Appendix K
Local Transportation Study

URBAN SYSTEMS ASSOCIATES, INC.
PLANNING & TRAFFIC ENGINEERING
CONSULTANTS TO INDUSTRY AND GOVERNMENT

Local Transportation Study

Ocean Creek Residential

City of Oceanside

May 31, 2022

Project Number: 001720



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1.0 EXECUTIVE SUMMARY

The proposed project includes the development of 295 dwelling units of residential apartments and 3,000 square feet of a mix of commercial/retail and a fast food restaurant in the City of Oceanside. The project is located on the southwest corner of the intersection of South Oceanside Boulevard and Crouch Street and is adjacent to the Crouch Street Sprinter Station. The project site is approximately 12.87 acres with a project density of 22.9 units per acre. The project will also provide on and off site transportation facility improvements along South Oceanside Boulevard and Crouch Street. The project will ensure the improvements provided are built in accordance with the City's design standards and therefore would not result in any hazards. Additionally due to the project's location, no VMT analysis will be required due to the project being located in a Transit Priority Area and being within ½ mile walking distance to the Crouch Street Station

The trip generation for the proposed project is calculated to be **3,075** Average Daily Trips (ADT) with **199** AM (**71** in / **128** out) peak hour trips and **210** PM (**132** in / **78** out) peak hour trips.

A study area was determined to the surrounding area and analysis was conducted with the inclusion of project traffic and without, the following tables summarize the intersection analysis level of service for the Existing, Near Term Opening Year (2026), Near Term Opening Year (2026) Plus Project, Buildout Year 2030, and Buildout Year 2030 Plus Project scenarios. The following tables show the summarized studied intersection analysis:

Table 1-1: Existing and Existing Plus Project Intersection LOS

#	Intersection	Existing				Existing + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	S ?	PM Peak Hour		Δ	S ?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	S. Oceanside Blvd. / Crouch St.	14.1	B	10.5	B	17.6	C	3.5	No	10.8	B	0.3	No
2	Oceanside Blvd. / Crouch St.	38.2	D	37.0	D	39.7	D	1.5	No	38.9	D	1.9	No
3	Grandview St. / Crouch St.	8.3	A	7.7	A	8.3	A	0.0	No	7.7	A	0.0	No
4	S. Oceanside Blvd. / State Tree Dr.	9.2	A	10.1	B	10.0	A	0.8	No	11.4	B	1.3	No
5	Oceanside Blvd. / State Tree Dr.	9.4	A	21.0	C	15.8	B	6.4	No	21.9	C	0.9	No
6	S. Oceanside Blvd. / Commerce St.	8.1	A	9.6	A	8.4	A	0.3	No	10.1	B	0.5	No
7	Oceanside Blvd. / I-5 NB Ramps	19.1	B	34.8	C	20.2	C	1.1	No	38.2	D	3.4	No
8	Oceanside Blvd. / I-5 SB Ramps	23.4	C	22.7	C	26.2	C	2.8	No	23.1	C	0.4	No
9	Skylark Dr. / Down St.	10.6	B	12.6	B	10.7	B	0.1	No	12.9	B	0.3	No
10	Down St. / California St.	9.2	A	9.5	A	9.3	A	0.1	No	9.7	A	0.2	No
11	Skylark Dr. / Crouch St.	12.6	B	11.9	B	15.5	C	2.9	No	14.5	B	2.6	No

Notes:

LOS = Level of Service

D = Delay (in sec.)

Δ = Change in Delay (in sec.)

Table 1-2: Near Term and Near Term Plus Project Intersection LOS

#	Intersection	Near-Term				Near-Term + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	I ?	PM Peak Hour		Δ	I ?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	S. Oceanside Blvd. / Crouch St.	17.4	C	10.8	B	20.3	C	2.9	No	11.2	B	0.4	No
2	Oceanside Blvd. / Crouch St.	38.7	D	43.4	D	39.7	D	1.0	No	45.9	D	2.5	No
3	Grandview St. / Crouch St.	8.3	A	7.8	A	8.4	A	0.1	No	7.8	A	0.0	No
4	S. Oceanside Blvd. / State Tree Dr.	14.7	B	12.2	B	17.0	C	2.3	No	14.2	B	2.0	No
5	Oceanside Blvd. / State Tree Dr.	20.5	C	23.9	C	26.0	C	5.5	No	28.9	C	5.0	No
6	S. Oceanside Blvd. / Commerce St.	9.5	A	10.2	B	10.2	B	0.7	No	10.8	B	0.6	No
7	Oceanside Blvd. / I-5 NB Ramps	21.2	C	38.1	D	21.9	C	0.7	No	42.0	D	3.9	No
8	Oceanside Blvd. / I-5 SB Ramps	26.1	C	25.4	C	29.3	C	3.2	No	25.9	C	0.5	No
9	Skylark Dr. / Down St.	10.6	B	12.6	B	10.7	B	0.1	No	12.9	B	0.3	No
10	Down St. / California St.	9.2	A	9.5	A	9.3	C	0.1	No	9.7	B	0.2	No
11	Skylark Dr. / Crouch St.	12.6	B	11.9	B	15.5	C	2.9	No	14.3	B	2.4	No

Notes:

LOS = Level of Service

D = Delay (in sec.)

Δ = Change in Delay (in sec.)

I = Improvement required

Table 1-3: Year 2030 and Year 2030 Plus Project Intersection LOS

#	Intersection	Year 2030				Year 2030 + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	I ?	PM Peak Hour		Δ	I ?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	S. Oceanside Blvd. / Crouch St.	19.8	C	11.2	B	24.2	C	4.4	No	11.6	B	0.4	No
2	Oceanside Blvd. / Crouch St.	45.4	D	51.3	D	46.6	D	1.2	No	53.4	D	2.1	No
3	Grandview St. / Crouch St.	8.6	A	7.9	A	8.7	A	0.1	No	8.0	A	0.1	No
4	S. Oceanside Blvd. / State Tree Dr.	16.3	C	13.1	B	19.2	C	2.9	No	15.6	C	2.5	No
5	Oceanside Blvd. / State Tree Dr.	24.6	C	30.2	C	31.4	C	6.8	No	36.6	D	6.4	No
6	S. Oceanside Blvd. / Commerce St.	10.2	B	11.0	B	11.0	B	0.8	No	11.8	B	0.8	No
7	Oceanside Blvd. / I-5 NB Ramps	24.9	C	41.4	D	25.9	C	1.0	No	46.6	D	5.2	No
8	Oceanside Blvd. / I-5 SB Ramps	33.9	C	31.0	C	42.9	D	9.0	No	31.8	C	0.8	No
9	Skylark Dr. / Down St.	10.9	B	13.7	B	11.1	B	0.2	No	14.1	B	0.4	No
10	Down St. / California St.	9.6	A	10.0	A	9.8	A	0.2	No	10.2	B	0.2	No
11	Skylark Dr. / Crouch St.	13.7	B	12.7	B	17.8	C	4.1	No	16.1	C	3.4	No

Notes:

LOS = Level of Service

Δ = Change

I = Improvement required

D= Delay

Table 1-4: Existing and Existing Plus Project Street Segment LOS

Road	Segment	# of Ln.	LOS "E" Capacity	Class.	Existing			Existing + Project			ΔV/C	I ?
					LOS	Volume	V/C	LOS	Volume	V/C		
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	30,000	4-C	D	20,100	0.67	D	21,484	0.72	0.046	***NO***
	I-5 NB Ramps to State Tree Drive	4	30,000	4-C	D	20,400	0.68	D	21,169	0.71	0.026	***NO***
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	15,000	2-Ca	B	7,000	0.47	C	7,769	0.52	0.051	***NO***
	Skylark Dr. to Grandview St.	2	10,000	2-Cb	B	3,800	0.38	B	3,954	0.40	0.015	***NO***
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	15,000	2-Ca	A	4,200	0.28	B	5,123	0.34	0.062	***NO***
	East of State Tree Drive	2	15,000	2-Ca	A	4,300	0.29	A	6,145	0.41	0.123	***NO***
Project Access Roadway	West of Crouch Street	2	10,000	2-Cb	A	44	0.00	A	1,274	0.13	0.123	***NO***

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

ΔV/C= Change in V/C ratio

I = Improvement Required

2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)

2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)

4-C = 4 Lane Secondary Collector

Table 1-2: Near Term and Near Term Plus Project Street Segment LOS

Road	Segment	# of Ln.	LOS "E" Capacity	Class.	Near-Term			Near-Term + Project			ΔV/C	I?
					LOS	Volume	V/C	LOS	Volume	V/C		
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	30,000	4-C	D	22,994	0.77	D	24,378	0.81	0.046	***NO***
	I-5 NB Ramps to State Tree Drive	4	30,000	4-C	D	23,798	0.79	D	24,567	0.82	0.026	***NO***
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	15,000	2-Ca	C	7,560	0.50	C	8,329	0.56	0.051	***NO***
	Skylark Dr. to Grandview St.	2	10,000	2-Cb	B	3,880	0.39	C	4,034	0.40	0.015	***NO***
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	15,000	2-Ca	B	5,000	0.33	C	5,923	0.39	0.062	***NO***
	East of State Tree Drive	2	15,000	2-Ca	A	5,260	0.35	A	7,105	0.47	0.123	***NO***
Project Access Roadway	West of Crouch Street	2	10,000	2-Cb	A	684	0.07	A	1,914	0.19	0.123	***NO***

Legend:
LOS= Level of Service
V/C= Volume to Capacity Ratio
ΔV/C= Change in V/C ratio
I = Improvement Required
2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)
2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)
4-C = 4 Lane Secondary Collector

Table 1-3: Year 2030 and Year 2030 Plus Project Street Segment LOS

Road	Segment	# of Ln.	LOS "E" Capacity	Class.	Year 2030			Year 2030 + Project			ΔV/C	I?
					LOS	Volume	V/C	LOS	Volume	V/C		
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	30,000	4-C	E	25,661	0.86	E	27,045	0.90	0.046	***YES***
	I-5 NB Ramps to State Tree Drive	4	30,000	4-C	E	26,559	0.89	E	27,327	0.91	0.026	***YES***
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	15,000	2-Ca	C	8,437	0.56	C	9,206	0.61	0.051	***NO***
	Skylark Dr. to Grandview St.	2	10,000	2-Cb	C	4,330	0.43	C	4,484	0.45	0.015	***NO***
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	15,000	2-Ca	B	5,580	0.37	C	6,503	0.43	0.062	***NO***
	East of State Tree Drive	2	15,000	2-Ca	A	5,870	0.39	A	7,715	0.51	0.123	***NO***
Project Access Roadway	West of Crouch Street	2	10,000	2-Cb	A	763	0.08	A	1,993	0.20	0.123	***NO***

Legend:
LOS= Level of Service
V/C= Volume to Capacity Ratio
ΔV/C= Change in V/C ratio
I = Improvement Required
2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)
2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)
4-C = 4 Lane Secondary Collector

Despite the additions of project traffic, no improvements will be required to any of the studied intersections. However, an improvement is required to the following street segments because the LOS is an E and the change in volume to capacity ratio is more than the 0.02 threshold. The project shall provide development impact fees towards an improvement based on the City of Oceanside Impact Fees for New Development to the impacted segments based on the City's General Plan buildout of the roadway. The street segments where an improvement is required are the following:

2030 Plus Project Conditions

- Oceanside Boulevard – between I-5 SB Ramps to I-5 NB Ramps
- Oceanside Boulevard – between I-5 NB Ramps to State Tree Drive

However assuming Buildout conditions for the previously mentioned street segments, no improvement would be required due to the increased capacity of the street segments. Under Buildout conditions, the segments of Oceanside Blvd. from I-5 SB Ramps to State Tree Drive would have a capacity of 40,000 ADT and be classified as a 4-lane major. The segments are currently classified as a 4-lane collector with a capacity of 30,000 ADT.

Additionally, the Ocean Creek project will change the operation of the signalized intersection of Oceanside Boulevard at Crouch Street through signal modification to become 8-phased and will install a new pole on the northeast corner of the intersection. The project will also rebuild the curb ramp at the northeast location as well. These improvements will be provided as a Project Feature from the Ocean Creek project.

Lastly, due to the project's location, no VMT analysis will be required due to the project being located in a Transit Priority Area and being within ½ mile walking distance to the Crouch Street Station.

2.0 INTRODUCTION

2.1 Purpose of Report & Study Objectives

Urban Systems Associates Inc. (USAI) has prepared this Local Transportation Study (LTS) report. The purpose of this Local Transportation Study (LTS) is to evaluate the development of the proposed Ocean Creek residential project in the City of Oceanside. The LTS was prepared in accordance with the *City of Oceanside Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment*, dated August 2020. The LTS was prepared for the City of Oceanside to maintain consistency with the City's Circulation Element and is not considered for CEQA purposes.

The LTS analyzes the following conditions for a Level of Service (LOS) of nearby intersections for potential deficiencies due to the addition of project traffic.

- Existing Conditions
- Existing Plus Project Conditions
- Opening Year 2026 Near Term Conditions
- Opening Year 2026 Near Term Plus Project Conditions
- Buildout Year 2030 Conditions
- Buildout Year 2030 Plus Project Conditions

2.2 Site Location and Study Area

The proposed project will be located on the southwest corner of the intersection of Crouch Street at South Oceanside Boulevard within the City of Oceanside. Following the *City of Oceanside Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of*

Service Assessment, dated August 2020, the study area includes the following intersections and street segments:

Intersections

1. South Oceanside Boulevard / Crouch Street
2. Oceanside Boulevard / Crouch Street
3. Grandview Street / Crouch Street
4. South Oceanside Boulevard / State Tree Drive
5. Oceanside Boulevard / State Tree Drive
6. South Oceanside Boulevard / Commerce Street
7. Oceanside Boulevard / I-5 Northbound Ramps
8. Oceanside Boulevard / I-5 Southbound Ramps
9. Down Street / Skylark Drive
10. Down Street / California Street
11. Skylark Drive / Crouch Street

Street Segments

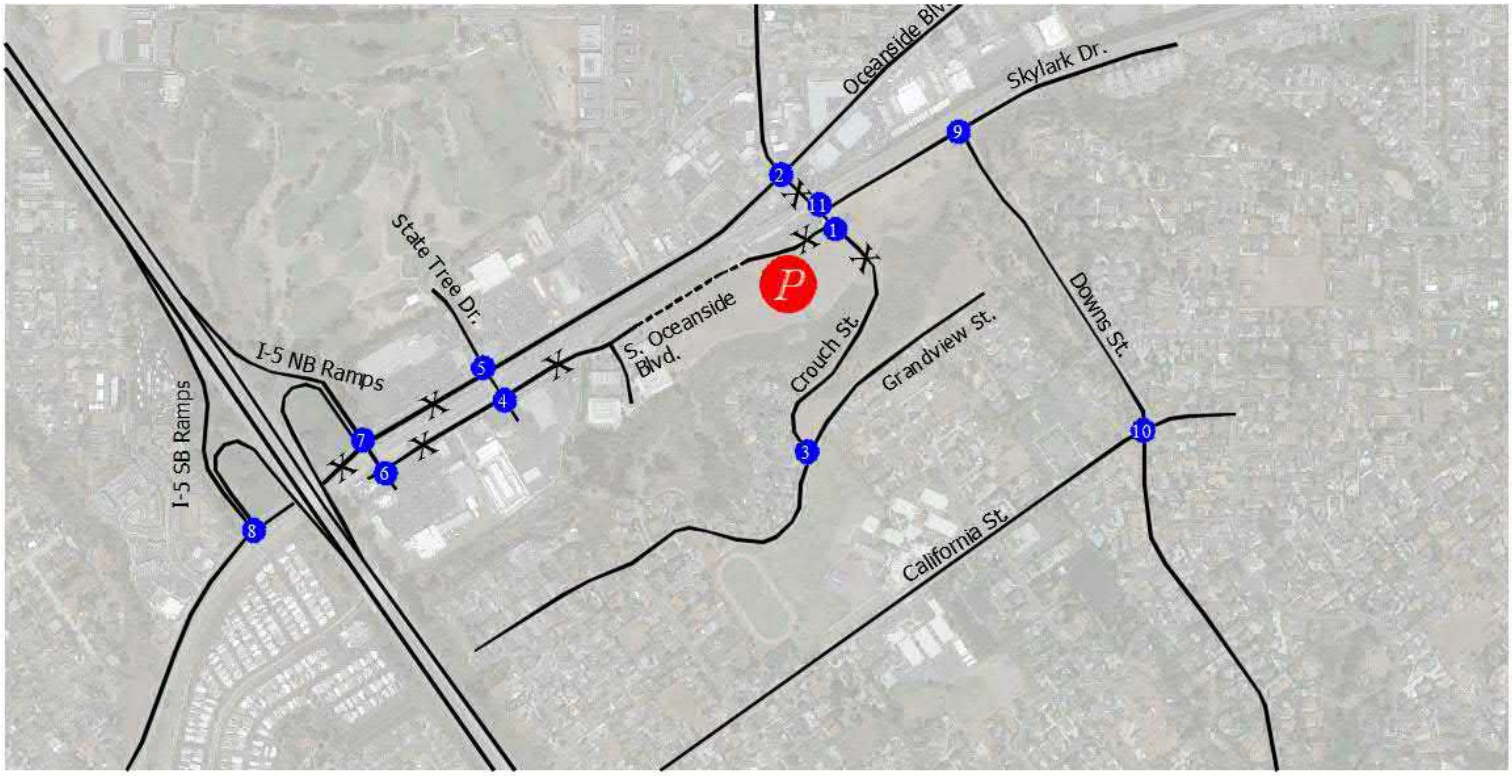
1. Oceanside Blvd. – I-5 SB Ramps to I-5 NB Ramps
2. Oceanside Blvd. – I-5 NB Ramps to State Tree Dr.
3. Crouch Street – Oceanside Blvd. to Grandview St.
4. South Oceanside Blvd. – Commerce St. to State Tree Dr.
5. South Oceanside Blvd. – east of State Tree Dr.
6. Project Access Roadway – West of Crouch St.

A map of the study area is shown on **Figure 2-1**.

2.3 Project Description

The proposed project is a mixed used transit-oriented development including 295 dwelling units of residential apartments and 3,000 square feet (SF) of commercial specialty retail space which will consists of a mix of commercial retail and a fast-food restaurant for public use. However, for a conservative analysis, the 3,000 SF specialty retail was analyzed assuming it would be a fast-food restaurant as a worst-case scenario. This assumption is reflected in the project trip generation and ensuing analysis. Access to the project site will be along the future roadway of South Oceanside Boulevard which connects to the existing roads of Crouch Street to the east and Union Plaza Court to the west. The project is also located across the Crouch Street Sprinter Station along Oceanside Boulevard. The Project has a proposed opening year of 2026.

Figure 2-1: Study Area



Legend

P = Project Location

-------- = Future Roadway

= Studied Intersection Location

X = Studied Street Segment

N
NO SCALE

3.0 ANALYSIS METHODOLOGY

This section of the LTS consists of the methodologies used to conduct analysis. *City of Oceanside Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment*, dated August 2020 was referred to for the preparation of this LTS.

3.1 Determining Local Transportation Study Type

Based on Figure 8-1 in the City's Traffic Impact Analysis Guidelines, the project will require a Local Transportation Study because the project generates over 1,000 ADT and is consistent with the General Plan. The project will also not require transportation VMT CEQA analysis because the project will be considered screened out based on the City's criteria.

3.2 General Plan Consistency and Zoning

The proposed Ocean Creek project is a multifamily mixed-use development on a 12.87 acre project site located at the intersection of Crouch Street and Skylark Drive in the City of Oceanside (City), across from the exiting Crouch Street Sprinter Station. The proposed project would develop 295 residential units and 3,000 square feet of commercial/retail and fast food within an approximately 12.87 acre graded area. The proposed uses would be located within five buildings, each that would have a maximum building height of 50 feet (four stories). The project would include the extension of S. Oceanside Boulevard across the frontage of the site to Crouch Street.

Access to the project site would be provided by two new driveways from S. Oceanside Boulevard, one at the west side of the project site and one more eastly, across from the exiting driveway to the NCTD Crouch Street Sprinter Station. Internal circulation through the 12.87-acre developed portion of the project site would provide access to parking spaces and individual units. Supporting amenities would be provided, including pool area, dog park, dog café, nature trail, gym, and clubhouse. In addition, the project includes utility improvements on-site, including sewer, water, storm drain, and electrical transmission lines, as well connections to utilities in the immediate vicinity. The proposed demolition, grading, remedial grading, and construction activities are expected to take 21 months, commencing in 2024, which completion anticipated by January 1, 2026.

The City General Plan designates the Property as “Commercial" and “Open Space.” The Property is zoned a combination of CC (Community Commercial) and OS (Open Space). As depicted on the City’s Interactive Zoning Map, much of the Property’s Open Space designated land is identified as “Hardline Preserve” under the City’s draft Habitat Conservation Plan – Sub Area Plan (SAP). To allow for the proposed development, the Project Applicant is requesting the following discretionary approvals: (1) Mixed-Use Development Plan; (2) Conditional Use Permit, (3) Tentative Map, (4) Section 10 Habitat Management Plan, (5) easement vacations, (6) Adoption of the SCEA, and (7) Approval of other permits, ministerial or discretionary, as maybe be necessary.

3.3 Intersection Analysis Methodology

The City of Oceanside follows the Highway Capacity Manual (HCM) to analyze signalized and unsignalized intersections for a performance level of service (LOS). The procedure in Chapter 19, which is used to analyze signalized intersections, is the "operational method." This method determines LOS based on average control delay expressed in seconds. **Table 3-1** shows the LOS based upon delay. A computer program called Synchro 10 supports this methodology and is used to complete the analysis for signalized and unsignalized intersections. The intersection analysis includes pedestrian and bike volumes based on actual count data obtained in the field.

Signal timing sheets were obtained from the City and Caltrans and are provided in **Appendix L** of the report.

Table 3-1: LOS Criteria for Intersections

Signalized Intersection

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio	
	Less than or equal to 1.0	Greater than or equal to 1.0
Less than or equal to 10	A	F
10 to 20	B	F
20 to 35	C	F
35 to 55	D	F
55 to 80	E	F
Greater than or equal to 80	F	F

Source: HCM 6th Edition, Transportation Research Board 2016, Exhibit 19-8

Two-Way Stop Controlled Intersections (1)(2)

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio	
	Less than or equal to 1.0	Greater than or equal to 1.0
0 to 10	A	F
10 to 15	B	F
15 to 25	C	F
25 to 35	D	F
35 to 50	E	F
Greater than or equal to 50	F	F

Source: HCM 6th Edition, Transportation Research Board 2016, Exhibit 19-8

Note:
1) The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major street approaches or for the intersection as a whole.
2) The intersection worst approach delay is the reported delay for the TWSC intersection. Note that it is important to consider measures of effectiveness such as V/C ratios, average queue lengths, and 95th percentile queue lengths in addition to considering delay.

A level of service of A, B, C, and D are acceptable while a level of service of E and F are unacceptable.

3.4 Street Segment Analysis Methodology

The *City of Oceanside Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment* has provided the following table to evaluate street segments based on average daily trips capacities.

Table 3-2: LOS Criteria for Street Segments

Class	Lanes	Cross Section [1]	Level of Service (LOS)				
			A	B	C	D	E
Expressway	6	102/160 122/200	30,000	42,000	60,000	70,000	80,000
Expressway	4	102/160 122/200	25,000	35,000	50,000	55,000	60,000
Prime Arterial	6	104/124	25,000	35,000	50,000	55,000	60,000
6-Lane Major Arterial	6	104/124	20,000	28,000	40,000	45,000	50,000
5-Lane Major Arterial [2]	5	102/122	17,500	24,500	35,000	40,000	45,000
4-Lane Major Arterial	4	80/100	15,000	21,000	30,000	35,000	40,000
Secondary Collector (4 lanes with 2-way left turn lane)	4	64/84	10,000	14,000	20,000	25,000	30,000
Secondary Collector (4 lanes without 2-way left-turn lane, with left turn pockets	4	54/74, 60/80	9,000	13,000	18,000	22,000	25,000
Collector (commercial fronting, 2-lanes with 2-way left turn lane) [3]	2	50/70	5,000	7,000	10,000	13,000	15,000
Collector (residential streets in the Circulation Element or industrial fronting)	2	40/60, 50/70	4,000	5,500	7,500	9,000	10,000
Local Street (residential streets NOT in the Circulation Element	1	36/56, 40/60	–	–	2,400	–	–

(1) Cross sections are listed as curd-to-curb width/total right of way width, in feet.
(2) Vandegrift Boulevard is the only Circulation Element roadway designated as a 5-lane Major Arterial. It is not intended that other roadways be build to 5-lane Major Arterial standards.
(3) This capacity will also be assumed for a two-lane one-way collector.

3.5 Improvement Requirement Thresholds

The *City of Oceanside Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment* has provided the following criteria in Table 13 of the guidelines for determining if a studied intersection or street segment requires an improvement due to the addition of the proposed project's traffic. As it relates to the project's study area, the thresholds are shown on the table below:

Level of Service with Project*	Allowable Change Due to Project Effect**					
	Freeways		Roadway Segments		Intersections	Ramp Metering
	V/C	Speed (MPH)	V/C	Speed (MPH)	Delay (Sec.)	Delay (Min.)
E & F (or ramp meter delays above 15 min)	0.01	1	0.02	1	2	2

4.0 EXISTING CONDITIONS

To analyze the existing conditions, count data was obtained on Tuesday March 16, 2021 and Tuesday March 8, 2022 on the following intersections:

1. South Oceanside Boulevard / Crouch Street
2. Oceanside Boulevard / Crouch Street
3. Grandview Street / Crouch Street
4. South Oceanside Boulevard / State Tree Drive
5. Oceanside Boulevard / State Tree Drive
6. South Oceanside Boulevard / Commerce Street
7. Oceanside Boulevard / I-5 NB Ramps
8. Oceanside Boulevard / I-5 SB Ramps
9. Down Street / Skylark Drive
10. Down Street / California Street
11. Skylark Drive / Crouch Street

The traffic count data and growth factor calculations are provided in **Appendix A** of this report.

The existing road facilities are described in detail below:

Oceanside Boulevard- from the I-5 ramps to Crouch Street is a 4-lane secondary collector with a capacity of 30,000 ADT. Oceanside Boulevard is an east-west direction road with a posted speed limit of 35 mph. Sidewalks are provided on the northern and southern portions of the road from the I-5 ramps to Crouch Street.

South Oceanside Boulevard- from Commerce Street to Union Plaza Court is a 2-lane collector with a capacity of 15,000 ADT. South Oceanside Boulevard is an east-west direction road, no posted speed limit sign currently exists along South Oceanside Boulevard. Sidewalks are provided on the northern and southern portions of the road from Commerce Street to Union Plaza Court.

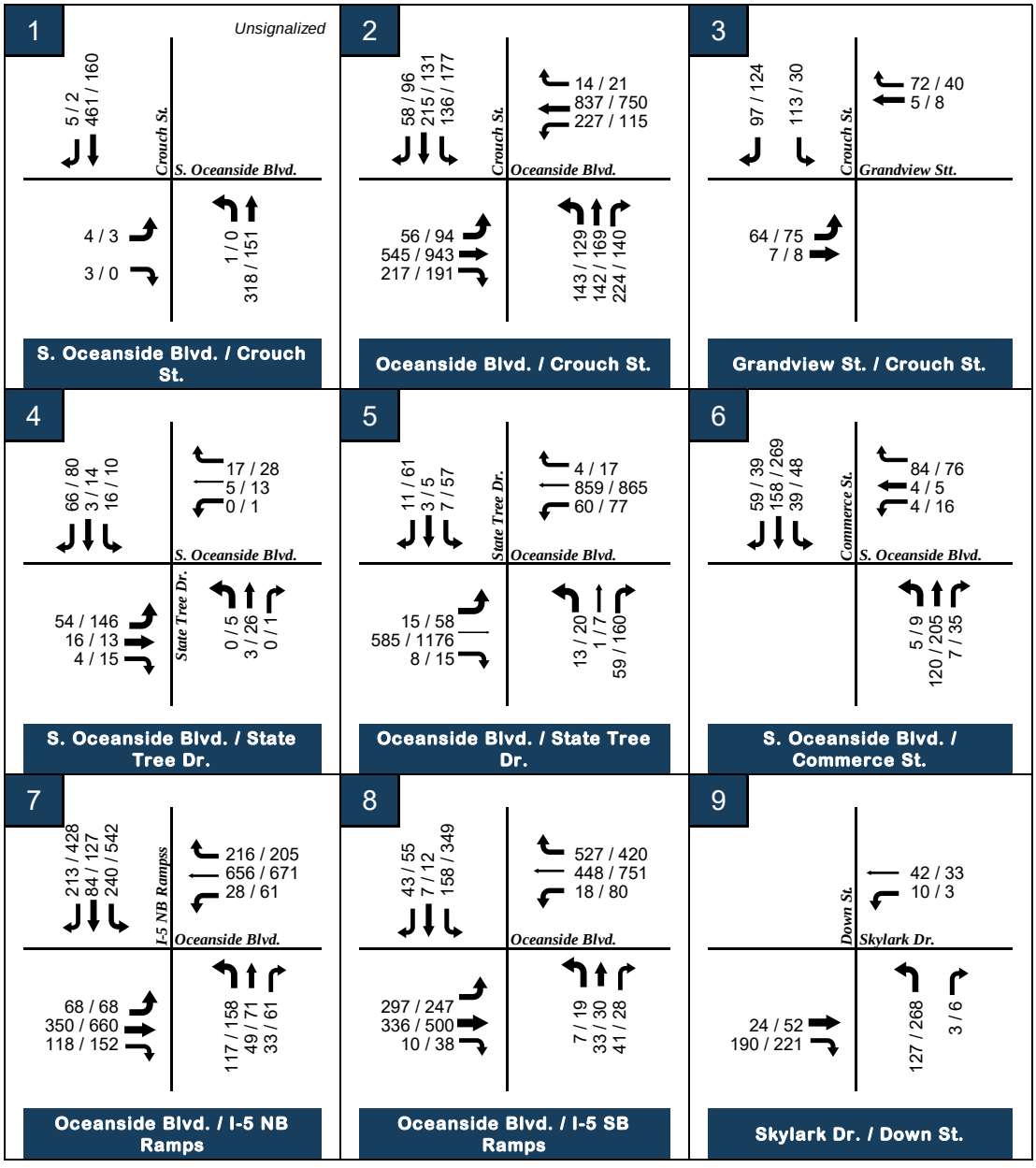
Crouch Street- from Oceanside Blvd. to Grandview St. is a 2-lane collector with a capacity of 10,000 ADT. Crouch Street is a north-south direction road with a posted speed limit of 35 mph. Sidewalks are only provided on the west and east sides of the road from South Downs Street to Oceanside Boulevard. The segment along Crouch Street north of Skylark Drive was classified as a 2-lane collector with a capacity of 15,000 ADT due to the commercial fronting and the segment containing 3-lanes.

4.1 Intersection Analysis

The existing peak hour traffic volumes at the studied intersections are shown on **Figure 4-1**. The average delay and level of service for the intersections in the AM and PM peak hour were analyzed using a software package called Synchro 10, which is an application of the Highway

Capacity Manual methodology. The existing intersection lane configurations are shown on **Figure 4-2.**

Figure 4-1: Existing AM and PM Turning Movement Volumes



XX / XX = AM / PM Peak hour volumes

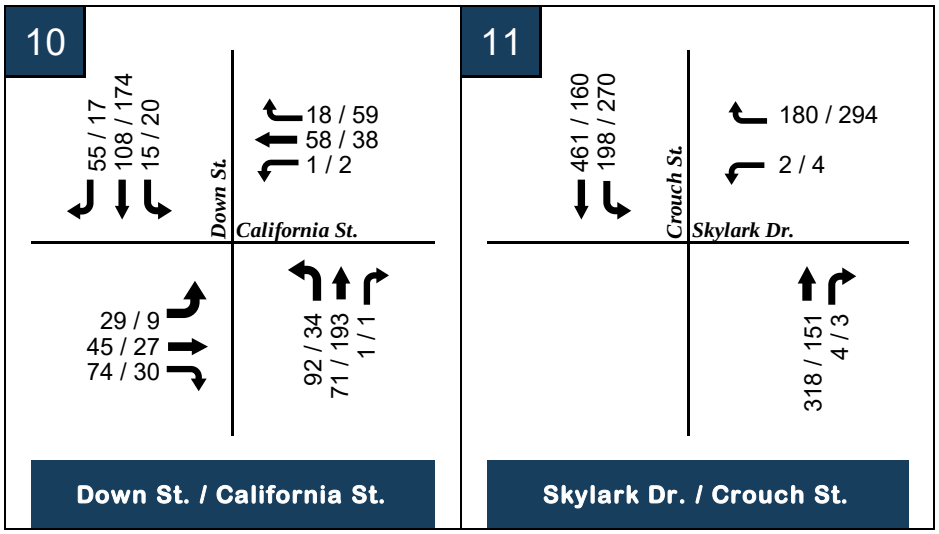
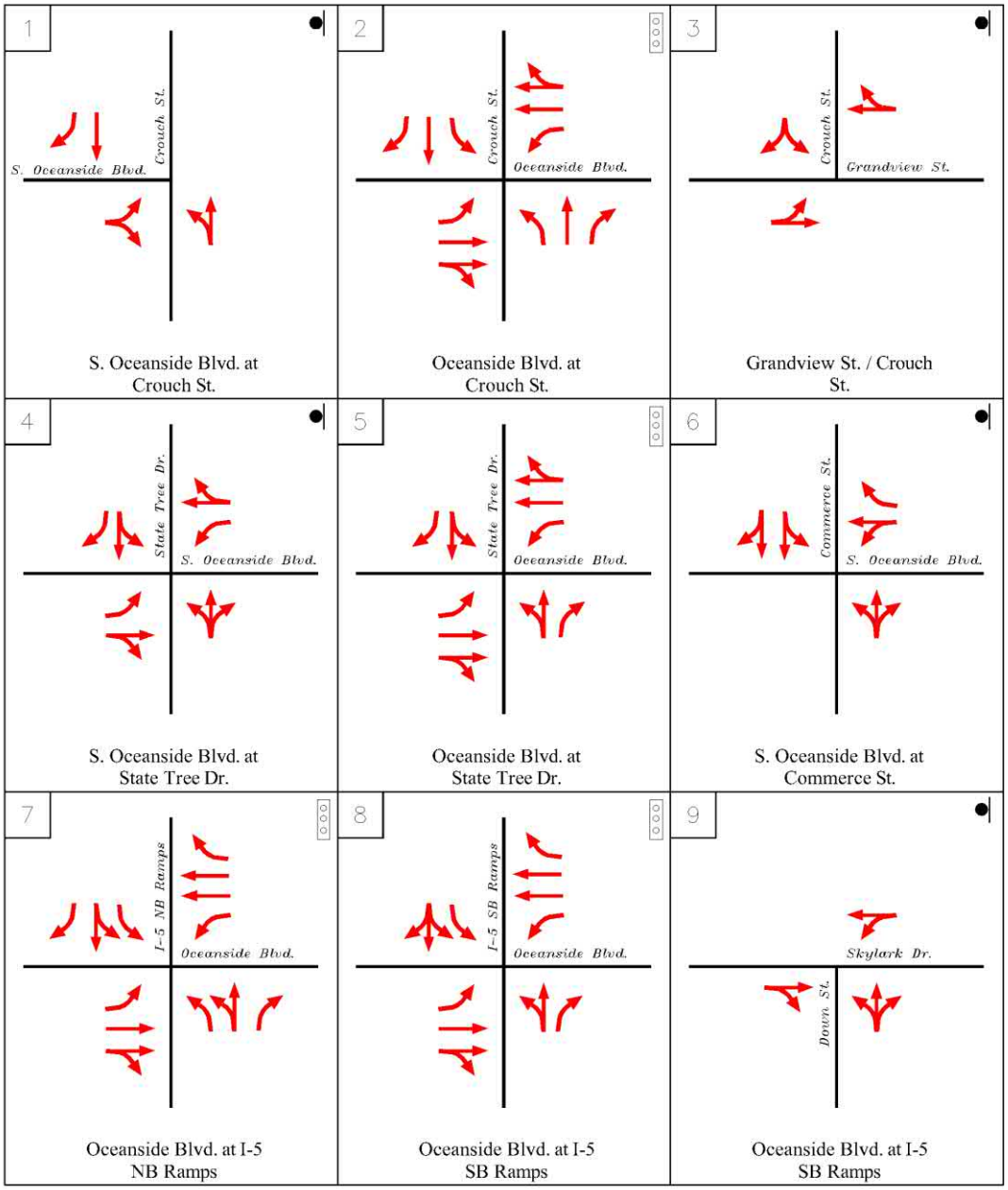
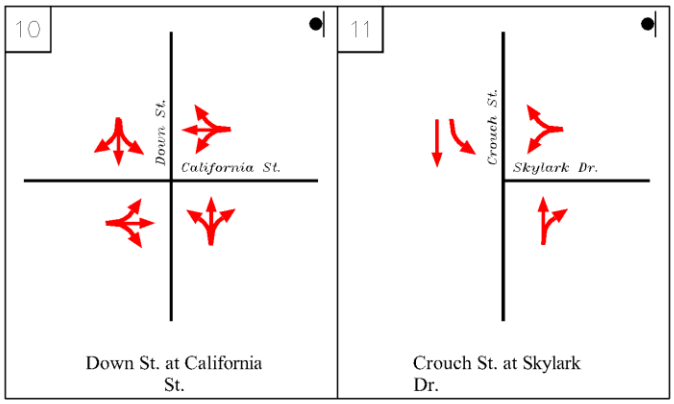

10
55 / 17
108 / 174
15 / 20
Down St.
18 / 59
58 / 38
1 / 2
California St.
29 / 9
45 / 27
74 / 30
92 / 34
71 / 193
1 / 1
Down St. / California St.
11
461 / 160
198 / 270
Crouch St.
180 / 294
2 / 4
Skylark Dr.
318 / 151
4 / 3
Skylark Dr. / Crouch St.

Figure 4-2: Existing Intersection Lane Configurations





Down St. at California St.

Crouch St. at Skylark Dr.

Legend

= Signalized Intersection

= Unsignalized Intersection

The existing conditions intersection analysis is shown on **Table 4-1**.

Table 4-1: Existing Intersection Analysis

#	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	S. Oceanside Blvd. / Crouch St.	Unsignalized	14.1	B	10.5	B
2	Oceanside Blvd. / Crouch St.	Signalized	38.2	D	37.0	D
3	Grandview St. / Crouch St.	Unsignalized	8.3	A	7.7	A
4	S. Oceanside Blvd. / State Tree Dr.	Unsignalized	9.2	A	10.1	B
5	Oceanside Blvd. / State Tree Dr.	Signalized	9.4	A	21.0	C
6	S. Oceanside Blvd. / Commerce St.	Unsignalized	8.1	A	9.6	A
7	Oceanside Blvd. / I-5 NB Ramps	Signalized	19.1	B	34.8	C
8	Oceanside Blvd. / I-5 SB Ramps	Signalized	23.4	C	22.7	C
9	Skylark Dr. / Down St.	Unsignalized	10.6	B	12.6	B
10	Down St. / California St.	Unsignalized	9.2	A	9.5	A
11	Skylark Dr. / Crouch St.	Unsignalized	12.6	B	11.9	B

Notes:

LOS = Level of Service

D = Delay (in sec.)

As shown on Table 4-1, in the existing intersection scenario, all studied intersections will operate at an acceptable level of service D or better in both the AM and PM peak hour.

The synchro worksheets for the existing conditions are provided in **Appendix B**.

4.2 Street Segment Analysis

Due to the COVID 19 pandemic affecting usual driver activity, existing volumes were obtained from the SANDAG Transportation Forecast Information Center (TFIC) for Series 13 Year 2020 and volumes from previously approved traffic studies. The following street segments were studied in this analysis:

Street Segments

- Oceanside Blvd. – I-5 SB Ramps to I-5 NB Ramps
- Oceanside Blvd. – I-5 NB Ramps to State Tree Dr.
- Crouch Street – Oceanside Blvd. to Grandview St.
- South Oceanside Blvd. – Commerce St. to State Tree Dr.
- South Oceanside Blvd. – east of State Tree Dr.
- Project Access Roadway – West of Crouch St.

Table 4-2 shows the Existing street segment analysis.

Figure 4-3 shows the Existing ADT volumes.

Table 4-2: Existing Street Segment Analysis

Road	Segment	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	4-C	30,000	20,100	0.67	D
	I-5 NB Ramps to State Tree Drive	4	4-C	30,000	20,400	0.68	D
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	2-Ca	15,000	7,000	0.47	B
	Skylark Dr. to Grandview St.	2	2-Cb	10,000	3,800	0.38	B
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	2-Ca	15,000	4,200	0.28	A
	East of State Tree Drive	2	2-Ca	15,000	4,300	0.29	A
Project Access Roadway	West of Crouch Street	2	2-Cb	10,000	44	0.00	A

Legend:

Class. = Functional Class

Cap. = Capacity

LOS = Level of Service

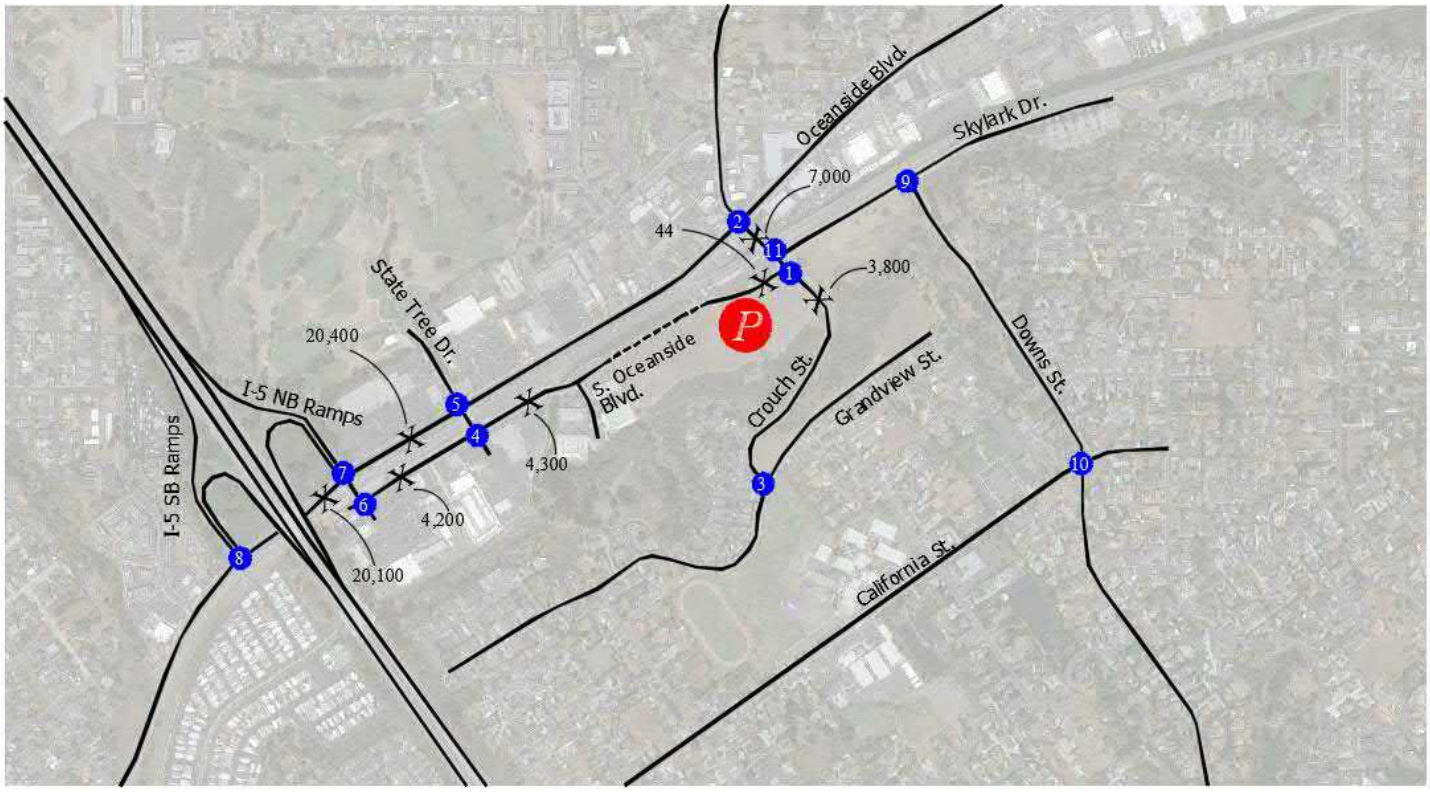
2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)

2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)

4-C = 4 Lane Secondary Collector

As shown on Table 4-2, all street segments are operating at an acceptable level of service D or better in this scenario.

Figure 4-3: Existing ADT



Legend

P = Project Location

-------- = Future Roadway

= Studied Intersection Location

X = Studied Street Segment

XX,XXX = ADT Number

N
NO SCALE

4.3 Freeway and Ramp Meter Analysis

Table 4-3 shows the Existing Freeway Analysis.

Table 4-4 shows the Existing Ramp Meter Analysis

Table 4-3: Existing Freeway Analysis

Segment	Lanes	Dir.	Cap.	ADT*	AM					PM				
					Peak Hour % (K)	Dir. Split (D)	PHV	V/C	LOS	Peak Hour % (K)	Dir. Split (D)	PHV	V/C	LOS
Freeway Name														
I-5 (Mission Ave. to Oceanside Blvd.)	4-GP	NB	9,400	208,000	0.070	0.52	7,571	0.805	D	0.064	0.58	7,672	0.816	D
I-5 (Mission Ave. to Oceanside Blvd.)	4-GP	SB	9,400	208,000	0.070	0.48	6,989	0.743	C	0.064	0.42	5,640	0.600	B
I-5 (Oceanside Blvd. to California St.)	4-GP	NB	9,400	207,000	0.070	0.52	7,535	0.802	D	0.064	0.58	7,684	0.817	D
I-5 (Oceanside Blvd. to California St.)	4-GP	SB	9,400	207,000	0.070	0.48	6,955	0.740	C	0.064	0.42	5,564	0.592	B
I-5 (California St. to Cassidy St.)	5-GP	NB	11,750	208,000	0.070	0.54	7,862	0.669	C	0.067	0.54	7,618	0.648	C
I-5 (California St. to Cassidy St.)	4-GP	SB	9,400	208,000	0.070	0.46	6,698	0.713	C	0.067	0.46	6,380	0.679	C

Legend:

Dir.= Direction
Cap. = Capacity
ADT= Average Daily Traffic
V/C= Volume to Capacity Ratio
LOS= Level of Service
PHV= Peak Hour Volume
#-GP= # of General Purpose Lanes

Note:

Capacity for LOS "E" roadway is 2,350.
Taken from Transition between LOS"C" and LOS "D" criteria for Basic Freeway Segments @ 65 mi/hr in "Caltrans Guide for the Preparation of Traffic Impact Studies", December 2002

Peak Hour % and Dir. Split taken from Caltrans internet posted Traffic Volumes

*Caltrans 2019 Count Data

As shown on Table 4-3, all studied Freeway segments are operating at an acceptable level of service D or better in this scenario.

Table 4-4: Existing Ramp Meter Analysis

Location		Lanes	Demand (Veh/Hr)	Demand per lane (Veh/Hr/Ln)	Meter Rate (Veh/Hr/Ln)	Excess Demand (Veh/Hr/Ln)	Delay (Min)	Queue (Feet)
I-5 SB Ramp / Oceanside Blvd.	AM	1 SOV	857	771	996	0	0.00	0
	PM	1 SOV	697	627	996	0	0.00	0
I-5 SB Ramp / Oceanside Blvd.	AM	1 HOV	857	86	996	0	0.00	0
	PM	1 HOV	697	70	996	0	0.00	0

NOTE:
Meter rate is based on the most restrictive meter rate provided by Caltrans
Delay = (Demand - Meter Rate) / Meter Rate * 60 minutes/hour
Queue = Excess Demand * 29 feet/vehicle
SOV = Single Occupancy Vehicles at 90%
HOV = High Occupancy Vehicles at 10%

Veh/Hr= Vehicles per hour
Veh/Hr/Ln= Vehicles per hour per lane

As shown on Table 4-4, the studied ramp is not expected to have an unacceptable queue and delay in this scenario.

5.0 PROPOSED PROJECT

The proposed project is located in the City of Oceanside and is a mixed used transit-oriented development including 295 dwelling units of residential apartments and 3,000 square feet (SF) of commercial specialty retail space which will consists of a mix of commercial retail and a fast-food restaurant for public use. However, for a conservative analysis, the 3,000 SF specialty retail was analyzed assuming it would be a fast-food restaurant as a worst-case scenario. This assumption is reflected in the project trip generation and ensuing analysis. Access to the project site will be along the future roadway of South Oceanside Boulevard which connects to the existing roads of Crouch Street to the east and Union Plaza Court to the west. The project is located on the southwest corner of the intersection of South Oceanside Boulevard and Crouch Street and is adjacent to the Crouch Street Sprinter Station. The project site is approximately 12.87 acres with a project density of 22.9 units per acre. The project will also provide a pedestrian improvement at the project driveway, a continental sidewalk will be provided for pedestrians to access the sprinter station from the project.

5.1 Project Trip Generation

The City of Oceanside requires the use of the SANDAG (Not so) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002 to determine the project's trip generation. The project trip generation is shown on **Table 5-1**.

The trip generation for the proposed project is calculated to be **3,075** Average Daily Trips (ADT) with **199** AM (**71** in / **128** out) peak hour trips and **210** PM (**132** in / **78** out) peak hour trips.

Table 5-2: Project Trip Generation

Land Use	Intensity	Rate*	ADT	AM						PM					
				Peak %*	Vol.	In %	Out%	In	Out	Peak %*	Vol.	In %	Out%	In	Out
Proposed Use															
Apartment	295 DU	6 /unit	1,770	8%	142	20% : 80%		28	113	9%	159	70% : 30%		112	48
Fast Food Restaurant (w/o drive-thru)	3 KSF	700 /KSF	2,100	5%	105	60% : 40%		63	42	7%	147	50% : 50%		74	74
Pass-By Reductions for Fast Food Restaurant (w/o drive-thru) 12% for ADT and AM peak hour. 40% reduction for PM peak hour			252		13			8	5		59			29	29
Proposed Total			3,618		234			84	150		248			156	92
Trip Reductions															
5% Trip reduction for land uses with transit access or near trasit stations accessible within 1/4 mile.			181		12			4	8		12			8	5
10% Trip reduction for mixed-use developments where residents and commercial retail are combined			362		23			8	15		25			16	9
Trip Reduction Totals			543		35			13	23		37			23	14
Net Total															
Net Total			3,075		199			71	128		210			132	78

Source:

*Rates are used taken from SANDAG "(Not so) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region", April 2002.

Note:

ADT= Average Daily Trips

KSF = 1,000 Square Feet

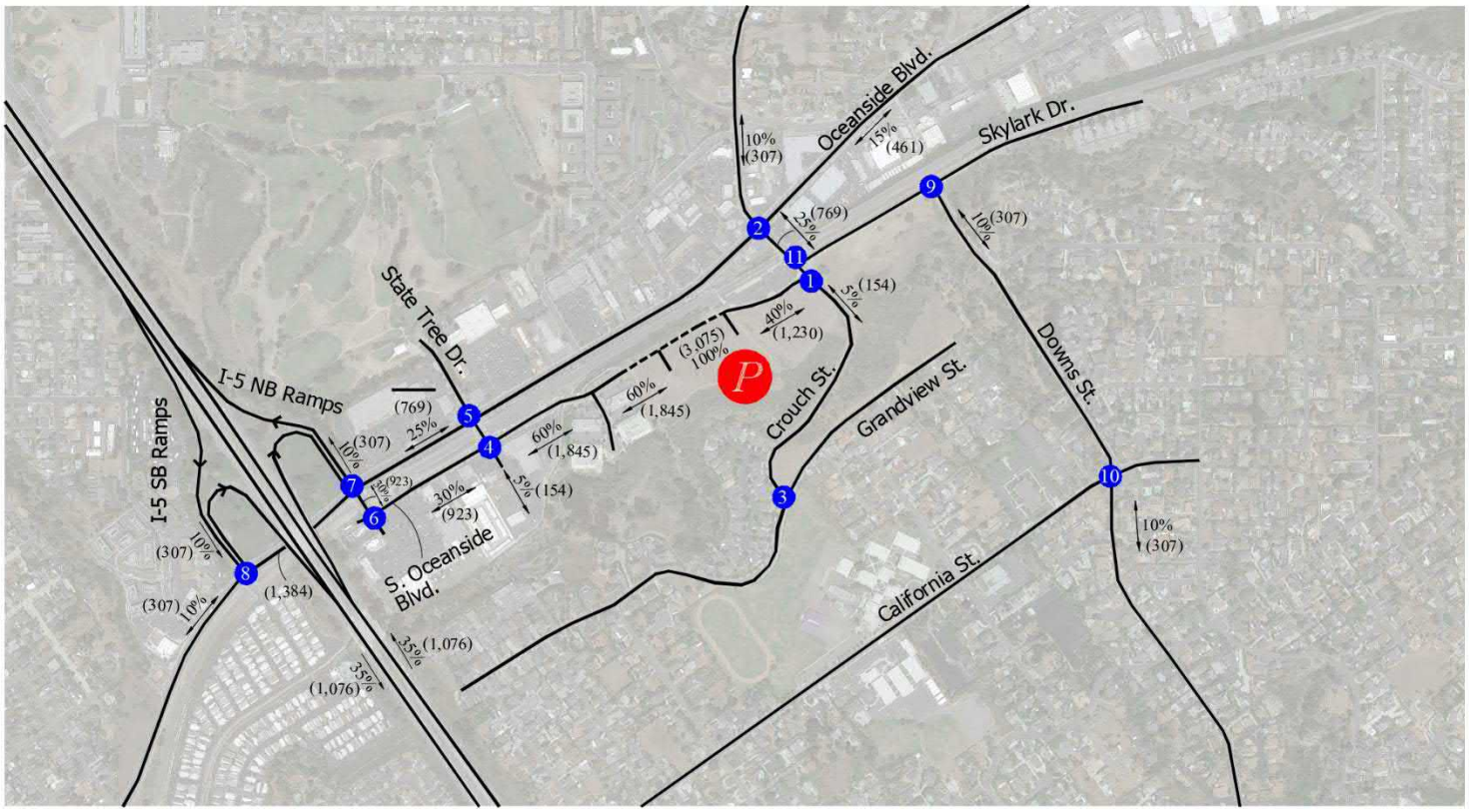
DU = Dwelling Units

5.2 Project Trip Distribution and Assignment

Figure 5-1 shows the project trip distribution. **Figure 5-2** shows the project trip assignment to the studied intersections.

The project trip distribution was determined based on a SANDAG Series 13 Select Zone Run Model dated March 23, 2020. The model is provided in **Appendix I**. As shown on Figure 5-1, 60% of project traffic will head west towards the I-5 ramps while 40% will head east towards Crouch Street. 10% is expected to take the I-5 north while 35% will take the I-5 south. 10% will continue west along Oceanside Blvd. while 15% will travel east along Oceanside Blvd. 5% is expected to travel south towards Grandview St. and 10% will travel north along Crouch Street. 10% is expected to travel south along Down Street.

Figure 5-1: Project Trip Distribution



Legend

P = Project Location

-------- = Future Roadway

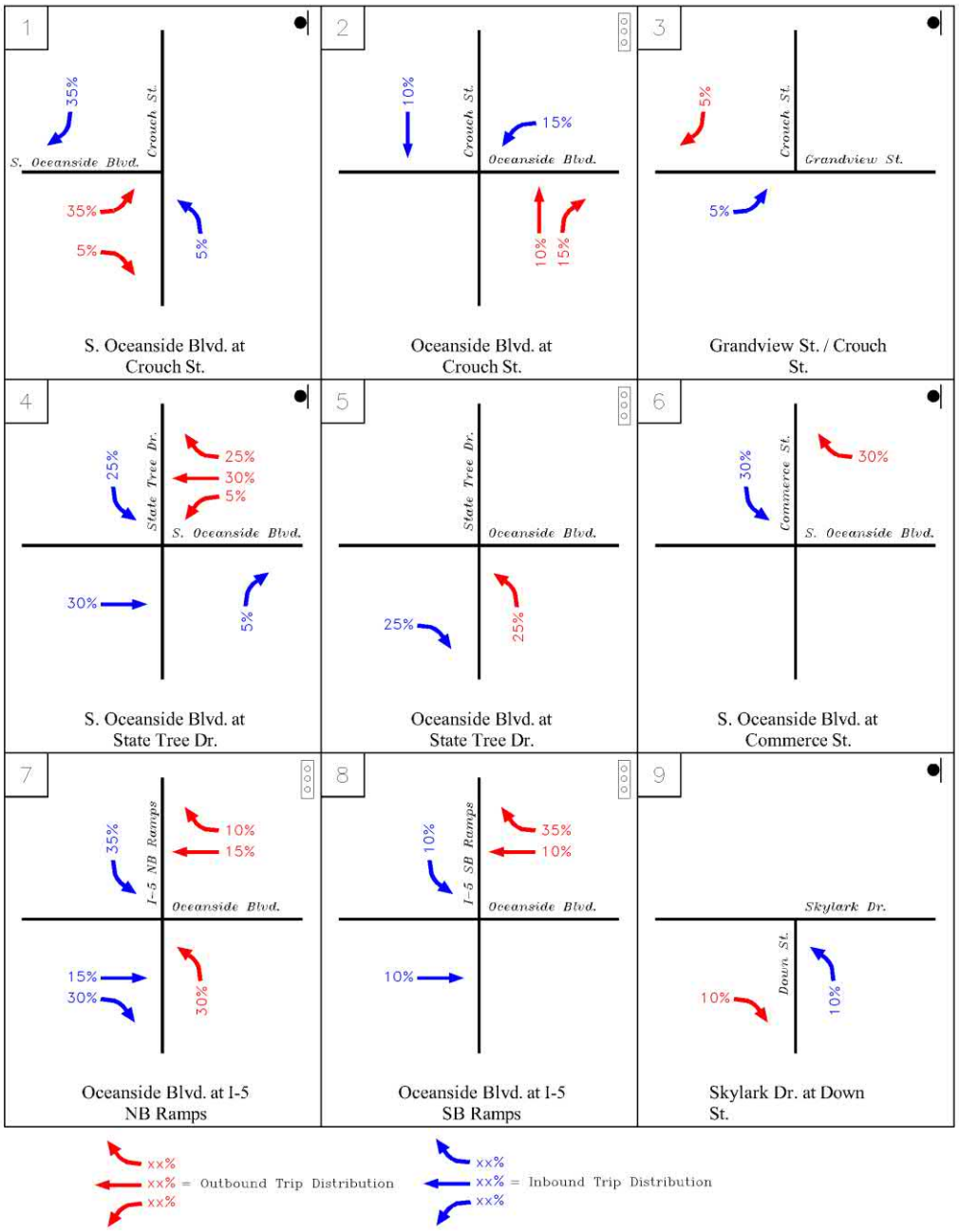
= Studied Intersection Location

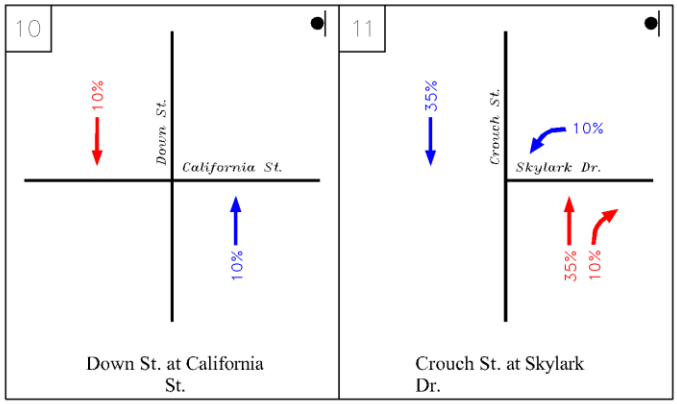
XX% = Project Distribution Percentage

(XX) = Project ADT

N
NO SCALE

Figure 5-2: Project Trip Assignment





Down St. at California St.

Crouch St. at Skylark Dr.

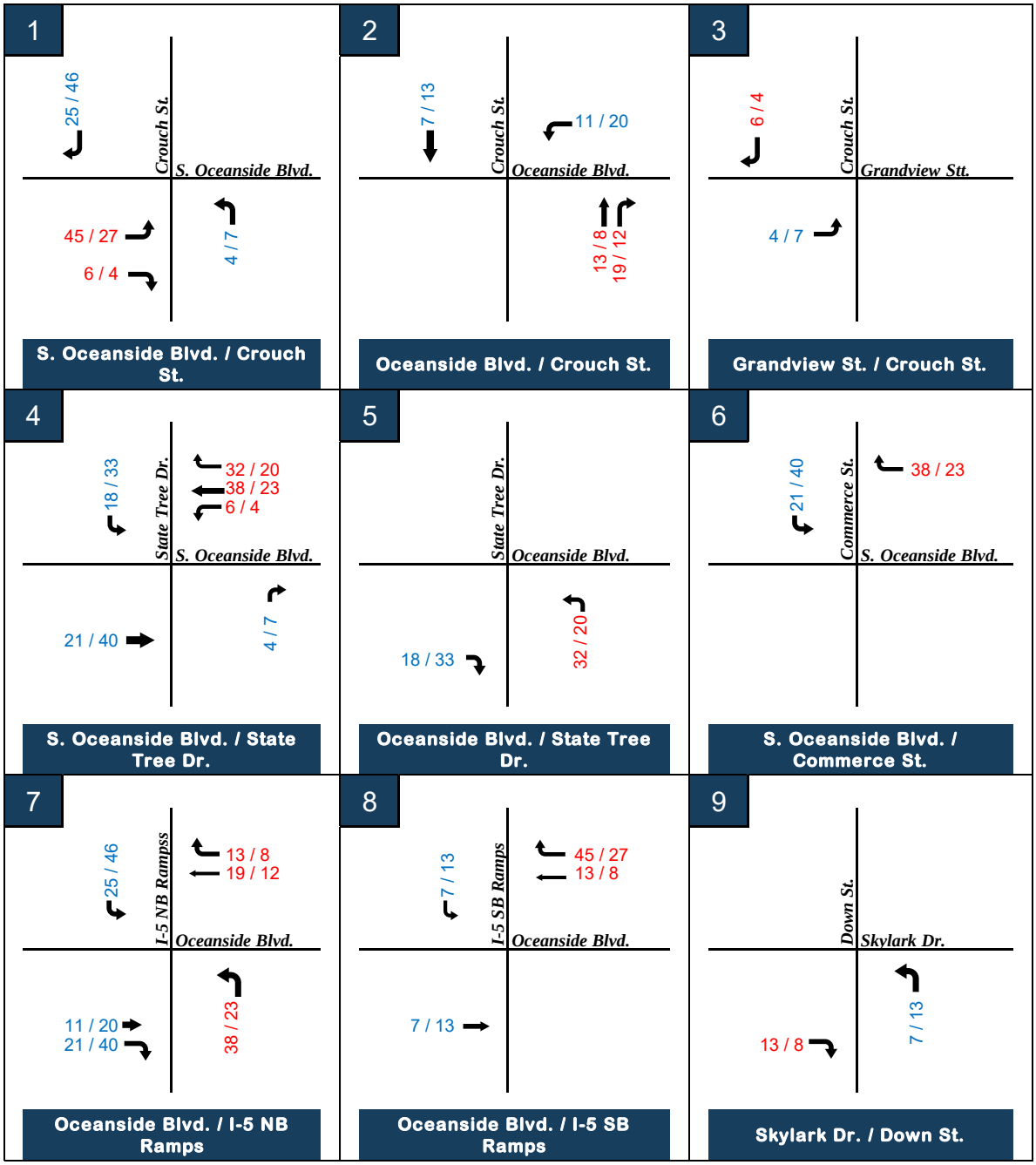
Legend

= Signalized Intersection

= Unsignalized Intersection

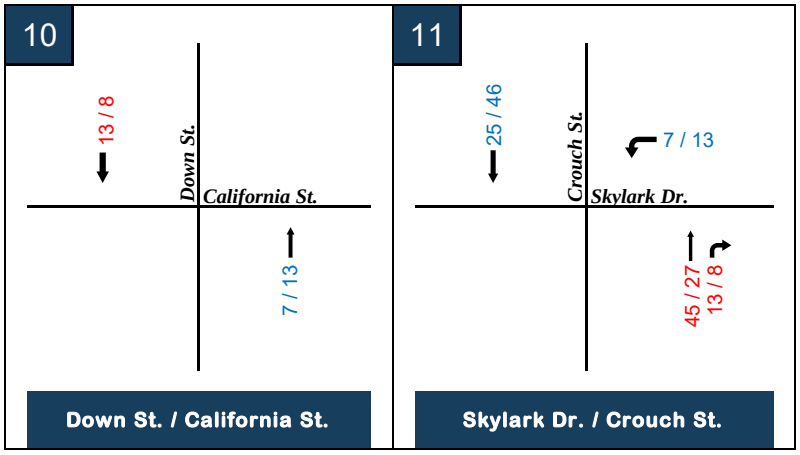
xx%
xx% = Inbound Trip Distribution
xx%

xx%
xx% = Outbound Trip Distribution
xx%



XX / XX = Inbound AM / PM Peak hour volumes

XX / XX = Outbound AM / PM Peak hour volumes



XX / XX = Inbound AM / PM Peak hour volumes

XX / XX = Outbound AM / PM Peak hour volumes

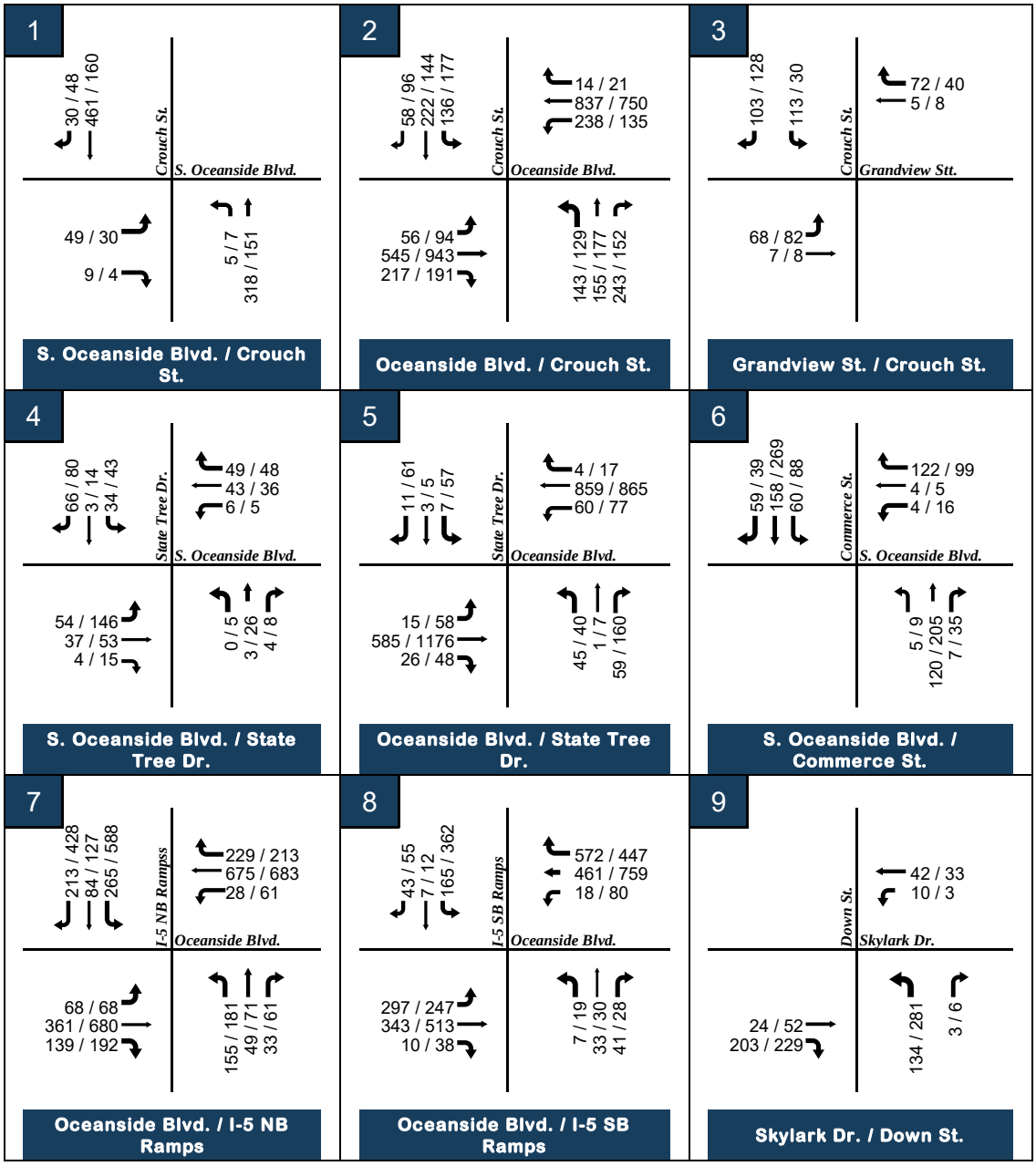
6.0 EXISTING PLUS PROJECT

Project traffic was added to existing volumes to determine if an improvement would be required to the studied intersections and street segments.

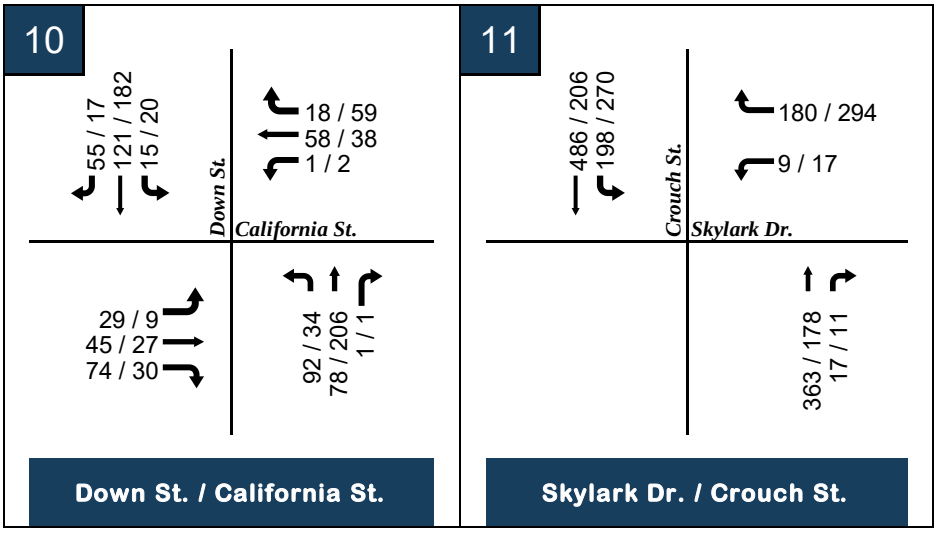
6.1 Intersection Analysis

The existing plus project peak hour traffic volumes at the studied intersections are shown on **Figure 6-1**.

Figure 6-1: Existing Plus Project AM and PM Turning Movement Volumes



XX / XX = AM / PM Peak hour volumes


10
55 / 17
121 / 182
15 / 20
Down St.
18 / 59
58 / 38
1 / 2
California St.
29 / 9
45 / 27
74 / 30
92 / 34
78 / 206
1 / 1
Down St. / California St.
11
486 / 206
198 / 270
Crouch St.
180 / 294
9 / 17
Skylark Dr.
363 / 178
17 / 11
Skylark Dr. / Crouch St.

The existing plus project conditions intersection analysis is shown on **Table 6-1**.

Table 6-1: Existing Plus Project Intersection Analysis

#	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	S. Oceanside Blvd. / Crouch St.	Unsignalized	17.6	C	10.8	B
2	Oceanside Blvd. / Crouch St.	Signalized	39.7	D	38.9	D
3	Grandview St. / Crouch St.	Unsignalized	8.3	A	7.7	A
4	S. Oceanside Blvd. / State Tree Dr.	Unsignalized	10.0	A	11.4	B
5	Oceanside Blvd. / State Tree Dr.	Signalized	15.8	B	21.9	C
6	S. Oceanside Blvd. / Commerce St.	Unsignalized	8.4	A	10.1	B
7	Oceanside Blvd. / I-5 NB Ramps	Signalized	20.2	C	38.2	D
8	Oceanside Blvd. / I-5 SB Ramps	Signalized	26.2	C	23.1	C
9	Skylark Dr. / Down St.	Unsignalized	10.7	B	12.9	B
10	Down St. / California St.	Unsignalized	9.3	A	9.7	A
11	Skylark Dr. / Crouch St.	Unsignalized	15.5	C	14.5	B

Notes:
LOS = Level of Service
D = Delay (in sec.)

As shown on Table 6-1, all studied intersections will operate at an acceptable level of service D or better in both the AM and PM peak hour.

The synchro worksheets for the existing plus project conditions are provided in **Appendix C**.

Table 6-2 shows the Existing with and without Project comparisons to determine if an improvement is required.

Table 6-2: Existing and Existing Plus Project Intersection Comparisons

#	Intersection	Existing				Existing + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	S ?	PM Peak Hour		Δ	S ?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	S. Oceanside Blvd. / Crouch St.	14.1	B	10.5	B	17.6	C	3.5	No	10.8	B	0.3	No
2	Oceanside Blvd. / Crouch St.	38.2	D	37.0	D	39.7	D	1.5	No	38.9	D	1.9	No
3	Grandview St. / Crouch St.	8.3	A	7.7	A	8.3	A	0.0	No	7.7	A	0.0	No
4	S. Oceanside Blvd. / State Tree Dr.	9.2	A	10.1	B	10.0	A	0.8	No	11.4	B	1.3	No
5	Oceanside Blvd. / State Tree Dr.	9.4	A	21.0	C	15.8	B	6.4	No	21.9	C	0.9	No
6	S. Oceanside Blvd. / Commerce St.	8.1	A	9.6	A	8.4	A	0.3	No	10.1	B	0.5	No
7	Oceanside Blvd. / I-5 NB Ramps	19.1	B	34.8	C	20.2	C	1.1	No	38.2	D	3.4	No
8	Oceanside Blvd. / I-5 SB Ramps	23.4	C	22.7	C	26.2	C	2.8	No	23.1	C	0.4	No
9	Skylark Dr. / Down St.	10.6	B	12.6	B	10.7	B	0.1	No	12.9	B	0.3	No
10	Down St. / California St.	9.2	A	9.5	A	9.3	A	0.1	No	9.7	A	0.2	No
11	Skylark Dr. / Crouch St.	12.6	B	11.9	B	15.5	C	2.9	No	14.5	B	2.6	No

Notes:

LOS = Level of Service

D = Delay (in sec.)

Δ = Change in Delay (in sec.)

As shown on Table 6-2, no improvements are needed because the intersections have an acceptable LOS of D or better in the with and without project conditions.

6.2 Street Segment Analysis

Table 6-3 shows the Existing Plus Project street segment analysis.

Figure 6-2 shows the Existing Plus Project ADT volumes.

Table 6-3: Existing Plus Project Street Segment Analysis

Road	Segment	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	4-C	30,000	21,484	0.72	D
	I-5 NB Ramps to State Tree Drive	4	4-C	30,000	21,169	0.71	D
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	2-Ca	15,000	7,769	0.52	C
	Skylark Dr. to Grandview St.	2	2-Cb	10,000	3,954	0.40	B
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	2-Ca	15,000	5,123	0.34	B
	East of State Tree Drive	2	2-Ca	15,000	6,145	0.41	A
Project Access Roadway	West of Crouch Street	2	2-Cb	10,000	1,274	0.13	A

Legend:

Class. = Functional Class

Cap. = Capacity

LOS = Level of Service

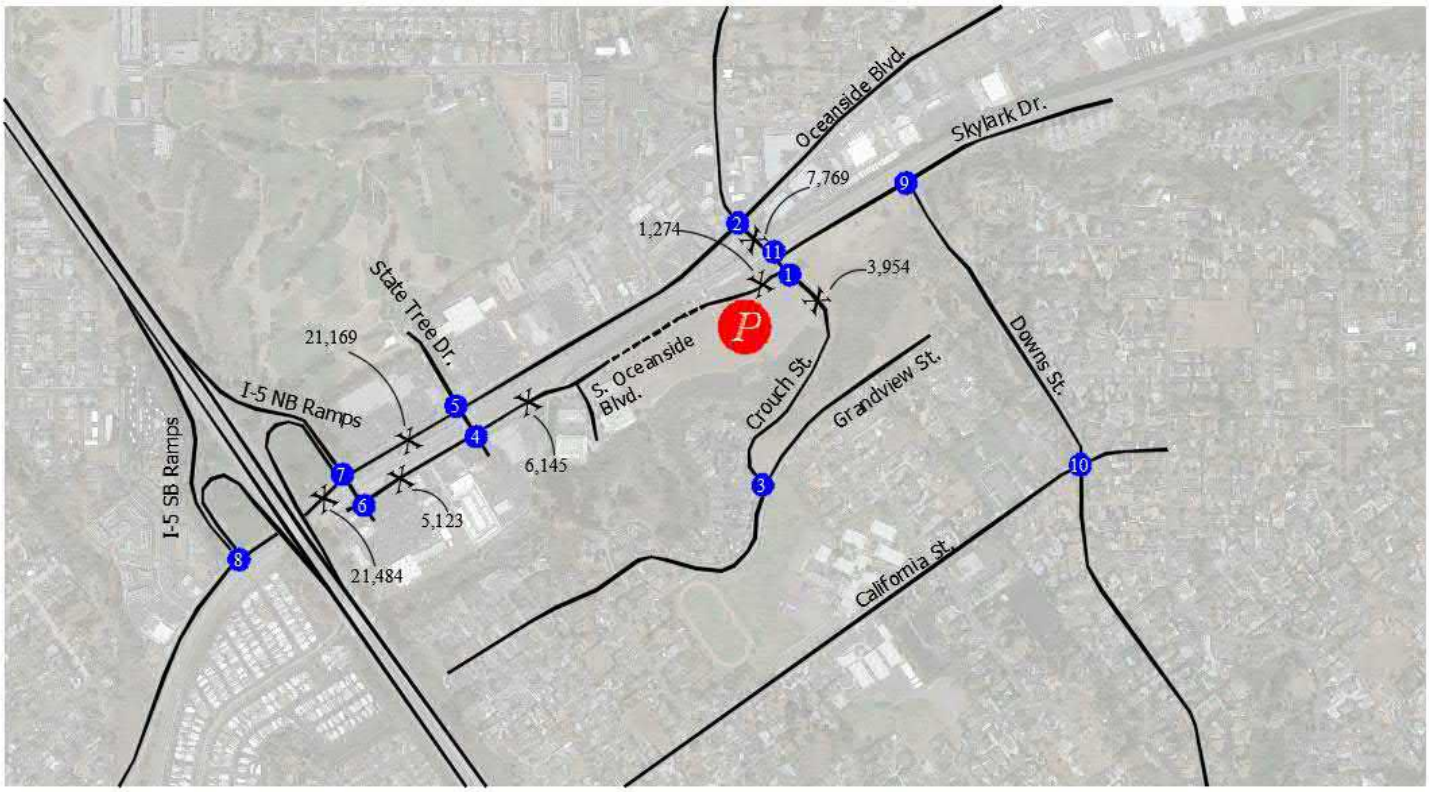
2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)

2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)

4-C = 4 Lane Secondary Collector

As shown on Table 6-3, all street segments are operating at an acceptable level of service D or better in this scenario.

Figure 6-2: Existing Plus Project ADT



Legend

P = Project Location

-------- = Future Roadway

= Studied Intersection Location

X = Studied Street Segment

XX,XXX = ADT Number

N
NO SCALE

Table 6-4 shows the Existing with and without Project to determine if an improvement is required due to the addition of project traffic.

Table 6-4: Existing and Existing Plus Project Street Segment Comparisons

Road	Segment	# of Ln.	LOS "E" Capacity	Class.	Existing			Existing + Project			ΔV/C	I ?
					LOS	Volume	V/C	LOS	Volume	V/C		
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	30,000	4-C	D	20,100	0.67	D	21,484	0.72	0.046	***NO***
	I-5 NB Ramps to State Tree Drive	4	30,000	4-C	D	20,400	0.68	D	21,169	0.71	0.026	***NO***
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	15,000	2-Ca	B	7,000	0.47	C	7,769	0.52	0.051	***NO***
	Skylark Dr. to Grandview St.	2	10,000	2-Cb	B	3,800	0.38	B	3,954	0.40	0.015	***NO***
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	15,000	2-Ca	A	4,200	0.28	B	5,123	0.34	0.062	***NO***
	East of State Tree Drive	2	15,000	2-Ca	A	4,300	0.29	A	6,145	0.41	0.123	***NO***
Project Access Roadway	West of Crouch Street	2	10,000	2-Cb	A	44	0.00	A	1,274	0.13	0.123	***NO***

Legend:
LOS= Level of Service
V/C= Volume to Capacity Ratio
ΔV/C= Change in V/C ratio
I = Improvement Required
2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)
2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)
4-C = 4 Lane Secondary Collector

As shown on Table 6-4, no improvement is required to the studied street segments because the LOS is an acceptable D or better in the with and without project conditions.

6.3 Freeway and Ramp Meter Analysis

Table 6-5 shows the Existing Plus Project Freeway Analysis.

Table 6-6 shows the Existing Plus Project Ramp Meter Analysis

Table 6-5: Existing Plus Project Freeway Analysis

Segment	Lanes	Dir.	Cap.	ADT*	AM					PM				
					Peak Hour %	Dir. Split	PHV	V/C	LOS	Peak Hour %	Dir. Split	PHV	V/C	LOS
Freeway Name														
I-5 (Mission Ave. to Oceanside Blvd.)	4-GP	NB	9,400	212,468	0.070	0.52	7,734	0.823	D	0.064	0.58	7,836	0.834	D
I-5 (Mission Ave. to Oceanside Blvd.)	4-GP	SB	9,400	212,468	0.070	0.48	7,139	0.759	C	0.064	0.42	5,761	0.613	B
I-5 (Oceanside Blvd. to California St.)	4-GP	NB	9,400	212,216	0.070	0.52	7,725	0.822	D	0.064	0.58	7,877	0.838	D
I-5 (Oceanside Blvd. to California St.)	4-GP	SB	9,400	212,216	0.070	0.48	7,130	0.759	C	0.064	0.42	5,704	0.607	B
I-5 (California St. to Cassidy St.)	5-GP	NB	11,750	213,236	0.070	0.54	8,060	0.686	C	0.067	0.54	7,810	0.665	C
I-5 (California St. to Cassidy St.)	4-GP	SB	9,400	213,236	0.070	0.46	6,866	0.730	C	0.067	0.46	6,541	0.696	C

Legend:

Dir.= Direction
Cap. = Capacity
ADT= Average Daily Traffic
V/C= Volume to Capacity Ratio
LOS= Level of Service
PHV= Peak Hour Volume
#-GP= # of General Purpose Lanes

Note:

Capacity for LOS "E" roadway is 2,350.
Taken from Transition between LOS"C" and LOS "D" criteria for Basic Freeway Segments @ 65 mi/hr in "Caltrans Guide for the Preparation of Traffic Impact Studies", December 2002

Peak Hour % and Dir. Split taken from Caltrans internet posted Traffic Volumes

*Caltrans 2019 Count Data

As shown on Table 6-5, all studied Freeway segments are operating at an acceptable level of service D or better in this scenario.

Table 6-6: Existing Plus Project Ramp Meter Analysis

Location		Lanes	Demand (Veh/Hr)	Demand per lane (Veh/Hr/Ln)	Meter Rate (Veh/Hr/Ln)	Excess Demand (Veh/Hr/Ln)	Delay (Min)	Queue (Feet)
I-5 SB Ramp / Oceanside Blvd.	AM	1 SOV	903	813	996	0	0.00	0
	PM	1 SOV	724	652	996	0	0.00	0
I-5 SB Ramp / Oceanside Blvd.	AM	1 HOV	903	90	996	0	0.00	0
	PM	1 HOV	724	72	996	0	0.00	0

NOTE:

Meter rate is based on the most restrictive meter rate provided by Caltrans
Delay = (Demand - Meter Rate) / Meter Rate * 60 minutes/hour
Queue = Excess Demand * 29 feet/vehicle
SOV = Single Occupancy Vehicles at 90%
HOV = High Occupancy Vehicles at 10%

Veh/Hr= Vehicles per hour
Veh/Hr/Ln= Vehicles per hour per lane

Location		Existing Without Project		Existing With Project		Freeway LOS	Change in Delay	D ?
		Delay (Min)	Queue (Ft)	Delay (Min)	Queue (Ft)			
I-5 SB Ramp / Oceanside Blvd. (SOV lane)	AM	0.00	0	0.00	0	C	0.00	NO
	PM	0.00	0	0.00	0	B	0.00	NO
I-5 SB Ramp / Oceanside Blvd. (HOV lane)	AM	0.00	0	0.00	0	C	0.00	NO
	PM	0.00	0	0.00	0	B	0.00	NO

Notes:
D = Deficiency

As shown on Table 6-6, the studied ramp is not expected to have an unacceptable queue and delay in this scenario.

7.0 CUMULATIVE PROJECTS

To conduct Near Term analysis, nearby cumulative projects were considered and included in the analysis. The following cumulative projects traffic volumes were obtained from the City of Oceanside and included in the analysis.

The project located on 1728 Whaley Street was considered to be included in the analysis, however after obtaining the *1728 Whaley Street Vehicle Miles Traveled Analysis (ADM20-00066)* prepared by LOS Engineering, Inc Traffic and Transportation on April 30, 2021 from the City of Oceanside, the project was not included in the analysis. The Whaley Street project was not deemed necessary to include as it was generating a minimal amount of traffic. Based on the trip generation provided in the VMT analysis, the project would only generate 70 to 118 ADT, and based on the SANDAG Trip Generation rates for a single family detached used for this project, the AM and PM peak hour volumes would be 6 and 8 respectively. It can also be assumed that the majority of Whaley Street project traffic will not travel in the Ocean Creek project study area. The project's location is on Whaley Street (which lies south of the proposed Ocean Creek project). Drivers coming to and from Whaley Street can access the I-5 north/south and SR-78 by traveling south towards Vista Way. Drivers who choose to travel north from Whaley Street may enter the Ocean Creek study area along Crouch Street, however it can be assumed that it is not likely that 100% of Whaley Street project trip distribution traffic will travel north and due to the minimal amount of traffic generated by Whaley Street would not have a major effect on the surrounding street segments and intersections studied for the Ocean Creek project, therefore the Whaley Street project was not included in the analysis.

Cumulative Projects List

ID	Project Name	Location	Size	Status
1	Breeze Oceanside Apartments	Southeast corner of Ditmar St. / Godfrey St.	90 units	Included
2	Dunkin Donuts	Northeast corner of Oceanside Blvd. / Goat Hill Dr.	2,136 SF	Included
3	Fairfield Inn	Oceanside Blvd. west of Vine St.	105 rooms	Included
4	Grandview 27 Lots	1902 Grandview St.	27 DU	Included
5	Coastal Academy High School	Along Union Plaza Court south of Oceanside Blvd	1200 students	Included
6	El Corazon Master Plan Phase 1, (Hotel, Parcel 1 Commercial, 80 condos, Parcel 3 apartments and ret	Bounded by Rancho Del Oro Drive on the east, Oceanside Blvd to the south, El Camino Real to the west, Mesa Drive on the nort	465 acre	Included
7	Greenbrier Apartments	Along Greenbrier Drive north of Oceanside Blvd.	60 DU	Included
8	1728 Whaley Street	Northwest corner of Whaley Steet and Hunsker Street	8 DU Junior Accessory	Acknowledged, but not included in analysis

The cumulative project information is provided in **Appendix J**.

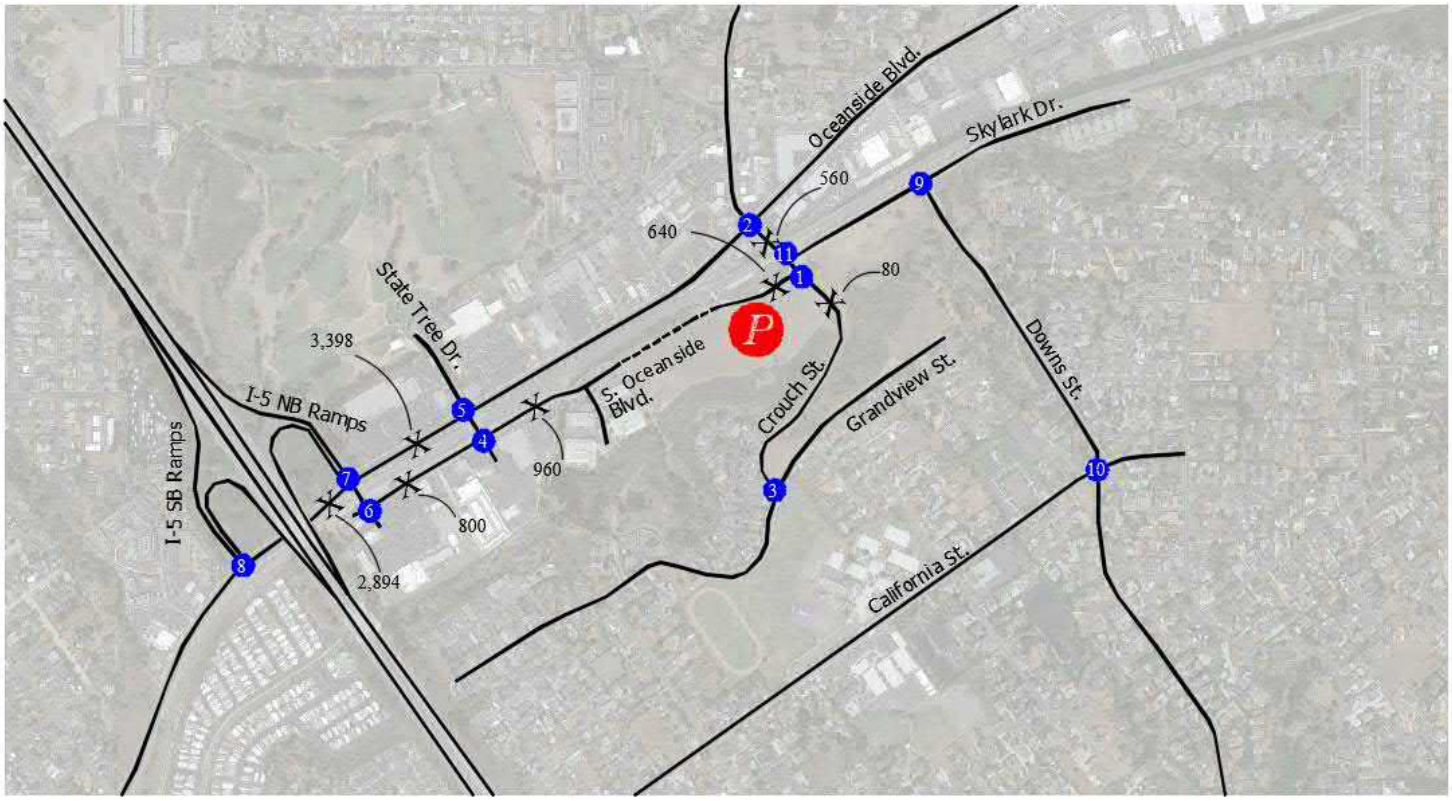
8.0 NEAR TERM OPENING YEAR 2026

Analysis was done in Near Term Opening Year 2026 conditions to determine if a significant deficiency would occur due to the addition of project traffic to the surrounding study area. The volumes used in this condition are based on the existing baseline volumes plus the cumulative project volumes. **Figure 8-1** shows the Cumulative Projects ADT volumes and **Figure 8-2** shows the Cumulative Projects AM/PM turning movement volumes.

8.1 Intersection Analysis

The Near Term peak hour traffic volumes at the studied intersections are shown on **Figure 8-3**.

Figure 8-1: Cumulative Projects ADT Volumes



Legend

P = Project Location

-------- = Future Roadway

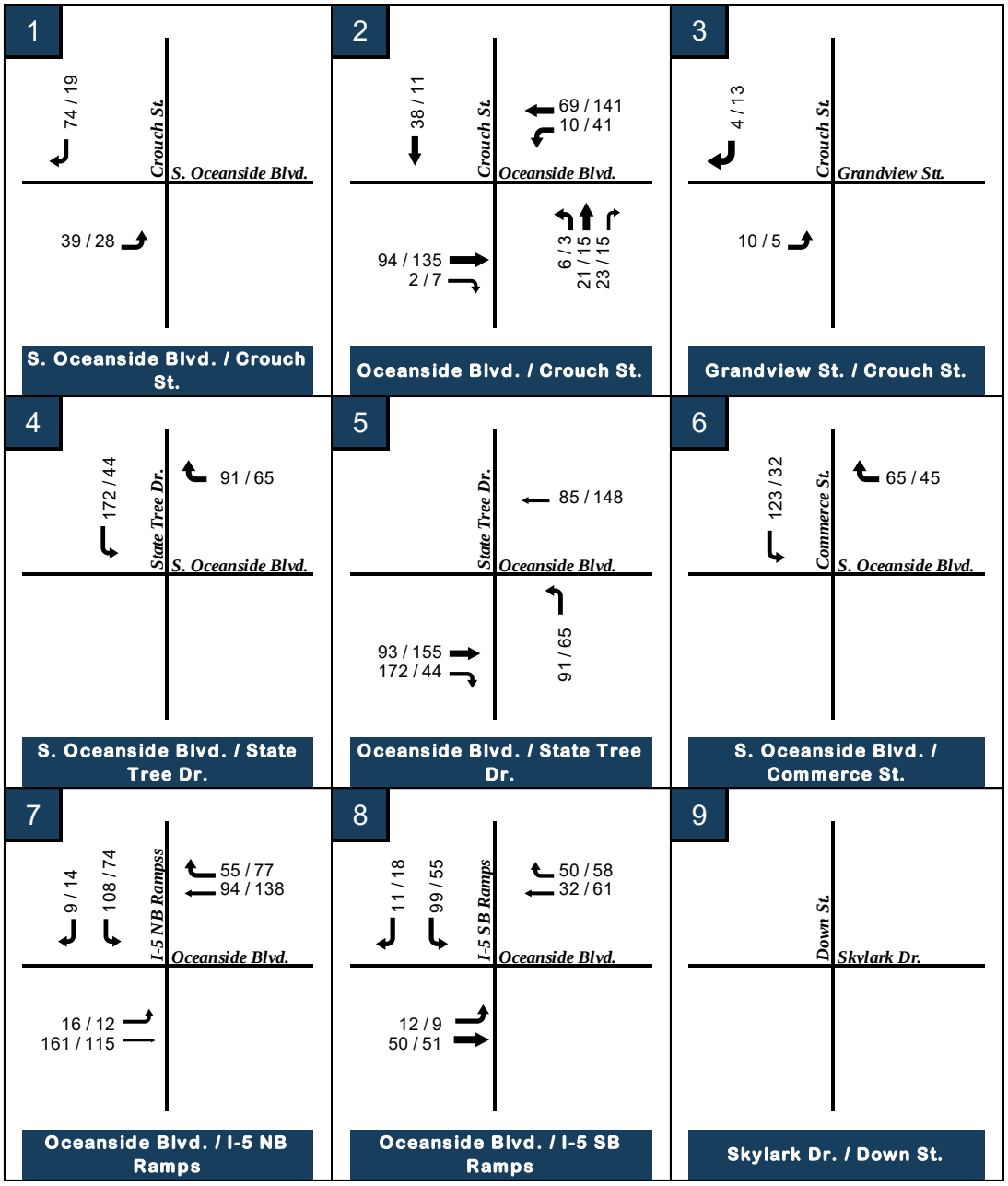
= Studied Intersection Location

X = Studied Street Segment

XX,XXX = ADT Number

N
NO SCALE

Figure 8-2: Cumulative Projects AM and PM Turning Movement Counts



XX / XX = AM / PM Peak hour volumes

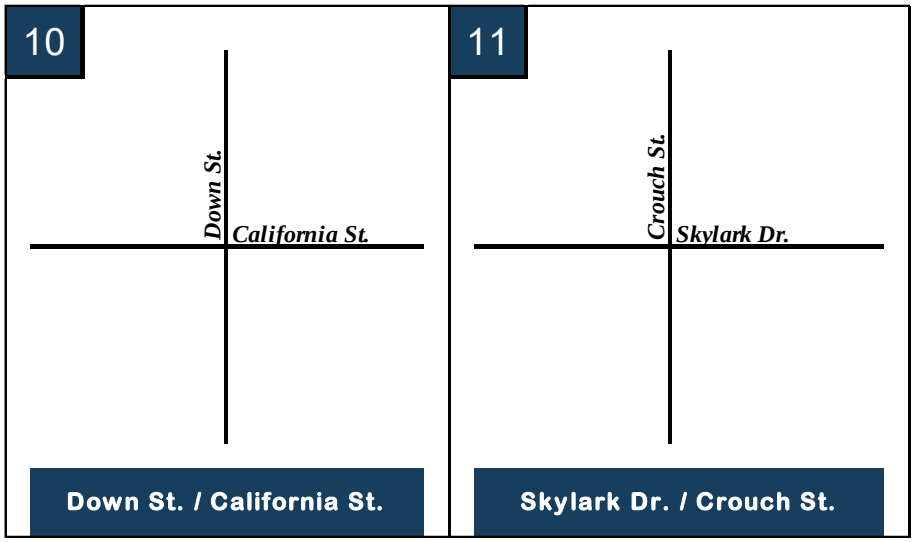
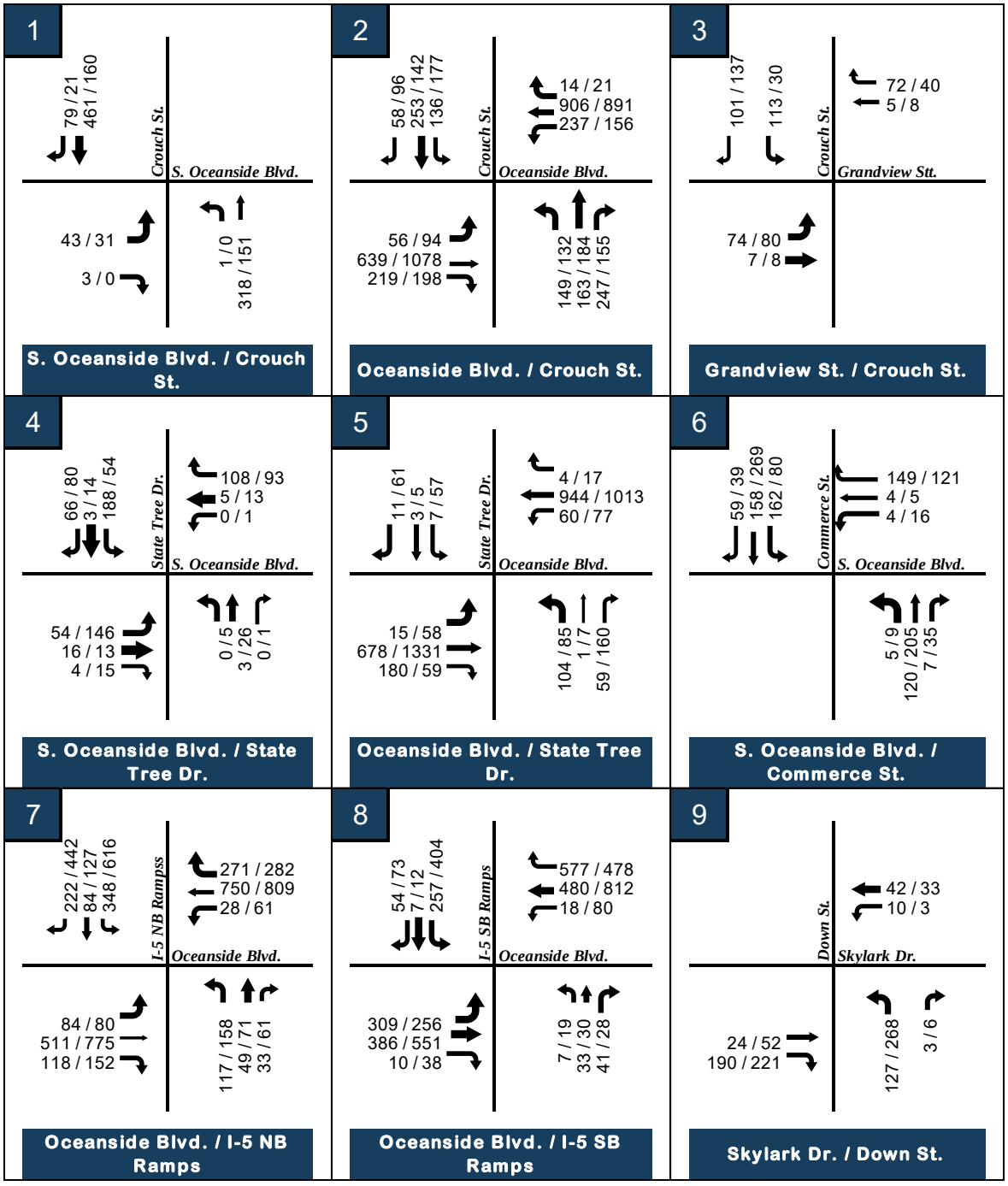
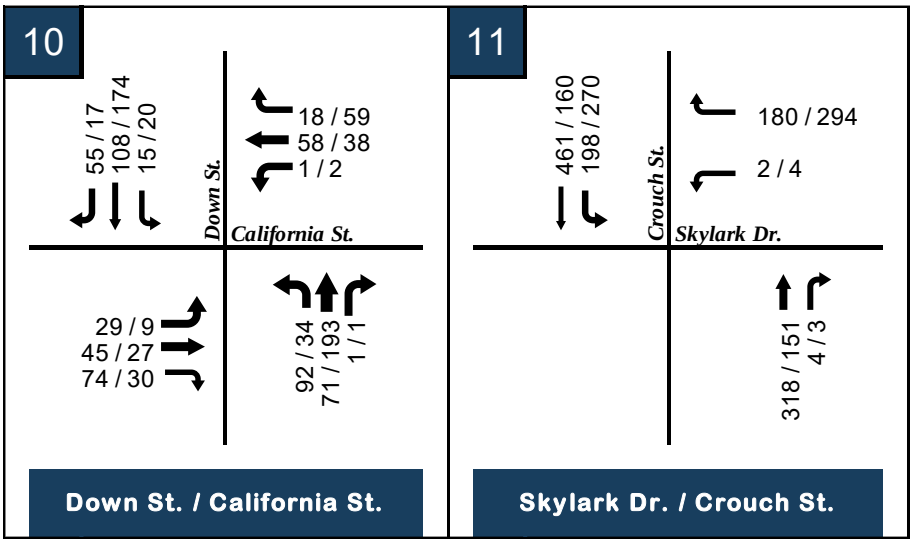

10
Down St.
California St.
Down St. / California St.
11
Crouch St.
Skylark Dr.
Skylark Dr. / Crouch St.

Figure 8-3: Near Term AM and PM Turning Movement Counts



XX / XX = AM / PM Peak hour volumes


10
55 / 17
108 / 174
15 / 20
Down St.
18 / 59
58 / 38
1 / 2
California St.
29 / 9
45 / 27
74 / 30
92 / 34
71 / 193
1 / 1
Down St. / California St.
11
461 / 160
198 / 270
Crouch St.
180 / 294
2 / 4
Skylark Dr.
318 / 151
4 / 3
Skylark Dr. / Crouch St.

The Near Term intersection analysis is shown on **Table 8-1**.

Table 8-1: Near Term Intersection Analysis

#	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	S. Oceanside Blvd. / Crouch St.	Unsignalized	17.4	C	10.8	B
2	Oceanside Blvd. / Crouch St.	Signalized	38.7	D	43.4	D
3	Grandview St. / Crouch St.	Unsignalized	8.3	A	7.8	A
4	S. Oceanside Blvd. / State Tree Dr.	Unsignalized	14.7	B	12.2	B
5	Oceanside Blvd. / State Tree Dr.	Signalized	20.5	C	23.9	C
6	S. Oceanside Blvd. / Commerce St.	Unsignalized	9.5	A	10.2	B
7	Oceanside Blvd. / I-5 NB Ramps	Signalized	21.2	C	38.1	D
8	Oceanside Blvd. / I-5 SB Ramps	Signalized	26.1	C	25.4	C
9	Skylark Dr. / Down St.	Unsignalized	10.6	B	12.6	B
10	Down St. / California St.	Unsignalized	9.2	A	9.5	A
11	Skylark Dr. / Crouch St.	Unsignalized	12.6	B	11.9	B

Notes:

LOS = Level of Service

D = Delay (in sec.)

As shown on Table 8-1, all studied intersections will operate at an acceptable level of service D or better in both the AM and PM peak hour.

The synchro worksheets for the Near Term conditions are provided in **Appendix D**.

8.2 Street Segment Analysis

Table 8-2 shows the Near Term street segment analysis.

Figure 8-4 shows the Near Term ADT volumes.

Table 8-2: Near Term Street Segment Analysis

Road	Segment	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	4-C	30,000	22,994	0.77	D
	I-5 NB Ramps to State Tree Drive	4	4-C	30,000	23,798	0.79	D
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	2-Ca	15,000	7,560	0.50	C
	Skylark Dr. to Grandview St.	2	2-Cb	10,000	3,880	0.39	B
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	2-Ca	15,000	5,000	0.33	B
	East of State Tree Drive	2	2-Ca	15,000	5,260	0.35	A
Project Access Roadway	West of Crouch Street	2	2-Cb	10,000	684	0.07	A

Legend:

Class. = Functional Class

Cap. = Capacity

LOS = Level of Service

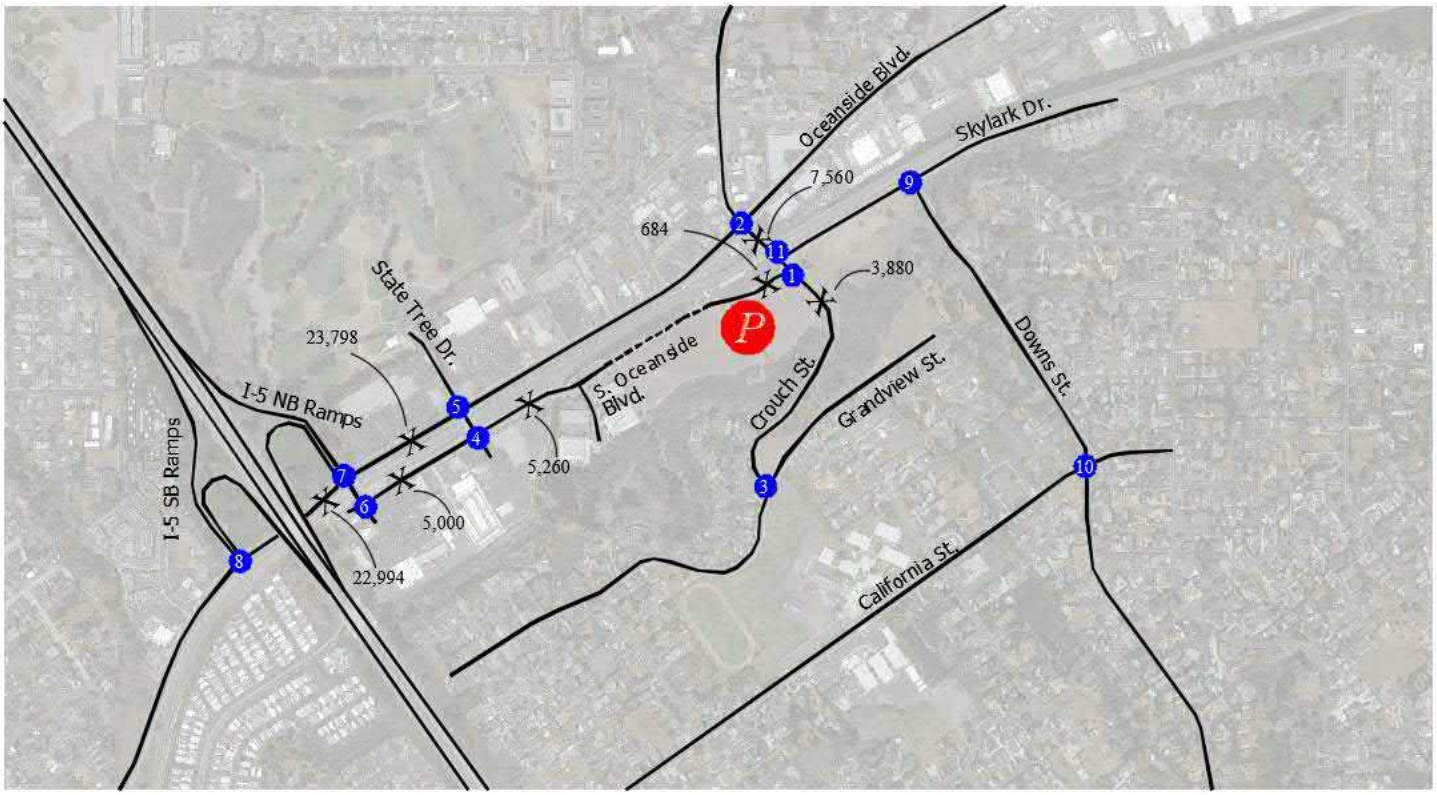
2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)

2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)

4-C = 4 Lane Secondary Collector

As shown on Table 8-2, all street segments are operating at an acceptable level of service D or better in this scenario.

Figure 8-4: Near Term ADT



Legend

P = Project Location

-------- = Future Roadway

= Studied Intersection Location

X = Studied Street Segment

XX,XXX = ADT Number

N
NO SCALE

8.3 Freeway and Ramp Meter Analysis

Table 8-3 shows the Near Term Freeway Analysis.

Table 8-4 shows the Near Term Ramp Meter Analysis

Table 8-3: Near Term Freeway Analysis

Segment	Lanes	Dir.	Cap.	ADT*	AM					PM				
					Peak Hour %	Dir. Split	PHV	V/C	LOS	Peak Hour %	Dir. Split	PHV	V/C	LOS
Freeway Name														
I-5 (Mission Ave. to Oceanside Blvd.)	4-GP	NB	9,400	210,234	0.070	0.52	7,653	0.814	D	0.064	0.58	7,754	0.825	D
I-5 (Mission Ave. to Oceanside Blvd.)	4-GP	SB	9,400	210,234	0.070	0.48	7,064	0.751	C	0.064	0.42	5,701	0.606	B
I-5 (Oceanside Blvd. to California St.)	4-GP	NB	9,400	209,608	0.070	0.52	7,630	0.812	D	0.064	0.58	7,781	0.828	D
I-5 (Oceanside Blvd. to California St.)	4-GP	SB	9,400	209,608	0.070	0.48	7,043	0.749	C	0.064	0.42	5,634	0.599	B
I-5 (California St. to Cassidy St.)	5-GP	NB	11,750	210,618	0.070	0.54	7,961	0.678	C	0.067	0.54	7,714	0.656	C
I-5 (California St. to Cassidy St.)	4-GP	SB	9,400	210,618	0.070	0.46	6,782	0.721	C	0.067	0.46	6,461	0.687	C

Legend:

Dir.= Direction
Cap. = Capacity
ADT= Average Daily Traffic
V/C= Volume to Capacity Ratio
LOS= Level of Service
PHV= Peak Hour Volume
#-GP= # of General Purpose Lanes

Note:

Capacity for LOS "E" roadway is 2,350.
Taken from Transition between LOS"C" and LOS "D" criteria for Basic Freeway Segments @ 65 mi/hr in "Caltrans Guide for the Preparation of Traffic Impact Studies", December 2002

Peak Hour % and Dir. Split taken from Caltrans internet posted Traffic Volumes

As shown on Table 8-3, all studied Freeway segments are operating at an acceptable level of service D or better in this scenario.

Table 8-4: Near Term Ramp Meter Analysis

Location		Lanes	Demand (Veh/Hr)	Demand per lane (Veh/Hr/Ln)	Meter Rate (Veh/Hr/Ln)	Excess Demand (Veh/Hr/Ln)	Delay (Min)	Queue (Feet)
I-5 SB Ramp / Oceanside Blvd.	AM	1 SOV	981	883	996	0	0.00	0
	PM	1 SOV	798	718	996	0	0.00	0
I-5 SB Ramp / Oceanside Blvd.	AM	1 HOV	981	98	996	0	0.00	0
	PM	1 HOV	798	80	996	0	0.00	0

NOTE:
Meter rate is based on the most restrictive meter rate provided by Caltrans
Delay = (Demand - Meter Rate) / Meter Rate * 60 minutes/hour
Queue = Excess Demand * 29 feet/vehicle
SOV = Single Occupancy Vehicles at 90%
HOV = High Occupancy Vehicles at 10%
Veh/Hr= Vehicles per hour
Veh/Hr/Ln= Vehicles per hour per lane

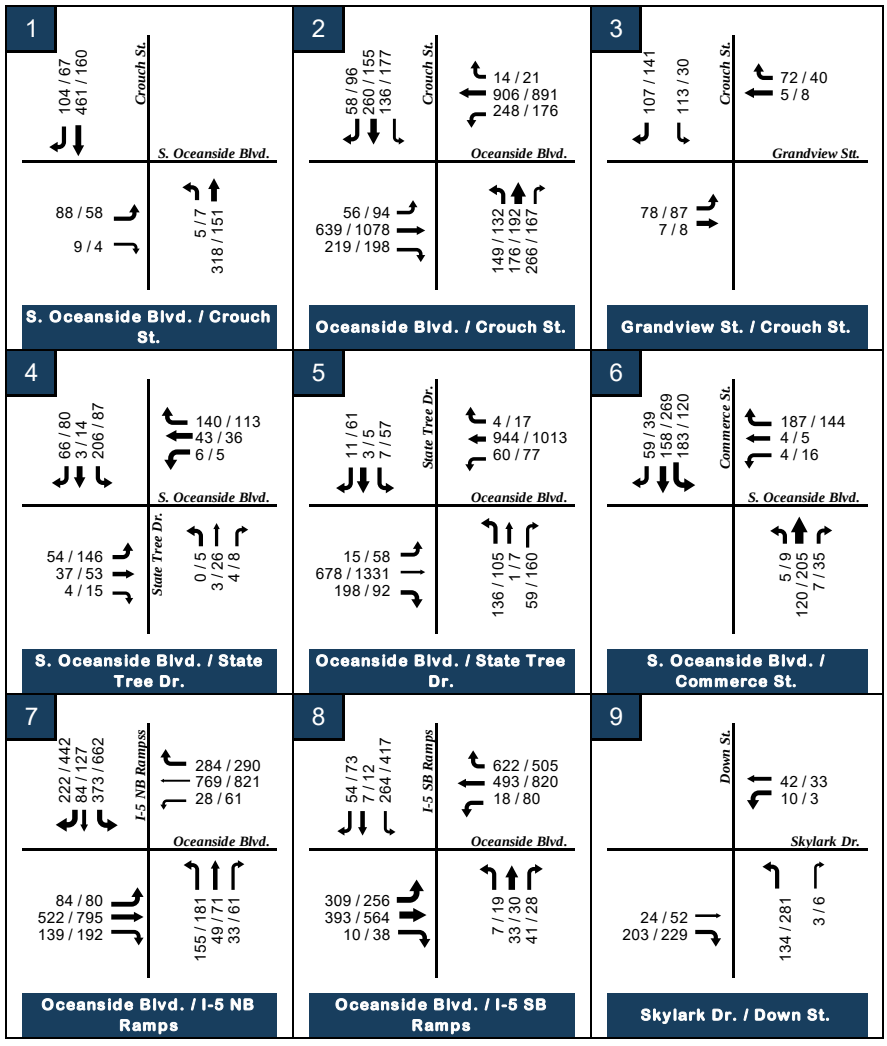
As shown on Table 8-4, the studied ramp is not expected to have an unacceptable queue and delay in this scenario.

9.0 NEAR TERM OPENING YEAR 2026 PLUS PROJECT

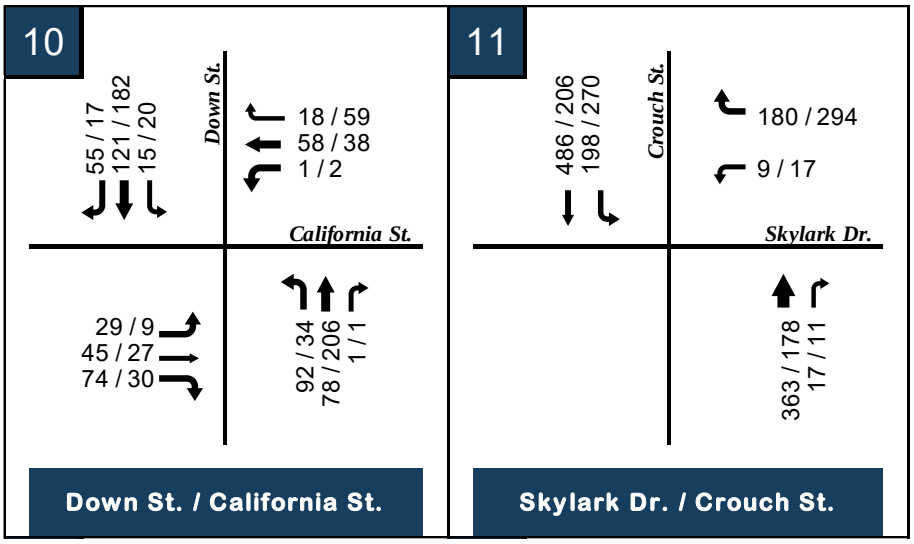
9.1 Intersection Analysis

The Near Term Plus Project peak hour traffic volumes at the studied intersections are shown on **Figure 9-1**.

Figure 9-1: Near Term Plus Project AM and PM Volumes



XX / XX = AM / PM Peak hour volumes


10
55 / 17
121 / 182
15 / 20
Down St.
18 / 59
58 / 38
1 / 2
California St.
29 / 9
45 / 27
74 / 30
92 / 34
78 / 206
1 / 1
Down St. / California St.
11
486 / 206
198 / 270
Crouch St.
180 / 294
9 / 17
Skylark Dr.
363 / 178
17 / 11
Skylark Dr. / Crouch St.

The Near Term Plus Project intersection analysis is shown on **Table 9-1**.

Table 9-1: Near Term Plus Project Intersection Analysis

#	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	S. Oceanside Blvd. / Crouch St.	Unsignalized	20.3	C	11.2	B
2	Oceanside Blvd. / Crouch St.	Signalized	39.7	D	45.9	D
3	Grandview St. / Crouch St.	Unsignalized	8.4	A	7.8	A
4	S. Oceanside Blvd. / State Tree Dr.	Unsignalized	17.0	C	14.2	B
5	Oceanside Blvd. / State Tree Dr.	Signalized	26.0	C	28.9	C
6	S. Oceanside Blvd. / Commerce St.	Unsignalized	10.2	B	10.8	B
7	Oceanside Blvd. / I-5 NB Ramps	Signalized	21.9	C	42.0	D
8	Oceanside Blvd. / I-5 SB Ramps	Signalized	29.3	C	25.9	C
9	Skylark Dr. / Down St.	Unsignalized	10.7	B	12.9	B
10	Down St. / California St.	Unsignalized	9.3	A	9.7	A
11	Skylark Dr. / Crouch St.	Unsignalized	15.5	C	14.3	B

Notes:

LOS = Level of Service

D = Delay (in sec.)

As shown on Table 9-1, all studied intersections will operate at an acceptable level of service D or better in both the AM and PM peak hour.

The synchro worksheets for the Near Term Plus Project conditions are provided in **Appendix E**.

Table 9-2 shows the Near Term with and without Project intersection comparison to determine if an improvement is required.

Table 9-2: Near Term and Near Term Plus Project Intersection Comparisons

#	Intersection	Near-Term				Near-Term + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	I?	PM Peak Hour		Δ	I?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	S. Oceanside Blvd. / Crouch St.	17.4	C	10.8	B	20.3	C	2.9	No	11.2	B	0.4	No
2	Oceanside Blvd. / Crouch St.	38.7	D	43.4	D	39.7	D	1.0	No	45.9	D	2.5	No
3	Grandview St. / Crouch St.	8.3	A	7.8	A	8.4	A	0.1	No	7.8	A	0.0	No
4	S. Oceanside Blvd. / State Tree Dr.	14.7	B	12.2	B	17.0	C	2.3	No	14.2	B	2.0	No
5	Oceanside Blvd. / State Tree Dr.	20.5	C	23.9	C	26.0	C	5.5	No	28.9	C	5.0	No
6	S. Oceanside Blvd. / Commerce St.	9.5	A	10.2	B	10.2	B	0.7	No	10.8	B	0.6	No
7	Oceanside Blvd. / I-5 NB Ramps	21.2	C	38.1	D	21.9	C	0.7	No	42.0	D	3.9	No
8	Oceanside Blvd. / I-5 SB Ramps	26.1	C	25.4	C	29.3	C	3.2	No	25.9	C	0.5	No
9	Skylark Dr. / Down St.	10.6	B	12.6	B	10.7	B	0.1	No	12.9	B	0.3	No
10	Down St. / California St.	9.2	A	9.5	A	9.3	C	0.1	No	9.7	B	0.2	No
11	Skylark Dr. / Crouch St.	12.6	B	11.9	B	15.5	C	2.9	No	14.3	B	2.4	No

Notes:
LOS = Level of Service
D = Delay (in sec.)
Δ = Change in Delay (in sec.)
I = Improvement required

As shown on Table 9-2, no improvements are needed because the intersections have an acceptable LOS of D or better in the with and without project conditions.

9.2 Street Segment Analysis

Table 9-3 shows the Near Term Plus Project street segment analysis.

Figure 9-2 shows the Near Term Plus Project ADT volumes.

Table 9-3: Near Term Plus Project Street Segment Analysis

Road	Segment	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	4-C	30,000	24,378	0.81	D
	I-5 NB Ramps to State Tree Drive	4	4-C	30,000	24,567	0.82	D
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	2-Ca	15,000	8,329	0.56	C
	Skylark Dr. to Grandview St.	2	2-Cb	10,000	4,034	0.40	C
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	2-Ca	15,000	5,923	0.39	C
	East of State Tree Drive	2	2-Ca	15,000	7,105	0.47	A
Project Access Roadway	West of Crouch Street	2	2-Cb	10,000	1,914	0.19	A

Legend:

Class. = Functional Class

Cap. = Capacity

LOS = Level of Service

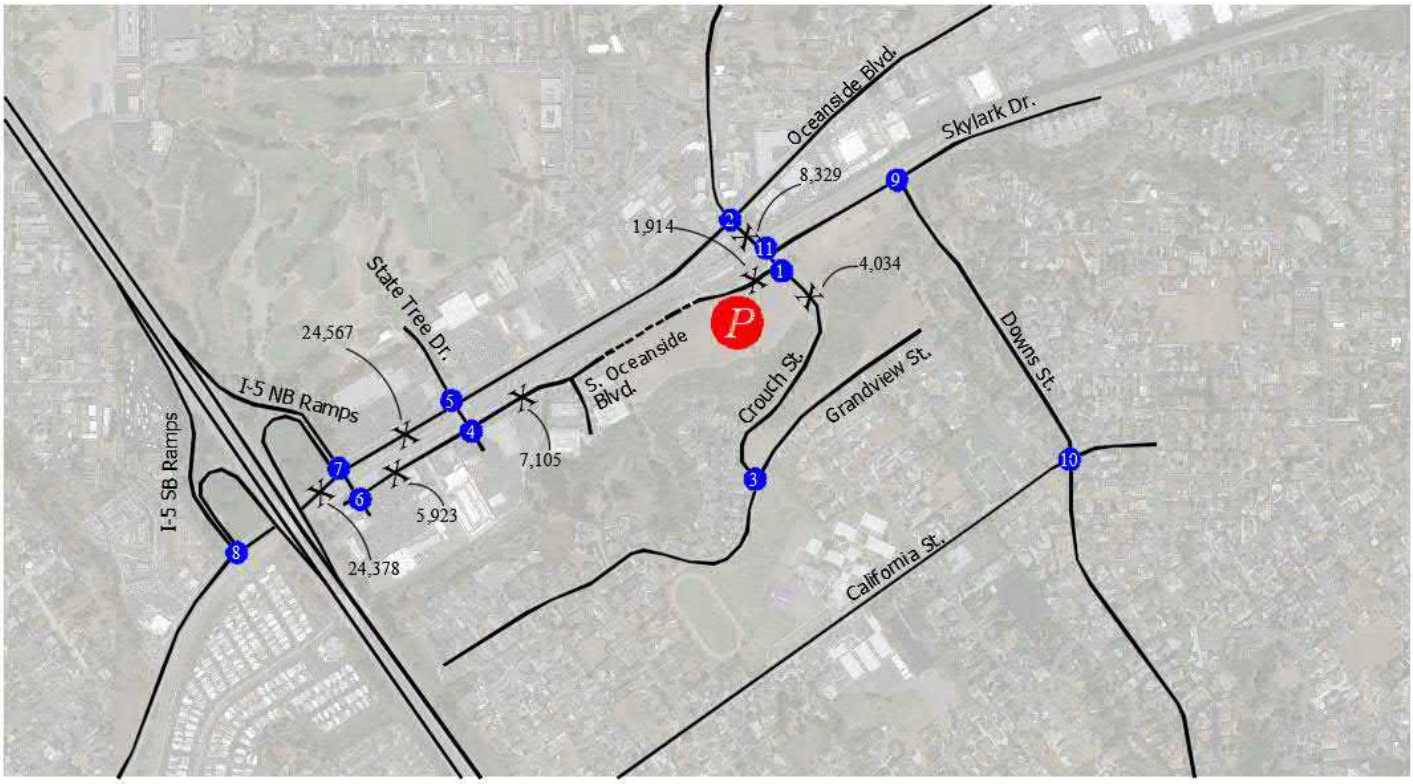
2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)

2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)

4-C = 4 Lane Secondary Collector

As shown on Table 9-3, all street segments are operating at an acceptable level of service D or better in this scenario.

Figure 9-2: Near Term Plus Project ADT



Legend

P = Project Location

-------- = Future Roadway

= Studied Intersection Location

X = Studied Street Segment

XX,XXX = ADT Number

N
NO SCALE

Table 9-4 shows the Near Term with and without Project to determine if an improvement is required due to the addition of project traffic.

Table 9-4: Near Term and Near Term Plus Project Street Segment Comparisons

Road	Segment	# of Ln.	LOS "E" Capacity	Class.	Near-Term			Near-Term + Project			ΔV/C	I ?
					LOS	Volume	V/C	LOS	Volume	V/C		
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	30,000	4-C	D	22,994	0.77	D	24,378	0.81	0.046	***NO***
	I-5 NB Ramps to State Tree Drive	4	30,000	4-C	D	23,798	0.79	D	24,567	0.82	0.026	***NO***
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	15,000	2-Ca	C	7,560	0.50	C	8,329	0.56	0.051	***NO***
	Skylark Dr. to Grandview St.	2	10,000	2-Cb	B	3,880	0.39	C	4,034	0.40	0.015	***NO***
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	15,000	2-Ca	B	5,000	0.33	C	5,923	0.39	0.062	***NO***
	East of State Tree Drive	2	15,000	2-Ca	A	5,260	0.35	A	7,105	0.47	0.123	***NO***
Project Access Roadway	West of Crouch Street	2	10,000	2-Cb	A	684	0.07	A	1,914	0.19	0.123	***NO***

Legend:
LOS= Level of Service
V/C= Volume to Capacity Ratio
ΔV/C= Change in V/C ratio
I = Improvement Required
2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)
2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)
4-C = 4 Lane Secondary Collector

As shown on Table 9-4, no improvement is required to the studied street segments because the LOS are acceptable and the change in volume to capacity ratio is less than the 0.02 threshold.

9.3 Freeway and Ramp Meter Analysis

Table 9-5 shows the Near Term Plus Project Freeway Analysis.

Table 9-6 shows the Near Term Plus Project Ramp Meter Analysis

Table 9-5: Near Term Plus Project Freeway Analysis

Segment	Lanes	Dir.	Cap.	ADT*	AM					PM				
					Peak Hour %	Dir. Split	PHV	V/C	LOS	Peak Hour %	Dir. Split	PHV	V/C	LOS
Freeway Name														
I-5 (Mission Ave. to Oceanside Blvd.)	4-GP	NB	9,400	210,541	0.070	0.52	7,664	0.815	D	0.064	0.58	7,765	0.826	D
I-5 (Mission Ave. to Oceanside Blvd.)	4-GP	SB	9,400	210,541	0.070	0.48	7,074	0.753	C	0.064	0.42	5,709	0.607	B
I-5 (Oceanside Blvd. to California St.)	4-GP	NB	9,400	210,684	0.070	0.52	7,669	0.816	D	0.064	0.58	7,821	0.832	D
I-5 (Oceanside Blvd. to California St.)	4-GP	SB	9,400	210,684	0.070	0.48	7,079	0.753	C	0.064	0.42	5,663	0.602	B
I-5 (California St. to Cassidy St.)	5-GP	NB	11,750	211,694	0.070	0.54	8,002	0.681	C	0.067	0.54	7,753	0.660	C
I-5 (California St. to Cassidy St.)	4-GP	SB	9,400	211,694	0.070	0.46	6,817	0.725	C	0.067	0.46	6,494	0.691	C

Legend:

Dir.= Direction
Cap. = Capacity
ADT= Average Daily Traffic
V/C= Volume to Capacity Ratio
LOS= Level of Service
PHV= Peak Hour Volume
#-GP= # of General Purpose Lanes

Note:

Capacity for LOS "E" roadway is 2,350.
Taken from Transition between LOS"C" and LOS "D" criteria for Basic Freeway Segments @ 65 mi/hr in "Caltrans Guide for the Preparation of Traffic Impact Studies", December 2002

Peak Hour % and Dir. Split taken from Caltrans internet posted Traffic Volumes

As shown on Table 9-5, all studied Freeway segments are operating at an acceptable level of service D or better in this scenario.

Table 9-6: Near Term Plus Project Ramp Meter Analysis

Location		Lanes	Demand (Veh/Hr)	Demand per lane (Veh/Hr/Ln)	Meter Rate (Veh/Hr/Ln)	Excess Demand (Veh/Hr/Ln)	Delay (Min)	Queue (Feet)
I-5 SB Ramp / Oceanside Blvd.	AM	1 SOV	1027	924	996	0	0.00	0
	PM	1 SOV	825	743	996	0	0.00	0
I-5 SB Ramp / Oceanside Blvd.	AM	1 HOV	1027	103	996	0	0.00	0
	PM	1 HOV	825	83	996	0	0.00	0

NOTE:

Meter rate is based on the most restrictive meter rate provided by Caltrans

Delay = (Demand - Meter Rate) / Meter Rate * 60 minutes/hour

Queue = Excess Demand * 29 feet/vehicle

SOV = Single Occupancy Vehicles at 90%

HOV = High Occupancy Vehicles at 10%

Veh/Hr= Vehicles per hour

Veh/Hr/Ln= Vehicles per hour per lane

Location		Near Term Without Project		Near Term With Project		Freeway LOS	Change in Delay	D ?
		Delay (Min)	Queue (Ft)	Delay (Min)	Queue (Ft)			
I-5 SB Ramp / Oceanside Blvd. (SOV lane)	AM	0.00	0	0.00	0	C	0.00	NO
	PM	0.00	0	0.00	0	B	0.00	NO
I-5 SB Ramp / Oceanside Blvd. (HOV lane)	AM	0.00	0	0.00	0	C	0.00	NO
	PM	0.00	0	0.00	0	B	0.00	NO

Notes:

D = Deficiency

As shown on Table 9-6, the studied ramp is not expected to have an unacceptable queue and delay in this scenario.

10.0 Buildout Year 2030

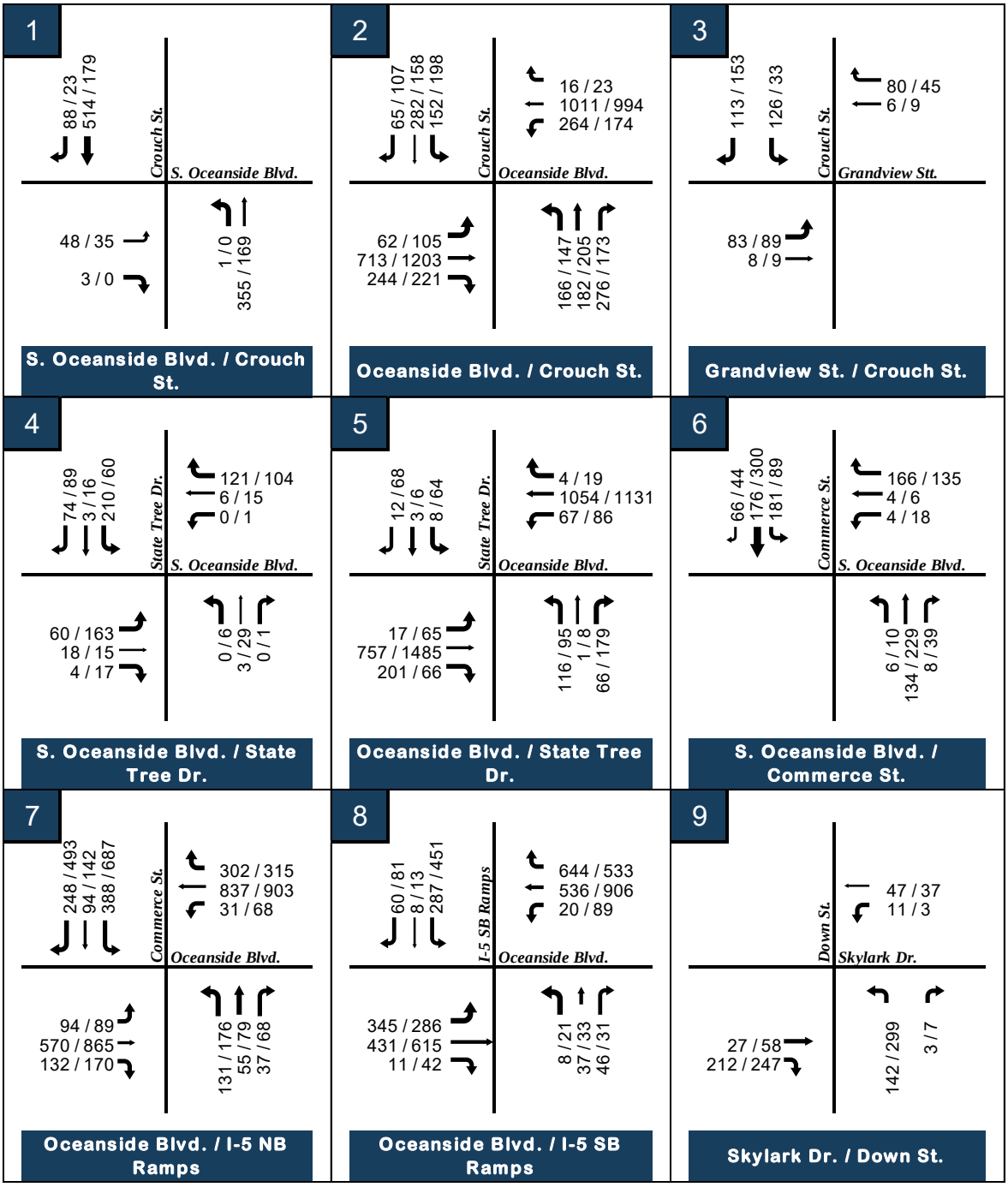
Analysis was done in Buildout Year 2030 conditions to determine if a significant deficiency would occur due to the addition of project traffic to the surrounding study area. The volumes used in this condition are based on the Near Term baseline volumes for Year 2026 (existing plus cumulative projects) plus a 2.9% growth factor per year (up to Year 2030). The 2.9% growth factor was determined by obtaining SANDAG Series 13 Year 2020 and Year 2035 Transportation Forecast Information Center models and comparing the growth in ADT for the studied street segments in this analysis. Each segment had a calculated growth percentage per year and the average percentage was taken for all segments and was determined to be the 2.9% growth factor. A Series 13 model was considered over a Series 14 model to maintain consistency with the SANDAG Select Zone model that is provided in Appendix I of this report which is also a Series 13.

The calculations for determining the growth factor and SANDAG TFIC models are provided in **Appendix A** of this report.

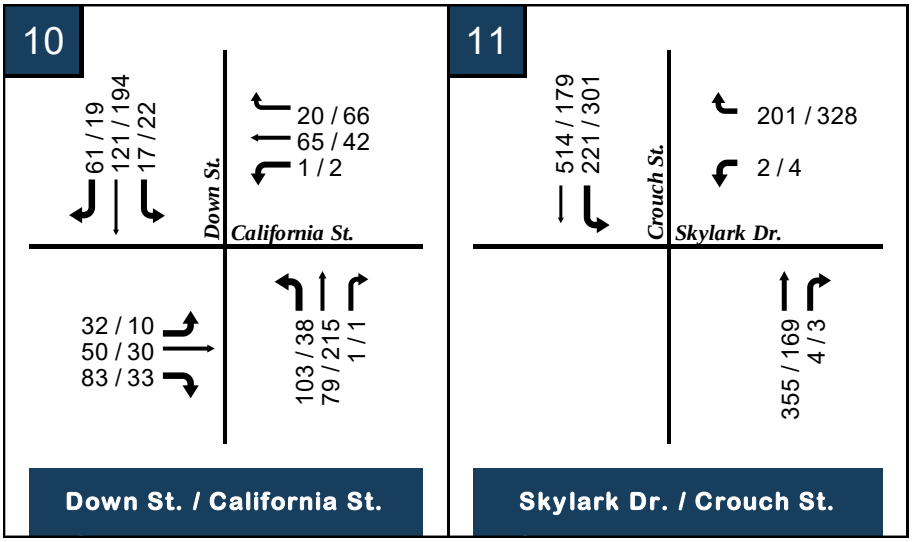
10.1 Intersection Analysis

The Year 2030 peak hour traffic volumes at the studied intersections are shown on **Figure 10-1**.

Figure 10-1: Year 2030 AM and PM Turning Movement Counts



XX / XX = AM / PM Peak hour volumes



The Year 2030 intersection analysis is shown on **Table 10-1**.

Table 10-1: Year 2030 Intersection Analysis

#	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	S. Oceanside Blvd. / Crouch St.	Unsignalized	19.8	C	11.2	B
2	Oceanside Blvd. / Crouch St.	Signalized	45.4	D	51.3	D
3	Grandview St. / Crouch St.	Unsignalized	8.6	A	7.9	A
4	S. Oceanside Blvd. / State Tree Dr.	Unsignalized	16.3	C	13.1	B
5	Oceanside Blvd. / State Tree Dr.	Signalized	24.6	C	30.2	C
6	S. Oceanside Blvd. / Commerce St.	Unsignalized	10.2	B	11.0	B
7	Oceanside Blvd. / I-5 NB Ramps	Signalized	24.9	C	41.4	D
8	Oceanside Blvd. / I-5 SB Ramps	Signalized	33.9	C	31.0	C
9	Skylark Dr. / Down St.	Unsignalized	10.9	B	13.7	B
10	Down St. / California St.	Unsignalized	9.6	A	10.0	A
11	Skylark Dr. / Crouch St.	Unsignalized	13.7	B	12.7	B

Notes:

LOS = Level of Service

D = Delay (in sec.)

As shown on Table 10-1, all studied intersections will operate at an acceptable level of service D or better in both the AM and PM peak hour.

The synchro worksheets for the Year 2030 conditions are provided in **Appendix F**.

10.2 Street Segment Analysis

Table 10-2 shows the Year 2030 street segment analysis.

Figure 10-2 shows the Year 2030 ADT volumes.

Table 10-2: Year 2030 Street Segment Analysis

Road	Segment	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	4-C	30,000	25,661	0.86	E
	I-5 NB Ramps to State Tree Drive	4	4-C	30,000	26,559	0.89	E
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	2-Ca	15,000	8,437	0.56	C
	Skylark Dr. to Grandview St.	2	2-Cb	10,000	4,330	0.43	C
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	2-Ca	15,000	5,580	0.37	B
	East of State Tree Drive	2	2-Ca	15,000	5,870	0.39	A
Project Access Roadway	West of Crouch Street	2	2-Cb	10,000	763	0.08	A

Legend:

Class. = Functional Class

Cap. = Capacity

LOS = Level of Service

2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)

2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)

4-C = 4 Lane Secondary Collector

As shown on Table 10-2, all street segments are operating at an acceptable level of service D or better in this scenario except for the following:

- Oceanside Blvd. (I-5 SB Ramps to I-5 NB Ramps.)
- Oceanside Blvd. (I-5 NB Ramps to State Tree Dr.)

Additionally, a street segment table is provided below for the 2030 conditions and with the assumption that Oceanside Boulevard is classified as it's 2030 General Plan classification as a 4-lane major with a capacity of 40,000 ADT.

Road	Segment	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	4-M	40,000	25,661	0.64	C
	I-5 NB Ramps to State Tree Drive	4	4-M	40,000	26,559	0.66	C
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	2-Ca	15,000	8,437	0.56	C
	Skylark Dr. to Grandview St.	2	2-Cb	10,000	4,330	0.43	C
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	2-Ca	15,000	5,580	0.37	B
	East of State Tree Drive	2	2-Ca	15,000	5,870	0.39	A
Project Access Roadway	West of Crouch Street	2	2-Cb	10,000	763	0.08	A

Legend:

Class. = Functional Class

Cap. = Capacity

LOS = Level of Service

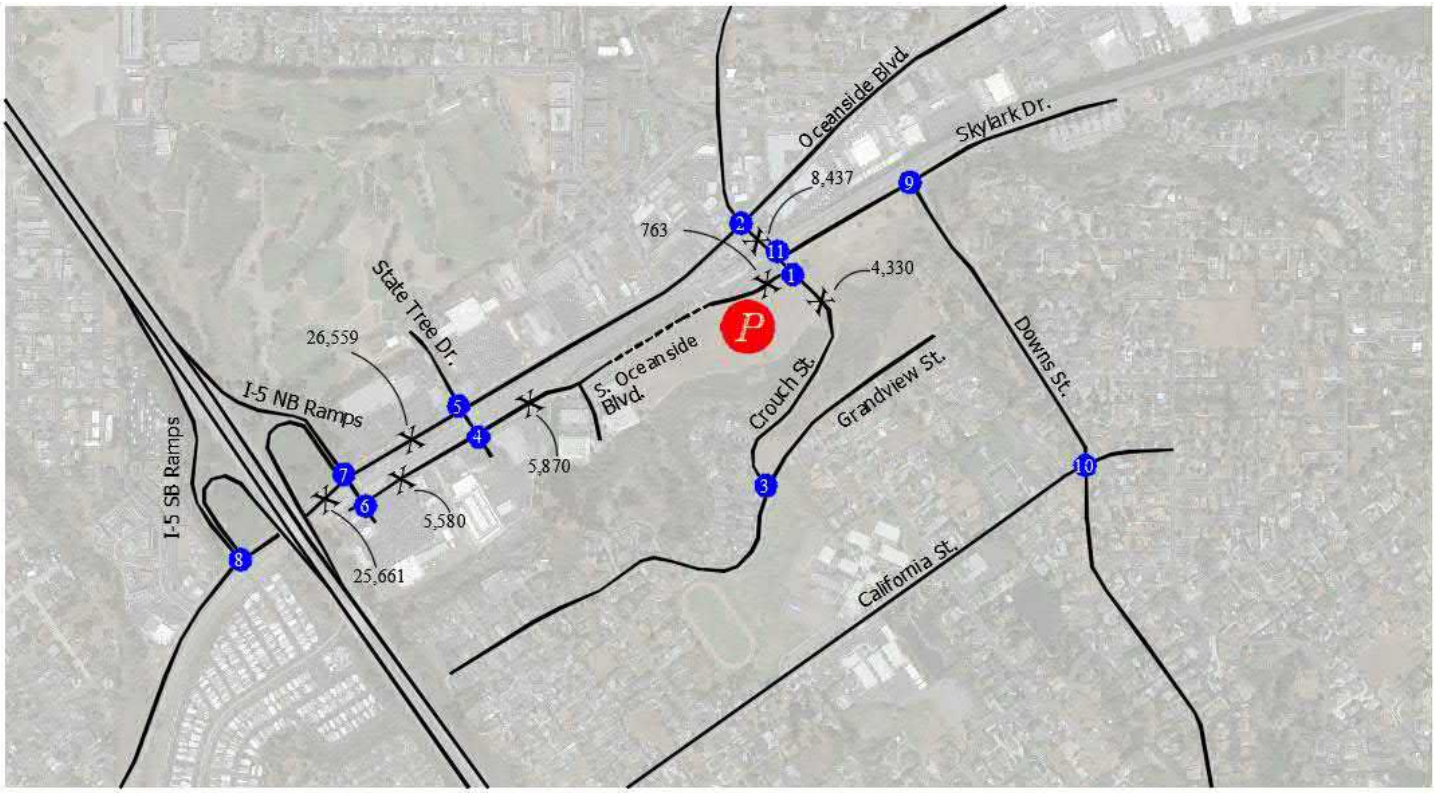
2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)

2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)

4-M = 4-lane major

As shown above, the level of service for Oceanside Boulevard has improved to a LOS C.

Figure 10-2: Year 2030 ADT



Legend

P = Project Location

-------- = Future Roadway

= Studied Intersection Location

X = Studied Street Segment

XX,XXX = ADT Number

N
NO SCALE

10.3 Freeway and Ramp Meter Analysis

Table 10-3 shows the Year 2030 Freeway Analysis.

Table 10-4 shows the Year 2030 Ramp Meter Analysis

Table 10-3: Year 2030 Freeway Analysis

Segment	Lanes	Dir.	Cap.	ADT*	AM					PM				
					Peak Hour %	Dir. Split	PHV	V/C	LOS	Peak Hour %	Dir. Split	PHV	V/C	LOS
Freeway Name														
I-5 (Mission Ave. to Oceanside Blvd.)	4-GP	NB	9,400	212,468	0.070	0.52	7,734	0.823	D	0.064	0.58	7,836	0.834	D
I-5 (Mission Ave. to Oceanside Blvd.)	4-GP	SB	9,400	212,468	0.070	0.48	7,139	0.759	C	0.064	0.42	5,761	0.613	B
I-5 (Oceanside Blvd. to California St.)	4-GP	NB	9,400	212,216	0.070	0.52	7,725	0.822	D	0.064	0.58	7,877	0.838	D
I-5 (Oceanside Blvd. to California St.)	4-GP	SB	9,400	212,216	0.070	0.48	7,130	0.759	C	0.064	0.42	5,704	0.607	B
I-5 (California St. to Cassidy St.)	5-GP	NB	11,750	213,236	0.070	0.54	8,060	0.686	C	0.067	0.54	7,810	0.665	C
I-5 (California St. to Cassidy St.)	4-GP	SB	9,400	213,236	0.070	0.46	6,866	0.730	C	0.067	0.46	6,541	0.696	C

Legend:

Dir.= Direction
Cap. = Capacity
ADT= Average Daily Traffic
V/C= Volume to Capacity Ratio
LOS= Level of Service
PHV= Peak Hour Volume
#-GP= # of General Purpose Lanes

Note:

Capacity for LOS "E" roadway is 2,350.
Taken from Transition between LOS"C" and LOS "D" criteria for Basic Freeway Segments @ 65 mi/hr in "Caltrans Guide for the Preparation of Traffic Impact Studies", December 2002

Peak Hour % and Dir. Split taken from Caltrans internet posted Traffic Volumes

As shown on Table 10-3, all studied Freeway segments are operating at an acceptable level of service D or better in this scenario.

Table 10-4: Year 2030 Ramp Meter Analysis

Location		Lanes	Demand (Veh/Hr)	Demand per lane (Veh/Hr/Ln)	Meter Rate (Veh/Hr/Ln)	Excess Demand (Veh/Hr/Ln)	Delay (Min)	Queue (Feet)
I-5 SB Ramp / Oceanside Blvd.	AM	1 SOV	1026	923	996	0	0.00	0
	PM	1 SOV	852	767	996	0	0.00	0
I-5 SB Ramp / Oceanside Blvd.	AM	1 HOV	1026	103	996	0	0.00	0
	PM	1 HOV	852	85	996	0	0.00	0

NOTE:
Meter rate is based on the most restrictive meter rate provided by Caltrans
Delay = (Demand - Meter Rate) / Meter Rate * 60 minutes/hour
Queue = Excess Demand * 29 feet/vehicle
SOV = Single Occupancy Vehicles at 90%
HOV = High Occupancy Vehicles at 10%

Veh/Hr= Vehicles per hour
Veh/Hr/Ln= Vehicles per hour per lane

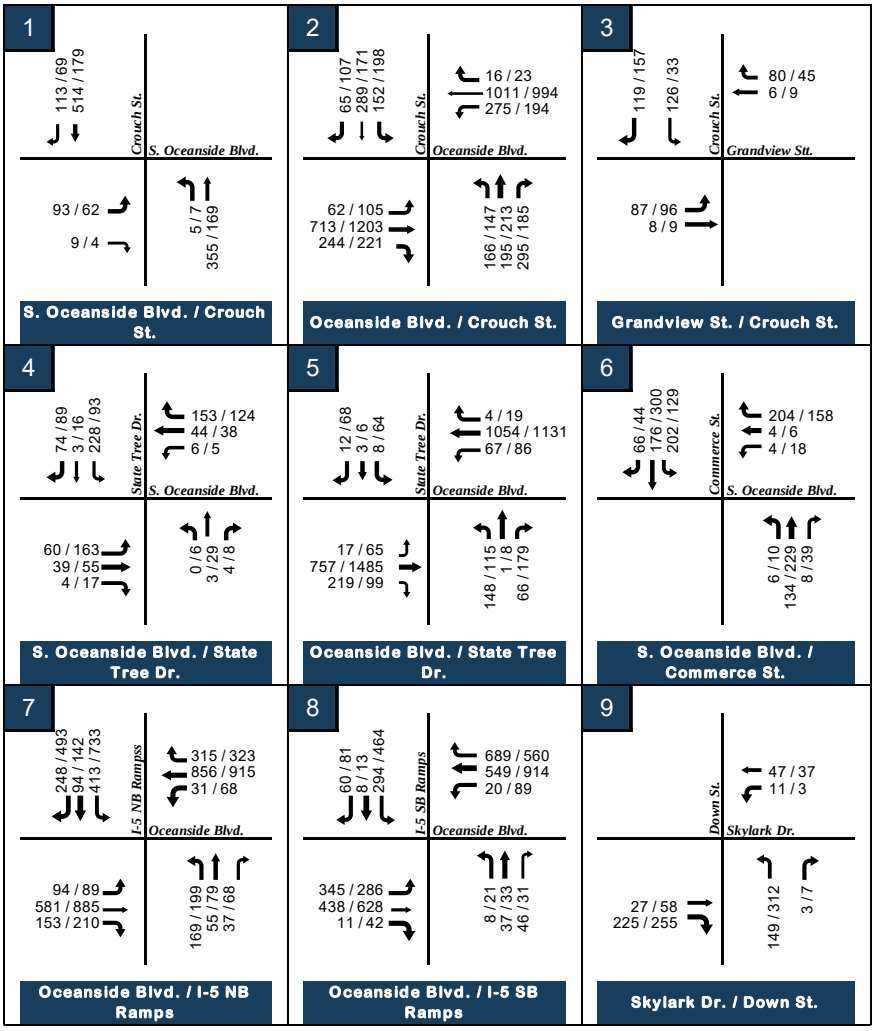
As shown on Table 10-4, the studied ramp is not expected to have an unacceptable queue and delay in this scenario.

11.0 BUILDOUT YEAR 2030 PLUS PROJECT

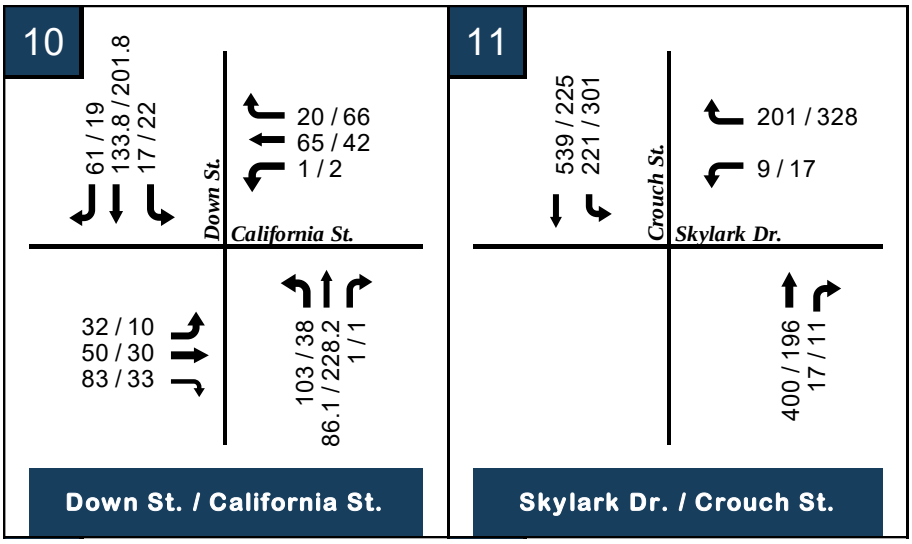
11.1 Intersection Analysis

The Year 2030 Plus Project peak hour traffic volumes at the studied intersections are shown on **Figure 11-1**.

Figure 11-1: Year 2030 Plus Project AM and PM Volumes



XX / XX = AM / PM Peak hour volumes


10
61 / 19
133.8 / 201.8
17 / 22
Down St.
20 / 66
65 / 42
1 / 2
California St.
32 / 10
50 / 30
83 / 33
103 / 38
86.1 / 228.2
1 / 1
Down St. / California St.
11
539 / 225
221 / 301
Crouch St.
201 / 328
9 / 17
Skylark Dr.
400 / 196
17 / 11
Skylark Dr. / Crouch St.

The Year2030 Plus Project intersection analysis is shown on **Table 11-1**.

Table 11-1: Year 2030 Plus Project Intersection Analysis

#	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	S. Oceanside Blvd. / Crouch St.	Unsignalized	24.2	C	11.6	B
2	Oceanside Blvd. / Crouch St.	Signalized	46.6	D	53.4	D
3	Grandview St. / Crouch St.	Unsignalized	8.7	A	8	A
4	S. Oceanside Blvd. / State Tree Dr.	Unsignalized	19.2	C	15.6	C
5	Oceanside Blvd. / State Tree Dr.	Signalized	31.4	C	36.6	D
6	S. Oceanside Blvd. / Commerce St.	Unsignalized	11	B	11.8	B
7	Oceanside Blvd. / I-5 NB Ramps	Signalized	25.9	C	46.6	D
8	Oceanside Blvd. / I-5 SB Ramps	Signalized	42.9	D	31.8	C
9	Skylark Dr. / Down St.	Unsignalized	11.1	B	14.1	B
10	Down St. / California St.	Unsignalized	9.8	A	10.2	B
11	Skylark Dr. / Crouch St.	Unsignalized	17.8	C	16.1	C

Notes:

LOS = Level of Service

D = Delay (in sec.)

As shown on Table 11-1, all studied intersections will operate at an acceptable level of service D or better in both the AM and PM peak hour.

The synchro worksheets for the Year 2030 Plus Project conditions are provided in **Appendix G**. **Table 11-2** shows the Year 2030 with and without Project intersection comparison to determine if an improvement is required.

Table 11-2: Year 2030 and Year 2030 Plus Project Intersection Comparisons

#	Intersection	Year 2030				Year 2030 + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	I?	PM Peak Hour		Δ	I?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	S. Oceanside Blvd. / Crouch St.	19.8	C	11.2	B	24.2	C	4.4	No	11.6	B	0.4	No
2	Oceanside Blvd. / Crouch St.	45.4	D	51.3	D	46.6	D	1.2	No	53.4	D	2.1	No
3	Grandview St. / Crouch St.	8.6	A	7.9	A	8.7	A	0.1	No	8.0	A	0.1	No
4	S. Oceanside Blvd. / State Tree Dr.	16.3	C	13.1	B	19.2	C	2.9	No	15.6	C	2.5	No
5	Oceanside Blvd. / State Tree Dr.	24.6	C	30.2	C	31.4	C	6.8	No	36.6	D	6.4	No
6	S. Oceanside Blvd. / Commerce St.	10.2	B	11.0	B	11.0	B	0.8	No	11.8	B	0.8	No
7	Oceanside Blvd. / I-5 NB Ramps	24.9	C	41.4	D	25.9	C	1.0	No	46.6	D	5.2	No
8	Oceanside Blvd. / I-5 SB Ramps	33.9	C	31.0	C	42.9	D	9.0	No	31.8	C	0.8	No
9	Skylark Dr. / Down St.	10.9	B	13.7	B	11.1	B	0.2	No	14.1	B	0.4	No
10	Down St. / California St.	9.6	A	10.0	A	9.8	A	0.2	No	10.2	B	0.2	No
11	Skylark Dr. / Crouch St.	13.7	B	12.7	B	17.8	C	4.1	No	16.1	C	3.4	No

Notes:
LOS = Level of Service
Δ = Change
I = Improvement required
D= Delay

As shown on Table 11-2, no improvements are needed because the intersections have an acceptable LOS of D or better in the with and without project conditions.

11.2 Street Segment Analysis

Table 11-3 shows the Year 2030 Plus Project street segment analysis.

Figure 11-2 shows the Year 2030 Plus Project ADT volumes.

Table 11-3: Year 2030 Plus Project Street Segment Analysis

Road	Segment	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	4-C	30,000	27,045	0.90	E
	I-5 NB Ramps to State Tree Drive	4	4-C	30,000	27,327	0.91	E
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	2-Ca	15,000	9,206	0.61	C
	Skylark Dr. to Grandview St.	2	2-Cb	10,000	4,484	0.45	C
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	2-Ca	15,000	6,503	0.43	C
	East of State Tree Drive	2	2-Ca	15,000	7,715	0.51	A
Project Access Roadway	West of Crouch Street	2	2-Cb	10,000	1,993	0.20	A

Legend:

Class. = Functional Class

Cap. = Capacity

LOS = Level of Service

2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)

2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)

4-C = 4 Lane Secondary Collector

As shown on Table 11-3, all street segments are operating at an acceptable level of service D or better in this scenario except for the following:

- Oceanside Blvd. (I-5 SB Ramps to I-5 NB Ramps.)
- Oceanside Blvd. (I-5 NB Ramps to State Tree Dr.)

Additionally, a street segment table is provided below for the 2030 plus Project conditions and with the assumption that Oceanside Boulevard is classified as its 2030 General Plan classification as a 4-lane major with a capacity of 40,000 ADT.

Road	Segment	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	4-M	40,000	27,045	0.68	C
	I-5 NB Ramps to State Tree Drive	4	4-M	40,000	27,327	0.68	C
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	2-Ca	15,000	9,206	0.61	C
	Skylark Dr. to Grandview St.	2	2-Cb	10,000	4,484	0.45	C
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	2-Ca	15,000	6,503	0.43	C
	East of State Tree Drive	2	2-Ca	15,000	7,715	0.51	A
Project Access Roadway	West of Crouch Street	2	2-Cb	10,000	1,993	0.20	A

Legend:

Class. = Functional Class

Cap. = Capacity

LOS = Level of Service

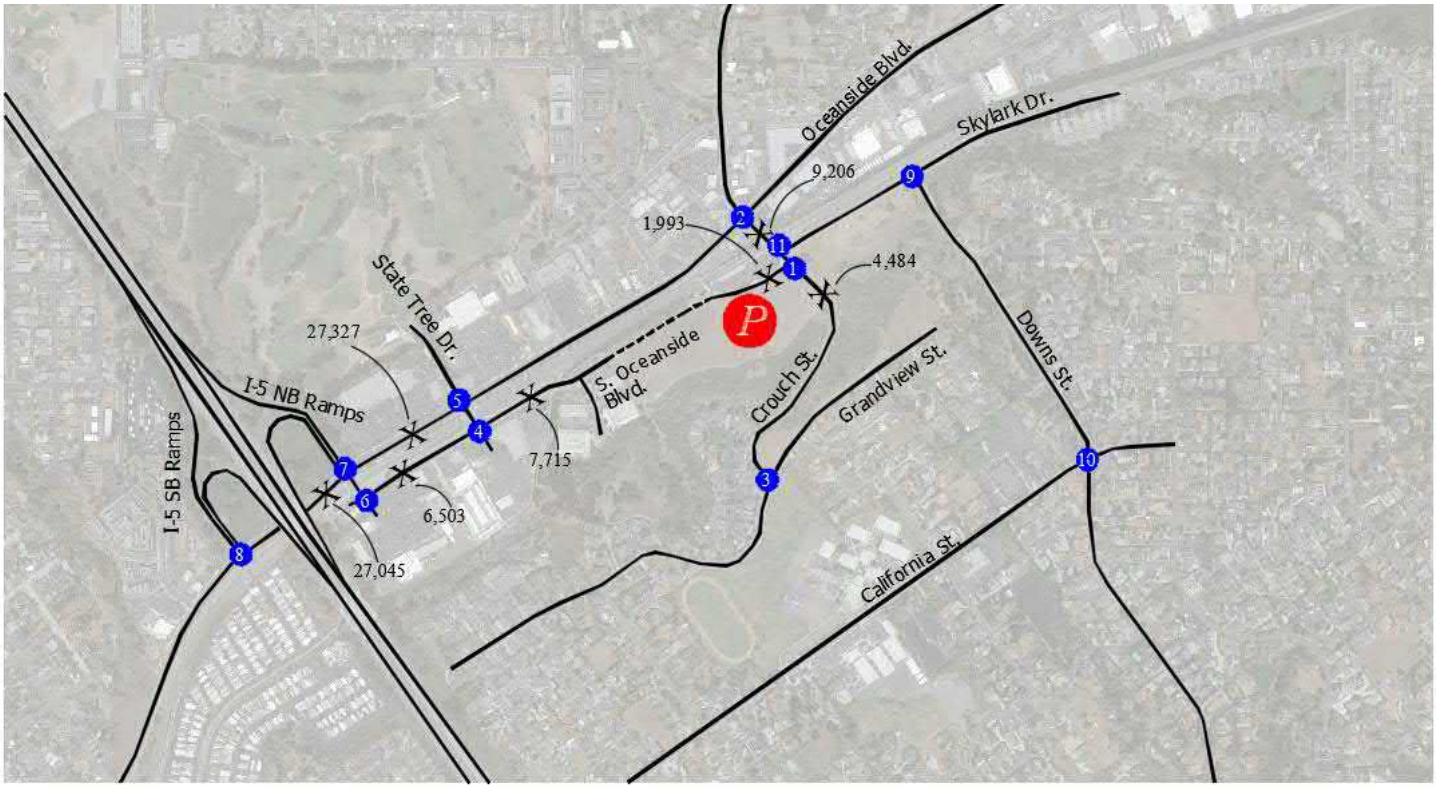
2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)

2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)

4-M = 4-lane major

As shown above, the level of service for Oceanside Boulevard has improved to a LOS C.

Figure 11-2: Year 2030 Plus Project ADT



Legend

P = Project Location

------- = Future Roadway

= Studied Intersection Location

X = Studied Street Segment

XX,XXX = ADT Number

N
NO SCALE

Table 11-4 shows the Year 2030 with and without Project to determine if an improvement is required due to the addition of project traffic.

Table 11-4: Year 2030 and Year 2030 Plus Project Street Segment Comparisons

Road	Segment	# of Ln.	LOS "E" Capacity	Class.	Year 2030			Year 2030 + Project			ΔV/C	I?
					LOS	Volume	V/C	LOS	Volume	V/C		
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	30,000	4-C	E	25,661	0.86	E	27,045	0.90	0.046	***YES***
	I-5 NB Ramps to State Tree Drive	4	30,000	4-C	E	26,559	0.89	E	27,327	0.91	0.026	***YES***
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	15,000	2-Ca	C	8,437	0.56	C	9,206	0.61	0.051	***NO***
	Skylark Dr. to Grandview St.	2	10,000	2-Cb	C	4,330	0.43	C	4,484	0.45	0.015	***NO***
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	15,000	2-Ca	B	5,580	0.37	C	6,503	0.43	0.062	***NO***
	East of State Tree Drive	2	15,000	2-Ca	A	5,870	0.39	A	7,715	0.51	0.123	***NO***
Project Access Roadway	West of Crouch Street	2	10,000	2-Cb	A	763	0.08	A	1,993	0.20	0.123	***NO***

Legend:
LOS= Level of Service
V/C= Volume to Capacity Ratio
ΔV/C= Change in V/C ratio
I = Improvement Required
2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)
2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)
4-C = 4 Lane Secondary Collector

As shown on Table 11-4, an improvement is required to the following street segments because the LOS is an E and the change in volume to capacity ratio is more than the 0.02 threshold. The project shall provide development impact fees towards an improvement based on the City of Oceanside Impact Fees for New Development to the impacted segments based on the City's General Plan buildout of the roadway.

However, assuming that Oceanside Boulevard will be built to its ultimate classification as a 4-lane major with a 40,000 capacity as shown below:

Road	Segment	# of Ln.	LOS "E" Capacity	Class.	Year 2030			Year 2030 + Project			ΔV/C	I?
					LOS	Volume	V/C	LOS	Volume	V/C		
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	40,000	4-M	C	25,661	0.86	C	27,045	0.90	0.046	***NO***
	I-5 NB Ramps to State Tree Drive	4	40,000	4-M	C	26,559	0.89	C	27,327	0.91	0.026	***NO***
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	15,000	2-Ca	C	8,437	0.56	C	9,206	0.61	0.051	***NO***
	Skylark Dr. to Grandview St.	2	10,000	2-Cb	C	4,330	0.43	C	4,484	0.45	0.015	***NO***
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	15,000	2-Ca	B	5,580	0.37	C	6,503	0.43	0.062	***NO***
	East of State Tree Drive	2	15,000	2-Ca	A	5,870	0.39	A	7,715	0.51	0.123	***NO***
Project Access Roadway	West of Crouch Street	2	10,000	2-Cb	A	763	0.08	A	1,993	0.20	0.123	***NO***

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

ΔV/C= Change in V/C ratio

I = Improvement Required

2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)

2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)

4-M = 4-lane major

As shown on the table above, the Level of Service has improved to an acceptable LOS C.

11.3 Freeway and Ramp Meter Analysis

Table 11-5 shows the Year 2030 Plus Project Freeway Analysis.

Table 11-6 shows the Year 2030 Plus Project Ramp Meter Analysis

Table 11-5: Year 2030 Plus Project Freeway Analysis

Segment	Lanes	Dir.	Cap.	ADT*	AM					PM				
					Peak Hour %	Dir. Split	PHV	V/C	LOS	Peak Hour %	Dir. Split	PHV	V/C	LOS
Freeway Name														
I-5 (Mission Ave. to Oceanside Blvd.)	4-GP	NB	9,400	212,468	0.070	0.52	7,734	0.823	D	0.064	0.58	7,836	0.834	D
I-5 (Mission Ave. to Oceanside Blvd.)	4-GP	SB	9,400	212,468	0.070	0.48	7,139	0.759	C	0.064	0.42	5,761	0.613	B
I-5 (Oceanside Blvd. to California St.)	4-GP	NB	9,400	212,216	0.070	0.52	7,725	0.822	D	0.064	0.58	7,877	0.838	D
I-5 (Oceanside Blvd. to California St.)	4-GP	SB	9,400	212,216	0.070	0.48	7,130	0.759	C	0.064	0.42	5,704	0.607	B
I-5 (California St. to Cassidy St.)	5-GP	NB	11,750	213,236	0.070	0.54	8,060	0.686	C	0.067	0.54	7,810	0.665	C
I-5 (California St. to Cassidy St.)	4-GP	SB	9,400	213,236	0.070	0.46	6,866	0.730	C	0.067	0.46	6,541	0.696	C

Legend:

Dir.= Direction
Cap. = Capacity
ADT= Average Daily Traffic
V/C= Volume to Capacity Ratio
LOS= Level of Service
PHV= Peak Hour Volume
#-GP= # of General Purpose Lanes

Note:

Capacity for LOS "E" roadway is 2,350.
Taken from Transition between LOS"C" and LOS "D" criteria for Basic Freeway Segments @ 65 mi/hr in "Caltrans Guide for the Preparation of Traffic Impact Studies", December 2002

Peak Hour % and Dir. Split taken from Caltrans internet posted Traffic Volumes

As shown on Table 11-5, all studied Freeway segments are operating at an acceptable level of service D or better in this scenario.

Table 11-6: Year 2030 Plus Project Ramp Meter Analysis

Location		Lanes	Demand (Veh/Hr)	Demand per lane (Veh/Hr/Ln)	Meter Rate (Veh/Hr/Ln)	Excess Demand (Veh/Hr/Ln)	Delay (Min)	Queue (Feet)
I-5 SB Ramp / Oceanside Blvd.	AM	1 SOV	1071	964	996	0	0.00	0
	PM	1 SOV	879	791	996	0	0.00	0
I-5 SB Ramp / Oceanside Blvd.	AM	1 HOV	1071	107	996	0	0.00	0
	PM	1 HOV	879	88	996	0	0.00	0

NOTE:
Meter rate is based on the most restrictive meter rate provided by Caltrans
Delay = (Demand - Meter Rate) / Meter Rate * 60 minutes/hour
Queue = Excess Demand * 29 feet/vehicle
SOV = Single Occupancy Vehicles at 90%
HOV = High Occupancy Vehicles at 10%

Veh/Hr= Vehicles per hour
Veh/Hr/Ln= Vehicles per hour per lane

Location		Year 2030 Without Project		Year 2030 With Project		Freeway LOS	Change in Delay	D ?
		Delay (Min)	Queue (Ft)	Delay (Min)	Queue (Ft)			
I-5 SB Ramp / Oceanside Blvd. (SOV lane)	AM	0.00	0	0.00	0	C	0.00	NO
	PM	0.00	0	0.00	0	B	0.00	NO
I-5 SB Ramp / Oceanside Blvd. (HOV lane)	AM	0.00	0	0.00	0	C	0.00	NO
	PM	0.00	0	0.00	0	B	0.00	NO

Notes:
D = Deficiency

As shown on Table 11-6, the studied ramp will have no delay and queue.

12.0 OTHER MODES OF TRANSPORTATION

This section of the report will discuss other modes of transportation facilities for pedestrians, bicycles, and transit.

12.1 Pedestrian Facilities

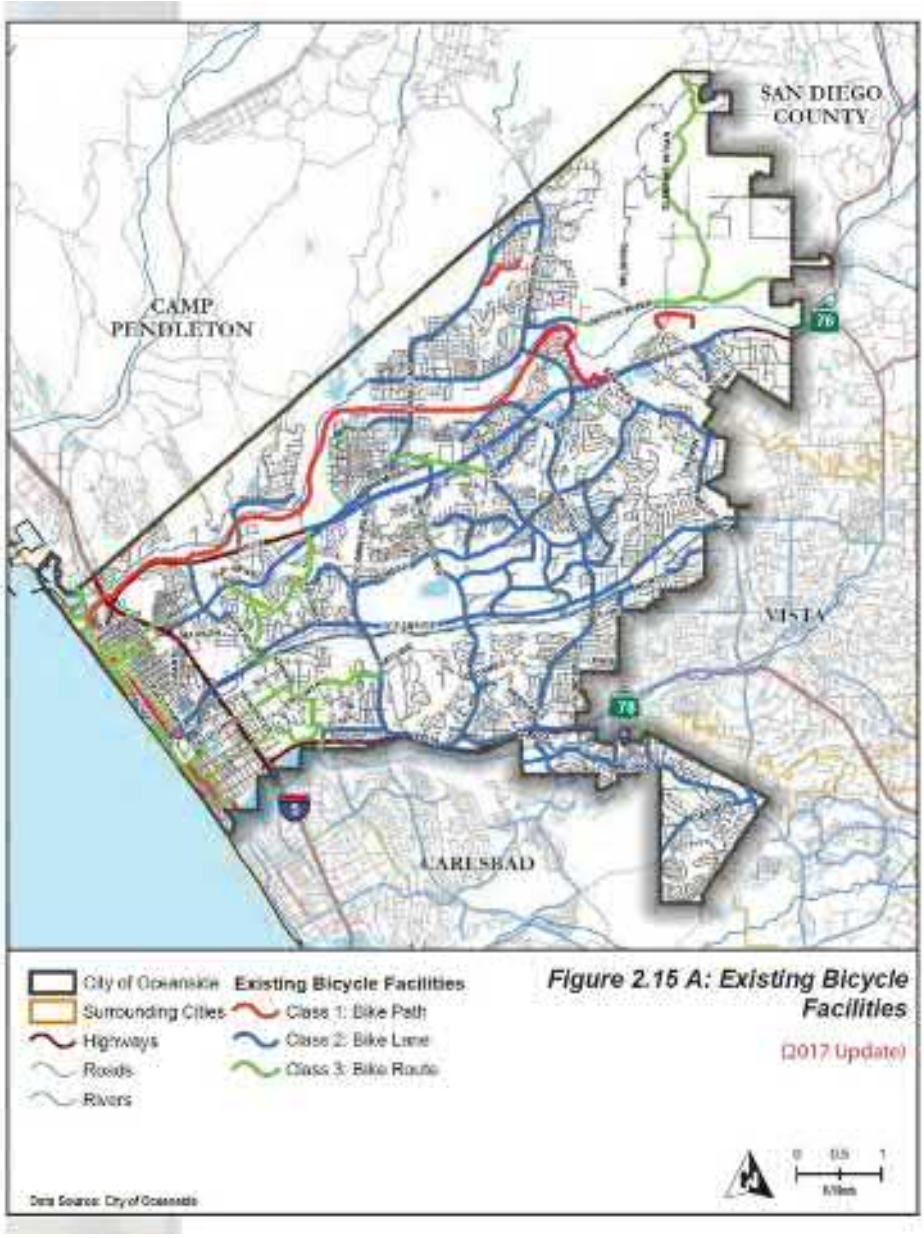
As it relates to the project's study area. Sidewalks are provided on the northern and southern portions of the road from the I-5 ramps to Crouch Street along Oceanside Boulevard. Sidewalks are provided on the northern and southern portions of the road from Commerce Street to Union Plaza Court along South Oceanside Boulevard. Sidewalks are only provided on the west and east sides of the road from South Downs Street to Oceanside Boulevard along Crouch Street. A sidewalk is only provided on the south side of the road from Crouch Street to Ridgeway Street along Grandview Street. A sidewalk is only provided on the east side of the road from Skylark Drive to Zabyn Street along Down Street. The project will add a sidewalk on the south side of S. Oceanside Blvd. which will connect the project's commercial/retail and employment sites on the west side of the project site to the Sprinter station. The sidewalks will be enhanced to 6 feet. The project will also provide a pedestrian improvement at the project driveway, a continental sidewalk will be provided for pedestrians to access the train station from the project.

12.2 Bicycle Facilities

Within the project's study area, a Class II bicycle lane exists along Oceanside Boulevard from the I-5 ramps to Crouch Street in both directions. A Class II bicycle lane exists just north of Oceanside Boulevard along Crouch Street in both directions. No bicycle facilities exist along South Oceanside Boulevard. The project will provide sharrows along S. Oceanside Blvd. and will help connect the transit stop to the project site.

Figure 12-1 shows Existing and Proposed Bicycle Facilities Map for Oceanside obtained from the City of Oceanside Bicycle Master Plan. No bike lanes are designated along S. Oceanside Blvd. however the project will provide sharrows along the road.

Figure 12-1: City of Oceanside Bicycle Master Plan

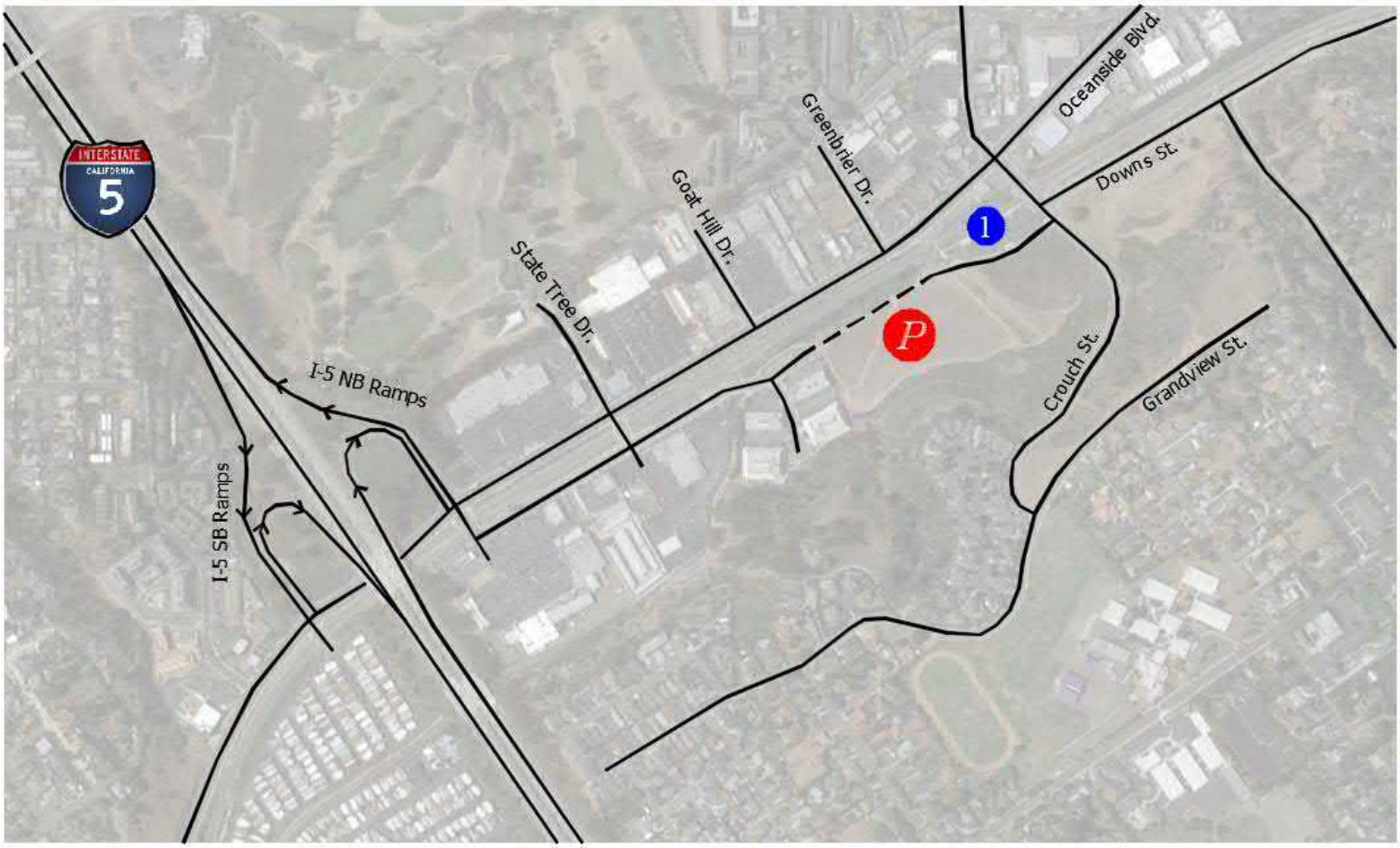


12.3 Transit Facilities

The project is located just south and within ½ mile walking distance of the Crouch Street Station as shown on **Figure 12-2**. The Crouch Street Station services the 318 bus route and Sprinter Hybrid Rail. The 318 bus route services commuters from Oceanside, CA to Vista, CA. **Figure 12-3** shows the 318 bus route map. The project will contribute to transit services by providing commercial/retail use across the sprinter station and provide transportation facilities such as sidewalks and sharrows to improve connectivity.

Figure 12-4 shows the existing bus stop locations within a ½ mile walking distance from project pedestrian access points along with the amenities provided at each stop.

Figure 12-2: Project Location and Transit Station



Legend

P = Project Location

1 = Crouch Street Station

N
NO SCALE

Figure 12-3: Bus Route 318 Map

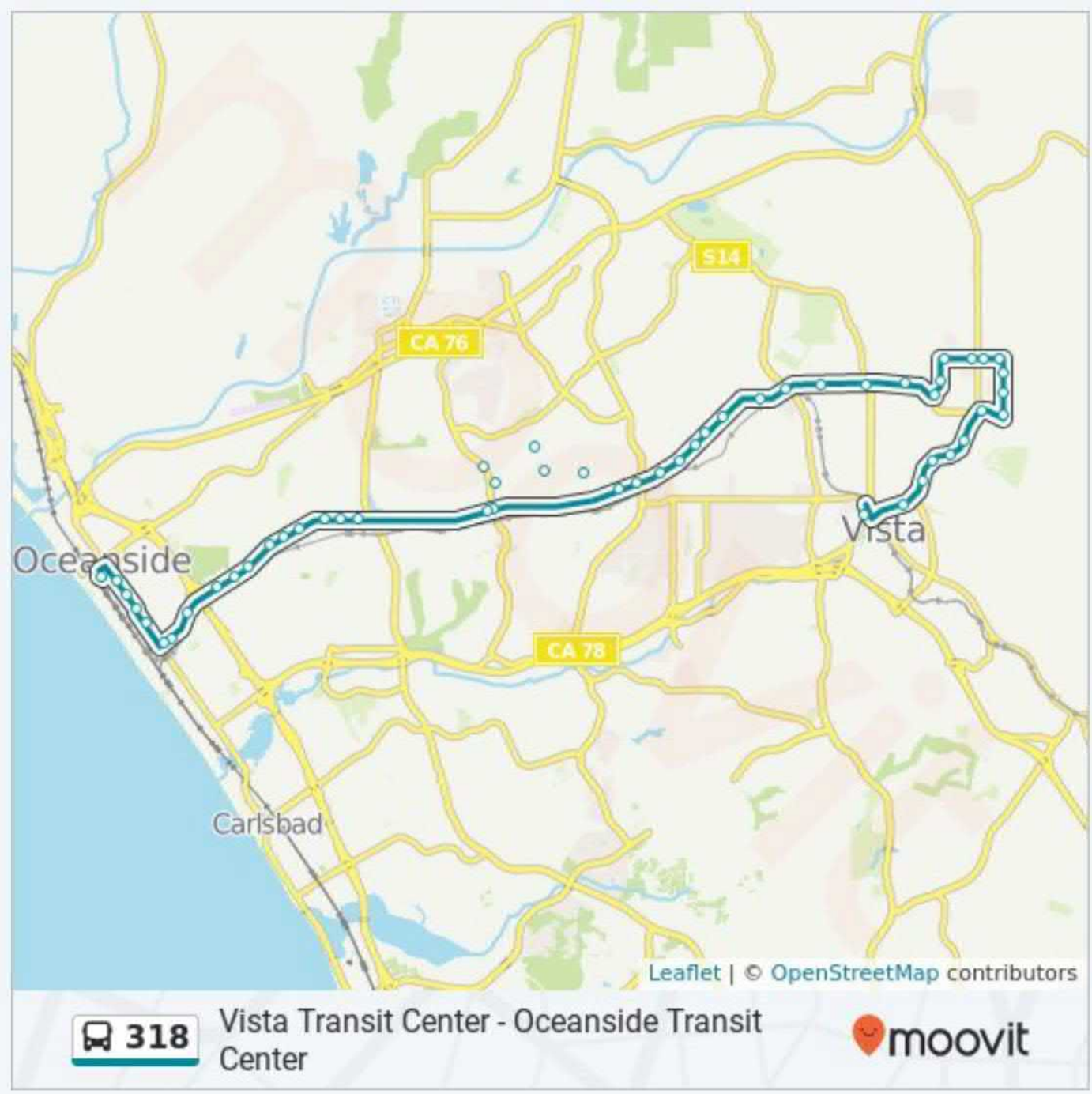
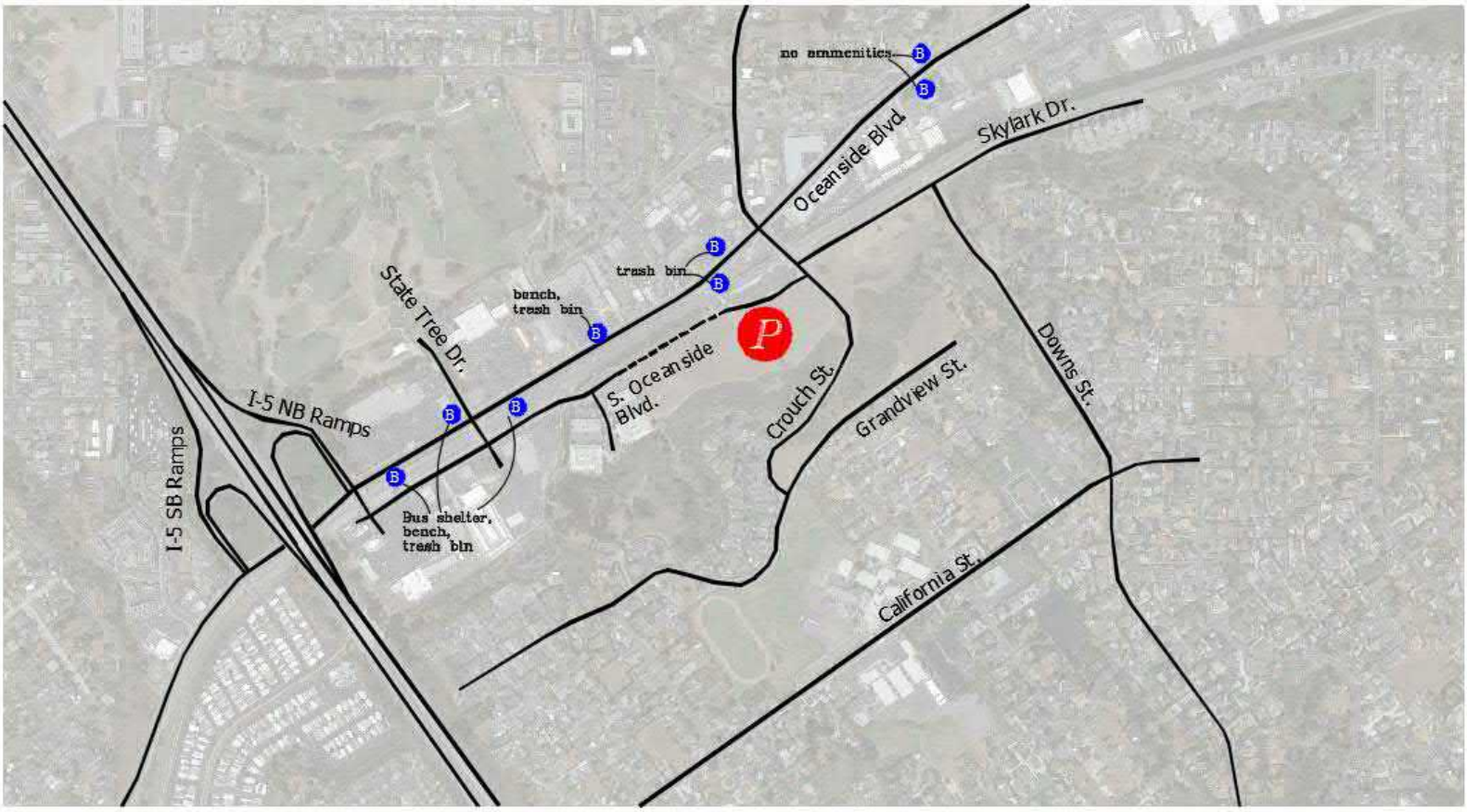


Figure 12-4: Bus Stop Locations



Legend

B = Bus Stop Location

N
NO SCALE

13.0 VEHICLE MILES TRAVELED (VMT)

The California Environmental Quality Act (CEQA) guidelines have incorporated Senate Bill 743 (SB 743) which requires VMT to be the measurement of determining significant transportation impacts instead of the previous delay level of service.

13.1 Project Screening

Projects can be considered screened out of performing further VMT analysis if the project meets the qualified criteria outlined by the City of Oceanside. Figure **13-1** shows the criteria for a project to be considered screened out.

Based on Figure 12-1, the project would be screened out because the Project is located in a Transit Priority Area and is within ½ mile walking distance to a qualifying transit station. The nearest transit station is the Crouch Street station which services the 318 bus route and Sprinter Hybrid rail.

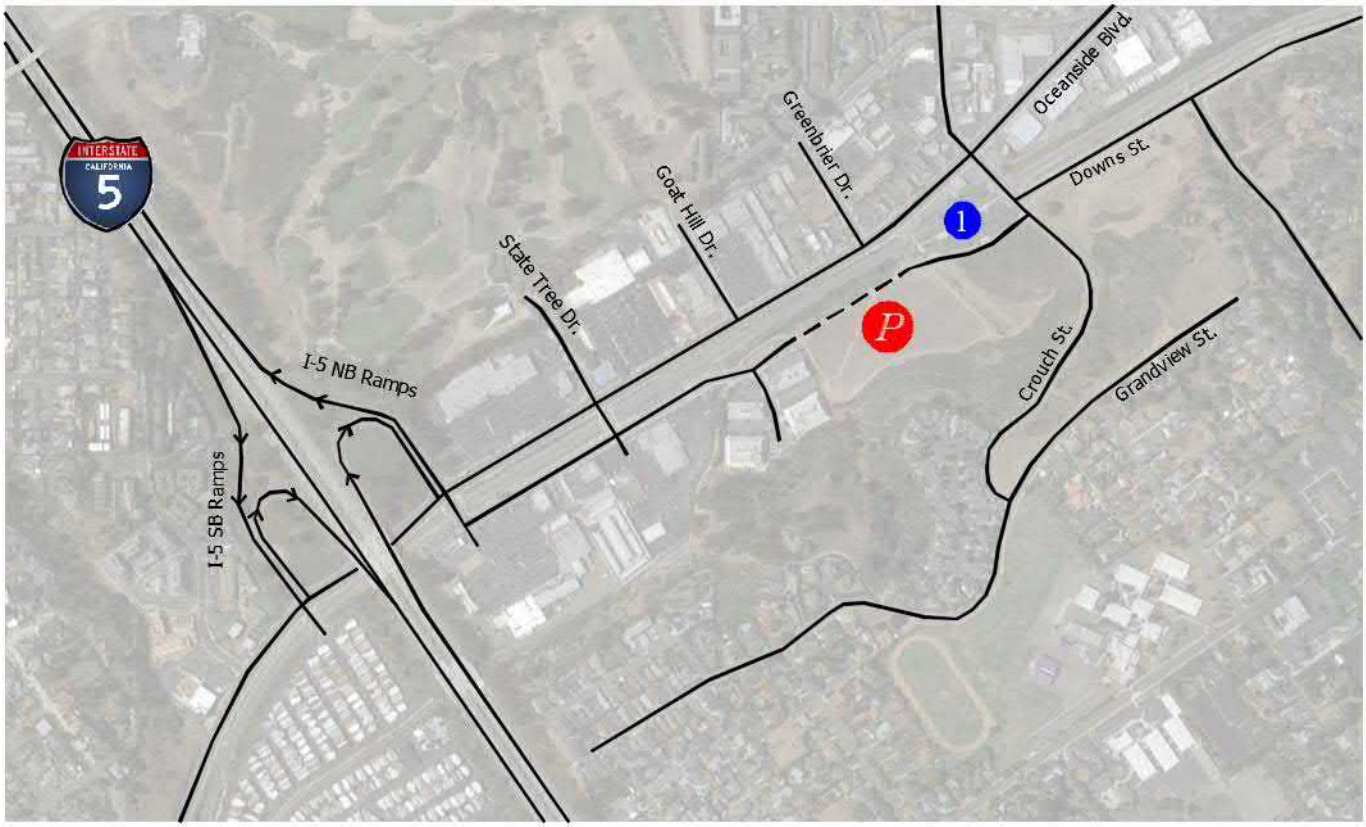
Figure 13-1: VMT Project Screening

Project Type
Projects located in a Transit Priority Areas (TPA) or Smart Growth Opportunity Area as identified in the most recent SANDAG San Diego Forward Regional Plan and is consistent with the General Plan at the time of project application. [(1)(2)]
Projects located in a low-VMT generating area identified on the most recent SANDAG SB 743 VMT Screening map
Locally serving K-12 schools
Day care centers
Local parks
Locally serving retail uses less than 50,000 square feet, including: gas stations, banks, restaurants, grocery stores, and shopping centers
Community institutions (Public libraries, fire stations, local government)
Locally serving hotels (e.g. non-destination hotels, non-regionally serving)
Student housing projects on or adjacent to college campuses
Local serving community colleges that are consistent with the assumptions noted in the most recent SANDAG Regional Transportation Plan/Sustainable Communities Strategy
Affordable housing projects [(3)]
Assisted living facilities
Senior housing (as defined by HUD)
Transit projects
Bike projects
Pedestrian projects
Safety improvement projects (e.g. RRFBs and high visibility crosswalks at uncontrolled locations, pedestrian count down timers, additionally projects identified through the Highway Safety Improvement Program)
Safe Routes to School
Projects generating less than 500 daily vehicle trips (if inconsistent with adopted General Plan)
Projects generating less than 1,000 daily vehicle trips (if consistent with adopted General Plan)

(1) Projects located in a TPA must be able to access the transit station within a ½ mile walking distance or 6 minute walk continuously without discontinuity of sidewalk or obstructions to the route. Qualifying transit stops means a site containing an existing rail transit station served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods (OPR, 2017). A high-quality transit corridor may also be considered if a corridor with fixed route bus service has service intervals no longer than 15 minutes during peak commute hours (OPR, 2017).
(2) Smart Growth Opportunity Area Map is provided in **Appendix B**. The most recent version available shall be used.
(3) If a project is a mix of affordable housing and market rate housing or unscreened use, only the affordable housing component would qualify as screened out. Additionally, any removal of affordable housing automatically requires CEQA VMT analysis.

The Project is within ½ mile walking distance to the Crouch Street light rail station which services the 318 bus route and Sprinter Hybrid rail. A map showing the proximity to the station from the project is shown on **Figure 13-2**.

Figure 13-2: Project Location and Transit Station



The Crouch Street Station services the Sprinter light rail which travels from the Oceanside Transit Center to the west and the Escondido Transit Center to the east. The schedule for the Sprinter on Mondays through Saturday typically begin operations starting at 4:00 AM in the morning to 9:30 PM in the evening (and up to 12:30 PM on Friday and Saturday evenings only). It typically takes 30 minutes for the Sprinter to travel from eastbound to westbound (Oceanside Transit Center to Escondido Transit Station) or vice versa. Figure 13-3 shows the most recent version of the Sprinter schedule.

Additionally, the project site is located in proximity to regions where the *San Diego Forward Regional Plan Transit Priority Areas and SANDAG Smart Growth Opportunity Areas Maps* (in Appendix B of the Oceanside Traffic guidelines) has called Potential Transit Priority Project Areas.

Figure 13-4 shows the 2035 Potential Transit Priority Areas.

Figure 13-5 shows the Smart Growth Concept Map North County Region.

As shown on Figures 13-4 and 13-5, the project location is within the outlined transit priority area and near a Sprinter Express.

Therefore, no VMT analysis will be required due to the project being located in a Transit Priority Area and being within ½ mile walking distance to the Crouch Street Station.

Figure 13-3: Sprinter Schedule



Please do not put your feet on the seats

Por favor, no pongasus pies en los asientos



EASTBOUND — OCEANSIDE TO ESCONDIDO

MONDAY-SUNDAY (Half-shaded boxes indicate NO SATURDAY, SUNDAY, or HOLIDAY service)

STATIONS	Read Down	30 MIN FREQUENCY
Oceanside Transit Center	↓	:03 :33
Coast Highway	↓	:05 :35
Crouch Street	↓	:07 :37
El Camino Real	↓	:11 :41
Rancho Del Oro	↓	:14 :44
College Boulevard	↓	:17 :47
Melrose Drive	↓	:22 :52
Vista Transit Center	↓	:26 :56
Civic Center-Vista	↓	:29 :59
Buena Creek	↓	:35 :05
Palomar College	↓	:40 :10
San Marcos Civic Center	↓	:43 :13
Cal State San Marcos	↓	:46 :16
Nordahl Road	↓	:51 :21
Escondido Transit Center	↓	:56 :26

4:03a	4:33a	5:03a	5:33a	6:03a	6:33a	7:03a	7:33a	8:03a	8:33a	9:03a	9:33a	10:03a	10:33a	11:03a	11:33a	12:03p	12:33p	1:03p	1:33p	2:03p	2:33p	3:03p	3:33p	4:03p	4:33p	5:03p	5:33p	6:03p	6:33p	7:03p	7:33p	8:03p	8:33p
4:05a	4:35a	5:05a	5:35a	6:05a	6:35a	7:05a	7:35a	8:05a	8:35a	9:05a	9:35a	10:05a	10:35a	11:05a	11:35a	12:05p	12:35p	1:05p	1:35p	2:05p	2:35p	3:05p	3:35p	4:05p	4:35p	5:05p	5:35p	6:05p	6:35p	7:05p	7:35p	8:05p	8:35p
4:07a	4:37a	5:07a	5:37a	6:07a	6:37a	7:07a	7:37a	8:07a	8:37a	9:07a	9:37a	10:07a	10:37a	11:07a	11:37a	12:07p	12:37p	1:07p	1:37p	2:07p	2:37p	3:07p	3:37p	4:07p	4:37p	5:07p	5:37p	6:07p	6:37p	7:07p	7:37p	8:07p	8:37p
4:11a	4:41a	5:11a	5:41a	6:11a	6:41a	7:11a	7:41a	8:11a	8:41a	9:11a	9:41a	10:11a	10:41a	11:11a	11:41a	12:11p	12:41p	1:11p	1:41p	2:11p	2:41p	3:11p	3:41p	4:11p	4:41p	5:11p	5:41p	6:11p	6:41p	7:11p	7:41p	8:11p	8:41p
4:14a	4:44a	5:14a	5:44a	6:14a	6:44a	7:14a	7:44a	8:14a	8:44a	9:14a	9:44a	10:14a	10:44a	11:14a	11:44a	12:14p	12:44p	1:14p	1:44p	2:14p	2:44p	3:14p	3:44p	4:14p	4:44p	5:14p	5:44p	6:14p	6:44p	7:14p	7:44p	8:14p	8:44p
4:17a	4:47a	5:17a	5:47a	6:17a	6:47a	7:17a	7:47a	8:17a	8:47a	9:17a	9:47a	10:17a	10:47a	11:17a	11:47a	12:17p	12:47p	1:17p	1:47p	2:17p	2:47p	3:17p	3:47p	4:17p	4:47p	5:17p	5:47p	6:17p	6:47p	7:17p	7:47p	8:17p	8:47p
4:22a	4:52a	5:22a	5:52a	6:22a	6:52a	7:22a	7:52a	8:22a	8:52a	9:22a	9:52a	10:22a	10:52a	11:22a	11:52a	12:22p	12:52p	1:22p	1:52p	2:22p	2:52p	3:22p	3:52p	4:22p	4:52p	5:22p	5:52p	6:22p	6:52p	7:22p	7:52p	8:22p	8:52p
4:26a	4:56a	5:26a	5:56a	6:26a	6:56a	7:26a	7:56a	8:26a	8:56a	9:26a	9:56a	10:26a	10:56a	11:26a	11:56a	12:26p	12:56p	1:26p	1:56p	2:26p	2:56p	3:26p	3:56p	4:26p	4:56p	5:26p	5:56p	6:26p	6:56p	7:26p	7:56p	8:26p	8:56p
4:29a	4:59a	5:29a	5:59a	6:29a	6:59a	7:29a	7:59a	8:29a	8:59a	9:29a	9:59a	10:29a	10:59a	11:29a	11:59a	12:29p	12:59p	1:29p	1:59p	2:29p	2:59p	3:29p	3:59p	4:29p	4:59p	5:29p	5:59p	6:29p	6:59p	7:29p	7:59p	8:29p	8:59p
4:35a	5:05a	5:35a	6:05a	6:35a	7:05a	7:35a	8:05a	8:35a	9:05a	9:35a	10:05a	10:35a	11:05a	11:35a	12:05p	12:35p	1:05p	1:35p	2:05p	2:35p	3:05p	3:35p	4:05p	4:35p	5:05p	5:35p	6:05p	6:35p	7:05p	7:35p	8:05p	8:35p	9:05p
4:40a	5:10a	5:40a	6:10a	6:40a	7:10a	7:40a	8:10a	8:40a	9:10a	9:40a	10:10a	10:40a	11:10a	11:40a	12:10p	12:40p	1:10p	1:40p	2:10p	2:40p	3:10p	3:40p	4:10p	4:40p	5:10p	5:40p	6:10p	6:40p	7:10p	7:40p	8:10p	8:40p	9:10p
4:43a	5:13a	5:43a	6:13a	6:43a	7:13a	7:43a	8:13a	8:43a	9:13a	9:43a	10:13a	10:43a	11:13a	11:43a	12:13p	12:43p	1:13p	1:43p	2:13p	2:43p	3:13p	3:43p	4:13p	4:43p	5:13p	5:43p	6:13p	6:43p	7:13p	7:43p	8:13p	8:43p	9:13p
4:46a	5:16a	5:46a	6:16a	6:46a	7:16a	7:46a	8:16a	8:46a	9:16a	9:46a	10:16a	10:46a	11:16a	11:46a	12:16p	12:46p	1:16p	1:46p	2:16p	2:46p	3:16p	3:46p	4:16p	4:46p	5:16p	5:46p	6:16p	6:46p	7:16p	7:46p	8:16p	8:46p	9:16p
4:51a	5:21a	5:51a	6:21a	6:51a	7:21a	7:51a	8:21a	8:51a	9:21a	9:51a	10:21a	10:51a	11:21a	11:51a	12:21p	12:51p	1:21p	1:51p	2:21p	2:51p	3:21p	3:51p	4:21p	4:51p	5:21p	5:51p	6:21p	6:51p	7:21p	7:51p	8:21p	8:51p	9:21p
4:56a	5:26a	5:56a	6:26a	6:56a	7:26a	7:56a	8:26a	8:56a	9:26a	9:56a	10:26a	10:56a	11:26a	11:56a	12:26p	12:56p	1:26p	1:56p	2:26p	2:56p	3:26p	3:56p	4:26p	4:56p	5:26p	5:56p	6:26p	6:56p	7:26p	7:56p	8:26p	8:56p	9:26p

EASTBOUND — FRIDAY NIGHT ONLY

STATIONS	
Oceanside Transit Center	↓
Coast Highway	↓
Crouch Street	↓
El Camino Real	↓
Rancho Del Oro	↓
College Boulevard	↓
Melrose Drive	↓
Vista Transit Center	↓
Civic Center-Vista	↓
Buena Creek	↓
Palomar College	↓
San Marcos Civic Center	↓
Cal State San Marcos	↓
Nordahl Road	↓
Escondido Transit Center	↓

9:03p	9:33p	10:03p	10:33p	11:03p	11:33p
9:05p	9:35p	10:05p	10:35p	11:05p	11:35p
9:07p	9:37p	10:07p	10:37p	11:07p	11:37p
9:11p	9:41p	10:11p	10:41p	11:11p	11:41p
9:14p	9:44p	10:14p	10:44p	11:14p	11:44p
9:17p	9:47p	10:17p	10:47p	11:17p	11:47p
9:22p	9:52p	10:22p	10:52p	11:22p	11:52p
9:26p	9:56p	10:26p	10:56p	11:26p	11:56p
9:29p	9:59p	10:29p	10:59p	11:29p	11:59p
9:35p	10:05p	10:35p	11:05p	11:35p	12:05a
9:40p	10:10p	10:40p	11:10p	11:40p	12:10a
9:43p	10:13p	10:43p	11:13p	11:43p	12:13a
9:46p	10:16p	10:46p	11:16p	11:46p	12:16a
9:51p	10:21p	10:51p	11:21p	11:51p	12:21a
9:56p	10:26p	10:56p	11:26p	11:56p	12:26a

EB — SAT NIGHT ONLY

9:33p	10:33p	11:33p
9:35p	10:35p	11:35p
9:37p	10:37p	11:37p
9:41p	10:41p	11:41p
9:44p	10:44p	11:44p
9:47p	10:47p	11:47p
9:52p	10:52p	11:52p
9:56p	10:56p	11:56p
9:59p	10:59p	11:59p
10:05p	11:05p	12:05a
10:10p	11:10p	12:10a
10:13p	11:13p	12:13a
10:16p	11:16p	12:16a
10:21p	11:21p	12:21a
10:26p	11:26p	12:26a

Monday - Sunday 7 days a week service/Lunes - domingo servicio los 7 días a la semana

Monday - Friday ONLY. Service does not run on Saturday, Sunday, and Holidays/Lunes - viernes ÚNICAMENTE. No hay servicio sábados, domingos, ni en días festivos

Friday night service ONLY/Servicio el viernes en la noche ÚNICAMENTE

Saturday night service ONLY/Servicio el sábado en la noche ÚNICAMENTE

Schedule subject to change
Horario sujeto a cambios

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GoNCTD.com
211SanDiego.org

WESTBOUND — ESCONDIDO TO OCEANSIDE

MONDAY-SUNDAY (Half-shaded boxes indicate NO SATURDAY, SUNDAY, or HOLIDAY service)

STATIONS	Read Down	30 MIN FREQUENCY
Escondido Transit Center	↓	:03 :33
Nordahl Road	↓	:06 :36
Cal State San Marcos	↓	:11 :41
San Marcos Civic Center	↓	:14 :44
Palomar College	↓	:17 :47
Buena Creek	↓	:22 :52
Civic Center-Vista	↓	:27 :57
Vista Transit Center	↓	:30 :00
Melrose Drive	↓	:35 :05
College Boulevard	↓	:40 :10
Rancho Del Oro	↓	:43 :13
El Camino Real	↓	:46 :16
Crouch Street	↓	:49 :19
Coast Highway	↓	:52 :22
Oceanside Transit Center	↓	:56 :26

4:03a	4:33a	5:03a	5:33a	6:03a	6:33a	7:03a	7:33a	8:03a	8:33a	9:03a	9:33a	10:03a	10:33a	11:03a	11:33a	12:03p	12:33p	1:03p	1:33p	2:03p	2:33p	3:03p	3:33p	4:03p	4:33p	5:03p	5:33p	6:03p	6:33p	7:03p	7:33p	8:03p	8:33p
4:06a	4:36a	5:06a	5:36a	6:06a	6:36a	7:06a	7:36a	8:06a	8:36a	9:06a	9:36a	10:06a	10:36a	11:06a	11:36a	12:06p	12:36p	1:06p	1:36p	2:06p	2:36p	3:06p	3:36p	4:06p	4:36p	5:06p	5:36p	6:06p	6:36p	7:06p	7:36p	8:06p	8:36p
4:11a	4:41a	5:11a	5:41a	6:11a	6:41a	7:11a	7:41a	8:11a	8:41a	9:11a	9:41a	10:11a	10:41a	11:11a	11:41a	12:11p	12:41p	1:11p	1:41p	2:11p	2:41p	3:11p	3:41p	4:11p	4:41p	5:11p	5:41p	6:11p	6:41p	7:11p	7:41p	8:11p	8:41p
4:14a	4:44a	5:14a	5:44a	6:14a	6:44a	7:14a	7:44a	8:14a	8:44a	9:14a	9:44a	10:14a	10:44a	11:14a	11:44a	12:14p	12:44p	1:14p	1:44p	2:14p	2:44p	3:14p	3:44p	4:14p	4:44p	5:14p	5:44p	6:14p	6:44p	7:14p	7:44p	8:14p	8:44p
4:17a	4:47a	5:17a	5:47a	6:17a	6:47a	7:17a	7:47a	8:17a	8:47a	9:17a	9:47a	10:17a	10:47a	11:17a	11:47a	12:17p	12:47p	1:17p	1:47p	2:17p	2:47p	3:17p	3:47p	4:17p	4:47p	5:17p	5:47p	6:17p	6:47p	7:17p	7:47p	8:17p	8:47p
4:22a	4:52a	5:22a	5:52a	6:22a	6:52a	7:22a	7:52a	8:22a	8:52a	9:22a	9:52a	10:22a	10:52a	11:22a	11:52a	12:22p	12:52p	1:22p	1:52p	2:22p	2:52p	3:22p	3:52p	4:22p	4:52p	5:22p	5:52p	6:22p	6:52p	7:22p	7:52p	8:22p	8:52p
4:27a	4:57a	5:27a	5:57a	6:27a	6:57a	7:27a	7:57a	8:27a	8:57a	9:27a	10:27a	10:57a	11:27a	11:57a	12:27p	12:57p	1:27p	1:57p	2:27p	2:57p	3:27p	3:57p	4:27p	4:57p	5:27p	5:57p	6:27p	6:57p	7:27p	7:57p	8:27p	8:57p	9:27p
4:30a	5:00a	5:30a	6:00a	6:30a	7:00a	7:30a	8:00a	8:30a	9:00a	9:30a	10:00a	10:30a	11:00a	11:30a	12:00p	12:30p	1:00p	1:30p	2:00p	2:30p	3:00p	3:30p	4:00p	4:30p	5:00p	5:30p	6:00p	6:30p	7:00p	7:30p	8:00p	8:30p	9:00p
4:35a	5:05a	5:35a	6:05a	6:35a	7:05a	7:35a	8:05a	8:35a	9:05a	9:35a	10:05a	10:35a	11:05a	11:35a	12:05p	12:35p	1:05p	1:35p	2:05p	2:35p	3:05p	3:35p	4:05p	4:35p	5:05p	5:35p	6:05p	6:35p	7:05p	7:35p	8:05p	8:35p	9:05p
4:40a	5:10a	5:40a	6:10a	6:40a	7:10a	7:40a	8:10a	8:40a	9:10a	9:40a	10:10a	10:40a	11:10a	11:40a	12:10p	12:40p	1:10p	1:40p	2:10p	2:40p	3:10p	3:40p	4:10p	4:40p	5:10p	5:40p	6:10p	6:40p	7:10p	7:40p	8:10p	8:40p	9:10p
4:43a	5:13a	5:43a	6:13a	6:43a	7:13a	7:43a	8:13a	8:43a	9:13a	9:43a	10:13a	10:43a	11:13a	11:43a	12:13p	12:43p	1:13p	1:43p	2:13p	2:43p	3:13p	3:43p	4:13p	4:43p	5:13p	5:43p	6:13p	6:43p	7:13p	7:43p	8:13p	8:43p	9:13p
4:46a	5:16a	5:46a	6:16a	6:46a	7:16a	7:46a	8:16a	8:46a	9:16a	9:46a	10:16a	10:46a	11:16a	11:46a	12:16p	12:46p	1:16p	1:46p	2:16p	2:46p	3:16p	3:46p	4:16p	4:46p	5:16p	5:46p	6:16p	6:46p	7:16p	7:46p	8:16p	8:46p	9:16p
4:49a	5:19a	5:49a	6:19a	6:49a	7:19a	7:49a	8:19a	8:49a	9:19a	9:49a	10:19a	10:49a	11:19a	11:49a	12:19p	12:49p	1:19p	1:49p	2:19p	2:49p	3:19p	3:49p	4:19p	4:49p	5:19p	5:49p	6:19p	6:49p	7:19p	7:49p	8:19p	8:49p	9:19p
4:52a	5:22a	5:52a	6:22a	6:52a	7:22a	7:52a	8:22a	8:52a	9:22a	9:52a	10:22a	10:52a	11:22a	11:52a	12:22p	12:52p	1:22p	1:52p	2:22p	2:52p	3:22p	3:52p	4:22p	4:52p	5:22p	5:52p	6:22p	6:52p	7:22p	7:52p	8:22p	8:52p	9:22p
4:56a	5:26a	5:56a	6:26a	6:56a	7:26a	7:56a	8:26a	8:56a	9:26a	9:56a	10:26a	10:56a	11:26a	11:56a	12:26p	12:56p	1:26p	1:56p	2:26p	2:56p	3:26p	3:56p	4:26p	4:56p	5:26p	5:56p	6:26p	6:56p	7:26p	7:56p	8:26p	8:56p	9:26p

WESTBOUND — FRIDAY NIGHT ONLY

STATIONS	
Escondido Transit Center	↓
Nordahl Road	↓
Cal State San Marcos	↓
San Marcos Civic Center	↓
Palomar College	↓
Buena Creek	↓
Civic Center-Vista	↓
Vista Transit Center	↓
Melrose Drive	↓
College Boulevard	↓
Rancho Del Oro	↓
El Camino Real	↓
Crouch Street	↓
Coast Highway	↓
Oceanside Transit Center	↓

9:03p	9:33p	10:03p	10:33p
9:06p	9:36p	10:06p	10:36p
9:11p	9:41p	10:11p	10:41p
9:14p	9:44p	10:14p	10:44p
9:17p	9:47p	10:17p	10:47p
9:22p	9:52p	10:22p	10:52p
9:27p	9:57p	10:27p	10:57p
9:30p	10:00p	10:30p	11:00p
9:35p	10:05p	10:35p	11:05p
9:40p	10:10p	10:40p	11:10p
9:43p	10:13p	10:43p	11:13p
9:46p	10:16p	10:46p	11:16p
9:51p	10:21p	10:51p	11:21p
9:56p	10:26p	10:56p	11:26p

WB — SAT NIGHT ONLY

9:33p	10:33p
9:36p	10:36p
9:41p	10:41p
9:44p	10:44p
9:47p	10:47p
9:52p	10:52p
9:57p	10:57p
10:00p	11:00p
10:05p	11:05p
10:10p	11:10p
10:13p	11:13p
10:16p	11:16p
10:21p	11:21p
10:26p	11:26p

SPRINTER operates on a Holiday (Sunday) schedule on New Year's Day, Memorial Day, Labor Day, Thanksgiving Day, and Christmas Day. COASTER operates on a Saturday schedule on Independence Day, and the day after Thanksgiving. **Schedule subject to change.**

El SPRINTER opera en días festivos (con los horarios de domingo) como en Año Nuevo, Día de la Recordación, Día del Trabajo, Día de Acción de Gracias y Navidad. El tren COASTER opera con los horarios de sábado en el Día de la Independencia, y el día siguiente al día de Acción de Gracias. Los horarios están sujetos a cambios.

Monday - Sunday 7 days a week service/Lunes - domingo servicio los 7 días a la semana

Monday - Friday ONLY. Service does not run on Saturday, Sunday, and Holidays/Lunes - viernes ÚNICAMENTE. No hay servicio sábados, domingos, ni en días festivos

Friday night service ONLY/Servicio el viernes en la noche ÚNICAMENTE

Saturday night service ONLY/Servicio el sábado en la noche ÚNICAMENTE

Schedule subject to change
Horario sujeto a cambios

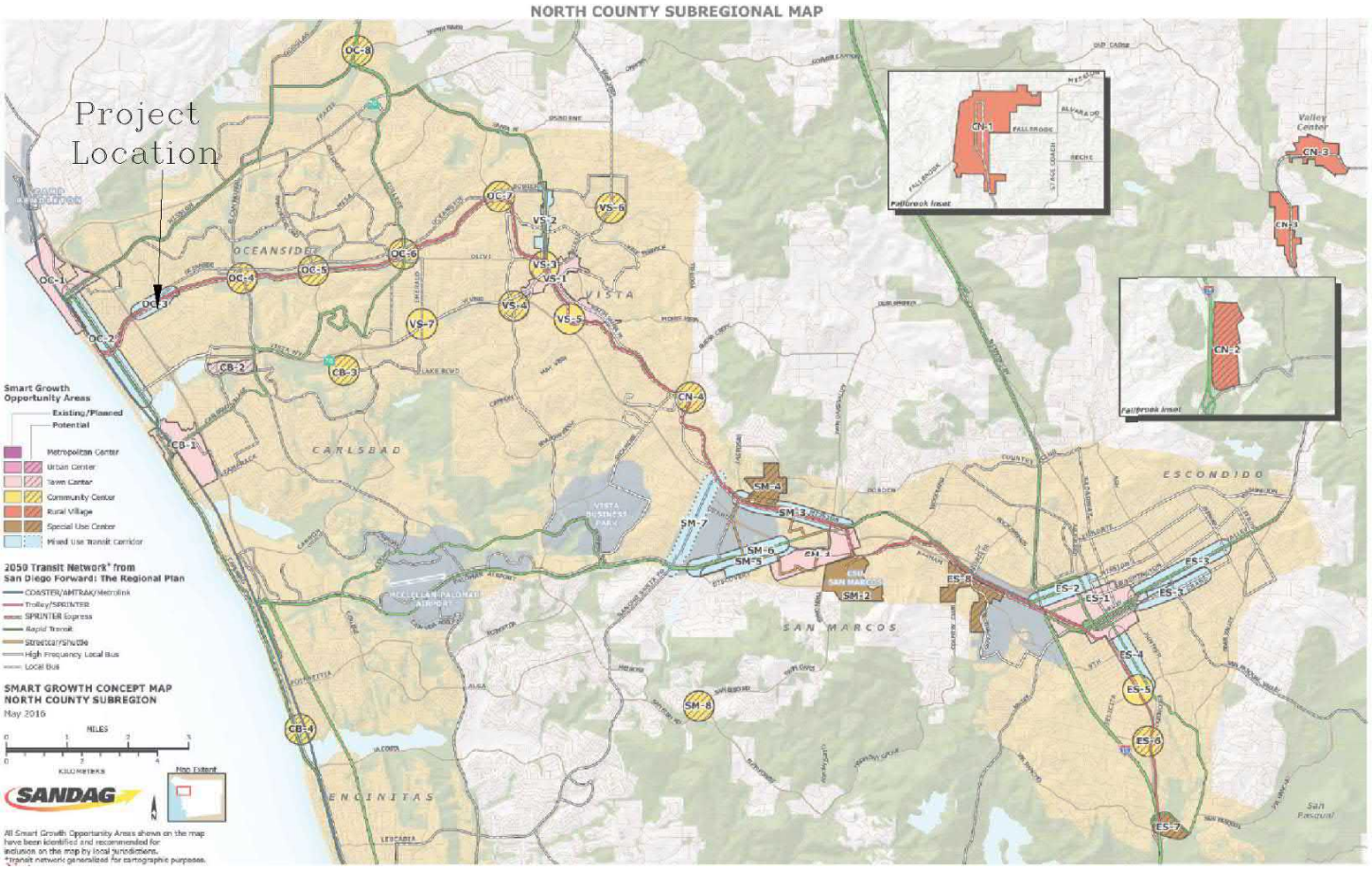
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Figure 13-4: 2035 Potential Transit Priority Areas



Figure 13-5: Smart Growth Concept Map North County Region



14.0 PROJECT DRIVEWAY ANALYSIS AND QUEUES

This section will analyze the projects two driveways along S. Oceanside Blvd. for a level of service delay and queue for the Year 2030 scenarios. The project driveways will be unsignalized and one-way stop controlled from the driveway. Due to the Year 2030 condition having the highest volumes, an acceptable LOS at the driveway would indicate that the earlier conditions would have acceptable LOS as well. **Table 14-1** shows the level of service analysis for the critical Year 2030 scenario.

Table 14-1: Year 2030 Driveway Analysis

#	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Project Driveway (east) / South Oceanside Blvd.	Unsignalized	9.1	A	8.8	A
2	Project Driveway (west) / South Oceanside Blvd.	Unsignalized	13.6	B	11.4	B

Notes:

LOS = Level of Service

D = Delay (in sec.)

As shown on Table 14-1, the project driveways will operate at an acceptable LOS B or better in the AM and PM peak hours.

Table 14-2 shows the project driveway queues for a 95th percentile for the Year 2030 scenario. Queue analysis was done using Synchro 10.

Table 14-2: Year 2030 Project Driveway Queues

Year 2030 Plus Project				
Number	Intersection	Control	AM Peak Hour Queue (ft)	PM Peak Hour Queue (ft)
1	Project Driveway (east) / South Oceanside Blvd.	Unsignalized	5	3
2	Project Driveway (west) / South Oceanside Blvd.	Unsignalized	15	7

As shown on Table 14-2, the project driveways will not have any excessive queues, the driveways are also operating at a LOS B or better so the driveways are expected to operate acceptably in all scenarios.

The synchro sheets for the level of service and queues are provided in **Appendix H**.

15.0 PARKING

The proposed project complies with the density bonus requirements.

16.0 CONSTRUCTION TRAFFIC

The proposed project would result in a temporary increase in traffic to the surrounding streets and intersections due to the construction of the project and the construction employees and equipment that will need to access the project site. Traffic related to construction includes vehicles for workers and trucks delivering materials and supplies to the construction site. Access to the project site will be through S. Oceanside Blvd. and Crouch St. for the employees and delivery or construction trucks.

It is expected that no deficiencies to the surrounding street segments and intersections will occur due to construction traffic in the Existing and Near Term conditions, however a deficiency that requires an improvement occurs in the Year 2030 conditions along the street segment of Oceanside Blvd. from the I-5 SB ramps to State Tree Drive. The project shall provide development impact fees towards an improvement based on the City of Oceanside Impact Fees for New Development to the impacted segments based on the City's General Plan buildout of the roadway. Construction traffic is expected to be lower than what the residential and commercial uses of the project will generate, and no significant deficiency should occur if the previously stated segments have been improved.

17.0 CONCLUSION AND SUMMARY

The proposed project is a mixed used transit-oriented development including 295 dwelling units of residential apartments and 3,000 square feet (SF) of commercial specialty retail space which will consists of a mix of commercial retail and a fast-food restaurant for public use. However, for a conservative analysis, the 3,000 SF specialty retail was analyzed assuming it would be a fast-food restaurant as a worst-case scenario.

The trip generation for the proposed project is calculated to be **3,075** Average Daily Trips (ADT) with **199** AM (**71** in / **128** out) peak hour trips and **210** PM (**132** in / **78** out) peak hour trips.

The following study area of intersections and street segments are the following:

Intersections

1. South Oceanside Boulevard / Crouch Street
2. Oceanside Boulevard / Crouch Street
3. Grandview Street / Crouch Street
4. South Oceanside Boulevard / State Tree Drive
5. Oceanside Boulevard / State Tree Drive
6. South Oceanside Boulevard / Commerce Street
7. Oceanside Boulevard / I-5 Northbound Ramps
8. Oceanside Boulevard / I-5 Southbound Ramps
9. Down Street / Skylar Drive
10. Down Street / California Street
11. Skylark Drive / Crouch Street

Street Segments

- Oceanside Blvd. – I-5 SB Ramps to I-5 NB Ramps
- Oceanside Blvd. – I-5 NB Ramps to State Tree Dr.
- Crouch Street – Oceanside Blvd. to Grandview St.
- South Oceanside Blvd. – Commerce St. to State Tree Dr.
- South Oceanside Blvd. – east of State Tree Dr.
- Project Access Roadway – West of Crouch St.

Existing:

Intersection:

- All studied intersections have an acceptable LOS in this scenario

Street Segments:

- All studied street segments have an acceptable LOS in this scenario

Existing Plus Project:

Intersection:

- All studied intersections have an acceptable LOS in this scenario

Street Segments:

- All studied street segments have an acceptable LOS in this scenario

Near Term Opening Year 2026:

Intersection:

- All studied intersections have an acceptable LOS in this scenario

Street Segments:

- All studied street segments have an acceptable LOS in this scenario

Near Term Opening Year 2026 Plus Project:

Intersection:

- All studied intersections have an acceptable LOS in this scenario

Street Segments:

- All studied street segments have an acceptable LOS in this scenario

Buildout Year 2030:

Intersection:

- All studied intersections have an acceptable LOS in this scenario

Street Segments:

- All studied street segments have an acceptable LOS in this scenario except for the following:
    - Oceanside Blvd. (I-5 SB Ramps to I-5 NB Ramps.)
    - Oceanside Blvd. (I-5 NB Ramps to State Tree Dr.)

Buildout Year 2030 Plus Project:

Intersection:

- All studied intersections have an acceptable LOS in this scenario

Street Segments:

- All studied street segments have an acceptable LOS in this scenario except for the following:
    - Oceanside Blvd. (I-5 SB Ramps to I-5 NB Ramps.)
    - Oceanside Blvd. (I-5 NB Ramps to State Tree Dr.)

Despite the additions of project traffic, no improvements will be required to any of the studied intersections per the thresholds outlined in section 3.5. However, an improvement is required to the following street segments because the LOS is an E and the change in volume to capacity ratio is more than the 0.02 threshold. The project shall provide development impact fees towards an improvement based on the City of Oceanside Impact Fees for New Development to the impacted segments based on the City's General Plan buildout of the roadway. The comparison tables for the intersections and street segments for the Existing, Near Term, and Year 2030 scenarios are respectively shown on thefollowing pages respectively.

Additionally, the Ocean Creek project will change the operation of the signalized intersection of Oceanside Boulevard at Crouch Street through signal modification to become 8-phased and will install a new pole on the northeast corner of the intersection. The project will also rebuild the curb ramp at the northeast location as well. These improvements will be provided as a Project Feature from the Ocean Creek project.

Lastly, due to the project's location, no VMT analysis will be required due to the project being located in a Transit Priority Area and being within ½ mile walking distance to the Crouch Street Station.

Table 17-1: Existing and Existing Plus Project Intersection LOS

#	Intersection	Existing				Existing + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	S ?	PM Peak Hour		Δ	S ?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	S. Oceanside Blvd. / Crouch St.	14.1	B	10.5	B	17.6	C	3.5	No	10.8	B	0.3	No
2	Oceanside Blvd. / Crouch St.	38.2	D	37.0	D	39.7	D	1.5	No	38.9	D	1.9	No
3	Grandview St. / Crouch St.	8.3	A	7.7	A	8.3	A	0.0	No	7.7	A	0.0	No
4	S. Oceanside Blvd. / State Tree Dr.	9.2	A	10.1	B	10.0	A	0.8	No	11.4	B	1.3	No
5	Oceanside Blvd. / State Tree Dr.	9.4	A	21.0	C	15.8	B	6.4	No	21.9	C	0.9	No
6	S. Oceanside Blvd. / Commerce St.	8.1	A	9.6	A	8.4	A	0.3	No	10.1	B	0.5	No
7	Oceanside Blvd. / I-5 NB Ramps	19.1	B	34.8	C	20.2	C	1.1	No	38.2	D	3.4	No
8	Oceanside Blvd. / I-5 SB Ramps	23.4	C	22.7	C	26.2	C	2.8	No	23.1	C	0.4	No
9	Skylark Dr. / Down St.	10.6	B	12.6	B	10.7	B	0.1	No	12.9	B	0.3	No
10	Down St. / California St.	9.2	A	9.5	A	9.3	A	0.1	No	9.7	A	0.2	No
11	Skylark Dr. / Crouch St.	12.6	B	11.9	B	15.5	C	2.9	No	14.5	B	2.6	No

Notes:

LOS = Level of Service

D = Delay (in sec.)

Δ = Change in Delay (in sec.)

Table 17-2: Near Term and Near Term Plus Project Intersection LOS

#	Intersection	Near-Term				Near-Term + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	I?	PM Peak Hour		Δ	I?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	S. Oceanside Blvd. / Crouch St.	17.4	C	10.8	B	20.3	C	2.9	No	11.2	B	0.4	No
2	Oceanside Blvd. / Crouch St.	38.7	D	43.4	D	39.7	D	1.0	No	45.9	D	2.5	No
3	Grandview St. / Crouch St.	8.3	A	7.8	A	8.4	A	0.1	No	7.8	A	0.0	No
4	S. Oceanside Blvd. / State Tree Dr.	14.7	B	12.2	B	17.0	C	2.3	No	14.2	B	2.0	No
5	Oceanside Blvd. / State Tree Dr.	20.5	C	23.9	C	26.0	C	5.5	No	28.9	C	5.0	No
6	S. Oceanside Blvd. / Commerce St.	9.5	A	10.2	B	10.2	B	0.7	No	10.8	B	0.6	No
7	Oceanside Blvd. / I-5 NB Ramps	21.2	C	38.1	D	21.9	C	0.7	No	42.0	D	3.9	No
8	Oceanside Blvd. / I-5 SB Ramps	26.1	C	25.4	C	29.3	C	3.2	No	25.9	C	0.5	No
9	Skylark Dr. / Down St.	10.6	B	12.6	B	10.7	B	0.1	No	12.9	B	0.3	No
10	Down St. / California St.	9.2	A	9.5	A	9.3	C	0.1	No	9.7	B	0.2	No
11	Skylark Dr. / Crouch St.	12.6	B	11.9	B	15.5	C	2.9	No	14.3	B	2.4	No

Notes:

LOS = Level of Service

D = Delay (in sec.)

Δ = Change in Delay (in sec.)

I = Improvement required

Table 17-3: Year 2030 and Year 2030 Plus Project Intersection LOS

#	Intersection	Year 2030				Year 2030 + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	I?	PM Peak Hour		Δ	I?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	S. Oceanside Blvd. / Crouch St.	19.8	C	11.2	B	24.2	C	4.4	No	11.6	B	0.4	No
2	Oceanside Blvd. / Crouch St.	45.4	D	51.3	D	46.6	D	1.2	No	53.4	D	2.1	No
3	Grandview St. / Crouch St.	8.6	A	7.9	A	8.7	A	0.1	No	8.0	A	0.1	No
4	S. Oceanside Blvd. / State Tree Dr.	16.3	C	13.1	B	19.2	C	2.9	No	15.6	C	2.5	No
5	Oceanside Blvd. / State Tree Dr.	24.6	C	30.2	C	31.4	C	6.8	No	36.6	D	6.4	No
6	S. Oceanside Blvd. / Commerce St.	10.2	B	11.0	B	11.0	B	0.8	No	11.8	B	0.8	No
7	Oceanside Blvd. / I-5 NB Ramps	24.9	C	41.4	D	25.9	C	1.0	No	46.6	D	5.2	No
8	Oceanside Blvd. / I-5 SB Ramps	33.9	C	31.0	C	42.9	D	9.0	No	31.8	C	0.8	No
9	Skylark Dr. / Down St.	10.9	B	13.7	B	11.1	B	0.2	No	14.1	B	0.4	No
10	Down St. / California St.	9.6	A	10.0	A	9.8	A	0.2	No	10.2	B	0.2	No
11	Skylark Dr. / Crouch St.	13.7	B	12.7	B	17.8	C	4.1	No	16.1	C	3.4	No

Notes:

LOS = Level of Service

Δ = Change

I = Improvement required

D= Delay

Table 17-4: Existing and Existing Plus Project Street Segment LOS

Road	Segment	# of Ln.	LOS "E" Capacity	Class.	Existing			Existing + Project			ΔV/C	I ?
					LOS	Volume	V/C	LOS	Volume	V/C		
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	30,000	4-C	D	20,100	0.67	D	21,484	0.72	0.046	***NO***
	I-5 NB Ramps to State Tree Drive	4	30,000	4-C	D	20,400	0.68	D	21,169	0.71	0.026	***NO***
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	15,000	2-Ca	B	7,000	0.47	C	7,769	0.52	0.051	***NO***
	Skylark Dr. to Grandview St.	2	10,000	2-Cb	B	3,800	0.38	B	3,954	0.40	0.015	***NO***
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	15,000	2-Ca	A	4,200	0.28	B	5,123	0.34	0.062	***NO***
	East of State Tree Drive	2	15,000	2-Ca	A	4,300	0.29	A	6,145	0.41	0.123	***NO***
Project Access Roadway	West of Crouch Street	2	10,000	2-Cb	A	44	0.00	A	1,274	0.13	0.123	***NO***

Legend:
LOS= Level of Service
V/C= Volume to Capacity Ratio
ΔV/C= Change in V/C ratio
I = Improvement Required
2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)
2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)
4-C = 4 Lane Secondary Collector

Table 17-2: Near Term and Near Term Plus Project Street Segment LOS

Road	Segment	# of Ln.	LOS "E" Capacity	Class.	Near-Term			Near-Term + Project			ΔV/C	I ?
					LOS	Volume	V/C	LOS	Volume	V/C		
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	30,000	4-C	D	22,994	0.77	D	24,378	0.81	0.046	***NO***
	I-5 NB Ramps to State Tree Drive	4	30,000	4-C	D	23,798	0.79	D	24,567	0.82	0.026	***NO***
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	15,000	2-Ca	C	7,560	0.50	C	8,329	0.56	0.051	***NO***
	Skylark Dr. to Grandview St.	2	10,000	2-Cb	B	3,880	0.39	C	4,034	0.40	0.015	***NO***
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	15,000	2-Ca	B	5,000	0.33	C	5,923	0.39	0.062	***NO***
	East of State Tree Drive	2	15,000	2-Ca	A	5,260	0.35	A	7,105	0.47	0.123	***NO***
Project Access Roadway	West of Crouch Street	2	10,000	2-Cb	A	684	0.07	A	1,914	0.19	0.123	***NO***

Legend:
LOS= Level of Service
V/C= Volume to Capacity Ratio
ΔV/C= Change in V/C ratio
I = Improvement Required
2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)
2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)
4-C = 4 Lane Secondary Collector

Table 17-3: Year 2030 and Year 2030 Plus Project Street Segment LOS

Road	Segment	# of Ln.	LOS "E" Capacity	Class.	Year 2030			Year 2030 + Project			ΔV/C	I?
					LOS	Volume	V/C	LOS	Volume	V/C		
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	4	30,000	4-C	E	25,661	0.86	E	27,045	0.90	0.046	***YES***
	I-5 NB Ramps to State Tree Drive	4	30,000	4-C	E	26,559	0.89	E	27,327	0.91	0.026	***YES***
Crouch St.	Oceanside Blvd. to Skylark Dr.	2	15,000	2-Ca	C	8,437	0.56	C	9,206	0.61	0.051	***NO***
	Skylark Dr. to Grandview St.	2	10,000	2-Cb	C	4,330	0.43	C	4,484	0.45	0.015	***NO***
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	2	15,000	2-Ca	B	5,580	0.37	C	6,503	0.43	0.062	***NO***
	East of State Tree Drive	2	15,000	2-Ca	A	5,870	0.39	A	7,715	0.51	0.123	***NO***
Project Access Roadway	West of Crouch Street	2	10,000	2-Cb	A	763	0.08	A	1,993	0.20	0.123	***NO***

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

ΔV/C= Change in V/C ratio

I = Improvement Required

2-Ca = 2 Lane Collector (w/ two way left-turn lane, commercial fronting)

2-Cb = 2 Lane Collector (residential street in the circulation element or industrial fronting)

4-C = 4 Lane Secondary Collector

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Appendix A: Traffic Counts and Growth Factor Calculations

Traffic Counts

Intersections

1. South Oceanside Boulevard / Crouch Street

Please note that the count sheet also displays movements for Skylark Drive. The count vendor combined the counts for South Oceanside Blvd. at Crouch Street and Skylark Drive at Crouch Street into one sheet. This is the case for intersection #11 as well.

Prepared by National Data & Surveying Services

Crouch St & Skylark Dr / S. Oceanside Blvd.

Peak Hour Turning Movement Count

ID: 22-040033-002
City: Oceanside

Day: Tuesday
Date: 3/8/2022

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Crouch St)

AM	5	461	198	0	502	AM
NOON	0	0	0	0	0	NOON
PM	2	160	270	0	448	PM

EASTBOUND (Skylark Dr)

AM	NOON	PM	
6	0	2	
0	0	0	0
4	0	3	0
0	0	0	1
3	0	0	0
AM	NOON	PM	

WESTBOUND (Skylark Dr)

PM	NOON	AM	
294	0	180	0
0	0	0	1
4	0	2	0
0	0	0	0
273	0	202	
PM	NOON	AM	

NORTHBOUND (Crouch St)

PM	164	0	0	151	3	PM
NOON	0	0	0	0	0	NOON
AM	466	0	1	318	4	AM

	1	1	1	0
	0	0	1	0

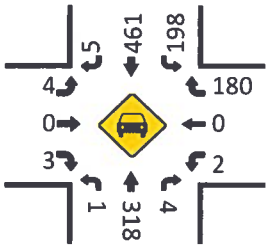
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1-Way Stop(EB)

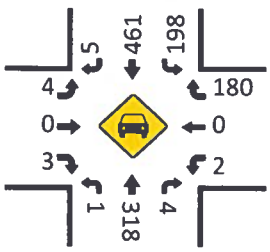
TEV	1176	0	887
	AM	NOON	PM
PHF	0.72		0.94

S. Oceanside Blvd.

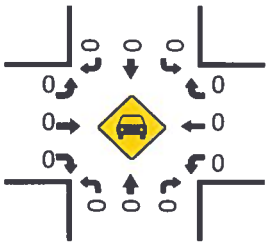
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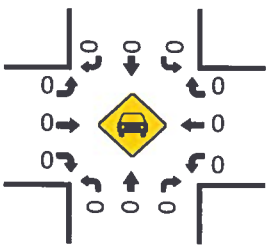
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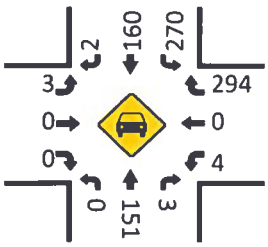
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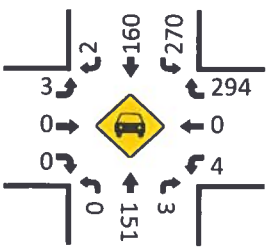
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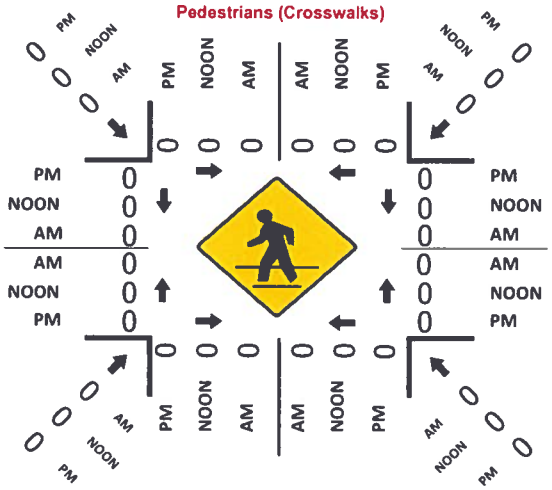
Totals (PM)



Totals (PM)



Pedestrians (Crosswalks)



2. Oceanside Boulevard / Crouch Street

Prepared by National Data & Surveying Services

Crouch St & Oceanside Blvd

Peak Hour Turning Movement Count

ID: 22-040033-001
City: Oceanside

Day: Tuesday
Date: 3/8/2022

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:15 PM - 05:15 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Crouch St)

AM	58	215	136	0	212	AM
NOON	0	0	0	0	0	NOON
PM	96	131	177	0	284	PM
	1	1	1	0		

EASTBOUND (Oceanside Blvd)

AM	NOON	PM	
1038	0	975	
0	0	0	0
56	0	94	1
545	0	943	2
217	0	191	0
AM	NOON	PM	

WESTBOUND (Oceanside Blvd)

PM	NOON	AM	
21	0	14	0
750	0	837	2
115	0	227	1
0	0	0	0
1260	0	905	
PM	NOON	AM	

CONTROL

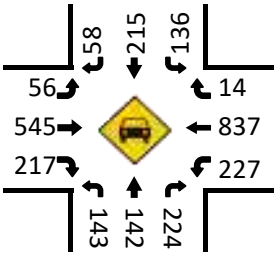
Signalized

TEV	2814 AM	0 NOON	2956 PM
PHF	0.86		0.97

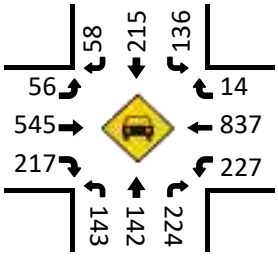
NORTHBOUND (Crouch St)

	0	1	1	1	
PM	437	0	129	169	140	PM
NOON	0	0	0	0	0	NOON
AM	659	0	143	142	224	AM

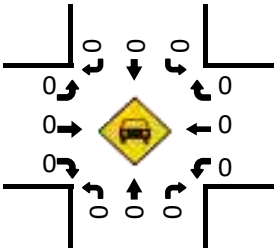
Totals (AM)



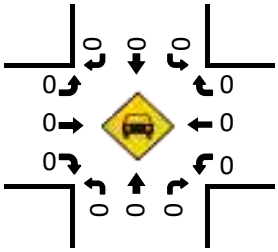
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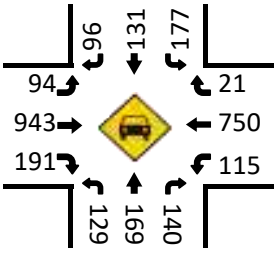
Totals (NOON)



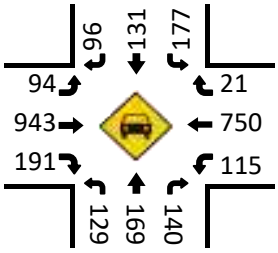
Totals (NOON)



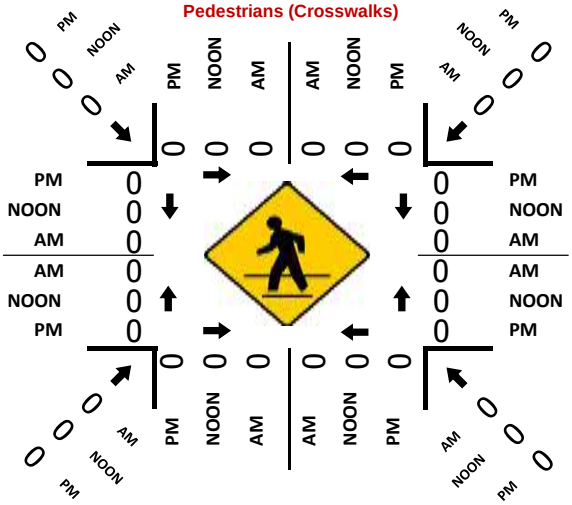
Totals (PM)



Totals (PM)



Pedestrians (Crosswalks)



3. Grandview Street / Crouch Street

Prepared by National Data & Surveying Services

Crouch St & Grandview St

Peak Hour Turning Movement Count

ID: 21-040040-003
City: Oceanside

Day: Tuesday
Date: 3/16/2021

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:15 PM - 05:15 PM	4:00 PM - 06:00 PM

CONTROL: 3-Way Stop

	AM	NOON	PM
TEV	359	0	285
PHF	0.75		0.94

SOUTHBOUND (Crouch St)

	L	T	R	U	Total	
AM	97	0	113	0	136	AM
NOON	0	0	0	0	0	NOON
PM	124	0	29	1	116	PM

EASTBOUND (Grandview St)

AM	NOON	PM	
102	0	132	
0	0	0	0
64	0	75	0
7	0	8	1
0	0	0	0
AM	NOON	PM	

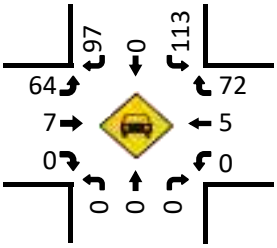
WESTBOUND (Grandview St)

PM	NOON	AM	
40	0	72	0
8	0	5	1
0	0	0	0
0	0	1	0
37	0	121	
PM	NOON	AM	

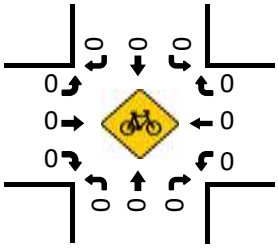
NORTHBOUND (Crouch St)

	L	T	R	U	Total	
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

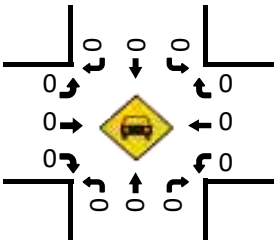
Total (AM)



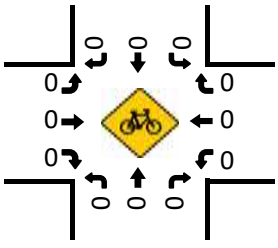
Total Bikes (AM)



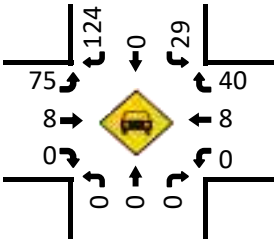
Total (NOON)



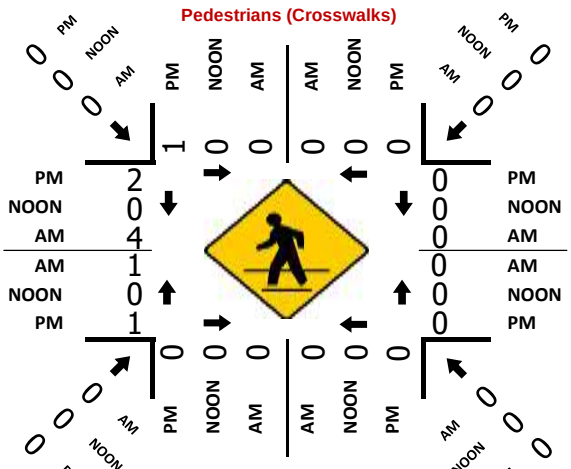
Total Bikes (NOON)



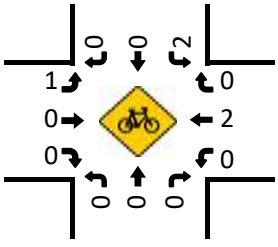
Total (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



4. South Oceanside Boulevard / State Tree Drive

Prepared by National Data & Surveying Services

State Tree Dr & S Oceanside Blvd

Peak Hour Turning Movement Count

ID: 21-040040-004
City: Oceanside

Day: Tuesday
Date: 3/16/2021

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (State Tree Dr)

AM	66	3	16	0	74	AM
NOON	0	0	0	0	0	NOON
PM	80	14	10	0	199	PM

Turning movements: 1 | 0.5 | 0.5 | 0

EASTBOUND (S Oceanside Blvd)

AM	NOON	PM	
71	0	99	
0	0	1	0
54	0	145	1
16	0	13	1
4	0	15	0

WESTBOUND (S Oceanside Blvd)

PM	NOON	AM	
28	0	17	0
13	0	5	1
1	0	0	1
0	0	0	0
24	0	32	

NORTHBOUND (State Tree Dr)

Turning movements: 0 | 0 | 1 | 0

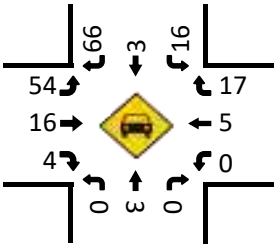
PM	30	0	5	26	1	PM
NOON	0	0	0	0	0	NOON
AM	7	0	0	3	0	AM

CONTROL

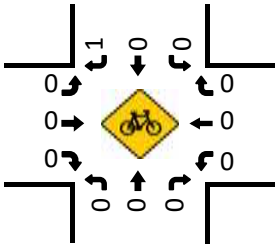
2-Way Stop(EB/WB)

TEV	184 AM	0 NOON	352 PM
PHF	0.90		0.85

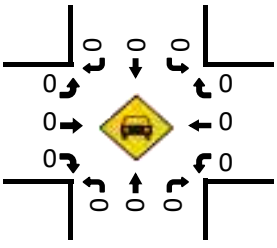
Total (AM)



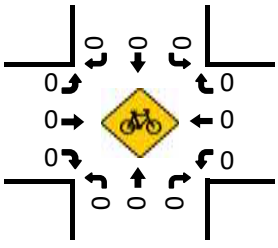
Total Bikes (AM)



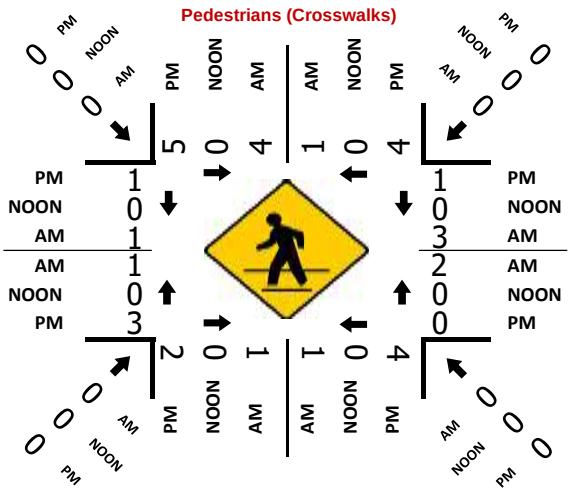
Total (NOON)



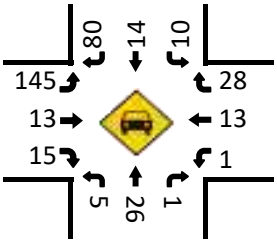
Total Bikes (NOON)



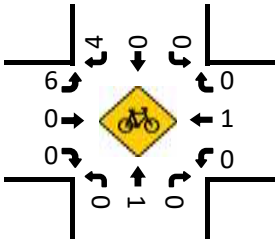
Pedestrians (Crosswalks)



Total (PM)



Total Bikes (PM)



5. Oceanside Boulevard / State Tree Drive

Prepared by National Data & Surveying Services

State Tree Dr & Oceanside Blvd

Peak Hour Turning Movement Count

ID: 21-040040-005
City: Oceanside

Day: Tuesday
Date: 3/16/2021

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	4:00 PM - 06:00 PM

SOUTHBOUND (State Tree Dr)

AM	11	3	7	0	20	AM
NOON	0	0	0	0	0	NOON
PM	61	5	57	0	82	PM

EASTBOUND (Oceanside Blvd)

AM	NOON	PM	
883	0	946	⇦
0	0	0	↶ 0
15	0	58	↱ 1
585	0	1176	→ 2
8	0	15	↳ 0
AM	NOON	PM	

WESTBOUND (Oceanside Blvd)

PM	NOON	AM	
17	0	4	0 ↷
865	0	859	2 ←
77	0	60	1 ↰
0	0	0	0 ↶
1393	0	651	⇨
PM	NOON	AM	

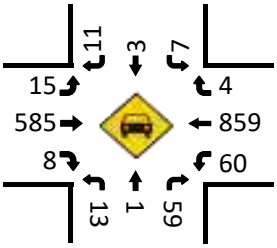
NORTHBOUND (State Tree Dr)

PM	97	0	20	7	160	PM
NOON	0	0	0	0	0	NOON
AM	71	0	13	1	59	AM

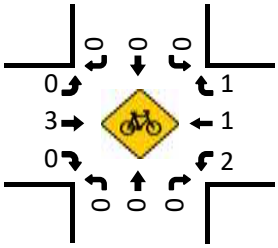
1	1	0	0
0	0.5	0.5	1

CONTROL			
Signalized			
TEV	1625 AM	0 NOON	2518 PM
PHF	0.94		0.99

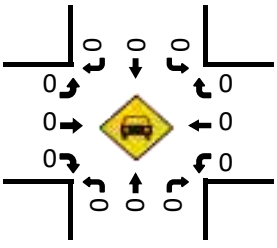
Total (AM)



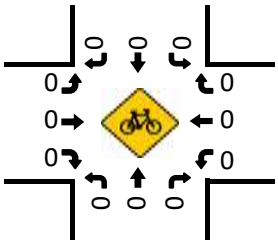
Total Bikes (AM)



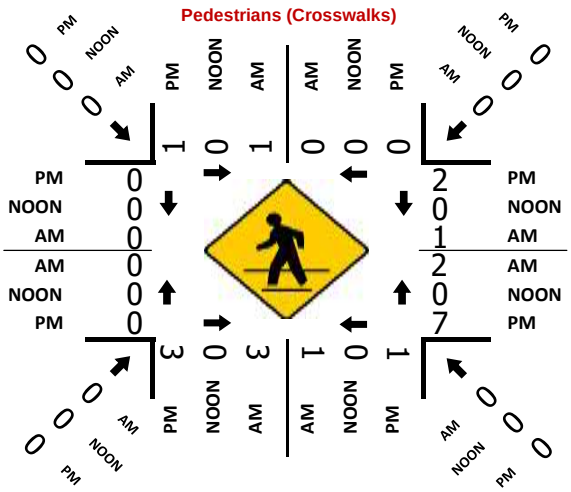
Total (NOON)



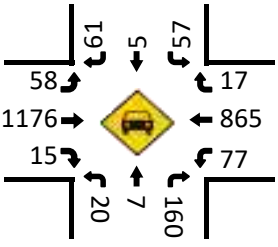
Total Bikes (NOON)



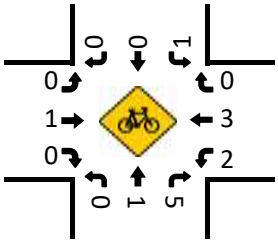
Pedestrians (Crosswalks)



Total (PM)



Total Bikes (PM)



6. South Oceanside Boulevard / Commerce Street

Prepared by National Data & Surveying Services

Commerce St & S Oceanside Blvd

Peak Hour Turning Movement Count

ID: 21-040040-006
City: Oceanside

Day: Tuesday
Date: 3/16/2021

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

CONTROL: 2-Way Stop(NB/WB)

	AM	NOON	PM
TEV	481	0	702
PHF	0.92		0.99

SOUTHBOUND (Commerce St)

	L	T	R	U	Total	
AM	59	158	39	0	205	AM
NOON	0	0	0	0	0	NOON
PM	39	269	47	1	282	PM

EASTBOUND (S Oceanside Blvd)

AM	NOON	PM	
68	0	53	⇦
0	0	0	↶ 0
1	0	0	↱ 0
0	0	0	→ 0
0	0	0	↴ 0

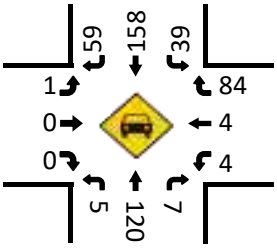
WESTBOUND (S Oceanside Blvd)

	PM	NOON	AM
1 ↰	76	0	84
1 ←	5	0	4
0 ↰	16	0	4
0 ↶	0	0	0
⇨	82	0	46

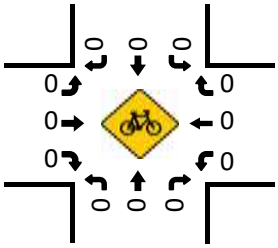
NORTHBOUND (Commerce St)

	L	T	R	U	Total	
PM	285	0	9	205	35	PM
NOON	0	0	0	0	0	NOON
AM	162	0	5	120	7	AM

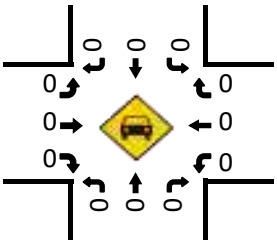
Total (AM)



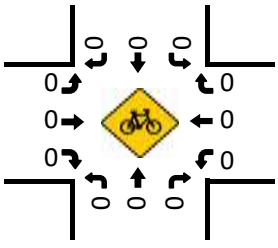
Total Bikes (AM)



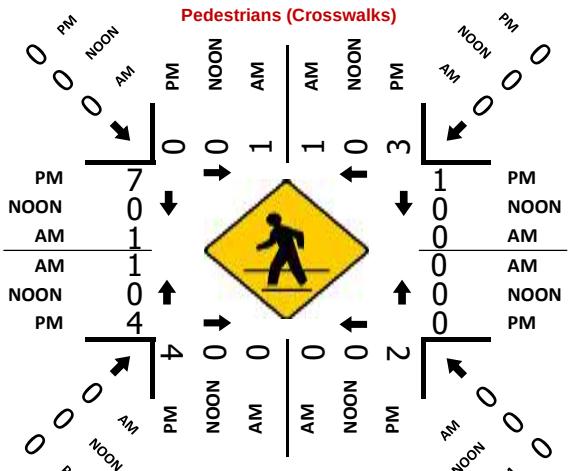
Total (NOON)



Total Bikes (NOON)



Pedestrians (Crosswalks)


PM
NOON
AM
0
0
0
1
1
0
3
7
0
1
1
0
4
0
0
0
0
0
0
2
1
0
0
0
0
0
0
0
0
0
0
0

7. Oceanside Boulevard / I-5 Northbound Ramps

Prepared by National Data & Surveying Services

I-5 NB Ramps & Oceanside Blvd

Peak Hour Turning Movement Count

ID: 21-040040-007
City: Oceanside

Day: Tuesday
Date: 3/16/2021

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	4:00 PM - 06:00 PM

SOUTHBOUND (I-5 NB Ramps)

AM	213	84	239	1	334	AM
NOON	0	0	0	0	0	NOON
PM	428	127	542	0	344	PM
	1	0.5	1.5	0		

EASTBOUND (Oceanside Blvd)

AM	NOON	PM	
986	0	1257	
0	0	0	0
68	0	68	1
350	0	660	2
118	0	152	0
AM	NOON	PM	

WESTBOUND (Oceanside Blvd)

PM	NOON	AM	
205	0	216	1
671	0	656	2
61	0	28	1
0	0	0	0
1263	0	622	
PM	NOON	AM	

CONTROL

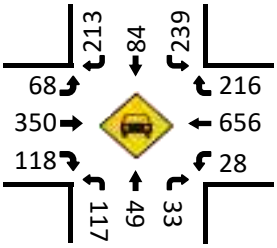
Signalized

	AM	NOON	PM
TEV	2172	0	3204
PHF	0.92		0.94

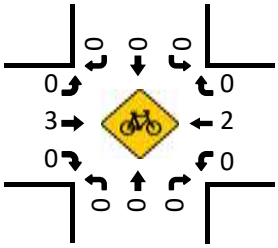
NORTHBOUND (I-5 NB Ramps)

	0	1.5	0.5	1		
PM	340	0	158	71	61	PM
NOON	0	0	0	0	0	NOON
AM	230	0	117	49	33	AM

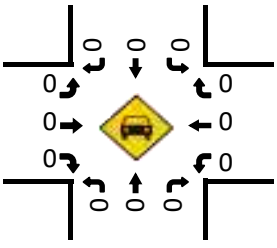
Total (AM)



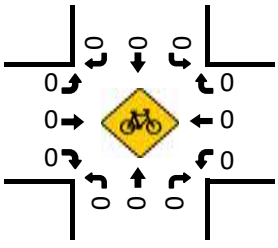
Total Bikes (AM)



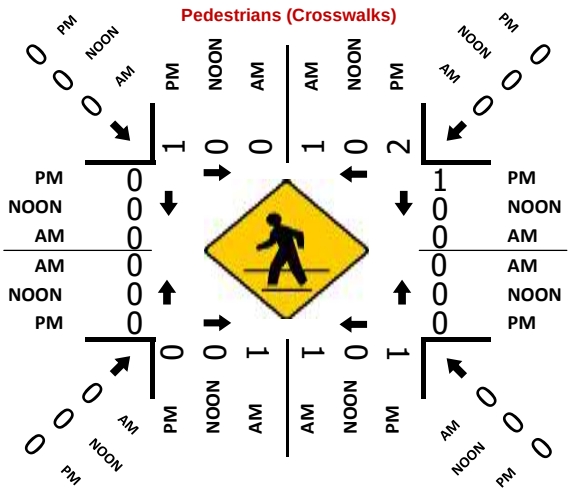
Total (NOON)



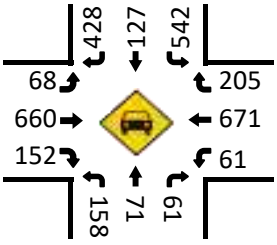
Total Bikes (NOON)



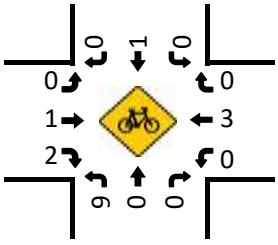
Pedestrians (Crosswalks)



Total (PM)



Total Bikes (PM)



8. Oceanside Boulevard / I-5 Southbound Ramps

Prepared by National Data & Surveying Services

I-5 SB Ramps & Oceanside Blvd

Peak Hour Turning Movement Count

ID: 21-040040-008
City: Oceanside

Day: Tuesday
Date: 3/16/2021

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:15 PM - 05:15 PM	4:00 PM - 06:00 PM

SOUTHBOUND (I-5 SB Ramps)

AM	43	7	158	0	857	AM
NOON	0	0	0	0	0	NOON
PM	55	12	349	0	697	PM
	0.3	0.3	1.3	0		

EASTBOUND (Oceanside Blvd)

AM	NOON	PM	
498	0	825	
0	0	0	0
297	0	247	1
336	0	500	2
10	0	38	0

WESTBOUND (Oceanside Blvd)

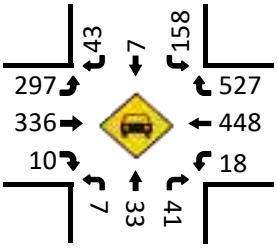
	PM	NOON	AM
1	420	0	527
2	751	0	448
1	80	0	18
0	0	0	0
	877	0	535

NORTHBOUND (I-5 SB Ramps)

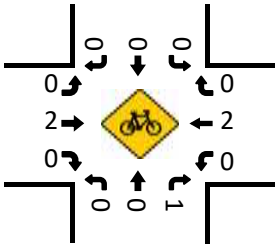
PM	130	0	19	30	28	PM
NOON	0	0	0	0	0	NOON
AM	35	0	7	33	41	AM
		0	0.5	0.5	1	

CONTROL			
Signalized			
TEV	1925 AM	0 NOON	2529 PM
PHF	0.90		0.92

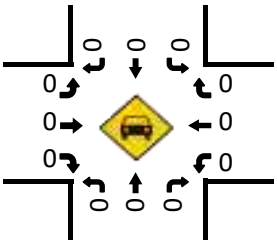
Total (AM)



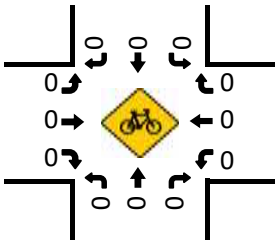
Total Bikes (AM)



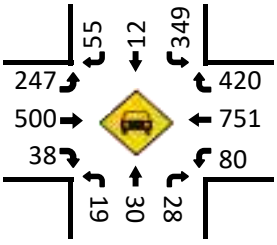
Total (NOON)



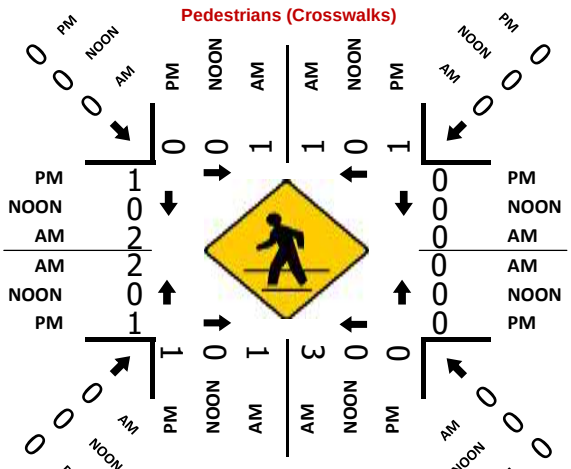
Total Bikes (NOON)



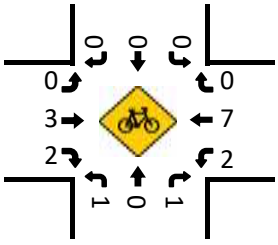
Total (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



9. Down Street / Skylark Drive

Prepared by National Data & Surveying Services

Downs St & Skylark Dr

Peak Hour Turning Movement Count

ID: 22-040033-003
City: Oceanside

Day: Tuesday
Date: 3/8/2022

PEAK HOURS	COUNT PERIODS
07:45 AM - 08:45 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Downs St)

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND (Skylark Dr)

AM	NOON	PM	
170	0	301	
1	0	0	0
0	0	0	0
24	0	52	1
190	0	221	0
AM	NOON	PM	

WESTBOUND (Skylark Dr)

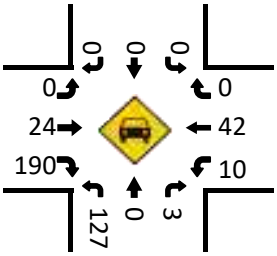
PM	NOON	AM	
0	0	0	0
33	0	42	1
3	0	10	0
0	0	0	0
58	0	27	
PM	NOON	AM	

NORTHBOUND (Downs St)

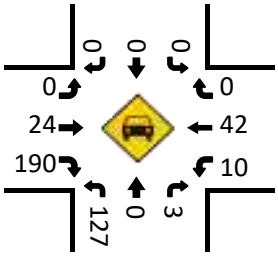
PM	224	0	268	0	6	PM
NOON	0	0	0	0	0	NOON
AM	200	0	127	0	3	AM

CONTROL			
1-Way Stop(NB)			
TEV	397 AM	0 NOON	583 PM
PHF	0.84		0.93

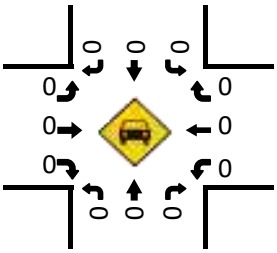
Totals (AM)



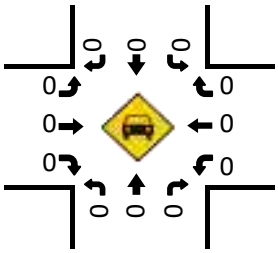
Totals (AM)



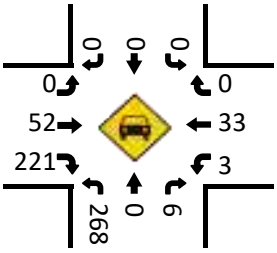
Totals (NOON)



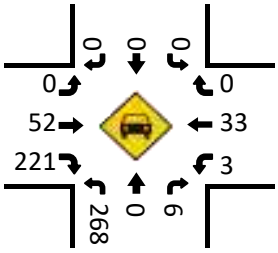
Totals (NOON)



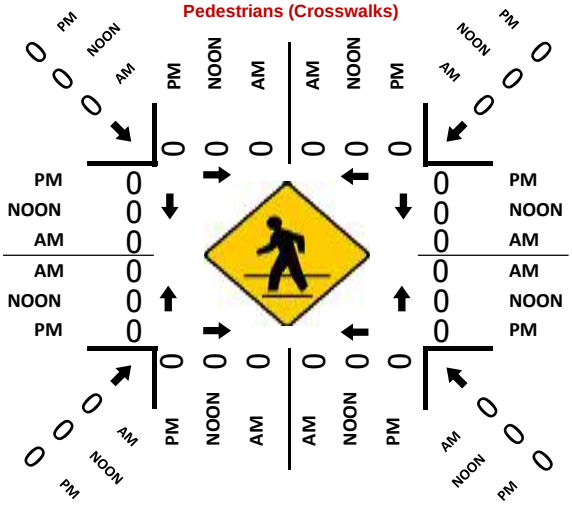
Totals (PM)



Totals (PM)



Pedestrians (Crosswalks)


PM NOON AM
0 0 0
0 0 0 0
0 0 0 0
0

10. Down Street / California Street

Prepared by National Data & Surveying Services

Downs St & California St

Peak Hour Turning Movement Count

ID: 22-040033-004
City: Oceanside

Day: Tuesday
Date: 3/8/2022

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:15 PM - 05:15 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Downs St)

AM	55	108	15	0	118	AM
NOON	0	0	0	0	0	NOON
PM	17	174	20	0	261	PM

EASTBOUND (California St)

AM	NOON	PM		
205	0	89		
0	0	0	0	
29	0	9	0	
45	0	27	1	
74	0	30	0	
AM	NOON	PM		

WESTBOUND (California St)

				PM	NOON	AM
			0.5	59	0	18
			0.5	38	0	58
			0	2	0	1
			0	0	0	0
				48	0	61
				PM	NOON	AM

NORTHBOUND (Downs St)

PM	206	0	34	193	1
NOON	0	0	0	0	0
AM	183	0	92	71	1

0	0	1	0

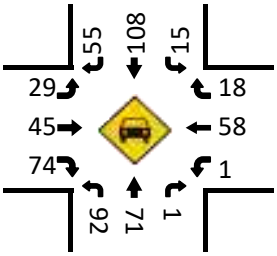
0	1	0	0

CONTROL

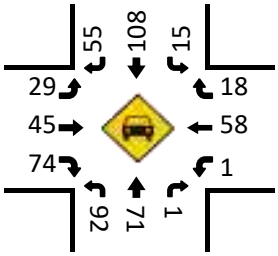
4-Way Stop

TEV	567 AM	0 NOON	604 PM
PHF	0.80		0.95

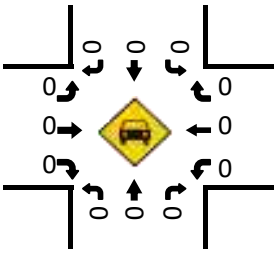
Totals (AM)



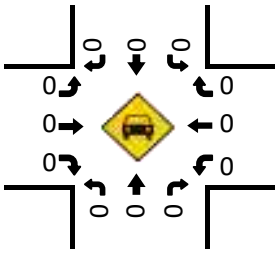
Totals (AM)



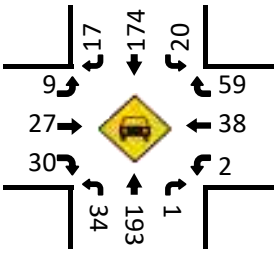
Totals (NOON)



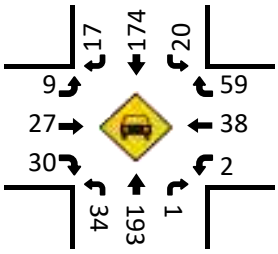
Totals (NOON)



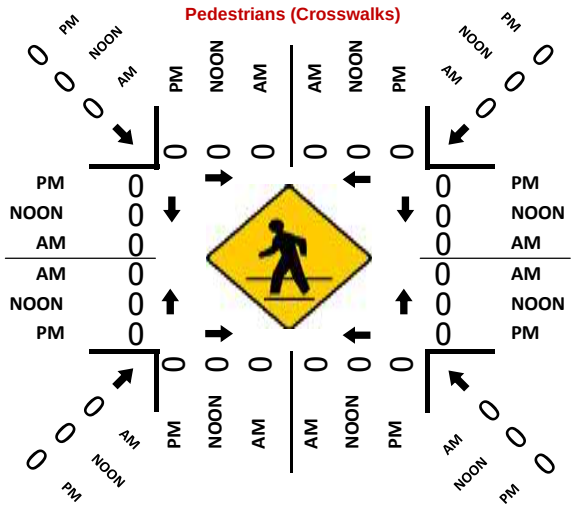
Totals (PM)



Totals (PM)



Pedestrians (Crosswalks)



11. Skylark Drive / Crouch Street

Prepared by National Data & Surveying Services

Crouch St & Skylark Dr / S. Oceanside Blvd.

Peak Hour Turning Movement Count

ID: 22-040033-002
City: Oceanside

Day: Tuesday
Date: 3/8/2022

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Crouch St)

AM	5	461	198	0	502	AM
NOON	0	0	0	0	0	NOON
PM	2	160	270	0	448	PM

EASTBOUND (Skylark Dr)

AM	NOON	PM	
6	0	2	
0	0	0	0
4	0	3	0
0	0	0	1
3	0	0	0
AM	NOON	PM	

WESTBOUND (Skylark Dr)

PM	NOON	AM	
294	0	180	0
0	0	0	1
4	0	2	0
0	0	0	0
273	0	202	
PM	NOON	AM	

NORTHBOUND (Crouch St)

PM	164	0	0	151	3	PM
NOON	0	0	0	0	0	NOON
AM	466	0	1	318	4	AM

	1	1	1	0
	0	0	1	0

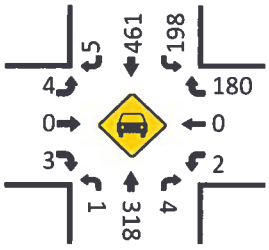
CONTROL

1-Way Stop(EB)

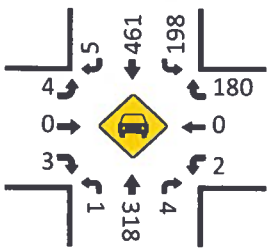
TEV	1176	0	887
	AM	NOON	PM
PHF	0.72		0.94

S. Oceanside Blvd.

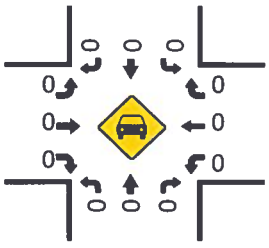
Totals (AM)



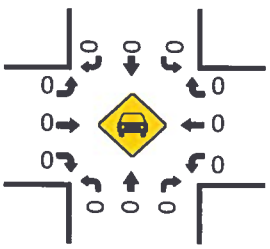
Totals (AM)



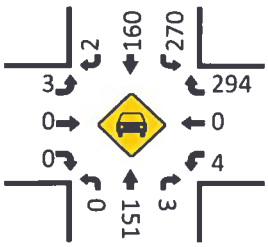
Totals (NOON)



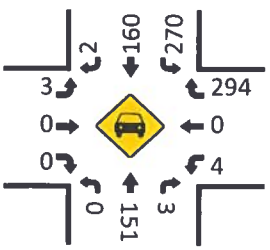
Totals (NOON)



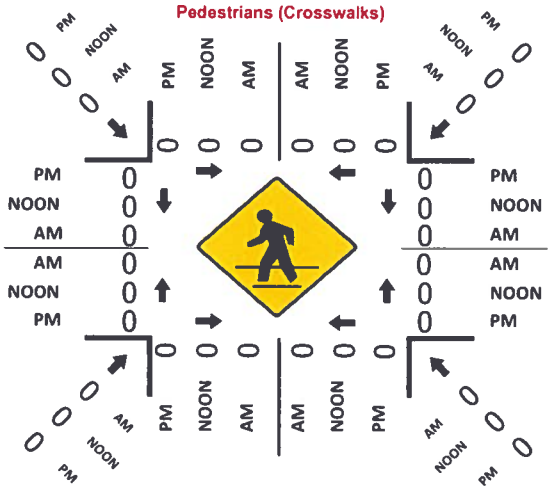
Totals (PM)



Totals (PM)



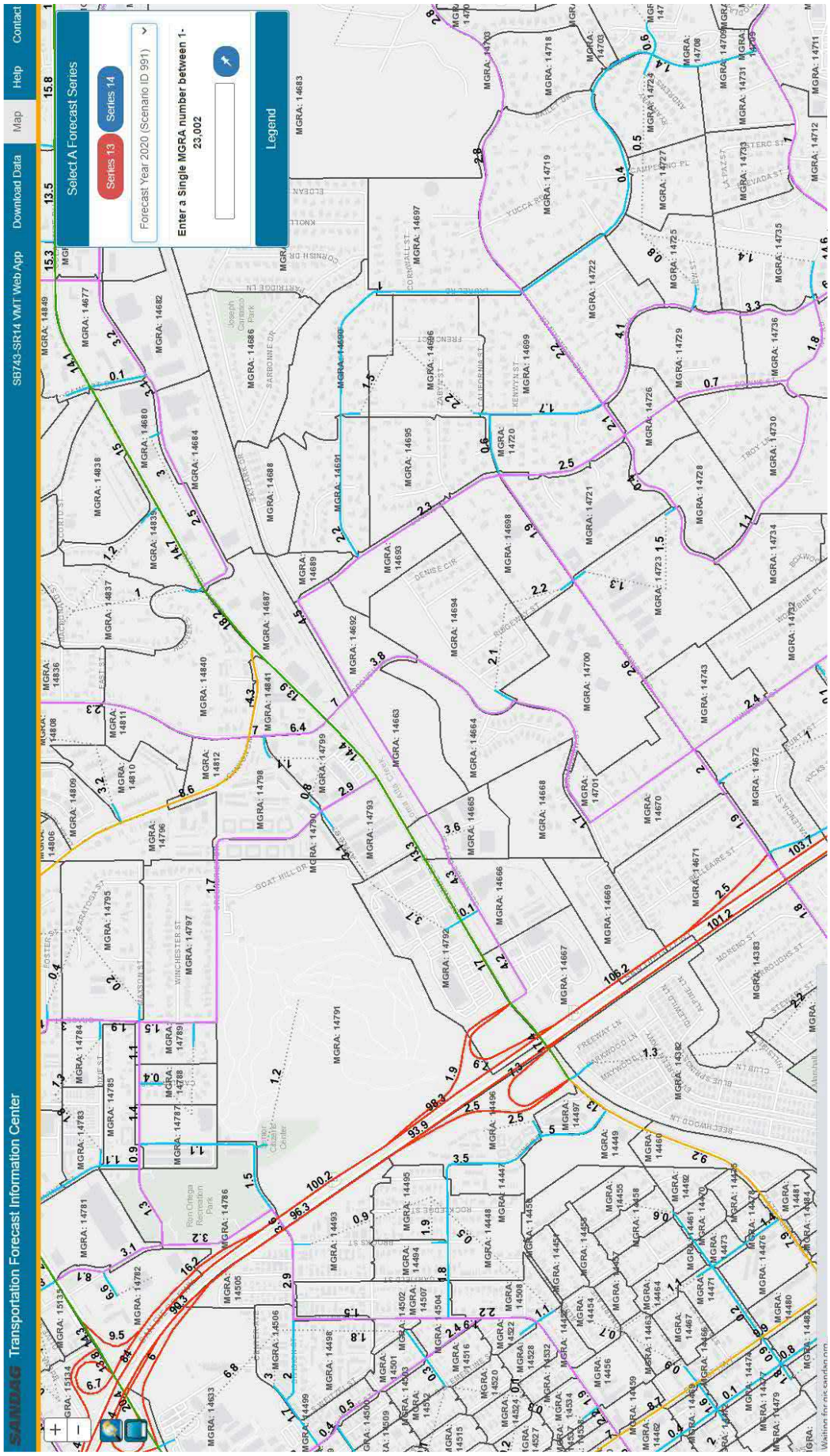
Pedestrians (Crosswalks)



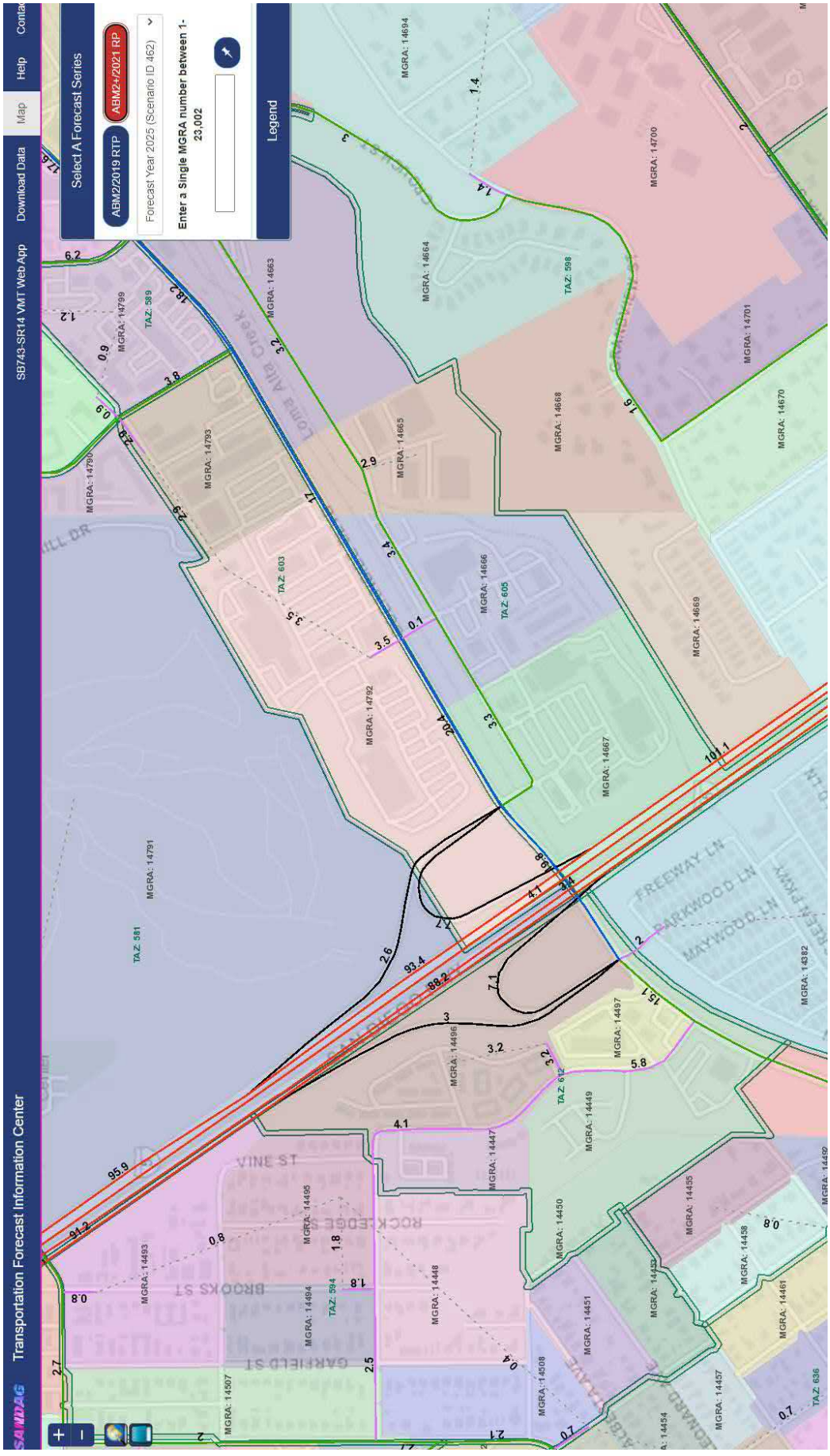
Street Segment Counts

Existing Counts obtained from SANDAG Transportation Forecast Information Center (TFIC) model series 13, year 2020 and 2025. Study segments were added to the report after traffic counts were conducted at the studied intersections.

Sandag TFIC S13 Year 2020



Sandag TFIC S13 Year 2025

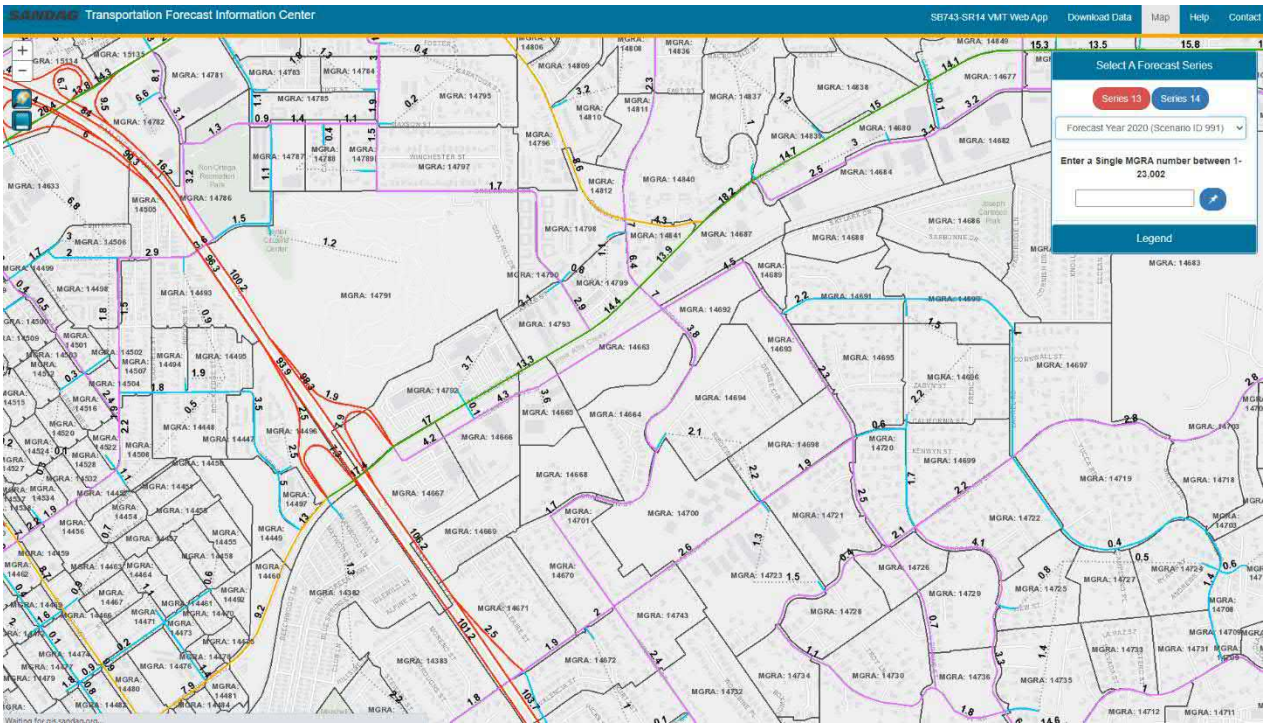


Growth Factor Calculations for 2.9% growth

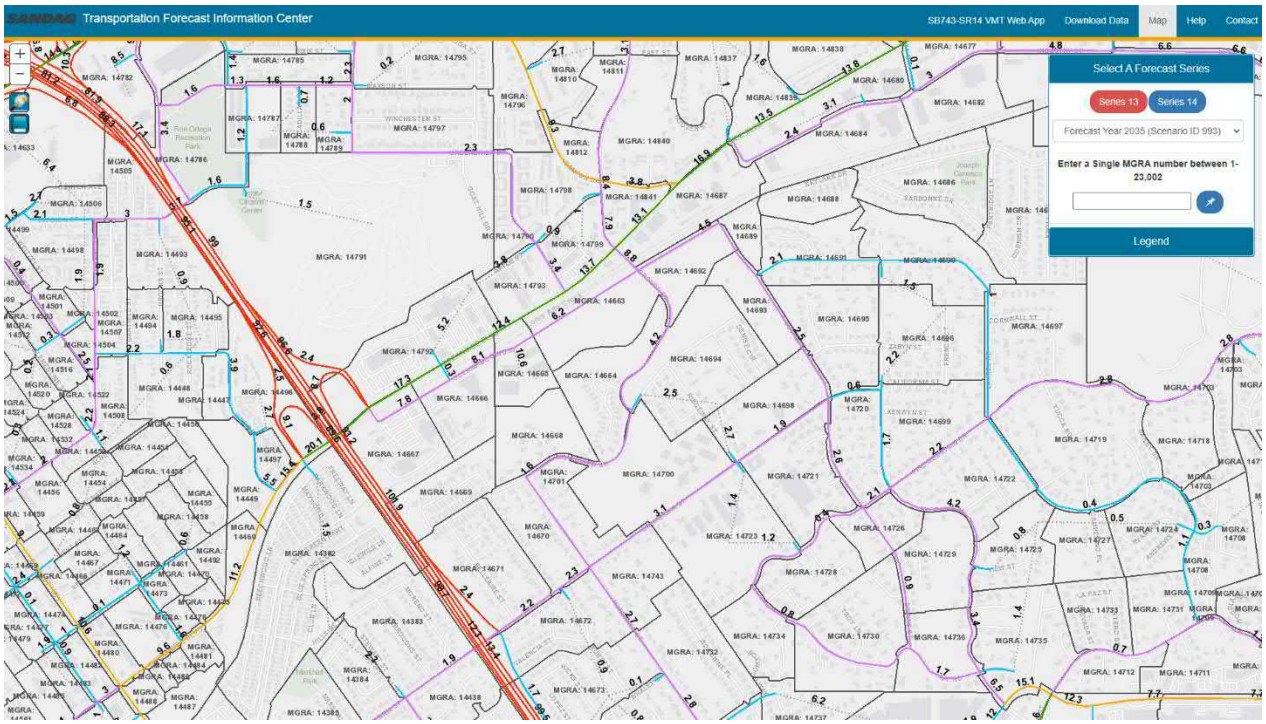
Based on Sandag TFIC Series 13 Year 2020 and 2035

Road	Segment	2020 adt	2035 adt	growth from 2020 to 2035	increase per year (15 years)	growth % per year
Oceanside Blvd.	I-5 SB Ramps to I-5 NB Ramps	17400	20100	2700	180	1.0%
	I-5 NB Ramps to State Tree Drive	17000	17300	300	20	0.1%
Crouch St.	Oceanside Blvd. to Grandview St.	7000	8800	1800	120	1.7%
S. Oceanside Blvd.	Commerce St. to State Tree Dr.	4200	7800	3600	240	5.7%
	East of State Tree Drive	4300	8100	3800	253.3333333	5.9%
						avg
						2.9%

Sandag TFIC Series 13 Year 2020



Sandag TFIC Series 13 Year 2035



Appendix B: Synchro Reports - Existing

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	3	1	318	461	5
Future Vol, veh/h	4	3	1	318	461	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	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	3	1	346	501	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	849	501	506	0	-	0
Stage 1	501	-	-	-	-	-
Stage 2	348	-	-	-	-	-
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	331	570	1059	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	715	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	331	570	1059	-	-	-
Mov Cap-2 Maneuver	331	-	-	-	-	-
Stage 1	608	-	-	-	-	-
Stage 2	715	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1059	-	404	-	-
HCM Lane V/C Ratio	0.001	-	0.019	-	-
HCM Control Delay (s)	8.4	0	14.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	545	217	227	837	14	143	142	224	136	215	58
Future Volume (veh/h)	56	545	217	227	837	14	143	142	224	136	215	58
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	61	592	236	247	910	15	155	154	243	148	234	63
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	78	921	367	260	1693	28	188	329	279	185	318	270
Arrive On Green	0.04	0.37	0.37	0.15	0.47	0.47	0.11	0.18	0.18	0.10	0.17	0.17
Sat Flow, veh/h	1781	2482	988	1781	3578	59	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	61	424	404	247	452	473	155	154	243	148	234	63
Grp Sat Flow(s),veh/h/ln	1781	1777	1693	1781	1777	1860	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.4	19.7	19.7	13.7	18.0	18.0	8.5	7.4	14.9	8.1	11.9	3.4
Cycle Q Clear(g_c), s	3.4	19.7	19.7	13.7	18.0	18.0	8.5	7.4	14.9	8.1	11.9	3.4
Prop In Lane	1.00		0.58	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	78	660	628	260	841	880	188	329	279	185	318	270
V/C Ratio(X)	0.78	0.64	0.64	0.95	0.54	0.54	0.82	0.47	0.87	0.80	0.74	0.23
Avail Cap(c_a), veh/h	112	660	628	260	841	880	290	393	333	374	473	401
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	47.3	26.0	26.0	42.3	18.6	18.6	43.8	37.0	40.1	43.8	39.4	35.9
Incr Delay (d2), s/veh	19.1	4.8	5.0	42.1	0.7	0.7	10.6	1.0	19.0	7.7	3.3	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	1.9	9.0	8.6	9.0	7.3	7.6	4.3	3.5	7.2	3.9	5.7	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.4	30.7	31.0	84.4	19.3	19.3	54.4	38.0	59.1	51.5	42.7	36.3
LnGrp LOS	E	C	C	F	B	B	D	D	E	D	D	D
Approach Vol, veh/h		889			1172			552			445	
Approach Delay, s/veh		33.3			33.0			51.9			44.7	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.7	42.9	15.7	21.7	9.5	53.1	15.1	22.3
Change Period (Y+Rc), s	5.1	5.8	5.1	* 4.7	5.1	5.8	* 4.7	* 4.7
Max Green Setting (Gmax), s	14.6	23.1	16.3	* 25	6.3	31.4	* 21	* 21
Max Q Clear Time (g_c+I1), s	15.7	21.7	10.5	13.9	5.4	20.0	10.1	16.9
Green Ext Time (p_c), s	0.0	0.7	0.2	1.1	0.0	4.6	0.3	0.7

Intersection Summary	
HCM 6th Ctrl Delay	38.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	64	7	5	72	113	97
Future Vol, veh/h	64	7	5	72	113	97
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	70	8	5	78	123	105
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.2	7.4	8.6
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	90%	0%	54%
Vol Thru, %	10%	6%	0%
Vol Right, %	0%	94%	46%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	71	77	210
LT Vol	64	0	113
Through Vol	7	5	0
RT Vol	0	72	97
Lane Flow Rate	77	84	228
Geometry Grp	1	1	1
Degree of Util (X)	0.101	0.092	0.256
Departure Headway (Hd)	4.704	3.967	4.04
Convergence, Y/N	Yes	Yes	Yes
Cap	766	908	874
Service Time	2.707	1.97	2.135
HCM Lane V/C Ratio	0.101	0.093	0.261
HCM Control Delay	8.2	7.4	8.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.3	0.3	1

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	54	16	4	0	5	17	0	3	0	16	3	66
Future Vol, veh/h	54	16	4	0	5	17	0	3	0	16	3	66
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	59	17	4	0	5	18	0	3	0	17	3	72

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	52	40	3	87	112	3	75	0	0	3	0	0
Stage 1	37	37	-	3	3	-	-	-	-	-	-	-
Stage 2	15	3	-	84	109	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	947	852	1081	899	778	1081	1524	-	-	1619	-	-
Stage 1	978	864	-	1020	893	-	-	-	-	-	-	-
Stage 2	1005	893	-	924	805	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	918	843	1081	874	769	1081	1524	-	-	1619	-	-
Mov Cap-2 Maneuver	918	843	-	874	769	-	-	-	-	-	-	-
Stage 1	978	854	-	1020	893	-	-	-	-	-	-	-
Stage 2	982	893	-	892	796	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.2	8.7	0	1.4
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1524	-	-	918	882	-	990	1619	-	-
HCM Lane V/C Ratio	-	-	-	0.064	0.025	-	0.024	0.011	-	-
HCM Control Delay (s)	0	-	-	9.2	9.2	0	8.7	7.2	0	-
HCM Lane LOS	A	-	-	A	A	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	-	0.1	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	585	8	60	859	4	13	1	59	7	3	11
Future Volume (veh/h)	15	585	8	60	859	4	13	1	59	7	3	11
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	16	636	9	65	934	4	14	1	64	8	3	12
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	37	1269	18	122	1457	6	418	23	248	335	95	248
Arrive On Green	0.02	0.35	0.35	0.07	0.40	0.40	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1781	3587	51	1781	3629	16	1285	145	1585	902	608	1585
Grp Volume(v), veh/h	16	315	330	65	457	481	15	0	64	11	0	12
Grp Sat Flow(s),veh/h/ln	1781	1777	1861	1781	1777	1868	1430	0	1585	1510	0	1585
Q Serve(g_s), s	0.3	4.5	4.5	1.1	6.6	6.6	0.1	0.0	1.1	0.0	0.0	0.2
Cycle Q Clear(g_c), s	0.3	4.5	4.5	1.1	6.6	6.6	0.3	0.0	1.1	0.2	0.0	0.2
Prop In Lane	1.00		0.03	1.00		0.01	0.93		1.00	0.73		1.00
Lane Grp Cap(c), veh/h	37	628	658	122	713	750	441	0	248	430	0	248
V/C Ratio(X)	0.43	0.50	0.50	0.53	0.64	0.64	0.03	0.00	0.26	0.03	0.00	0.05
Avail Cap(c_a), veh/h	278	1021	1070	284	1027	1079	1018	0	891	1019	0	891
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	15.5	8.1	8.1	14.4	7.7	7.7	11.5	0.0	11.9	11.5	0.0	11.5
Incr Delay (d2), s/veh	7.8	0.6	0.6	3.6	1.0	0.9	0.0	0.0	0.5	0.0	0.0	0.1
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	0.2	1.2	1.3	0.5	1.7	1.8	0.1	0.0	0.3	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.3	8.7	8.7	18.0	8.7	8.6	11.5	0.0	12.4	11.5	0.0	11.6
LnGrp LOS	C	A	A	B	A	A	B	A	B	B	A	B
Approach Vol, veh/h		661			1003			79			23	
Approach Delay, s/veh		9.1			9.3			12.3			11.5	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.7	15.8		9.5	5.2	17.4		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	18.4		18.0	5.0	18.5		18.0				
Max Q Clear Time (g_c+I1), s	3.1	6.5		2.2	2.3	8.6		3.1				
Green Ext Time (p_c), s	0.0	3.1		0.0	0.0	4.2		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		9.4	
HCM 6th LOS		A	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Yield	
Traffic Volume (vph)	0	0	0	4	4	84	5	120	7	39	158	59
Future Volume (vph)	0	0	0	4	4	84	5	120	7	39	158	59
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
Hourly flow rate (vph)	0	0	0	4	4	91	5	130	8	42	172	64

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	8	91	143	128	150
Volume Left (vph)	4	0	5	42	0
Volume Right (vph)	0	91	8	0	64
Hadj (s)	0.28	-0.67	0.01	0.20	-0.26
Departure Headway (s)	5.8	4.8	5.1	5.1	4.6
Degree Utilization, x	0.01	0.12	0.20	0.18	0.19
Capacity (veh/h)	580	692	691	687	758
Control Delay (s)	7.6	7.3	9.3	8.0	7.5
Approach Delay (s)	7.3		9.3	7.7	
Approach LOS	A		A	A	

Intersection Summary				
Delay	8.1			
Level of Service	A			
Intersection Capacity Utilization	27.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	350	118	28	656	216	117	49	33	240	84	213
Future Volume (veh/h)	68	350	118	28	656	216	117	49	33	240	84	213
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	74	380	128	30	713	235	90	105	36	176	210	232
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	112	824	274	60	1015	453	186	196	166	370	388	329
Arrive On Green	0.06	0.31	0.31	0.03	0.29	0.29	0.10	0.10	0.10	0.21	0.21	0.21
Sat Flow, veh/h	1781	2620	871	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	74	256	252	30	713	235	90	105	36	176	210	232
Grp Sat Flow(s),veh/h/ln	1781	1777	1714	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.2	6.1	6.3	0.9	9.5	6.6	2.5	2.8	1.1	4.6	5.3	7.2
Cycle Q Clear(g_c), s	2.2	6.1	6.3	0.9	9.5	6.6	2.5	2.8	1.1	4.6	5.3	7.2
Prop In Lane	1.00		0.51	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	112	559	539	60	1015	453	186	196	166	370	388	329
V/C Ratio(X)	0.66	0.46	0.47	0.50	0.70	0.52	0.48	0.54	0.22	0.48	0.54	0.71
Avail Cap(c_a), veh/h	205	684	660	188	1334	595	605	635	538	605	635	538
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	24.3	14.5	14.6	25.2	16.9	15.9	22.4	22.5	21.7	18.5	18.7	19.5
Incr Delay (d2), s/veh	6.6	0.6	0.6	6.3	1.1	0.9	1.9	2.3	0.6	1.0	1.2	2.8
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	1.0	2.2	2.2	0.5	3.6	2.2	1.1	1.3	0.4	1.8	2.2	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.9	15.1	15.2	31.5	18.0	16.8	24.3	24.8	22.4	19.4	19.9	22.3
LnGrp LOS	C	B	B	C	B	B	C	C	C	B	B	C
Approach Vol, veh/h		582			978			231			618	
Approach Delay, s/veh		17.2			18.2			24.2			20.7	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	21.2		15.5	7.8	19.6		10.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.6	20.4		18.0	6.1	19.9		18.0				
Max Q Clear Time (g_c+I1), s	2.9	8.3		9.2	4.2	11.5		4.8				
Green Ext Time (p_c), s	0.0	2.5		1.8	0.0	3.6		0.7				

Intersection Summary			
HCM 6th Ctrl Delay		19.1	
HCM 6th LOS		B	

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	297	336	10	18	448	527	7	33	41	158	7	43
Future Volume (veh/h)	297	336	10	18	448	527	7	33	41	158	7	43
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	323	365	11	20	487	573	8	36	45	114	90	47
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	379	1715	52	42	1058	661	27	122	128	213	138	72
Arrive On Green	0.21	0.49	0.49	0.02	0.30	0.30	0.08	0.08	0.08	0.12	0.12	0.12
Sat Flow, veh/h	1781	3522	106	1781	3554	1585	337	1517	1585	1781	1157	604
Grp Volume(v), veh/h	323	184	192	20	487	573	44	0	45	114	0	137
Grp Sat Flow(s),veh/h/ln	1781	1777	1851	1781	1777	1585	1854	0	1585	1781	0	1762
Q Serve(g_s), s	10.8	3.7	3.7	0.7	6.9	18.5	1.4	0.0	1.7	3.7	0.0	4.6
Cycle Q Clear(g_c), s	10.8	3.7	3.7	0.7	6.9	18.5	1.4	0.0	1.7	3.7	0.0	4.6
Prop In Lane	1.00		0.06	1.00		1.00	0.18		1.00	1.00		0.34
Lane Grp Cap(c), veh/h	379	865	902	42	1058	661	149	0	128	213	0	210
V/C Ratio(X)	0.85	0.21	0.21	0.48	0.46	0.87	0.30	0.00	0.35	0.54	0.00	0.65
Avail Cap(c_a), veh/h	502	878	915	152	1058	661	537	0	459	516	0	510
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	23.5	9.1	9.1	30.0	17.8	16.0	26.9	0.0	27.0	25.7	0.0	26.1
Incr Delay (d2), s/veh	10.4	0.1	0.1	8.2	0.3	11.7	1.1	0.0	1.7	2.1	0.0	3.4
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	5.3	1.2	1.3	0.4	2.7	10.4	0.6	0.0	0.7	1.6	0.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.0	9.2	9.2	38.2	18.1	27.7	28.0	0.0	28.7	27.8	0.0	29.5
LnGrp LOS	C	A	A	D	B	C	C	A	C	C	A	C
Approach Vol, veh/h		699			1080			89			251	
Approach Delay, s/veh		20.7			23.5			28.3			28.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	34.8		11.9	17.7	23.0		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.3	30.7		18.0	17.5	18.5		18.0				
Max Q Clear Time (g_c+I1), s	2.7	5.7		6.6	12.8	20.5		3.7				
Green Ext Time (p_c), s	0.0	2.2		0.8	0.4	0.0		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			23.4									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	24	190	10	42	127	3
Future Vol, veh/h	24	190	10	42	127	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	207	11	46	138	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	233	0	198	130
Stage 1	-	-	-	-	130	-
Stage 2	-	-	-	-	68	-
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	-	-	1335	-	791	920
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	955	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1335	-	785	920
Mov Cap-2 Maneuver	-	-	-	-	785	-
Stage 1	-	-	-	-	889	-
Stage 2	-	-	-	-	955	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	788	-	-	1335	-
HCM Lane V/C Ratio	0.179	-	-	0.008	-
HCM Control Delay (s)	10.6	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0	-

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	45	74	1	58	18	92	71	1	15	108	55
Future Vol, veh/h	29	45	74	1	58	18	92	71	1	15	108	55
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	49	80	1	63	20	100	77	1	16	117	60
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	9.1	8.7	9.5	9.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	56%	20%	2%	0%	8%
Vol Thru, %	43%	30%	98%	0%	61%
Vol Right, %	1%	50%	0%	100%	31%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	164	148	59	18	178
LT Vol	92	29	1	0	15
Through Vol	71	45	58	0	108
RT Vol	1	74	0	18	55
Lane Flow Rate	178	161	64	20	193
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.241	0.213	0.1	0.027	0.247
Departure Headway (Hd)	4.873	4.77	5.592	4.876	4.591
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	733	748	637	729	778
Service Time	2.929	2.829	3.357	2.64	2.644
HCM Lane V/C Ratio	0.243	0.215	0.1	0.027	0.248
HCM Control Delay	9.5	9.1	9	7.8	9.2
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.9	0.8	0.3	0.1	1

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	180	318	4	198	461
Future Vol, veh/h	2	180	318	4	198	461
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	196	346	4	215	501

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1279	348	0	0	350	0
Stage 1	348	-	-	-	-	-
Stage 2	931	-	-	-	-	-
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	183	695	-	-	1209	-
Stage 1	715	-	-	-	-	-
Stage 2	384	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	150	695	-	-	1209	-
Mov Cap-2 Maneuver	150	-	-	-	-	-
Stage 1	588	-	-	-	-	-
Stage 2	384	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	2.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	668	1209	-
HCM Lane V/C Ratio	-	-	0.296	0.178	-
HCM Control Delay (s)	-	-	12.6	8.6	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.2	0.6	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	0	0	151	160	2
Future Vol, veh/h	3	0	0	151	160	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	0	0	164	174	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	338	174	176	0	-	0
Stage 1	174	-	-	-	-	-
Stage 2	164	-	-	-	-	-
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	658	869	1400	-	-	-
Stage 1	856	-	-	-	-	-
Stage 2	865	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	658	869	1400	-	-	-
Mov Cap-2 Maneuver	658	-	-	-	-	-
Stage 1	856	-	-	-	-	-
Stage 2	865	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1400	-	658	-	-
HCM Lane V/C Ratio	-	-	0.005	-	-
HCM Control Delay (s)	0	-	10.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	943	191	115	750	21	129	169	140	177	131	96
Future Volume (veh/h)	94	943	191	115	750	21	129	169	140	177	131	96
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	102	1025	208	125	815	23	140	184	152	192	142	104
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	128	1411	286	152	1739	49	169	230	195	221	285	242
Arrive On Green	0.07	0.48	0.48	0.09	0.49	0.49	0.09	0.12	0.12	0.12	0.15	0.15
Sat Flow, veh/h	1781	2944	596	1781	3530	100	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	102	618	615	125	410	428	140	184	152	192	142	104
Grp Sat Flow(s),veh/h/ln	1781	1777	1763	1781	1777	1852	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.2	30.5	30.7	7.6	16.8	16.8	8.5	10.5	10.2	11.6	7.7	6.5
Cycle Q Clear(g_c), s	6.2	30.5	30.7	7.6	16.8	16.8	8.5	10.5	10.2	11.6	7.7	6.5
Prop In Lane	1.00		0.34	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	128	852	845	152	875	913	169	230	195	221	285	242
V/C Ratio(X)	0.80	0.73	0.73	0.82	0.47	0.47	0.83	0.80	0.78	0.87	0.50	0.43
Avail Cap(c_a), veh/h	209	852	845	160	875	913	201	359	304	241	401	340
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	50.2	22.9	22.9	49.5	18.4	18.4	48.9	46.9	46.8	47.3	42.7	42.3
Incr Delay (d2), s/veh	10.6	5.3	5.5	26.8	0.4	0.4	21.5	6.9	6.6	25.4	1.3	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	13.6	13.6	4.5	6.8	7.1	4.8	5.3	4.4	6.7	3.6	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.8	28.2	28.4	76.3	18.8	18.8	70.4	53.8	53.4	72.7	44.1	43.5
LnGrp LOS	E	C	C	E	B	B	E	D	D	E	D	D
Approach Vol, veh/h		1335			963			476			438	
Approach Delay, s/veh		30.8			26.3			58.6			56.5	
Approach LOS		C			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.5	58.5	15.5	21.5	13.0	60.0	18.8	18.2
Change Period (Y+Rc), s	5.1	5.8	5.1	* 4.7	5.1	5.8	5.1	* 4.7
Max Green Setting (Gmax), s	9.9	43.4	12.4	* 24	12.9	40.4	14.9	* 21
Max Q Clear Time (g_c+I1), s	9.6	32.7	10.5	9.7	8.2	18.8	13.6	12.5
Green Ext Time (p_c), s	0.0	6.0	0.1	0.9	0.1	5.5	0.1	1.0

Intersection Summary	
HCM 6th Ctrl Delay	37.0
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	75	8	8	40	30	124
Future Vol, veh/h	75	8	8	40	30	124
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	9	9	43	33	135
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.1	7.1	7.6
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	90%	0%	19%
Vol Thru, %	10%	17%	0%
Vol Right, %	0%	83%	81%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	83	48	154
LT Vol	75	0	30
Through Vol	8	8	0
RT Vol	0	40	124
Lane Flow Rate	90	52	167
Geometry Grp	1	1	1
Degree of Util (X)	0.112	0.055	0.174
Departure Headway (Hd)	4.451	3.798	3.733
Convergence, Y/N	Yes	Yes	Yes
Cap	799	929	947
Service Time	2.509	1.877	1.811
HCM Lane V/C Ratio	0.113	0.056	0.176
HCM Control Delay	8.1	7.1	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.2	0.6

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	146	13	15	1	13	28	5	26	1	10	14	80
Future Vol, veh/h	146	13	15	1	13	28	5	26	1	10	14	80
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	159	14	16	1	14	30	5	28	1	11	15	87

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	98	76	15	135	163	29	102	0	0	29	0	0
Stage 1	37	37	-	39	39	-	-	-	-	-	-	-
Stage 2	61	39	-	96	124	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	884	814	1065	836	729	1046	1490	-	-	1584	-	-
Stage 1	978	864	-	976	862	-	-	-	-	-	-	-
Stage 2	950	862	-	911	793	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	839	806	1065	806	722	1046	1490	-	-	1584	-	-
Mov Cap-2 Maneuver	839	806	-	806	722	-	-	-	-	-	-	-
Stage 1	975	858	-	973	859	-	-	-	-	-	-	-
Stage 2	904	859	-	876	787	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	9.1	1.2	0.7
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1490	-	-	839	927	806	916	1584	-	-
HCM Lane V/C Ratio	0.004	-	-	0.189	0.033	0.001	0.049	0.007	-	-
HCM Control Delay (s)	7.4	0	-	10.3	9	9.5	9.1	7.3	0	-
HCM Lane LOS	A	A	-	B	A	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.1	0	0.2	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	1176	15	77	865	17	20	7	160	57	5	61
Future Volume (veh/h)	58	1176	15	77	865	17	20	7	160	57	5	61
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	1278	16	84	940	18	22	8	174	62	5	66
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	96	1508	19	111	1526	29	102	22	471	114	5	471
Arrive On Green	0.05	0.42	0.42	0.06	0.43	0.43	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1781	3594	45	1781	3567	68	0	75	1585	0	17	1585
Grp Volume(v), veh/h	63	632	662	84	468	490	30	0	174	67	0	66
Grp Sat Flow(s),veh/h/ln	1781	1777	1862	1781	1777	1858	75	0	1585	17	0	1585
Q Serve(g_s), s	2.1	19.5	19.5	2.8	12.5	12.5	0.0	0.0	5.3	0.0	0.0	1.9
Cycle Q Clear(g_c), s	2.1	19.5	19.5	2.8	12.5	12.5	18.1	0.0	5.3	18.1	0.0	1.9
Prop In Lane	1.00		0.02	1.00		0.04	0.73		1.00	0.93		1.00
Lane Grp Cap(c), veh/h	96	745	781	111	760	795	125	0	471	119	0	471
V/C Ratio(X)	0.66	0.85	0.85	0.76	0.62	0.62	0.24	0.00	0.37	0.56	0.00	0.14
Avail Cap(c_a), veh/h	172	807	846	167	801	838	125	0	471	119	0	471
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	28.3	15.9	15.9	28.1	13.5	13.5	17.8	0.0	16.9	29.2	0.0	15.7
Incr Delay (d2), s/veh	7.4	7.9	7.6	10.3	1.3	1.3	1.0	0.0	0.5	6.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	8.4	8.8	1.5	4.6	4.8	0.3	0.0	1.8	1.1	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.7	23.9	23.6	38.5	14.9	14.8	18.8	0.0	17.4	35.2	0.0	15.9
LnGrp LOS	D	C	C	D	B	B	B	A	B	D	A	B
Approach Vol, veh/h		1357			1042			204			133	
Approach Delay, s/veh		24.3			16.7			17.6			25.6	
Approach LOS		C			B			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	30.1		22.6	7.8	30.6		22.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.7	27.7		18.1	5.9	27.5		18.1				
Max Q Clear Time (g_c+I1), s	4.8	21.5		20.1	4.1	14.5		20.1				
Green Ext Time (p_c), s	0.0	4.0		0.0	0.0	5.1		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			21.0									
HCM 6th LOS			C									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Yield	
Traffic Volume (vph)	0	0	0	16	5	76	9	205	35	48	269	39
Future Volume (vph)	0	0	0	16	5	76	9	205	35	48	269	39
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
Hourly flow rate (vph)	0	0	0	17	5	83	10	223	38	52	292	42

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	22	83	271	198	188
Volume Left (vph)	17	0	10	52	0
Volume Right (vph)	0	83	38	0	42
Hadj (s)	0.42	-0.67	-0.04	0.17	-0.12
Departure Headway (s)	6.5	5.4	5.2	5.2	4.9
Degree Utilization, x	0.04	0.12	0.39	0.29	0.26
Capacity (veh/h)	511	608	679	669	709
Control Delay (s)	8.5	7.9	11.4	9.1	8.4
Approach Delay (s)	8.1		11.4	8.8	
Approach LOS	A		B	A	

Intersection Summary				
Delay	9.6			
Level of Service	A			
Intersection Capacity Utilization	36.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	660	152	61	671	205	158	71	61	542	127	428
Future Volume (veh/h)	68	660	152	61	671	205	158	71	61	542	127	428
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	74	717	165	66	729	223	124	143	66	364	454	465
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	95	859	198	89	1051	469	202	212	179	532	559	473
Arrive On Green	0.05	0.30	0.30	0.05	0.30	0.30	0.11	0.11	0.11	0.30	0.30	0.30
Sat Flow, veh/h	1781	2869	660	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	74	444	438	66	729	223	124	143	66	364	454	465
Grp Sat Flow(s),veh/h/ln	1781	1777	1752	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.1	17.6	17.6	2.8	13.7	8.7	5.0	5.5	2.9	13.6	16.9	21.9
Cycle Q Clear(g_c), s	3.1	17.6	17.6	2.8	13.7	8.7	5.0	5.5	2.9	13.6	16.9	21.9
Prop In Lane	1.00		0.38	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	95	532	525	89	1051	469	202	212	179	532	559	473
V/C Ratio(X)	0.78	0.83	0.83	0.75	0.69	0.48	0.62	0.68	0.37	0.68	0.81	0.98
Avail Cap(c_a), veh/h	154	613	605	130	1180	526	426	447	379	532	559	473
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	35.2	24.6	24.6	35.3	23.5	21.7	31.8	32.1	30.9	23.3	24.5	26.2
Incr Delay (d2), s/veh	12.7	8.7	8.8	12.3	1.5	0.8	3.0	3.7	1.3	3.6	8.9	36.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	8.2	8.2	1.5	5.7	3.2	2.3	2.6	1.1	5.9	8.5	12.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.9	33.3	33.5	47.6	25.0	22.5	34.9	35.8	32.2	26.9	33.4	62.8
LnGrp LOS	D	C	C	D	C	C	C	D	C	C	C	E
Approach Vol, veh/h		956			1018			333			1283	
Approach Delay, s/veh		34.5			25.9			34.7			42.2	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	27.1		27.0	8.5	26.8		13.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	26.0		22.5	6.5	25.0		18.0				
Max Q Clear Time (g_c+I1), s	4.8	19.6		23.9	5.1	15.7		7.5				
Green Ext Time (p_c), s	0.0	3.0		0.0	0.0	3.9		1.0				

Intersection Summary			
HCM 6th Ctrl Delay		34.8	
HCM 6th LOS		C	

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	247	500	38	80	751	420	19	30	28	349	12	55
Future Volume (veh/h)	247	500	38	80	751	420	19	30	28	349	12	55
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	268	543	41	87	816	457	21	33	30	444	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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	317	1395	105	113	1072	742	55	86	122	592	311	0
Arrive On Green	0.18	0.42	0.42	0.06	0.30	0.30	0.08	0.08	0.08	0.17	0.00	0.00
Sat Flow, veh/h	1781	3349	252	1781	3554	1585	713	1121	1585	3563	1870	0
Grp Volume(v), veh/h	268	288	296	87	816	457	54	0	30	444	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1825	1781	1777	1585	1835	0	1585	1781	1870	0
Q Serve(g_s), s	9.5	7.3	7.4	3.1	13.5	14.0	1.8	0.0	1.2	7.7	0.0	0.0
Cycle Q Clear(g_c), s	9.5	7.3	7.4	3.1	13.5	14.0	1.8	0.0	1.2	7.7	0.0	0.0
Prop In Lane	1.00		0.14	1.00		1.00	0.39		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	317	740	760	113	1072	742	141	0	122	592	311	0
V/C Ratio(X)	0.85	0.39	0.39	0.77	0.76	0.62	0.38	0.00	0.25	0.75	0.00	0.00
Avail Cap(c_a), veh/h	381	740	760	274	1209	803	508	0	439	987	518	0
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	0.00
Uniform Delay (d), s/veh	25.8	13.2	13.2	30.0	20.6	12.9	28.5	0.0	28.2	25.8	0.0	0.0
Incr Delay (d2), s/veh	13.8	0.3	0.3	10.6	2.6	1.3	1.7	0.0	1.0	1.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	2.7	2.8	1.6	5.5	6.5	0.8	0.0	0.5	3.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.6	13.5	13.5	40.5	23.1	14.2	30.2	0.0	29.2	27.7	0.0	0.0
LnGrp LOS	D	B	B	D	C	B	C	A	C	C	A	A
Approach Vol, veh/h		852			1360			84			444	
Approach Delay, s/veh		21.7			21.2			29.9			27.7	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.6	31.5		15.3	16.1	24.1		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.0	26.0		18.0	13.9	22.1		18.0				
Max Q Clear Time (g_c+I1), s	5.1	9.4		9.7	11.5	16.0		3.8				
Green Ext Time (p_c), s	0.1	3.3		1.1	0.2	3.6		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		22.7	
HCM 6th LOS		C	

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	51	221	3	33	268	6
Future Vol, veh/h	51	221	3	33	268	6
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	55	240	3	36	291	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	295	0	217	175
Stage 1	-	-	-	-	175	-
Stage 2	-	-	-	-	42	-
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	-	-	1266	-	771	868
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	980	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1266	-	769	868
Mov Cap-2 Maneuver	-	-	-	-	769	-
Stage 1	-	-	-	-	853	-
Stage 2	-	-	-	-	980	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	771	-	-	1266	-
HCM Lane V/C Ratio	0.386	-	-	0.003	-
HCM Control Delay (s)	12.6	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.8	-	-	0	-

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	27	30	2	38	59	34	193	1	20	174	17
Future Vol, veh/h	9	27	30	2	38	59	34	193	1	20	174	17
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	29	33	2	41	64	37	210	1	22	189	18
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	8.7	8.5	10	9.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	15%	14%	5%	0%	9%
Vol Thru, %	85%	41%	95%	0%	82%
Vol Right, %	0%	45%	0%	100%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	228	66	40	59	211
LT Vol	34	9	2	0	20
Through Vol	193	27	38	0	174
RT Vol	1	30	0	59	17
Lane Flow Rate	248	72	43	64	229
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.322	0.101	0.069	0.089	0.296
Departure Headway (Hd)	4.681	5.053	5.749	5.016	4.648
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	766	704	620	710	771
Service Time	2.726	3.12	3.513	2.78	2.694
HCM Lane V/C Ratio	0.324	0.102	0.069	0.09	0.297
HCM Control Delay	10	8.7	8.9	8.3	9.7
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	1.4	0.3	0.2	0.3	1.2

Intersection	
Int Delay, s/veh	6.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	294	151	3	270	160
Future Vol, veh/h	4	294	151	3	270	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	320	164	3	293	174

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	926	166	0	0	167	0
Stage 1	166	-	-	-	-	-
Stage 2	760	-	-	-	-	-
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	298	878	-	-	1411	-
Stage 1	863	-	-	-	-	-
Stage 2	462	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	236	878	-	-	1411	-
Mov Cap-2 Maneuver	236	-	-	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	462	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	5.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	847	1411	-
HCM Lane V/C Ratio	-	-	0.382	0.208	-
HCM Control Delay (s)	-	-	11.9	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.8	0.8	-

Appendix C: Synchro Reports – Existing Plus Project

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	49	9	5	318	461	30
Future Vol, veh/h	49	9	5	318	461	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	10	5	346	501	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	857	501	534	0	-	0
Stage 1	501	-	-	-	-	-
Stage 2	356	-	-	-	-	-
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	328	570	1034	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	709	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	326	570	1034	-	-	-
Mov Cap-2 Maneuver	326	-	-	-	-	-
Stage 1	605	-	-	-	-	-
Stage 2	709	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.6	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1034	-	349	-	-
HCM Lane V/C Ratio	0.005	-	0.181	-	-
HCM Control Delay (s)	8.5	0	17.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	545	217	238	837	14	143	155	243	136	222	58
Future Volume (veh/h)	56	545	217	238	837	14	143	155	243	136	222	58
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	61	592	236	259	910	15	155	168	264	148	241	63
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	79	846	337	291	1648	27	186	351	298	179	344	291
Arrive On Green	0.04	0.34	0.34	0.16	0.46	0.46	0.10	0.19	0.19	0.10	0.18	0.18
Sat Flow, veh/h	1781	2482	988	1781	3578	59	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	61	424	404	259	452	473	155	168	264	148	241	63
Grp Sat Flow(s),veh/h/ln	1781	1777	1693	1781	1777	1860	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.4	20.6	20.7	14.2	18.4	18.4	8.5	8.0	16.2	8.2	12.1	3.4
Cycle Q Clear(g_c), s	3.4	20.6	20.7	14.2	18.4	18.4	8.5	8.0	16.2	8.2	12.1	3.4
Prop In Lane	1.00		0.58	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	79	606	577	291	818	857	186	351	298	179	344	291
V/C Ratio(X)	0.78	0.70	0.70	0.89	0.55	0.55	0.83	0.48	0.89	0.83	0.70	0.22
Avail Cap(c_a), veh/h	116	606	577	319	818	857	212	395	334	212	395	334
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	47.3	28.5	28.5	40.9	19.5	19.5	43.9	36.2	39.6	44.1	38.2	34.7
Incr Delay (d2), s/veh	17.6	6.6	6.9	23.7	0.8	0.8	21.7	1.0	22.1	20.1	4.6	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	1.9	9.7	9.3	8.1	7.5	7.9	4.9	3.7	8.1	4.6	5.9	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.9	35.1	35.5	64.6	20.3	20.3	65.6	37.2	61.6	64.3	42.8	35.0
LnGrp LOS	E	D	D	E	C	C	E	D	E	E	D	D
Approach Vol, veh/h		889			1184			587			452	
Approach Delay, s/veh		37.3			30.0			55.7			48.8	
Approach LOS		D			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.5	39.9	15.5	23.1	9.5	51.9	15.1	23.5
Change Period (Y+Rc), s	5.1	5.8	5.1	* 4.7	5.1	5.8	5.1	* 4.7
Max Green Setting (Gmax), s	17.9	28.4	11.9	* 21	6.5	39.8	11.9	* 21
Max Q Clear Time (g_c+I1), s	16.2	22.7	10.5	14.1	5.4	20.4	10.2	18.2
Green Ext Time (p_c), s	0.1	2.6	0.1	0.9	0.0	6.0	0.1	0.6

Intersection Summary	
HCM 6th Ctrl Delay	39.7
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	68	7	5	72	113	103
Future Vol, veh/h	68	7	5	72	113	103
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	74	8	5	78	123	112
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.3	7.4	8.7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	91%	0%	52%
Vol Thru, %	9%	6%	0%
Vol Right, %	0%	94%	48%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	75	77	216
LT Vol	68	0	113
Through Vol	7	5	0
RT Vol	0	72	103
Lane Flow Rate	82	84	235
Geometry Grp	1	1	1
Degree of Util (X)	0.107	0.093	0.27
Departure Headway (Hd)	4.719	3.987	4.136
Convergence, Y/N	Yes	Yes	Yes
Cap	761	901	873
Service Time	2.737	2.004	2.136
HCM Lane V/C Ratio	0.108	0.093	0.269
HCM Control Delay	8.3	7.4	8.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.3	1.1

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	54	37	4	6	43	49	0	3	4	34	3	66
Future Vol, veh/h	54	37	4	6	43	49	0	3	4	34	3	66
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	59	40	4	7	47	53	0	3	4	37	3	72

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	132	84	3	140	154	5	75	0	0	7	0	0
Stage 1	77	77	-	5	5	-	-	-	-	-	-	-
Stage 2	55	7	-	135	149	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	840	806	1081	830	738	1078	1524	-	-	1614	-	-
Stage 1	932	831	-	1017	892	-	-	-	-	-	-	-
Stage 2	957	890	-	868	774	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	745	787	1081	780	720	1078	1524	-	-	1614	-	-
Mov Cap-2 Maneuver	745	787	-	780	720	-	-	-	-	-	-	-
Stage 1	932	811	-	1017	892	-	-	-	-	-	-	-
Stage 2	862	890	-	802	755	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	9.6	0	2.4
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1524	-	-	745	808	780	875	1614	-	-
HCM Lane V/C Ratio	-	-	-	0.079	0.055	0.008	0.114	0.023	-	-
HCM Control Delay (s)	0	-	-	10.2	9.7	9.7	9.6	7.3	0	-
HCM Lane LOS	A	-	-	B	A	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.2	0	0.4	0.1	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	585	26	60	859	4	45	1	59	7	3	11
Future Volume (veh/h)	15	585	26	60	859	4	45	1	59	7	3	11
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	16	636	28	65	934	4	49	1	64	8	3	12
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	35	1033	45	108	1231	5	229	3	527	176	45	527
Arrive On Green	0.02	0.30	0.30	0.06	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1781	3467	153	1781	3629	16	199	9	1585	103	135	1585
Grp Volume(v), veh/h	16	326	338	65	457	481	50	0	64	11	0	12
Grp Sat Flow(s),veh/h/ln	1781	1777	1843	1781	1777	1868	208	0	1585	238	0	1585
Q Serve(g_s), s	0.4	6.9	6.9	1.6	10.0	10.0	1.5	0.0	1.2	0.1	0.0	0.2
Cycle Q Clear(g_c), s	0.4	6.9	6.9	1.6	10.0	10.0	13.9	0.0	1.2	13.2	0.0	0.2
Prop In Lane	1.00		0.08	1.00		0.01	0.98		1.00	0.73		1.00
Lane Grp Cap(c), veh/h	35	529	549	108	603	634	232	0	527	221	0	527
V/C Ratio(X)	0.46	0.62	0.62	0.60	0.76	0.76	0.22	0.00	0.12	0.05	0.00	0.02
Avail Cap(c_a), veh/h	204	748	776	208	752	791	344	0	653	337	0	653
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	21.2	13.2	13.2	20.0	12.8	12.8	20.1	0.0	10.2	11.6	0.0	9.8
Incr Delay (d2), s/veh	9.2	1.2	1.1	5.2	3.5	3.3	0.5	0.0	0.1	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.4	2.5	0.7	3.7	3.9	0.5	0.0	0.4	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.4	14.4	14.3	25.2	16.4	16.2	20.5	0.0	10.3	11.7	0.0	9.8
LnGrp LOS	C	B	B	C	B	B	C	A	B	B	A	A
Approach Vol, veh/h		680			1003			114			23	
Approach Delay, s/veh		14.7			16.8			14.8			10.7	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	17.7		19.8	5.4	19.5		19.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	18.4		18.0	5.0	18.5		18.0				
Max Q Clear Time (g_c+I1), s	3.6	8.9		15.2	2.4	12.0		15.9				
Green Ext Time (p_c), s	0.0	2.8		0.0	0.0	3.1		0.1				

Intersection Summary												
HCM 6th Ctrl Delay			15.8									
HCM 6th LOS			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Yield	
Traffic Volume (vph)	0	0	0	4	4	122	5	120	7	60	158	59
Future Volume (vph)	0	0	0	4	4	122	5	120	7	60	158	59
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
Hourly flow rate (vph)	0	0	0	4	4	133	5	130	8	65	172	64

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	8	133	143	151	150
Volume Left (vph)	4	0	5	65	0
Volume Right (vph)	0	133	8	0	64
Hadj (s)	0.28	-0.67	0.01	0.25	-0.26
Departure Headway (s)	5.8	4.9	5.2	5.3	4.7
Degree Utilization, x	0.01	0.18	0.21	0.22	0.20
Capacity (veh/h)	572	684	666	662	735
Control Delay (s)	7.7	7.8	9.6	8.5	7.7
Approach Delay (s)	7.8		9.6	8.1	
Approach LOS	A		A	A	

Intersection Summary				
Delay	8.4			
Level of Service	A			
Intersection Capacity Utilization	28.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	361	139	28	676	229	155	49	33	265	84	213
Future Volume (veh/h)	68	361	139	28	676	229	155	49	33	265	84	213
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	74	392	151	30	735	249	110	133	36	190	229	232
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	109	797	303	59	1025	457	213	224	189	367	385	326
Arrive On Green	0.06	0.32	0.32	0.03	0.29	0.29	0.12	0.12	0.12	0.21	0.21	0.21
Sat Flow, veh/h	1781	2517	957	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	74	275	268	30	735	249	110	133	36	190	229	232
Grp Sat Flow(s),veh/h/ln	1781	1777	1698	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.3	6.9	7.1	0.9	10.3	7.4	3.2	3.7	1.1	5.3	6.1	7.5
Cycle Q Clear(g_c), s	2.3	6.9	7.1	0.9	10.3	7.4	3.2	3.7	1.1	5.3	6.1	7.5
Prop In Lane	1.00		0.56	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	109	562	537	59	1025	457	213	224	189	367	385	326
V/C Ratio(X)	0.68	0.49	0.50	0.50	0.72	0.54	0.52	0.59	0.19	0.52	0.59	0.71
Avail Cap(c_a), veh/h	177	670	640	164	1314	586	578	607	515	578	607	515
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	25.5	15.3	15.4	26.3	17.7	16.6	22.9	23.1	22.0	19.6	19.9	20.5
Incr Delay (d2), s/veh	7.1	0.7	0.7	6.5	1.4	1.0	1.9	2.5	0.5	1.1	1.5	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	2.6	2.5	0.5	3.9	2.5	1.4	1.7	0.4	2.1	2.6	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.6	16.0	16.1	32.8	19.1	17.7	24.8	25.7	22.5	20.7	21.4	23.3
LnGrp LOS	C	B	B	C	B	B	C	C	C	C	C	C
Approach Vol, veh/h		617			1014			279			651	
Approach Delay, s/veh		18.0			19.1			24.9			21.9	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	22.0		15.9	7.9	20.5		11.1				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	20.9		18.0	5.5	20.5		18.0				
Max Q Clear Time (g_c+I1), s	2.9	9.1		9.5	4.3	12.3		5.7				
Green Ext Time (p_c), s	0.0	2.6		1.9	0.0	3.7		0.9				

Intersection Summary		
HCM 6th Ctrl Delay		20.2
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	297	343	10	18	461	572	7	33	41	165	7	43
Future Volume (veh/h)	297	343	10	18	461	572	7	33	41	165	7	43
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	323	373	11	20	501	622	8	36	45	117	95	47
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	379	1709	50	42	1050	662	27	122	127	218	144	71
Arrive On Green	0.21	0.48	0.48	0.02	0.30	0.30	0.08	0.08	0.08	0.12	0.12	0.12
Sat Flow, veh/h	1781	3525	104	1781	3554	1585	337	1517	1585	1781	1181	584
Grp Volume(v), veh/h	323	188	196	20	501	622	44	0	45	117	0	142
Grp Sat Flow(s),veh/h/ln	1781	1777	1852	1781	1777	1585	1854	0	1585	1781	0	1765
Q Serve(g_s), s	10.9	3.8	3.8	0.7	7.2	18.4	1.4	0.0	1.7	3.8	0.0	4.8
Cycle Q Clear(g_c), s	10.9	3.8	3.8	0.7	7.2	18.4	1.4	0.0	1.7	3.8	0.0	4.8
Prop In Lane	1.00		0.06	1.00		1.00	0.18		1.00	1.00		0.33
Lane Grp Cap(c), veh/h	379	861	898	42	1050	662	149	0	127	218	0	216
V/C Ratio(X)	0.85	0.22	0.22	0.48	0.48	0.94	0.30	0.00	0.35	0.54	0.00	0.66
Avail Cap(c_a), veh/h	501	873	910	152	1050	662	536	0	458	518	0	513
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	23.6	9.2	9.2	30.0	18.0	15.9	27.0	0.0	27.1	25.7	0.0	26.1
Incr Delay (d2), s/veh	10.5	0.1	0.1	8.2	0.3	21.4	1.1	0.0	1.7	2.1	0.0	3.4
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	5.3	1.3	1.3	0.4	2.8	12.9	0.6	0.0	0.7	1.7	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.1	9.4	9.4	38.2	18.3	37.3	28.1	0.0	28.8	27.7	0.0	29.5
LnGrp LOS	C	A	A	D	B	D	C	A	C	C	A	C
Approach Vol, veh/h		707			1143			89			259	
Approach Delay, s/veh		20.6			29.0			28.4			28.7	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	34.7		12.1	17.7	22.9		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.3	30.6		18.1	17.5	18.4		18.0				
Max Q Clear Time (g_c+I1), s	2.7	5.8		6.8	12.9	20.4		3.7				
Green Ext Time (p_c), s	0.0	2.3		0.8	0.4	0.0		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		26.2	
HCM 6th LOS		C	

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	24	203	10	42	134	3
Future Vol, veh/h	24	203	10	42	134	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	221	11	46	146	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	247	0	205	137
Stage 1	-	-	-	-	137	-
Stage 2	-	-	-	-	68	-
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	-	-	1319	-	783	911
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	955	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1319	-	776	911
Mov Cap-2 Maneuver	-	-	-	-	776	-
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	955	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	779	-	-	1319	-
HCM Lane V/C Ratio	0.191	-	-	0.008	-
HCM Control Delay (s)	10.7	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0	-

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	45	74	1	58	18	92	78	1	15	121	55
Future Vol, veh/h	29	45	74	1	58	18	92	78	1	15	121	55
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	49	80	1	63	20	100	85	1	16	132	60
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	9.2	8.8	9.6	9.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	54%	20%	2%	0%	8%
Vol Thru, %	46%	30%	98%	0%	63%
Vol Right, %	1%	50%	0%	100%	29%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	171	148	59	18	191
LT Vol	92	29	1	0	15
Through Vol	78	45	58	0	121
RT Vol	1	74	0	18	55
Lane Flow Rate	186	161	64	20	208
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.253	0.216	0.101	0.027	0.266
Departure Headway (Hd)	4.893	4.824	5.649	4.933	4.619
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	730	738	630	720	772
Service Time	2.952	2.889	3.42	2.704	2.676
HCM Lane V/C Ratio	0.255	0.218	0.102	0.028	0.269
HCM Control Delay	9.6	9.2	9.1	7.8	9.4
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	1	0.8	0.3	0.1	1.1

Intersection	
Int Delay, s/veh	3.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	180	363	17	198	486
Future Vol, veh/h	9	180	363	17	198	486
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	196	395	18	215	528

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1362	404	0	0	413	0
Stage 1	404	-	-	-	-	-
Stage 2	958	-	-	-	-	-
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	163	647	-	-	1146	-
Stage 1	674	-	-	-	-	-
Stage 2	373	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	132	647	-	-	1146	-
Mov Cap-2 Maneuver	132	-	-	-	-	-
Stage 1	547	-	-	-	-	-
Stage 2	373	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.5	0	2.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	546	1146	-
HCM Lane V/C Ratio	-	-	0.376	0.188	-
HCM Control Delay (s)	-	-	15.5	8.9	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.7	0.7	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	4	7	151	160	48
Future Vol, veh/h	30	4	7	151	160	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	4	8	164	174	52

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	354	174	226	0	-	0
Stage 1	174	-	-	-	-	-
Stage 2	180	-	-	-	-	-
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	644	869	1342	-	-	-
Stage 1	856	-	-	-	-	-
Stage 2	851	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	639	869	1342	-	-	-
Mov Cap-2 Maneuver	639	-	-	-	-	-
Stage 1	850	-	-	-	-	-
Stage 2	851	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1342	-	660	-	-
HCM Lane V/C Ratio	0.006	-	0.056	-	-
HCM Control Delay (s)	7.7	0	10.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	943	191	135	750	21	129	177	152	177	144	96
Future Volume (veh/h)	94	943	191	135	750	21	129	177	152	177	144	96
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	102	1025	208	147	815	23	140	192	165	192	157	104
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	128	1358	275	175	1720	49	169	241	204	221	295	250
Arrive On Green	0.07	0.46	0.46	0.10	0.49	0.49	0.09	0.13	0.13	0.12	0.16	0.16
Sat Flow, veh/h	1781	2944	596	1781	3530	100	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	102	618	615	147	410	428	140	192	165	192	157	104
Grp Sat Flow(s),veh/h/ln	1781	1777	1763	1781	1777	1852	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.2	31.6	31.8	8.9	16.9	16.9	8.5	11.0	11.1	11.6	8.5	6.5
Cycle Q Clear(g_c), s	6.2	31.6	31.8	8.9	16.9	16.9	8.5	11.0	11.1	11.6	8.5	6.5
Prop In Lane	1.00		0.34	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	128	819	813	175	866	903	169	241	204	221	295	250
V/C Ratio(X)	0.80	0.75	0.76	0.84	0.47	0.47	0.83	0.80	0.81	0.87	0.53	0.42
Avail Cap(c_a), veh/h	209	819	813	177	866	903	199	359	304	225	386	327
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	50.2	24.5	24.5	48.8	18.8	18.8	48.9	46.5	46.6	47.3	42.6	41.7
Incr Delay (d2), s/veh	10.6	6.4	6.5	28.6	0.4	0.4	21.8	7.4	9.5	28.4	1.5	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	14.3	14.3	5.3	6.9	7.2	4.8	5.6	4.9	6.9	4.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.8	30.8	31.0	77.4	19.2	19.2	70.7	53.9	56.1	75.7	44.1	42.8
LnGrp LOS	E	C	C	E	B	B	E	D	E	E	D	D
Approach Vol, veh/h		1335			985			497			453	
Approach Delay, s/veh		33.2			27.9			59.4			57.2	
Approach LOS		C			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.9	56.5	15.5	22.1	13.0	59.4	18.7	18.9
Change Period (Y+Rc), s	5.1	5.8	5.1	* 4.7	5.1	5.8	5.1	* 4.7
Max Green Setting (Gmax), s	10.9	43.4	12.3	* 23	12.9	41.4	13.9	* 21
Max Q Clear Time (g_c+I1), s	10.9	33.8	10.5	10.5	8.2	18.9	13.6	13.1
Green Ext Time (p_c), s	0.0	5.5	0.1	0.9	0.1	5.6	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	38.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	82	8	8	40	30	128
Future Vol, veh/h	82	8	8	40	30	128
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	89	9	9	43	33	139
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.1	7.1	7.7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	91%	0%	19%
Vol Thru, %	9%	17%	0%
Vol Right, %	0%	83%	81%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	90	48	158
LT Vol	82	0	30
Through Vol	8	8	0
RT Vol	0	40	128
Lane Flow Rate	98	52	172
Geometry Grp	1	1	1
Degree of Util (X)	0.121	0.055	0.179
Departure Headway (Hd)	4.46	3.812	3.742
Convergence, Y/N	Yes	Yes	Yes
Cap	798	925	945
Service Time	2.52	1.895	1.824
HCM Lane V/C Ratio	0.123	0.056	0.182
HCM Control Delay	8.1	7.1	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.2	0.6

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	146	53	15	5	36	48	5	26	8	43	14	80
Future Vol, veh/h	146	53	15	5	36	48	5	26	8	43	14	80
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	159	58	16	5	39	52	5	28	9	47	15	87

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	197	156	15	233	239	33	102	0	0	37	0	0
Stage 1	109	109	-	43	43	-	-	-	-	-	-	-
Stage 2	88	47	-	190	196	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	762	736	1065	722	662	1041	1490	-	-	1574	-	-
Stage 1	896	805	-	971	859	-	-	-	-	-	-	-
Stage 2	920	856	-	812	739	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	672	710	1065	649	639	1041	1490	-	-	1574	-	-
Mov Cap-2 Maneuver	672	710	-	649	639	-	-	-	-	-	-	-
Stage 1	893	779	-	968	856	-	-	-	-	-	-	-
Stage 2	831	853	-	717	715	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.4	9.9	1	2.3
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1490	-	-	672	766	649	820	1574	-	-
HCM Lane V/C Ratio	0.004	-	-	0.236	0.096	0.008	0.111	0.03	-	-
HCM Control Delay (s)	7.4	0	-	12	10.2	10.6	9.9	7.4	0	-
HCM Lane LOS	A	A	-	B	B	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.9	0.3	0	0.4	0.1	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	1176	48	77	865	17	40	7	160	57	5	61
Future Volume (veh/h)	58	1176	48	77	865	17	40	7	160	57	5	61
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	1278	52	84	940	18	43	8	174	62	5	66
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	95	1481	60	110	1548	30	108	11	465	112	5	465
Arrive On Green	0.05	0.43	0.43	0.06	0.43	0.43	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1781	3480	141	1781	3567	68	0	38	1585	0	17	1585
Grp Volume(v), veh/h	63	652	678	84	468	490	51	0	174	67	0	66
Grp Sat Flow(s),veh/h/ln	1781	1777	1845	1781	1777	1858	38	0	1585	17	0	1585
Q Serve(g_s), s	2.1	20.5	20.6	2.9	12.5	12.5	0.0	0.0	5.4	0.0	0.0	1.9
Cycle Q Clear(g_c), s	2.1	20.5	20.6	2.9	12.5	12.5	18.1	0.0	5.4	18.1	0.0	1.9
Prop In Lane	1.00		0.08	1.00		0.04	0.84		1.00	0.93		1.00
Lane Grp Cap(c), veh/h	95	756	785	110	771	806	119	0	465	117	0	465
V/C Ratio(X)	0.66	0.86	0.86	0.76	0.61	0.61	0.43	0.00	0.37	0.57	0.00	0.14
Avail Cap(c_a), veh/h	182	804	835	159	781	817	119	0	465	117	0	465
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	28.6	16.1	16.1	28.5	13.4	13.4	26.9	0.0	17.3	29.5	0.0	16.0
Incr Delay (d2), s/veh	7.6	9.1	8.9	12.3	1.3	1.3	2.4	0.0	0.5	6.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	9.1	9.4	1.5	4.6	4.8	0.8	0.0	1.9	1.2	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.2	25.2	25.0	40.7	14.7	14.7	29.3	0.0	17.8	36.0	0.0	16.2
LnGrp LOS	D	C	C	D	B	B	C	A	B	D	A	B
Approach Vol, veh/h		1393			1042			225			133	
Approach Delay, s/veh		25.6			16.8			20.4			26.2	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	30.7		22.6	7.8	31.2		22.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	27.9		18.1	6.3	27.1		18.1				
Max Q Clear Time (g_c+I1), s	4.9	22.6		20.1	4.1	14.5		20.1				
Green Ext Time (p_c), s	0.0	3.7		0.0	0.0	5.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			21.9									
HCM 6th LOS			C									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Yield	
Traffic Volume (vph)	0	0	0	16	5	99	9	205	35	88	269	39
Future Volume (vph)	0	0	0	16	5	99	9	205	35	88	269	39
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
Hourly flow rate (vph)	0	0	0	17	5	108	10	223	38	96	292	42

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	22	108	271	242	188
Volume Left (vph)	17	0	10	96	0
Volume Right (vph)	0	108	38	0	42
Hadj (s)	0.42	-0.67	-0.04	0.23	-0.12
Departure Headway (s)	6.6	5.5	5.3	5.4	5.0
Degree Utilization, x	0.04	0.16	0.40	0.36	0.26
Capacity (veh/h)	502	597	660	649	695
Control Delay (s)	8.7	8.4	11.8	10.2	8.6
Approach Delay (s)	8.4		11.8	9.5	
Approach LOS	A		B	A	

Intersection Summary				
Delay	10.1			
Level of Service	B			
Intersection Capacity Utilization	38.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	680	192	61	683	213	181	71	61	588	127	428
Future Volume (veh/h)	68	680	192	61	683	213	181	71	61	588	127	428
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	74	739	209	66	742	232	137	161	66	738	0	465
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	95	877	248	88	1125	502	218	229	194	971	0	432
Arrive On Green	0.05	0.32	0.32	0.05	0.32	0.32	0.12	0.12	0.12	0.27	0.00	0.27
Sat Flow, veh/h	1781	2735	773	1781	3554	1585	1781	1870	1585	3563	0	1585
Grp Volume(v), veh/h	74	480	468	66	742	232	137	161	66	738	0	465
Grp Sat Flow(s),veh/h/ln	1781	1777	1731	1781	1777	1585	1781	1870	1585	1781	0	1585
Q Serve(g_s), s	3.1	19.3	19.3	2.8	13.8	9.0	5.6	6.3	2.9	14.6	0.0	20.9
Cycle Q Clear(g_c), s	3.1	19.3	19.3	2.8	13.8	9.0	5.6	6.3	2.9	14.6	0.0	20.9
Prop In Lane	1.00		0.45	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	95	570	555	88	1125	502	218	229	194	971	0	432
V/C Ratio(X)	0.78	0.84	0.84	0.75	0.66	0.46	0.63	0.70	0.34	0.76	0.00	1.08
Avail Cap(c_a), veh/h	151	649	632	118	1233	550	418	439	372	971	0	432
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	0.00	1.00
Uniform Delay (d), s/veh	35.8	24.2	24.2	36.0	22.6	21.0	32.0	32.3	30.8	25.6	0.0	27.9
Incr Delay (d2), s/veh	12.7	8.9	9.1	16.6	1.2	0.7	2.9	3.9	1.0	3.5	0.0	65.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	9.0	8.8	1.6	5.6	3.3	2.5	3.0	1.1	6.3	0.0	15.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.5	33.1	33.3	52.6	23.8	21.6	34.9	36.2	31.8	29.1	0.0	93.1
LnGrp LOS	D	C	C	D	C	C	C	D	C	C	A	F
Approach Vol, veh/h		1022			1040			364			1203	
Approach Delay, s/veh		34.3			25.1			34.9			53.8	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	29.1		25.4	8.6	28.8		13.9				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	28.0		20.9	6.5	26.6		18.0				
Max Q Clear Time (g_c+I1), s	4.8	21.3		22.9	5.1	15.8		8.3				
Green Ext Time (p_c), s	0.0	3.3		0.0	0.0	4.4		1.1				

Intersection Summary		
HCM 6th Ctrl Delay		38.2
HCM 6th LOS		D

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	247	513	38	80	759	447	19	30	28	362	12	55
Future Volume (veh/h)	247	513	38	80	759	447	19	30	28	362	12	55
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	268	558	41	87	825	486	21	33	30	458	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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	316	1412	104	113	1090	754	54	85	119	603	317	0
Arrive On Green	0.18	0.42	0.42	0.06	0.31	0.31	0.08	0.08	0.08	0.17	0.00	0.00
Sat Flow, veh/h	1781	3357	246	1781	3554	1585	713	1121	1585	3563	1870	0
Grp Volume(v), veh/h	268	295	304	87	825	486	54	0	30	458	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1826	1781	1777	1585	1835	0	1585	1781	1870	0
Q Serve(g_s), s	9.7	7.6	7.7	3.2	13.9	15.4	1.9	0.0	1.2	8.1	0.0	0.0
Cycle Q Clear(g_c), s	9.7	7.6	7.7	3.2	13.9	15.4	1.9	0.0	1.2	8.1	0.0	0.0
Prop In Lane	1.00		0.13	1.00		1.00	0.39		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	316	748	768	113	1090	754	138	0	119	603	317	0
V/C Ratio(X)	0.85	0.39	0.40	0.77	0.76	0.64	0.39	0.00	0.25	0.76	0.00	0.00
Avail Cap(c_a), veh/h	373	748	768	269	1184	796	498	0	430	967	507	0
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	0.00
Uniform Delay (d), s/veh	26.4	13.3	13.4	30.6	20.8	13.1	29.2	0.0	28.9	26.3	0.0	0.0
Incr Delay (d2), s/veh	14.6	0.3	0.3	10.6	2.6	1.7	1.8	0.0	1.1	2.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	2.8	2.9	1.6	5.7	7.3	0.9	0.0	0.5	3.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.1	13.7	13.7	41.2	23.4	14.8	31.0	0.0	30.0	28.3	0.0	0.0
LnGrp LOS	D	B	B	D	C	B	C	A	C	C	A	A
Approach Vol, veh/h		867			1398			84			458	
Approach Delay, s/veh		22.1			21.5			30.6			28.3	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.7	32.4		15.7	16.3	24.8		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.0	26.0		18.0	13.9	22.1		18.0				
Max Q Clear Time (g_c+I1), s	5.2	9.7		10.1	11.7	17.4		3.9				
Green Ext Time (p_c), s	0.1	3.3		1.1	0.2	3.0		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		23.1	
HCM 6th LOS		C	

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	6.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	52	229	3	33	281	6
Future Vol, veh/h	52	229	3	33	281	6
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	57	249	3	36	305	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	306	0	224	182
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	42	-
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	-	-	1255	-	764	861
Stage 1	-	-	-	-	849	-
Stage 2	-	-	-	-	980	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1255	-	762	861
Mov Cap-2 Maneuver	-	-	-	-	762	-
Stage 1	-	-	-	-	847	-
Stage 2	-	-	-	-	980	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	764	-	-	1255	-
HCM Lane V/C Ratio	0.408	-	-	0.003	-
HCM Control Delay (s)	12.9	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	2	-	-	0	-

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	27	30	2	38	59	34	206	1	20	182	17
Future Vol, veh/h	9	27	30	2	38	59	34	206	1	20	182	17
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	29	33	2	41	64	37	224	1	22	198	18
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	8.8	8.6	10.2	9.8
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	14%	14%	5%	0%	9%
Vol Thru, %	85%	41%	95%	0%	83%
Vol Right, %	0%	45%	0%	100%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	241	66	40	59	219
LT Vol	34	9	2	0	20
Through Vol	206	27	38	0	182
RT Vol	1	30	0	59	17
Lane Flow Rate	262	72	43	64	238
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.341	0.102	0.07	0.09	0.309
Departure Headway (Hd)	4.691	5.108	5.803	5.069	4.668
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	762	696	613	702	767
Service Time	2.743	3.182	3.573	2.839	2.719
HCM Lane V/C Ratio	0.344	0.103	0.07	0.091	0.31
HCM Control Delay	10.2	8.8	9	8.3	9.8
HCM Lane LOS	B	A	A	A	A
HCM 95th-tile Q	1.5	0.3	0.2	0.3	1.3

Intersection	
Int Delay, s/veh	6.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	17	294	187	11	270	206
Future Vol, veh/h	17	294	187	11	270	206
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	320	203	12	293	224

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1019	209	0	0	215	0
Stage 1	209	-	-	-	-	-
Stage 2	810	-	-	-	-	-
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	263	831	-	-	1355	-
Stage 1	826	-	-	-	-	-
Stage 2	438	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	206	831	-	-	1355	-
Mov Cap-2 Maneuver	206	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	438	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.5	0	4.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	713	1355	-
HCM Lane V/C Ratio	-	-	0.474	0.217	-
HCM Control Delay (s)	-	-	14.5	8.4	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	2.6	0.8	-

Appendix D: Synchro Reports – Near Term

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	43	3	1	318	461	79
Future Vol, veh/h	43	3	1	318	461	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	3	1	346	501	86

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	849	501	587	0	-	0
Stage 1	501	-	-	-	-	-
Stage 2	348	-	-	-	-	-
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	331	570	988	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	715	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	331	570	988	-	-	-
Mov Cap-2 Maneuver	331	-	-	-	-	-
Stage 1	608	-	-	-	-	-
Stage 2	715	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	988	-	340	-	-
HCM Lane V/C Ratio	0.001	-	0.147	-	-
HCM Control Delay (s)	8.6	0	17.4	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	639	219	237	906	14	149	163	247	136	253	58
Future Volume (veh/h)	56	639	219	237	906	14	149	163	247	136	253	58
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	61	695	129	258	985	15	162	177	159	148	275	63
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	78	1054	195	289	1685	26	192	334	283	178	319	270
Arrive On Green	0.04	0.35	0.35	0.16	0.47	0.47	0.11	0.18	0.18	0.10	0.17	0.17
Sat Flow, veh/h	1781	2992	555	1781	3583	55	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	61	412	412	258	488	512	162	177	159	148	275	63
Grp Sat Flow(s),veh/h/ln	1781	1777	1770	1781	1777	1861	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.4	19.6	19.6	14.2	20.1	20.1	8.9	8.6	9.2	8.2	14.3	3.4
Cycle Q Clear(g_c), s	3.4	19.6	19.6	14.2	20.1	20.1	8.9	8.6	9.2	8.2	14.3	3.4
Prop In Lane	1.00		0.31	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	78	626	623	289	836	875	192	334	283	178	319	270
V/C Ratio(X)	0.78	0.66	0.66	0.89	0.58	0.58	0.84	0.53	0.56	0.83	0.86	0.23
Avail Cap(c_a), veh/h	112	626	623	301	836	875	194	410	347	180	395	334
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	47.3	27.3	27.3	41.0	19.3	19.3	43.8	37.3	37.5	44.2	40.3	35.8
Incr Delay (d2), s/veh	19.1	5.4	5.4	26.0	1.0	1.0	26.8	1.3	1.7	26.7	14.9	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	1.9	9.0	9.0	8.2	8.2	8.6	5.3	4.0	3.7	4.9	7.8	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.4	32.7	32.8	67.0	20.4	20.3	70.6	38.6	39.2	70.9	55.2	36.3
LnGrp LOS	E	C	C	E	C	C	E	D	D	E	E	D
Approach Vol, veh/h		885			1258			498			486	
Approach Delay, s/veh		35.1			29.9			49.2			57.5	
Approach LOS		D			C			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.3	41.0	15.9	21.8	9.5	52.8	15.1	22.6
Change Period (Y+Rc), s	5.1	5.8	5.1	* 4.7	5.1	5.8	5.1	* 4.7
Max Green Setting (Gmax), s	16.9	30.4	10.9	* 21	6.3	41.0	10.1	* 22
Max Q Clear Time (g_c+I1), s	16.2	21.6	10.9	16.3	5.4	22.1	10.2	11.2
Green Ext Time (p_c), s	0.1	3.5	0.0	0.8	0.0	6.5	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	38.7
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	74	7	5	72	113	101
Future Vol, veh/h	74	7	5	72	113	101
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	8	5	78	123	110
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.3	7.4	8.7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	91%	0%	53%
Vol Thru, %	9%	6%	0%
Vol Right, %	0%	94%	47%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	81	77	214
LT Vol	74	0	113
Through Vol	7	5	0
RT Vol	0	72	101
Lane Flow Rate	88	84	233
Geometry Grp	1	1	1
Degree of Util (X)	0.115	0.093	0.268
Departure Headway (Hd)	4.72	3.992	4.155
Convergence, Y/N	Yes	Yes	Yes
Cap	762	900	870
Service Time	2.735	2.007	2.155
HCM Lane V/C Ratio	0.115	0.093	0.268
HCM Control Delay	8.3	7.4	8.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.3	1.1

Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	54	16	4	0	5	108	0	3	0	188	3	66
Future Vol, veh/h	54	16	4	0	5	108	0	3	0	188	3	66
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	59	17	4	0	5	117	0	3	0	204	3	72

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	475	414	3	461	486	3	75	0	0	3	0	0
Stage 1	411	411	-	3	3	-	-	-	-	-	-	-
Stage 2	64	3	-	458	483	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	500	529	1081	511	481	1081	1524	-	-	1619	-	-
Stage 1	618	595	-	1020	893	-	-	-	-	-	-	-
Stage 2	947	893	-	583	553	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	397	459	1081	444	417	1081	1524	-	-	1619	-	-
Mov Cap-2 Maneuver	397	459	-	444	417	-	-	-	-	-	-	-
Stage 1	618	516	-	1020	893	-	-	-	-	-	-	-
Stage 2	839	893	-	486	479	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.7	9.1	0	5.5
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1524	-	-	397	519	-	1010	1619	-	-
HCM Lane V/C Ratio	-	-	-	0.148	0.042	-	0.122	0.126	-	-
HCM Control Delay (s)	0	-	-	15.6	12.2	0	9.1	7.5	0	-
HCM Lane LOS	A	-	-	C	B	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.1	-	0.4	0.4	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	678	180	60	944	4	104	1	59	7	3	11
Future Volume (veh/h)	15	678	180	60	944	4	104	1	59	7	3	11
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	16	737	196	65	1026	4	113	1	64	8	3	12
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	35	961	255	103	1395	5	135	1	541	117	26	541
Arrive On Green	0.02	0.35	0.35	0.06	0.38	0.38	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	1781	2776	738	1781	3631	14	0	2	1585	0	78	1585
Grp Volume(v), veh/h	16	472	461	65	502	528	114	0	64	11	0	12
Grp Sat Flow(s),veh/h/ln	1781	1777	1737	1781	1777	1868	2	0	1585	78	0	1585
Q Serve(g_s), s	0.5	12.5	12.5	1.9	12.9	12.9	0.0	0.0	1.5	0.0	0.0	0.3
Cycle Q Clear(g_c), s	0.5	12.5	12.5	1.9	12.9	12.9	18.1	0.0	1.5	18.1	0.0	0.3
Prop In Lane	1.00		0.42	1.00		0.01	0.99		1.00	0.73		1.00
Lane Grp Cap(c), veh/h	35	615	601	103	683	718	136	0	541	144	0	541
V/C Ratio(X)	0.45	0.77	0.77	0.63	0.74	0.74	0.84	0.00	0.12	0.08	0.00	0.02
Avail Cap(c_a), veh/h	171	767	750	185	781	821	136	0	541	144	0	541
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	25.7	15.4	15.4	24.4	14.0	14.0	26.4	0.0	12.0	14.4	0.0	11.6
Incr Delay (d2), s/veh	8.8	3.7	3.8	6.1	3.1	3.0	35.0	0.0	0.1	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	5.0	4.9	0.9	4.9	5.1	2.7	0.0	0.5	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.6	19.1	19.2	30.5	17.2	17.0	61.4	0.0	12.1	14.6	0.0	11.6
LnGrp LOS	C	B	B	C	B	B	E	A	B	B	A	B
Approach Vol, veh/h		949			1095			178			23	
Approach Delay, s/veh		19.4			17.9			43.7			13.1	
Approach LOS		B			B			D			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	22.9		22.6	5.5	24.9		22.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	22.9		18.1	5.1	23.3		18.1				
Max Q Clear Time (g_c+I1), s	3.9	14.5		20.1	2.5	14.9		20.1				
Green Ext Time (p_c), s	0.0	3.8		0.0	0.0	4.2		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		20.5
HCM 6th LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Yield	
Traffic Volume (vph)	0	0	0	4	4	149	5	120	7	162	158	59
Future Volume (vph)	0	0	0	4	4	149	5	120	7	162	158	59
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
Hourly flow rate (vph)	0	0	0	4	4	162	5	130	8	176	172	64

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	8	162	143	262	150
Volume Left (vph)	4	0	5	176	0
Volume Right (vph)	0	162	8	0	64
Hadj (s)	0.28	-0.67	0.01	0.37	-0.26
Departure Headway (s)	6.1	5.2	5.4	5.5	4.9
Degree Utilization, x	0.01	0.23	0.22	0.40	0.20
Capacity (veh/h)	543	644	634	636	716
Control Delay (s)	8.0	8.6	9.9	10.9	7.9
Approach Delay (s)	8.5		9.9	9.8	
Approach LOS	A		A	A	

Intersection Summary				
Delay	9.5			
Level of Service	A			
Intersection Capacity Utilization	31.3%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	511	118	28	750	271	117	49	33	348	84	222
Future Volume (veh/h)	84	511	118	28	750	271	117	49	33	348	84	222
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	91	555	128	30	815	295	90	105	36	234	292	241
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	119	965	222	59	1077	480	179	188	160	386	406	344
Arrive On Green	0.07	0.34	0.34	0.03	0.30	0.30	0.10	0.10	0.10	0.22	0.22	0.22
Sat Flow, veh/h	1781	2869	659	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	91	343	340	30	815	295	90	105	36	234	292	241
Grp Sat Flow(s),veh/h/ln	1781	1777	1752	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.9	9.1	9.2	1.0	11.9	9.2	2.8	3.1	1.2	6.8	8.3	8.1
Cycle Q Clear(g_c), s	2.9	9.1	9.2	1.0	11.9	9.2	2.8	3.1	1.2	6.8	8.3	8.1
Prop In Lane	1.00		0.38	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	119	598	589	59	1077	480	179	188	160	386	406	344
V/C Ratio(X)	0.77	0.57	0.58	0.51	0.76	0.61	0.50	0.56	0.23	0.61	0.72	0.70
Avail Cap(c_a), veh/h	170	645	636	158	1266	565	557	585	496	557	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	26.4	15.7	15.7	27.4	18.1	17.2	24.5	24.7	23.8	20.3	20.9	20.8
Incr Delay (d2), s/veh	12.1	1.1	1.1	6.6	2.3	1.5	2.2	2.6	0.7	1.5	2.4	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	3.5	3.4	0.5	4.7	3.2	1.2	1.4	0.5	2.8	3.6	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	16.8	16.8	34.0	20.4	18.7	26.7	27.2	24.5	21.8	23.3	23.4
LnGrp LOS	D	B	B	C	C	B	C	C	C	C	C	C
Approach Vol, veh/h		774			1140			231			767	
Approach Delay, s/veh		19.4			20.3			26.6			22.9	
Approach LOS		B			C			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.4	23.9		17.0	8.3	21.9		10.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	20.9		18.0	5.5	20.5		18.0				
Max Q Clear Time (g_c+I1), s	3.0	11.2		10.3	4.9	13.9		5.1				
Green Ext Time (p_c), s	0.0	3.0		2.1	0.0	3.5		0.7				
Intersection Summary												
HCM 6th Ctrl Delay			21.2									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	309	386	10	18	480	577	7	33	41	257	7	54
Future Volume (veh/h)	309	386	10	18	480	577	7	33	41	257	7	54
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	336	420	11	20	522	627	8	36	45	173	156	59
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	386	1665	44	41	984	696	25	113	119	289	209	79
Arrive On Green	0.22	0.47	0.47	0.02	0.28	0.28	0.07	0.07	0.07	0.16	0.16	0.16
Sat Flow, veh/h	1781	3538	93	1781	3554	1585	337	1517	1585	1781	1293	489
Grp Volume(v), veh/h	336	211	220	20	522	627	44	0	45	173	0	215
Grp Sat Flow(s),veh/h/ln	1781	1777	1854	1781	1777	1585	1854	0	1585	1781	0	1782
Q Serve(g_s), s	12.2	4.8	4.8	0.7	8.3	18.5	1.5	0.0	1.8	6.0	0.0	7.7
Cycle Q Clear(g_c), s	12.2	4.8	4.8	0.7	8.3	18.5	1.5	0.0	1.8	6.0	0.0	7.7
Prop In Lane	1.00		0.05	1.00		1.00	0.18		1.00	1.00		0.27
Lane Grp Cap(c), veh/h	386	836	872	41	984	696	139	0	119	289	0	289
V/C Ratio(X)	0.87	0.25	0.25	0.48	0.53	0.90	0.32	0.00	0.38	0.60	0.00	0.74
Avail Cap(c_a), veh/h	467	836	872	141	984	696	499	0	427	480	0	480
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	25.2	10.6	10.6	32.2	20.5	15.7	29.3	0.0	29.4	26.0	0.0	26.7
Incr Delay (d2), s/veh	14.1	0.2	0.2	8.5	0.5	15.0	1.3	0.0	2.0	2.0	0.0	3.8
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	6.3	1.7	1.8	0.4	3.3	12.7	0.7	0.0	0.7	2.6	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.3	10.8	10.8	40.7	21.0	30.7	30.6	0.0	31.4	28.0	0.0	30.5
LnGrp LOS	D	B	B	D	C	C	C	A	C	C	A	C
Approach Vol, veh/h		767			1169			89			388	
Approach Delay, s/veh		23.3			26.5			31.0			29.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.1	35.9		15.3	19.0	23.0		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.3	30.7		18.0	17.5	18.5		18.0				
Max Q Clear Time (g_c+I1), s	2.7	6.8		9.7	14.2	20.5		3.8				
Green Ext Time (p_c), s	0.0	2.6		1.1	0.4	0.0		0.2				

Intersection Summary		
HCM 6th Ctrl Delay	26.1	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	24	190	10	42	127	3
Future Vol, veh/h	24	190	10	42	127	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	207	11	46	138	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	233	0	198	130
Stage 1	-	-	-	-	130	-
Stage 2	-	-	-	-	68	-
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	-	-	1335	-	791	920
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	955	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1335	-	785	920
Mov Cap-2 Maneuver	-	-	-	-	785	-
Stage 1	-	-	-	-	889	-
Stage 2	-	-	-	-	955	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	788	-	-	1335	-
HCM Lane V/C Ratio	0.179	-	-	0.008	-
HCM Control Delay (s)	10.6	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0	-

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	45	74	1	58	18	92	71	1	15	108	55
Future Vol, veh/h	29	45	74	1	58	18	92	71	1	15	108	55
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	49	80	1	63	20	100	77	1	16	117	60
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	9.1	8.7	9.5	9.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	56%	20%	2%	0%	8%
Vol Thru, %	43%	30%	98%	0%	61%
Vol Right, %	1%	50%	0%	100%	31%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	164	148	59	18	178
LT Vol	92	29	1	0	15
Through Vol	71	45	58	0	108
RT Vol	1	74	0	18	55
Lane Flow Rate	178	161	64	20	193
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.241	0.213	0.1	0.027	0.247
Departure Headway (Hd)	4.873	4.77	5.592	4.876	4.591
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	733	748	637	729	778
Service Time	2.929	2.829	3.357	2.64	2.644
HCM Lane V/C Ratio	0.243	0.215	0.1	0.027	0.248
HCM Control Delay	9.5	9.1	9	7.8	9.2
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.9	0.8	0.3	0.1	1

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	180	318	4	198	461
Future Vol, veh/h	2	180	318	4	198	461
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	196	346	4	215	501

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1279	348	0	0	350	0
Stage 1	348	-	-	-	-	-
Stage 2	931	-	-	-	-	-
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	183	695	-	-	1209	-
Stage 1	715	-	-	-	-	-
Stage 2	384	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	150	695	-	-	1209	-
Mov Cap-2 Maneuver	150	-	-	-	-	-
Stage 1	588	-	-	-	-	-
Stage 2	384	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	2.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	668	1209	-
HCM Lane V/C Ratio	-	-	0.296	0.178	-
HCM Control Delay (s)	-	-	12.6	8.6	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.2	0.6	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	0	0	151	160	21
Future Vol, veh/h	31	0	0	151	160	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	0	0	164	174	23

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	338	174	197	0	-	0
Stage 1	174	-	-	-	-	-
Stage 2	164	-	-	-	-	-
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	658	869	1376	-	-	-
Stage 1	856	-	-	-	-	-
Stage 2	865	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	658	869	1376	-	-	-
Mov Cap-2 Maneuver	658	-	-	-	-	-
Stage 1	856	-	-	-	-	-
Stage 2	865	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1376	-	658	-	-
HCM Lane V/C Ratio	-	-	0.051	-	-
HCM Control Delay (s)	0	-	10.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	1078	198	156	891	21	132	184	155	177	142	96
Future Volume (veh/h)	94	1078	198	156	891	21	132	184	155	177	142	96
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	102	1172	215	170	968	23	143	200	168	192	154	104
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	127	1399	255	196	1791	43	170	241	204	218	292	247
Arrive On Green	0.07	0.47	0.47	0.11	0.50	0.50	0.10	0.13	0.13	0.12	0.16	0.16
Sat Flow, veh/h	1781	3001	547	1781	3548	84	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	102	691	696	170	485	506	143	200	168	192	154	104
Grp Sat Flow(s),veh/h/ln	1781	1777	1772	1781	1777	1855	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.8	40.8	41.4	11.3	22.3	22.3	9.5	12.5	12.4	12.7	9.1	7.1
Cycle Q Clear(g_c), s	6.8	40.8	41.4	11.3	22.3	22.3	9.5	12.5	12.4	12.7	9.1	7.1
Prop In Lane	1.00		0.31	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	127	828	826	196	897	937	170	241	204	218	292	247
V/C Ratio(X)	0.80	0.83	0.84	0.87	0.54	0.54	0.84	0.83	0.82	0.88	0.53	0.42
Avail Cap(c_a), veh/h	200	828	826	196	897	937	203	329	279	221	348	295
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	54.9	28.0	28.2	52.5	20.2	20.2	53.4	51.0	50.9	51.8	46.6	45.8
Incr Delay (d2), s/veh	11.7	9.7	10.2	31.3	0.7	0.6	22.8	12.2	13.3	30.5	1.5	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	19.1	19.4	6.7	9.3	9.7	5.3	6.7	5.7	7.5	4.4	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.6	37.7	38.3	83.8	20.9	20.9	76.2	63.2	64.2	82.3	48.1	46.9
LnGrp LOS	E	D	D	F	C	C	E	E	E	F	D	D
Approach Vol, veh/h		1489			1161			511			450	
Approach Delay, s/veh		40.0			30.1			67.1			62.4	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.3	61.7	16.5	23.4	13.7	66.4	19.8	20.2
Change Period (Y+Rc), s	5.1	5.8	5.1	* 4.7	5.1	5.8	5.1	* 4.7
Max Green Setting (Gmax), s	13.2	50.1	13.7	* 22	13.5	49.8	14.9	* 21
Max Q Clear Time (g_c+I1), s	13.3	43.4	11.5	11.1	8.8	24.3	14.7	14.5
Green Ext Time (p_c), s	0.0	4.6	0.1	0.9	0.1	7.2	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	43.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	80	8	8	40	30	137
Future Vol, veh/h	80	8	8	40	30	137
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	87	9	9	43	33	149
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.2	7.1	7.7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	91%	0%	18%
Vol Thru, %	9%	17%	0%
Vol Right, %	0%	83%	82%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	88	48	167
LT Vol	80	0	30
Through Vol	8	8	0
RT Vol	0	40	137
Lane Flow Rate	96	52	182
Geometry Grp	1	1	1
Degree of Util (X)	0.119	0.055	0.188
Departure Headway (Hd)	4.476	3.826	3.73
Convergence, Y/N	Yes	Yes	Yes
Cap	795	921	948
Service Time	2.538	1.911	1.812
HCM Lane V/C Ratio	0.121	0.056	0.192
HCM Control Delay	8.2	7.1	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.2	0.7

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	146	13	15	1	13	93	5	26	1	54	14	80
Future Vol, veh/h	146	13	15	1	13	93	5	26	1	54	14	80
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	159	14	16	1	14	101	5	28	1	59	15	87

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	229	172	15	231	259	29	102	0	0	29	0	0
Stage 1	133	133	-	39	39	-	-	-	-	-	-	-
Stage 2	96	39	-	192	220	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	726	721	1065	724	645	1046	1490	-	-	1584	-	-
Stage 1	870	786	-	976	862	-	-	-	-	-	-	-
Stage 2	911	862	-	810	721	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	624	690	1065	679	617	1046	1490	-	-	1584	-	-
Mov Cap-2 Maneuver	624	690	-	679	617	-	-	-	-	-	-	-
Stage 1	867	755	-	973	859	-	-	-	-	-	-	-
Stage 2	807	859	-	751	692	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.2	9.2	1.2	2.7
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1490	-	-	624	850	679	964	1584	-	-
HCM Lane V/C Ratio	0.004	-	-	0.254	0.036	0.002	0.12	0.037	-	-
HCM Control Delay (s)	7.4	0	-	12.7	9.4	10.3	9.2	7.4	0	-
HCM Lane LOS	A	A	-	B	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1	0.1	0	0.4	0.1	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	1331	59	77	1013	17	85	7	160	57	5	61
Future Volume (veh/h)	58	1331	59	77	1013	17	85	7	160	57	5	61
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	1447	64	84	1101	18	92	8	174	62	5	66
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	84	1829	81	109	1939	32	86	4	385	86	4	385
Arrive On Green	0.05	0.53	0.53	0.06	0.54	0.54	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1781	3467	153	1781	3578	58	0	17	1585	0	15	1585
Grp Volume(v), veh/h	63	740	771	84	547	572	100	0	174	67	0	66
Grp Sat Flow(s),veh/h/ln	1781	1777	1843	1781	1777	1860	17	0	1585	15	0	1585
Q Serve(g_s), s	2.8	27.1	27.3	3.7	16.3	16.3	0.0	0.0	7.5	0.0	0.0	2.6
Cycle Q Clear(g_c), s	2.8	27.1	27.3	3.7	16.3	16.3	19.5	0.0	7.5	19.5	0.0	2.6
Prop In Lane	1.00		0.08	1.00		0.03	0.92		1.00	0.93		1.00
Lane Grp Cap(c), veh/h	84	937	972	109	963	1008	90	0	385	90	0	385
V/C Ratio(X)	0.75	0.79	0.79	0.77	0.57	0.57	1.11	0.00	0.45	0.74	0.00	0.17
Avail Cap(c_a), veh/h	211	1229	1275	255	1273	1333	90	0	385	90	0	385
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	37.8	15.3	15.4	37.1	12.2	12.2	39.3	0.0	25.8	39.0	0.0	24.0
Incr Delay (d2), s/veh	12.7	2.6	2.6	10.9	0.5	0.5	127.2	0.0	0.8	27.8	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	10.4	10.9	1.9	5.9	6.2	4.9	0.0	2.8	2.0	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.4	18.0	18.0	48.0	12.7	12.7	166.5	0.0	26.7	66.9	0.0	24.2
LnGrp LOS	D	B	B	D	B	B	F	A	C	E	A	C
Approach Vol, veh/h		1574			1203			274			133	
Approach Delay, s/veh		19.3			15.2			77.7			45.7	
Approach LOS		B			B			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.4	46.8		24.0	8.3	48.0		24.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	11.5	55.5		19.5	9.5	57.5		19.5				
Max Q Clear Time (g_c+I1), s	5.7	29.3		21.5	4.8	18.3		21.5				
Green Ext Time (p_c), s	0.1	13.1		0.0	0.0	9.5		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			23.9									
HCM 6th LOS			C									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Yield	
Traffic Volume (vph)	0	0	0	16	5	121	9	205	35	80	269	39
Future Volume (vph)	0	0	0	16	5	121	9	205	35	80	269	39
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
Hourly flow rate (vph)	0	0	0	17	5	132	10	223	38	87	292	42

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	22	132	271	233	188
Volume Left (vph)	17	0	10	87	0
Volume Right (vph)	0	132	38	0	42
Hadj (s)	0.42	-0.67	-0.04	0.22	-0.12
Departure Headway (s)	6.6	5.5	5.4	5.5	5.1
Degree Utilization, x	0.04	0.20	0.40	0.35	0.27
Capacity (veh/h)	504	599	650	639	682
Control Delay (s)	8.7	8.7	12.0	10.2	8.8
Approach Delay (s)	8.7		12.0	9.6	
Approach LOS	A		B	A	

Intersection Summary				
Delay	10.2			
Level of Service	B			
Intersection Capacity Utilization	37.7%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	775	152	61	809	282	158	71	61	616	127	442
Future Volume (veh/h)	80	775	152	61	809	282	158	71	61	616	127	442
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	87	842	165	66	879	307	124	143	66	769	0	480
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	111	979	192	85	1121	500	192	202	171	1091	0	485
Arrive On Green	0.06	0.33	0.33	0.05	0.32	0.32	0.11	0.11	0.11	0.31	0.00	0.31
Sat Flow, veh/h	1781	2962	580	1781	3554	1585	1781	1870	1585	3563	0	1585
Grp Volume(v), veh/h	87	505	502	66	879	307	124	143	66	769	0	480
Grp Sat Flow(s),veh/h/ln	1781	1777	1766	1781	1777	1585	1781	1870	1585	1781	0	1585
Q Serve(g_s), s	4.2	23.0	23.0	3.2	19.5	14.2	5.8	6.4	3.4	16.5	0.0	26.1
Cycle Q Clear(g_c), s	4.2	23.0	23.0	3.2	19.5	14.2	5.8	6.4	3.4	16.5	0.0	26.1
Prop In Lane	1.00		0.33	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	111	587	584	85	1121	500	192	202	171	1091	0	485
V/C Ratio(X)	0.78	0.86	0.86	0.78	0.78	0.61	0.65	0.71	0.39	0.71	0.00	0.99
Avail Cap(c_a), veh/h	138	657	653	113	1264	564	370	389	330	1091	0	485
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	0.00	1.00
Uniform Delay (d), s/veh	40.0	27.1	27.1	40.8	26.9	25.1	37.0	37.3	35.9	26.6	0.0	29.9
Incr Delay (d2), s/veh	20.2	10.3	10.4	21.4	3.0	1.6	3.6	4.5	1.4	2.1	0.0	38.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	11.0	11.0	1.9	8.4	5.4	2.7	3.1	1.3	7.1	0.0	14.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.2	37.4	37.5	62.1	29.9	26.8	40.6	41.8	37.4	28.7	0.0	67.8
LnGrp LOS	E	D	D	E	C	C	D	D	D	C	A	E
Approach Vol, veh/h		1094			1252			333			1249	
Approach Delay, s/veh		39.3			30.8			40.5			43.7	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.6	33.1		31.0	9.9	31.8		13.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	32.0		26.5	6.7	30.8		18.0				
Max Q Clear Time (g_c+I1), s	5.2	25.0		28.1	6.2	21.5		8.4				
Green Ext Time (p_c), s	0.0	3.6		0.0	0.0	4.8		0.9				

Intersection Summary												
HCM 6th Ctrl Delay			38.1									
HCM 6th LOS			D									

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	256	551	38	80	812	478	19	30	28	404	12	73
Future Volume (veh/h)	256	551	38	80	812	478	19	30	28	404	12	73
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	278	599	41	87	883	520	21	33	30	522	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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	322	1430	98	113	1089	778	51	80	113	657	345	0
Arrive On Green	0.18	0.42	0.42	0.06	0.31	0.31	0.07	0.07	0.07	0.18	0.00	0.00
Sat Flow, veh/h	1781	3375	231	1781	3554	1585	713	1121	1585	3563	1870	0
Grp Volume(v), veh/h	278	315	325	87	883	520	54	0	30	522	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1829	1781	1777	1585	1835	0	1585	1781	1870	0
Q Serve(g_s), s	10.6	8.7	8.7	3.4	16.1	17.4	2.0	0.0	1.3	9.8	0.0	0.0
Cycle Q Clear(g_c), s	10.6	8.7	8.7	3.4	16.1	17.4	2.0	0.0	1.3	9.8	0.0	0.0
Prop In Lane	1.00		0.13	1.00		1.00	0.39		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	322	753	775	113	1089	778	131	0	113	657	345	0
V/C Ratio(X)	0.86	0.42	0.42	0.77	0.81	0.67	0.41	0.00	0.26	0.79	0.00	0.00
Avail Cap(c_a), veh/h	349	753	775	254	1132	797	472	0	408	916	481	0
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	0.00
Uniform Delay (d), s/veh	27.8	14.1	14.1	32.3	22.4	13.5	31.1	0.0	30.8	27.3	0.0	0.0
Incr Delay (d2), s/veh	18.5	0.4	0.4	10.6	4.4	2.1	2.1	0.0	1.2	3.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	3.3	3.4	1.7	6.9	8.7	0.9	0.0	0.5	4.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.4	14.5	14.5	42.9	26.8	15.6	33.2	0.0	32.0	30.6	0.0	0.0
LnGrp LOS	D	B	B	D	C	B	C	A	C	C	A	A
Approach Vol, veh/h		918			1490			84			522	
Approach Delay, s/veh		24.2			23.9			32.7			30.6	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	34.2		17.4	17.1	25.9		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.0	26.0		18.0	13.7	22.3		18.0				
Max Q Clear Time (g_c+I1), s	5.4	10.7		11.8	12.6	19.4		4.0				
Green Ext Time (p_c), s	0.1	3.5		1.1	0.1	2.0		0.2				

Intersection Summary		
HCM 6th Ctrl Delay		25.4
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	52	221	3	33	268	6
Future Vol, veh/h	52	221	3	33	268	6
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	57	240	3	36	291	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	297	0	219	177
Stage 1	-	-	-	-	177	-
Stage 2	-	-	-	-	42	-
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	-	-	1264	-	769	866
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	980	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1264	-	767	866
Mov Cap-2 Maneuver	-	-	-	-	767	-
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	980	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	769	-	-	1264	-
HCM Lane V/C Ratio	0.387	-	-	0.003	-
HCM Control Delay (s)	12.6	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.8	-	-	0	-

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	27	30	2	38	59	34	193	1	20	174	17
Future Vol, veh/h	9	27	30	2	38	59	34	193	1	20	174	17
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	29	33	2	41	64	37	210	1	22	189	18
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	8.7	8.5	10	9.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	15%	14%	5%	0%	9%
Vol Thru, %	85%	41%	95%	0%	82%
Vol Right, %	0%	45%	0%	100%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	228	66	40	59	211
LT Vol	34	9	2	0	20
Through Vol	193	27	38	0	174
RT Vol	1	30	0	59	17
Lane Flow Rate	248	72	43	64	229
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.322	0.101	0.069	0.089	0.296
Departure Headway (Hd)	4.681	5.053	5.749	5.016	4.648
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	766	704	620	710	771
Service Time	2.726	3.12	3.513	2.78	2.694
HCM Lane V/C Ratio	0.324	0.102	0.069	0.09	0.297
HCM Control Delay	10	8.7	8.9	8.3	9.7
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	1.4	0.3	0.2	0.3	1.2

Intersection	
Int Delay, s/veh	6.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	294	151	3	270	160
Future Vol, veh/h	4	294	151	3	270	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	320	164	3	293	174

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	926	166	0	0	167	0
Stage 1	166	-	-	-	-	-
Stage 2	760	-	-	-	-	-
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	298	878	-	-	1411	-
Stage 1	863	-	-	-	-	-
Stage 2	462	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	236	878	-	-	1411	-
Mov Cap-2 Maneuver	236	-	-	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	462	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	5.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	847	1411	-
HCM Lane V/C Ratio	-	-	0.382	0.208	-
HCM Control Delay (s)	-	-	11.9	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.8	0.8	-

Appendix E: Synchro Reports – Near Term Plus Project

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	88	9	5	318	461	104
Future Vol, veh/h	88	9	5	318	461	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	96	10	5	346	501	113

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	857	501	614	0	-	0
Stage 1	501	-	-	-	-	-
Stage 2	356	-	-	-	-	-
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	328	570	965	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	709	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	326	570	965	-	-	-
Mov Cap-2 Maneuver	326	-	-	-	-	-
Stage 1	605	-	-	-	-	-
Stage 2	709	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.3	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	965	-	339	-	-
HCM Lane V/C Ratio	0.006	-	0.311	-	-
HCM Control Delay (s)	8.8	0	20.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	1.3	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	639	219	248	906	14	149	176	266	136	260	58
Future Volume (veh/h)	56	639	219	248	906	14	149	176	266	136	260	58
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	61	695	129	270	985	15	162	191	180	148	283	63
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	78	1023	190	300	1671	25	192	343	291	176	326	277
Arrive On Green	0.04	0.34	0.34	0.17	0.47	0.47	0.11	0.18	0.18	0.10	0.17	0.17
Sat Flow, veh/h	1781	2992	555	1781	3583	55	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	61	412	412	270	488	512	162	191	180	148	283	63
Grp Sat Flow(s),veh/h/ln	1781	1777	1770	1781	1777	1861	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.4	19.9	19.9	14.9	20.2	20.2	8.9	9.3	10.5	8.2	14.7	3.4
Cycle Q Clear(g_c), s	3.4	19.9	19.9	14.9	20.2	20.2	8.9	9.3	10.5	8.2	14.7	3.4
Prop In Lane	1.00		0.31	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	78	607	605	300	829	868	192	343	291	176	326	277
V/C Ratio(X)	0.78	0.68	0.68	0.90	0.59	0.59	0.84	0.56	0.62	0.84	0.87	0.23
Avail Cap(c_a), veh/h	112	607	605	305	829	868	194	413	350	176	395	334
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	47.3	28.2	28.2	40.7	19.6	19.6	43.8	37.1	37.6	44.3	40.2	35.5
Incr Delay (d2), s/veh	19.1	6.0	6.1	27.3	1.1	1.1	26.8	1.4	2.4	28.6	15.9	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	1.9	9.3	9.3	8.7	8.3	8.7	5.3	4.3	4.2	5.0	8.1	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.4	34.2	34.3	68.0	20.7	20.7	70.6	38.5	40.0	72.8	56.0	35.9
LnGrp LOS	E	C	C	E	C	C	E	D	D	E	E	D
Approach Vol, veh/h		885			1270			533			494	
Approach Delay, s/veh		36.5			30.8			48.8			58.5	
Approach LOS		D			C			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	40.0	15.9	22.1	9.5	52.4	15.0	23.0
Change Period (Y+Rc), s	5.1	5.8	5.1	* 4.7	5.1	5.8	5.1	* 4.7
Max Green Setting (Gmax), s	17.1	30.2	10.9	* 21	6.3	41.0	9.9	* 22
Max Q Clear Time (g_c+I1), s	16.9	21.9	10.9	16.7	5.4	22.2	10.2	12.5
Green Ext Time (p_c), s	0.0	3.3	0.0	0.7	0.0	6.5	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	39.7
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	78	7	5	72	113	107
Future Vol, veh/h	78	7	5	72	113	107
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	85	8	5	78	123	116
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.4	7.4	8.7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	92%	0%	51%
Vol Thru, %	8%	6%	0%
Vol Right, %	0%	94%	49%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	85	77	220
LT Vol	78	0	113
Through Vol	7	5	0
RT Vol	0	72	107
Lane Flow Rate	92	84	239
Geometry Grp	1	1	1
Degree of Util (X)	0.122	0.093	0.276
Departure Headway (Hd)	4.735	4.012	4.157
Convergence, Y/N	Yes	Yes	Yes
Cap	759	895	870
Service Time	2.752	2.03	2.157
HCM Lane V/C Ratio	0.121	0.094	0.275
HCM Control Delay	8.4	7.4	8.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.3	1.1

Intersection	
Int Delay, s/veh	9.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	54	37	4	6	43	140	0	3	4	206	3	66
Future Vol, veh/h	54	37	4	6	43	140	0	3	4	206	3	66
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	59	40	4	7	47	152	0	3	4	224	3	72

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	556	458	3	514	528	5	75	0	0	7	0	0
Stage 1	451	451	-	5	5	-	-	-	-	-	-	-
Stage 2	105	7	-	509	523	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	442	499	1081	471	456	1078	1524	-	-	1614	-	-
Stage 1	588	571	-	1017	892	-	-	-	-	-	-	-
Stage 2	901	890	-	547	530	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	307	426	1081	387	389	1078	1524	-	-	1614	-	-
Mov Cap-2 Maneuver	307	426	-	387	389	-	-	-	-	-	-	-
Stage 1	588	488	-	1017	892	-	-	-	-	-	-	-
Stage 2	733	890	-	427	453	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17	11.5	0	5.7
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1524	-	-	307	453	387	761	1614	-	-
HCM Lane V/C Ratio	-	-	-	0.191	0.098	0.017	0.261	0.139	-	-
HCM Control Delay (s)	0	-	-	19.5	13.8	14.5	11.4	7.6	0	-
HCM Lane LOS	A	-	-	C	B	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.3	0.1	1	0.5	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	678	198	60	944	4	136	1	59	7	3	11
Future Volume (veh/h)	15	678	198	60	944	4	136	1	59	7	3	11
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	16	737	215	65	1026	4	148	1	64	8	3	12
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	35	950	277	103	1410	5	134	0	537	116	26	537
Arrive On Green	0.02	0.35	0.35	0.06	0.39	0.39	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	1781	2713	791	1781	3631	14	0	1	1585	0	78	1585
Grp Volume(v), veh/h	16	483	469	65	502	528	149	0	64	11	0	12
Grp Sat Flow(s),veh/h/ln	1781	1777	1728	1781	1777	1868	1	0	1585	78	0	1585
Q Serve(g_s), s	0.5	12.9	12.9	1.9	12.9	12.9	0.0	0.0	1.5	0.0	0.0	0.3
Cycle Q Clear(g_c), s	0.5	12.9	12.9	1.9	12.9	12.9	18.1	0.0	1.5	18.1	0.0	0.3
Prop In Lane	1.00		0.46	1.00		0.01	0.99		1.00	0.73		1.00
Lane Grp Cap(c), veh/h	35	622	605	103	690	726	135	0	537	143	0	537
V/C Ratio(X)	0.45	0.78	0.78	0.63	0.73	0.73	1.10	0.00	0.12	0.08	0.00	0.02
Avail Cap(c_a), veh/h	170	762	741	183	775	815	135	0	537	143	0	537
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	25.9	15.5	15.5	24.6	13.9	13.9	26.6	0.0	12.2	14.6	0.0	11.8
Incr Delay (d2), s/veh	8.9	4.1	4.2	6.2	3.0	2.9	108.4	0.0	0.1	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	5.2	5.0	0.9	4.9	5.1	5.7	0.0	0.5	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.7	19.6	19.7	30.8	17.0	16.8	135.1	0.0	12.3	14.8	0.0	11.8
LnGrp LOS	C	B	B	C	B	B	F	A	B	B	A	B
Approach Vol, veh/h		968			1095			213			23	
Approach Delay, s/veh		19.9			17.7			98.2			13.2	
Approach LOS		B			B			F			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	23.2		22.6	5.6	25.2		22.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	22.9		18.1	5.1	23.3		18.1				
Max Q Clear Time (g_c+I1), s	3.9	14.9		20.1	2.5	14.9		20.1				
Green Ext Time (p_c), s	0.0	3.8		0.0	0.0	4.2		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			26.0									
HCM 6th LOS			C									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Yield	
Traffic Volume (vph)	0	0	0	4	4	187	5	120	7	183	158	59
Future Volume (vph)	0	0	0	4	4	187	5	120	7	183	158	59
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
Hourly flow rate (vph)	0	0	0	4	4	203	5	130	8	199	172	64

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	8	203	143	285	150
Volume Left (vph)	4	0	5	199	0
Volume Right (vph)	0	203	8	0	64
Hadj (s)	0.28	-0.67	0.01	0.38	-0.26
Departure Headway (s)	6.2	5.3	5.6	5.6	5.0
Degree Utilization, x	0.01	0.30	0.22	0.45	0.21
Capacity (veh/h)	537	637	611	618	694
Control Delay (s)	8.1	9.3	10.2	11.9	8.1
Approach Delay (s)	9.2		10.2	10.6	
Approach LOS	A		B	B	

Intersection Summary			
Delay	10.2		
Level of Service	B		
Intersection Capacity Utilization	31.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	522	139	28	769	284	155	49	33	373	84	222
Future Volume (veh/h)	84	522	139	28	769	284	155	49	33	373	84	222
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	91	567	151	30	836	309	110	133	36	470	0	241
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	117	937	249	59	1083	483	208	218	185	734	0	327
Arrive On Green	0.07	0.34	0.34	0.03	0.30	0.30	0.12	0.12	0.12	0.21	0.00	0.21
Sat Flow, veh/h	1781	2777	737	1781	3554	1585	1781	1870	1585	3563	0	1585
Grp Volume(v), veh/h	91	362	356	30	836	309	110	133	36	470	0	241
Grp Sat Flow(s),veh/h/ln	1781	1777	1738	1781	1777	1585	1781	1870	1585	1781	0	1585
Q Serve(g_s), s	3.0	10.0	10.0	1.0	12.6	9.9	3.4	4.0	1.2	7.1	0.0	8.4
Cycle Q Clear(g_c), s	3.0	10.0	10.0	1.0	12.6	9.9	3.4	4.0	1.2	7.1	0.0	8.4
Prop In Lane	1.00		0.42	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	117	600	587	59	1083	483	208	218	185	734	0	327
V/C Ratio(X)	0.78	0.60	0.61	0.51	0.77	0.64	0.53	0.61	0.19	0.64	0.00	0.74
Avail Cap(c_a), veh/h	167	633	619	155	1241	554	546	574	486	1093	0	486
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	0.00	1.00
Uniform Delay (d), s/veh	27.0	16.2	16.2	27.9	18.6	17.6	24.4	24.6	23.4	21.3	0.0	21.8
Incr Delay (d2), s/veh	13.4	1.5	1.6	6.7	2.7	2.0	2.1	2.7	0.5	0.9	0.0	3.3
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	1.6	3.8	3.8	0.5	5.0	3.5	1.5	1.8	0.4	2.8	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.4	17.7	17.8	34.6	21.2	19.6	26.5	27.4	23.9	22.2	0.0	25.1
LnGrp LOS	D	B	B	C	C	B	C	C	C	C	A	C
Approach Vol, veh/h		809			1175			279			711	
Approach Delay, s/veh		20.3			21.2			26.6			23.2	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.4	24.3		16.6	8.4	22.4		11.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	20.9		18.0	5.5	20.5		18.0				
Max Q Clear Time (g_c+I1), s	3.0	12.0		10.4	5.0	14.6		6.0				
Green Ext Time (p_c), s	0.0	3.0		1.7	0.0	3.3		0.9				

Intersection Summary			
HCM 6th Ctrl Delay		21.9	
HCM 6th LOS		C	

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	309	393	10	18	493	622	7	33	41	264	7	54
Future Volume (veh/h)	309	393	10	18	493	622	7	33	41	264	7	54
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	336	427	11	20	536	676	8	36	45	177	162	59
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	386	1661	43	41	979	698	25	113	118	294	216	79
Arrive On Green	0.22	0.47	0.47	0.02	0.28	0.28	0.07	0.07	0.07	0.17	0.17	0.17
Sat Flow, veh/h	1781	3540	91	1781	3554	1585	337	1517	1585	1781	1308	476
Grp Volume(v), veh/h	336	214	224	20	536	676	44	0	45	177	0	221
Grp Sat Flow(s),veh/h/ln	1781	1777	1854	1781	1777	1585	1854	0	1585	1781	0	1785
Q Serve(g_s), s	12.2	4.9	4.9	0.7	8.6	18.5	1.5	0.0	1.8	6.2	0.0	7.9
Cycle Q Clear(g_c), s	12.2	4.9	4.9	0.7	8.6	18.5	1.5	0.0	1.8	6.2	0.0	7.9
Prop In Lane	1.00		0.05	1.00		1.00	0.18		1.00	1.00		0.27
Lane Grp Cap(c), veh/h	386	834	870	41	979	698	138	0	118	294	0	295
V/C Ratio(X)	0.87	0.26	0.26	0.48	0.55	0.97	0.32	0.00	0.38	0.60	0.00	0.75
Avail Cap(c_a), veh/h	464	834	870	141	979	698	497	0	425	478	0	479
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	25.4	10.8	10.8	32.4	20.7	15.7	29.4	0.0	29.6	26.0	0.0	26.7
Incr Delay (d2), s/veh	14.3	0.2	0.2	8.5	0.6	26.2	1.3	0.0	2.0	2.0	0.0	3.8
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	6.4	1.7	1.8	0.4	3.4	15.7	0.7	0.0	0.7	2.7	0.0	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.6	10.9	10.9	40.9	21.4	41.9	30.8	0.0	31.6	28.0	0.0	30.5
LnGrp LOS	D	B	B	D	C	D	C	A	C	C	A	C
Approach Vol, veh/h		774			1232			89			398	
Approach Delay, s/veh		23.4			33.0			31.2			29.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.1	36.0		15.6	19.0	23.0		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.3	30.7		18.0	17.5	18.5		18.0				
Max Q Clear Time (g_c+I1), s	2.7	6.9		9.9	14.2	20.5		3.8				
Green Ext Time (p_c), s	0.0	2.6		1.2	0.4	0.0		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		29.3	
HCM 6th LOS		C	

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	24	203	10	42	134	3
Future Vol, veh/h	24	203	10	42	134	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	221	11	46	146	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	247	0	205	137
Stage 1	-	-	-	-	137	-
Stage 2	-	-	-	-	68	-
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	-	-	1319	-	783	911
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	955	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1319	-	776	911
Mov Cap-2 Maneuver	-	-	-	-	776	-
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	955	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	779	-	-	1319	-
HCM Lane V/C Ratio	0.191	-	-	0.008	-
HCM Control Delay (s)	10.7	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0	-

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	45	74	1	58	18	92	78	1	15	121	55
Future Vol, veh/h	29	45	74	1	58	18	92	78	1	15	121	55
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	49	80	1	63	20	100	85	1	16	132	60
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	9.2	8.8	9.6	9.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	54%	20%	2%	0%	8%
Vol Thru, %	46%	30%	98%	0%	63%
Vol Right, %	1%	50%	0%	100%	29%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	171	148	59	18	191
LT Vol	92	29	1	0	15
Through Vol	78	45	58	0	121
RT Vol	1	74	0	18	55
Lane Flow Rate	186	161	64	20	208
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.253	0.216	0.101	0.027	0.266
Departure Headway (Hd)	4.893	4.824	5.649	4.933	4.619
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	730	738	630	720	772
Service Time	2.952	2.889	3.42	2.704	2.676
HCM Lane V/C Ratio	0.255	0.218	0.102	0.028	0.269
HCM Control Delay	9.6	9.2	9.1	7.8	9.4
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	1	0.8	0.3	0.1	1.1

Intersection	
Int Delay, s/veh	3.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	180	363	17	198	486
Future Vol, veh/h	9	180	363	17	198	486
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	196	395	18	215	528

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1362	404	0	0	413	0
Stage 1	404	-	-	-	-	-
Stage 2	958	-	-	-	-	-
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	163	647	-	-	1146	-
Stage 1	674	-	-	-	-	-
Stage 2	373	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	132	647	-	-	1146	-
Mov Cap-2 Maneuver	132	-	-	-	-	-
Stage 1	547	-	-	-	-	-
Stage 2	373	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.5	0	2.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	546	1146	-
HCM Lane V/C Ratio	-	-	0.376	0.188	-
HCM Control Delay (s)	-	-	15.5	8.9	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.7	0.7	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	58	4	7	151	160	67
Future Vol, veh/h	58	4	7	151	160	67
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	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	63	4	8	164	174	73

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	354	174	247	0	-	0
Stage 1	174	-	-	-	-	-
Stage 2	180	-	-	-	-	-
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	644	869	1319	-	-	-
Stage 1	856	-	-	-	-	-
Stage 2	851	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	639	869	1319	-	-	-
Mov Cap-2 Maneuver	639	-	-	-	-	-
Stage 1	850	-	-	-	-	-
Stage 2	851	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1319	-	650	-	-
HCM Lane V/C Ratio	0.006	-	0.104	-	-
HCM Control Delay (s)	7.7	0	11.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	1078	198	176	891	21	132	192	167	177	155	96
Future Volume (veh/h)	94	1078	198	176	891	21	132	192	167	177	155	96
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	102	1172	215	191	968	23	143	209	182	192	168	104
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	127	1352	247	214	1771	42	170	255	216	215	302	256
Arrive On Green	0.07	0.45	0.45	0.12	0.50	0.50	0.10	0.14	0.14	0.12	0.16	0.16
Sat Flow, veh/h	1781	3001	547	1781	3548	84	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	102	691	696	191	485	506	143	209	182	192	168	104
Grp Sat Flow(s),veh/h/ln	1781	1777	1772	1781	1777	1855	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.8	42.0	42.6	12.7	22.6	22.6	9.5	13.0	13.4	12.7	9.9	7.1
Cycle Q Clear(g_c), s	6.8	42.0	42.6	12.7	22.6	22.6	9.5	13.0	13.4	12.7	9.9	7.1
Prop In Lane	1.00		0.31	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	127	800	798	214	887	926	170	255	216	215	302	256
V/C Ratio(X)	0.80	0.86	0.87	0.89	0.55	0.55	0.84	0.82	0.84	0.89	0.56	0.41
Avail Cap(c_a), veh/h	200	800	798	214	887	926	203	329	279	215	341	289
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	54.9	29.7	29.8	52.0	20.7	20.7	53.4	50.4	50.6	52.0	46.3	45.1
Incr Delay (d2), s/veh	11.7	11.9	12.6	34.3	0.7	0.7	22.8	12.0	16.5	33.8	1.6	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	20.1	20.5	7.7	9.4	9.8	5.3	6.9	6.3	7.7	4.8	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.6	41.6	42.4	86.4	21.4	21.4	76.2	62.4	67.1	85.8	47.9	46.2
LnGrp LOS	E	D	D	F	C	C	E	E	E	F	D	D
Approach Vol, veh/h		1489			1182			534			464	
Approach Delay, s/veh		43.7			31.9			67.7			63.2	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.5	59.9	16.5	24.1	13.7	65.7	19.6	21.0
Change Period (Y+Rc), s	5.1	5.8	5.1	* 4.7	5.1	5.8	5.1	* 4.7
Max Green Setting (Gmax), s	14.4	49.3	13.7	* 22	13.5	50.2	14.5	* 21
Max Q Clear Time (g_c+I1), s	14.7	44.6	11.5	11.9	8.8	24.6	14.7	15.4
Green Ext Time (p_c), s	0.0	3.4	0.1	0.9	0.1	7.2	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	45.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	87	8	8	40	30	141
Future Vol, veh/h	87	8	8	40	30	141
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	95	9	9	43	33	153
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.2	7.2	7.7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	92%	0%	18%
Vol Thru, %	8%	17%	0%
Vol Right, %	0%	83%	82%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	95	48	171
LT Vol	87	0	30
Through Vol	8	8	0
RT Vol	0	40	141
Lane Flow Rate	103	52	186
Geometry Grp	1	1	1
Degree of Util (X)	0.129	0.056	0.193
Departure Headway (Hd)	4.485	3.841	3.74
Convergence, Y/N	Yes	Yes	Yes
Cap	793	917	942
Service Time	2.55	1.93	1.83
HCM Lane V/C Ratio	0.13	0.057	0.197
HCM Control Delay	8.2	7.2	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.2	0.7

Intersection	
Int Delay, s/veh	9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	146	53	15	5	36	113	5	26	8	87	14	80
Future Vol, veh/h	146	53	15	5	36	113	5	26	8	87	14	80
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	159	58	16	5	39	123	5	28	9	95	15	87

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	329	252	15	329	335	33	102	0	0	37	0	0
Stage 1	205	205	-	43	43	-	-	-	-	-	-	-
Stage 2	124	47	-	286	292	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	624	651	1065	624	585	1041	1490	-	-	1574	-	-
Stage 1	797	732	-	971	859	-	-	-	-	-	-	-
Stage 2	880	856	-	721	671	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	494	607	1065	541	545	1041	1490	-	-	1574	-	-
Mov Cap-2 Maneuver	494	607	-	541	545	-	-	-	-	-	-	-
Stage 1	795	684	-	968	856	-	-	-	-	-	-	-
Stage 2	738	853	-	608	627	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.2	10.2	1	3.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1490	-	-	494	671	541	853	1574	-	-
HCM Lane V/C Ratio	0.004	-	-	0.321	0.11	0.01	0.19	0.06	-	-
HCM Control Delay (s)	7.4	0	-	15.7	11	11.7	10.2	7.4	0	-
HCM Lane LOS	A	A	-	C	B	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.4	0.4	0	0.7	0.2	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	1331	92	77	1013	17	105	7	160	57	5	61
Future Volume (veh/h)	58	1331	92	77	1013	17	105	7	160	57	5	61
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	1447	100	84	1101	18	114	8	174	62	5	66
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	83	1807	124	109	1970	32	85	3	377	85	4	377
Arrive On Green	0.05	0.54	0.54	0.06	0.55	0.55	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1781	3373	232	1781	3578	58	0	13	1585	0	15	1585
Grp Volume(v), veh/h	63	759	788	84	547	572	122	0	174	67	0	66
Grp Sat Flow(s),veh/h/ln	1781	1777	1829	1781	1777	1860	13	0	1585	15	0	1585
Q Serve(g_s), s	2.9	28.4	28.8	3.8	16.4	16.4	0.0	0.0	7.7	0.0	0.0	2.7
Cycle Q Clear(g_c), s	2.9	28.4	28.8	3.8	16.4	16.4	19.5	0.0	7.7	19.5	0.0	2.7
Prop In Lane	1.00		0.13	1.00		0.03	0.93		1.00	0.93		1.00
Lane Grp Cap(c), veh/h	83	952	980	109	978	1024	88	0	377	88	0	377
V/C Ratio(X)	0.76	0.80	0.80	0.77	0.56	0.56	1.38	0.00	0.46	0.76	0.00	0.17
Avail Cap(c_a), veh/h	207	1204	1239	250	1248	1306	88	0	377	88	0	377
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	38.6	15.4	15.5	37.9	11.9	12.0	40.2	0.0	26.7	39.9	0.0	24.8
Incr Delay (d2), s/veh	13.3	3.0	3.1	10.9	0.5	0.5	227.8	0.0	0.9	30.9	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	11.0	11.5	2.0	5.9	6.2	7.3	0.0	2.9	2.1	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.9	18.4	18.6	48.8	12.5	12.4	268.0	0.0	27.6	70.8	0.0	25.0
LnGrp LOS	D	B	B	D	B	B	F	A	C	E	A	C
Approach Vol, veh/h		1610			1203			296			133	
Approach Delay, s/veh		19.8			15.0			126.7			48.1	
Approach LOS		B			B			F			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.5	48.4		24.0	8.3	49.6		24.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	11.5	55.5		19.5	9.5	57.5		19.5				
Max Q Clear Time (g_c+I1), s	5.8	30.8		21.5	4.9	18.4		21.5				
Green Ext Time (p_c), s	0.1	13.1		0.0	0.0	9.5		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			28.9									
HCM 6th LOS			C									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Yield	
Traffic Volume (vph)	0	0	0	16	5	144	9	205	35	120	269	39
Future Volume (vph)	0	0	0	16	5	144	9	205	35	120	269	39
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
Hourly flow rate (vph)	0	0	0	17	5	157	10	223	38	130	292	42

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	22	157	271	276	188
Volume Left (vph)	17	0	10	130	0
Volume Right (vph)	0	157	38	0	42
Hadj (s)	0.42	-0.67	-0.04	0.27	-0.12
Departure Headway (s)	6.7	5.6	5.5	5.6	5.2
Degree Utilization, x	0.04	0.24	0.42	0.43	0.27
Capacity (veh/h)	495	588	631	623	668
Control Delay (s)	8.8	9.2	12.4	11.6	8.9
Approach Delay (s)	9.2		12.4	10.5	
Approach LOS	A		B	B	

Intersection Summary			
Delay	10.8		
Level of Service	B		
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	795	192	61	821	290	181	71	61	662	127	442
Future Volume (veh/h)	80	795	192	61	821	290	181	71	61	662	127	442
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	87	864	209	66	892	315	137	161	66	819	0	480
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	111	963	233	85	1153	514	208	218	185	1054	0	469
Arrive On Green	0.06	0.34	0.34	0.05	0.32	0.32	0.12	0.12	0.12	0.30	0.00	0.30
Sat Flow, veh/h	1781	2838	686	1781	3554	1585	1781	1870	1585	3563	0	1585
Grp Volume(v), veh/h	87	541	532	66	892	315	137	161	66	819	0	480
Grp Sat Flow(s),veh/h/ln	1781	1777	1747	1781	1777	1585	1781	1870	1585	1781	0	1585
Q Serve(g_s), s	4.3	25.9	25.9	3.3	20.3	15.0	6.6	7.5	3.4	18.8	0.0	26.5
Cycle Q Clear(g_c), s	4.3	25.9	25.9	3.3	20.3	15.0	6.6	7.5	3.4	18.8	0.0	26.5
Prop In Lane	1.00		0.39	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	111	603	593	85	1153	514	208	218	185	1054	0	469
V/C Ratio(X)	0.78	0.90	0.90	0.78	0.77	0.61	0.66	0.74	0.36	0.78	0.00	1.02
Avail Cap(c_a), veh/h	133	635	624	109	1222	545	358	376	318	1054	0	469
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	0.00	1.00
Uniform Delay (d), s/veh	41.4	28.1	28.1	42.2	27.3	25.5	37.9	38.3	36.5	28.9	0.0	31.6
Incr Delay (d2), s/veh	21.7	15.1	15.4	23.0	3.0	1.9	3.5	4.8	1.2	3.7	0.0	47.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	13.1	12.9	2.0	8.8	5.7	3.0	3.7	1.4	8.3	0.0	16.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.1	43.2	43.5	65.2	30.3	27.4	41.4	43.1	37.6	32.6	0.0	79.3
LnGrp LOS	E	D	D	E	C	C	D	D	D	C	A	F
Approach Vol, veh/h		1160			1273			364			1299	
Approach Delay, s/veh		44.9			31.4			41.5			49.9	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	34.9		31.0	10.1	33.6		14.9				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	32.0		26.5	6.7	30.8		18.0				
Max Q Clear Time (g_c+I1), s	5.3	27.9		28.5	6.3	22.3		9.5				
Green Ext Time (p_c), s	0.0	2.5		0.0	0.0	4.6		1.0				

Intersection Summary			
HCM 6th Ctrl Delay		42.0	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	256	564	38	80	820	505	19	30	28	417	12	73
Future Volume (veh/h)	256	564	38	80	820	505	19	30	28	417	12	73
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	278	613	41	87	891	549	21	33	30	536	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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	321	1440	96	113	1098	787	50	79	111	667	350	0
Arrive On Green	0.18	0.43	0.43	0.06	0.31	0.31	0.07	0.07	0.07	0.19	0.00	0.00
Sat Flow, veh/h	1781	3381	226	1781	3554	1585	713	1121	1585	3563	1870	0
Grp Volume(v), veh/h	278	322	332	87	891	549	54	0	30	536	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1830	1781	1777	1585	1835	0	1585	1781	1870	0
Q Serve(g_s), s	10.8	9.0	9.1	3.4	16.4	19.0	2.0	0.0	1.3	10.2	0.0	0.0
Cycle Q Clear(g_c), s	10.8	9.0	9.1	3.4	16.4	19.0	2.0	0.0	1.3	10.2	0.0	0.0
Prop In Lane	1.00		0.12	1.00		1.00	0.39		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	321	757	779	113	1098	787	129	0	111	667	350	0
V/C Ratio(X)	0.87	0.43	0.43	0.77	0.81	0.70	0.42	0.00	0.27	0.80	0.00	0.00
Avail Cap(c_a), veh/h	343	757	779	251	1115	794	464	0	401	902	473	0
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	0.00
Uniform Delay (d), s/veh	28.3	14.3	14.3	32.8	22.7	13.8	31.7	0.0	31.3	27.6	0.0	0.0
Incr Delay (d2), s/veh	19.3	0.4	0.4	10.6	4.6	2.7	2.2	0.0	1.3	3.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	3.4	3.5	1.8	7.1	9.6	0.9	0.0	0.5	4.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.6	14.7	14.7	43.4	27.2	16.5	33.8	0.0	32.6	31.5	0.0	0.0
LnGrp LOS	D	B	B	D	C	B	C	A	C	C	A	A
Approach Vol, veh/h		932			1527			84			536	
Approach Delay, s/veh		24.5			24.3			33.4			31.5	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	34.8		17.8	17.3	26.5		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.0	26.0		18.0	13.7	22.3		18.0				
Max Q Clear Time (g_c+I1), s	5.4	11.1		12.2	12.8	21.0		4.0				
Green Ext Time (p_c), s	0.1	3.6		1.1	0.1	1.0		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		25.9	
HCM 6th LOS		C	

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	6.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	52	229	3	33	281	6
Future Vol, veh/h	52	229	3	33	281	6
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	57	249	3	36	305	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	306	0	224	182
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	42	-
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	-	-	1255	-	764	861
Stage 1	-	-	-	-	849	-
Stage 2	-	-	-	-	980	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1255	-	762	861
Mov Cap-2 Maneuver	-	-	-	-	762	-
Stage 1	-	-	-	-	847	-
Stage 2	-	-	-	-	980	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	764	-	-	1255	-
HCM Lane V/C Ratio	0.408	-	-	0.003	-
HCM Control Delay (s)	12.9	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	2	-	-	0	-

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	27	30	2	38	59	34	206	1	20	182	17
Future Vol, veh/h	9	27	30	2	38	59	34	206	1	20	182	17
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	29	33	2	41	64	37	224	1	22	198	18
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	8.8	8.6	10.2	9.8
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	14%	14%	5%	0%	9%
Vol Thru, %	85%	41%	95%	0%	83%
Vol Right, %	0%	45%	0%	100%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	241	66	40	59	219
LT Vol	34	9	2	0	20
Through Vol	206	27	38	0	182
RT Vol	1	30	0	59	17
Lane Flow Rate	262	72	43	64	238
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.341	0.102	0.07	0.09	0.309
Departure Headway (Hd)	4.691	5.108	5.803	5.069	4.668
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	762	696	613	702	767
Service Time	2.743	3.182	3.573	2.839	2.719
HCM Lane V/C Ratio	0.344	0.103	0.07	0.091	0.31
HCM Control Delay	10.2	8.8	9	8.3	9.8
HCM Lane LOS	B	A	A	A	A
HCM 95th-tile Q	1.5	0.3	0.2	0.3	1.3

Intersection	
Int Delay, s/veh	6.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	17	294	178	11	270	206
Future Vol, veh/h	17	294	178	11	270	206
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	320	193	12	293	224

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1009	199	0	0	205	0
Stage 1	199	-	-	-	-	-
Stage 2	810	-	-	-	-	-
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	266	842	-	-	1366	-
Stage 1	835	-	-	-	-	-
Stage 2	438	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	209	842	-	-	1366	-
Mov Cap-2 Maneuver	209	-	-	-	-	-
Stage 1	656	-	-	-	-	-
Stage 2	438	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.3	0	4.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	722	1366	-
HCM Lane V/C Ratio	-	-	0.468	0.215	-
HCM Control Delay (s)	-	-	14.3	8.4	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	2.5	0.8	-

Appendix F: Synchro Reports – Year 2030

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	48	3	1	355	514	88
Future Vol, veh/h	48	3	1	355	514	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	3	1	386	559	96

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	947	559	655	0	-	0
Stage 1	559	-	-	-	-	-
Stage 2	388	-	-	-	-	-
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	290	529	932	-	-	-
Stage 1	572	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	290	529	932	-	-	-
Mov Cap-2 Maneuver	290	-	-	-	-	-
Stage 1	571	-	-	-	-	-
Stage 2	686	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	932	-	298	-	-
HCM Lane V/C Ratio	0.001	-	0.186	-	-
HCM Control Delay (s)	8.9	0	19.8	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	713	244	264	1011	16	166	182	276	152	282	65
Future Volume (veh/h)	62	713	244	264	1011	16	166	182	276	152	282	65
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	67	775	156	287	1099	17	180	198	191	165	307	71
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	86	991	199	315	1665	26	208	355	301	194	340	288
Arrive On Green	0.05	0.34	0.34	0.18	0.46	0.46	0.12	0.19	0.19	0.11	0.18	0.18
Sat Flow, veh/h	1781	2947	593	1781	3582	55	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	67	467	464	287	545	571	180	198	191	165	307	71
Grp Sat Flow(s),veh/h/ln	1781	1777	1764	1781	1777	1860	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.1	26.1	26.1	17.4	26.1	26.1	10.9	10.6	12.2	10.0	17.7	4.2
Cycle Q Clear(g_c), s	4.1	26.1	26.1	17.4	26.1	26.1	10.9	10.6	12.2	10.0	17.7	4.2
Prop In Lane	1.00		0.34	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	86	597	593	315	826	865	208	355	301	194	340	288
V/C Ratio(X)	0.78	0.78	0.78	0.91	0.66	0.66	0.86	0.56	0.63	0.85	0.90	0.25
Avail Cap(c_a), veh/h	121	597	593	329	826	865	212	362	307	209	359	304
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	51.8	32.9	32.9	44.4	22.7	22.7	47.7	40.4	41.0	48.1	44.1	38.6
Incr Delay (d2), s/veh	18.4	9.8	9.9	27.5	2.0	1.9	28.4	1.8	4.1	25.8	24.5	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	2.3	12.7	12.6	10.0	11.0	11.5	6.5	5.0	5.1	5.8	10.4	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.1	42.7	42.8	71.9	24.7	24.6	76.1	42.2	45.2	73.9	68.6	39.0
LnGrp LOS	E	D	D	E	C	C	E	D	D	E	E	D
Approach Vol, veh/h		998			1403			569			543	
Approach Delay, s/veh		44.6			34.3			53.9			66.3	
Approach LOS		D			C			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.6	42.8	18.0	24.7	10.4	56.9	17.1	25.6
Change Period (Y+Rc), s	5.1	5.8	5.1	* 4.7	5.1	5.8	5.1	* 4.7
Max Green Setting (Gmax), s	20.3	34.8	13.1	* 21	7.5	47.6	12.9	* 21
Max Q Clear Time (g_c+I1), s	19.4	28.1	12.9	19.7	6.1	28.1	12.0	14.2
Green Ext Time (p_c), s	0.1	3.2	0.0	0.3	0.0	7.5	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	45.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	83	8	6	80	126	113
Future Vol, veh/h	83	8	6	80	126	113
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	90	9	7	87	137	123
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.5	7.6	9
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	91%	0%	53%
Vol Thru, %	9%	7%	0%
Vol Right, %	0%	93%	47%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	91	86	239
LT Vol	83	0	126
Through Vol	8	6	0
RT Vol	0	80	113
Lane Flow Rate	99	93	260
Geometry Grp	1	1	1
Degree of Util (X)	0.132	0.106	0.303
Departure Headway (Hd)	4.797	4.077	4.196
Convergence, Y/N	Yes	Yes	Yes
Cap	749	880	860
Service Time	2.817	2.097	2.21
HCM Lane V/C Ratio	0.132	0.106	0.302
HCM Control Delay	8.5	7.6	9
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.4	1.3

Intersection	
Int Delay, s/veh	8.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	18	4	0	6	121	0	3	0	210	3	74
Future Vol, veh/h	60	18	4	0	6	121	0	3	0	210	3	74
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	20	4	0	7	132	0	3	0	228	3	80

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	532	462	3	514	542	3	83	0	0	3	0	0
Stage 1	459	459	-	3	3	-	-	-	-	-	-	-
Stage 2	73	3	-	511	539	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	458	497	1081	471	447	1081	1514	-	-	1619	-	-
Stage 1	582	566	-	1020	893	-	-	-	-	-	-	-
Stage 2	937	893	-	545	522	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	352	423	1081	401	380	1081	1514	-	-	1619	-	-
Mov Cap-2 Maneuver	352	423	-	401	380	-	-	-	-	-	-	-
Stage 1	582	482	-	1020	893	-	-	-	-	-	-	-
Stage 2	817	893	-	443	444	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.3	9.2	0	5.6
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1514	-	-	352	476	-	994	1619	-	-
HCM Lane V/C Ratio	-	-	-	0.185	0.05	-	0.139	0.141	-	-
HCM Control Delay (s)	0	-	-	17.5	13	0	9.2	7.6	0	-
HCM Lane LOS	A	-	-	C	B	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.2	-	0.5	0.5	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	757	201	67	1054	4	116	1	66	8	3	12
Future Volume (veh/h)	17	757	201	67	1054	4	116	1	66	8	3	12
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	18	823	218	73	1146	4	126	1	72	9	3	13
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	39	1015	269	109	1469	5	130	1	521	114	23	521
Arrive On Green	0.02	0.37	0.37	0.06	0.40	0.40	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1781	2779	736	1781	3632	13	0	2	1585	0	69	1585
Grp Volume(v), veh/h	18	526	515	73	561	589	127	0	72	12	0	13
Grp Sat Flow(s),veh/h/ln	1781	1777	1738	1781	1777	1868	2	0	1585	69	0	1585
Q Serve(g_s), s	0.5	14.7	14.7	2.2	15.1	15.1	0.0	0.0	1.8	0.0	0.0	0.3
Cycle Q Clear(g_c), s	0.5	14.7	14.7	2.2	15.1	15.1	18.1	0.0	1.8	18.1	0.0	0.3
Prop In Lane	1.00		0.42	1.00		0.01	0.99		1.00	0.75		1.00
Lane Grp Cap(c), veh/h	39	649	635	109	718	755	131	0	521	137	0	521
V/C Ratio(X)	0.46	0.81	0.81	0.67	0.78	0.78	0.97	0.00	0.14	0.09	0.00	0.02
Avail Cap(c_a), veh/h	165	739	723	178	752	790	131	0	521	137	0	521
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	26.6	15.8	15.8	25.3	14.3	14.3	27.5	0.0	13.0	15.2	0.0	12.5
Incr Delay (d2), s/veh	8.3	6.1	6.2	7.0	5.1	4.9	69.6	0.0	0.1	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	6.2	6.1	1.1	6.1	6.4	4.1	0.0	0.6	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.9	21.9	22.0	32.3	19.4	19.1	97.0	0.0	13.1	15.5	0.0	12.5
LnGrp LOS	C	C	C	C	B	B	F	A	B	B	A	B
Approach Vol, veh/h		1059			1223			199			25	
Approach Delay, s/veh		22.2			20.0			66.7			14.0	
Approach LOS		C			C			E			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.9	24.6		22.6	5.7	26.8		22.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	22.9		18.1	5.1	23.3		18.1				
Max Q Clear Time (g_c+I1), s	4.2	16.7		20.1	2.5	17.1		20.1				
Green Ext Time (p_c), s	0.0	3.4		0.0	0.0	3.7		0.0				

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Yield	
Traffic Volume (vph)	0	0	0	4	4	166	6	134	8	181	176	66
Future Volume (vph)	0	0	0	4	4	166	6	134	8	181	176	66
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
Hourly flow rate (vph)	0	0	0	4	4	180	7	146	9	197	191	72

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	8	180	162	293	168
Volume Left (vph)	4	0	7	197	0
Volume Right (vph)	0	180	9	0	72
Hadj (s)	0.28	-0.67	0.01	0.37	-0.27
Departure Headway (s)	6.3	5.4	5.6	5.6	4.9
Degree Utilization, x	0.01	0.27	0.25	0.45	0.23
Capacity (veh/h)	528	624	619	625	702
Control Delay (s)	8.2	9.1	10.4	11.9	8.2
Approach Delay (s)	9.1		10.4	10.6	
Approach LOS	A		B	B	

Intersection Summary			
Delay	10.2		
Level of Service	B		
Intersection Capacity Utilization	33.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	570	132	31	837	302	131	55	37	388	94	248
Future Volume (veh/h)	94	570	132	31	837	302	131	55	37	388	94	248
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	102	620	143	34	910	328	101	117	40	262	326	270
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	131	990	228	64	1092	487	186	195	166	405	425	360
Arrive On Green	0.07	0.35	0.35	0.04	0.31	0.31	0.10	0.10	0.10	0.23	0.23	0.23
Sat Flow, veh/h	1781	2868	660	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	102	384	379	34	910	328	101	117	40	262	326	270
Grp Sat Flow(s),veh/h/ln	1781	1777	1752	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.5	11.3	11.3	1.2	14.9	11.3	3.4	3.7	1.5	8.3	10.2	9.9
Cycle Q Clear(g_c), s	3.5	11.3	11.3	1.2	14.9	11.3	3.4	3.7	1.5	8.3	10.2	9.9
Prop In Lane	1.00		0.38	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	131	613	604	64	1092	487	186	195	166	405	425	360
V/C Ratio(X)	0.78	0.63	0.63	0.54	0.83	0.67	0.54	0.60	0.24	0.65	0.77	0.75
Avail Cap(c_a), veh/h	157	613	604	145	1164	519	512	538	456	512	538	456
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	28.5	17.1	17.1	29.7	20.2	18.9	26.6	26.8	25.7	21.9	22.6	22.5
Incr Delay (d2), s/veh	18.8	2.0	2.1	6.8	5.1	3.1	2.5	2.9	0.7	1.9	5.1	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	4.5	4.5	0.6	6.4	4.2	1.5	1.7	0.6	3.5	4.8	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.3	19.1	19.2	36.5	25.2	22.1	29.1	29.7	26.5	23.8	27.7	27.7
LnGrp LOS	D	B	B	D	C	C	C	C	C	C	C	C
Approach Vol, veh/h		865			1272			258			858	
Approach Delay, s/veh		22.5			24.7			28.9			26.5	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.7	26.1		18.7	9.1	23.7		11.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	20.9		18.0	5.5	20.5		18.0				
Max Q Clear Time (g_c+I1), s	3.2	13.3		12.2	5.5	16.9		5.7				
Green Ext Time (p_c), s	0.0	2.9		2.0	0.0	2.3		0.8				

Intersection Summary												
HCM 6th Ctrl Delay			24.9									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	345	431	11	20	536	644	8	37	46	287	8	60
Future Volume (veh/h)	345	431	11	20	536	644	8	37	46	287	8	60
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	375	468	12	22	583	700	9	40	50	193	176	65
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	418	1676	43	44	936	694	24	108	113	310	227	84
Arrive On Green	0.23	0.47	0.47	0.02	0.26	0.26	0.07	0.07	0.07	0.17	0.17	0.17
Sat Flow, veh/h	1781	3540	91	1781	3554	1585	340	1513	1585	1781	1303	481
Grp Volume(v), veh/h	375	235	245	22	583	700	49	0	50	193	0	241
Grp Sat Flow(s),veh/h/ln	1781	1777	1854	1781	1777	1585	1853	0	1585	1781	0	1784
Q Serve(g_s), s	14.3	5.6	5.6	0.9	10.1	18.5	1.8	0.0	2.1	7.0	0.0	9.1
Cycle Q Clear(g_c), s	14.3	5.6	5.6	0.9	10.1	18.5	1.8	0.0	2.1	7.0	0.0	9.1
Prop In Lane	1.00		0.05	1.00		1.00	0.18		1.00	1.00		0.27
Lane Grp Cap(c), veh/h	418	841	878	44	936	694	132	0	113	310	0	311
V/C Ratio(X)	0.90	0.28	0.28	0.50	0.62	1.01	0.37	0.00	0.44	0.62	0.00	0.78
Avail Cap(c_a), veh/h	444	841	878	134	936	694	475	0	406	457	0	457
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	26.0	11.2	11.2	33.8	22.8	16.3	31.1	0.0	31.3	26.9	0.0	27.7
Incr Delay (d2), s/veh	19.8	0.2	0.2	8.4	1.3	36.4	1.7	0.0	2.7	2.0	0.0	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	2.0	2.1	0.5	4.2	18.5	0.8	0.0	0.9	3.0	0.0	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.9	11.4	11.4	42.2	24.1	52.8	32.8	0.0	34.0	28.9	0.0	32.6
LnGrp LOS	D	B	B	D	C	F	C	A	C	C	A	C
Approach Vol, veh/h		855			1305			99			434	
Approach Delay, s/veh		26.5			39.8			33.4			31.0	
Approach LOS		C			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	37.7		16.7	21.0	23.0		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.3	30.7		18.0	17.5	18.5		18.0				
Max Q Clear Time (g_c+I1), s	2.9	7.6		11.1	16.3	20.5		4.1				
Green Ext Time (p_c), s	0.0	2.9		1.2	0.2	0.0		0.3				
Intersection Summary												
HCM 6th Ctrl Delay			33.9									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	27	212	11	47	142	3
Future Vol, veh/h	27	212	11	47	142	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	230	12	51	154	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	259	0	219	144
Stage 1	-	-	-	-	144	-
Stage 2	-	-	-	-	75	-
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	-	-	1306	-	769	903
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	948	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1306	-	762	903
Mov Cap-2 Maneuver	-	-	-	-	762	-
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	948	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	764	-	-	1306	-
HCM Lane V/C Ratio	0.206	-	-	0.009	-
HCM Control Delay (s)	10.9	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0	-

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	50	83	1	65	20	103	79	1	17	121	61
Future Vol, veh/h	32	50	83	1	65	20	103	79	1	17	121	61
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	54	90	1	71	22	112	86	1	18	132	66
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	9.6	9	10	9.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	56%	19%	2%	0%	9%
Vol Thru, %	43%	30%	98%	0%	61%
Vol Right, %	1%	50%	0%	100%	31%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	183	165	66	20	199
LT Vol	103	32	1	0	17
Through Vol	79	50	65	0	121
RT Vol	1	83	0	20	61
Lane Flow Rate	199	179	72	22	216
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.276	0.244	0.114	0.03	0.283
Departure Headway (Hd)	4.99	4.902	5.737	5.022	4.707
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	714	726	619	705	757
Service Time	3.061	2.979	3.524	2.808	2.775
HCM Lane V/C Ratio	0.279	0.247	0.116	0.031	0.285
HCM Control Delay	10	9.6	9.3	8	9.6
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	1.1	1	0.4	0.1	1.2

Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	201	355	4	221	514
Future Vol, veh/h	2	201	355	4	221	514
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	218	386	4	240	559

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1427	388	0	0	390	0
Stage 1	388	-	-	-	-	-
Stage 2	1039	-	-	-	-	-
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	149	660	-	-	1169	-
Stage 1	686	-	-	-	-	-
Stage 2	341	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	118	660	-	-	1169	-
Mov Cap-2 Maneuver	118	-	-	-	-	-
Stage 1	545	-	-	-	-	-
Stage 2	341	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.7	0	2.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	631	1169	-
HCM Lane V/C Ratio	-	-	0.35	0.205	-
HCM Control Delay (s)	-	-	13.7	8.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.6	0.8	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	35	0	0	169	179	23
Future Vol, veh/h	35	0	0	169	179	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	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	38	0	0	184	195	25

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	379	195	220	0	-	0
Stage 1	195	-	-	-	-	-
Stage 2	184	-	-	-	-	-
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	623	846	1349	-	-	-
Stage 1	838	-	-	-	-	-
Stage 2	848	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	623	846	1349	-	-	-
Mov Cap-2 Maneuver	623	-	-	-	-	-
Stage 1	838	-	-	-	-	-
Stage 2	848	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1349	-	623	-	-
HCM Lane V/C Ratio	-	-	0.061	-	-
HCM Control Delay (s)	0	-	11.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	1203	221	174	994	23	147	205	173	198	158	107
Future Volume (veh/h)	105	1203	221	174	994	23	147	205	173	198	158	107
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	114	1308	131	189	1080	25	160	223	188	215	172	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	139	1540	154	171	1740	40	186	258	219	240	315	267
Arrive On Green	0.08	0.47	0.47	0.10	0.49	0.49	0.10	0.14	0.14	0.13	0.17	0.17
Sat Flow, veh/h	1781	3263	326	1781	3550	82	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	114	710	729	189	540	565	160	223	188	215	172	116
Grp Sat Flow(s),veh/h/ln	1781	1777	1812	1781	1777	1856	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	8.2	45.7	46.2	12.5	29.0	29.0	11.5	15.2	15.1	15.4	11.0	8.5
Cycle Q Clear(g_c), s	8.2	45.7	46.2	12.5	29.0	29.0	11.5	15.2	15.1	15.4	11.0	8.5
Prop In Lane	1.00		0.18	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	139	839	855	171	871	909	186	258	219	240	315	267
V/C Ratio(X)	0.82	0.85	0.85	1.10	0.62	0.62	0.86	0.86	0.86	0.90	0.55	0.44
Avail Cap(c_a), veh/h	238	839	855	171	871	909	232	306	260	256	332	282
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	59.0	30.2	30.3	58.8	24.3	24.3	57.3	54.8	54.8	55.3	49.5	48.5
Incr Delay (d2), s/veh	11.1	10.3	10.5	99.2	1.4	1.3	22.6	19.4	21.4	29.6	1.7	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	4.1	21.5	22.2	10.4	12.4	12.9	6.3	8.5	7.3	8.9	5.3	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.1	40.5	40.8	157.9	25.7	25.6	79.9	74.2	76.2	84.9	51.2	49.6
LnGrp LOS	E	D	D	F	C	C	E	E	E	F	D	D
Approach Vol, veh/h		1553			1294			571			503	
Approach Delay, s/veh		42.8			45.0			76.5			65.3	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.6	67.2	18.7	26.6	15.3	69.5	22.6	22.6
Change Period (Y+Rc), s	5.1	5.8	5.1	* 4.7	5.1	5.8	5.1	* 4.7
Max Green Setting (Gmax), s	12.5	56.8	16.9	* 23	17.4	51.9	18.7	* 21
Max Q Clear Time (g_c+I1), s	14.5	48.2	13.5	13.0	10.2	31.0	17.4	17.2
Green Ext Time (p_c), s	0.0	5.8	0.1	0.9	0.1	7.7	0.1	0.8

Intersection Summary	
HCM 6th Ctrl Delay	51.3
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	89	9	9	45	33	153
Future Vol, veh/h	89	9	9	45	33	153
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	97	10	10	49	36	166
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.3	7.2	7.9
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	91%	0%	18%
Vol Thru, %	9%	17%	0%
Vol Right, %	0%	83%	82%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	98	54	186
LT Vol	89	0	33
Through Vol	9	9	0
RT Vol	0	45	153
Lane Flow Rate	107	59	202
Geometry Grp	1	1	1
Degree of Util (X)	0.134	0.063	0.211
Departure Headway (Hd)	4.519	3.873	3.759
Convergence, Y/N	Yes	Yes	Yes
Cap	786	907	938
Service Time	2.591	1.971	1.854
HCM Lane V/C Ratio	0.136	0.065	0.215
HCM Control Delay	8.3	7.2	7.9
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.2	0.8

Intersection	
Int Delay, s/veh	8.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	163	15	17	1	15	104	6	29	1	60	16	89
Future Vol, veh/h	163	15	17	1	15	104	6	29	1	60	16	89
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	177	16	18	1	16	113	7	32	1	65	17	97

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	258	194	17	260	291	33	114	0	0	33	0	0
Stage 1	147	147	-	47	47	-	-	-	-	-	-	-
Stage 2	111	47	-	213	244	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	695	701	1062	693	619	1041	1475	-	-	1579	-	-
Stage 1	856	775	-	967	856	-	-	-	-	-	-	-
Stage 2	894	856	-	789	704	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	584	667	1062	643	589	1041	1475	-	-	1579	-	-
Mov Cap-2 Maneuver	584	667	-	643	589	-	-	-	-	-	-	-
Stage 1	852	741	-	962	852	-	-	-	-	-	-	-
Stage 2	778	852	-	725	673	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.1	9.4	1.2	2.7
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1475	-	-	584	831	643	949	1579	-	-
HCM Lane V/C Ratio	0.004	-	-	0.303	0.042	0.002	0.136	0.041	-	-
HCM Control Delay (s)	7.5	0	-	13.8	9.5	10.6	9.4	7.4	0	-
HCM Lane LOS	A	A	-	B	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.3	0.1	0	0.5	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	1485	66	86	1131	19	95	8	179	64	6	68
Future Volume (veh/h)	65	1485	66	86	1131	19	95	8	179	64	6	68
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	71	1614	72	93	1229	21	103	9	195	70	7	74
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	92	1926	86	120	2043	35	79	4	353	79	4	353
Arrive On Green	0.05	0.56	0.56	0.07	0.57	0.57	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1781	3466	154	1781	3575	61	0	17	1585	0	19	1585
Grp Volume(v), veh/h	71	824	862	93	611	639	112	0	195	77	0	74
Grp Sat Flow(s),veh/h/ln	1781	1777	1843	1781	1777	1859	17	0	1585	19	0	1585
Q Serve(g_s), s	3.4	33.7	34.2	4.5	19.6	19.7	0.0	0.0	9.5	0.0	0.0	3.3
Cycle Q Clear(g_c), s	3.4	33.7	34.2	4.5	19.6	19.7	19.5	0.0	9.5	19.5	0.0	3.3
Prop In Lane	1.00		0.08	1.00		0.03	0.92		1.00	0.91		1.00
Lane Grp Cap(c), veh/h	92	987	1024	120	1015	1063	83	0	353	83	0	353
V/C Ratio(X)	0.77	0.83	0.84	0.78	0.60	0.60	1.35	0.00	0.55	0.93	0.00	0.21
Avail Cap(c_a), veh/h	193	1127	1168	234	1167	1221	83	0	353	83	0	353
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	41.0	16.1	16.2	40.2	12.2	12.2	42.9	0.0	30.1	42.7	0.0	27.7
Incr Delay (d2), s/veh	12.8	5.0	5.1	10.2	0.7	0.6	219.9	0.0	1.9	75.6	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	1.8	13.5	14.3	2.3	7.2	7.5	6.8	0.0	3.7	3.4	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.8	21.1	21.3	50.4	12.9	12.9	262.8	0.0	32.0	118.3	0.0	28.0
LnGrp LOS	D	C	C	D	B	B	F	A	C	F	A	C
Approach Vol, veh/h		1757			1343			307			151	
Approach Delay, s/veh		22.6			15.5			116.2			74.1	
Approach LOS		C			B			F			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.4	53.1		24.0	9.0	54.5		24.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	11.5	55.5		19.5	9.5	57.5		19.5				
Max Q Clear Time (g_c+I1), s	6.5	36.2		21.5	5.4	21.7		21.5				
Green Ext Time (p_c), s	0.1	12.5		0.0	0.0	11.1		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		30.2	
HCM 6th LOS		C	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Yield	
Traffic Volume (vph)	0	0	0	18	6	135	10	229	39	89	300	44
Future Volume (vph)	0	0	0	18	6	135	10	229	39	89	300	44
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
Hourly flow rate (vph)	0	0	0	20	7	147	11	249	42	97	326	48

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	27	147	302	260	211
Volume Left (vph)	20	0	11	97	0
Volume Right (vph)	0	147	42	0	48
Hadj (s)	0.40	-0.67	-0.04	0.22	-0.13
Departure Headway (s)	6.8	5.7	5.5	5.6	5.2
Degree Utilization, x	0.05	0.23	0.46	0.40	0.31
Capacity (veh/h)	489	579	634	625	666
Control Delay (s)	8.9	9.2	13.2	11.1	9.3
Approach Delay (s)	9.2		13.2	10.3	
Approach LOS	A		B	B	

Intersection Summary			
Delay	11.0		
Level of Service	B		
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	865	170	68	903	315	176	79	68	687	142	493
Future Volume (veh/h)	89	865	170	68	903	315	176	79	68	687	142	493
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	97	940	185	74	982	342	138	159	74	857	0	427
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	123	1037	204	95	1190	531	201	211	179	1069	0	476
Arrive On Green	0.07	0.35	0.35	0.05	0.33	0.33	0.11	0.11	0.11	0.30	0.00	0.30
Sat Flow, veh/h	1781	2960	582	1781	3554	1585	1781	1870	1585	3563	0	1585
Grp Volume(v), veh/h	97	564	561	74	982	342	138	159	74	857	0	427
Grp Sat Flow(s),veh/h/ln	1781	1777	1766	1781	1777	1585	1781	1870	1585	1781	0	1585
Q Serve(g_s), s	5.3	29.6	29.7	4.0	24.9	18.0	7.3	8.1	4.3	21.7	0.0	25.3
Cycle Q Clear(g_c), s	5.3	29.6	29.7	4.0	24.9	18.0	7.3	8.1	4.3	21.7	0.0	25.3
Prop In Lane	1.00		0.33	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	123	623	619	95	1190	531	201	211	179	1069	0	476
V/C Ratio(X)	0.79	0.91	0.91	0.78	0.83	0.64	0.69	0.75	0.41	0.80	0.00	0.90
Avail Cap(c_a), veh/h	154	652	648	118	1232	549	327	343	291	1144	0	509
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	0.00	1.00
Uniform Delay (d), s/veh	45.0	30.3	30.3	45.9	30.0	27.7	41.9	42.2	40.5	31.6	0.0	32.9
Incr Delay (d2), s/veh	19.1	15.9	16.2	22.6	4.6	2.5	4.1	5.4	1.5	3.9	0.0	17.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	15.0	15.0	2.4	11.1	7.0	3.4	4.0	1.7	9.7	0.0	11.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.1	46.2	46.5	68.5	34.6	30.1	46.0	47.6	42.0	35.6	0.0	50.7
LnGrp LOS	E	D	D	E	C	C	D	D	D	D	A	D
Approach Vol, veh/h		1222			1398			371			1284	
Approach Delay, s/veh		47.8			35.3			45.9			40.6	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.7	38.9		33.9	11.3	37.3		15.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.5	36.0		31.5	8.5	34.0		18.0				
Max Q Clear Time (g_c+I1), s	6.0	31.7		27.3	7.3	26.9		10.1				
Green Ext Time (p_c), s	0.0	2.7		2.1	0.0	4.3		1.0				

Intersection Summary			
HCM 6th Ctrl Delay		41.4	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	286	615	42	89	906	533	21	33	31	451	13	81
Future Volume (veh/h)	286	615	42	89	906	533	21	33	31	451	13	81
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	311	668	46	97	985	579	23	36	34	582	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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	332	1414	97	125	1078	794	49	76	108	704	369	0
Arrive On Green	0.19	0.42	0.42	0.07	0.30	0.30	0.07	0.07	0.07	0.20	0.00	0.00
Sat Flow, veh/h	1781	3373	232	1781	3554	1585	715	1119	1585	3563	1870	0
Grp Volume(v), veh/h	311	352	362	97	985	579	59	0	34	582	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1829	1781	1777	1585	1835	0	1585	1781	1870	0
Q Serve(g_s), s	12.7	10.5	10.6	3.9	19.6	21.1	2.3	0.0	1.5	11.5	0.0	0.0
Cycle Q Clear(g_c), s	12.7	10.5	10.6	3.9	19.6	21.1	2.3	0.0	1.5	11.5	0.0	0.0
Prop In Lane	1.00		0.13	1.00		1.00	0.39		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	332	745	767	125	1078	794	125	0	108	704	369	0
V/C Ratio(X)	0.94	0.47	0.47	0.77	0.91	0.73	0.47	0.00	0.32	0.83	0.00	0.00
Avail Cap(c_a), veh/h	332	745	767	242	1078	794	449	0	388	872	458	0
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	0.00
Uniform Delay (d), s/veh	29.5	15.5	15.5	33.6	24.7	14.4	33.0	0.0	32.6	28.3	0.0	0.0
Incr Delay (d2), s/veh	33.4	0.5	0.5	9.7	11.8	3.4	2.8	0.0	1.7	5.5	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	4.0	4.1	2.0	9.5	10.9	1.1	0.0	0.6	5.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.9	15.9	15.9	43.3	36.4	17.9	35.8	0.0	34.3	33.8	0.0	0.0
LnGrp LOS	E	B	B	D	D	B	D	A	C	C	A	A
Approach Vol, veh/h		1025			1661			93			582	
Approach Delay, s/veh		30.2			30.4			35.2			33.8	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.7	35.3		19.0	18.2	26.8		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.0	26.0		18.0	13.7	22.3		18.0				
Max Q Clear Time (g_c+I1), s	5.9	12.6		13.5	14.7	23.1		4.3				
Green Ext Time (p_c), s	0.1	3.7		1.0	0.0	0.0		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		31.0
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	6.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	58	247	3	37	299	7
Future Vol, veh/h	58	247	3	37	299	7
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	63	268	3	40	325	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	331	0	243	197
Stage 1	-	-	-	-	197	-
Stage 2	-	-	-	-	46	-
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	-	-	1228	-	745	844
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	976	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1228	-	744	844
Mov Cap-2 Maneuver	-	-	-	-	744	-
Stage 1	-	-	-	-	834	-
Stage 2	-	-	-	-	976	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	746	-	-	1228	-
HCM Lane V/C Ratio	0.446	-	-	0.003	-
HCM Control Delay (s)	13.7	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	2.3	-	-	0	-

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	30	33	2	42	66	38	215	1	22	194	19
Future Vol, veh/h	10	30	33	2	42	66	38	215	1	22	194	19
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	33	36	2	46	72	41	234	1	24	211	21
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	9	8.8	10.6	10.2
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	15%	14%	5%	0%	9%
Vol Thru, %	85%	41%	95%	0%	83%
Vol Right, %	0%	45%	0%	100%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	254	73	44	66	235
LT Vol	38	10	2	0	22
Through Vol	215	30	42	0	194
RT Vol	1	33	0	66	19
Lane Flow Rate	276	79	48	72	255
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.366	0.115	0.078	0.103	0.337
Departure Headway (Hd)	4.776	5.215	5.897	5.165	4.745
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	748	680	603	687	754
Service Time	2.838	3.306	3.681	2.949	2.808
HCM Lane V/C Ratio	0.369	0.116	0.08	0.105	0.338
HCM Control Delay	10.6	9	9.2	8.6	10.2
HCM Lane LOS	B	A	A	A	B
HCM 95th-tile Q	1.7	0.4	0.3	0.3	1.5

Intersection	
Int Delay, s/veh	6.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	328	169	3	301	179
Future Vol, veh/h	4	328	169	3	301	179
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	357	184	3	327	195

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1035	186	0	0	187	0
Stage 1	186	-	-	-	-	-
Stage 2	849	-	-	-	-	-
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	257	856	-	-	1387	-
Stage 1	846	-	-	-	-	-
Stage 2	419	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	196	856	-	-	1387	-
Mov Cap-2 Maneuver	196	-	-	-	-	-
Stage 1	646	-	-	-	-	-
Stage 2	419	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	5.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	823	1387	-
HCM Lane V/C Ratio	-	-	0.438	0.236	-
HCM Control Delay (s)	-	-	12.7	8.4	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	2.3	0.9	-

Appendix G: Synchro Reports – Year 2030 Plus Project

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	93	9	5	355	514	113
Future Vol, veh/h	93	9	5	355	514	113
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	101	10	5	386	559	123

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	955	559	682	0	-	0
Stage 1	559	-	-	-	-	-
Stage 2	396	-	-	-	-	-
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	287	529	911	-	-	-
Stage 1	572	-	-	-	-	-
Stage 2	680	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	285	529	911	-	-	-
Mov Cap-2 Maneuver	285	-	-	-	-	-
Stage 1	568	-	-	-	-	-
Stage 2	680	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.2	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	911	-	297	-	-
HCM Lane V/C Ratio	0.006	-	0.373	-	-
HCM Control Delay (s)	9	0	24.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	1.7	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	713	244	275	1011	16	166	195	295	152	289	65
Future Volume (veh/h)	62	713	244	275	1011	16	166	195	295	152	289	65
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	67	775	156	299	1099	17	180	212	212	165	314	71
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	86	964	194	326	1654	26	208	361	306	194	345	293
Arrive On Green	0.05	0.33	0.33	0.18	0.46	0.46	0.12	0.19	0.19	0.11	0.18	0.18
Sat Flow, veh/h	1781	2947	593	1781	3582	55	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	67	467	464	299	545	571	180	212	212	165	314	71
Grp Sat Flow(s),veh/h/ln	1781	1777	1764	1781	1777	1860	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.1	26.4	26.4	18.1	26.2	26.2	10.9	11.3	13.7	10.0	18.1	4.2
Cycle Q Clear(g_c), s	4.1	26.4	26.4	18.1	26.2	26.2	10.9	11.3	13.7	10.0	18.1	4.2
Prop In Lane	1.00		0.34	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	86	581	577	326	820	859	208	361	306	194	345	293
V/C Ratio(X)	0.78	0.80	0.80	0.92	0.66	0.66	0.86	0.59	0.69	0.85	0.91	0.24
Avail Cap(c_a), veh/h	121	581	577	329	820	859	212	362	307	209	359	304
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	51.8	33.8	33.8	44.1	23.0	23.0	47.7	40.4	41.4	48.1	43.9	38.3
Incr Delay (d2), s/veh	18.4	11.3	11.4	29.3	2.0	1.9	28.4	2.5	6.5	25.8	25.7	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	2.3	13.0	13.0	10.6	11.1	11.6	6.5	5.5	5.9	5.8	10.8	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.1	45.1	45.2	73.4	25.0	24.9	76.1	42.9	47.9	73.9	69.6	38.7
LnGrp LOS	E	D	D	E	C	C	E	D	D	E	E	D
Approach Vol, veh/h		998			1415			604			550	
Approach Delay, s/veh		46.8			35.2			54.5			66.9	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.2	41.8	18.0	25.0	10.4	56.6	17.1	25.9
Change Period (Y+Rc), s	5.1	5.8	5.1	* 4.7	5.1	5.8	5.1	* 4.7
Max Green Setting (Gmax), s	20.3	34.8	13.1	* 21	7.5	47.6	12.9	* 21
Max Q Clear Time (g_c+I1), s	20.1	28.4	12.9	20.1	6.1	28.2	12.0	15.7
Green Ext Time (p_c), s	0.0	3.1	0.0	0.2	0.0	7.5	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	46.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	87	8	6	80	126	119
Future Vol, veh/h	87	8	6	80	126	119
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	95	9	7	87	137	129
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.6	7.6	9.1
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	92%	0%	51%
Vol Thru, %	8%	7%	0%
Vol Right, %	0%	93%	49%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	95	86	245
LT Vol	87	0	126
Through Vol	8	6	0
RT Vol	0	80	119
Lane Flow Rate	103	93	266
Geometry Grp	1	1	1
Degree of Util (X)	0.138	0.106	0.31
Departure Headway (Hd)	4.812	4.097	4.196
Convergence, Y/N	Yes	Yes	Yes
Cap	747	876	860
Service Time	2.832	2.117	2.211
HCM Lane V/C Ratio	0.138	0.106	0.309
HCM Control Delay	8.6	7.6	9.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.4	1.3

Intersection	
Int Delay, s/veh	9.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	39	4	6	44	153	0	3	4	228	3	74
Future Vol, veh/h	60	39	4	6	44	153	0	3	4	228	3	74
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	42	4	7	48	166	0	3	4	248	3	80

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	611	506	3	567	584	5	83	0	0	7	0	0
Stage 1	499	499	-	5	5	-	-	-	-	-	-	-
Stage 2	112	7	-	562	579	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	406	469	1081	434	423	1078	1514	-	-	1614	-	-
Stage 1	554	544	-	1017	892	-	-	-	-	-	-	-
Stage 2	893	890	-	512	501	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	270	393	1081	348	354	1078	1514	-	-	1614	-	-
Mov Cap-2 Maneuver	270	393	-	348	354	-	-	-	-	-	-	-
Stage 1	554	455	-	1017	892	-	-	-	-	-	-	-
Stage 2	715	890	-	387	419	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.2	11.9	0	5.7
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1514	-	-	270	418	348	740	1614	-	-
HCM Lane V/C Ratio	-	-	-	0.242	0.112	0.019	0.289	0.154	-	-
HCM Control Delay (s)	0	-	-	22.5	14.7	15.5	11.8	7.6	0	-
HCM Lane LOS	A	-	-	C	B	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.9	0.4	0.1	1.2	0.5	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	757	219	67	1054	4	148	1	66	8	3	12
Future Volume (veh/h)	17	757	219	67	1054	4	148	1	66	8	3	12
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	18	823	238	73	1146	4	161	1	72	9	3	13
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	39	1003	290	108	1481	5	130	0	518	114	23	518
Arrive On Green	0.02	0.37	0.37	0.06	0.41	0.41	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1781	2720	786	1781	3632	13	0	1	1585	0	69	1585
Grp Volume(v), veh/h	18	538	523	73	561	589	162	0	72	12	0	13
Grp Sat Flow(s),veh/h/ln	1781	1777	1729	1781	1777	1868	1	0	1585	69	0	1585
Q Serve(g_s), s	0.6	15.2	15.2	2.2	15.1	15.1	0.0	0.0	1.8	0.0	0.0	0.3
Cycle Q Clear(g_c), s	0.6	15.2	15.2	2.2	15.1	15.1	18.1	0.0	1.8	18.1	0.0	0.3
Prop In Lane	1.00		0.45	1.00		0.01	0.99		1.00	0.75		1.00
Lane Grp Cap(c), veh/h	39	655	637	108	725	762	130	0	518	136	0	518
V/C Ratio(X)	0.46	0.82	0.82	0.67	0.77	0.77	1.25	0.00	0.14	0.09	0.00	0.03
Avail Cap(c_a), veh/h	164	734	715	177	747	786	130	0	518	136	0	518
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	26.8	15.8	15.8	25.5	14.2	14.2	27.6	0.0	13.2	15.4	0.0	12.7
Incr Delay (d2), s/veh	8.3	6.7	6.9	7.0	4.9	4.7	159.5	0.0	0.1	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	6.5	6.3	1.1	6.1	6.4	7.4	0.0	0.6	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.1	22.6	22.8	32.5	19.1	18.9	187.2	0.0	13.3	15.7	0.0	12.7
LnGrp LOS	D	C	C	C	B	B	F	A	B	B	A	B
Approach Vol, veh/h		1079			1223			234			25	
Approach Delay, s/veh		22.9			19.8			133.7			14.1	
Approach LOS		C			B			F			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.9	24.9		22.6	5.7	27.1		22.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	22.9		18.1	5.1	23.3		18.1				
Max Q Clear Time (g_c+I1), s	4.2	17.2		20.1	2.6	17.1		20.1				
Green Ext Time (p_c), s	0.0	3.2		0.0	0.0	3.7		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			31.4									
HCM 6th LOS			C									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Yield	
Traffic Volume (vph)	0	0	0	4	4	204	6	134	8	202	176	66
Future Volume (vph)	0	0	0	4	4	204	6	134	8	202	176	66
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
Hourly flow rate (vph)	0	0	0	4	4	222	7	146	9	220	191	72

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	8	222	162	316	168
Volume Left (vph)	4	0	7	220	0
Volume Right (vph)	0	222	9	0	72
Hadj (s)	0.28	-0.67	0.01	0.38	-0.27
Departure Headway (s)	6.4	5.4	5.8	5.7	5.1
Degree Utilization, x	0.01	0.34	0.26	0.50	0.24
Capacity (veh/h)	522	617	596	607	681
Control Delay (s)	8.3	10.0	10.8	13.2	8.5
Approach Delay (s)	9.9		10.8	11.6	
Approach LOS	A		B	B	

Intersection Summary			
Delay	11.0		
Level of Service	B		
Intersection Capacity Utilization	34.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	581	153	31	856	315	169	55	37	413	94	248
Future Volume (veh/h)	94	581	153	31	856	315	169	55	37	413	94	248
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	102	632	166	34	930	342	122	147	40	522	0	270
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	131	959	252	63	1089	486	216	227	192	775	0	345
Arrive On Green	0.07	0.34	0.34	0.04	0.31	0.31	0.12	0.12	0.12	0.22	0.00	0.22
Sat Flow, veh/h	1781	2785	730	1781	3554	1585	1781	1870	1585	3563	0	1585
Grp Volume(v), veh/h	102	403	395	34	930	342	122	147	40	522	0	270
Grp Sat Flow(s),veh/h/ln	1781	1777	1739	1781	1777	1585	1781	1870	1585	1781	0	1585
Q Serve(g_s), s	3.6	12.3	12.3	1.2	15.7	12.2	4.1	4.8	1.5	8.6	0.0	10.3
Cycle Q Clear(g_c), s	3.6	12.3	12.3	1.2	15.7	12.2	4.1	4.8	1.5	8.6	0.0	10.3
Prop In Lane	1.00		0.42	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	131	612	599	63	1089	486	216	227	192	775	0	345
V/C Ratio(X)	0.78	0.66	0.66	0.54	0.85	0.70	0.56	0.65	0.21	0.67	0.00	0.78
Avail Cap(c_a), veh/h	153	612	599	142	1139	508	501	526	446	1003	0	446
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	0.00	1.00
Uniform Delay (d), s/veh	29.1	17.8	17.8	30.3	20.8	19.6	26.5	26.8	25.3	22.9	0.0	23.6
Incr Delay (d2), s/veh	19.6	2.6	2.7	7.0	6.3	4.2	2.3	3.1	0.5	1.2	0.0	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	5.0	4.9	0.6	6.9	4.7	1.8	2.2	0.5	3.5	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.7	20.4	20.5	37.3	27.1	23.8	28.8	29.9	25.9	24.1	0.0	30.3
LnGrp LOS	D	C	C	D	C	C	C	C	C	C	A	C
Approach Vol, veh/h		900			1306			309			792	
Approach Delay, s/veh		23.6			26.5			28.9			26.2	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.8	26.5		18.4	9.2	24.1		12.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	20.9		18.0	5.5	20.5		18.0				
Max Q Clear Time (g_c+I1), s	3.2	14.3		12.3	5.6	17.7		6.8				
Green Ext Time (p_c), s	0.0	2.7		1.6	0.0	1.9		1.0				

Intersection Summary			
HCM 6th Ctrl Delay		25.9	
HCM 6th LOS		C	

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	345	438	11	20	549	689	8	37	46	294	8	60
Future Volume (veh/h)	345	438	11	20	549	689	8	37	46	294	8	60
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	375	476	12	22	597	749	9	40	50	387	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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	421	1721	43	45	975	669	25	112	118	527	276	0
Arrive On Green	0.24	0.49	0.49	0.03	0.27	0.27	0.07	0.07	0.07	0.15	0.00	0.00
Sat Flow, veh/h	1781	3542	89	1781	3554	1585	340	1513	1585	3563	1870	0
Grp Volume(v), veh/h	375	239	249	22	597	749	49	0	50	387	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1854	1781	1777	1585	1853	0	1585	1781	1870	0
Q Serve(g_s), s	13.7	5.4	5.4	0.8	9.9	18.5	1.7	0.0	2.0	7.0	0.0	0.0
Cycle Q Clear(g_c), s	13.7	5.4	5.4	0.8	9.9	18.5	1.7	0.0	2.0	7.0	0.0	0.0
Prop In Lane	1.00		0.05	1.00		1.00	0.18		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	421	864	901	45	975	669	137	0	118	527	276	0
V/C Ratio(X)	0.89	0.28	0.28	0.49	0.61	1.12	0.36	0.00	0.43	0.73	0.00	0.00
Avail Cap(c_a), veh/h	462	864	901	140	975	669	495	0	423	951	499	0
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	0.00
Uniform Delay (d), s/veh	24.9	10.3	10.3	32.4	21.3	16.6	29.7	0.0	29.8	27.5	0.0	0.0
Incr Delay (d2), s/veh	17.8	0.2	0.2	8.2	1.1	72.4	1.6	0.0	2.4	2.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	1.9	2.0	0.4	4.0	24.0	0.8	0.0	0.8	3.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.7	10.5	10.5	40.6	22.5	88.9	31.2	0.0	32.3	29.5	0.0	0.0
LnGrp LOS	D	B	B	D	C	F	C	A	C	C	A	A
Approach Vol, veh/h		863			1368			99			387	
Approach Delay, s/veh		24.5			59.2			31.8			29.5	
Approach LOS		C			E			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	37.3		14.5	20.5	23.0		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.3	30.7		18.0	17.5	18.5		18.0				
Max Q Clear Time (g_c+I1), s	2.8	7.4		9.0	15.7	20.5		4.0				
Green Ext Time (p_c), s	0.0	2.9		1.0	0.2	0.0		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		42.9	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	27	225	11	47	149	3
Future Vol, veh/h	27	225	11	47	149	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	245	12	51	162	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	274	0	227	152
Stage 1	-	-	-	-	152	-
Stage 2	-	-	-	-	75	-
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	-	-	1289	-	761	894
Stage 1	-	-	-	-	876	-
Stage 2	-	-	-	-	948	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1289	-	753	894
Mov Cap-2 Maneuver	-	-	-	-	753	-
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	948	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	11.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	755	-	-	1289	-
HCM Lane V/C Ratio	0.219	-	-	0.009	-
HCM Control Delay (s)	11.1	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0	-

Intersection	
Intersection Delay, s/veh	9.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	50	83	1	65	20	103	86	1	17	134	61
Future Vol, veh/h	32	50	83	1	65	20	103	86	1	17	134	61
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	54	90	1	71	22	112	93	1	18	146	66
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	9.7	9.1	10.1	9.9
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	54%	19%	2%	0%	8%
Vol Thru, %	45%	30%	98%	0%	63%
Vol Right, %	1%	50%	0%	100%	29%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	165	66	20	212
LT Vol	103	32	1	0	17
Through Vol	86	50	65	0	134
RT Vol	1	83	0	20	61
Lane Flow Rate	207	179	72	22	230
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.287	0.247	0.115	0.031	0.303
Departure Headway (Hd)	5.011	4.955	5.794	5.078	4.733
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	710	717	613	696	751
Service Time	3.088	3.039	3.588	2.872	2.807
HCM Lane V/C Ratio	0.292	0.25	0.117	0.032	0.306
HCM Control Delay	10.1	9.7	9.4	8	9.9
HCM Lane LOS	B	A	A	A	A
HCM 95th-tile Q	1.2	1	0.4	0.1	1.3

Intersection	
Int Delay, s/veh	4.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	201	400	17	221	539
Future Vol, veh/h	9	201	400	17	221	539
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	218	435	18	240	586

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1510	444	0	0	453	0
Stage 1	444	-	-	-	-	-
Stage 2	1066	-	-	-	-	-
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	133	614	-	-	1108	-
Stage 1	646	-	-	-	-	-
Stage 2	331	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	104	614	-	-	1108	-
Mov Cap-2 Maneuver	104	-	-	-	-	-
Stage 1	506	-	-	-	-	-
Stage 2	331	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.8	0	2.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	507	1108	-
HCM Lane V/C Ratio	-	-	0.45	0.217	-
HCM Control Delay (s)	-	-	17.8	9.1	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	2.3	0.8	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	62	4	7	169	179	69
Future Vol, veh/h	62	4	7	169	179	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	4	8	184	195	75

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	395	195	270	0	-	0
Stage 1	195	-	-	-	-	-
Stage 2	200	-	-	-	-	-
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	610	846	1293	-	-	-
Stage 1	838	-	-	-	-	-
Stage 2	834	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	606	846	1293	-	-	-
Mov Cap-2 Maneuver	606	-	-	-	-	-
Stage 1	832	-	-	-	-	-
Stage 2	834	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1293	-	617	-	-
HCM Lane V/C Ratio	0.006	-	0.116	-	-
HCM Control Delay (s)	7.8	0	11.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	1203	221	194	994	23	147	213	185	198	171	107
Future Volume (veh/h)	105	1203	221	194	994	23	147	213	185	198	171	107
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	114	1308	131	211	1080	25	160	232	201	215	186	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	139	1480	148	190	1712	40	187	270	229	242	328	278
Arrive On Green	0.08	0.45	0.45	0.11	0.48	0.48	0.11	0.14	0.14	0.14	0.18	0.18
Sat Flow, veh/h	1781	3263	326	1781	3550	82	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	114	710	729	211	540	565	160	232	201	215	186	116
Grp Sat Flow(s),veh/h/ln	1781	1777	1812	1781	1777	1856	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	8.2	47.3	47.8	13.9	29.4	29.4	11.5	15.7	16.1	15.4	11.8	8.5
Cycle Q Clear(g_c), s	8.2	47.3	47.8	13.9	29.4	29.4	11.5	15.7	16.1	15.4	11.8	8.5
Prop In Lane	1.00		0.18	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	139	806	822	190	857	895	187	270	229	242	328	278
V/C Ratio(X)	0.82	0.88	0.89	1.11	0.63	0.63	0.86	0.86	0.88	0.89	0.57	0.42
Avail Cap(c_a), veh/h	238	806	822	190	857	895	275	306	260	300	332	282
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	59.0	32.3	32.5	58.0	25.0	25.0	57.2	54.3	54.5	55.2	49.1	47.7
Incr Delay (d2), s/veh	11.1	13.3	13.6	97.1	1.5	1.4	15.7	19.1	24.9	22.7	2.2	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	22.9	23.7	11.4	12.7	13.2	6.0	8.9	8.0	8.5	5.8	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.1	45.6	46.1	155.1	26.5	26.5	72.9	73.4	79.4	77.9	51.3	48.7
LnGrp LOS	E	D	D	F	C	C	E	E	E	E	D	D
Approach Vol, veh/h		1553			1316			593			517	
Approach Delay, s/veh		47.6			47.1			75.3			61.8	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	64.7	18.8	27.5	15.3	68.5	22.8	23.5
Change Period (Y+Rc), s	5.1	5.8	5.1	* 4.7	5.1	5.8	5.1	* 4.7
Max Green Setting (Gmax), s	13.9	52.2	20.1	* 23	17.4	48.7	21.9	* 21
Max Q Clear Time (g_c+I1), s	15.9	49.8	13.5	13.8	10.2	31.4	17.4	18.1
Green Ext Time (p_c), s	0.0	1.8	0.2	0.9	0.1	7.0	0.2	0.6

Intersection Summary	
HCM 6th Ctrl Delay	53.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	96	9	9	45	33	157
Future Vol, veh/h	96	9	9	45	33	157
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	104	10	10	49	36	171
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.4	7.3	8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	91%	0%	17%
Vol Thru, %	9%	17%	0%
Vol Right, %	0%	83%	83%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	105	54	190
LT Vol	96	0	33
Through Vol	9	9	0
RT Vol	0	45	157
Lane Flow Rate	114	59	207
Geometry Grp	1	1	1
Degree of Util (X)	0.144	0.065	0.222
Departure Headway (Hd)	4.528	3.991	3.87
Convergence, Y/N	Yes	Yes	Yes
Cap	782	900	933
Service Time	2.616	2.003	1.873
HCM Lane V/C Ratio	0.146	0.066	0.222
HCM Control Delay	8.4	7.3	8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.2	0.8

Intersection	
Int Delay, s/veh	9.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	163	55	17	5	38	124	6	29	8	93	16	89
Future Vol, veh/h	163	55	17	5	38	124	6	29	8	93	16	89
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	177	60	18	5	41	135	7	32	9	101	17	97

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	358	274	17	358	367	37	114	0	0	41	0	0
Stage 1	219	219	-	51	51	-	-	-	-	-	-	-
Stage 2	139	55	-	307	316	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	597	633	1062	597	562	1035	1475	-	-	1568	-	-
Stage 1	783	722	-	962	852	-	-	-	-	-	-	-
Stage 2	864	849	-	703	655	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	460	586	1062	510	520	1035	1475	-	-	1568	-	-
Mov Cap-2 Maneuver	460	586	-	510	520	-	-	-	-	-	-	-
Stage 1	779	671	-	957	848	-	-	-	-	-	-	-
Stage 2	711	845	-	585	609	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.6	10.5	1	3.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1475	-	-	460	655	510	840	1568	-	-
HCM Lane V/C Ratio	0.004	-	-	0.385	0.119	0.011	0.21	0.064	-	-
HCM Control Delay (s)	7.5	0	-	17.6	11.2	12.1	10.4	7.5	0	-
HCM Lane LOS	A	A	-	C	B	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.8	0.4	0	0.8	0.2	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	1485	99	86	1131	19	115	8	179	64	6	68
Future Volume (veh/h)	65	1485	99	86	1131	19	115	8	179	64	6	68
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	71	1614	108	93	1229	21	125	9	195	70	7	74
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	92	1900	126	120	2064	35	78	3	348	77	4	348
Arrive On Green	0.05	0.56	0.56	0.07	0.58	0.58	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1781	3382	225	1781	3575	61	0	14	1585	0	19	1585
Grp Volume(v), veh/h	71	843	879	93	611	639	134	0	195	77	0	74
Grp Sat Flow(s),veh/h/ln	1781	1777	1830	1781	1777	1859	14	0	1585	19	0	1585
Q Serve(g_s), s	3.5	35.2	36.0	4.6	19.7	19.7	0.0	0.0	9.7	0.0	0.0	3.4
Cycle Q Clear(g_c), s	3.5	35.2	36.0	4.6	19.7	19.7	19.5	0.0	9.7	19.5	0.0	3.4
Prop In Lane	1.00		0.12	1.00		0.03	0.93		1.00	0.91		1.00
Lane Grp Cap(c), veh/h	92	998	1028	120	1026	1073	81	0	348	82	0	348
V/C Ratio(X)	0.77	0.84	0.86	0.78	0.60	0.60	1.65	0.00	0.56	0.94	0.00	0.21
Avail Cap(c_a), veh/h	190	1109	1142	230	1149	1202	81	0	348	82	0	348
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	41.7	16.2	16.4	40.8	12.1	12.1	43.7	0.0	30.9	43.4	0.0	28.4
Incr Delay (d2), s/veh	12.8	5.7	6.1	10.3	0.7	0.7	340.1	0.0	2.0	81.0	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	1.8	14.3	15.2	2.3	7.2	7.5	9.5	0.0	3.8	3.5	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.5	21.9	22.5	51.1	12.8	12.8	383.9	0.0	32.9	124.4	0.0	28.7
LnGrp LOS	D	C	C	D	B	B	F	A	C	F	A	C
Approach Vol, veh/h		1793			1343			329			151	
Approach Delay, s/veh		23.5			15.4			175.9			77.5	
Approach LOS		C			B			F			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.5	54.4		24.0	9.1	55.8		24.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	11.5	55.5		19.5	9.5	57.5		19.5				
Max Q Clear Time (g_c+I1), s	6.6	38.0		21.5	5.5	21.7		21.5				
Green Ext Time (p_c), s	0.1	11.9		0.0	0.0	11.1		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			36.6									
HCM 6th LOS			D									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Yield	
Traffic Volume (vph)	0	0	0	18	6	158	10	229	39	129	300	44
Future Volume (vph)	0	0	0	18	6	158	10	229	39	129	300	44
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
Hourly flow rate (vph)	0	0	0	20	7	172	11	249	42	140	326	48

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	27	172	302	303	211
Volume Left (vph)	20	0	11	140	0
Volume Right (vph)	0	172	42	0	48
Hadj (s)	0.40	-0.67	-0.04	0.27	-0.13
Departure Headway (s)	6.9	5.8	5.7	5.7	5.4
Degree Utilization, x	0.05	0.28	0.48	0.48	0.31
Capacity (veh/h)	481	569	617	610	652
Control Delay (s)	9.1	9.9	13.7	12.8	9.6
Approach Delay (s)	9.8		13.7	11.5	
Approach LOS	A		B	B	

Intersection Summary			
Delay	11.8		
Level of Service	B		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	885	210	68	915	323	199	79	68	733	142	493
Future Volume (veh/h)	89	885	210	68	915	323	199	79	68	733	142	493
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	97	962	228	74	995	351	151	177	74	907	0	427
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	122	1006	238	95	1199	535	215	226	192	1055	0	469
Arrive On Green	0.07	0.35	0.35	0.05	0.34	0.34	0.12	0.12	0.12	0.30	0.00	0.30
Sat Flow, veh/h	1781	2851	674	1781	3554	1585	1781	1870	1585	3563	0	1585
Grp Volume(v), veh/h	97	599	591	74	995	351	151	177	74	907	0	427
Grp Sat Flow(s),veh/h/ln	1781	1777	1749	1781	1777	1585	1781	1870	1585	1781	0	1585
Q Serve(g_s), s	5.5	33.5	33.6	4.2	26.2	19.2	8.3	9.3	4.4	24.5	0.0	26.4
Cycle Q Clear(g_c), s	5.5	33.5	33.6	4.2	26.2	19.2	8.3	9.3	4.4	24.5	0.0	26.4
Prop In Lane	1.00		0.39	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	122	627	617	95	1199	535	215	226	192	1055	0	469
V/C Ratio(X)	0.79	0.95	0.96	0.78	0.83	0.66	0.70	0.78	0.39	0.86	0.00	0.91
Avail Cap(c_a), veh/h	149	629	619	114	1199	535	315	331	280	1103	0	491
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	0.00	1.00
Uniform Delay (d), s/veh	46.7	32.1	32.2	47.6	31.0	28.7	43.0	43.4	41.2	33.8	0.0	34.5
Incr Delay (d2), s/veh	20.8	25.1	26.0	24.4	5.0	2.9	4.1	7.2	1.3	6.8	0.0	20.5
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	3.1	18.3	18.2	2.5	11.8	7.6	3.9	4.7	1.8	11.4	0.0	12.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.5	57.3	58.2	72.0	36.1	31.6	47.1	50.7	42.5	40.6	0.0	55.0
LnGrp LOS	E	E	E	E	D	C	D	D	D	D	A	D
Approach Vol, veh/h		1287			1420			402			1334	
Approach Delay, s/veh		58.5			36.8			47.8			45.2	
Approach LOS		E			D			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.9	40.4		34.6	11.5	38.8		16.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.5	36.0		31.5	8.5	34.0		18.0				
Max Q Clear Time (g_c+I1), s	6.2	35.6		28.4	7.5	28.2		11.3				
Green Ext Time (p_c), s	0.0	0.3		1.7	0.0	3.7		1.0				
Intersection Summary												
HCM 6th Ctrl Delay			46.6									
HCM 6th LOS			D									

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	286	628	42	89	914	560	21	33	31	464	13	81
Future Volume (veh/h)	286	628	42	89	914	560	21	33	31	464	13	81
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	311	683	46	97	993	609	23	36	34	596	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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	331	1410	95	125	1073	797	48	76	107	716	376	0
Arrive On Green	0.19	0.42	0.42	0.07	0.30	0.30	0.07	0.07	0.07	0.20	0.00	0.00
Sat Flow, veh/h	1781	3379	227	1781	3554	1585	715	1119	1585	3563	1870	0
Grp Volume(v), veh/h	311	359	370	97	993	609	59	0	34	596	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1829	1781	1777	1585	1835	0	1585	1781	1870	0
Q Serve(g_s), s	12.7	10.9	10.9	4.0	20.0	22.3	2.3	0.0	1.5	11.9	0.0	0.0
Cycle Q Clear(g_c), s	12.7	10.9	10.9	4.0	20.0	22.3	2.3	0.0	1.5	11.9	0.0	0.0
Prop In Lane	1.00		0.12	1.00		1.00	0.39		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	331	741	763	125	1073	797	124	0	107	716	376	0
V/C Ratio(X)	0.94	0.48	0.48	0.77	0.93	0.76	0.47	0.00	0.32	0.83	0.00	0.00
Avail Cap(c_a), veh/h	331	741	763	241	1073	797	447	0	386	869	456	0
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	0.00
Uniform Delay (d), s/veh	29.7	15.7	15.7	33.7	25.0	14.7	33.1	0.0	32.8	28.3	0.0	0.0
Incr Delay (d2), s/veh	34.3	0.5	0.5	9.7	13.1	4.4	2.8	0.0	1.7	5.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	4.2	4.3	2.0	9.8	11.7	1.1	0.0	0.6	5.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.0	16.2	16.2	43.4	38.1	19.1	35.9	0.0	34.5	34.2	0.0	0.0
LnGrp LOS	E	B	B	D	D	B	D	A	C	C	A	A
Approach Vol, veh/h		1040			1699			93			596	
Approach Delay, s/veh		30.5			31.6			35.4			34.2	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.7	35.3		19.3	18.2	26.8		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.0	26.0		18.0	13.7	22.3		18.0				
Max Q Clear Time (g_c+I1), s	6.0	12.9		13.9	14.7	24.3		4.3				
Green Ext Time (p_c), s	0.1	3.8		1.0	0.0	0.0		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		31.8
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	6.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	58	255	3	37	312	7
Future Vol, veh/h	58	255	3	37	312	7
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	63	277	3	40	339	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	340	0	248	202
Stage 1	-	-	-	-	202	-
Stage 2	-	-	-	-	46	-
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	-	-	1219	-	740	839
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	976	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1219	-	738	839
Mov Cap-2 Maneuver	-	-	-	-	738	-
Stage 1	-	-	-	-	830	-
Stage 2	-	-	-	-	976	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	740	-	-	1219	-
HCM Lane V/C Ratio	0.469	-	-	0.003	-
HCM Control Delay (s)	14.1	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	2.5	-	-	0	-

Intersection	
Intersection Delay, s/veh	10.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	30	33	2	42	66	38	228	1	22	202	19
Future Vol, veh/h	10	30	33	2	42	66	38	228	1	22	202	19
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	33	36	2	46	72	41	248	1	24	220	21
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	9.1	8.9	10.9	10.4
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	14%	14%	5%	0%	9%
Vol Thru, %	85%	41%	95%	0%	83%
Vol Right, %	0%	45%	0%	100%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	267	73	44	66	243
LT Vol	38	10	2	0	22
Through Vol	228	30	42	0	202
RT Vol	1	33	0	66	19
Lane Flow Rate	290	79	48	72	264
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.386	0.116	0.079	0.104	0.35
Departure Headway (Hd)	4.791	5.273	5.952	5.22	4.77
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	746	671	596	679	747
Service Time	2.855	3.37	3.742	3.009	2.835
HCM Lane V/C Ratio	0.389	0.118	0.081	0.106	0.353
HCM Control Delay	10.9	9.1	9.3	8.6	10.4
HCM Lane LOS	B	A	A	A	B
HCM 95th-tile Q	1.8	0.4	0.3	0.3	1.6

Intersection	
Int Delay, s/veh	7.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	17	328	196	11	301	225
Future Vol, veh/h	17	328	196	11	301	225
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	357	213	12	327	245

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1118	219	0	0	225	0
Stage 1	219	-	-	-	-	-
Stage 2	899	-	-	-	-	-
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	229	821	-	-	1344	-
Stage 1	817	-	-	-	-	-
Stage 2	397	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	173	821	-	-	1344	-
Mov Cap-2 Maneuver	173	-	-	-	-	-
Stage 1	618	-	-	-	-	-
Stage 2	397	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.1	0	4.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	693	1344	-
HCM Lane V/C Ratio	-	-	0.541	0.243	-
HCM Control Delay (s)	-	-	16.1	8.5	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	3.3	1	-

Appendix H: Project Driveway Synchro and Queues

Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	102	0	28	118	0	51
Future Vol, veh/h	102	0	28	118	0	51
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	111	0	30	128	0	55

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	111	0	299	111
Stage 1	-	-	-	-	111	-
Stage 2	-	-	-	-	188	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1479	-	692	942
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	844	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1479	-	677	942
Mov Cap-2 Maneuver	-	-	-	-	677	-
Stage 1	-	-	-	-	894	-
Stage 2	-	-	-	-	844	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	942	-	-	1479	-
HCM Lane V/C Ratio	0.059	-	-	0.021	-
HCM Control Delay (s)	9.1	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	271	43	0	203	77	0
Future Vol, veh/h	271	43	0	203	77	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	295	47	0	221	84	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	342	0	540	319
Stage 1	-	-	-	-	319	-
Stage 2	-	-	-	-	221	-
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	-	-	1217	-	503	722
Stage 1	-	-	-	-	737	-
Stage 2	-	-	-	-	816	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1217	-	503	722
Mov Cap-2 Maneuver	-	-	-	-	503	-
Stage 1	-	-	-	-	737	-
Stage 2	-	-	-	-	816	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	503	-	-	1217	-
HCM Lane V/C Ratio	0.166	-	-	-	-
HCM Control Delay (s)	13.6	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Intersection	
Int Delay, s/veh	3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	66	0	53	76	0	31
Future Vol, veh/h	66	0	53	76	0	31
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	72	0	58	83	0	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	72	0	271	72
Stage 1	-	-	-	-	72	-
Stage 2	-	-	-	-	199	-
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	-	-	1528	-	718	990
Stage 1	-	-	-	-	951	-
Stage 2	-	-	-	-	835	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1528	-	689	990
Mov Cap-2 Maneuver	-	-	-	-	689	-
Stage 1	-	-	-	-	913	-
Stage 2	-	-	-	-	835	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	990	-	-	1528	-
HCM Lane V/C Ratio	0.034	-	-	0.038	-
HCM Control Delay (s)	8.8	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	156	79	0	167	47	0
Future Vol, veh/h	156	79	0	167	47	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	170	86	0	182	51	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	256	0	395	213
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	182	-
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	-	-	1309	-	610	827
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	849	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1309	-	610	827
Mov Cap-2 Maneuver	-	-	-	-	610	-
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	849	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	610	-	-	1309	-
HCM Lane V/C Ratio	0.084	-	-	-	-
HCM Control Delay (s)	11.4	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

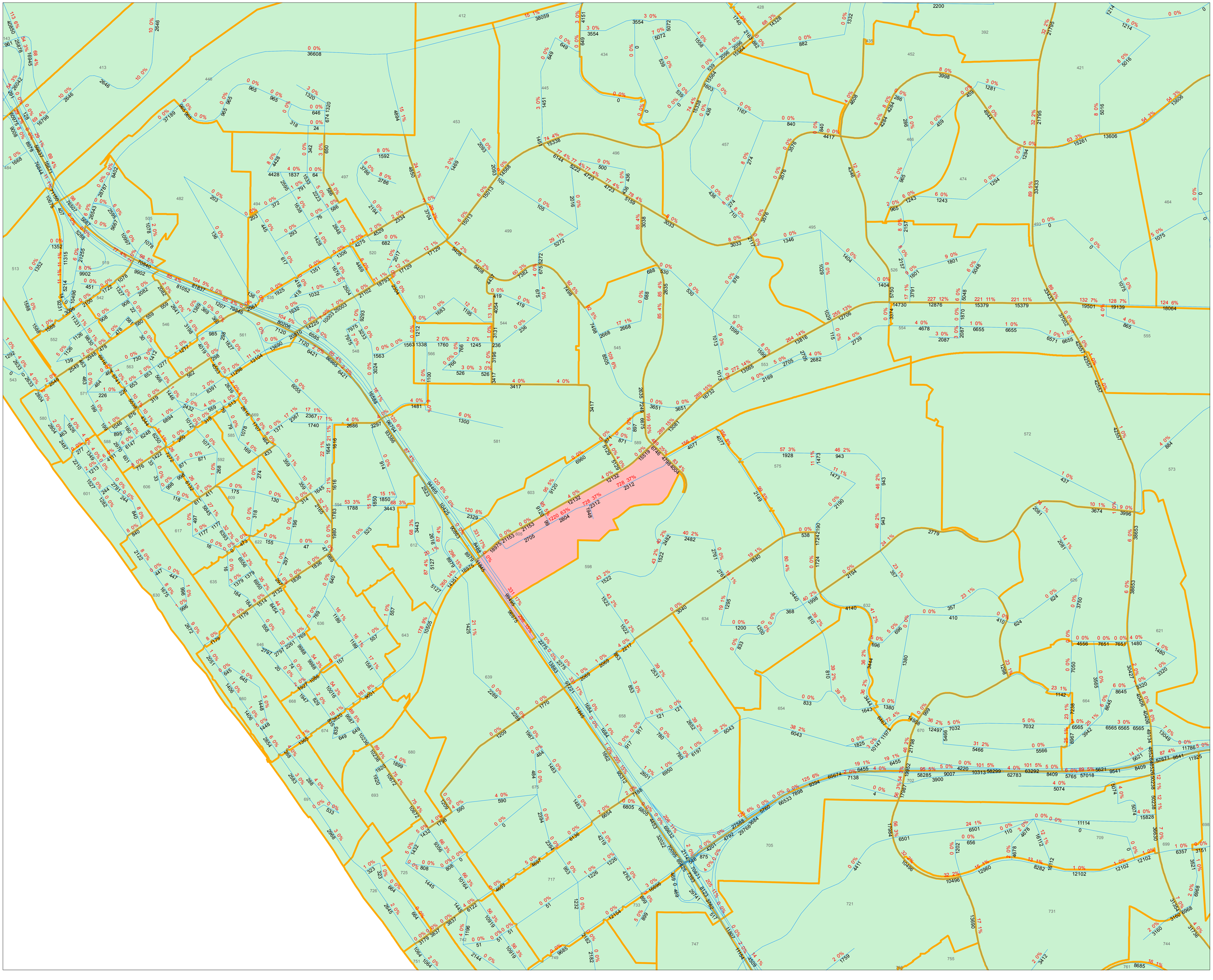
Appendix I: Sandag Forecast Model

SANDAG
SR13
versiom13_3_2
hwy_load 1192

2035rc
Jefferson

Select Zone Run

TAZ 605



join

hwy_load_1192

Selected Zone(s)

\# Select Zone Vol and %

\# Model Estimated ADT

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Miles

SANDAG servicebureau

Date: March 23, 2020

Appendix J: Cumulative Project Information

PROJECT INFORMATION FORM (PIF)

THE FOLLOWING IS TO BE COMPLETED BY THE PROJECT APPLICANT:

PROJECT INFORMATION FORM			
1.	**PROJECT DESCRIPTION:** Charter School for grades 7-12. Maximum of 1,200 students (400 students in grades 7-8 and 800 students in grades 9-12)		
2.	**PROJECT LOCATION:** 1305 Union Plaza Court (existing office complex with four buildings)		
3.	**LAND USE:** Commercial Professional **SIZE/DENSITY:** 6.01 Acres with up to 1,200 Students		
4.	**ZONING AND LAND USE CONSISTENT WITH ADOPTED GENERAL PLAN?**	☒ Yes	☐ No
5.	**PROJECT LOCATED IN TRANSIT PRIORITY AREA[1], SMART GROWTH AREA[2], OR LOW VMT AREA[3]?**	☒ Yes	☐ No
6.	**PROJECT TRIP GENERATION:** Net reduction of -921 ADT with trip credit based on recent historical office use.	☒ < 200 ADT ☐ ≥ 200 ADT ☐ ≥ 1,000 ADT ☐ ≥ 2,400 ADT	
	ATTACHMENTS		
A.	**PROJECT LOCATION MAP**	☒ Attached	
B.	**PROJECT TRIP DISTRIBUTION**	☒ Attached	
C.	**PROJECT TRIP ASSIGNMENT**	☒ Attached	

1) Projects located in a TPA must be able to access the transit station within a ½ mile walking distance or 6 minute walk continuously without discontinuity of sidewalk or obstructions to the route. Qualifying transit stops means a site containing an existing rail transit station served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods (OPR, 2017). A high-quality transit corridor may also be considered if a corridor with fixed route bus service has service intervals no longer than 15 minutes during peak commute hours (OPR, 2017).
(2) See Appendix B.
(3) Based on the most recent SANDAG SB 743 Screening Map. Example shown in Appendix C.

TO BE COMPLETED BY CITY STAFF AND RETURNED TO PROJECT APPLICANT

PROJECT STUDY REQUIREMENTS				
1)	**Does the project require a CEQA VMT analysis?** Screened out **A. If yes, does the project require a SANDAG Model Run?**	☐ Yes ☐ Yes	☒ No ☐ No	☐ Incomplete[1]
2a)	**Does the project require a Local Transportation Study?**	☐ Yes	☒ No	☐ Incomplete[1]
	OR			
2b)	**Does the project require a Local Transportation Assessment?**	☐ Yes	☒ No	☐ Incomplete[1]

[1] Incomplete application or additional information is needed to determine study requirements.

05/10/21
Planning Division

05/10/21
Traffic Division

Coastal Academy Charter School (Grades 7-12)

The proposed Coastal Academy is a charter school for grades 7-12. A maximum of 1,200 students are anticipated to physically attend on campus classes (400 in grades 7-8; and 800 in grades 9-12). However, being a charter school, all the students will not be on campus at one time because students have the option of selecting different learning programs that include online learning. The school develops a parent partnership to support learning in a home environment as an option to physically going to the campus. The maximum 1,200 students are NOT anticipated to be on campus on a daily basis, rather they are shown in case there is a school event that requires all 1,200 students to be on campus.

The charter school is proposed to occupy the office buildings at 1305-1320 Union Plaza Court. Interior tenant improvements will convert the office space into classrooms. All four buildings are to be used solely by the School.

Since the mid-1990s, the overall office buildings at 1305-1320 Union Plaza Court were occupied in the range of 80 to 90%. During that time, the County of San Diego leased a space of approximately 65,000 sf. Near the end of 2020, the County and two other tenants with close relationship with the County moved out. Currently, about 13,600 sf of office space remains occupied. The vacant space can be occupied at any time.

The school trip generation with credit based on recent historical office use.

									AM					PM	
Land Use	**Rate**		**Size & Units**		**ADT**	**%**	**Split**		**IN**	**OUT**	**%**	**Split**		**IN**	**OUT**
Proposed Project															
Junior/Middle School	1.4	/Student	400	Students	560	30%	0.6	0.4	101	67	9%	0.4	0.6	21	30
High School	1.3	/Student	800	Students	1,040	20%	0.7	0.3	146	62	10%	0.4	0.6	42	62
		Subtotal	1,200		1,600				246	130				63	93
Recent historical office use															
Government Office	30	/KSF	-65,000	SF	-1,950	9%	0.9	0.1	-158	-18	12%	0.3	0.7	-70	-164
Standard Office	20	/KSF	-28,552	SF	-571	14%	0.9	0.1	-72	-8	13%	0.2	0.8	-15	-59
		Subtotal	-93,552		-2,521				-230	-26				-85	-223
Trip Generation Net Change:					**-921**				**16**	**104**				**-22**	**-130**

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. Excel rounding may result ±1 to some of the above numbers.

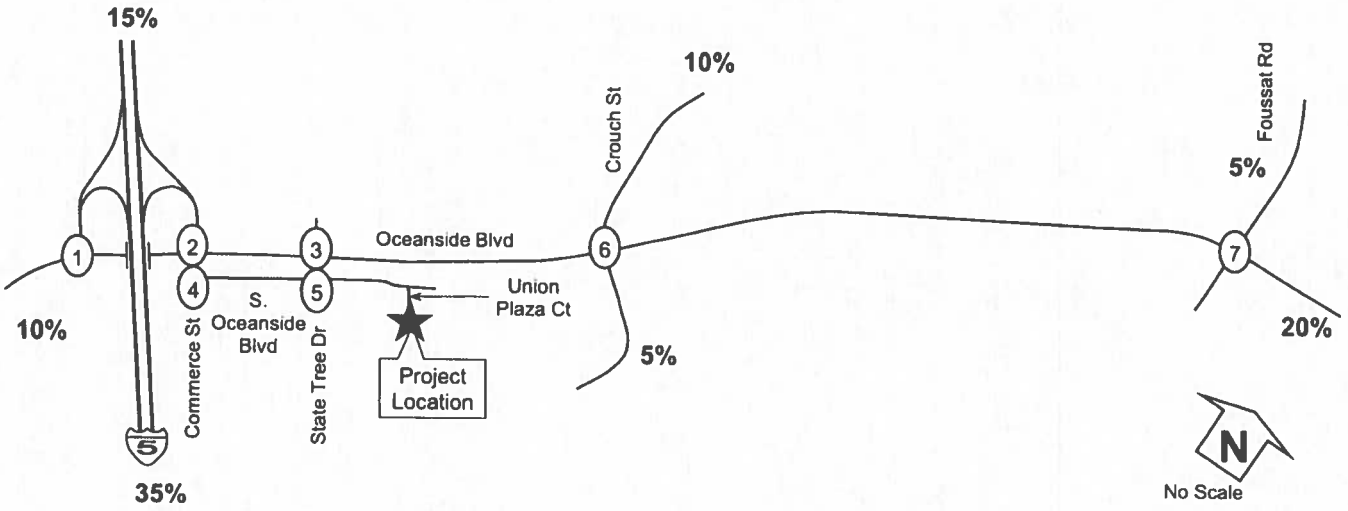
Pickup areas will be coordinated with City staff. The school will have multiple end bell times to help reduce pick-up queuing.

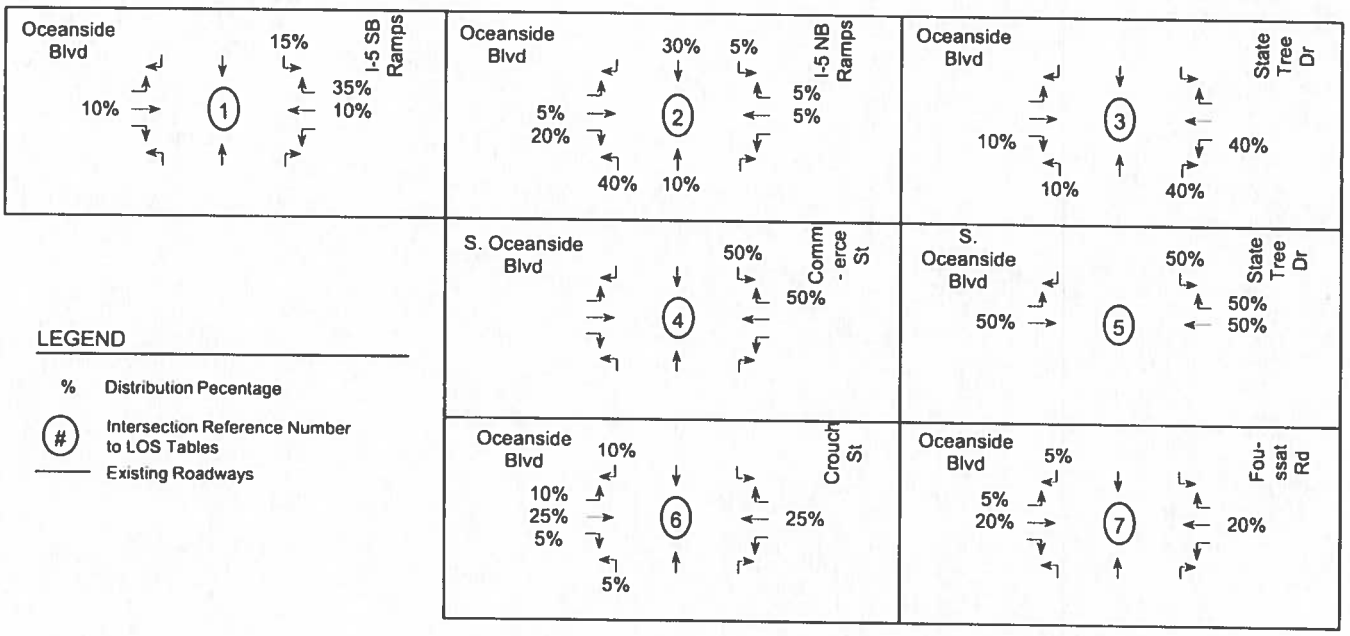
In addition to a VMT screenline analysis, the following are proposed:

1) Pedestrian Analysis
2) Bicycle Analysis
3) Transit Analysis
4) Circulation and Queuing Analysis

05/03/2021

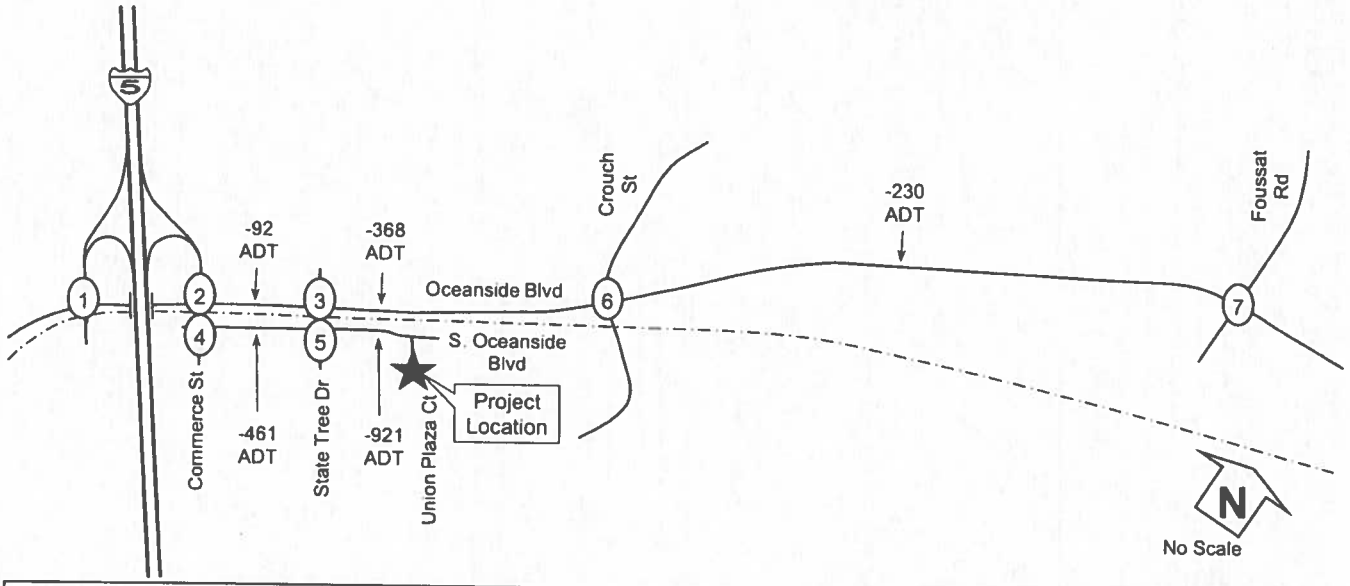
Project Location Map and Proposed Distribution

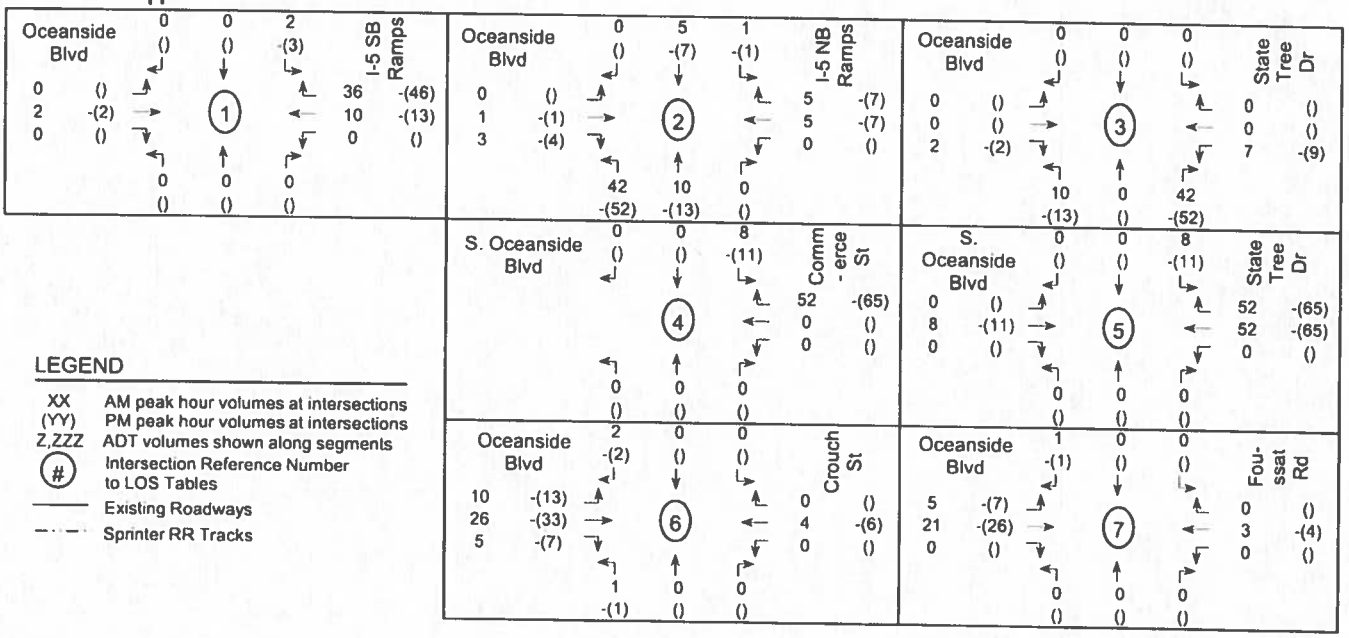




05/03/2021

Prelimiary Project Trip Assignment





4.0 Project Description

The proposed residential project of 90 apartments is located on the southeast corner of Ditmar Street at Godfrey Street in Oceanside, California. The project would include 3-story residential structures over 2-levels of underground parking. The project site is elongated with a footprint that starts at Ditmar Street and extends east past Nevada Street and is generally between Oceanside Blvd and the North County Transit District Sprinter rail line. The project site of approximately 2.1 acres is currently vacant.

4.1 Project Traffic Generation

The project traffic generation was calculated using SANDAG trip rates from the *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. The project at approximately 43 units per acre correlates with the SANDAG trip rate of 6 daily trips per unit for projects greater than 20 units per acre. Copies of SANDAG rates are included in **Appendix E**. Using SANDAG traffic generation rates, the project is calculated to generate 540 ADT, 44 AM peak hour trips (9 inbound and 35 outbound), and 54 PM peak hour trips (38 inbound and 16 outbound) as shown in **Table 6**.

TABLE 6: PROJECT TRAFFIC GENERATION

Proposed							AM				PM	
Land Use	Rate	Size & Units	ADT	%	Split		IN	OUT	%	Split	IN	OUT
Aptartments	6 /DU	90 DU	**540**	8%	0.2	0.8	**9**	**35**	10%	0.7 0.3	**38**	**16**

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002.

ADT-Average Daily Traffic; Split-percent inbound and outbound. DU: Dwelling Unit. Excel round may result in values at ±1

4.2 Project Access

Project access is proposed from Ditmar Street with a project driveway to a parking garage at the corner of Ditmar Street and Godfrey Street. Secondary access reserved for emergency services and/or site service is from Nevada Street (no residential access to the parking garage). No other vehicular access locations are proposed.

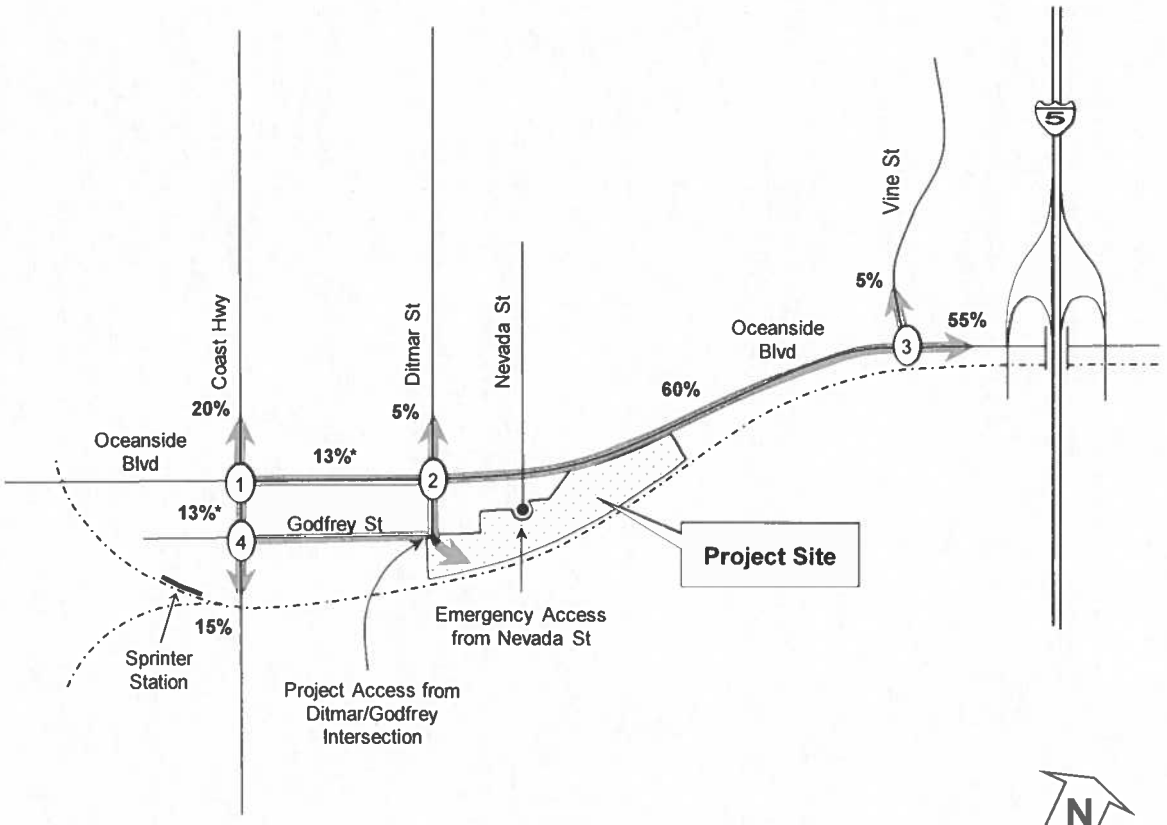
4.3 Project On-Site Parking

The parking garage includes 210 spaces broken down with 180 spaces for residents, 24 for guests, and 6 tandem/compact spaces. Additionally, 13 motorcycle and 82 bicycle spaces are proposed.

4.4 Project Distribution and Assignment

The project distribution was based existing turn movement patterns at Oceanside/Ditmar and Coast Hwy/Godfrey along with proximity to regional employment centers, local attractions, schools, and shopping areas (calculations area included in **Appendix F**). The project distribution is shown in **Figure 5** with assignment of project traffic shown in **Figure 6.**

Figure 5: Project Distribution



* Daily distribution is based on directional average (15% one direction + 10% other direction = 12.5% or 13% rounded)

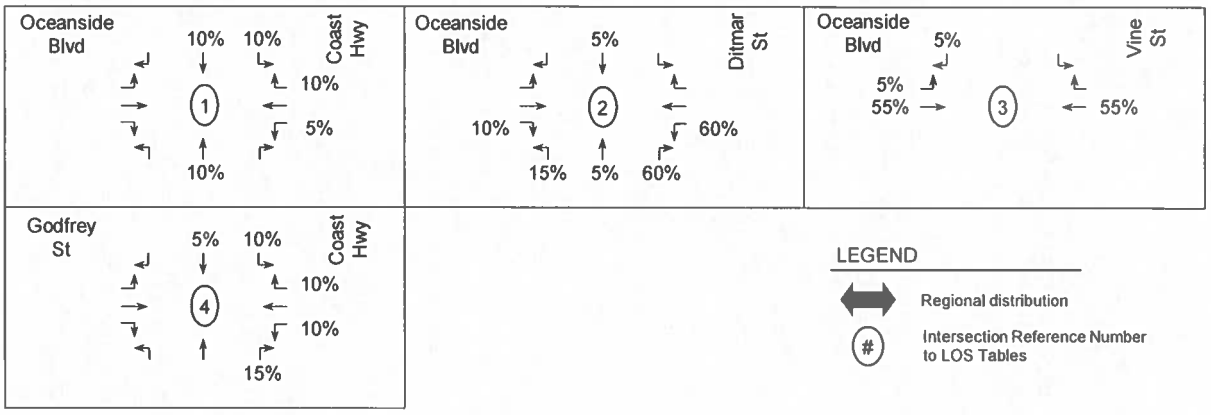
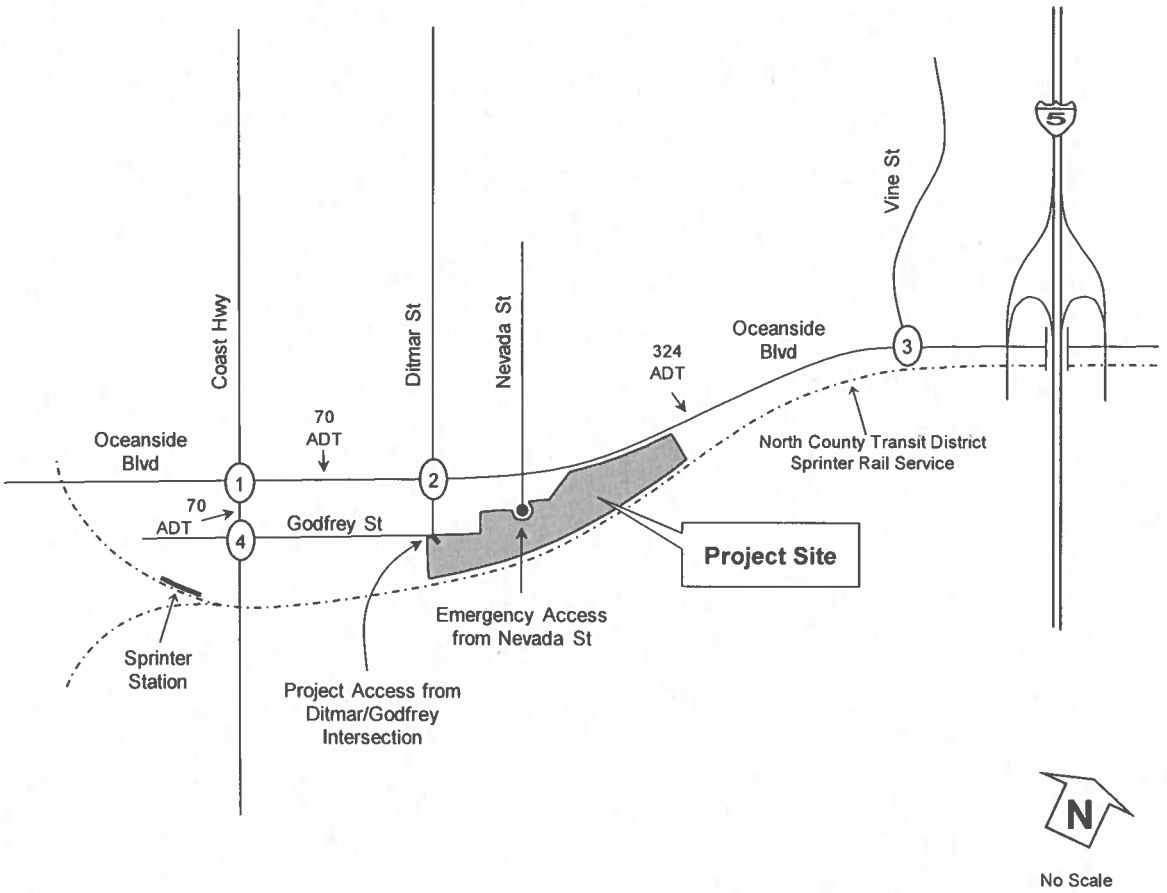
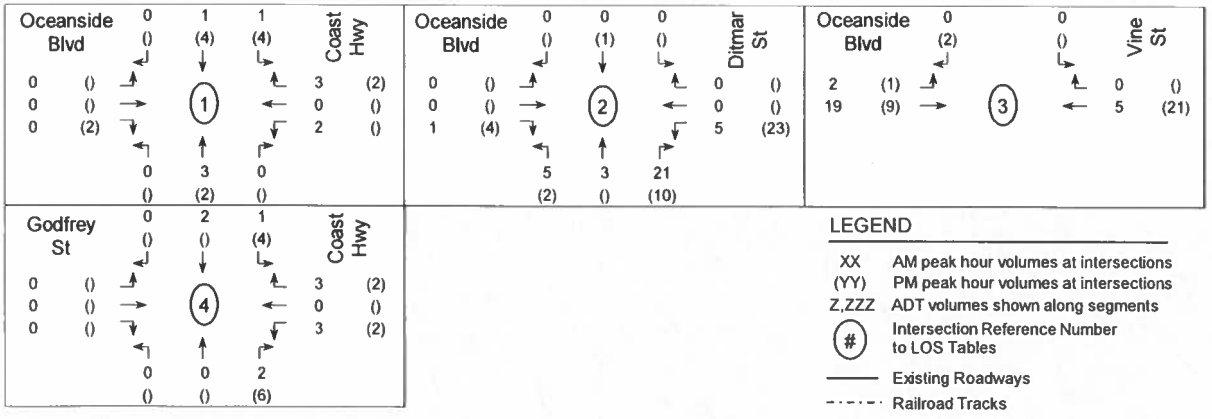


Figure 6: Project Volumes





on SANDAG guidelines and existing traffic patterns. ***Appendix F*** includes transaction data calculation worksheets.

Table 8–1 tabulates the total project traffic generation. The total project is calculated to generate approximately a total of 1308 ADT with 39 inbound / 39 outbound trips during the AM peak hour and 21 inbound / 21 outbound trips during the PM peak hour.

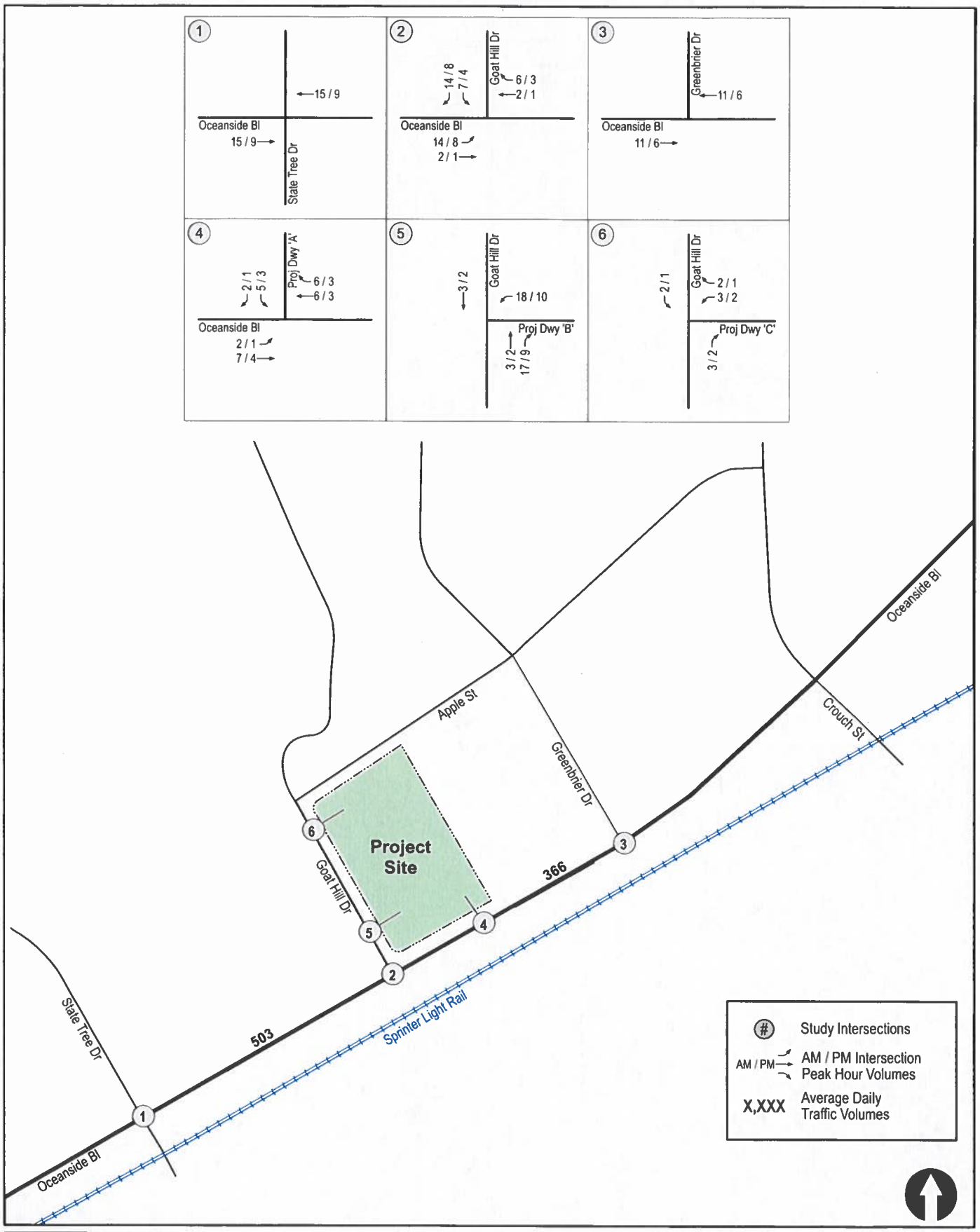
TABLE 8–3
TRIP GENERATION SUMMARY

Land Use	Rate	Daily Trips (ADT)	AM Peak Hour					PM Peak Hour				
			% of ADT	In:Out Split	Volume			% of ADT	In:Out Split	Volume		
					In	Out	Total			In	Out	Total
Dunkin Donuts	Total Driveway trips	1,038	7.5%	5:5	39	39	78	4.0%	5:5	21	21	42
	Pass-by	*125* [a]			*12*	*12*	*24* [b]			*6*	*6*	*12* [b]
	Primary Trips	*913*			*27*	*27*	*54*			*15*	*15*	*30*

Footnotes:

a. Percent of pass-by is 12% for daily trips for "Fast Food" land use based on *SANDAG guideline.*

b. Peak hour pass-by trip is 40% for Fast Food Restaurant per SANDAG guidelines. A 30% pass-by trip rate is assumed for the AM and PM peak hours.



LINSCOTT LAW & GREENSPAN engineers

N:\2895\Figures
Date: 05/15/18

Figure 8-3

Project Traffic Volumes (Primary Trips)

OCEANSIDE DUNKIN DONUTS

4.0 Project Description

The project includes the removal of three dwelling units and replacing with 27 dwelling units located at 1902 Grandview Street.

4.1 Project Traffic Generation

The project traffic generation was calculated using the San Diego Association of Governments (SANDAG) rates from the *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. A copy of SANDAG traffic generation rates is included in **Appendix E**. The net increase in project traffic is the difference between the existing three residential dwelling units and the proposed 27 dwelling units. The net increase in project traffic is calculated at 240 ADT with 18 AM peak hour trips (5 inbound and 13 outbound) and 24 PM peak hour trips (17 inbound and 7 outbound) as shown in **Table 6**.

TABLE 6: PROJECT TRAFFIC GENERATION

Proposed and Existing					AM				PM			
Land Use	Rate	Size & Units	ADT	%	Split	IN	OUT	%	Split	IN	OUT
Proposed Project												
Residential - Single Family	10 /DU	27 DU	270	8%	0.3 0.7	6	15	10%	0.7 0.3	19	8
Existing Use to be replaced by Project (Credit)												
Residential - Single Family	10 /DU	-3 DU	-30	8%	0.3 0.7	-1	-2	10%	0.7 0.3	-2	-1
Project Trip Generation			240			5	13			17	7

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region,* April 2002.

DU: Dwelling Units; ADT-Average Daily Traffic; Split-percent inbound and outbound.

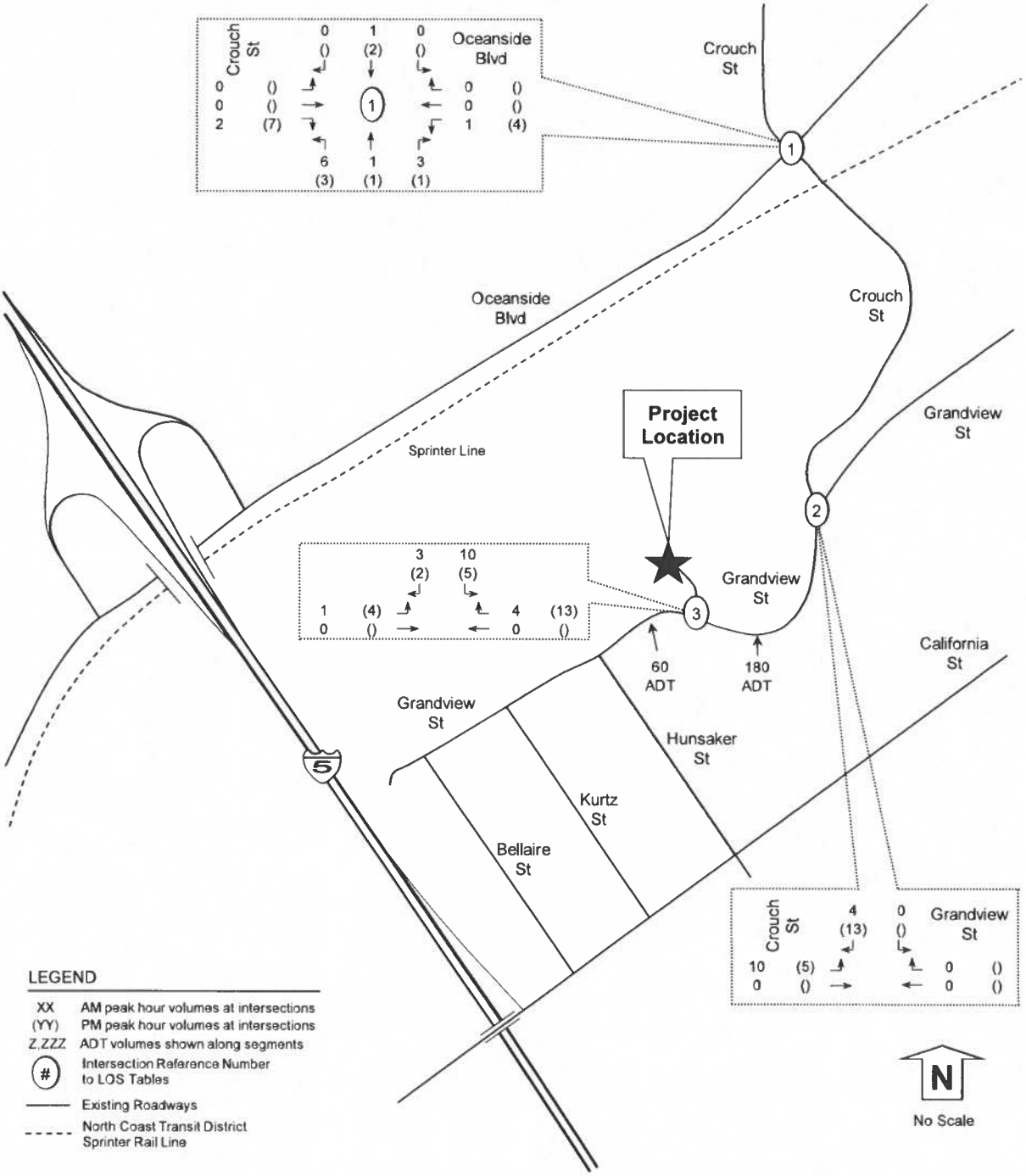
4.2 Project Access, Circulation, and Corner Sight Distance

The existing project driveway will be reconstructed with a roadway ending in a cul-de-sac as previously shown in Figure 2. The project driveway corner sight distance is provided under separate cover on the Civil Engineering drawings.

4.3 Project Distribution and Assignment

Project trips were distributed to the adjacent roadway network based on coordination with City staff. The project distribution is shown in **Figure 5** with assignment of the project volumes shown in **Figure 6.**

Figure 6: Project Traffic Assignment



4.0 Project Description

The proposed business hotel with 99 rooms is to be located on the north side of Oceanside Boulevard generally between Ditmar Street and Vine Street in Oceanside, California. This traffic study is based on an original hotel design of 105 room, thus provides a slightly conservative analysis. The site is currently vacant.

The type of hotel being proposed is a business hotel, which does not have a public restaurant nor public convention/meeting space. According to the SANDAG trip rates, business hotels have a slightly lower trip generation (7 ADT/room) as opposed to hotels with convention facilities/restaurant (10 ADT/room), motel (9 ADT/room), or resort hotel (8 ADT/room). A detailed project description as provided by the applicant describes how this project is a business hotel:

> *The project is proposing construction of a 99-room select service hotel, designed to serve both business needs as well as tourist guests. Guest services that are proposed include a small business center, market, and fitness center. A small guest dining room is located near the lobby check-in area, where typically a continental breakfast is provided for hotel guests only. No restaurants or public meeting areas are proposed for this project. The proposed building is three and four stories over subterranean parking. Hotel rooms are a mixture of 1 king sized bed, 2 queen sized beds, and king suites, with wheelchair accessible options. A central hallway runs the length of the building with elevator access at the center of the building and staircase access at both ends of the building. An outdoor pool and spa has been located on the first level on the north side of the hotel building, and a rooftop terrace has been proposed for the top of the third floor on the street-side of the building for use by hotel guests.*

4.1 Project Traffic Generation

The project traffic generation was calculated using SANDAG trip rates from the *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. Copies of SANDAG rates are included in **Appendix C**. Using SANDAG traffic generation rates, the project is calculated to generate 735 ADT, 60 AM peak hour trips (24 inbound and 36 outbound), and 66 PM peak hour trips (40 inbound and 26 outbound) as shown in **Table 6**.

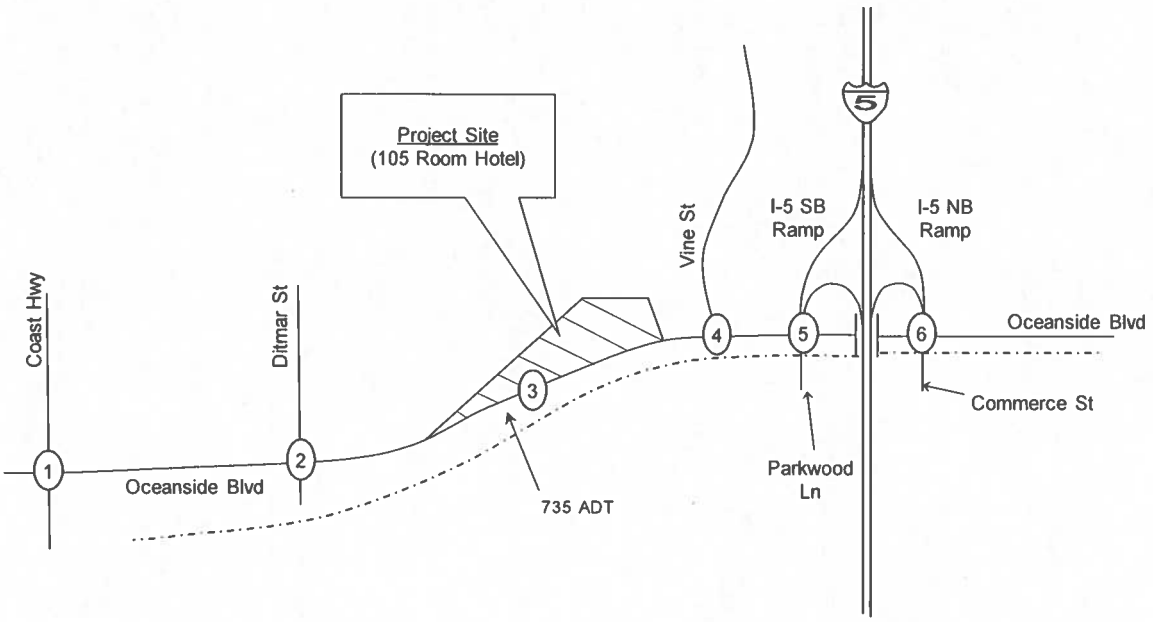
TABLE 6: PROJECT TRAFFIC GENERATION

Proposed								AM				PM	
Land Use	Rate	Size & Units	ADT	%	Split		IN	OUT	%	Split		IN	OUT
Business Hotel	7 /room	105 rooms	**735**	8%	0.4	0.6	**24**	**36**	9%	0.6	0.4	**40**	**26**

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002.

ADT-Average Daily Traffic; Split-percent inbound and outbound.

Figure 6: Project Volumes

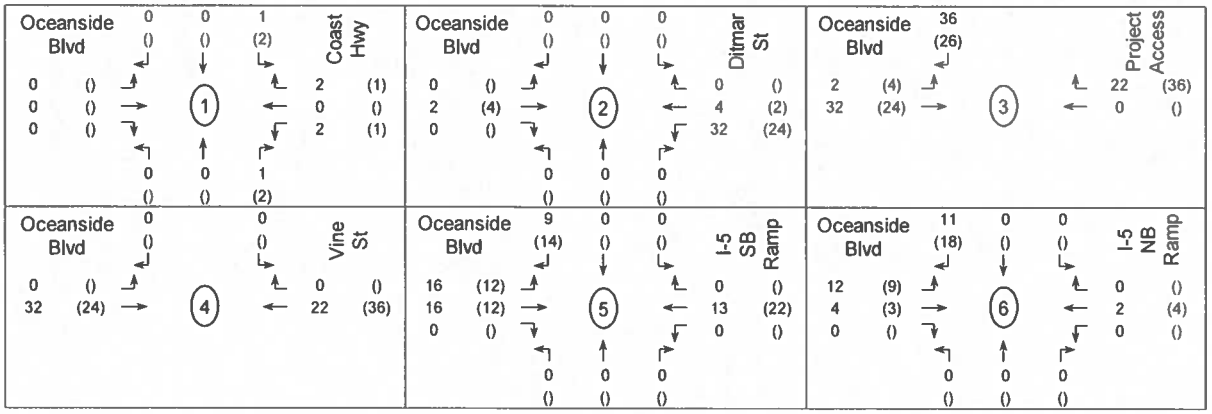


LEGEND

XX	AM peak hour volumes at intersections
(YY)	PM peak hour volumes at intersections
Z,ZZZ	ADT volumes shown along segments
(#)	Intersection Reference Number to LOS Tables
———	Existing Roadways
- - - -	Railroad Tracks

N

No Scale



LINSCOTT LAW & GREENSPAN
engineers

TRANSPORTATION IMPACT ANALYSIS

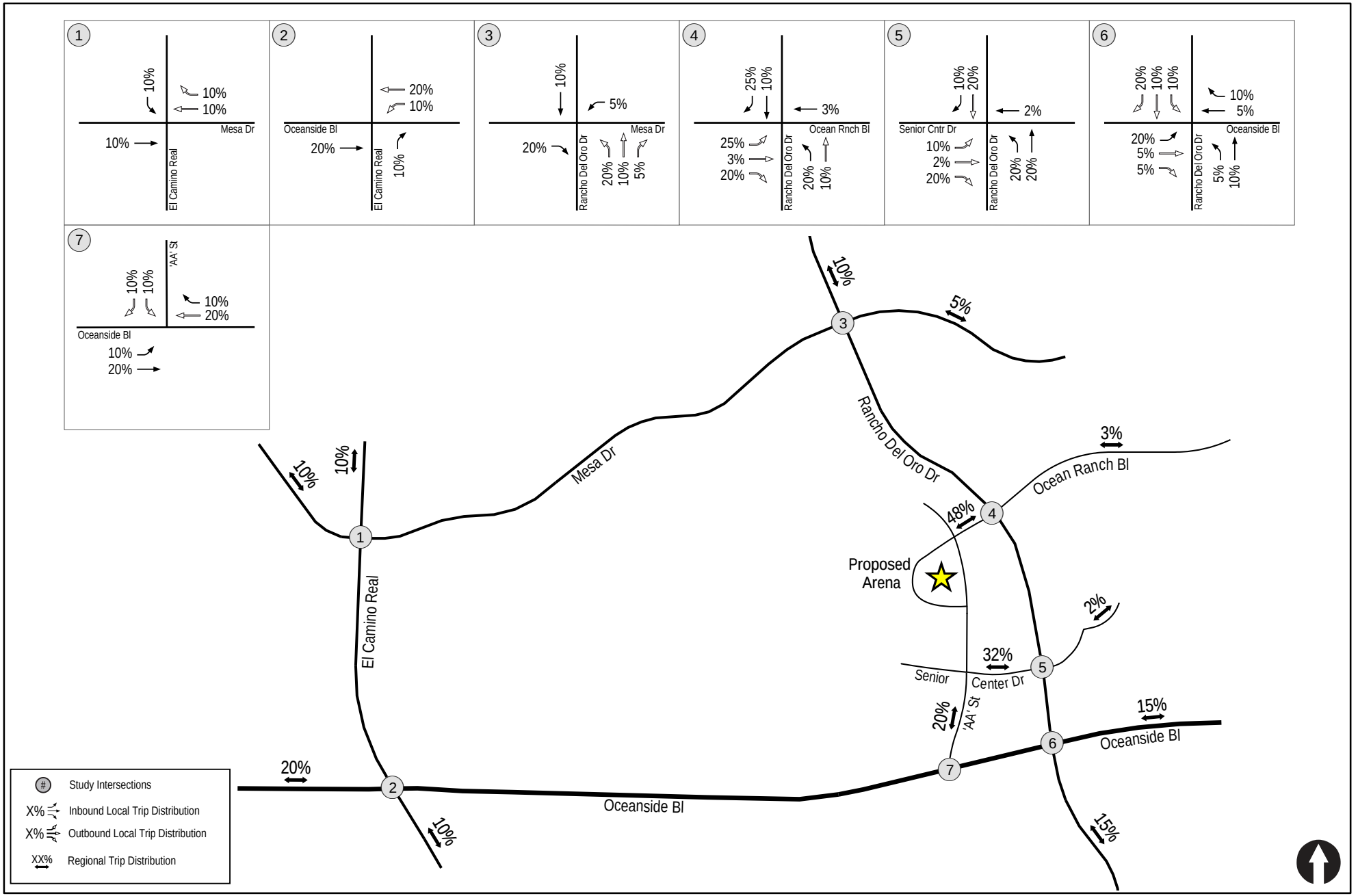
EL CORAZON ARENA

Oceanside, California
March 23, 2018

LLG Ref. 3-16-2646

DRAFT

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LINSCOTT LAW & GREENSPAN engineers

N:\2646\Figures
Date: 08/10/17

Figure 7-1

Project Traffic Distribution

EL CORAZON ARENA

TABLE 8–1
OPENING DAY (YEAR 2020) CUMULATIVE PROJECTS SUMMARY

No.	Name	Project	ADT	AM		PM	
				In	Out	In	Out
	City of Oceanside						
1.	Arroyo Verde	6.9 KSF Retail, 4.0 KSF Bank, 8.4 KSF Fast-Food, 7.9 KSF Restaurant	4,713	202	166	179	170
2.	Terraza at RDO Village	338 Multi-Family units	2,704	43	176	189	81
3.	Pacific Coast Business Park (20% occupied)	1,200.0 KSF Business Park	17,278	1,770	218	460	1,664
4.	Ocean Ranch (60% occupied)	1,881.79 KSF Business Park	14,302	1,412	169	339	1,336
5.	El Corazon Master Plan Phase 1	Hotel, Portions of Parcel 1 Commercial, 80 Condos, Parcel 3 Apartments and Retail	9,740	201	168	459	409
6.	ECR Medical Office	32.6 KSF Medical Office	1,630	78	20	54	125
7.	Camino Town & Country Shopping Center, North Expansion	89,148 KSF Community Commercial, Discount Supermarket	6,271	106	73	289	289
8.	Inns at Buena Vista Creek	426-room Hotel	4,260	153	102	204	136
	City of Carlsbad						
9.	Westfield Mall Revitalization Project	35,417 KSF Mall Expansion	1,240	35	14	62	62
10.	Quarry Creek Master Plan	119 Single-Family units, 438 Condos, 99 Apartments, 1.5 acres Community Facilities, Park and Ride	5,423	119	338	375	182
	City of Vista						
11.	Alexan Melrose	410 Apartments	2,460	39	157	155	66
12.	Laurel Pointe	62 Single-Family units	620	15	35	43	19
Total Cumulative Projects			**70,461**	**4,173**	**1,636**	**2,808**	**4,539**

8.2 Opening Day (Year 2020) without Project Analysis

8.2.1 *Peak Hour Intersection Operations*

Table 8–2 summarizes the intersection operations under Opening Day (Year 2020) without Project conditions. As shown in *Table 8–2*, the following study area intersections are calculated to operate at LOS E or F during the weekday and / or weekend peak hour scenarios analyzed:

- El Camino Real / Oceanside Boulevard
- Rancho Del Oro Drive / Senior Center Drive

LOS Engineering, Inc.
Traffic and Transportation

DRAFT

11622 El Camino Real, Suite #100, San Diego, CA 92130
Phone 619-890-1253, Email: Justin@LOSengineering.com

April 30, 2021

Mr. Tam Tran
City of Oceanside
300 North Coast Highway
Oceanside, CA 92054

Subject: 1728 Whaley Street Vehicle Miles Traveled Screening Analysis (ADM20-00066)

Dear Mr. Tran:

LOS Engineering, Inc. is pleased to present this Vehicle Miles Traveled (VMT) screening analysis for the proposed residential project located at 1728 Whaley Street Oceanside, California.

PROJECT LOCATION AND DESCRIPTION

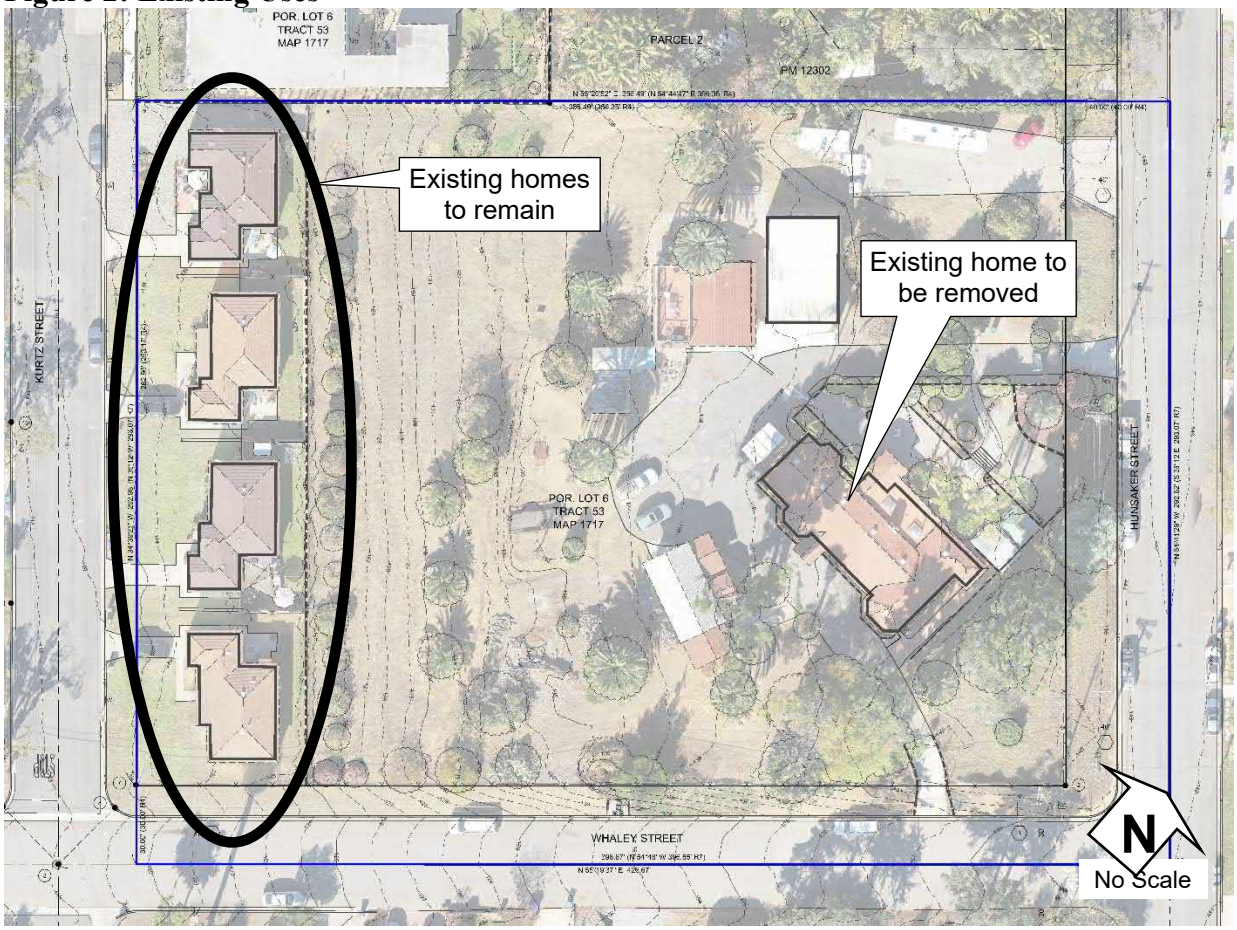
The project is located on the NW corner of Hunsaker St and Whaley St as shown in **Figure 1**.

Figure 1: Project Location



The project is the removal of one single family dwelling unit and construction of eight (8) new single-family units each with a Junior Accessory Dwelling Unit (JADU). The project site also encompasses 4 existing homes that will remain. The existing uses are shown in **Figure 2**.

Figure 2: Existing Uses

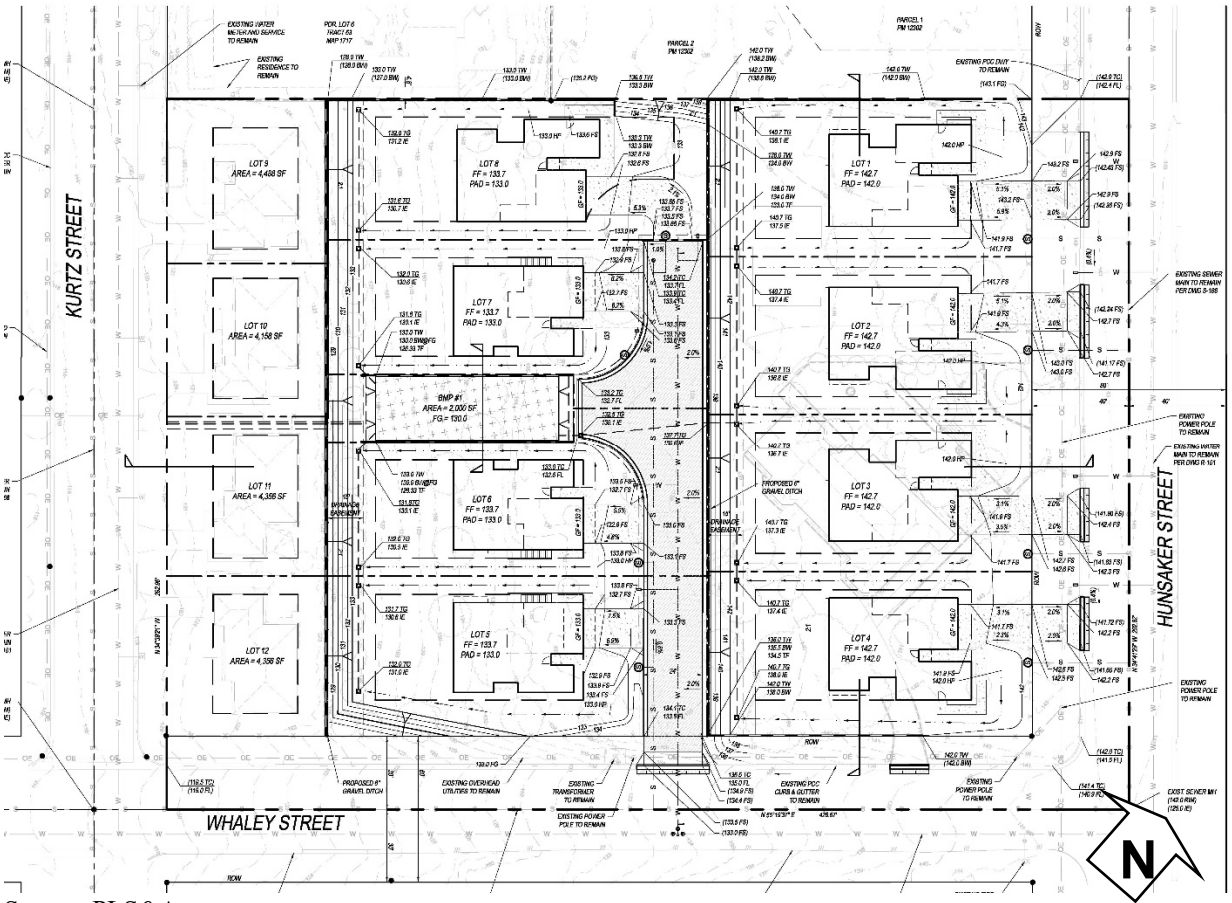


Source: PLS&A.

The project is located within land use designation Estate B and zoned RE-B.

A site plan of eight (8) new homes and four (4) homes to remain are shown in **Figure 3**.

Figure 3: Site Plan



Source: PLS&A.

VEHICLE MILES TRAVELED

A VMT analysis is required to satisfy the CEQA guidelines that utilize VMT as the measure of effectiveness for determining transportation impacts. The California Governor's Office of Planning and Research (OPR) Technical Advisory developed guidance on implementing Senate Bill 743 (SB 743) that shifts the transportation impact measure of effectiveness from Level of Service (LOS) to VMT. The OPR *Transportation Technical Advisory on Evaluating Transportation Impacts in CEQA*, December 2018 states on page 8 "As noted above, lead agencies have the discretion to set or apply their own thresholds of significance". Excerpts from the OPR Technical Advisory are included in **Appendix A**.

The City of Oceanside *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment*, August 2020 has identified several project types that are presumed to be considered VMT reducing projects as documented in **Appendix B**:

> "The projects listed are either locally serving or are based on substantial evidence provided by the OPR Technical Advisory Committee supporting SR 743 implementation."

The list of screened out project is shown in **Table 1**. Excerpts from the City of Oceanside Guidelines are included in Appendix B.

Table 1: City of Oceanside VMT Screened Out Project List

Project Type
Projects located in a Transit Priority Areas (TPA) or Smart Growth Opportunity Area as identified in the most recent SANDAG San Diego Forward Regional Plan and is consistent with the General Plan at the time of project application (1) (2).
Projects located in a low-VMT generating area identified on the most recent SANDAG SB 743 VMT Screening map
Locally serving K-12 schools
Day care centers
Local parks
Locally serving retail uses less than 50,000 square feet, including: gas stations, banks, restaurants, grocery stores, and shopping centers
Community institutions (Public libraries, fire stations, local government)
Locally serving hotels (e.g. non-destination hotels, non-regionally serving)
Student housing projects on or adjacent to college campuses
Local serving community colleges that are consistent with the assumptions noted in the most recent SANDAG Regional Transportation Plan/Sustainable Communities Strategy
Affordable housing projects (3)
Assisted living facilities
Senior housing (as defined by HUD)
Transit projects
Bike projects
Pedestrian projects
Safety improvement projects (e.g. RRFBs and high visibility crosswalks at uncontrolled locations, pedestrian count down timers, additionally projects identified through the Highway Safety Improvement Program)
Safe Routes to School
Projects generating less than 500 daily vehicle trips (if inconsistent with adopted General Plan)
Projects generating less than 1,000 daily vehicle trips (if consistent with adopted General Plan)

Source: City of Oceanside *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment*, August 2020

(1) Projects located in a TPA must be able to access the transit station within a ½ mile walking distance or 6 minute walk continuously without discontinuity of sidewalk or obstructions to the route. Qualifying transit stops means a site containing an existing rail transit station served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods (OPR, 2017). A high-quality transit corridor may also be considered if a corridor with fixed route bus service has service intervals no longer than 15 minutes during peak commute hours (OPR, 2017).

(2) Smart Growth Opportunity Area Map is provided in Appendix B [to the City's VMT and LOS Assessment]. The most recent version available shall be used.

(3) If a project is a mix of affordable housing and market rate housing or unscreened use, only the affordable housing component would qualify as screened out. Additionally, any removal of affordable housing automatically requires CEQA VMT analysis.

PROJECT TRIP GENERATION

The project traffic generation was calculated using SANDAG trip rates from the *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002.

The project will be removing one (1) single family home and constructing eight (8) new single-family homes. The four existing homes along Kurtz Street will remain and will not change the project trip generation. The eight (8) new single-family homes will each include a Junior Accessory Dwelling Unit. It is unknown if each JADU will be leased out like a separate apartment, used for extended family, or used as a home office. Therefore, a range of trip generation was calculated for the project to account for the various uses of the JADUs. If none of the JADUs are leased out, then the project is calculated to generate 70 ADT as shown in **Table 2**.

Table 2: Project Trip Generation (lower range)

Existing and Proposed Land Use		Trip Rate	Number of Units		Average Daily Traffic (ADT)
Existing home to be removed					
Residential - Single Family	10	Trips per Dwelling Unit	-1	Dwelling Unit	-10
New homes to be constructed					
Residential - Single Family	10	Trips per Dwelling Unit	8	Dwelling Unit	80
			ADT Net Change:		**70**

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region,* April 2002.

A SANDAG apartment trip rate is applied to the JADUs due to their size being limited to 500 square feet. If all the JADUs are leased out, then the project is calculated to generate 118 ADT as shown in **Table 3**.

Table 3: Project Trip Generation (upper range)

Existing and Proposed Land Use		Trip Rate	Number of Units		Average Daily Traffic (ADT)
Existing home to be removed					
Residential - Single Family	10	Trips per Dwelling Unit	-1	Dwelling Unit	-10
New homes to be constructed					
Residential - Single Family	10	Trips per Dwelling Unit	8	Dwelling Unit	80
Residential - Apartment	6	Trips per Dwelling Unit	8	Dwelling Unit	48
			ADT Net Change:		**118**

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region,* April 2002.

The project is calculated to have a trip generation range between 70 and 118 ADT depending on the use of the JADUs.

The project is consistent with the General Plan and calculated to generate between 70 and 118 ADT, which is less than the 1,000 ADT threshold for a full VMT Analysis. Therefore, the project is screened out and further VMT Analysis is not required.

PROJECT INFORMATION FORM

The City of Oceanside has developed a Project Information Form (PIF) to facilitate the screening of project requirements. A completed City PIF for this project is included in **Appendix C**.

CONCLUSION

This VMT analysis was based on guidance from the Governor's Office of Planning and Research (OPR) Technical Advisory and the City of Oceanside *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment*, August 2020.

OPR developed guidance for implementing Senate Bill 743 (SB 743) requirements that shifts the transportation impact measure of effectiveness from Level of Service (LOS) to VMT. The City of Oceanside *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment*, August 2020 has identified several project types that are presumed to be considered VMT reducing projects if they are either locally serving or are based on substantial evidence provided by the OPR Technical Advisory Committee supporting SR 743 implementation.

The project is consistent with the General Plan and calculated to generate between 70 and 118 ADT, which is less than the 1,000 ADT threshold for a full VMT Analysis. Therefore, the project is screened out and further VMT Analysis is not required.

Sincerely,
LOS Engineering, Inc.

Justin Rasas

Justin Rasas, P.E.(RCE 60690), PTOE
Principal and Officer of LOS Engineering, Inc.
Attachments

Appendix K: Project Site Plan

LEGEND

PROPERTY LINE

ADA PATH OF TRAVEL

CREEK CENTERLINE

PROPERTY LINE, TYP.

CROUCH ST. STATION

FUTURE STREET CONNECTION

S. OCEANSIDE BLVD

SECONDARY ENTRY

VEHICLE GATE

MAIN ENTRY

CROUCH ST.

BLDG. 5 (TYPE C)

BLDG. 1 (TYPE A)

BLDG. 2 (TYPE D)

BLDG. 4 (TYPE C)

BLDG. 3 (TYPE B)

RETAIL

TRASH

POOL

LEASING/ AMENITIES

AMENITY

24'-0" DRIVE AISLE

35'-0" DRIVE AISLE

COMPACT PARKING STALL

CARPORT WITH POTENTIAL SOLAR, TYP.

STANDARD PARKING STALL, TYP.

DOG PARK

EASEMENT

SITE PLAN 1

0 25' 50' 100'

SCALE: 1" = 50'-0"

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JEFFERSON OCEANSIDE

OCEANSIDE, CA

Issue Date

1ST SUBMITTAL 03/09/2020

2ND SUBMITTAL 04/12/2021

SITE PLAN

A1.0

Appendix L: Signal Timing Sheets

INTERSECTION: Oceanside & Crouch

Group Assignment: **NONE**
Field Master Assignment: **NONE**
System Reference Number: **50**

N/S Street Name: **Not Assigned**
E/W Street Name: **Not Assigned**

Last Database Change: **8/22/2018 8:03**

Change Record					
Change	By	Date	Change	By	Date

Notes:

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Drop Number	5	<C/0+0+0>
Zone Number	5	<C/0+0+1>
Area Number	1	<C/0+0+2>
Area Address	50	<C/0+0+3>
QuicNet Channel	Serial:COM38:	(QuicNet)

Communication Addresses

Manual Plan		<C/0+A+1>
Manual Offset		<C/0+B+1>

Manual Selection

Flash Start	0	<F/1+0+E>
Red Revert	5.0	<F/1+0+F>
All Red Start	5.0	<F/1+C+0>

Start / Revert Times

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase
(Outputs specified in Assignable Outputs at E/127+A+E & F)

Row	Column Numbers ----> / Phase Names ---->	Phase 1	2	3	4	5	6	7	8
0	Ped Walk	0	7	6	6	0	7	0	0
1	Ped FDW	0	10	15	15	0	10	0	0
2	Min Green	5	10	6	6	5	10	4	4
3	Type 3 Disconnect	0	99	0	0	0	99	0	0
4	Added per Vehicle	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0
5	Veh Extension	2.0	3.0	2.5	2.5	2.0	3.0	2.0	2.5
6	Max Gap	2.0	6.0	2.5	2.5	2.0	6.0	3.0	3.0
7	Min Gap	2.0	3.0	2.5	2.5	2.0	3.0	0.5	1.5
8	Max Limit	25	70	20	20	20	50	20	25
9	Max Limit 2	20	70	20	20	20	70	30	40
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	7	7	7	7	7	7	7	7
C	Cond Serv Check	0	0	0	0	0	0	10	0
D	Reduce Every	0.0	1.2	0.0	0.0	0.0	1.2	1.0	1.0
E	Yellow Change	4.1	4.8	3.7	3.7	4.1	4.8	3.2	3.6
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Phase Timing - Bank 1 <C+0+F=1>

	9	A	B	C	D
	---	---	---	---	---
Phase 1	0	0	0	0	0.0
Phase 2	20	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	20	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	20	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	20	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <C+0+F=1>

E	
RR-1 Delay	0
RR-1 Clear	0
EV-A Delay	0
EV-A Clear	5
EV-B Delay	0
EV-B Clear	5
EV-C Delay	0
EV-C Clear	5
EV-D Delay	0
EV-D Clear	5
RR-2 Delay	0
RR-2 Clear	10
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing

F		Row
Permit	123456__	0
Red Lock	1_345___	1
Yellow Lock	__3_____	2
Min Recall	_2___6__	3
Ped Recall	_____	4
View Set Peds	-----	5
Rest In Walk	_____	6
Red Rest	_____	7
Dual Entry	_2___6__	8
Max Recall	_____	9
Soft Recall	_____	A
Max 2	_____	B
Cond. Service	_____	C
Man Cntrl Calls	_____	D
Yellow Start	_2___6__	E
First Phases	__3_____	F

Phase Functions <C+0+F=1>

Row	Column Numbers ---->	Overlap 1	2	3	4	5	6	7	8
	Overlap Name ---->								
0	Load Switch Number	0	0	0	0	0	0	0	0
1	Veh Set 1 - Phases								
2	Veh Set 2 - Phases								
3	Veh Set 3 - Phases								
4	Neg Veh Phases								
5	Neg Ped Phases								
6	Green Omit Phases								
7	Green Clear Omit Phs.								
8									
9									
A									
B									
C									
D	Green Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Overlap Assignments <C+0+E=29>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = Solid FDW on EV
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

Extra 2 Flags
1 = AWB During Initial
2 = LMU Installed
3 = Disable Min Walk
4 = QuicNet/4 System
5 = Ignore P/P on EV
6 =
7 = Allow QuicNet PE
8 =

Row		C	Row
0	EV-A	0	0
1	EV-B	0	1
2	EV-C	0	2
3	EV-D	0	3
4	RR-1 *	---	4
5	RR-2 *	---	5
6	SE-1	0	6
7	SE-2	0	7

Preempt Priority <C+0+E=125>
(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row	Column Numbers ---->	E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	4
3	RR-2 Limited Service	12 6
4	Prot / Perm Phases	
5	Flash to PE Circuits	
6	Flash Entry Phases	
7	Disable Yellow Range	
8	Disable Ovp Yel Range	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	4
C	EV-C Phases	1 6
D	EV-D Phases	3
E	Extra 1 Config. Bits	1 45
F	IC Select (Interconnect)	2

Configuration <C+0+E=125>

	F
Ext. Permit 1 Phases	
Ext. Permit 2 Phases	
Exclusive Ped Assign	
Preempt Non-Lock	12345678
Ped for 2P Output	2
Ped for 6P Output	6
Ped for 4P Output	4
Ped for 8P Output	3
Yellow Flash Phases	
Low Priority A Phases	
Low Priority B Phases	
Low Priority C Phases	
Low Priority D Phases	
Restricted Phases	
Extra 2 Config. Bits	

Configuration <C+0+E=125>

	F
Fast Green Flash Phase	
Green Flash Phases	
Flashing Walk Phases	
Guaranteed Passage	
Simultaneous Gap Term	123456
Sequential Timing	
Advance Walk Phases	
Delay Walk Phases	
External Recall	
Start-up Overlap Green	
Max Extension	
Inhibit Ped Reservice	
Semi-Actuated	
Start-up Overlap Yellow	
Start-up Vehicle Calls	
Start-up Ped Calls	12345678

Specials <C+0+F=2>

Flash to PE & PE Non-Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Row		2	Row
0			0
1	Phase 1	10	1
2	Phase 2	10	2
3	Phase 3	10	3
4	Phase 4	10	4
5	Phase 5	10	5
6	Phase 6	10	6
7	Phase 7	10	7
8	Phase 8	10	8

Coordination Transition Minimums <C+0+C=5>

Coord Extra
1 = Programmed WALK Time for Sync Phases
2 = Always Terminate Sync Phase Peds

Row	Column Numbers --->	Plan 1	2	3	4	5	6	7	8	9	Row
	Plan Name --->										
0	Cycle Length	100	100	100	100	100	130	130	100	100	0
1	Phase 1 - ForceOff	55	55	55	79	20	99	50	55	55	1
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0	2
3	Phase 3 - ForceOff	20	20	20	44	45	49	1	20	20	3
4	Phase 4 - ForceOff	40	40	30	64	70	74	30	40	40	4
5	Phase 5 - ForceOff	55	55	55	24	85	24	50	55	55	5
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0	6
7	Phase 7 - ForceOff	20	20	20	1	1	1	1	20	20	7
8	Phase 8 - ForceOff	40	40	40	1	1	1	30	40	40	8
9	Ring Offset	0	0	0	0	0	0	0	0	0	9
A	Offset 1	0	0	0	40	46	67	123	0	0	A
B	Offset 2	0	0	0	0	0	0	0	0	0	B
C	Offset 3	0	0	0	0	0	0	0	0	0	C
D	Perm 1 - End	15	15	15	30	25	30	15	15	15	D
E	Hold Release	255	255	255	255	255	255	255	255	255	E
F	Zone Offset	0	0	0	0	0	0	0	0	0	F

Coordination - Bank 1 <C+0+C=1>

Row		E	Row
0			0
1	Plan 1 - Sync	2 6	1
2	Plan 2 - Sync	2 6	2
3	Plan 3 - Sync	2 6	3
4	Plan 4 - Sync	2 6	4
5	Plan 5 - Sync	2 6	5
6	Plan 6 - Sync	2 6	6
7	Plan 7 - Sync	2 6	7
8	Plan 8 - Sync	2 6	8
9	Plan 9 - Sync	2 6	9
A	NEMA Sync		A
B	NEMA Hold		B
C			C
D			D
E	Coord Extra		E
F			F

Sync Phases <C+0+C=1>

Row		1	2	3	4	5	6	7	8	9	Row
0	Ped Adjustment	0	0	0	4	4	2	0	0	0	0
1	Perm 2 - Start	0	0	0	0	0	0	0	0	0	1
2	Perm 2 - End	0	0	0	0	0	0	0	0	0	2
3	Perm 3 - Start	0	0	0	0	0	0	0	0	0	3
4	Perm 3 - End	0	0	0	0	0	0	0	0	0	4
5	Reservice Time	0	0	0	0	0	0	0	0	0	5
6	Reservice Phases										6
7											7
8	Pretimed Phases										8
9	Max Recall										9
A	Perm 1 Veh Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	A
B	Perm 1 Ped Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	B
C	Perm 2 Veh Phase										C
D	Perm 2 Ped Phase										D
E	Perm 3 Veh Phase										E
F	Perm 3 Ped Phase										F

Coordination - Bank 2 <C+0+C=2>

Row		F	Row
0	Free Lag	2 4 6 8	0
1	Plan 1 - Lag	2 4 6 8	1
2	Plan 2 - Lag	2 4 6 8	2
3	Plan 3 - Lag	2 4 6 8	3
4	Plan 4 - Lag	2 45 8	4
5	Plan 5 - Lag	1 4 6 8	5
6	Plan 6 - Lag	2 45 8	6
7	Plan 7 - Lag	2 4 6 8	7
8	Plan 8 - Lag	2 4 6 8	8
9	Plan 9 - Lag	2 4 6 8	9
A	External Lag		A
B			B
C			C
D			D
E			E
F			F

Lag Phases <C+0+C=1>

Row	Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Spec. Funct. 1	0	NOT-3	0	Max 2	0	Pretimed	0	Set Monday	0	Dial 2 (7-Wire)	0	Sim Term	0	0
1	Spec. Funct. 2	0	NOT-4	0	System Det 1	0	Plan 1	0	Ext. Perm 1	0	Dial 3 (7-Wire)	0	EV-A	71	1
2	Spec. Funct. 3	0	OR-4 (a)	0	System Det 2	0	Plan 2	0	Ext. Perm 2	0	Offset 1 (7-Wire)	0	EV-B	72	2
3	Spec. Funct. 4	0	OR-4 (b)	0	System Det 3	0	Plan 3	0	Reserved	0	Offset 2 (7-Wire)	0	EV-C	73	3
4	NAND-3 (a)	0	OR-5 (a)	0	System Det 4	0	Plan 4	0	Set Clock	0	Offset 3 (7-Wire)	0	EV-D	74	4
5	NAND-3 (b)	0	OR-5 (b)	0	System Det 5	0	Plan 5	0	Stop Time	82	Free (7-Wire)	0	RR-1	51	5
6	NAND-4 (a)	0	OR-6 (a)	0	System Det 6	0	Plan 6	0	Flash Sense	81	Flash (7-Wire)	0	RR-2	0	6
7	NAND-4 (b)	0	OR-6 (b)	0	System Det 7	0	Plan 7	0	Manual Enable	0	Excl. Ped Omit	0	Spec. Event 1	52	7
8	OR-7 (a)	0	Fig 3 Diamond	0	System Det 8	0	Plan 8	0	Man. Advance	0	NOT-1	0	Spec. Event 2	0	8
9	OR-7 (b)	0	Fig 4 Diamond	0	Max Inhibit (nema)	0	Plan 9	0	External Alarm	0	NOT-2	0	External Lag	0	9
A	OR-7 (c)	0	AND-4 (a)	0	Force A (nema)	0	DELAY-A	0	Phase Bank 2	0	OR-1 (a)	0	AND-1 (a)	0	A
B	OR-7 (d)	0	AND-4 (b)	0	Force B (nema)	0	DELAY-B	0	Phase Bank 3	0	OR-1 (b)	0	AND-1 (b)	0	B
C	OR-8 (a)	0	NAND-1 (a)	0	C.N.A. (nema)	0	DELAY-C	0	Overlap Set 2	0	OR-2 (a)	0	AND-2 (a)	0	C
D	OR-8 (b)	0	NAND-1 (b)	0	Hold (nema)	0	DELAY-D	0	Overlap Set 3	0	OR-2 (b)	0	AND-2 (b)	0	D
E	OR-8 (c)	0	NAND-2 (a)	0	Max Recall	0	DELAY-E	0	Detector Set 2	0	OR-3 (a)	0	AND-3 (a)	0	E
F	OR-8 (d)	0	NAND-2 (b)	0	Min Recall	0	DELAY-F	0	Detector Set 3	0	OR-3 (b)	0	AND-3 (b)	0	F

Assignable Inputs <C+0+E=126>

Row	Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Phase ON - 1	0	Preempt Fail	0	Flasher 0	0	Free	0	NOT-1	0	TOD Out 1	0	Dial 2 (7-Wire)	0	0
1	Phase ON - 2	0	Sp Evnt Out 1	0	Flasher 1	0	Plan 1	0	OR-1	0	TOD Out 2	0	Dial 3 (7-Wire)	0	1
2	Phase ON - 3	0	Sp Evnt Out 2	0	Fast Flasher	0	Plan 2	0	OR-2	0	TOD Out 3	0	Offset 1 (7-Wire)	0	2
3	Phase ON - 4	0	Sp Evnt Out 3	0	Fig 3 Diamond	0	Plan 3	0	OR-3	0	TOD Out 4	0	Offset 2 (7-Wire)	0	3
4	Phase ON - 5	0	Sp Evnt Out 4	0	Fig 4 Diamond	0	Plan 4	0	AND-1	0	TOD Out 5	0	Offset 3 (7-Wire)	0	4
5	Phase ON - 6	0	Sp Evnt Out 5	0			Plan 5	0	AND-2	0	TOD Out 6	0	Free (7-Wire)	0	5
6	Phase ON - 7	0	Sp Evnt Out 6	0			Plan 6	0	AND-3	0	TOD Out 7	0	Flash (7-Wire)	0	6
7	Phase ON - 8	0	Sp Evnt Out 7	0			Plan 7	0	NOT-2	0	TOD Out 8	0	Preempt	0	7
8	Ph. Check - 1	0	Sp Evnt Out 8	0	NOT-3	0	Plan 8	0	EV-A	0	Adv. Warn - 1	0	Low Priority A	0	8
9	Ph. Check - 2	0			NOT-4	0	Plan 9	0	EV-B	0	Adv. Warn - 2	0	Low Priority B	0	9
A	Ph. Check - 3	0	Detector Fail	0	OR-4	0	Spec. Funct. 3	0	EV-C	0	DELAY-A	0	Low Priority C	0	A
B	Ph. Check - 4	0	Spec. Funct. 1	0	OR-5	0	Spec. Funct. 4	0	EV-D	0	DELAY-B	0	Low Priority D	0	B
C	Ph. Check - 5	0	Spec. Funct. 2	0	OR-6	0	NAND-3	0	RR-1	0	DELAY-C	0			C
D	Ph. Check - 6	0	Central Control	0	AND-4	0	NAND-4	0	RR-2	0	DELAY-D	0			D
E	Ph. Check - 7	0	Excl. Ped DW	0	NAND-1	0	OR-7	0	Spec. Event 1	0	DELAY-E	0			E
F	Ph. Check - 8	0	Excl. Ped WK	0	NAND-2	0	OR-8	0	Spec. Event 2	0	DELAY-F	0			F

Assignable Outputs <C+0+E=127>

Row	Column Numbers ----> / Phase Names ---->	Phase 1	2	3	4	5	6	7	8
0	Ped Walk	0	7	0	7	0	7	0	7
1	Ped FDW	0	15	0	15	0	15	0	15
2	Min Green	4	7	4	4	4	7	4	4
3	Type 3 Disconnect	0	20	0	20	0	20	0	20
4	Added per Vehicle	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0
5	Veh Extension	2.0	4.0	2.0	2.5	2.0	4.0	2.0	2.5
6	Max Gap	3.0	6.0	3.0	3.0	3.0	6.0	3.0	3.0
7	Min Gap	0.5	2.0	0.5	1.5	0.5	2.0	0.5	1.5
8	Max Limit	20	30	20	25	20	30	20	25
9	Max Limit 2	30	50	30	40	30	50	30	40
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	7	7	7	7	7	7	7	7
C	Cond Serv Check	10	10	10	10	10	10	10	10
D	Reduce Every	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
E	Yellow Change	3.0	4.0	3.0	3.0	3.0	4.0	3.0	3.0
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Phase Timing - Bank 2 <C+0+F=2>

	9	A	B	C	D
	---	---	---	---	---
Phase 1	0	0	0	0	0.0
Phase 2	20	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	20	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	20	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	20	0	0	0	0.0

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = Number of cycles when lengthing

Transition Type	0.3	<C/5+1+9>

TBC Transition

Lag Hold Phases		<C/5+1+A>

Coordinated Lag Hold Phases

Daylight Savings Date
If set to all zeros, standard dates will be used.

Begin Month	4	<C/5+2+A>
Begin Week	1	<C/5+2+B>
End Month	10	<C/5+2+C>
End Week	5	<C/5+2+D>

Daylight Savings Time

Time B4 Yellow	0.0	<F/1+C+E>
Phase Number	0	<F/1+C+F>

Advance Warning Beacon - Sign 1

Time B4 Yellow	0.0	<F/1+D+E>
Phase Number	0	<F/1+D+F>

Advance Warning Beacon - Sign 2

Row	1	2	3	4	5	6	7	8
0	Ped Walk	0	7	0	7	0	7	0	7
1	Ped FDW	0	15	0	15	0	15	0	15
2	Min Green	4	7	4	4	4	7	4	4
3	Type 3 Disconnect	0	20	0	20	0	20	0	20
4	Added per Vehicle	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0
5	Veh Extension	2.0	4.0	2.0	2.5	2.0	4.0	2.0	2.5
6	Max Gap	3.0	6.0	3.0	3.0	3.0	6.0	3.0	3.0
7	Min Gap	0.5	2.0	0.5	1.5	0.5	2.0	0.5	1.5
8	Max Limit	20	30	20	25	20	30	20	25
9	Max Limit 2	30	50	30	40	30	50	30	40
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	7	7	7	7	7	7	7	7
C	Cond Serv Check	10	10	10	10	10	10	10	10
D	Reduce Every	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
E	Yellow Change	3.0	4.0	3.0	3.0	3.0	4.0	3.0	3.0
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Phase Timing - Bank 3 <C+0+F=3>

	9	A	B	C	D
	---	---	---	---	---
Phase 1	0	0	0	0	0.0
Phase 2	20	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	20	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	20	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	20	0	0	0	0.0

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing

Column Numbers ---->	0	1	2	3	1	3
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		39	45_7_	2	123	0.0	0.0
1		40	45_7_	6	123	0.0	0.0
2		41	45_7_	4	123	0.0	0.0
3		42	45_7_	8	123	0.0	0.0
4		43	45_7_	2	123	10.0	0.0
5		44	45_7_	6	123	0.0	0.0
6		45	45_7_	4	123	0.0	0.0
7		46	45_7_	8	123	0.0	0.0
8		47	67	2	123	0.0	0.0
9		48	67	6	123	0.0	0.0
A		49	67	4	123	0.0	0.0
B		50	67	8	123	0.0	0.0
C		55	45_7_	5	123	0.0	0.0
D		56	45_7_	1	123	0.0	0.0
E		57	45_7_	7	123	0.0	0.0
F		58	45_7_	3	123	0.0	0.0

	4	5	6	7	2	4
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		59	45_7_	5	123	0.0	0.0
1		60	45_7_	1	123	0.0	0.0
2		61	45_7_	7	123	0.0	0.0
3		62	45_7_	3	123	0.0	0.0
4		63	45_7_	2	123	5.0	0.0
5		64	45_7_	6	123	0.0	0.0
6		65	45_7_	4	123	0.0	0.0
7		66	45_7_	8	123	0.0	0.0
8		67	2	2	123	0.0	0.0
9		68	2	6	123	0.0	0.0
A		69	2	4	123	0.0	0.0
B		70	2	3	123	0.0	0.0
C		76	45_7_	2	123	0.0	0.0
D		77	45_7_	6	123	0.0	0.0
E		78	45_7_	4	123	0.0	0.0
F		79	45_7_	8	123	0.0	0.0

Detector Assignments <C+0+E=126> <C+0+D=0>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 =
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

Column Numbers ---->	Ped / Phase / Overlap 1	2	3	4	5	6	7	8	Row
Walk	0	0	0	0	0	0	0	0	0
Don't Walk	0	0	0	0	0	0	0	0	1
Phase Green	0	0	0	0	0	0	0	0	2
Phase Yellow	0	0	0	0	0	0	0	0	3
Phase Red	0	0	0	0	0	0	0	0	4
Overlap Green	0	0	0	0	0	0	0	0	5
Overlap Yellow	0	0	0	0	0	0	0	0	6
Overlap Red	0	0	0	0	0	0	0	0	7

Redirect Phase Outputs <C+0+E=127>

Cabinet Type	0	<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)	20	<D/0+0+1>
Max ON (minutes)	7	<D/0+0+2>

Detector Failure Monitor

Disable Alarms
1 = Stop Time
2 = Flash Sense
3 = Keyboard Entry
4 = Manual Plan
5 = Police Control
6 = External Alarm
7 = Detector Failure
8 =

	B	Row
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

Delay Logic Times
<C+0+D=0> (seconds)

Omit Alarm		<C/5+F+0>

Disable Alarm Reporting

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	
1	06 : 30	4	A	23456
2	09 : 00	5	A	23456
3	15 : 00	6	A	23456
4	19 : 00	E	A	23456
5	10 : 00	5	A	1 7
6	18 : 00	E	A	1 7
7	00 : 00	0	0	
8	00 : 00	0	0	
9	00 : 00	0	0	
A	00 : 00	0	0	
B	00 : 00	0	0	
C	00 : 00	0	0	
D	00 : 00	0	0	
E	00 : 00	0	0	
F	00 : 00	0	0	

TOD Coordination <C+0+9=0.1>
(Bank 1)

Time	Funct.	Day of Week	Column 4 Phases/Bits
00 : 05	E	1234567	78
23 : 45	E	1234567	
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		

TOD Function <C+0+7=0.1> <C+0+E=27>

Day	Year	Month	Holiday Type
04	10	7	1234567
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	

Holiday Dates <C+0+8=1.1>
(Bank 1)

Time	Plan	Offset	Holiday Type
20 : 00	6	A	1234567
23 : 00	E	A	1234567
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	

Holiday Events <C+0+9=1.1>
(Bank 1)

T.O.D. Functions
0 =
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 5 - Disable Low Priority Preempt
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

Month Select
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
A = October
B = November
C = December

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	
1	00 : 00	0	0	
2	00 : 00	0	0	
3	00 : 00	0	0	
4	00 : 00	0	0	
5	00 : 00	0	0	
6	00 : 00	0	0	
7	00 : 00	0	0	
8	00 : 00	0	0	
9	00 : 00	0	0	
A	00 : 00	0	0	
B	00 : 00	0	0	
C	00 : 00	0	0	
D	00 : 00	0	0	
E	00 : 00	0	0	
F	00 : 00	0	0	

TOD Coordination <C+0+9=0.2>
(Bank 2)

Time	Funct.	Holiday Type	Column 4 Phases/Bits
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		

Holiday TOD Function <C+0+7=0.2> <C+0+E=28>

Day	Year	Month	Holiday Type
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	

Holiday Events <C+0+9=1.2>
(Bank 2)

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		4		4				123456	234_6	
2		20				123_56	4	4	234_6	
3		0				4	2 6	12 6		
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Notes:

3 <E/27+5+F>
Limited Service Interval

Special Event Schedule -- Table 1 <C+0+E=27>

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Notes:

0 <E/28+5+F>
Limited Service Interval

Special Event Schedule -- Table 2 <C+0+E=28>

Min Time (seconds) | 0 | <F/1+0+8>
Min Green Before PE Force Off

Max Time (minutes) | 255 | <F/1+0+9>
Max Preempt Time Before Failure

Min Time (seconds) | 0 | <F/1+0+A>
Min Time Between Same Preempts
(Does Not Apply To Railroad Preempt)

Low Pri. Channel | _____ | <E/125+C+8>
Disable Low Priority Channel

Low Priority
1 = Channel A
2 = Channel B
3 = Channel C
4 = Channel D

Delay Time (seconds) | 0 | <F/1+A+D>
Bus Delay

Max Time (seconds) | 0 | <F/1+A+E>
Max Early Green

Max Time (seconds) | 0 | <F/1+A+F>
Max Green Extension

Row	Time	Headway	Direction	Day of Week
0	00 : 00	0	0	_____
1	00 : 00	0	0	_____
2	00 : 00	0	0	_____
3	00 : 00	0	0	_____
4	00 : 00	0	0	_____
5	00 : 00	0	0	_____
6	00 : 00	0	0	_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

Headway <C+0+9=2.1>

Headway Time
(minutes)
1 thru 9 = 1 thru 9
A = 10
B = 11
C = 12
D = 13
E = 14
F = 15

Low Priority Preemption (Bus Priority)

Only available with *Program 233RV2.B* (and above)

Note: Also see "Time of Day Functions", Function E, Bit 5 (Disable Low Priority)

INTERSECTION: Oceanside & State Tree

Group Assignment: **NONE**
Field Master Assignment: **NONE**
System Reference Number: **48**

N/S Street Name: **Not Assigned**
E/W Street Name: **Not Assigned**

Last Database Change: **2/15/2021 2:09**

Change Record					
Change	By	Date	Change	By	Date

Notes:

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Drop Number	3	<C/0+0+0>
Zone Number	3	<C/0+0+1>
Area Number	1	<C/0+0+2>
Area Address	48	<C/0+0+3>
QuicNet Channel	Serial:COM38:	(QuicNet)

Communication Addresses

Manual Plan		<C/0+A+1>
Manual Offset		<C/0+B+1>

Manual Selection

Flash Start	0	<F/1+0+E>
Red Revert	5.0	<F/1+0+F>
All Red Start	5.0	<F/1+C+0>

Start / Revert Times

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase
(Outputs specified in Assignable Outputs at E/127+A+E & F)

Row	Column Numbers ----> / Phase Names ---->	Phase 1	2	3	4	5	6	7	8
0	Ped Walk	0	7	4	0	0	7	0	5
1	Ped FDW	0	15	18	0	0	15	0	18
2	Min Green	5	8	6	6	5	8	4	4
3	Type 3 Disconnect	0	99	0	0	0	99	0	0
4	Added per Vehicle	0.0	1.5	0.0	0.0	0.0	1.5	0.0	0.0
5	Veh Extension	2.0	4.0	3.0	3.0	2.0	4.0	2.0	3.0
6	Max Gap	2.0	5.0	3.0	3.0	2.0	5.0	3.0	3.0
7	Min Gap	2.0	3.0	3.0	3.0	2.0	3.0	0.5	3.0
8	Max Limit	30	70	30	20	30	70	20	25
9	Max Limit 2	30	70	30	40	30	70	30	40
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
E	Yellow Change	3.6	4.1	3.6	3.6	3.6	4.1	3.0	3.6
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Phase Timing - Bank 1 <C+0+F=1>

	9	A	B	C	D
	---	---	---	---	---
Phase 1	0	0	0	0	0.0
Phase 2	20	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	20	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	20	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	20	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <C+0+F=1>

E	
RR-1 Delay	0
RR-1 Clear	0
EV-A Delay	0
EV-A Clear	5
EV-B Delay	0
EV-B Clear	5
EV-C Delay	0
EV-C Clear	5
EV-D Delay	0
EV-D Clear	5
RR-2 Delay	0
RR-2 Clear	0
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing

Row	F	
0	Permit	123456__
1	Red Lock	_____
2	Yellow Lock	_____
3	Min Recall	_2___6__
4	Ped Recall	_____
5	*View Set Peds*	-----
6	Rest In Walk	_____
7	Red Rest	_____
8	Dual Entry	_2___6__
9	Max Recall	_____
A	Soft Recall	_____
B	Max 2	_____
C	Cond. Service	_____
D	Man Cntrl Calls	_____
E	Yellow Start	1___5___
F	First Phases	_2___6__

Phase Functions <C+0+F=1>

Row	Column Numbers --->	Overlap 1	2	3	4	5	6	7	8	Row
	Overlap Name --->									
0	Load Switch Number	0	0	0	0	0	0	0	0	0
1	Veh Set 1 - Phases									1
2	Veh Set 2 - Phases									2
3	Veh Set 3 - Phases									3
4	Neg Veh Phases									4
5	Neg Ped Phases									5
6	Green Omit Phases									6
7	Green Clear Omit Phs.									7
8										8
9										9
A										A
B										B
C										C
D	Green Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	D
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	E
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	F

Overlap Assignments <C+0+E=29>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = Solid FDW on EV
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

Extra 2 Flags
1 = AWB During Initial
2 = LMU Installed
3 = Disable Min Walk
4 = QuicNet/4 System
5 = Ignore P/P on EV
6 =
7 = Allow QuicNet PE
8 =

Row		C	Row
0	EV-A	0	0
1	EV-B	0	1
2	EV-C	0	2
3	EV-D	0	3
4	RR-1 *	- - -	4
5	RR-2 *	- - -	5
6	SE-1	0	6
7	SE-2	0	7

Preempt Priority <C+0+E=125>
(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row	Column Numbers --->	E	Row
0	Exclusive Phases		0
1	RR-1 Clear Phases		1
2	RR-2 Clear Phases	3	2
3	RR-2 Limited Service	2 56	3
4	Prot / Perm Phases		4
5	Flash to PE Circuits		5
6	Flash Entry Phases		6
7	Disable Yellow Range		7
8	Disable Ovp Yel Range		8
9	Overlap Yellow Flash		9
A	EV-A Phases	2 5	A
B	EV-B Phases	4 7	B
C	EV-C Phases	1 6	C
D	EV-D Phases	3 8	D
E	Extra 1 Config. Bits	1 45	E
F	IC Select (Interconnect)	2	F

Configuration <C+0+E=125>

	F
Ext. Permit 1 Phases	
Ext. Permit 2 Phases	
Exclusive Ped Assign	
Preempt Non-Lock	12345678
Ped for 2P Output	2
Ped for 6P Output	6
Ped for 4P Output	
Ped for 8P Output	3
Yellow Flash Phases	
Low Priority A Phases	
Low Priority B Phases	
Low Priority C Phases	
Low Priority D Phases	
Restricted Phases	
Extra 2 Config. Bits	

Configuration <C+0+E=125>

	F
Fast Green Flash Phase	
Green Flash Phases	
Flashing Walk Phases	
Guaranteed Passage	
Simultaneous Gap Term	12345678
Sequential Timing	
Advance Walk Phases	
Delay Walk Phases	
External Recall	
Start-up Overlap Green	
Max Extension	
Inhibit Ped Reservice	
Semi-Actuated	
Start-up Overlap Yellow	
Start-up Vehicle Calls	_2_4_6_8
Start-up Ped Calls	_2_4_6_8

Specials <C+0+F=2>

Flash to PE & PE Non-Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Row		2	Row
0	Phase 1	10	0
1	Phase 2	10	1
2	Phase 3	10	2
3	Phase 4	10	3
4	Phase 5	10	4
5	Phase 6	10	5
6	Phase 7	10	6
7	Phase 8	10	7

Coordination Transition Minimums <C+0+C=5>

Coord Extra
1 = Programmed WALK Time for Sync Phases
2 = Always Terminate Sync Phase Peds

Row	Column Numbers ---->	Plan 1	2	3	4	5	6	7	8	9	Row
	Plan Name ----->										
0	Cycle Length	100	100	100	100	100	130	130	100	100	0
1	Phase 1 - ForceOff	55	55	55	63	22	80	50	55	55	1
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0	2
3	Phase 3 - ForceOff	20	20	20	20	47	40	1	20	20	3
4	Phase 4 - ForceOff	40	40	30	40	65	60	30	40	40	4
5	Phase 5 - ForceOff	55	55	55	63	82	20	50	55	55	5
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0	6
7	Phase 7 - ForceOff	20	20	20	1	1	1	1	20	20	7
8	Phase 8 - ForceOff	40	40	40	1	1	1	30	40	40	8
9	Ring Offset	0	0	0	0	0	0	0	0	0	9
A	Offset 1	0	0	0	10	52	4	123	0	0	A
B	Offset 2	0	0	0	0	0	0	0	0	0	B
C	Offset 3	0	0	0	0	0	0	0	0	0	C
D	Perm 1 - End	15	15	15	12	25	12	15	15	15	D
E	Hold Release	255	255	255	255	255	255	255	255	255	E
F	Zone Offset	0	0	0	0	0	0	0	0	0	F

Coordination - Bank 1 <C+0+C=1>

Row		E	Row
			0
1	Plan 1 - Sync	2 6	1
2	Plan 2 - Sync	2 6	2
3	Plan 3 - Sync	2 6	3
4	Plan 4 - Sync	2 6	4
5	Plan 5 - Sync	2 6	5
6	Plan 6 - Sync	2 6	6
7	Plan 7 - Sync	2 6	7
8	Plan 8 - Sync	2 6	8
9	Plan 9 - Sync	2 6	9
A	NEMA Sync		A
B	NEMA Hold		B
C			C
D			D
E	Coord Extra		E
F			F

Sync Phases <C+0+C=1>

Row		Plan 1	2	3	4	5	6	7	8	9	Row
0	Ped Adjustment	0	0	0	5	5	5	0	0	0	0
1	Perm 2 - Start	0	0	0	0	0	0	0	0	0	1
2	Perm 2 - End	0	0	0	0	0	0	0	0	0	2
3	Perm 3 - Start	0	0	0	0	0	0	0	0	0	3
4	Perm 3 - End	0	0	0	0	0	0	0	0	0	4
5	Reservice Time	0	0	0	0	0	0	0	0	0	5
6	Reservice Phases										6
7											7
8	Pretimed Phases										8
9	Max Recall										9
A	Perm 1 Veh Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	A
B	Perm 1 Ped Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	B
C	Perm 2 Veh Phase										C
D	Perm 2 Ped Phase										D
E	Perm 3 Veh Phase										E
F	Perm 3 Ped Phase										F

Coordination - Bank 2 <C+0+C=2>

Row		F	Row
0	Free Lag	2 4 6 8	0
1	Plan 1 - Lag	2 4 6 8	1
2	Plan 2 - Lag	2 4 6 8	2
3	Plan 3 - Lag	2 4 6 8	3
4	Plan 4 - Lag	2 4 6 8	4
5	Plan 5 - Lag	1 4 6 8	5
6	Plan 6 - Lag	2 45 8	6
7	Plan 7 - Lag	2 4 6 8	7
8	Plan 8 - Lag	2 4 6 8	8
9	Plan 9 - Lag	2 4 6 8	9
A	External Lag		A
B			B
C			C
D			D
E			E
F			F

Lag Phases <C+0+C=1>

Row	Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Spec. Funct. 1	0	NOT-3	0	Max 2	0	Pretimed	0	Set Monday	0	Dial 2 (7-Wire)	0	Sim Term	0	0
1	Spec. Funct. 2	0	NOT-4	0	System Det 1	0	Plan 1	0	Ext. Perm 1	0	Dial 3 (7-Wire)	0	EV-A	71	1
2	Spec. Funct. 3	0	OR-4 (a)	0	System Det 2	0	Plan 2	0	Ext. Perm 2	0	Offset 1 (7-Wire)	0	EV-B	72	2
3	Spec. Funct. 4	0	OR-4 (b)	0	System Det 3	0	Plan 3	0	Reserved	0	Offset 2 (7-Wire)	0	EV-C	73	3
4	NAND-3 (a)	0	OR-5 (a)	0	System Det 4	0	Plan 4	0	Set Clock	0	Offset 3 (7-Wire)	0	EV-D	74	4
5	NAND-3 (b)	0	OR-5 (b)	0	System Det 5	0	Plan 5	0	Stop Time	82	Free (7-Wire)	0	RR-1	51	5
6	NAND-4 (a)	0	OR-6 (a)	0	System Det 6	0	Plan 6	0	Flash Sense	81	Flash (7-Wire)	0	RR-2	0	6
7	NAND-4 (b)	0	OR-6 (b)	0	System Det 7	0	Plan 7	0	Manual Enable	0	Excl. Ped Omit	0	Spec. Event 1	52	7
8	OR-7 (a)	0	Fig 3 Diamond	0	System Det 8	0	Plan 8	0	Man. Advance	0	NOT-1	0	Spec. Event 2	0	8
9	OR-7 (b)	0	Fig 4 Diamond	0	Max Inhibit (nema)	0	Plan 9	0	External Alarm	0	NOT-2	0	External Lag	0	9
A	OR-7 (c)	0	AND-4 (a)	0	Force A (nema)	0	DELAY-A	0	Phase Bank 2	0	OR-1 (a)	0	AND-1 (a)	0	A
B	OR-7 (d)	0	AND-4 (b)	0	Force B (nema)	0	DELAY-B	0	Phase Bank 3	0	OR-1 (b)	0	AND-1 (b)	0	B
C	OR-8 (a)	0	NAND-1 (a)	0	C.N.A. (nema)	0	DELAY-C	0	Overlap Set 2	0	OR-2 (a)	0	AND-2 (a)	0	C
D	OR-8 (b)	0	NAND-1 (b)	0	Hold (nema)	0	DELAY-D	0	Overlap Set 3	0	OR-2 (b)	0	AND-2 (b)	0	D
E	OR-8 (c)	0	NAND-2 (a)	0	Max Recall	0	DELAY-E	0	Detector Set 2	0	OR-3 (a)	0	AND-3 (a)	0	E
F	OR-8 (d)	0	NAND-2 (b)	0	Min Recall	0	DELAY-F	0	Detector Set 3	0	OR-3 (b)	0	AND-3 (b)	0	F

Assignable Inputs <C+0+E=126>

Row	Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Phase ON - 1	0	Preempt Fail	0	Flasher 0	0	Free	0	NOT-1	0	TOD Out 1	0	Dial 2 (7-Wire)	0	0
1	Phase ON - 2	0	Sp Evnt Out 1	0	Flasher 1	0	Plan 1	0	OR-1	0	TOD Out 2	0	Dial 3 (7-Wire)	0	1
2	Phase ON - 3	0	Sp Evnt Out 2	0	Fast Flasher	0	Plan 2	0	OR-2	0	TOD Out 3	0	Offset 1 (7-Wire)	0	2
3	Phase ON - 4	0	Sp Evnt Out 3	0	Fig 3 Diamond	0	Plan 3	0	OR-3	0	TOD Out 4	0	Offset 2 (7-Wire)	0	3
4	Phase ON - 5	0	Sp Evnt Out 4	0	Fig 4 Diamond	0	Plan 4	0	AND-1	0	TOD Out 5	0	Offset 3 (7-Wire)	0	4
5	Phase ON - 6	0	Sp Evnt Out 5	0			Plan 5	0	AND-2	0	TOD Out 6	0	Free (7-Wire)	0	5
6	Phase ON - 7	0	Sp Evnt Out 6	0			Plan 6	0	AND-3	0	TOD Out 7	0	Flash (7-Wire)	0	6
7	Phase ON - 8	0	Sp Evnt Out 7	0			Plan 7	0	NOT-2	0	TOD Out 8	0	Preempt	0	7
8	Ph. Check - 1	0	Sp Evnt Out 8	0	NOT-3	0	Plan 8	0	EV-A	0	Adv. Warn - 1	0	Low Priority A	0	8
9	Ph. Check - 2	0			NOT-4	0	Plan 9	0	EV-B	0	Adv. Warn - 2	0	Low Priority B	0	9
A	Ph. Check - 3	0	Detector Fail	0	OR-4	0	Spec. Funct. 3	0	EV-C	0	DELAY-A	0	Low Priority C	0	A
B	Ph. Check - 4	0	Spec. Funct. 1	0	OR-5	0	Spec. Funct. 4	0	EV-D	0	DELAY-B	0	Low Priority D	0	B
C	Ph. Check - 5	0	Spec. Funct. 2	0	OR-6	0	NAND-3	0	RR-1	0	DELAY-C	0			C
D	Ph. Check - 6	0	Central Control	0	AND-4	0	NAND-4	0	RR-2	0	DELAY-D	0			D
E	Ph. Check - 7	0	Excl. Ped DW	0	NAND-1	0	OR-7	0	Spec. Event 1	0	DELAY-E	0			E
F	Ph. Check - 8	0	Excl. Ped WK	0	NAND-2	0	OR-8	0	Spec. Event 2	0	DELAY-F	0			F

Assignable Outputs <C+0+E=127>

Row	Column Numbers ----> / Phase Names ---->	Phase 1	2	3	4	5	6	7	8
0	Ped Walk	0	7	0	7	0	7	0	7
1	Ped FDW	0	15	0	15	0	15	0	15
2	Min Green	4	7	4	4	4	7	4	4
3	Type 3 Disconnect	0	20	0	20	0	20	0	20
4	Added per Vehicle	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0
5	Veh Extension	2.0	4.0	2.0	2.5	2.0	4.0	2.0	2.5
6	Max Gap	3.0	6.0	3.0	3.0	3.0	6.0	3.0	3.0
7	Min Gap	0.5	2.0	0.5	1.5	0.5	2.0	0.5	1.5
8	Max Limit	20	40	20	25	20	40	20	25
9	Max Limit 2	30	50	30	40	30	50	30	40
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	7	7	7	7	7	7	7	7
C	Cond Serv Check	10	10	10	10	10	10	10	10
D	Reduce Every	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
E	Yellow Change	3.0	4.0	3.0	3.0	3.0	4.0	3.0	3.0
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Phase Timing - Bank 2 <C+0+F=2>

	9	A	B	C	D
	---	---	---	---	---
Phase 1	0	0	0	0	0.0
Phase 2	20	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	20	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	20	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	20	0	0	0	0.0

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = Number of cycles when lengthing

Transition Type: 0.3 <C/5+1+9>
TBC Transition

Lag Hold Phases: _____ <C/5+1+A>
Coordinated Lag Hold Phases

Daylight Savings Date
If set to all zeros, standard dates will be used.

Begin Month	4	<C/5+2+A>
Begin Week	1	<C/5+2+B>
End Month	10	<C/5+2+C>
End Week	5	<C/5+2+D>

Daylight Savings Time

Time B4 Yellow	0.0	<F/1+C+E>
Phase Number	0	<F/1+C+F>

Advance Warning Beacon - Sign 1

Time B4 Yellow	0.0	<F/1+D+E>
Phase Number	0	<F/1+D+F>

Advance Warning Beacon - Sign 2

Row	1	2	3	4	5	6	7	8
0	Ped Walk	0	7	0	7	0	7	0	7
1	Ped FDW	0	15	0	15	0	15	0	15
2	Min Green	4	7	4	4	4	7	4	4
3	Type 3 Disconnect	0	20	0	20	0	20	0	20
4	Added per Vehicle	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0
5	Veh Extension	2.0	4.0	2.0	2.5	2.0	4.0	2.0	2.5
6	Max Gap	3.0	6.0	3.0	3.0	3.0	6.0	3.0	3.0
7	Min Gap	0.5	2.0	0.5	1.5	0.5	2.0	0.5	1.5
8	Max Limit	20	30	20	25	20	30	20	25
9	Max Limit 2	30	50	30	40	30	50	30	40
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	7	192	7	7	7	7	7	7
C	Cond Serv Check	10	193	10	10	10	10	10	10
D	Reduce Every	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
E	Yellow Change	3.0	4.0	3.0	3.0	3.0	4.0	3.0	3.0
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Phase Timing - Bank 3 <C+0+F=3>

	9	A	B	C	D
	---	---	---	---	---
Phase 1	0	0	0	0	0.0
Phase 2	20	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	20	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	20	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	20	0	0	0	0.0

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing

Column Numbers ---->		0	1	2	3	1	3	
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over	Row
0		39	45_7_	2	123	0.0	0.0	0
1		40	45_7_	6	123	0.0	0.0	1
2		41	45_7_	4	123	0.0	0.0	2
3		42	45_7_	8	123	0.0	0.0	3
4		43	45_7_	2	123	0.0	0.0	4
5		44	45_7_	6	123	0.0	0.0	5
6		45	45_7_	4	123	5.0	0.0	6
7		46	45_7_	8	123	5.0	0.0	7
8		47	67	2	123	0.0	0.0	8
9		48	67	6	123	0.0	0.0	9
A		49	67	4	123	0.0	0.0	A
B		50	67	8	123	0.0	0.0	B
C		55	45_7_	5	123	0.0	0.0	C
D		56	45_7_	1	123	0.0	0.0	D
E		57	45_7_	7	123	0.0	0.0	E
F		58	45_7_	3	123	0.0	0.0	F

		4	5	6	7	2	4	
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over	Row
0		59	45_7_	5	123	0.0	0.0	0
1		60	45_7_	1	123	0.0	0.0	1
2		61	45_7_	7	123	0.0	0.0	2
3		62	45_7_	3	123	0.0	0.0	3
4		63	45_7_	2	123	0.0	0.0	4
5		64	45_7_	6	123	0.0	0.0	5
6		65	45_7_	4	123	0.0	0.0	6
7		66	45_7_	8	123	0.0	0.0	7
8		67	2	2	123	0.0	0.0	8
9		68	2	6	123	0.0	0.0	9
A		69	2	4	123	0.0	0.0	A
B		70	2	3	123	0.0	0.0	B
C		76	45_7_	2	123	0.0	0.0	C
D		77	45_7_	6	123	0.0	0.0	D
E		78	45_7_	4	123	0.0	0.0	E
F		79	45_7_	8	123	0.0	0.0	F

Detector Assignments <C+0+E=126> <C+0+D=0>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 =
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

Column Numbers ---->	Ped / Phase / Overlap 1	2	3	4	5	6	7	8	Row
Walk	0	0	0	0	0	0	0	0	0
Don't Walk	0	0	0	0	0	0	0	0	1
Phase Green	0	0	0	0	0	0	0	0	2
Phase Yellow	0	0	0	0	0	0	0	0	3
Phase Red	0	0	0	0	0	0	0	0	4
Overlap Green	0	0	0	0	0	0	0	0	5
Overlap Yellow	0	0	0	0	0	0	0	0	6
Overlap Red	0	0	0	0	0	0	0	0	7

Redirect Phase Outputs <C+0+E=127>

Cabinet Type	0	<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)	20	<D/0+0+1>
Max ON (minutes)	7	<D/0+0+2>

Detector Failure Monitor

Disable Alarms
1 = Stop Time
2 = Flash Sense
3 = Keyboard Entry
4 = Manual Plan
5 = Police Control
6 = External Alarm
7 = Detector Failure
8 =

	B	Row
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

Delay Logic Times
<C+0+D=0> (seconds)

Omit Alarm		<C/5+F+0>

Disable Alarm Reporting

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	
1	06 : 30	4	A	23456
2	09 : 00	5	A	23456
3	15 : 00	6	A	23456
4	19 : 00	E	A	23456
5	10 : 00	5	A	1 7
6	18 : 00	E	A	1 7
7	00 : 00	0	0	
8	00 : 00	0	0	
9	00 : 00	0	0	
A	00 : 00	0	0	
B	00 : 00	0	0	
C	00 : 00	0	0	
D	00 : 00	0	0	
E	00 : 00	0	0	
F	00 : 00	0	0	

TOD Coordination <C+0+9=0.1>
(Bank 1)

Time	Funct.	Day of Week	Column 4 Phases/Bits
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		

TOD Function <C+0+7=0.1> <C+0+E=27>

Day	Year	Month	Holiday Type
04	10	7	1234567
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	

Holiday Dates <C+0+8=1.1>
(Bank 1)

Time	Plan	Offset	Holiday Type
20 : 00	6	A	1234567
23 : 00	E	A	1234567
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	

Holiday Events <C+0+9=1.1>
(Bank 1)

T.O.D. Functions
0 =
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 5 - Disable Low Priority Preempt
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

Month Select
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
A = October
B = November
C = December

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	
1	00 : 00	0	0	
2	00 : 00	0	0	
3	00 : 00	0	0	
4	00 : 00	0	0	
5	00 : 00	0	0	
6	00 : 00	0	0	
7	00 : 00	0	0	
8	00 : 00	0	0	
9	00 : 00	0	0	
A	00 : 00	0	0	
B	00 : 00	0	0	
C	00 : 00	0	0	
D	00 : 00	0	0	
E	00 : 00	0	0	
F	00 : 00	0	0	

TOD Coordination <C+0+9=0.2>
(Bank 2)

Time	Funct.	Holiday Type	Column 4 Phases/Bits
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		
00 : 00	0		

Holiday TOD Function <C+0+7=0.2> <C+0+E=28>

Day	Year	Month	Holiday Type
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	
00	00	0	

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	
00 : 00	0	0	

Holiday Events <C+0+9=1.2>
(Bank 2)

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		10		3				123456	23 6	
2		21				12 456	3	3	23 6	
3		0				3	2 6	2 56		
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Special Event Schedule -- Table 1 <C+0+E=27>

Notes:

3 <E/27+5+F>
Limited Service Interval

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		255								
A		0								
B		0								
C		24								
D		0								
E		0								
F		0								

Special Event Schedule -- Table 2 <C+0+E=28>

Notes:

0 <E/28+5+F>
Limited Service Interval

Min Time (seconds) | 0 | <F/1+0+8>
Min Green Before PE Force Off

Max Time (minutes) | 255 | <F/1+0+9>
Max Preempt Time Before Failure

Min Time (seconds) | 0 | <F/1+0+A>
Min Time Between Same Preempts
(Does Not Apply To Railroad Preempt)

Low Pri. Channel | _____ | <E/125+C+8>
Disable Low Priority Channel

Low Priority
1 = Channel A
2 = Channel B
3 = Channel C
4 = Channel D

Delay Time (seconds) | 0 | <F/1+A+D>
Bus Delay

Max Time (seconds) | 0 | <F/1+A+E>
Max Early Green

Max Time (seconds) | 0 | <F/1+A+F>
Max Green Extension

Row	Time	Headway	Direction	Day of Week
0	00 : 00	0	0	_____
1	00 : 00	0	0	_____
2	00 : 00	0	0	_____
3	00 : 00	0	0	_____
4	00 : 00	0	0	_____
5	00 : 00	0	0	_____
6	00 : 00	0	0	_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

Headway <C+0+9=2.1>

Headway Time
(minutes)
1 thru 9 = 1 thru 9
A = 10
B = 11
C = 12
D = 13
E = 14
F = 15

Low Priority Preemption (Bus Priority)

Only available with *Program 233RV2.B* (and above)
Note: Also see "Time of Day Functions", Function E, Bit 5 (Disable Low Priority)