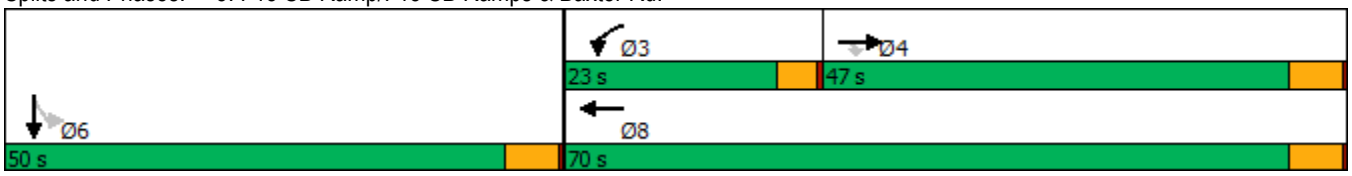
Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	541
HCM Lane V/C Ratio	-	-	-	0.066
HCM Control Delay (s)	-	-	-	12.1
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.2

Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Configurations					
Traffic Volume (vph)	833	491	160	568	4
Future Volume (vph)	833	491	160	568	4
Turn Type	NA	Perm	Prot	NA	NA
Protected Phases	4		3	8	6
Permitted Phases		4			
Detector Phase	4	4	3	8	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	20.3	20.3	9.1	20.3	20.3
Total Split (s)	47.0	47.0	23.0	70.0	50.0
Total Split (%)	39.2%	39.2%	19.2%	58.3%	41.7%
Yellow Time (s)	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	4.1	5.3	5.3
Lead/Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes		
Recall Mode	Max	Max	None	Max	None
Act Effct Green (s)	44.8	44.8	15.8	64.7	44.7
Actuated g/C Ratio	0.37	0.37	0.13	0.54	0.37
v/c Ratio	0.73	0.75	0.79	0.34	1.06
Control Delay	36.8	25.1	73.4	16.3	85.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	36.8	25.1	73.4	16.3	85.5
LOS	D	C	E	B	F
Approach Delay	32.5			28.8	85.5
Approach LOS	C			C	F

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.06	
Intersection Signal Delay: 43.6	Intersection LOS: D
Intersection Capacity Utilization 86.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 5: I-15 SB Ramp/I-15 SB Ramps & Baxter Rd.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	833	491	160	568	0	0	0	0	308	4	294
Future Volume (veh/h)	0	833	491	160	568	0	0	0	0	308	4	294
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	0	1870	1870	1870	1870	0				1900	1900	1900
Adj Flow Rate, veh/h	0	957	416	184	653	0				354	5	338
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87				0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	2	2	0				0	0	0
Cap, veh/h	0	1373	612	212	1916	0				323	5	308
Arrive On Green	0.00	0.39	0.39	0.12	0.54	0.00				0.37	0.37	0.37
Sat Flow, veh/h	0	3647	1585	1781	3647	0				867	12	828
Grp Volume(v), veh/h	0	957	416	184	653	0				697	0	0
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1781	1777	0				1708	0	0
Q Serve(g_s), s	0.0	27.1	26.2	12.2	12.4	0.0				44.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	27.1	26.2	12.2	12.4	0.0				44.7	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				0.51		0.48
Lane Grp Cap(c), veh/h	0	1373	612	212	1916	0				636	0	0
V/C Ratio(X)	0.00	0.70	0.68	0.87	0.34	0.00				1.10	0.00	0.00
Avail Cap(c_a), veh/h	0	1373	612	281	1916	0				636	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	30.9	30.6	52.0	15.6	0.0				37.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	3.0	6.0	16.3	0.5	0.0				64.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.6	10.6	6.3	4.8	0.0				29.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	33.9	36.6	68.3	16.1	0.0				102.3	0.0	0.0
LnGrp LOS	A	C	D	E	B	A				F	A	A
Approach Vol, veh/h		1373			837						697	
Approach Delay, s/veh		34.7			27.6						102.3	
Approach LOS		C			C						F	

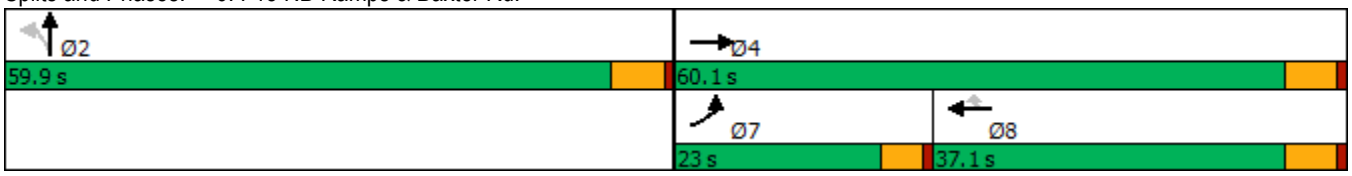
Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		18.3	51.7		50.0		70.0					
Change Period (Y+Rc), s		4.1	5.3		5.3		5.3					
Max Green Setting (Gmax), s		18.9	41.7		44.7		64.7					
Max Q Clear Time (g_c+I1), s		14.2	29.1		46.7		14.4					
Green Ext Time (p_c), s		0.1	6.1		0.0		4.6					

Intersection Summary	
HCM 6th Ctrl Delay	48.9
HCM 6th LOS	D

Lane Group	EBL	EBT	WBT	WBR	NBT
Lane Configurations					
Traffic Volume (vph)	345	796	463	198	4
Future Volume (vph)	345	796	463	198	4
Turn Type	Prot	NA	NA	Perm	NA
Protected Phases	7	4	8		2
Permitted Phases				8	
Detector Phase	7	4	8	8	2
Switch Phase					
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0
Minimum Split (s)	9.6	20.8	20.8	20.8	20.8
Total Split (s)	23.0	60.1	37.1	37.1	59.9
Total Split (%)	19.2%	50.1%	30.9%	30.9%	49.9%
Yellow Time (s)	3.6	4.8	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	5.8	5.8
Lead/Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	None	Max	Max	Max	None
Act Effct Green (s)	18.6	54.8	31.6	31.6	41.1
Actuated g/C Ratio	0.17	0.51	0.29	0.29	0.38
v/c Ratio	1.34	0.52	0.53	0.40	0.91
Control Delay	211.0	20.5	35.8	12.8	47.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	211.0	20.5	35.8	12.8	47.7
LOS	F	C	D	B	D
Approach Delay		78.1	28.9		47.7
Approach LOS		E	C		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 107.6	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.34	
Intersection Signal Delay: 57.3	Intersection LOS: E
Intersection Capacity Utilization 86.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 6: I-15 NB Ramps & Baxter Rd.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	345	796	0	0	463	198	266	4	244	0	0	0
Future Volume (veh/h)	345	796	0	0	463	198	266	4	244	0	0	0
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	1826	1841	0	0	1811	1856	1900	1900	1900			
Adj Flow Rate, veh/h	397	915	0	0	532	172	306	5	210			
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87			
Percent Heavy Veh, %	5	4	0	0	6	3	0	0	0			
Cap, veh/h	321	1904	0	0	1080	494	344	6	236			
Arrive On Green	0.18	0.54	0.00	0.00	0.31	0.31	0.34	0.34	0.34			
Sat Flow, veh/h	1739	3589	0	0	3532	1572	1013	17	695			
Grp Volume(v), veh/h	397	915	0	0	532	172	521	0	0			
Grp Sat Flow(s),veh/h/ln	1739	1749	0	0	1721	1572	1724	0	0			
Q Serve(g_s), s	18.4	16.1	0.0	0.0	12.5	8.4	28.5	0.0	0.0			
Cycle Q Clear(g_c), s	18.4	16.1	0.0	0.0	12.5	8.4	28.5	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.59		0.40			
Lane Grp Cap(c), veh/h	321	1904	0	0	1080	494	585	0	0			
V/C Ratio(X)	1.24	0.48	0.00	0.00	0.49	0.35	0.89	0.00	0.00			
Avail Cap(c_a), veh/h	321	1904	0	0	1080	494	935	0	0			
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	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	40.7	14.0	0.0	0.0	27.8	26.4	31.2	0.0	0.0			
Incr Delay (d2), s/veh	130.7	0.9	0.0	0.0	1.6	1.9	6.7	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	19.1	5.8	0.0	0.0	5.1	3.2	12.1	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	171.4	14.9	0.0	0.0	29.4	28.3	37.9	0.0	0.0			
LnGrp LOS	F	B	A	A	C	C	D	A	A			
Approach Vol, veh/h		1312			704			521				
Approach Delay, s/veh		62.2			29.1			37.9				
Approach LOS		E			C			D				

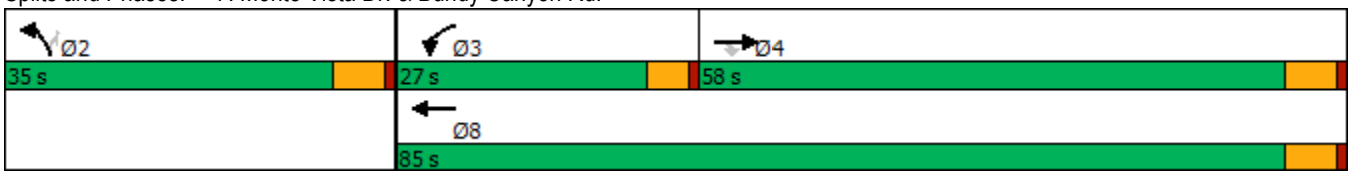
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		39.6		60.1			23.0	37.1				
Change Period (Y+Rc), s		5.8		5.8			4.6	5.8				
Max Green Setting (Gmax), s		54.1		54.3			18.4	31.3				
Max Q Clear Time (g_c+I1), s		30.5		18.1			20.4	14.5				
Green Ext Time (p_c), s		3.3		6.9			0.0	3.5				

Intersection Summary												
HCM 6th Ctrl Delay			48.1									
HCM 6th LOS			D									

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	797	290	342	1415	215	383
Future Volume (vph)	797	290	342	1415	215	383
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	22.8	22.8	9.6	15.8	22.8	22.8
Total Split (s)	58.0	58.0	27.0	85.0	35.0	35.0
Total Split (%)	48.3%	48.3%	22.5%	70.8%	29.2%	29.2%
Yellow Time (s)	4.8	4.8	3.6	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	4.6	5.8	5.8	5.8
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	Max	Max	None	Max	None	None
Act Effct Green (s)	59.1	59.1	15.5	79.3	14.5	14.5
Actuated g/C Ratio	0.56	0.56	0.15	0.75	0.14	0.14
v/c Ratio	0.30	0.31	0.74	0.40	0.73	0.55
Control Delay	13.5	4.0	52.2	5.3	33.0	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.5	4.0	52.2	5.3	33.0	11.5
LOS	B	A	D	A	C	B
Approach Delay	11.0			14.4	26.1	
Approach LOS	B			B	C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 105.4	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 15.4	Intersection LOS: B
Intersection Capacity Utilization 48.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 7: Monte Vista Dr. & Bundy Canyon Rd.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	797	290	342	1415	215	383
Future Volume (veh/h)	797	290	342	1415	215	383
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	866	315	372	1538	217	435
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2834	880	442	3702	301	535
Arrive On Green	0.55	0.55	0.13	0.73	0.17	0.17
Sat Flow, veh/h	5274	1585	3456	5274	1781	3170
Grp Volume(v), veh/h	866	315	372	1538	217	435
Grp Sat Flow(s),veh/h/ln	1702	1585	1728	1702	1781	1585
Q Serve(g_s), s	9.9	12.1	11.5	12.9	12.6	14.4
Cycle Q Clear(g_c), s	9.9	12.1	11.5	12.9	12.6	14.4
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2834	880	442	3702	301	535
V/C Ratio(X)	0.31	0.36	0.84	0.42	0.72	0.81
Avail Cap(c_a), veh/h	2834	880	709	3702	476	847
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.0	13.5	46.5	5.9	43.0	43.7
Incr Delay (d2), s/veh	0.3	1.1	2.6	0.3	3.3	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	4.2	4.9	3.6	5.6	5.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.3	14.6	49.2	6.3	46.2	47.1
LnGrp LOS	B	B	D	A	D	D
Approach Vol, veh/h	1181			1910	652	
Approach Delay, s/veh	13.7			14.6	46.8	
Approach LOS	B			B	D	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		24.2	18.6	66.4		85.0
Change Period (Y+Rc), s		5.8	4.6	5.8		5.8
Max Green Setting (Gmax), s		29.2	22.4	52.2		79.2
Max Q Clear Time (g_c+I1), s		16.4	13.5	14.1		14.9
Green Ext Time (p_c), s		2.0	0.5	7.9		15.8

Intersection Summary	
HCM 6th Ctrl Delay	19.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	555	487	373	306	344	288
Future Volume (vph)	555	487	373	306	344	288
Turn Type	Prot	NA	NA	pm+ov	Prot	Perm
Protected Phases	7	4	8	6	6	
Permitted Phases				8		6
Detector Phase	7	4	8	6	6	6
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	9.6	15.8	22.8	22.8	22.8	22.8
Total Split (s)	49.0	83.0	34.0	37.0	37.0	37.0
Total Split (%)	40.8%	69.2%	28.3%	30.8%	30.8%	30.8%
Yellow Time (s)	3.6	4.8	4.8	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	5.8	5.8	5.8
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Max	Max	None	None	None
Act Effct Green (s)	42.2	77.3	30.5	65.9	29.6	29.6
Actuated g/C Ratio	0.36	0.65	0.26	0.56	0.25	0.25
v/c Ratio	0.96	0.44	0.85	0.36	0.91	0.48
Control Delay	64.6	11.7	60.6	10.2	69.4	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.6	11.7	60.6	10.2	69.4	7.0
LOS	E	B	E	B	E	A
Approach Delay		39.9	37.8		43.8	
Approach LOS		D	D		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 118.5	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 40.3	Intersection LOS: D
Intersection Capacity Utilization 88.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 8: Baxter Rd. & Monte Vista Dr.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	555	487	373	306	344	288
Future Volume (veh/h)	555	487	373	306	344	288
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	603	529	405	333	374	313
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	628	1249	515	804	413	368
Arrive On Green	0.35	0.67	0.28	0.28	0.23	0.23
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	603	529	405	333	374	313
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	38.3	15.2	23.2	15.2	23.6	21.9
Cycle Q Clear(g_c), s	38.3	15.2	23.2	15.2	23.6	21.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	628	1249	515	804	413	368
V/C Ratio(X)	0.96	0.42	0.79	0.41	0.90	0.85
Avail Cap(c_a), veh/h	684	1249	515	804	481	428
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.6	8.9	38.8	17.8	43.2	42.5
Incr Delay (d2), s/veh	23.4	1.1	11.5	1.6	18.8	13.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.8	5.6	11.8	8.7	12.1	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	60.0	10.0	50.3	19.3	61.9	56.0
LnGrp LOS	E	A	D	B	E	E
Approach Vol, veh/h		1132	738		687	
Approach Delay, s/veh		36.6	36.3		59.2	
Approach LOS		D	D		E	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			83.0		32.6	45.4	37.6
Change Period (Y+Rc), s			5.8		5.8	4.6	5.8
Max Green Setting (Gmax), s			77.2		31.2	44.4	28.2
Max Q Clear Time (g_c+I1), s			17.2		25.6	40.3	25.2
Green Ext Time (p_c), s			3.4		1.2	0.5	1.1

Intersection Summary	
HCM 6th Ctrl Delay	42.6
HCM 6th LOS	D

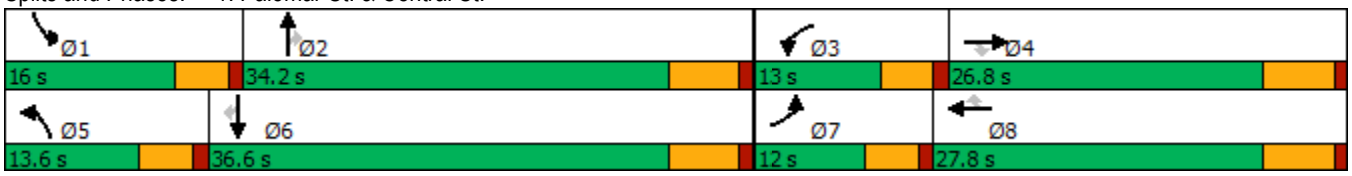
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	344	61	189	371	306	128	977	282	184	560	80
Future Volume (vph)	62	344	61	189	371	306	128	977	282	184	560	80
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	26.8	26.8	9.6	26.8	26.8	9.6	26.8	26.8	9.6	26.8	26.8
Total Split (s)	12.0	26.8	26.8	13.0	27.8	27.8	13.6	34.2	34.2	16.0	36.6	36.6
Total Split (%)	13.3%	29.8%	29.8%	14.4%	30.9%	30.9%	15.1%	38.0%	38.0%	17.8%	40.7%	40.7%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	4.8	3.6	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	5.8	4.6	5.8	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	6.6	14.5	14.5	8.4	18.4	18.4	8.5	28.5	28.5	10.9	30.9	30.9
Actuated g/C Ratio	0.08	0.17	0.17	0.10	0.22	0.22	0.10	0.34	0.34	0.13	0.37	0.37
v/c Ratio	0.45	0.57	0.16	1.08	0.49	0.54	0.72	0.82	0.43	0.81	0.43	0.12
Control Delay	48.3	35.2	0.9	129.6	31.6	8.3	60.9	33.0	10.7	63.2	21.6	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.3	35.2	0.9	129.6	31.6	8.3	60.9	33.0	10.7	63.2	21.6	0.8
LOS	D	D	A	F	C	A	E	C	B	E	C	A
Approach Delay		32.4			44.8			31.0			28.9	
Approach LOS		C			D			C			C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 83.2	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 34.1	Intersection LOS: C
Intersection Capacity Utilization 74.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Palomar St. & Central St.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	344	61	189	371	306	128	977	282	184	560	80
Future Volume (veh/h)	62	344	61	189	371	306	128	977	282	184	560	80
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	63	351	47	193	379	234	131	997	225	188	571	62
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	85	500	223	190	711	317	164	1284	573	226	1407	627
Arrive On Green	0.05	0.14	0.14	0.11	0.20	0.20	0.09	0.36	0.36	0.13	0.40	0.40
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	63	351	47	193	379	234	131	997	225	188	571	62
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	2.7	7.4	2.1	8.4	7.5	10.9	5.7	19.6	8.3	8.1	9.1	1.9
Cycle Q Clear(g_c), s	2.7	7.4	2.1	8.4	7.5	10.9	5.7	19.6	8.3	8.1	9.1	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	85	500	223	190	711	317	164	1284	573	226	1407	627
V/C Ratio(X)	0.74	0.70	0.21	1.01	0.53	0.74	0.80	0.78	0.39	0.83	0.41	0.10
Avail Cap(c_a), veh/h	168	949	423	190	994	443	204	1284	573	258	1407	627
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.0	32.2	29.9	35.1	28.2	29.5	35.0	22.3	18.7	33.5	17.1	14.9
Incr Delay (d2), s/veh	4.8	1.8	0.5	69.0	0.6	4.0	13.0	4.7	2.0	16.3	0.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	3.1	0.8	7.0	3.0	4.2	2.9	8.0	3.0	4.3	3.4	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.7	34.0	30.4	104.1	28.8	33.5	48.0	27.0	20.7	49.8	18.0	15.3
LnGrp LOS	D	C	C	F	C	C	D	C	C	D	B	B
Approach Vol, veh/h		461			806			1353			821	
Approach Delay, s/veh		34.7			48.2			28.0			25.1	
Approach LOS		C			D			C			C	

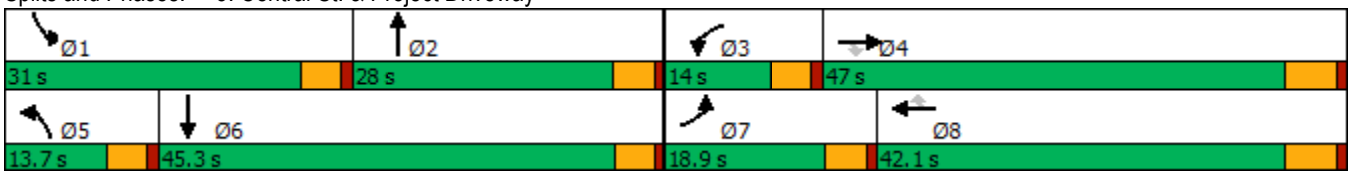
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.6	34.2	13.0	16.9	11.8	36.9	8.3	21.5
Change Period (Y+Rc), s	4.6	5.8	4.6	5.8	4.6	5.8	4.6	5.8
Max Green Setting (Gmax), s	11.4	28.4	8.4	21.0	9.0	30.8	7.4	22.0
Max Q Clear Time (g_c+I1), s	10.1	21.6	10.4	9.4	7.7	11.1	4.7	12.9
Green Ext Time (p_c), s	0.0	3.8	0.0	1.7	0.0	3.6	0.0	2.1

Intersection Summary	
HCM 6th Ctrl Delay	32.9
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	80	837	61	225	964	316	19	110	208	93
Future Volume (vph)	80	837	61	225	964	316	19	110	208	93
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	27.8	27.8	9.6	27.8	27.8	9.6	26.7	9.6	26.6
Total Split (s)	18.9	47.0	47.0	14.0	42.1	42.1	13.7	28.0	31.0	45.3
Total Split (%)	15.8%	39.2%	39.2%	11.7%	35.1%	35.1%	11.4%	23.3%	25.8%	37.8%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	4.8	3.6	3.7	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	5.8	4.6	4.7	4.6	4.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None
Act Effct Green (s)	9.3	41.6	41.6	9.5	44.0	44.0	6.0	16.9	17.0	34.3
Actuated g/C Ratio	0.09	0.40	0.40	0.09	0.42	0.42	0.06	0.16	0.16	0.33
v/c Ratio	0.52	0.62	0.09	1.54	0.67	0.42	0.21	0.75	0.75	0.22
Control Delay	59.5	29.2	0.3	304.6	31.0	13.8	55.5	52.3	58.6	24.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.5	29.2	0.3	304.6	31.0	13.8	55.5	52.3	58.6	24.3
LOS	E	C	A	F	C	B	E	D	E	C
Approach Delay		29.8			70.2			52.5		45.4
Approach LOS		C			E			D		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 104.8	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.54	
Intersection Signal Delay: 53.2	Intersection LOS: D
Intersection Capacity Utilization 75.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Central St. & Project Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	837	61	225	964	316	19	110	102	208	93	31
Future Volume (veh/h)	80	837	61	225	964	316	19	110	102	208	93	31
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	82	863	50	245	994	245	21	120	84	214	101	25
Peak Hour Factor	0.97	0.97	0.92	0.92	0.97	0.97	0.92	0.92	0.92	0.97	0.92	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	105	1494	667	171	1625	725	40	146	102	250	377	93
Arrive On Green	0.06	0.42	0.42	0.10	0.46	0.46	0.02	0.14	0.14	0.14	0.26	0.26
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1024	717	1781	1448	358
Grp Volume(v), veh/h	82	863	50	245	994	245	21	0	204	214	0	126
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	0	1741	1781	0	1806
Q Serve(g_s), s	4.4	18.2	1.8	9.4	20.6	9.7	1.1	0.0	11.2	11.5	0.0	5.4
Cycle Q Clear(g_c), s	4.4	18.2	1.8	9.4	20.6	9.7	1.1	0.0	11.2	11.5	0.0	5.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.41	1.00		0.20
Lane Grp Cap(c), veh/h	105	1494	667	171	1625	725	40	0	247	250	0	470
V/C Ratio(X)	0.78	0.58	0.08	1.43	0.61	0.34	0.53	0.00	0.82	0.86	0.00	0.27
Avail Cap(c_a), veh/h	260	1494	667	171	1625	725	165	0	414	480	0	750
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.5	21.7	17.0	44.3	20.0	17.1	47.4	0.0	40.8	41.1	0.0	28.8
Incr Delay (d2), s/veh	4.6	1.6	0.2	225.3	1.7	1.3	4.0	0.0	6.8	3.3	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	7.3	0.7	14.7	8.1	3.5	0.5	0.0	5.2	5.3	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.1	23.4	17.2	269.5	21.8	18.3	51.4	0.0	47.6	44.4	0.0	29.1
LnGrp LOS	D	C	B	F	C	B	D	A	D	D	A	C
Approach Vol, veh/h		995			1484			225			340	
Approach Delay, s/veh		25.2			62.1			48.0			38.7	
Approach LOS		C			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.4	18.6	14.0	47.0	6.8	30.2	10.4	50.6
Change Period (Y+Rc), s	4.6	* 4.7	4.6	5.8	4.6	* 4.7	4.6	5.8
Max Green Setting (Gmax), s	26.4	* 23	9.4	41.2	9.1	* 41	14.3	36.3
Max Q Clear Time (g_c+I1), s	13.5	13.2	11.4	20.2	3.1	7.4	6.4	22.6
Green Ext Time (p_c), s	0.3	0.8	0.0	5.7	0.0	0.8	0.0	6.1

Intersection Summary	
HCM 6th Ctrl Delay	46.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↱			↱
Traffic Vol, veh/h	0	1153	1495	51	0	84
Future Vol, veh/h	0	1153	1495	51	0	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1253	1625	55	0	91

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	840
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	309
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	309
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

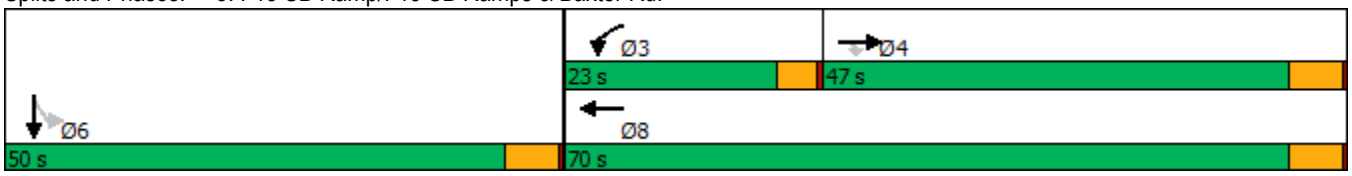
Approach	EB	WB	SB
HCM Control Delay, s	0	0	21.5
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	309
HCM Lane V/C Ratio	-	-	-	0.295
HCM Control Delay (s)	-	-	-	21.5
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	1.2

Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Configurations					
Traffic Volume (vph)	508	645	178	1204	3
Future Volume (vph)	508	645	178	1204	3
Turn Type	NA	Perm	Prot	NA	NA
Protected Phases	4		3	8	6
Permitted Phases		4			
Detector Phase	4	4	3	8	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	10.0
Minimum Split (s)	20.3	20.3	9.1	20.3	20.3
Total Split (s)	47.0	47.0	23.0	70.0	50.0
Total Split (%)	39.2%	39.2%	19.2%	58.3%	41.7%
Yellow Time (s)	4.8	4.8	3.6	4.8	4.8
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	4.1	5.3	5.3
Lead/Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes		
Recall Mode	Max	Max	None	Max	None
Act Effct Green (s)	46.2	46.2	14.8	65.1	32.8
Actuated g/C Ratio	0.43	0.43	0.14	0.60	0.30
v/c Ratio	0.37	0.69	0.76	0.62	0.89
Control Delay	24.6	9.8	66.5	16.9	51.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	24.6	9.8	66.5	16.9	51.9
LOS	C	A	E	B	D
Approach Delay	16.4			23.3	51.9
Approach LOS	B			C	D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 108.6	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 24.8	Intersection LOS: C
Intersection Capacity Utilization 88.7%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 5: I-15 SB Ramp/I-15 SB Ramps & Baxter Rd.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	508	645	178	1204	0	0	0	0	87	3	342
Future Volume (veh/h)	0	508	645	178	1204	0	0	0	0	87	3	342
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	0	1767	1796	1870	1781	0				1900	1411	1900
Adj Flow Rate, veh/h	0	524	665	184	1241	0				90	3	353
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	9	7	2	8	0				0	33	0
Cap, veh/h	0	1296	588	212	1825	0				92	3	361
Arrive On Green	0.00	0.39	0.39	0.12	0.54	0.00				0.37	0.37	0.37
Sat Flow, veh/h	0	3445	1522	1781	3474	0				247	8	969
Grp Volume(v), veh/h	0	524	665	184	1241	0				446	0	0
Grp Sat Flow(s),veh/h/ln	0	1678	1522	1781	1692	0				1224	0	0
Q Serve(g_s), s	0.0	13.6	46.4	12.2	32.0	0.0				43.2	0.0	0.0
Cycle Q Clear(g_c), s	0.0	13.6	46.4	12.2	32.0	0.0				43.2	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				0.20		0.79
Lane Grp Cap(c), veh/h	0	1296	588	212	1825	0				456	0	0
V/C Ratio(X)	0.00	0.40	1.13	0.87	0.68	0.00				0.98	0.00	0.00
Avail Cap(c_a), veh/h	0	1296	588	281	1825	0				456	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	26.8	36.8	52.0	20.1	0.0				37.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.9	78.7	16.3	2.1	0.0				36.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.4	29.1	6.3	12.1	0.0				16.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	27.7	115.6	68.3	22.2	0.0				73.5	0.0	0.0
LnGrp LOS	A	C	F	E	C	A				E	A	A
Approach Vol, veh/h		1189			1425						446	
Approach Delay, s/veh		76.9			28.1						73.5	
Approach LOS		E			C						E	

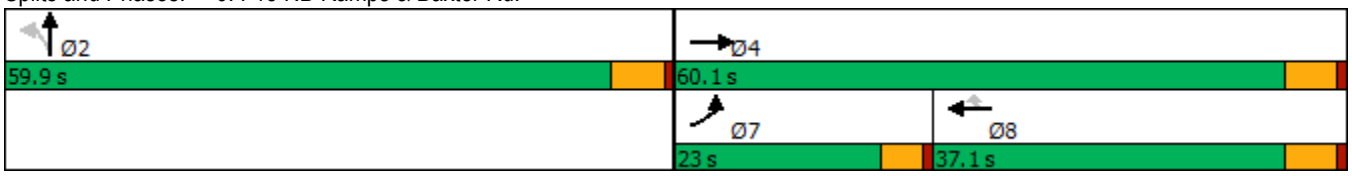
Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		18.3	51.7		50.0		70.0					
Change Period (Y+Rc), s		4.1	5.3		5.3		5.3					
Max Green Setting (Gmax), s		18.9	41.7		44.7		64.7					
Max Q Clear Time (g_c+I1), s		14.2	48.4		45.2		34.0					
Green Ext Time (p_c), s		0.1	0.0		0.0		10.2					

Intersection Summary	
HCM 6th Ctrl Delay	53.7
HCM 6th LOS	D

Lane Group	EBL	EBT	WBT	WBR	NBT
Lane Configurations					
Traffic Volume (vph)	234	362	841	324	6
Future Volume (vph)	234	362	841	324	6
Turn Type	Prot	NA	NA	Perm	NA
Protected Phases	7	4	8		2
Permitted Phases				8	
Detector Phase	7	4	8	8	2
Switch Phase					
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0
Minimum Split (s)	9.6	20.8	20.8	20.8	20.8
Total Split (s)	23.0	60.1	37.1	37.1	59.9
Total Split (%)	19.2%	50.1%	30.9%	30.9%	49.9%
Yellow Time (s)	3.6	4.8	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	5.8	5.8
Lead/Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	None	Max	Max	Max	None
Act Effct Green (s)	17.5	54.5	32.4	32.4	49.4
Actuated g/C Ratio	0.15	0.47	0.28	0.28	0.43
v/c Ratio	0.90	0.22	0.87	0.61	0.95
Control Delay	83.7	19.3	51.8	25.9	53.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	83.7	19.3	51.8	25.9	53.3
LOS	F	B	D	C	D
Approach Delay		44.6	44.6		53.3
Approach LOS		D	D		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 115.5	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 47.0	Intersection LOS: D
Intersection Capacity Utilization 88.7%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 6: I-15 NB Ramps & Baxter Rd.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	362	0	0	841	324	541	6	143	0	0	0
Future Volume (veh/h)	234	362	0	0	841	324	541	6	143	0	0	0
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	1870	1870	0	0	1870	1870	1900	1870	1900			
Adj Flow Rate, veh/h	241	373	0	0	867	250	558	6	110			
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	2	0	0	2	2	0	2	0			
Cap, veh/h	269	1715	0	0	1033	461	599	6	118			
Arrive On Green	0.15	0.48	0.00	0.00	0.29	0.29	0.41	0.41	0.41			
Sat Flow, veh/h	1781	3647	0	0	3647	1585	1446	16	285			
Grp Volume(v), veh/h	241	373	0	0	867	250	674	0	0			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1585	1747	0	0			
Q Serve(g_s), s	14.9	6.8	0.0	0.0	25.8	14.9	41.4	0.0	0.0			
Cycle Q Clear(g_c), s	14.9	6.8	0.0	0.0	25.8	14.9	41.4	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.83		0.16			
Lane Grp Cap(c), veh/h	269	1715	0	0	1033	461	724	0	0			
V/C Ratio(X)	0.90	0.22	0.00	0.00	0.84	0.54	0.93	0.00	0.00			
Avail Cap(c_a), veh/h	291	1715	0	0	1033	461	840	0	0			
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	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	46.9	16.8	0.0	0.0	37.4	33.6	31.4	0.0	0.0			
Incr Delay (d2), s/veh	25.5	0.3	0.0	0.0	8.2	4.5	15.5	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.3	2.7	0.0	0.0	11.8	6.1	19.3	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.4	17.1	0.0	0.0	45.6	38.2	46.9	0.0	0.0			
LnGrp LOS	E	B	A	A	D	D	D	A	A			
Approach Vol, veh/h		614			1117			674				
Approach Delay, s/veh		38.8			44.0			46.9				
Approach LOS		D			D			D				

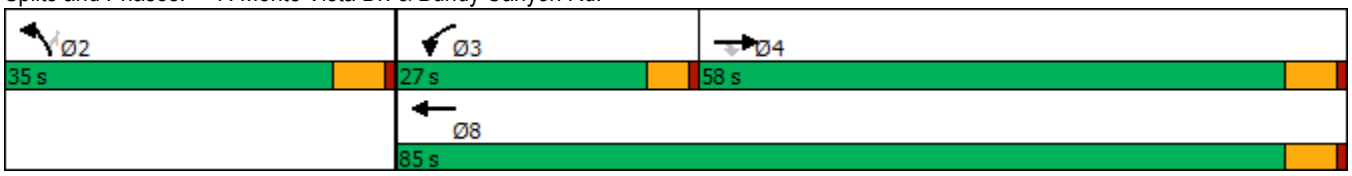
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		52.4		60.1			21.6	38.5				
Change Period (Y+Rc), s		5.8		5.8			4.6	5.8				
Max Green Setting (Gmax), s		54.1		54.3			18.4	31.3				
Max Q Clear Time (g_c+I1), s		43.4		8.8			16.9	27.8				
Green Ext Time (p_c), s		3.2		2.4			0.1	2.0				

Intersection Summary												
HCM 6th Ctrl Delay			43.5									
HCM 6th LOS			D									

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1736	287	433	1373	404	451
Future Volume (vph)	1736	287	433	1373	404	451
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	22.8	22.8	9.6	15.8	22.8	22.8
Total Split (s)	58.0	58.0	27.0	85.0	35.0	35.0
Total Split (%)	48.3%	48.3%	22.5%	70.8%	29.2%	29.2%
Yellow Time (s)	4.8	4.8	3.6	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	4.6	5.8	5.8	5.8
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	Max	Max	None	Max	None	None
Act Effct Green (s)	55.3	55.3	19.4	79.3	25.2	25.2
Actuated g/C Ratio	0.48	0.48	0.17	0.68	0.22	0.22
v/c Ratio	0.78	0.38	0.82	0.43	0.83	0.54
Control Delay	29.3	14.2	59.6	9.1	49.0	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.3	14.2	59.6	9.1	49.0	8.2
LOS	C	B	E	A	D	A
Approach Delay	27.1			21.2	36.1	
Approach LOS	C			C	D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 116.1	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 26.5	Intersection LOS: C
Intersection Capacity Utilization 75.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 7: Monte Vista Dr. & Bundy Canyon Rd.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1736	287	433	1373	404	451
Future Volume (veh/h)	1736	287	433	1373	404	451
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1887	312	471	1492	607	310
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2478	769	534	3469	788	350
Arrive On Green	0.49	0.49	0.15	0.68	0.22	0.22
Sat Flow, veh/h	5274	1585	3456	5274	3563	1585
Grp Volume(v), veh/h	1887	312	471	1492	607	310
Grp Sat Flow(s),veh/h/ln	1702	1585	1728	1702	1781	1585
Q Serve(g_s), s	35.2	14.7	15.6	15.4	18.6	22.1
Cycle Q Clear(g_c), s	35.2	14.7	15.6	15.4	18.6	22.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2478	769	534	3469	788	350
V/C Ratio(X)	0.76	0.41	0.88	0.43	0.77	0.88
Avail Cap(c_a), veh/h	2478	769	664	3469	892	397
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.5	19.2	48.2	8.5	42.6	44.0
Incr Delay (d2), s/veh	2.3	1.6	9.9	0.4	3.7	18.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.6	5.4	7.2	4.9	8.3	10.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	26.8	20.8	58.1	8.9	46.3	62.9
LnGrp LOS	C	C	E	A	D	E
Approach Vol, veh/h	2199			1963	917	
Approach Delay, s/veh	25.9			20.7	51.9	
Approach LOS	C			C	D	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		31.6	22.6	62.4		85.0
Change Period (Y+Rc), s		5.8	4.6	5.8		5.8
Max Green Setting (Gmax), s		29.2	22.4	52.2		79.2
Max Q Clear Time (g_c+I1), s		24.1	17.6	37.2		17.4
Green Ext Time (p_c), s		1.7	0.5	11.3		14.9

Intersection Summary	
HCM 6th Ctrl Delay	28.6
HCM 6th LOS	C

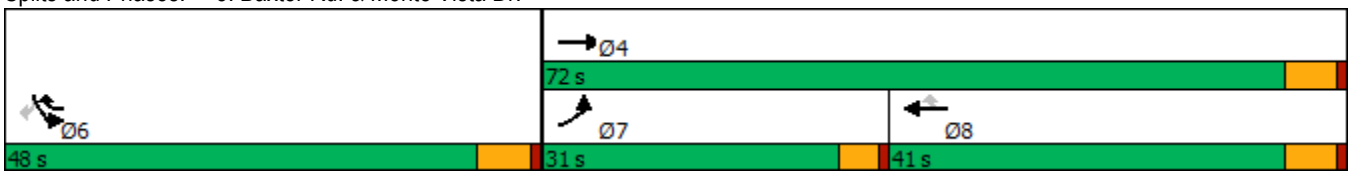
Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	306	189	446	581	255	719
Future Volume (vph)	306	189	446	581	255	719
Turn Type	Prot	NA	NA	pm+ov	Prot	Perm
Protected Phases	7	4	8	6	6	
Permitted Phases				8		6
Detector Phase	7	4	8	6	6	6
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	9.6	15.8	22.8	22.8	22.8	22.8
Total Split (s)	31.0	72.0	41.0	48.0	48.0	48.0
Total Split (%)	25.8%	60.0%	34.2%	40.0%	40.0%	40.0%
Yellow Time (s)	3.6	4.8	4.8	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	5.8	5.8	5.8
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Max	Max	None	None	None
Act Effct Green (s)	24.2	66.3	37.4	82.4	39.2	39.2
Actuated g/C Ratio	0.21	0.57	0.32	0.70	0.33	0.33
v/c Ratio	0.91	0.19	0.82	0.55	0.92	0.61
Control Delay	74.9	13.6	50.6	8.3	56.0	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.9	13.6	50.6	8.3	56.0	5.8
LOS	E	B	D	A	E	A
Approach Delay		51.5	26.7		31.6	
Approach LOS		D	C		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 117.1	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 33.5	Intersection LOS: C
Intersection Capacity Utilization 82.7%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 8: Baxter Rd. & Monte Vista Dr.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	306	189	446	581	255	719
Future Volume (veh/h)	306	189	446	581	255	719
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	333	205	485	632	513	530
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	359	1037	588	1051	621	552
Arrive On Green	0.20	0.55	0.31	0.31	0.35	0.35
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	333	205	485	632	513	530
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	21.9	6.5	28.7	26.7	31.5	39.1
Cycle Q Clear(g_c), s	21.9	6.5	28.7	26.7	31.5	39.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	359	1037	588	1051	621	552
V/C Ratio(X)	0.93	0.20	0.82	0.60	0.83	0.96
Avail Cap(c_a), veh/h	394	1037	588	1051	630	560
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.8	13.3	37.9	11.3	35.6	38.1
Incr Delay (d2), s/veh	25.7	0.4	12.5	2.6	8.8	27.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.9	2.7	14.6	19.4	14.5	4.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	72.5	13.7	50.3	13.8	44.4	66.0
LnGrp LOS	E	B	D	B	D	E
Approach Vol, veh/h		538	1117		1043	
Approach Delay, s/veh		50.1	29.7		55.4	
Approach LOS		D	C		E	

Timer - Assigned Phs		4		6	7	8
Phs Duration (G+Y+Rc), s		72.0		47.4	28.7	43.3
Change Period (Y+Rc), s		5.8		5.8	4.6	5.8
Max Green Setting (Gmax), s		66.2		42.2	26.4	35.2
Max Q Clear Time (g_c+I1), s		8.5		41.1	23.9	30.7
Green Ext Time (p_c), s		1.1		0.5	0.1	2.2

Intersection Summary	
HCM 6th Ctrl Delay	43.7
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

APPENDIX 7.9:

GENERAL PLAN BUILDOUT (2040) WITH PROJECT FREEWAY FACILITY ANALYSIS WORKSHEETS WITH IMPROVEMENTS

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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Post-2040 With Project with IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Southbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	North of Baxter	3300	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2020	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	South of Baxter	4425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.926	5755	7161	0.80	63.3	30.3	D

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.926	0.971	5755	678	7200	2100	0.80	0.32	64.0	59.9	30.0	31.4	D

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	5093	7161	0.71	66.3	25.6	C

Segment 4: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.962	5833	740	7200	2100	0.81	0.35	60.3	58.3	32.2	29.4	D

Segment 5: Basic

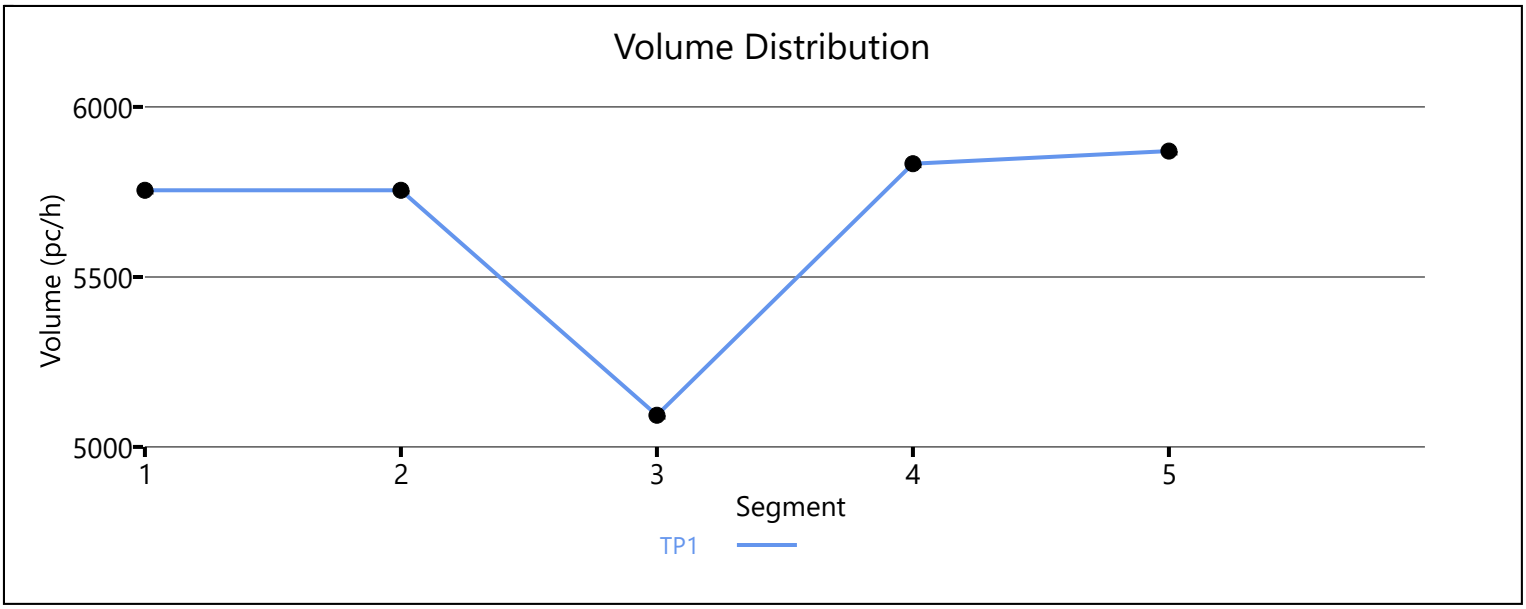
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	5870	7161	0.82	62.7	31.2	D

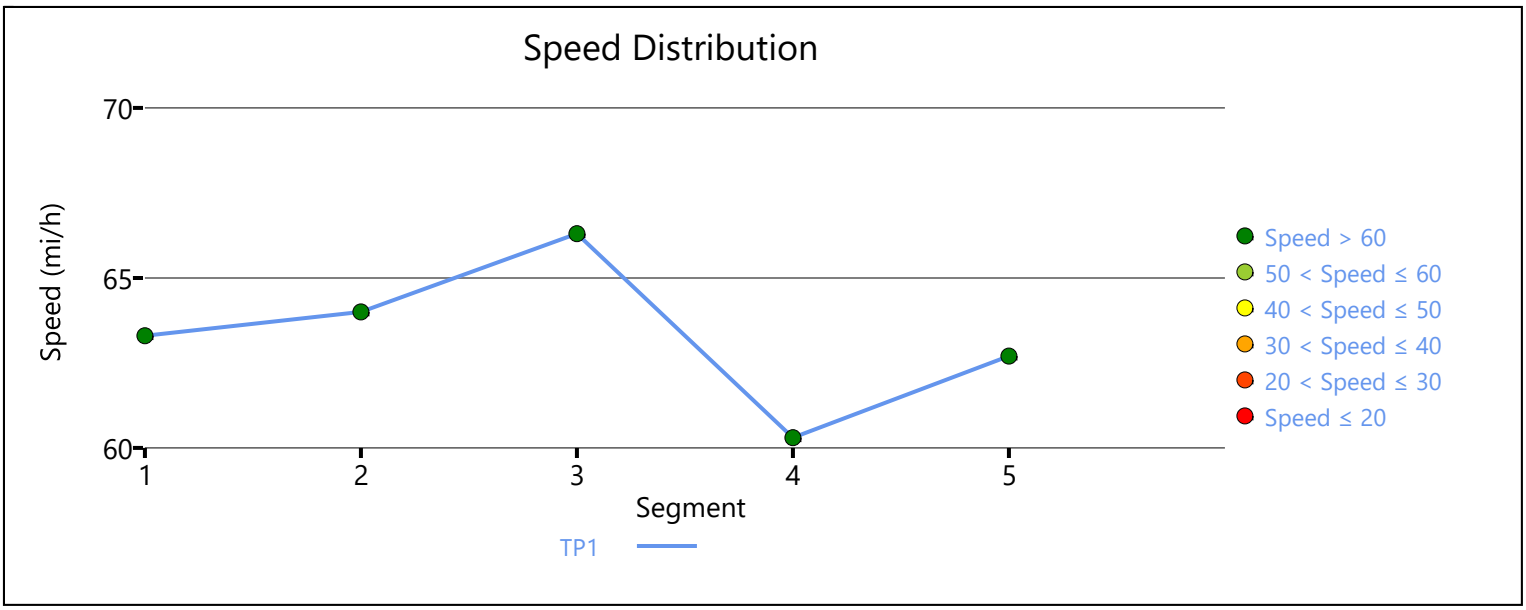
Facility Time Period Results

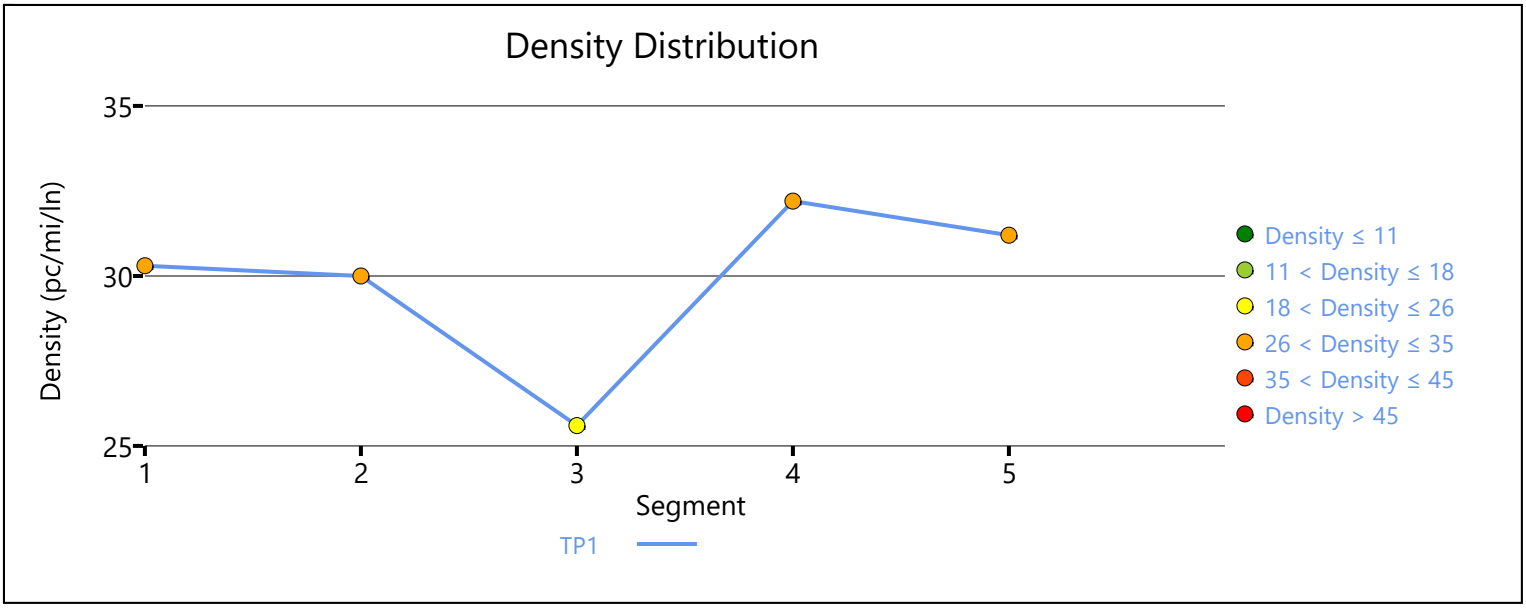
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	63.2	30.1	27.7	2.3	D

Facility Overall Results

Space Mean Speed, mi/h	63.2	Density, veh/mi/ln	27.7
Average Travel Time, min	2.3	Density, pc/mi/ln	30.1







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Post-2040 With Project with IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	AM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Northbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	South of Baxter	2680	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2220	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	North of Baxter	3425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.952	7530	7161	1.05	53.0	45.0	F

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.952	0.962	6799	581	7200	2100	1.05	0.28	43.2	60.2	52.5	40.8	F

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.943	6093	7161	0.98	32.4	62.8	F

Segment 4: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.943	0.971	6668	612	7200	2100	1.06	0.29	40.1	48.0	55.4	38.8	F

Segment 5: Basic

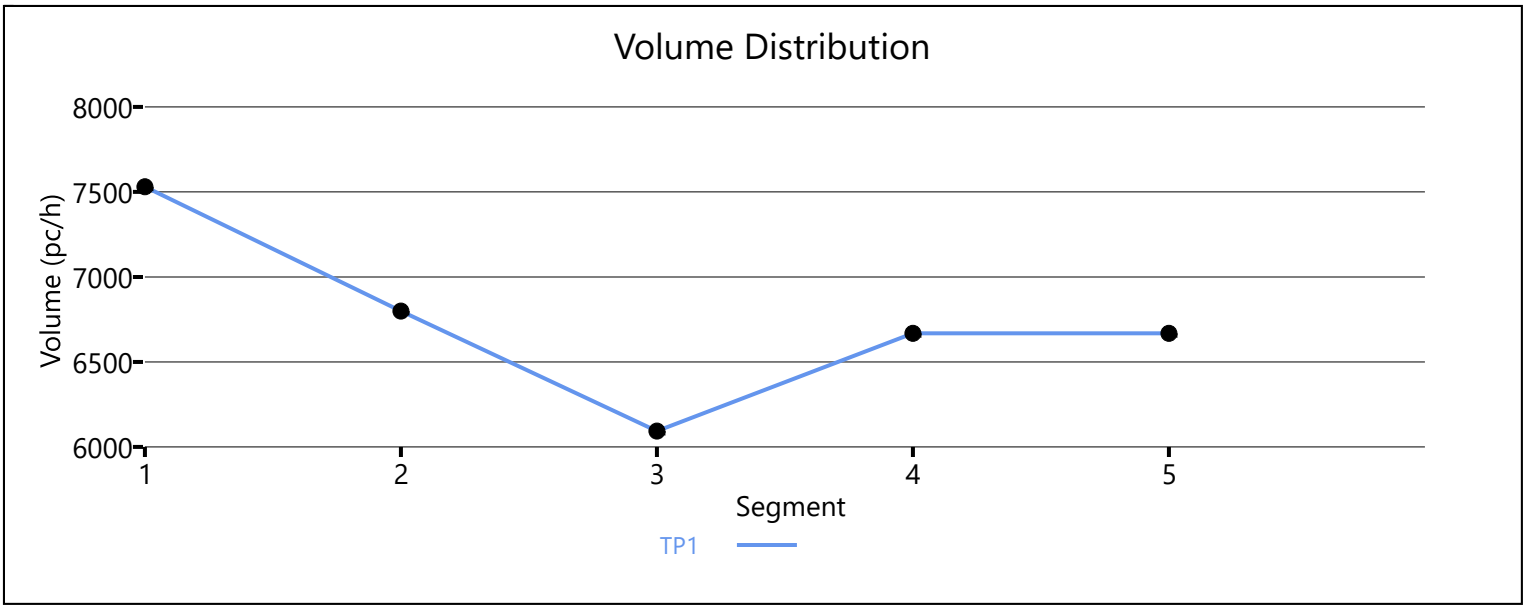
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.952	6668	7161	1.06	57.9	38.4	F

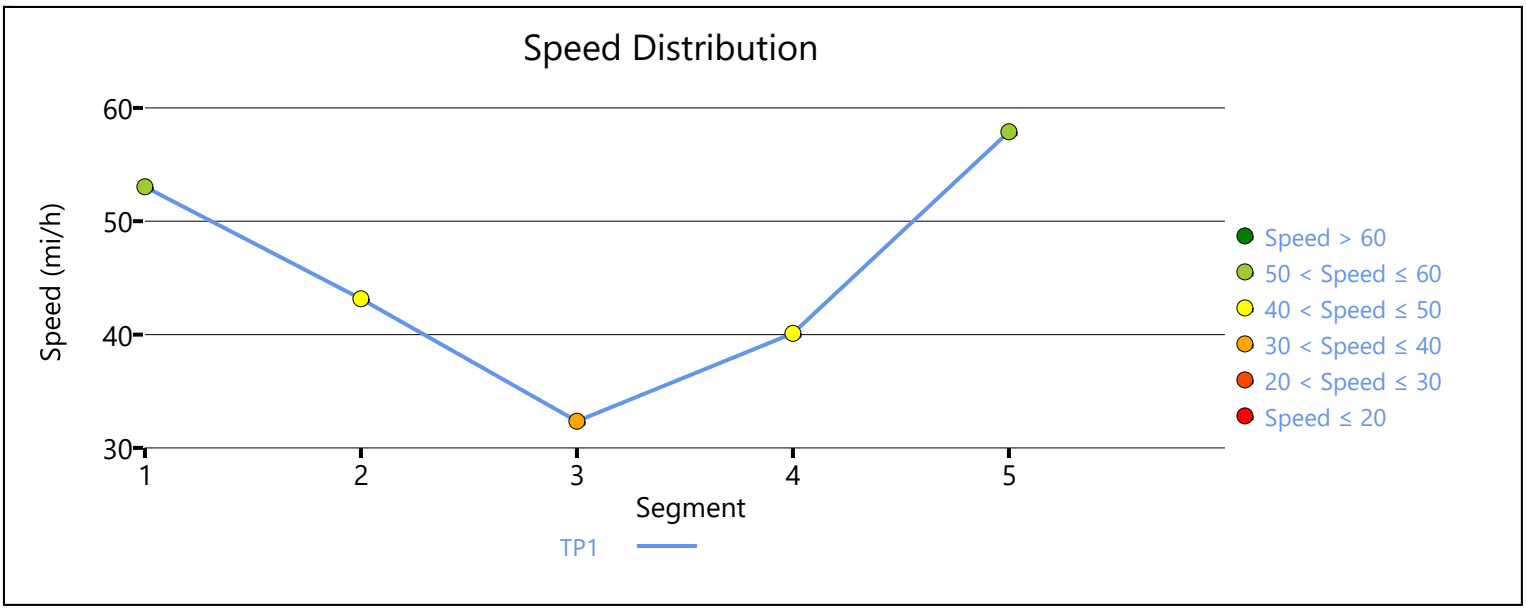
Facility Time Period Results

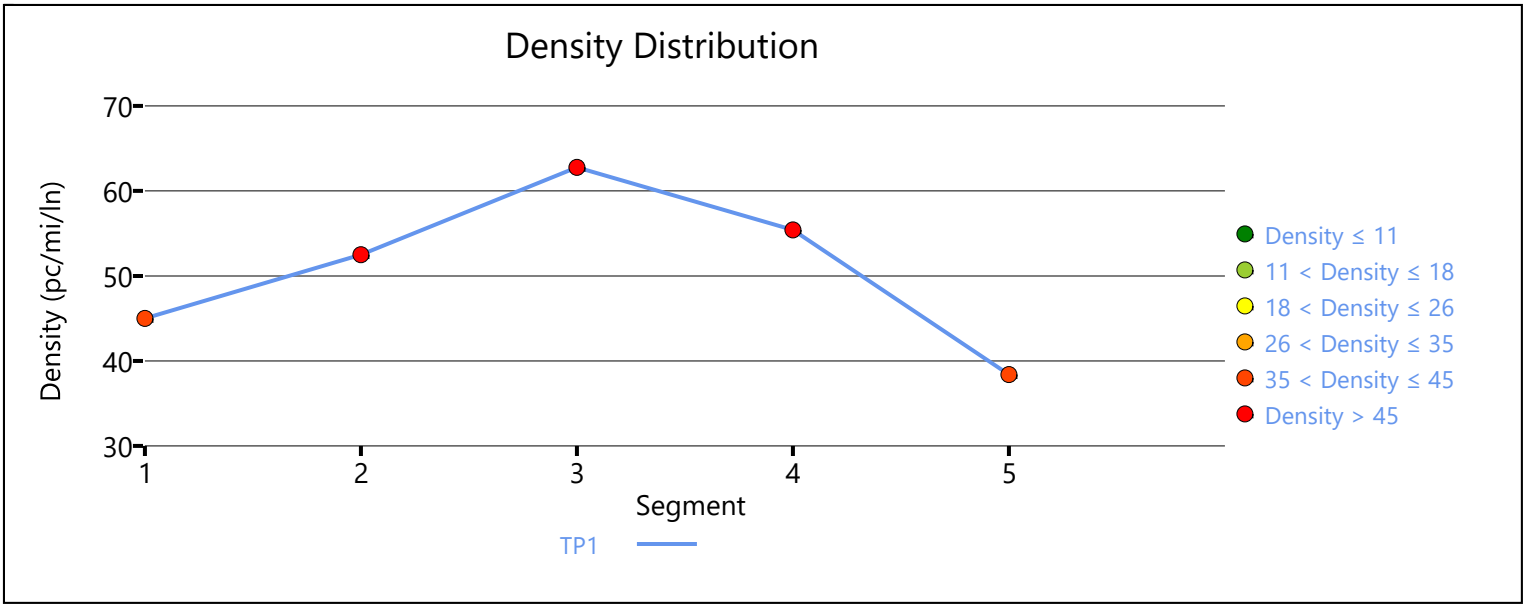
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	43.8	50.4	47.8	2.9	F

Facility Overall Results

Space Mean Speed, mi/h	43.8	Density, veh/mi/ln	47.8
Average Travel Time, min	2.9	Density, pc/mi/ln	50.4







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Post-2040 With Project with IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Southbound		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	North of Baxter	3300	3
2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2020	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	South of Baxter	4425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.943	8212	7161	1.15	53.0	45.0	F

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.943	0.943	6404	498	7200	2100	1.14	0.24	35.4	60.4	60.4	47.4	F

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.943	5772	7161	1.08	27.1	71.0	F

Segment 4: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.943	0.962	6668	933	7200	2100	1.20	0.44	40.1	21.4	55.4	46.0	F

Segment 5: Basic

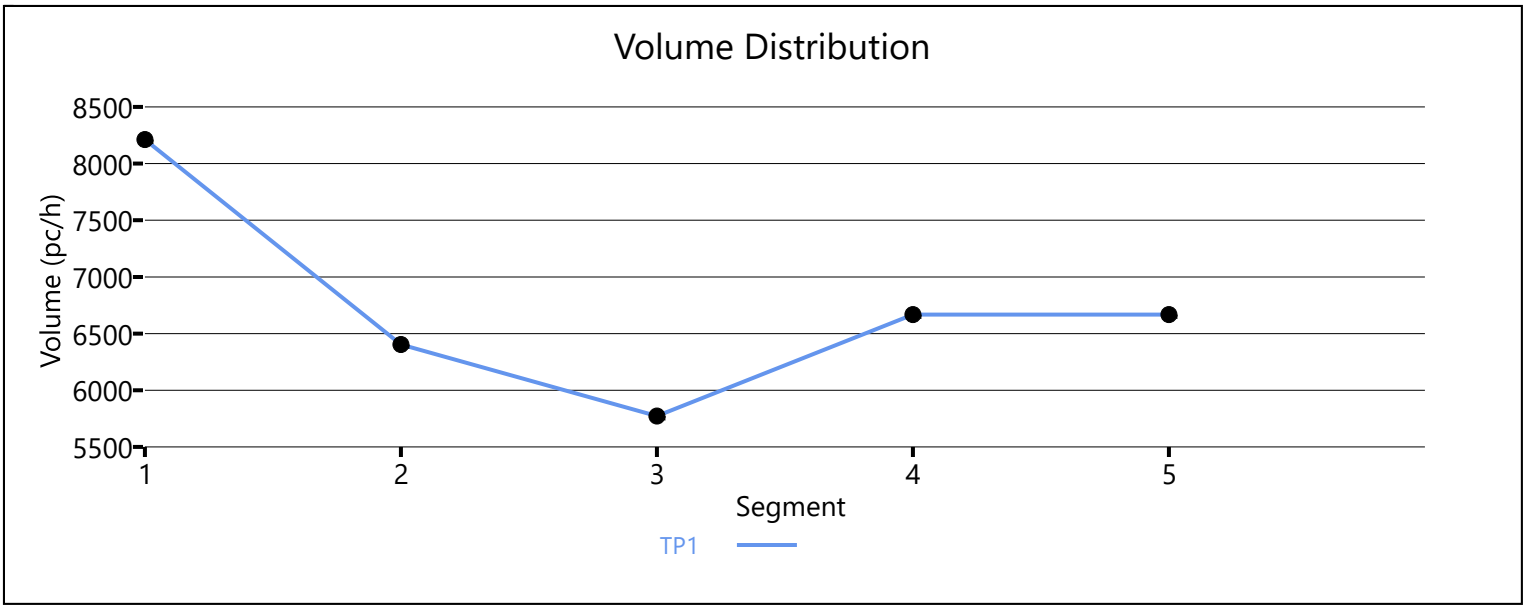
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.943	6668	7161	1.21	57.9	38.4	F

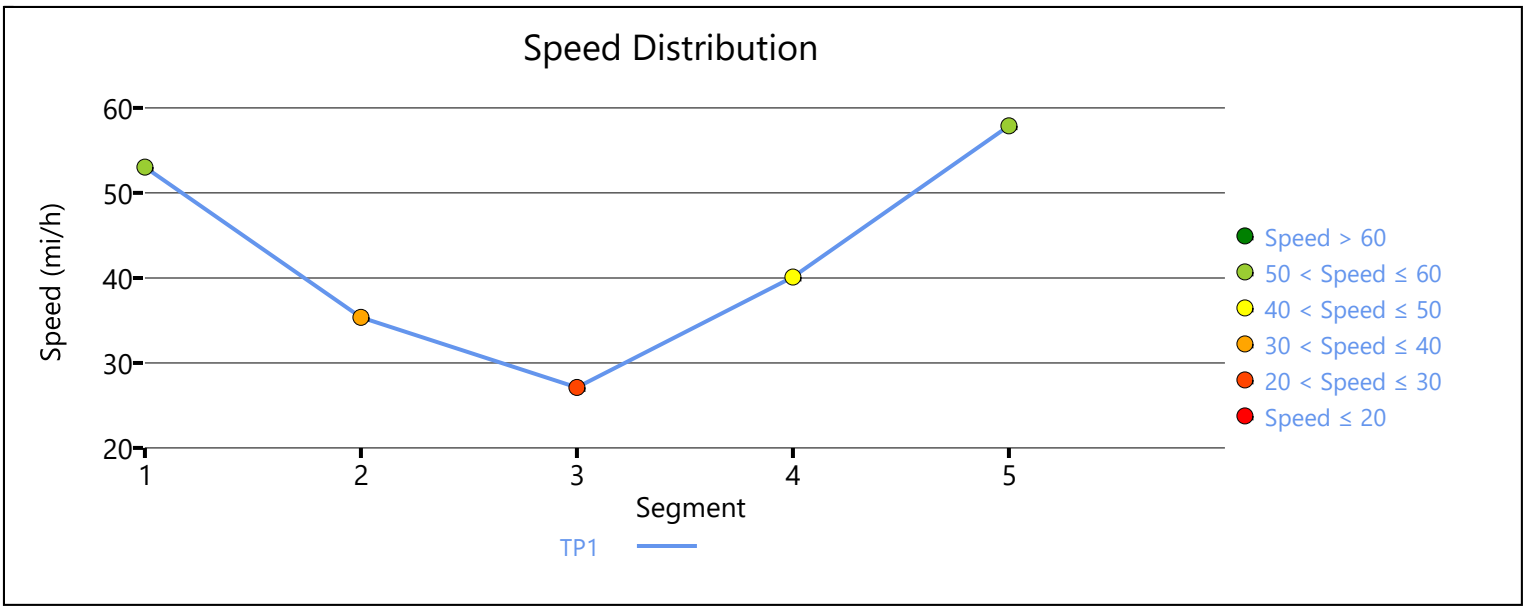
Facility Time Period Results

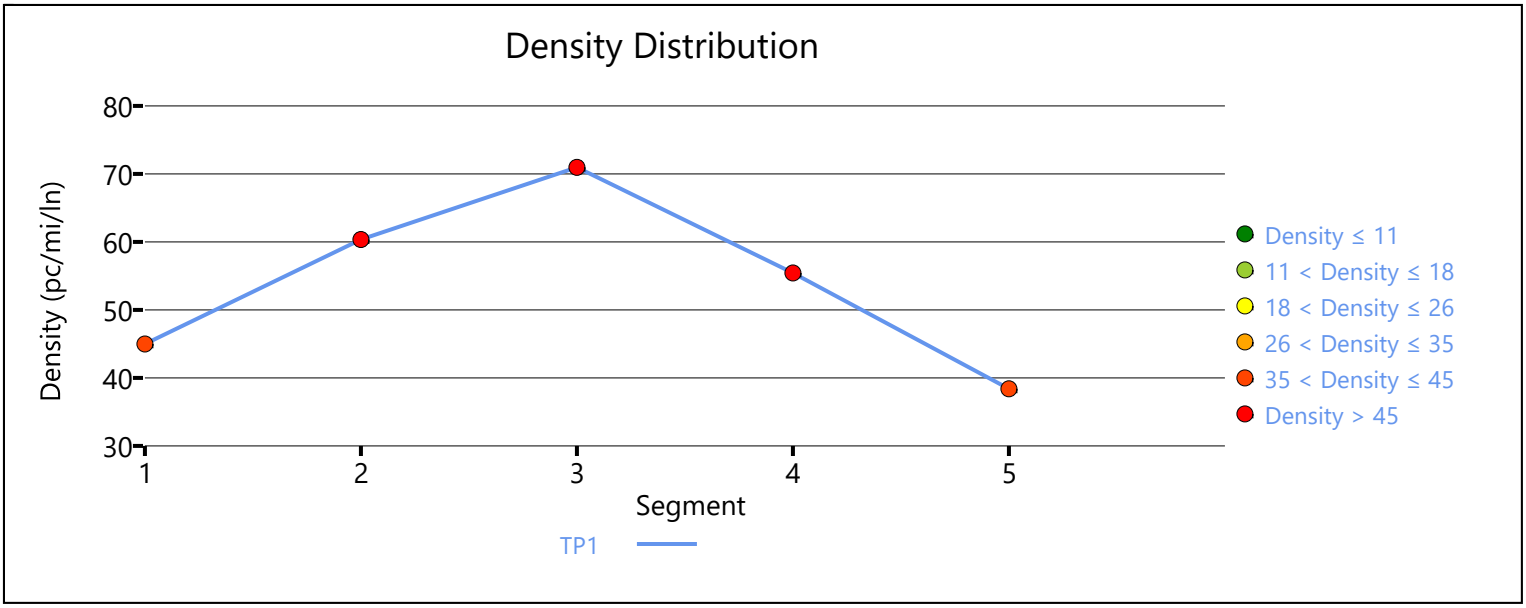
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	40.2	53.5	50.4	3.6	F

Facility Overall Results

Space Mean Speed, mi/h	40.2	Density, veh/mi/ln	50.4
Average Travel Time, min	3.6	Density, pc/mi/ln	53.5







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HCS7 Freeway Facilities Report

Project Information

Analyst	LC	Date	6/24/2019
Agency	Urban Crossroads, Inc.	Analysis Year	Post-2040 With Project with IMPROVEMENTS
Jurisdiction	Caltrans	Time Period Analyzed	PM Peak Hour
Project Description	Baxter Village TIA (JN:12651) - I-15 Northbound		

Facility Global Input

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Total Time Periods	1	Time Period Duration, min	15

Facility Segment Data

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2	Diverge	Diverge	Off-Ramp	1500	3
3	Basic	Basic	Between	2220	3
4	Merge	Merge	On-Ramp	1500	3
5	Basic	Basic	North of Baxter	3425	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	6753	7161	0.94	56.6	39.8	E

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.917	0.962	6753	780	7200	2100	0.94	0.37	63.5	59.7	35.4	34.4	D

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.909	5987	7161	0.84	62.0	32.2	D

Segment 4: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	0.92	0.92	0.909	0.971	6618	631	7200	2100	0.92	0.30	58.0	55.6	38.0	33.3	D

Segment 5: Basic

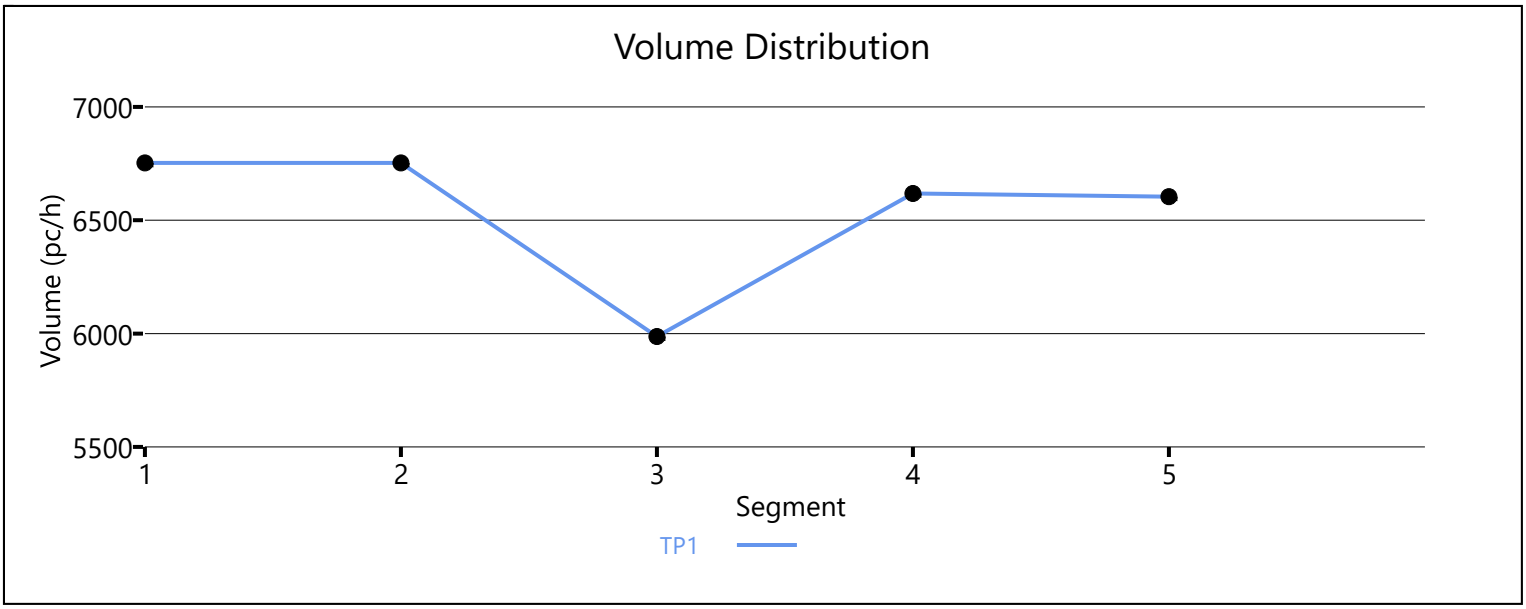
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.917	6604	7161	0.92	57.8	38.1	E

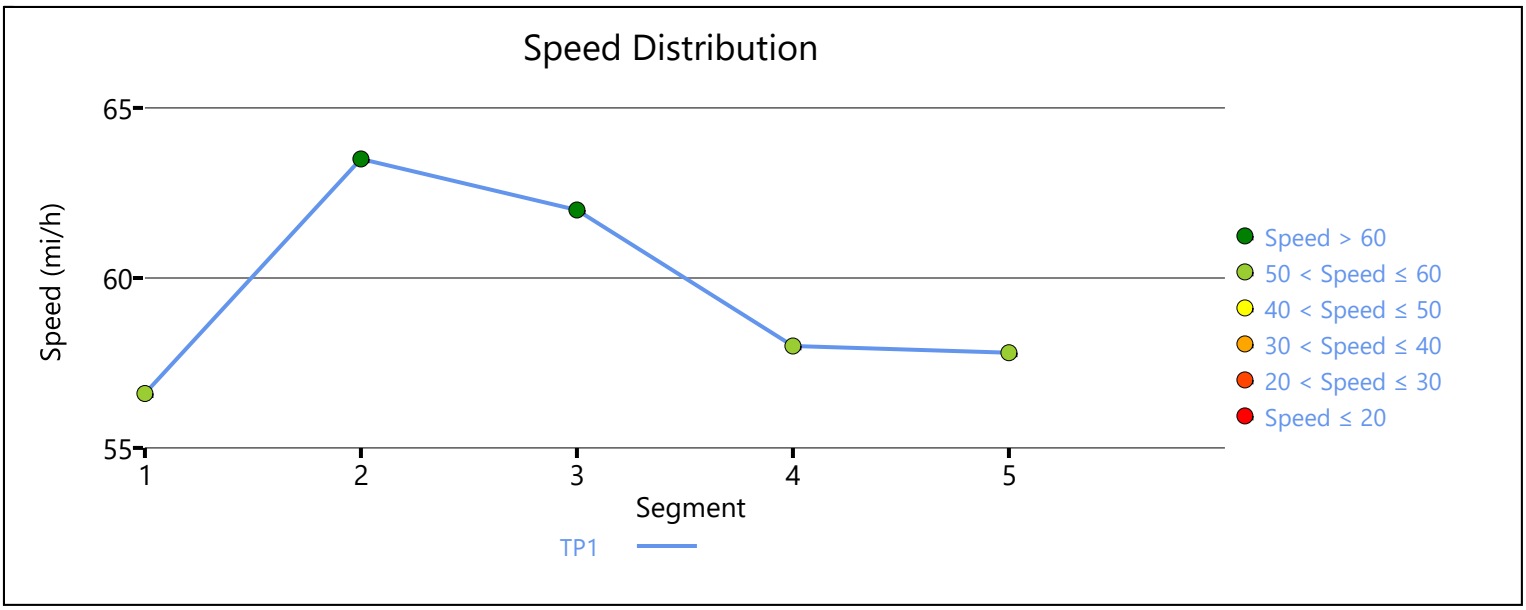
Facility Time Period Results

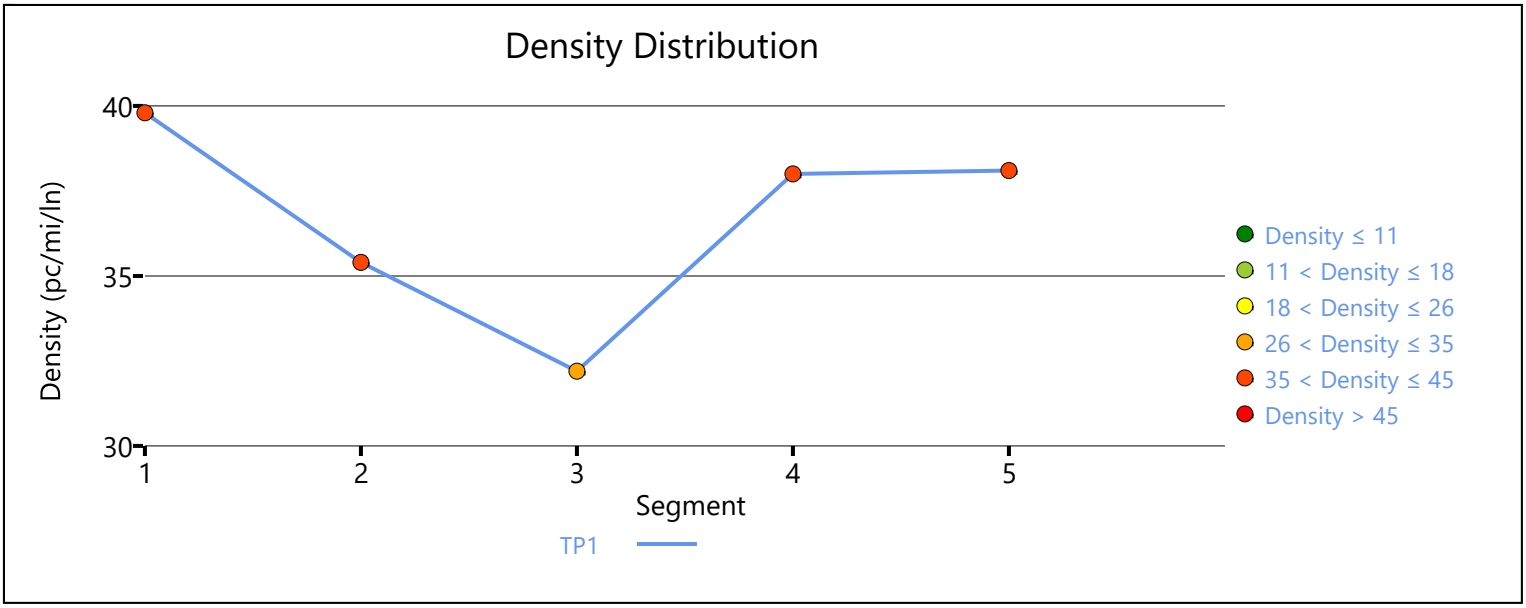
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	59.0	37.0	33.8	2.2	E

Facility Overall Results

Space Mean Speed, mi/h	59.0	Density, veh/mi/ln	33.8
Average Travel Time, min	2.2	Density, pc/mi/ln	37.0







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