

BELLA MAR

LOCAL MOBILITY ANALYSIS



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PTS #: 631240

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EXECUTIVE SUMMARY

This Local Mobility Analysis (LMA) evaluates the potential traffic effects associated with the proposed Bella Mar project. The City of San Diego (City) Draft Transportation Study Manual (TSM) dated June 2020 was used to develop this LMA. A Vehicle Miles Traveled (VMT) analysis was also performed per CEQA, and the results are provided in a separate memorandum provided in **Appendix M**. The results of the VMT analysis indicated the project has less than significant transportation impacts per CEQA.

The proposed project is located the Otay Mesa-Nestor Community Planning area, east of Imperial Beach and south of the City of Chula Vista. The approximately 14-acre site is bounded by Interstate 5 (I-5) to the west and Hollister Street to the east, between Palm Avenue to the south and Main Street to the north.

The Bella Mar project is proposing to construct 380 multi-family residential units—including 100 affordable housing units. The project requires a General Plan, Community Plan Amendment, and Local Coastal Program Land Use Amendments; Rezone, a Site Development Permit, a Coastal Development Permit, a Tentative Map, Neighborhood Development Permit, an MHPA Boundary Line Adjustment, and the rescinding of the existing Conditional Use Permit.

Project Information

The project will involve construction of a 380-unit multi-family dwelling unit building on a currently empty lot located at 408 Hollister Street between Main Street and Palm Avenue. The project includes 100 affordable units. The entire project is planned to be constructed in one phase. Access to the site will be established through construction of two unsignalized full-access driveways on Hollister Street.

The *San Diego Municipal Code, Land Development Code, Trip Generation Manual (Rev. 2003)*, was referenced to calculate the estimated trip generation for the site. The driveway trip generation rate of 6 trips per dwelling unit for *Multiple Dwelling Unit – Over 20 dwelling units/acre* was used to estimate trips for the project. As per The City of San Diego's draft TSM, a 10% daily trip reduction and 14% AM and PM peak trip reduction was then applied to account for the project's proximity within a half-mile of a major transit stop (Palm Avenue Transit Station). The resulting trip generation with the trip reduction is 2,052 daily trips with 156 morning peak-hour trips (31 in, 125 out) and 176 afternoon peak-hour trips (124 in, 52 out). **Table 4-1** summarizes the trip generation for the site.

Analysis Scenarios

Per the City's TSM, five scenarios were analyzed as part of this analysis, listed below:

- Existing Conditions
- Opening Year (2021) Conditions
- Opening Year (2021) Conditions with Project
- Horizon Year (2050) Baseline Conditions
- Horizon Year (2050) with Cumulative Project
- Horizon Year (2050) Conditions with Project

Study Area

The study area was determined based on the project's trip assignment and reflects the main access routes to and from the project site, mainly providing access to I-5, Main Street, and Palm Avenue. The study area also includes a half-mile walkshed and bikeshed for evaluating pedestrian, bicycle, and transit facilities. The study area facilities are in three jurisdictions: Caltrans, City of Chula Vista, and the City of San Diego.

Cumulative Projects

The proposed Otay River Business Park in the City of Chula Vista is currently under construction, and traffic volumes were included in the Opening Year (2021) baseline analysis. The Salt Bay Design District project, also located largely in the City of Chula Vista, is anticipated for construction after opening year for the Bella Mar project. The Salt Bay Design District was not included in future models based on the volumes reflected in the model. Therefore, Salt Bay Design District traffic volumes were included manually in the Horizon Year (2050) baseline analysis.

Summary of Project Effects and Recommended Improvements

Table E-1 displays the intersection delay and LOS at all study intersections for the scenarios analyzed. As shown in the table, all intersections would operate at LOS D or better for the scenarios except for the following:

- **Intersection 1** – Main Street & I-5 SB Ramps (Opening Year 2021 direct project effect)
- **Intersection 2** – Main Street & I-5 NB Ramps (Horizon Year 2050 project effect)
- **Intersection 4** – Palm Avenue & I-5 SB Ramps (Horizon Year 2050 project effect)

The Bella Mar project would have a project effect at the intersection of Main Street and I-5 Southbound Ramps starting in Opening Year 2021. Operations at the intersection could be restored to better than baseline conditions by installing a traffic signal or roundabout. However, the City of Chula Vista does not currently have a project at this location for the developer to pay a fair share contribution towards. Therefore, no improvement is required as part of this project.

The project also has cumulative project effects at the Palm Avenue and I-5 southbound ramps intersection and the Main Street and I-5 northbound ramps intersection based on Horizon Year (2050) with Project Conditions. The City of San Diego and City of Chula Vista do not currently have projects identified at these locations for the developer to pay a fair share contribution towards. Therefore, no improvement is required as part of this project.

Table E-2 displays the daily traffic volumes and LOS at all the study roadway segments for the different scenarios analyzed. As shown in the table, the anticipated project traffic will have project effects at the following roadway segments under the following conditions:

- **Hollister Street** between Main Street and Marian Avenue (Opening Year Plus Project direct project effect)
- **Hollister Street** between Marian Avenue and the North Project Limit (Opening Year Plus Project direct project effect)
- **Hollister Street** between the South Project Limit and Conifer Avenue (Horizon Year Plus Project Cumulative project effect)
- **Hollister Street** between Conifer Avenue and Palm Avenue (Opening Year Plus Project direct project effect)
- **Palm Avenue** between I-5 NB Ramps and Hollister Street (Horizon Year Plus Project Cumulative project effect)

Table E-3 shows the recommended improvements for the roadway segments with project effects. As part of proposed project Hollister Street will be widened by 16 feet along the project frontage to include a continuous two-way left turn lane and buffered bike lanes, as identified in the Otay Mesa Nestor Community Plan. Two segments of Hollister Street, Main Street to Marian Avenue and Conifer Avenue to Palm Avenue,

will be restriped to include a two-way left turn lane. Parking removal will be required for the southern segment between Conifer Avenue and Palm Avenue to accommodate the restriping.

Table E-4 displays the freeway speed, density, LOS at all the study freeway facilities for the different scenarios analyzed. As shown in the table, all study freeway facilities would operate at LOS D or better with the addition of the proposed project except for the I-5 Northbound Palm Avenue Off-Ramp, the I-5 Southbound Main Street Off-Ramp, and the I-5 Southbound weave segment between Main Street and Palm Avenue. These segments are expected to operate at LOS E or F during a peak period under Opening Year (2021) Plus Project and / or Horizon Year (2050) Plus Project Conditions. These segments would have minimal effect by the project and no project effect would occur.

Table E-5 displays the freeway off-ramp 95th percentile queue lengths for the study area intersections. This determines whether queue lengths can be expected to affect freeway mainline operations based on the storage length available for the off-ramps. As shown in the table, the following off-ramp will be affected by project traffic:

- I-5 Southbound at Main Street (Horizon Year Plus Project Cumulative project effect)

The queuing issue at this intersection is a result of large growth of volumes associated with cumulative projects and the operational deficiency identified in the intersection analysis. The proposed project contributes a small portion of volumes to this ramp in comparison to the overall growth and would not independently create queues beyond the ramps. Queues could be improved with construction of a signal or roundabout, similar to operational improvements identified. The City of Chula Vista does not currently have a project at this location for the developer to pay a fair share contribution towards. Therefore, no improvement is required as part of this project.

Multi-Modal Improvements

The project trip generation assumes a reduction of trips due to the project's proximity to the Palm Avenue Trolley Station. As a result, accessible pedestrian connections to the trolley station are required. Additionally, the Otay Mesa-Nestor Community Plan calls for Class II bike lanes along Hollister Street within the study area. Hollister Street is constrained at the bridge crossing over the Otay River.

Based on the analysis of multi-modal facilities within ½ mile of the project site, the development of the project site will include the following improvements, shown in **Figure E-1**:

- Stripe buffered bike lanes along the project frontage.
- Relocate the southbound bus stop on Hollister Street for Bus Route 932 to be in front of the project site.
- Construct a bus stop on northbound Hollister Street for Bus Route 932 across from the project site.
- Construct a mid-block crossing across Hollister Street on the north side of the southern project driveway.
- Construct non-contiguous sidewalk facilities along the project frontage on southbound Hollister Street
- Construct non-contiguous sidewalk facilities along northbound Hollister Street from the proposed bus stop to the proposed mid-block crossing.
- Construct temporary accessible sidewalk along southbound Hollister Street between the project site and Conifer Avenue.
- Provide decomposed gravel path on northbound Hollister Street for connection to Otay Valley Regional Trail system.

Table E-1 Intersection Level of Service Analysis Summary

Intersection	Jurisdiction	Traffic Control (a)	Peak Hour	Existing Conditions		Opening Year (2021) Conditions		Opening Year (2021) with Project				Horizon Year (2050) Baseline Conditions		Horizon Year (2050) with Cumulative Project Conditions		Horizon Year (2050) with Project Conditions				
				Delay (b)	LOS (c)	Delay (b)	LOS (c)	Delay (b)	LOS (c)	Change	Eff? (d)	Delay (b)	LOS (c)	Delay (b)	LOS (c)	Delay (b)	LOS (c)	Change	Eff? (d)	
1	Main Street & I-5 SB Ramps	Caltrans	SSSC	AM	14.5	B	17.6	C	18.1	C	0.5	NO	18.8	C	251.0	F	263.6	F	244.8	YES
				PM	26.2	D	31.0	D	40.9	E	9.9	YES	72.4	F	**	F	**	F	**	YES
2	Main Street & I-5 NB Ramps	Caltrans	Signal	AM	14.8	B	16.3	B	17.8	B	1.5	NO	20.1	C	32.0	C	90.1	F	70.0	YES
				PM	15.8	B	19.0	B	19.9	B	0.9	NO	26.2	C	86.2	F	28.1	C	1.9	NO
3	Hollister Street & Main Street	Chula Vista	Signal	AM	11.6	B	12.5	B	13.7	B	1.2	NO	17.0	B	19.4	B	21.8	C	4.8	NO
				PM	19.6	B	21.2	C	22.5	C	1.3	NO	44.9	D	62.0	E	62.6	E	17.7	YES
4	Palm Avenue & I-5 SB Ramps	Caltrans	Signal	AM	39.4	D	44.0	D	46.6	D	2.6	NO	174.7	F	174.7	F	175.5	F	0.8	YES
				PM	65.3	E	73.2	E	73.5	E	0.3	NO	163.6	F	163.6	F	164.0	F	0.4	YES
5	Palm Avenue & I-5 NB Ramps	Caltrans	Signal	AM	11.2	B	11.6	B	12.0	B	0.4	NO	21.8	C	21.8	C	23.6	C	1.8	NO
				PM	10.2	B	10.5	B	10.8	B	0.3	NO	12.9	B	12.9	B	12.1	B	-0.8	NO
6	Hollister Street & Palm Avenue	San Diego	Signal	AM	13.6	B	14.3	B	15.7	B	1.4	NO	26.3	C	26.3	C	30.2	C	3.9	NO
				PM	15.3	B	16.4	B	17.9	B	1.5	NO	35.9	D	35.9	D	49.8	D	13.9	NO
7	Hollister Street & North Project Driveway	San Diego	SSSC	AM	Does not exist		Does not exist		10.7	B	10.7	NO	Does not exist		Does not exist		12.7	B	12.7	NO
				PM	Does not exist		Does not exist		12.3	B	12.3	NO	Does not exist		Does not exist		16.9	C	16.9	NO
8	Hollister Street & South Project Driveway	San Diego	SSSC	AM	Does not exist		Does not exist		10.8	B	10.8	NO	Does not exist		Does not exist		12.8	B	12.8	NO
				PM	Does not exist		Does not exist		12.2	B	12.2	NO	Does not exist		Does not exist		16.7	C	16.7	NO

Notes:

Bold values indicate intersections operating at LOS E or F. **Bold and Shaded** values indicate a project effect.

** Delay is beyond calculable values.

(a) Signal = Traffic Signal, SSSC = Side Street Stop Control

(b) Delay refers to the average control delay for the entire intersection measured in seconds per vehicle. At SSSC intersections, delay refers to the worst movement.

(c) LOS calculations based on methodologies outlined in the 6th Edition HCM and performed using Synchro 10.

(d) Project Effect?

Table E-2 Roadway Segment Level of Service Analysis Summary

Roadway Segment	Without Project Conditions		With Project Conditions		Existing Conditions (d)			Opening Year (2021) Conditions (d)			Opening Year (2021) with Project Conditions (f)			Horizon Year (2050) Baseline Conditions (d)			Horizon Year (2050) with Cumulative Project Conditions (d)			Horizon Year (2050) with Project Conditions (f)		
	Roadway Classification (a)	LOS E Capacity	Roadway Classification	LOS E Capacity	ADT (b)	V/C Ratio (c)	LOS	ADT (e)	V/C Ratio (c)	LOS	ADT	V/C Ratio (c)	LOS	ADT (e)	V/C Ratio (c)	LOS	ADT (g)	V/C Ratio (c)	LOS	ADT	V/C Ratio (c)	LOS
Main Street																						
I-5 NB Ramps to Hollister Street	4 Lane Major Arterial	40,000	4 Lane Major Arterial	40,000	26,312	0.658	C	28,333	0.708	C	29,154	0.729	C	31,815	0.795	D	33,345	0.834	D	34,166	0.854	D
Hollister Street																						
Main Street to Marian Avenue	2 Lane Collector (no center turn lane)	8,000	2 Lane Collector (no center turn lane)	8,000	6,372	0.797	D	6,857	0.857	E	7,883	0.985	E	11,675	1.459	F	11,675	1.459	F	12,701	1.588	F
Marian Avenue to North Project Limit	2 Lane Collector (no center turn lane)	8,000	2 Lane Collector (no center turn lane)	8,000	6,372	0.797	D	6,828	0.854	E	7,854	0.982	E	11,277	1.410	F	11,277	1.410	F	12,303	1.538	F
North Project Limit to South Project Limit (Project Frontage)	2 Lane Collector (no fronting property)	10,000	2 Lane Collector (continuous left turn)	15,000	6,372	0.637	C	6,828	0.683	C	7,854	0.524	C	11,277	1.128	F	11,277	1.128	F	12,303	0.820	D
South Project Limits to Conifer Avenue	2 Lane Collector (no fronting property)	10,000	2 Lane Collector (no fronting property)	10,000	6,372	0.637	C	6,828	0.683	C	7,854	0.785	D	11,277	1.128	F	11,277	1.128	F	12,303	1.203	F
Conifer Avenue to Palm Avenue	2 Lane Collector (no center turn lane)	8,000	2 Lane Collector (no center turn lane)	8,000	6,639	0.830	E	7,098	0.887	E	8,124	1.016	F	11,525	1.441	F	11,525	1.441	F	12,551	1.569	F
Palm Avenue																						
I-5 NB Ramps to Hollister Street	4 Lane Collector	30,000	4 Lane Collector	30,000	22,262	0.742	D	22,955	0.765	D	23,776	0.793	D	28,671	0.956	E	28,671	0.956	E	29,492	0.983	E

Notes:

Bold values indicate roadway segments operating at LOS E or F. **Bold and Shaded** values indicate a project effect.

- (a) Existing road classifications are based on field work conducted in November 2018.
- (b) Average Daily Traffic (ADT) volumes for the roadway segments were provided by NDS and measured on April 19, 2017.
- (c) The v/c ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.
- (d) Roadway Classification the same as Without Project Conditions
- (e) Average Daily Traffic (ADT) volumes for the roadway segments were calculated by applying a growth rates derived from the SANDAG Series 12 Model to the existing volumes. Growth rates can be found in Table 5-2 of this report.
- (f) Roadway Classification the same as With Project Conditions
- (g) Average Daily Traffic (ADT) volumes for roadway segments were calculated by adding a horizon year cumulative project traffic volumes (provided in Appendix L) to the Horizon Year (2050) Baseline Conditions volumes.

Table E-3 Project Improvements for Roadway Segments

Roadway Segment	Project Effect	Proposed Improvement
Hollister Street		
Main Street to Marian Avenue	Opening year 2021 plus project direct project effect	Prior to issuance of the first building permit, Owner/Permittee shall assure the re-striping of Hollister Street between Main Street and Marian Avenue to add a continuous two-way left turn lane, satisfactory to the City of Chula Vista Engineer and the City of San Diego City Engineer. All improvements must be complete and operational prior to first occupancy.
Marian Avenue to North Project Limit	Opening year 2021 plus project direct project effect	No improvement – this section of roadway is currently not wide enough to re-stripe a two-way left-turn lane
North Project Limit to South Project Limit (Project Frontage)	Opening Year 2021 Plus project direct project effect.	Prior to issuance of the first building permit, Owner/Permittee shall assure by permit and bond the widening of Hollister Street along the project frontage by 16 feet and the restriping of Hollister Street to include two lanes of travel, a continuous two-way left turn land and buffered bike lanes, satisfactory to the City of San Diego City Engineer. All improvements must be complete and operational prior to first occupancy.
South Project Limit to Conifer Avenue	Horizon year 2050 plus project cumulative project effect	No improvement – this section of roadway is currently not wide enough to re-stripe a two-way left-turn lane
Conifer Avenue to Palm Street	Opening year 2021 plus project direct project effect	Prior to issuance of the first building permit, Owner/Permittee shall assure the re-striping of Hollister Street between Conifer Avenue and Palm Avenue to add a continuous two-way left turn lane, satisfactory to the City of San Diego City Engineer. All improvements must be complete and operational prior to first occupancy. Improvement will require removal of on-street parking along the east side of Hollister Street.
Palm Avenue		
I-5 NB Ramps to Hollister Street	Horizon year 2050 plus project cumulative project effect	No improvement – City of San Diego does not currently have a project on Palm Avenue for the developer to pay a fair share contribution towards

Table E-4 Freeway Level of Service Analysis Summary

Freeway Facility	Facility Type	Peak Hour	Existing Conditions			Existing plus Project Conditions					Opening Year (2021) Conditions			Opening Year (2021) with Project Conditions					Horizon Year (2050) Conditions			Horizon Year (2050) with Cumulative Project Conditions			Horizon Year (2050) with Project Conditions				
			Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Δ in density (pc/mi/ln)	Significant?	Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Δ in density (pc/mi/ln)	Effect?	Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Δ in density (pc/mi/ln) (d)	Effect?
I-5 Northbound																													
Palm Ave Off-Ramp	Diverge	AM	67.3	19.7	C	67.4	19.7	C	0.0	NO	67.2	21.5	D	67.2	21.5	D	0.0	NO	65.9	27.0	E	65.9	27.0	E	65.9	27.0	E	0.0	NO
		PM	68.7	16.0	C	68.6	16.2	C	0.2	NO	68.6	17.4	C	68.5	17.5	C	0.1	NO	67.7	21.8	D	67.7	21.8	D	67.6	21.9	D	0.1	NO
Palm Ave to Main St	Weave	AM	60.2	18.1	B	60.9	17.8	B	-0.3	NO	59.0	20.2	C	59.0	20.2	C	0.0	NO	56.7	24.9	C	56.7	24.9	C	56.7	24.9	C	0.0	NO
		PM	62.7	14.8	B	62.8	14.7	B	-0.1	NO	61.8	16.3	B	61.8	16.3	B	0.0	NO	59.6	20.2	C	59.6	20.2	C	59.6	20.2	C	0.0	NO
Main St On-Ramp	Merge	AM	75.3	14.5	B	75.3	14.6	B	0.1	NO	74.9	15.9	B	74.9	16.0	B	0.1	NO	73.4	19.2	C	73.1	19.7	C	73.0	19.8	C	0.6	NO
		PM	75.4	12.6	B	75.4	12.6	B	0.0	NO	75.4	13.8	B	75.4	13.9	B	0.1	NO	74.7	16.4	B	74.3	17.6	B	74.2	17.6	B	1.2	NO
I-5 Southbound																													
Main St Off-Ramp	Diverge	AM	75.4	8.4	A	75.4	8.4	A	0.0	NO	75.4	9.3	A	75.4	9.3	A	0.0	NO	75.4	10.5	A	75.4	11.6	B	75.4	11.6	B	1.1	NO
		PM	70.2	23.8	C	70.1	24.0	C	0.2	NO	67.9	26.7	D	67.7	26.9	D	0.2	NO	22.8	76.7	F	23.6	75.7	F	23.9	75.1	F	-1.6	NO
Main St to Palm Ave	Weave	AM	60.5	9.7	A	60.5	9.7	A	0.0	NO	60.1	10.7	B	60.1	10.7	B	0.0	NO	58.1	12.7	B	58.1	12.7	B	58.1	12.7	B	0.0	NO
		PM	51.2	32.4	D	51.2	32.4	D	0.0	NO	50.0	36.1	E	50.0	36.1	E	0.0	NO	53.3	30.6	F	53.3	30.6	F	53.3	30.6	F	0.0	NO
Palm Ave On-Ramp	Merge	AM	75.2	4.5	A	75.2	4.6	A	0.1	NO	75.2	5.1	A	75.2	5.2	A	0.1	NO	75.2	5.7	A	75.2	5.7	A	75.2	5.8	A	0.1	NO
		PM	74.3	17.4	B	74.3	17.5	B	0.1	NO	73.2	19.5	C	73.2	19.5	C	0.0	NO	69.5	16.7	B	69.5	16.7	B	69.5	16.7	B	0.0	NO
SR75 On-Ramp	Merge	AM	70.5	5.2	A	70.5	5.3	A	0.1	NO	70.5	5.9	A	70.5	5.9	A	0.0	NO	70.5	6.6	A	70.5	6.6	A	70.5	6.6	A	0.0	NO
		PM	68.7	20.2	B	68.7	20.2	B	0.0	NO	68.4	22.3	C	68.4	22.3	C	0.0	NO	68.9	17.4	B	68.9	17.4	B	68.9	17.4	B	0.0	NO

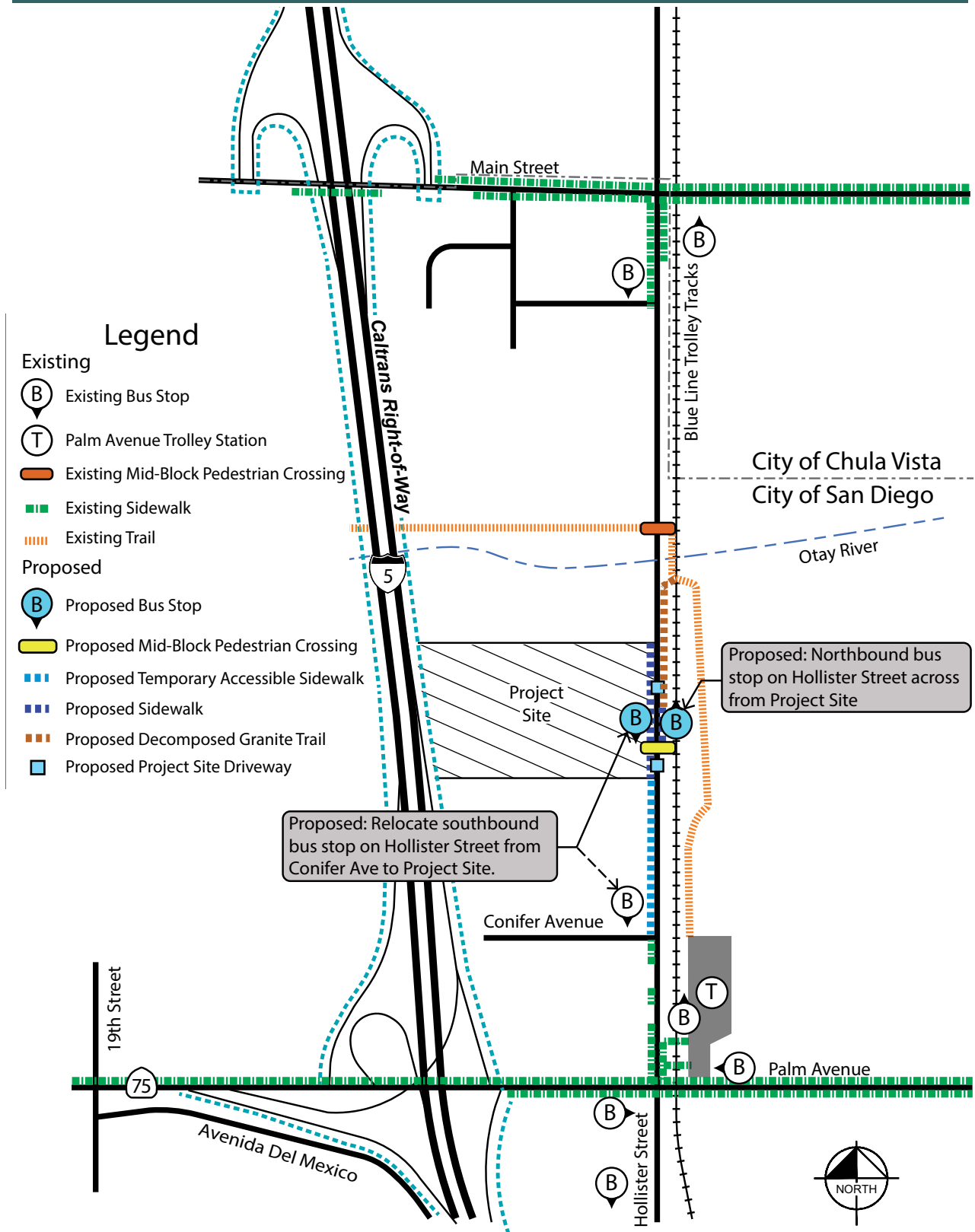
Notes:
Bold values indicate roadway segments operating at LOS E or F.
(a) Speed is measured in miles per hour (mph).
(b) Density is measured in passenger cars per mile per lane (pc/mi/ln).
(c) LOS calculations based on methodologies outlined in the 6th Edition HCM and performed using HCS 7.
(d) HCM models may under-predict the extent of congestion in oversaturated conditions.

Table E-5 Freeway Off-Ramp Queue Summary

Intersection	Intersection Control Type (a)	Off-Ramp Storage Length (ft) (b)	Movement	Peak Hour	95 th Percentile Queue Lengths (ft)					
					Existing Conditions	Opening Year (2021) Conditions	Opening Year (2021) with Project Conditions	Horizon Year (2050) Baseline Conditions	Horizon Year (2050) with Cumulative Project Conditions	Horizon Year (2050) with Project Conditions
I-5 SB Off-Ramp at Main Street	SSSC	1,500	SB	AM	118	183	194	207	ERROR (d)	ERROR (d)
				PM	211	253	328	473	ERROR (d)	ERROR (d)
I-5 NB Off-Ramp at Main Street	Signal	1,100	SB*	AM	317	369	373	462	520	520
				PM	329	367	388	545	609	609
I-5 SB Off-Ramp at Palm Avenue	Signal	1,400	SB	AM	389	408	408	643	643	647
				PM	750	784	785	1001	1001	1001
I-5 NB Off-Ramp at Palm Avenue	Signal	1,100	NB	AM	227	244	266	657	657	687
				PM	163	173	187	320	320	400

Notes:
(a) SSSC = Side Street Stop Control, Signal = Traffic Signal.
(b) Off-ramp storage length measured from theoretical gore point to intersection stop bar for longest lane.
(c) 95th percentile queue determined based on Synchro 6th Edition results for signalized intersections, and Synchro 2000 queue reports for unsignalized intersections as Synchro 6th Edition does not provide queue results for unsignalized intersections.
(d) Error indicates the capacity of the intersection approach is exceeded by a number that cannot be defined.
* Northbound off-ramp becomes southbound approach to ramp terminus intersection.

FIGURE E-1 STUDY AREA MULTI-MODAL IMPROVEMENTS



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1 INTRODUCTION

The following Local Mobility Analysis has been prepared to determine and evaluate potential project effects associated with the proposed Bella Mar project and to recommend project improvements.

1.1 PROJECT DESCRIPTION

The proposed project is located at 408 Hollister Street in the Otay Mesa-Nestor Community in the City of San Diego, east of Imperial Beach and south of the City of Chula Vista. **Figure 1-1** depicts the project location in a regional context. The approximately 14-acre site is bounded by Interstate 5 (I-5) to the west and Hollister Street to the east, between Palm Avenue to the south and Main Street to the north. The project site is currently vacant. It is directly south of the Otay River Valley and north of a vacant adjacent site. The east side of Hollister Street has an elevated railroad track for the MTS Trolley Blue Line.

The Bella Mar project is proposing to construct 380 multi-family residential units, including 100 affordable units. **Figure 1-2** shows the proposed project site plan. The project requires a General Plan Amendment, a Community Plan Amendment, a Local Coastal Program Amendment, with a Rezone from Agricultural-Residential (AR-1-2) land use to the Residential Multiple-Unit (RM-2-4) zone. The project also requires a Site Development Permit, a Coastal Development Permit, a Tentative Map, a Neighborhood Development Permit, the proposal of a Multiple Habitat Planning Area (MHPA) Boundary Line Adjustment, and the rescinding of the existing Conditional Use Permit No. 96-7318.

1.2 ANALYSIS SCENARIOS

Six scenarios were evaluated as part of this analysis, listed below:

- **Existing Conditions:** Represents the traffic conditions of the existing street network in place in 2020. Traffic counts were collected on Wednesday, April 19, 2017. The data collected on this date are representative of a more conservative baseline than more recent counts taken in 2018. All count data is provided in **Appendix A**. Signal timing data is provided in **Appendix B**.
- **Opening Year (2021) Conditions:** Represents the traffic conditions on the existing street network plus traffic growth per year based on SANDAG's Series 12 model, and the addition of volumes associated with reasonably foreseeable projects in the area.
- **Opening Year (2021) with Project Conditions:** Represents the Opening Year (2021) conditions with the addition of the proposed project traffic. Comparison of this scenario to the Opening Year (2021) Conditions scenario determines direct effects associated with the proposed project.
- **Horizon Year (2050) Baseline Conditions:** Represents the traffic conditions on the existing street network assumed to be in place at community buildout in year 2050. Traffic volumes were estimated using growth rates from SANDAG's Series 12 model.
- **Horizon Year (2050) with Cumulative Project Conditions:** Represents the traffic conditions from the Horizon Year (2050) Baseline Conditions plus the addition of volumes associated with the cumulative project anticipated to be constructed after Opening Year (2021).
- **Horizon Year (2050) with Project Conditions:** Represents the traffic conditions under the Horizon Year with the addition of the horizon year cumulative project and the proposed project traffic. Comparison of this scenario to the Horizon Year (2050) with Cumulative Project Conditions determines cumulative project effects associated with the project.

FIGURE 1-1 REGIONAL VICINITY MAP

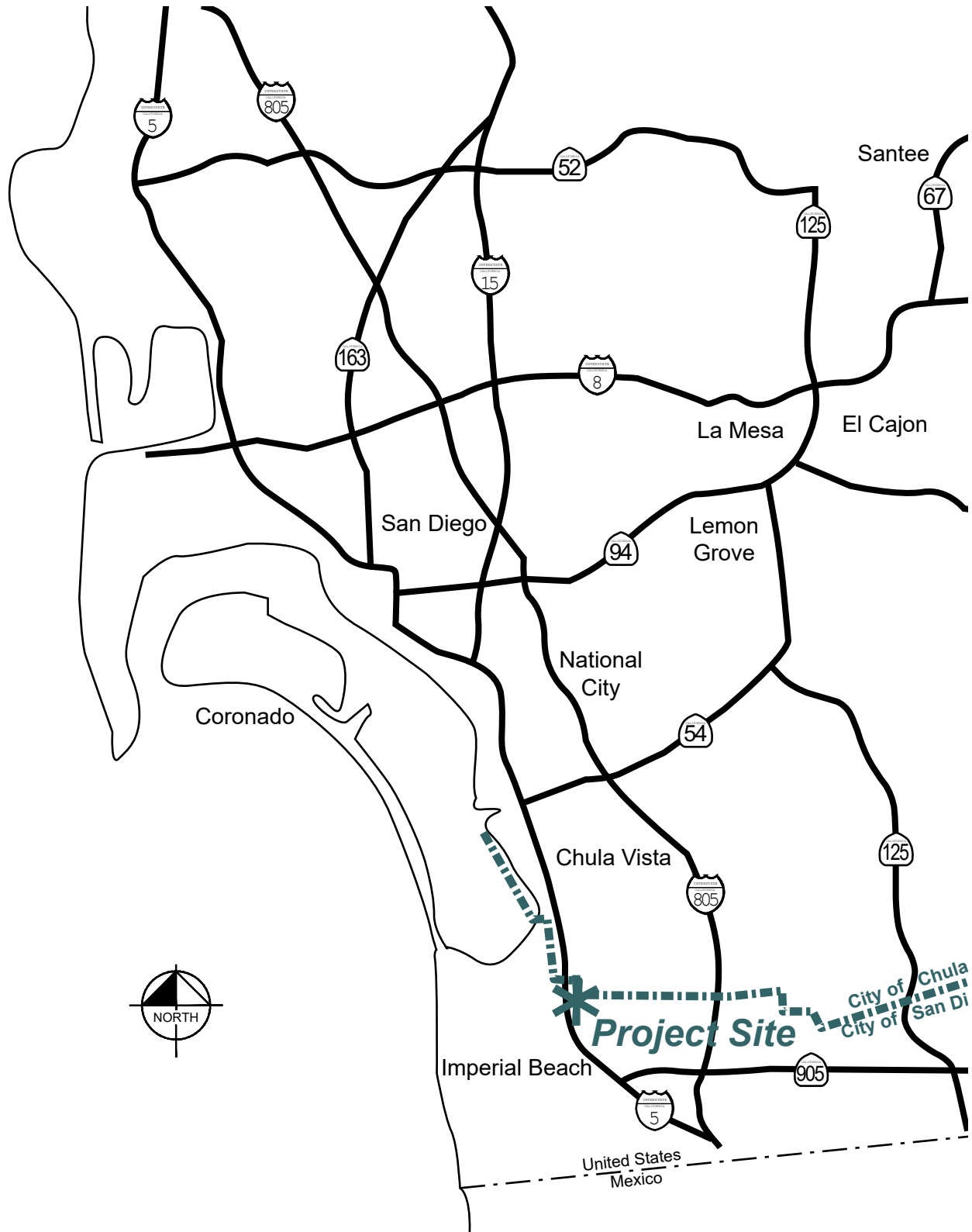
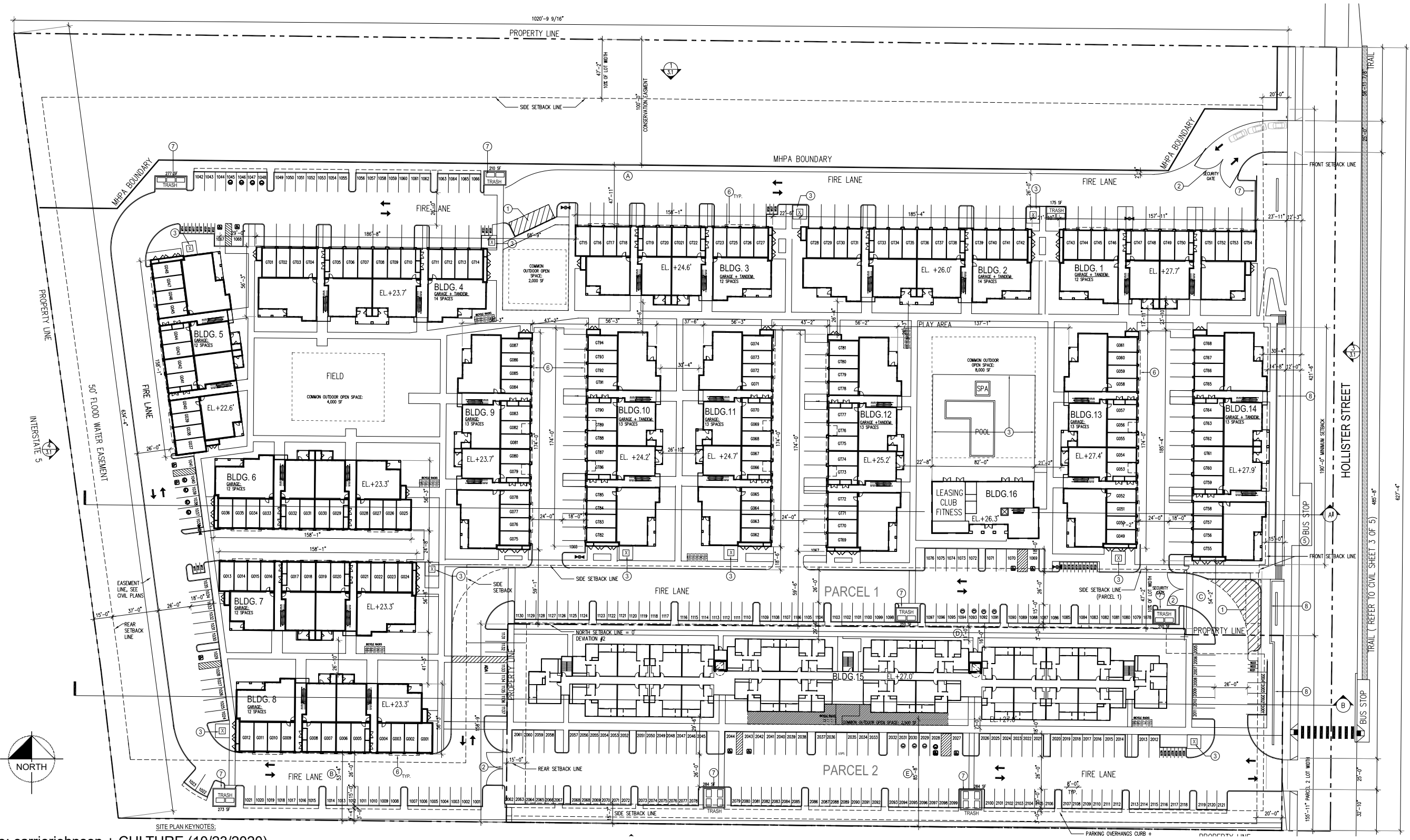


FIGURE 1-2 PROPOSED SITE PLAN



Source: carrierjohnson + CULTURE (10/23/2020)

2 METHODOLOGY

The following section describes the methodology used to identify the study area, analyze study area conditions, and determine project effects.

2.1 STUDY AREA

The study area was determined based on the City of San Diego's Transportation Study Manual (TSM), as well as the project's expected trip assignment. The study area reflects the main access routes to and from the project site, mainly providing access to I-5, Main Street, and Palm Avenue.

The City of San Diego's TSM determines the extents for pedestrian and bicycle modes based on deficiencies in facilities within a half-mile of the project site. Pedestrian and bicycle facilities, as well as transit stops within a half-mile of each pedestrian access point, are documented and their amenities are evaluated.

Roadway segments should be included in the study area if the following apply:

- The project adds 1,000 or more daily trips and is consistent with the Community Plan, or
- The project adds 500 or more daily trips and inconsistent with the Community Plan.
- In addition to one of the previous, the project either has improvements identified in the community plan or not built to the community plan ultimate classification.

The roadway segments identified for evaluation include:

- **Main Street** between I-5 NB Ramps and Hollister Street (Caltrans / Chula Vista)
- **Hollister Street** between Main Street and Palm Avenue (San Diego)
- **Palm Ave** between 19th Street and Hollister Street (represented by the most constrained and project-affected portion, I-5 NB Ramps to Hollister Street) (Caltrans / San Diego)

For projects that generate less than 2,400 daily trips, the following intersections should be included in the study area:

- All signalized intersections and signalized driveways within 0.5 miles of any project driveway that also generate 50 or more peak hour trips to any turning movement
- All unsignalized intersections and unsignalized driveways located within 0.5 miles of any project driveway that also generate 50 or more peak hour trips in either direction
- All freeway ramp terminal intersections where a project adds 50 or more peak hour trips in either direction regardless of distance from the project

The study area facilities, shown in **Figure 2-1**, are within three jurisdictions: Caltrans, City of Chula Vista, and the City of San Diego. The intersections identified for evaluation are shown in **Table 2-1**.

FIGURE 2-1 STUDY AREA

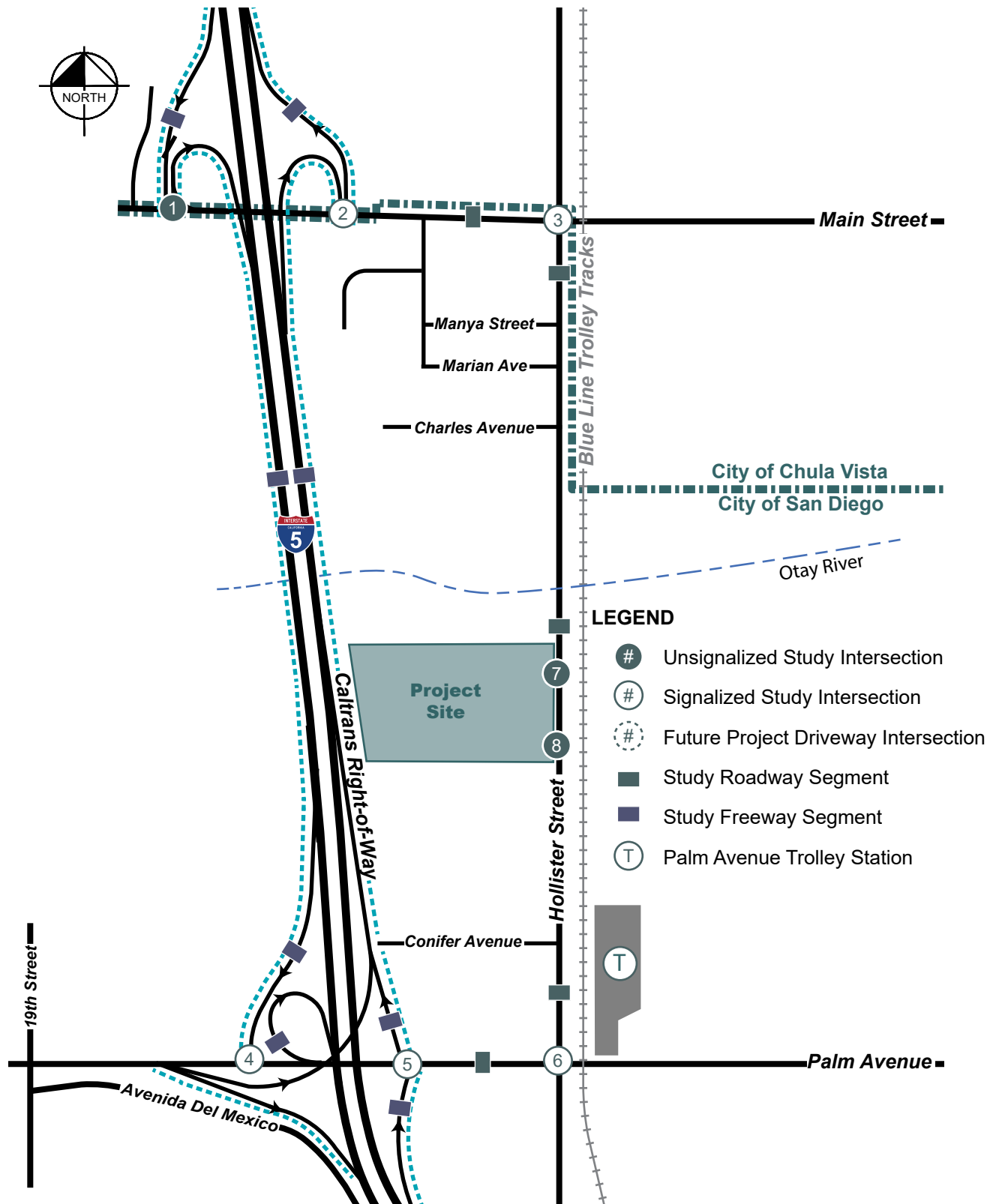


Table 2-1 Study Intersections

	Intersection	Traffic Control (a)	Jurisdiction
1	Main St & I-5 SB Ramps	SSSC	Caltrans
2	Main St & I-5 NB Ramps	Signal	Caltrans
3	Hollister St & Main St	Signal	San Diego / Chula Vista
4	Palm Ave & I-5 SB Ramps	Signal	Caltrans
5	Palm Ave & I-5 NB Ramps	Signal	Caltrans
6	Hollister St & Palm Ave	Signal	San Diego
7	Hollister St & North Project Driveway	SSSC (b)	San Diego
8	Hollister St & South Project Driveway	SSSC (b)	San Diego

Note:

- (a) Signal = Traffic Signal; SSSC = Side Street Stop Control;
- (b) Project driveway

As shown in Figure 2-1 the freeway facilities identified for evaluation include:

- **I-5 Northbound** Palm Avenue Off-Ramp (Diverge Facility)
- **I-5 Northbound** Palm Avenue Off-Ramp to Main Street On-Ramp (Weave Facility)
- **I-5 Northbound** Main Street On-Ramp (Merge Facility)
- **I-5 Southbound** Main Street Off-Ramp (Diverge Facility)
- **I-5 Southbound** Main Street On-Ramp to Palm Avenue Off-Ramp (Weave Facility)
- **I-5 Southbound** Eastbound Palm Avenue On-Ramp (Merge Facility)
- **I-5 Southbound** Westbound Palm Avenue On-Ramp (Merge Facility)

In addition, queue lengths on the following off-ramps were evaluated:

- I-5 SB Off-Ramp at Main Street
- I-5 NB Off-Ramp at Main Street
- I-5 SB Off-Ramp at Palm Avenue
- I-5 NB Off-Ramp at Palm Avenue

2.2 ANALYSIS PROCESS

The City of San Diego TSM provides guidelines for preparing a Local Mobility Analysis (LMA). The analysis process includes determining the operations at the study intersections for the AM and PM commuter peak periods and operations along the roadway segments, as well as documenting pedestrian, bicycle, and transit facilities within the study area. Intersections were measured and quantified using Synchro 10 software. Roadway segments were measured and quantified by the applicable roadway classifications' planning-level capacity and ADT volume. Freeway facilities were measured using HCS 7 software. Analysis results were compared to the applicable Jurisdiction's standards to determine if the project has any project effects.

The Highway Capacity Manual (*HCM*) published by the Transportation Research Board establishes procedures to evaluate highway facilities and rate their ability to process traffic volumes. The terminology

"level of service" is used to provide a qualitative evaluation based on certain quantitative calculations, which are related to empirical values.

2.2.1 PEDESTRIANS

Pedestrian analysis includes evaluating the project study area pedestrian facilities (sidewalks and crosswalks) for connectivity gaps, obstructions, or inefficiencies. In addition, locations with substantial pedestrian volumes should be analyzed in accordance with the latest version of the HCM.

2.2.2 BICYCLES

Bicycle projects or improvements identified in the City's Bicycle Master Plan or the Community's Bicycle Mobility Element and located within the project study area should be documented. Bicycle facilities within the project study area should also be evaluated for connectivity gaps and adequacy of facilities.

2.2.3 TRANSIT

Planned and/or proposed transit improvements identified in the Community's General Plan or the Regional Transportation Improvement Program (RTIP) that are located within the project study area should be documented. The transit system within the study area should be evaluated for the following project effects:

- Anticipated increase in travel time for buses as a result of intersection or corridor delay
- Conflicts involving buses at stop due to nearby driveways

2.2.4 SIGNALIZED AND UNSIGNALIZED INTERSECTIONS

Level of service (LOS) for intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and loss of travel time. Specifically, LOS criteria for signalized intersections are stated in terms of the average control delay per vehicle for the peak 15-minute period within the hour analyzed. The average control delay includes initial deceleration delay, queue move-up time, and final acceleration time in addition to the stop delay. The criteria for the various levels of service designations for intersections are given in **Table 2-2**.

Table 2-2 LOS Criteria for Intersections

LOS	Control Delay (sec/veh)		Description
	Signalized Intersections (a)	Unsignalized Intersections (b)	
A	≤10.0	≤10.0	Operations with very low delay and most vehicles do not stop.
B	>10.0 and ≤20.0	>10.0 and ≤15.0	Operations with good progression but with some restricted movement.
C	>20.0 and ≤35.0	>15.0 and ≤25.0	Operations where a significant number of vehicles are stopping with some backup and light congestion.
D	>35.0 and ≤55.0	>25.0 and ≤35.0	Operations where congestion is noticeable, longer delays occur, and many vehicles stop. The proportion of vehicles not stopping declines
E	>55.0 and ≤80.0	>35.0 and ≤50.0	Operations where there is significant delay, extensive queuing, and poor progression.
F	>80.0	>50.0	Operations that is unacceptable to most drivers, when the arrival rates exceed the capacity of the intersection.

Source:

(a) 6th Edition Highway Capacity Manual, Chapter 19, Page 16, Exhibit 19-8

(b) 6th Edition Highway Capacity Manual, Chapter 20, Page 6, Exhibit 20-2

LOS for unsignalized intersections is determined by the computed or measured control delay and is defined for each movement. At an all-way stop control intersection, the delay reported is the average control delay of all movements at the intersection. At a one-way or two-way stop control intersection, the delay reported represents the worst movement, which is typically the left-turn from the minor street approach.

Synchro 10 (Trafficware) software was used to analyze the operations of both signalized and unsignalized intersections. Synchro uses the methodologies outlined in the 6th Edition Highway Capacity Manual.

The following list contains the assumptions used for the intersection analyses:

- Peak-hour factor (PHF) - Measured in field PHFs were used for Existing and Opening Year (2021) scenarios per approach, a network-wide 0.92 was used for Horizon Year (2050)
- Saturation flow rate – typical saturation flow rate of 1,900 vehicles per hour per lane
- Signal Timing - Existing signal timings were modeled for each signalized intersection for Existing and Opening Day (2021) Conditions
 - Horizon Year (2050) signal timing was optimized

2.2.5 ROADWAY SEGMENTS

To determine the effects on the study area roadway segments, capacity thresholds and associated LOS documented in the City of San Diego TSM was utilized and are shown in **Table 2-3**. The segment traffic volumes under LOS E as shown in this table are considered at capacity because at LOS E the v/c Ratio is equal to 1.0.

Table 2-3 City of San Diego Roadway Segment Capacity and LOS

Road		Level of Service (LOS)				
Class	Lanes	A	B	C	D	E
Expressway	6	30,000	42,000	60,000	70,000	80,000
Prime Arterial	6	25,000	35,000	50,000	55,000	60,000
Major Arterial	6	20,000	28,000	40,000	45,000	50,000
Major Arterial	4	15,000	21,000	30,000	35,000	40,000
Collector	4	10,000	14,000	20,000	25,000	30,000
Collector (Continuous left-turn lane)	2	5,000	7,000	10,000	13,000	15,000
Collector (No fronting property)	2	4,000	5,500	7,500	9,000	10,000
Collector (Commercial/Industrial fronting)	2	2,500	3,500	5,000	6,500	8,000
Collector (Multi-family)	2	2,500	3,500	5,000	6,500	8,000
Sub-Collector (Single family)	2	---	---	2,200	---	---

Notes:

- XXXX = Approximate recommended ADT based on the City of San Diego Street Design Manual.
- The volumes and the average daily level of service listed above are only intended as a general planning guideline.
- Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

Source:

City of San Diego Transportation Study Manual, Table 6.

2.2.6 FREEWAY SEGMENTS

LOS for freeway facilities is defined in terms of density, which is measured in passenger cars per mile per lane (pc/mi/ln). The criteria for the various levels of service designations for intersections are given in **Table 2-4**.

HCS 7 software was used to analyze the operations of the freeway. HCS uses the methodologies outlined in the Highway Capacity Manual.

The following list contains the assumptions used for the freeway analyses:

- Freeway Free Flow Speed (FFS) = 75.4 mph
- Ramp Free Flow Speed (FFS) = 35 mph
- Freeway/Ramp Peak Hour Factor (PHF) = 0.94
- Freeway Truck Percentage = 4%
- Ramp Truck Percentage = 2%
- Level Freeway Terrain
- All Familiar Driver Population
- A conservative growth rate of 1.8% per year was used to calculate Opening Year & Horizon Year Freeway Volumes to reflect the highest growth rate in the study based on SANDAG Series 12 model

Table 2-4 LOS Criteria for Freeway Segments

Level of Service (LOS)	Density (pc/mi/ln)
	Urban Basic Segments
A	≤ 11
B	> 11 – 18
C	> 18 – 26
D	> 26 – 35
E	> 35 – 45
F*	> 45*

Source:

6th Edition Highway Capacity Manual, Chapter 10, Page 15, Exhibit 10-6

* Demand exceeds capacity

Freeway off-ramps queues were evaluated against the available storage length, to identify queues affecting the freeway mainline. HCM 6th edition only provides queues for signalized intersections. As a result, HCM 2000 results were used for the unsignalized intersection of Main Street and I-5 Southbound Ramps.

2.3 OFF-SITE IMPROVEMENTS

2.3.1 CITY OF SAN DIEGO

The City of San Diego has developed acceptable threshold standards to determine project effects to intersections and roadway segments, as well as considerations for improving multi-modal facilities adjacent to the project site. At intersections, the measurement of effectiveness (MOE) is based on allowable increases in delay and resulting LOS. Along roadway segments, the MOE is based on allowable increases in the v/c ratio. Along freeway facilities, the MOE is based on the allowable increases in density. For active transportation modes, analysis is more qualitative in nature, focusing on connectivity and consistency with planning

documents. **Table 2-5** summarizes the Measures of Effectiveness and recommendations for off-site improvements for the different facilities in the study area.

Table 2-5 City of San Diego Off-Site Improvement Recommendations for Study Area Facilities

Facility	Measurement of Effectiveness (MOE)	Off-Site Improvement Recommendations
Pedestrian	Connectivity, walkshed, ADA-compliance	<ul style="list-style-type: none"> • Close sidewalk gaps and/or remove obstructions • Construct curb ramps to meet accessibility standards • Accommodate increased pedestrian demand with traffic calming and/or pedestrian related signal timing changes
Bicycle	Connectivity, bikeshed	<ul style="list-style-type: none"> • Construct bicycle facilities identified in the Community Plan or City Bicycle Master Plan • Accommodate increased bicycle demand with upgrades to existing facilities
Transit	Travel time, on-time performance, conflict identification	<ul style="list-style-type: none"> • Implement transit priority treatments and/or improvements identified in the Community Plan or at movements that experience LOS E or worse • Accommodate transit demand with additional stops and abiding by the Community Plan, RTIP, SANDAG, MTS, and/or the North County Transit District
Signalized Intersection	Seconds of delay, queue lengths, project traffic volumes	<ul style="list-style-type: none"> • Add or lengthen a turn lane • Improve/modify signal timing
Unsignalized Intersection	Seconds of delay, queue lengths, project traffic volumes	<ul style="list-style-type: none"> • Evaluate alternative traffic control such as a signal or roundabout
Roadway Segment	ADT, v/c ratio	<ul style="list-style-type: none"> • Improve or upgrade facilities identified in the Community Plan
Freeway	Density (pc/mi/ln)	<ul style="list-style-type: none"> • Coordinate with Caltrans to improve off-ramp spillbacks onto freeway mainline

Source: City of San Diego Transportation Study Manual

There are two classes of project effects: direct effects and cumulative effects.

Project Specific Direct Effects are those effects that are projected to occur at the time a proposed development becomes operational—i.e., the Opening Year (2021). Project specific direct effects are measured against projected background traffic levels, which include other developments that are not presently operating but which are expected to be operating by 2021 (cumulative projects). The project applicant may be responsible for improvements at all locations with project specific effects.

Cumulative Traffic Effects are those projected to occur at some point after a proposed development becomes operational, such as when the affected community plan area reaches full planned build. A fair share contribution towards improvements could be required if a funding source for the remaining funds is identified. A fair share contribution is based on the project's proportionate traffic contribution to the increase in traffic volumes entering an intersection or added to a roadway segment between existing and the Horizon Year (2050) scenario.

For **signalized intersections**, the following considerations should be made for adding or lengthening a turn lane:

- No existing left-turn lane - If the project causes the total number of peak hour left-turn trips to exceed 100, consider adding a left-turn lane
- Existing single left-turn lane – If the project causes the total number of peak hour left-turn trips to exceed 300, consider adding a second left-turn lane
- No existing right-turn lane - If the project causes the total number of peak hour right-turn trips to exceed 500, consider adding a right-turn lane
- Existing single right-turn lane - If the project causes the total number of peak hour right-turn trips to exceed 800, consider adding a second right-turn lane
- If the project causes a turning movement 95th percentile queue to exceed the available turn pocket length, consider lengthening the turn pocket

For **signalized intersections**, the following considerations should be made for signal timing improvements or signal modifications such as updating signal split times, adding transit signal priority, adding right-turn overlap phasing, modifying signal phases, or adding/improving Intelligent Transportation Systems (ITS):

- Within a ½ mile path of travel of a major transit stop – If the project causes an intersection to degrade to LOS F, or if the project adds traffic to a signal already operating at LOS F
- Outside of a ½ mile path of travel of a major transit stop – If the project causes an intersection to degrade to LOS E or F, or if the project adds traffic to a signal already operating at LOS E or F

For **unsignalized intersections**, an intersection control evaluation should be conducted to determine the appropriate intersection control improvement if one of the following conditions occur:

- All-way stop-controlled intersection
 - Within a ½ mile path of travel of a major transit stop – if the project causes the intersection to degrade to LOS F, or if the intersection is already operating at LOS F and the project adds traffic to it
 - Outside of a ½ mile path of travel of a major transit stop – if the project causes the intersection to degrade to LOS E or F, or if the intersection is already operating at LOS E or F and the project adds traffic to it
- Two-way stop-controlled intersection
 - Within a ½ mile path of travel of a major transit stop – if the project causes the worst movement to degrade to LOS F, or if the intersection is already operating at LOS F and the project adds traffic to the worst movement
 - Outside of a ½ mile path of travel of a major transit stop – if the project causes the worst movement to degrade to LOS E or F, or if the intersection is already operating at LOS E or F and the project adds traffic to the worst movement

For **roadway segments**, the project should consider implementing improvements identified in the community plan if the project adds greater than 50% off the total daily vehicle trips on the segment. If the project adds less than or equal to 50%, the project should evaluate its fair share contribution towards the improvement

2.3.2 CITY OF CHULA VISTA

The City of Chula Vista's Transportation Study Guidelines (TSG) published on June 10, 2020 provides guidance for off-site improvements for vehicular traffic needs summarized in **Table 2-6** and active transportation needs summarized in **Table 2-7**.

Table 2-6 City of Chula Vista Off-Site Vehicle Improvement Recommendations

Intersection Type	Potential Improvement (Project Responsibility) ^{1,2}				
	Project Added Peak Hour Trips ⁸				
	0%-4%	5%-19% ³		20%+ ⁴	
Signal – Whole Intersection	Signal retiming ⁵ (100%)	Signal retiming ⁵ (100%)	Signal Upgrade / ITS ⁶ (Fair share)	Signal Retiming ⁵ (100%)	Signal Upgrade / ITS ⁶ (Fair share)
Signal – Turning Movement	None	Add additional turn lane (Fair share) ⁷	Extend existing turn pocket (Fair share) ⁷	Add additional turn lane ⁷ (100%)	Extend existing turn pocket ⁷ (100%)
All-Way Stop Control	None	Coordinate with City staff to evaluate alternative control, including signalization, roundabout, turn restriction, additional turn lanes			
Side-Street Stop Control	None				

Notes:

- ¹ All projects are expected to pay applicable impact fees in addition to implementing the project specific improvements.
- ² Certain improvements may not be feasible due to constraints; alternative improvements can be considered with the approval of the City Engineer.
- ³ Project that contributes between 5% and 19% of the overall intersection peak hour traffic volumes can make fair share contributions toward the cost of the improvement, in addition to paying applicable impact fees.
- ⁴ Project that contributes 20% or more peak hour traffic volumes to an intersection is required to pay 100% of the improvement cost.
- ⁵ Project is expected to pay 100% of all signal retiming cost.
- ⁶ Signal upgrade / Intelligent Transportation System (ITS) improvements should be consistent with the City of Chula Vista Traffic Signal Communications Master plan and recommendations from City staff. Project's applicant should coordinate with City staff to identify feasible signal upgrade / ITS improvements.
- ⁷ Coordinate with City staff to determine the appropriate improvement measure. Refer to the City of Chula Vista Design and Construction Standard Drawings for turn pocket requirements.
- ⁸ Project added peak hour trips is relative to pre-existing pre-project peak hour trips.

Table 2-7 City of Chula Vista Multi-Modal Improvement Recommendations

Proximity	Facility Type		
	Pedestrian	Bicycle	Transit
Project Frontage & Adjacent Facilities ¹	<ul style="list-style-type: none"> • Close sidewalk gaps • Remove pathway obstructions • Construct curb ramps per current ADA standards • Implement identified traffic calming measures 	<ul style="list-style-type: none"> • Upgrade substandard bike facilities • Fill gaps in the Planned Bikeway Network 	<ul style="list-style-type: none"> • Add missing transit amenities according to MTS Designing for Transit Guidelines High-quality transit amenities (shelter, trash can, benches, street trees) are encouraged
Within ¼ Mile of Project	<ul style="list-style-type: none"> • Close sidewalk gaps • Remove pathway obstructions • Implement identified traffic calming measures 	<ul style="list-style-type: none"> • Upgrade substandard bike facilities • Coordinate with City staff to pay fair share towards Planned Bikeways 	

Note:

¹ Adjacent facilities are defined as intersection immediately to the project site. Location of adjacent facilities should be identified in coordination with City's staff prior to conducting an LMA.

3 EXISTING CONDITIONS

This section summarizes the existing roadway circulation network, daily and peak-hour traffic volumes, and operations at the study intersections and roadway segments.

3.1 ROAD NETWORK

The following provides a description of the existing street system as of January 2021, within the vicinity of the project area. Ultimate roadway classifications are provided in the Otay Mesa-Nestor Community Plan, shown in **Appendix C**.

Main Street is currently classified as a four-lane major arterial in the *Chula Vista General Plan*. Within the study area, Main Street is currently built to its classification and provides east-west connectivity through Chula Vista with sidewalk on both sides of Main Street east of the I-5 NB ramp intersection. Bike lanes are not provided and sidewalks do not exist west of the I-5 NB ramp intersection along the north side of the road. The posted speed limit is 35 miles per hour (mph). For intermittent lengths, parking is allowed and left-turn pockets exist. There is a raised median along the study segment.

- **Ultimate Classification:** Four-lane major arterial

Hollister Street provides north-south connectivity between City of Chula Vista and City of San Diego and currently functions as a two-lane collector with no center lane between Main Street and Palm Avenue. The roadway conditions vary along Hollister Street between Main Street and Palm Avenue, so the roadway is discussed in three segments below:

Main Street to Marian Avenue: The speed limit south of Main Street is 35 mph, parking is allowed on both sides of the street, and contiguous sidewalk is provided on the west side of the street.

Marian Avenue to Conifer Avenue: The posted speed limit is 40 mph between Marian Avenue and Conifer Avenue, parking is allowed on the west side of the street except at the Otay River Bridge where the roadway narrows, and sidewalk is not provided on either side of the street.

Conifer Avenue to Palm Avenue: The posted speed limit is 30 mph, parking is allowed on both sides of the street and intermittent contiguous and non-contiguous sidewalk exists on the west side of the street. There is approximately 200 feet of contiguous sidewalk along the trolley station frontage on the east side of the street.

The City's Bicycle Master Plan calls for Class II bicycle lanes along Hollister Street within the study area, but no bicycle facilities currently exist. The Bicycle Master Plan describes this as a high priority segment.

- **Ultimate Classification:** Two-lane collector with continuous left-turn lane and Class II bicycle lanes

Palm Avenue is a four-lane major road with a raised median between the I-5 SB and I-5 NB ramps, a 6-Lane Major with raised median and intermittent turn lanes west of the I-5 northbound ramps intersection, and a four-lane collector road with a continuous left turn lane east of the I-5 northbound ramps intersection. Palm Avenue runs east-west from Imperial Beach to Interstate 805. The posted speed limit is 40 mph. Street parking is allowed on some sections within the study area on the north side of the roadway. Sidewalk is provided on the north side of Palm Avenue within the study area, and on the south side of Palm Avenue east of the I-5 northbound ramps intersection only. Bike lanes are present east of the trolley station on both sides of the street, but not west of Hollister Street within the study area.

- **Ultimate Classification:** Four-lane major arterial

Figure 3-1 illustrates the existing intersection and roadway segment geometrics.

3.2 TRAFFIC VOLUMES

Peak-hour intersection turning movement counts and 24-hour roadway traffic counts were collected by National Data and Surveying Services (NDS) at the study intersections on Wednesday, April 19, 2017. The City's traffic volume database provides 24-hour traffic count data for the study area roadways. A 24-hour roadway traffic count was obtained by the City of San Diego conducted on Hollister Street between Conifer Avenue and Outer Road on September 27, 2018. The data collected in 2018 was lower than the data collected in 2017, so the 2017 count data was validated, and the 2017 volumes were used for this analysis as a conservative approach. **Appendix A** contains the existing traffic volume data at the study intersections and roadway segments, as well as the 2018 roadway segment data from the City's database.

Figure 3-2 illustrates the existing traffic volumes at the study intersections and ADT volumes along the roadway segments.

3.3 INTERSECTION ANALYSIS

Table 3-1 displays the LOS analysis results for the study intersections under Existing Conditions. As shown in the table, all intersections currently operate at LOS D or better during both peak periods, except the following intersection:

- **Intersection 4** – Palm Avenue & I-5 SB Ramps (LOS E in the PM Peak)

Appendix D-1 contains the intersection LOS calculation worksheets for Existing Conditions.

3.4 ROADWAY SEGMENT ANALYSIS

Table 3-2 displays the roadway segments analysis under Existing Conditions. As shown in the table, all roadway segments within the study area function at LOS D or better under Existing Conditions except the following:

- **Hollister Street** – Conifer Avenue to Palm Avenue (LOS E)

FIGURE 3-1 EXISTING INTERSECTION GEOMETRICS

I-5 SB Ramps / Main Street	I-5 NB Ramps / Main Street	Hollister Street / Main Street	I-5 SB Ramps / Palm Avenue
I-5 NB Ramps / Palm Avenue	Hollister Street / Palm Avenue		

LEGEND

- Unsignalized Study Intersection
- Signalized Study Intersection
- Stop Controlled Leg
- Yield Controlled Leg
- F** Free Right-Turn
- O** Right-Turn Overlap
- Future Project Driveway
- Study Roadway Segment
- MA** Major Arterial
- CO** Collector

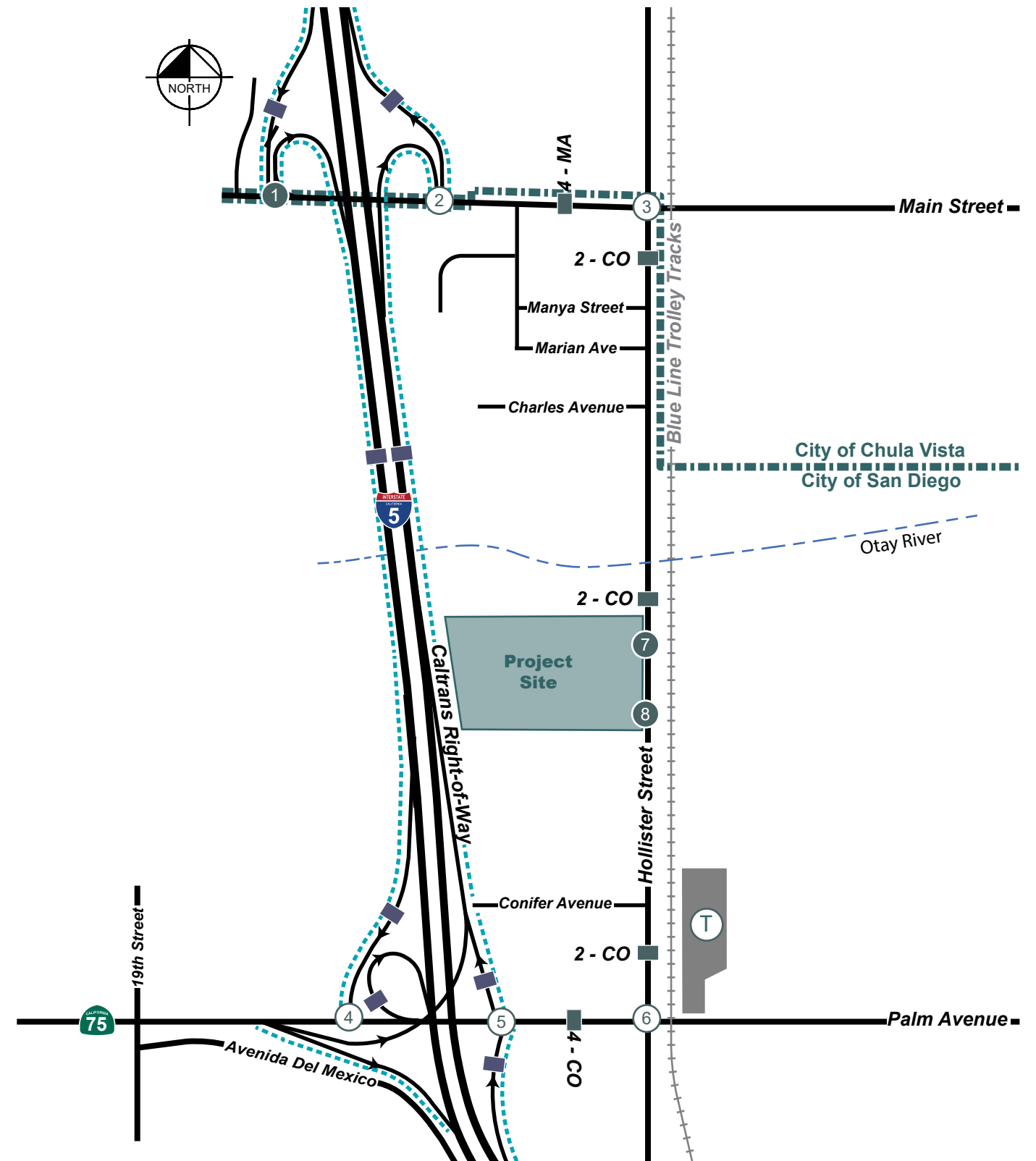


FIGURE 3-2 EXISTING TRAFFIC VOLUMES

<p>1</p> <p>9 / 14 458 / 557 I-5 SB Ramps</p> <p>272 / 537 58 / 44</p> <p>Main Street</p>	<p>2</p> <p>25 / 26 428 / 399 I-5 NB Ramps</p> <p>415 / 498 299 / 537</p> <p>Main Street</p>	<p>3</p> <p>81 / 127 48 / 82 38 / 58 Hollister Street</p> <p>51 / 53 606 / 789 93 / 157</p> <p>Main Street</p>	<p>4</p> <p>1176 / 1556 153 / 353 I-5 SB Ramps</p> <p>110 / 109 1109 / 896</p> <p>Palm Avenue</p>
<p>9 / 32 32 / 103</p>	<p>12 / 22 468 / 641</p>	<p>72 / 61 671 / 857 33 / 76</p> <p>26 / 43 49 / 72 102 / 122</p>	<p>337 / 400</p>
<p>5</p> <p>I-5 NB Ramps</p> <p>355 / 226 449 / 491</p> <p>Palm Avenue</p>	<p>6</p> <p>88 / 198 63 / 100 19 / 36 Hollister Street</p> <p>28 / 33 567 / 429 25 / 25</p> <p>Palm Avenue</p>	<p>7</p> <p>170 / 334 Hollister Street</p> <p>North Project Driveway</p>	<p>8</p> <p>170 / 334 Hollister Street</p> <p>South Project Driveway</p>
<p>490 / 767</p> <p>769 / 466 0 / 12 135 / 104</p>	<p>108 / 120 388 / 586 37 / 83</p> <p>84 / 77 76 / 73 43 / 39</p>	<p>177 / 237</p>	<p>177 / 237</p>

LEGEND

- Unsignalized Study Intersection
- Signalized Study Intersection
- Future Project Driveway Intersection
- Study Roadway Segment
- Study Freeway Segment
- Palm Avenue Trolley Station
- \circ X/Y AM / PM Peak-Hour Traffic Volumes
- X,XXX** ADT Traffic Volumes

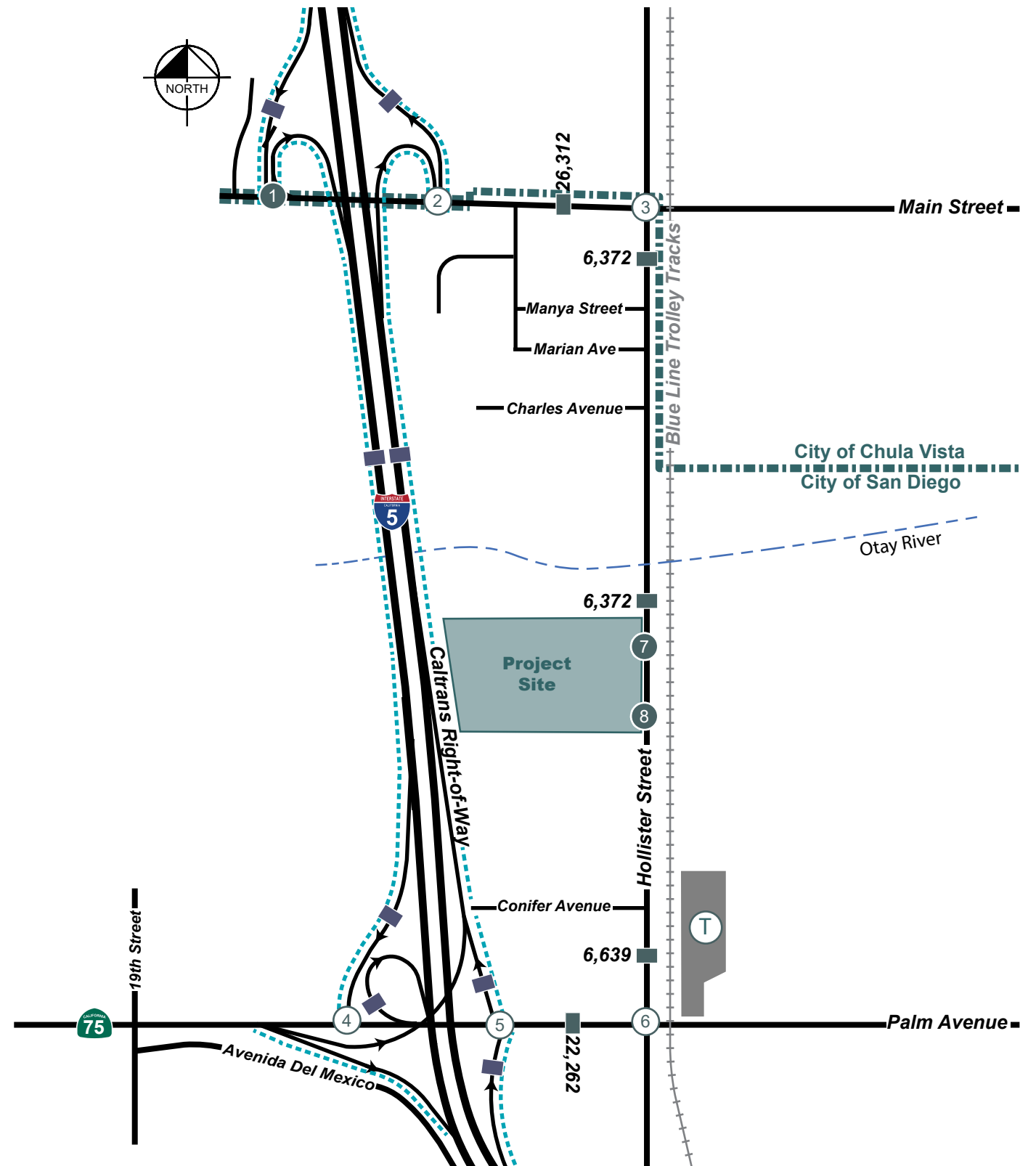


Table 3-1 Existing Conditions Intersection LOS Summary

Intersection	Jurisdiction	Traffic Control (a)	Peak Hour	Existing Conditions	
				Delay (b)	LOS (c)
1 Main Street & I-5 SB Ramps	Caltrans	SSSC	AM	14.5	B
			PM	26.2	D
2 Main Street & I-5 NB Ramps	Caltrans	Signal	AM	14.8	B
			PM	15.8	B
3 Hollister Street & Main Street	San Diego & Chula Vista	Signal	AM	11.6	B
			PM	19.6	B
4 Palm Avenue & I-5 SB Ramps	Caltrans	Signal	AM	39.4	D
			PM	65.3	E
5 Palm Avenue & I-5 NB Ramps	Caltrans	Signal	AM	11.2	B
			PM	10.2	B
6 Hollister Street & Palm Avenue	San Diego	Signal	AM	13.6	B
			PM	15.3	B

Notes:

Bold values indicate intersections operating at LOS E or F.

(a) Signal = Traffic Signal, SSSC = Side Street Stop Control,

(b) Delay refers to the average control delay for the entire intersection measured in seconds per vehicle. At SSSC intersections, delay refers to the worst movement.

(c) LOS calculations based on methodologies outlined in the 6th Edition HCM and performed using Synchro 10.

Table 3-2 Existing Conditions Roadway Segment LOS Summary

Roadway Segment	Roadway Classification (a)	LOS E Capacity	Existing Conditions		
			ADT (b)	V/C Ratio (c)	LOS
Main Street					
I-5 NB Ramps to Hollister Street	4 Lane Major Arterial	40,000	26,312	0.658	C
Hollister Street					
Main Street to Marian Avenue	2 Lane Collector (no center lane)	8,000	6,372	0.797	D
Marian Avenue to North Project Limit	2 Lane Collector (no center lane)	8,000	6,372	0.797	D
North Project Limit to South Project Limit (Project Frontage)	2 Lane Collector (no fronting property)	10,000	6,372	0.637	C
South Project Limit to Conifer Avenue	2 Lane Collector (no fronting property)	10,000	6,372	0.637	C
Conifer Avenue to Palm Avenue	2 Lane Collector (no center lane)	8,000	6,639	0.830	E
Palm Avenue					
I-5 NB Ramps to Hollister Street	4 Lane Collector	30,000	22,262	0.742	D

Notes:

Bold values indicate roadway segments operating at LOS E or F.

(a) Existing road classifications are based on field work conducted in November 2018.

(b) Average Daily Traffic (ADT) volumes for the roadway segments were provided by NDS and measured on April 19, 2017.

(c) The v/c ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

3.5 FREEWAY ANALYSIS

Table 3-3 displays the LOS analysis results for the freeway under Existing Conditions. As shown in the table, all freeway facilities currently operate at LOS D or better during both peak periods. **Table 3-4** displays the 95th percentile queue lengths for the off-ramps located within the study area compared to the storage length available for each off-ramp.

Table 3-4 displays the 95th percentile queue results for the freeway off-ramps at study area intersections under Existing Conditions. As shown in the table, all off-ramp queues do not exceed available storage during both peak periods.

Appendix E contains the freeway LOS and off-ramp queue calculation worksheets.

Table 3-3 Existing Conditions Freeway LOS Summary

Freeway Facility	Facility Type	Peak Hour	Existing Conditions		
			Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)
I-5 Northbound					
Palm Ave Off-Ramp	Diverge	AM	67.3	19.7	C
		PM	68.7	16.0	C
Palm Ave to Main St	Weave	AM	60.6	18.0	B
		PM	62.7	14.8	B
Main St On-Ramp	Merge	AM	75.3	14.5	B
		PM	75.4	12.6	B
I-5 Southbound					
Main St Off-Ramp	Diverge	AM	75.4	8.4	A
		PM	70.2	23.8	C
Main St to Palm Ave	Weave	AM	60.5	9.7	A
		PM	51.2	32.4	D
Palm Ave On-Ramp	Merge	AM	75.2	4.5	A
		PM	74.3	17.4	B
SR75 On-Ramp	Merge	AM	70.5	5.2	A
		PM	68.7	20.2	B

Notes:

(a) Speed is measured in miles per hour (mph).

(b) Density is measured in passenger cars per mile per lane (pc/mi/ln)

(c) LOS calculations based on methodologies outlined in the 6th Edition HCM and performed using HCS 7.

Table 3-4 Existing Conditions Freeway Off-Ramp Queue Summary

Off-Ramp Location		Traffic Control (a)	Off-Ramp Storage Lengths (ft) (b)	Peak Hour	95 th Percentile Queue Length (ft) (c)
1	I-5 SB Off-Ramp at Main Street	SSSC	1,500	AM	118
				PM	211
2	I-5 NB Off-Ramp at Main Street	Signal	1,100	AM	317
				PM	329
5	I-5 SB Off-Ramp at Palm Avenue	Signal	1,400	AM	389
				PM	750
6	I-5 NB Off-Ramp at Palm Avenue	Signal	1,100	AM	227
				PM	163

Notes:

- (a) SSSC= Side Street Stop Control, Signal = Traffic Signal.
- (b) Off-ramp storage length measured from theoretical gore point to intersection stop bar for longest lane.
- (c) 95th percentile queue lengths measured based on HCM 2010 for signalized intersections, and HCM 2000 for unsignalized intersections.

4 PROJECT TRAFFIC

The following section describes the trip generation, distribution and assignment related to the proposed Bella Mar project at 408 Hollister Street. The proposed project includes the construction of 380-unit multi-family residential dwelling units, including 100 affordable units, within the City of San Diego.

4.1 ROADWAY NETWORK CHANGES

The development of the project site will include the following improvements to provide accessible connectivity for the project site and to comply with the City of San Diego Bike Master Plan:

- Widen Hollister Street along the project frontage by 16 feet to the ultimate classification of a two-lane collector with a continuous two-way left-turn lane and buffered bike lanes.
- Relocate the southbound bus stop on Hollister Street for Bus Route 932 to be in front of the project site.
- Construct a bus stop on northbound Hollister Street for Bus Route 932 across from the project site.
- Construct a mid-block crossing across Hollister Street on the north side of the southern project driveway with a rectangular rapid flashing beacon (RRFB) system. Mid-block crossing warrant evaluation provided in **Appendix F**.
- Construct non-contiguous sidewalk facilities along the project frontage on southbound Hollister Street
- Construct non-contiguous sidewalk facilities along northbound Hollister Street from the proposed bus stop to the proposed mid-block crossing.
- Construct temporary accessible sidewalk along southbound Hollister Street between the project site and Conifer Avenue.

These improvements along the project frontage are assumed for the Opening Year with Project and Horizon Year with Project scenarios.

4.2 TRIP GENERATION

The City of San Diego *Trip Generation Manual* (May 2003) was referenced to calculate the estimated trip generation for the proposed project. The driveway trip generation rate of 6 trips per dwelling units for *Multiple Dwelling Unit – Over 20 dwelling units/acre* was used to estimate trips for the project. A 10% daily trip reduction and 14% AM peak hour and 14% PM peak hour was then applied to account for the project's proximity within a half mile of the Palm Avenue Transit Station and that it is anticipated transit will be heavily utilized by the project. Accessible connections to the transit station will be provided as part of the project with bus stops for Bus Route 932 in front of the project site on Hollister Street as discussed in Section 4-1.

The resulting trip generation with the trip reductions is 2,052 daily trips with 156 morning peak-hour trips (31 in, 125 out) and 176 afternoon peak-hour trips (124 in, 52 out). These values are used in the trip assignment to the roadway network. **Table 4-1** summarizes the trip generation for the site.

Table 4-1 Trip Generation Summary

Land Use	Units ¹	Trip Rate ²	Daily Trips	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Multiple Dwelling Unit – Over 20 dwelling units/acre	380 du	6 / du	2,280	36	146	182	144	61	205
Trip Reductions for Proximity to the Palm Avenue Transit Station			-10%	-14%			-14%		
			-228	-5	-20	-25	-20	-9	-29
NET TRIP GENERATION			2,052	31	126	157	124	52	176

Notes:

1. Du = dwelling units
2. Daily and peak-hour, trip generation rates referenced are from the City of San Diego Land Development Code - Trip Generation Manual, May 2003. Transit reductions are from the draft TSM (June 2020)

4.3 TRIP DISTRIBUTION

The project traffic distribution was estimated based on the project access locations, freeway access and knowledge of the existing roadway network within the study area. Although a market study was not performed for this location, it was assumed that 100% of the traffic with destinations along northbound I-5 would utilize Main Street to access the freeway, and 100% of traffic with destinations along southbound I-5 would utilize Palm Avenue to access the freeway. Based on ADT values along Hollister Street north and south of the project site and assumed employment opportunities, it was assumed that 50% of the project traffic will travel to destinations north of the site using northbound Hollister Street and 50% of traffic will have destinations south of the project using southbound Hollister Street.

Figure 4-1 shows the general project traffic distribution within the study area and throughout the study intersections.

4.4 TRIP ASSIGNMENT

Based on the project trip generation and trip distribution, AM and PM project trips were assigned to the local roadway network and through the study intersections. **Figure 4-2** displays the trip assignment for the project at the study intersections and roadway segments within the study area.

FIGURE 4-1 PROJECT TRIP DISTRIBUTION

1	40% I-5 SB Ramps Main Street	2	I-5 NB Ramps Main Street 40%	3	5% Hollister Street Main Street 40%	4	(0%) / 0% I-5 SB Ramps Palm Avenue 15%
5	I-5 NB Ramps Palm Avenue 15%	6	(40%) Hollister Street Palm Avenue 40%	7	25% Hollister Street North Project Driveway 25%	8	25% Hollister Street South Project Driveway 25%

LEGEND

- # Unsignalized Study Intersection
- # Signalized Study Intersection
- Study Roadway Segment
- T Palm Avenue Trolley Station
- ⇄ X% / (Y%) Inbound / Outbound Percent Distribution
- X% Daily Percent Distribution

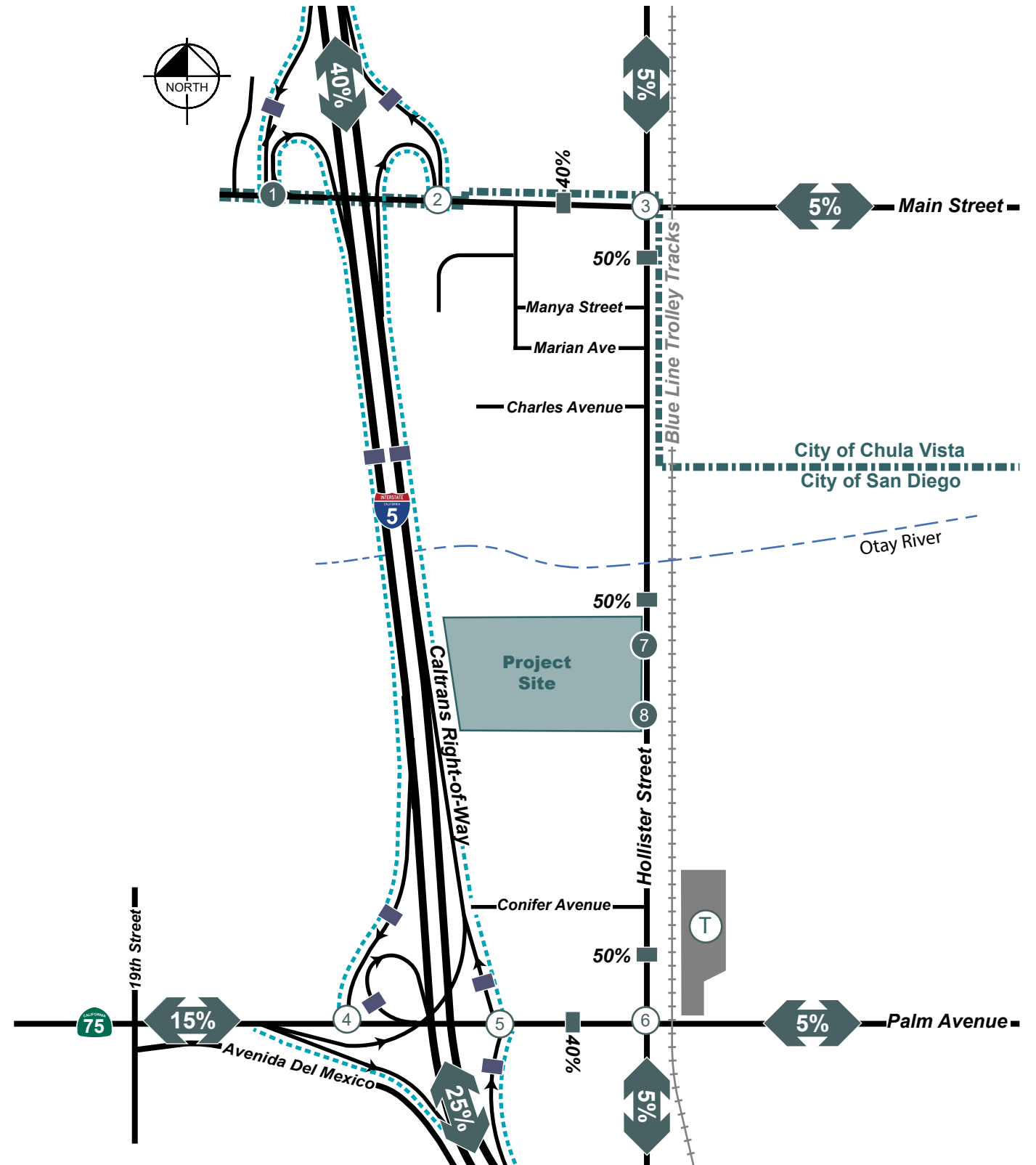






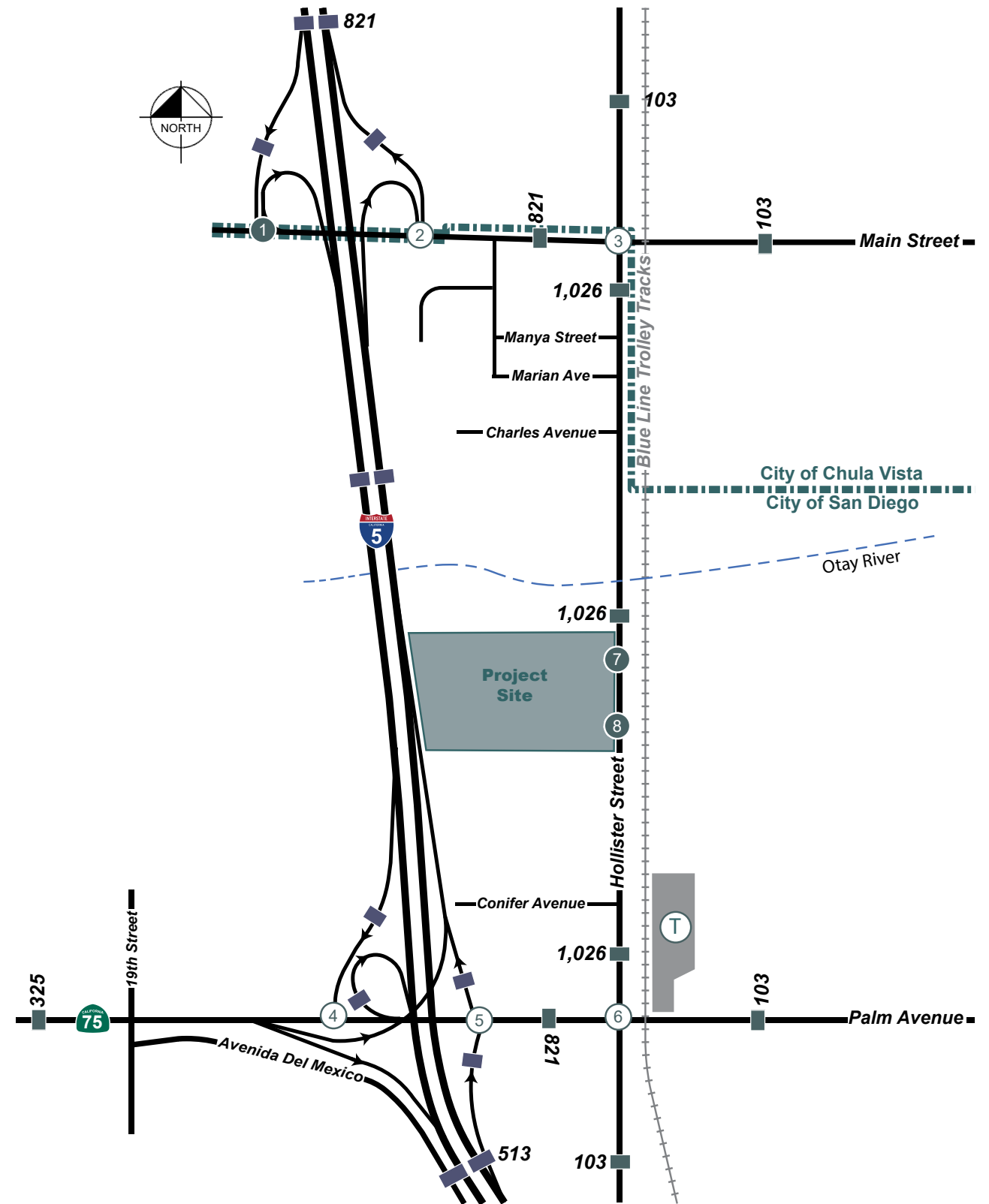


FIGURE 4-2 PROJECT TRIP ASSIGNMENT

<p>1</p> <p>12 / 50 I-5 SB Ramps</p> <p>Main Street</p>	<p>2</p> <p>I-5 NB Ramps</p> <p>50 / 21</p> <p>Main Street</p>	<p>3</p> <p>Hollister Street</p> <p>2 / 6</p> <p>Main Street</p>	<p>4</p> <p>I-5 SB Ramps</p> <p>0 / 0</p> <p>31 / 13 19 / 8</p> <p>Palm Avenue</p>
<p>5</p> <p>I-5 NB Ramps</p> <p>50 / 21</p> <p>Palm Avenue</p>		<p>6</p> <p>Hollister Street</p> <p>50 / 21 6 / 3 6 / 3</p> <p>2 / 6</p> <p>Palm Avenue</p>	
<p>5 / 19</p>	<p>8 / 31</p>	<p>12 / 50</p>	<p>2 / 6</p>
<p>5</p> <p>I-5 NB Ramps</p> <p>50 / 21</p> <p>Palm Avenue</p>	<p>6</p> <p>Hollister Street</p> <p>50 / 21 6 / 3 6 / 3</p> <p>2 / 6</p> <p>Palm Avenue</p>	<p>7</p> <p>Hollister Street</p> <p>8 / 31 8 / 31</p> <p>North Project Driveway</p>	<p>8</p> <p>Hollister Street</p> <p>8 / 31 31 / 13</p> <p>South Project Driveway</p>
<p>5 / 19</p>	<p>12 / 50</p>	<p>31 / 13</p>	<p>31 / 13</p>
<p>8 / 31</p>	<p>2 / 6</p>	<p>8 / 31 31 / 13</p>	<p>8 / 31 8 / 31</p>

LEGEND

-  Unsignalized Study Intersection
-  Signalized Study Intersection
-  Study Roadway Segment
-  Study Freeway Segment
-  Palm Avenue Trolley Station
-  X / Y AM / PM Peak-Hour Traffic Volumes
- X,XXX** ADT Traffic Volumes



5 OPENING YEAR (2021) CONDITIONS

This section summarizes the Opening Year (2021) Conditions. This scenario establishes a baseline to compare against the Opening Year (2021) with Project Conditions to determine direct project effects. Year 2021 was selected as the anticipated opening year of the project.

5.1 ROADWAY NETWORK CHANGES

No changes to the study roadway network are assumed to take place under Opening Year (2021) Conditions.

5.2 TRAFFIC VOLUMES

Opening Year volumes were forecast by applying an annual growth rate to the existing traffic volumes for 4 years to estimate Year 2021 baseline volumes. Typically, the annual growth rate for Opening Year baseline conditions are calculated using historical count data or cumulative project trips. However, as shown in **Table 5-1**, the historical traffic data yielded growth rates between -4% and 5%. Furthermore, only one cumulative project was identified to be constructed prior to Opening Year (2021), which would generate traffic on Main Street and would indicate 0% traffic growth on Hollister Street and Palm Avenue. As shown in Table 5-1 growth rates resulting from the SANDAG methodology were more reflective of typical annual growth for the region than growth rates calculated from historical traffic data or cumulative projects. Therefore, growth rates resulting from the SANDAG model were used as a conservative approach.

Volumes documented in the SANDAG Series 12 model runs for 2008 and 2050 were used to calculate the growth rate for the study area. The annual growth rate for each segment was directly applied to the roadway segments, and the intersection volumes were forecasted using the highest growth rate of all legs of the intersection. The growth rates used for each segment are summarized in **Table 5-2**.

Traffic from cumulative nearby projects throughout the community were also added to Opening Year (2021) baseline traffic. The only cumulative project identified by the City of Chula Vista and the City of San Diego to be included in the Opening Year (2021) analysis is the Otay River Business Park. The proposed Otay River Business Park is currently under construction. It is located on the southwest corner of Main Street and 4th Avenue in the City of Chula Vista. Relevant information from the Otay River Business Park Traffic Impact Analysis including the total project assignment volumes is included in **Appendix G**.

The Opening Year (2021) Cumulative Project traffic volumes are shown in **Figure 5-1**. The resulting Opening Year (2021) Traffic Volumes are shown in **Figure 5-2**.

Table 5-1 Growth Rate Methodology Comparison

ROADWAY SEGMENT	ROADWAY CLASSIFICATION	Project Count	Historical Data											SANDAG Series 12 Model			
			Apr-18	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Near-Term Growth	2008	2050
Main Street																	
I-5 NB Ramps to Hollister Street	4 Lane Major Arterial	26,312		22,670			23,425				23,928			0.5%	22,700	27,100	0.4%
Hollister Street																	
Main Street to Charles Avenue	2 Lane Collector (no center lane)	6,372	6,120			5,825			5,904				5,083	-3.7%	6,200	13,400	1.9%
Charles Avenue to Conifer Avenue	2 Lane Collector (no fronting property)	6,372												-	5,900	12,200	1.7%
Conifer Avenue to Palm Avenue	2 Lane Collector (no center lane)	6,639											4,249	-	5,600	11,300	1.7%
Palm Avenue																	
Saturn Blvd to I-5 SB Ramps	4 Lane Major Arterial	-		62,990			62,850			66,186		73,584		5.4%	28,100	41,900	1.0%
I-5 NB Ramps to Hollister Street	4 Lane Major Arterial	22,262	22,790		21,150			20,903						-0.4%	22,900	31,600	0.8%

Sources: Historical data – City of San Diego historical traffic data provided in **Appendix A**; SANDAG data – Transportation Forecast Information Center Screenshot provided in **Appendix H**.

Table 5-2 SANDAG Series 12 Model Data and Estimated Growth Rates (by Segment) for Opening Day 2021

Roadway Segment	2008 Model ADT	2050 Model ADT	Annual Growth Rate
Main Street			
I-5 NB Ramps to Hollister Street	22,700	27,100	0.4%
Hollister Street			
Main Street to Marian Avenue	6,200	13,400	1.9%
Marian Avenue to Conifer Avenue (Includes Partial Project Frontage)	5,900	12,200	1.7%
Conifer Avenue to Palm Avenue	5,600	11,300	1.7%
Palm Avenue			
I-5 NB Ramps to Hollister Street	22,900	31,600	0.8%

Source: SANDAG Transportation Forecast Information Center. Screenshot provided in **Appendix H**.

5.3 INTERSECTION ANALYSIS

Table 5-3 displays the LOS analysis results for the study intersections under the Opening Year (2021) Conditions. As shown in the table, all intersections within the study area would operate at LOS D or better except for the following:

- **Intersection 4** – Palm Avenue & I-5 SB Ramps (LOS E in the PM Peak)

Appendix D-2 contains the intersection LOS calculation worksheets for the Opening Year (2021) Conditions.

Table 5-3 Opening Year (2021) Conditions Intersection LOS Summary

Intersection	Jurisdiction	Traffic Control (a)	Peak Hour	Opening Year (2021) Conditions		
				Delay (b)	LOS (c)	
1	Main Street & I-5 SB Ramps	Caltrans	SSSC	AM	17.6	C
				PM	31.0	D
2	Main Street & I-5 NB Ramps	Caltrans	Signal	AM	16.3	B
				PM	19.0	B
3	Hollister Street & Main Street	San Diego & Chula Vista	Signal	AM	12.5	B
				PM	21.2	C
4	Palm Avenue & I-5 SB Ramps	Caltrans	Signal	AM	44.0	D
				PM	73.2	E
5	Palm Avenue & I-5 NB Ramps	Caltrans	Signal	AM	11.6	B
				PM	10.5	B
6	Hollister Street & Palm Avenue	San Diego	Signal	AM	14.3	B
				PM	16.4	B

Notes:

Bold values indicate intersections operating at LOS E or F.

- (a) Signal = Traffic Signal, SSSC = Side Street Stop Control
- (b) Delay refers to the average control delay for the entire intersection measured in seconds per vehicle. At SSSC intersections, delay refers to the worst movement.
- (c) LOS calculations based on methodologies outlined in the 6th Edition HCM and performed using Synchro 10.

FIGURE 5-1 OPENING YEAR (2021) CUMULATIVE PROJECT TRAFFIC VOLUMES

1 I-5 SB Ramps 77 / 22 Main Street 8 / 31	2 I-5 NB Ramps 30 / 10 Main Street 16 / 75 8 / 31	3 Hollister Street 13 / 7 Main Street 4 / 13 24 / 108 4 / 11	4 I-5 SB Ramps Palm Avenue
76 / 22		106 / 32	11 / 7
5 I-5 NB Ramps Palm Avenue	6 Hollister Street 4 / 11 Palm Avenue 11 / 7	7 Hollister Street 4 / 11 North Project Driveway 11 / 7	8 Hollister Street 4 / 11 South Project Driveway 11 / 7

LEGEND

- XX Cumulative Project Location
- T Palm Avenue Trolley Station

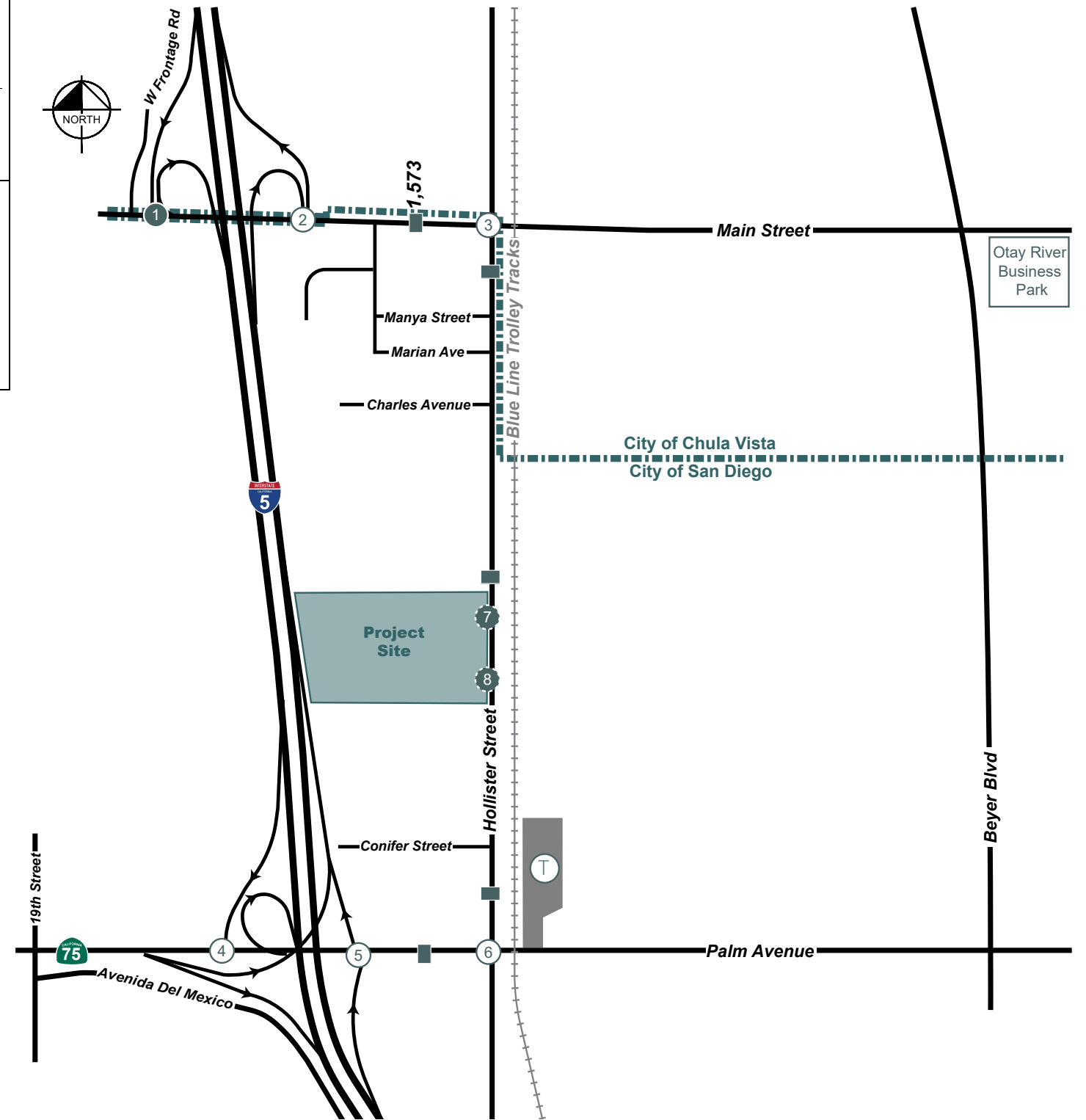
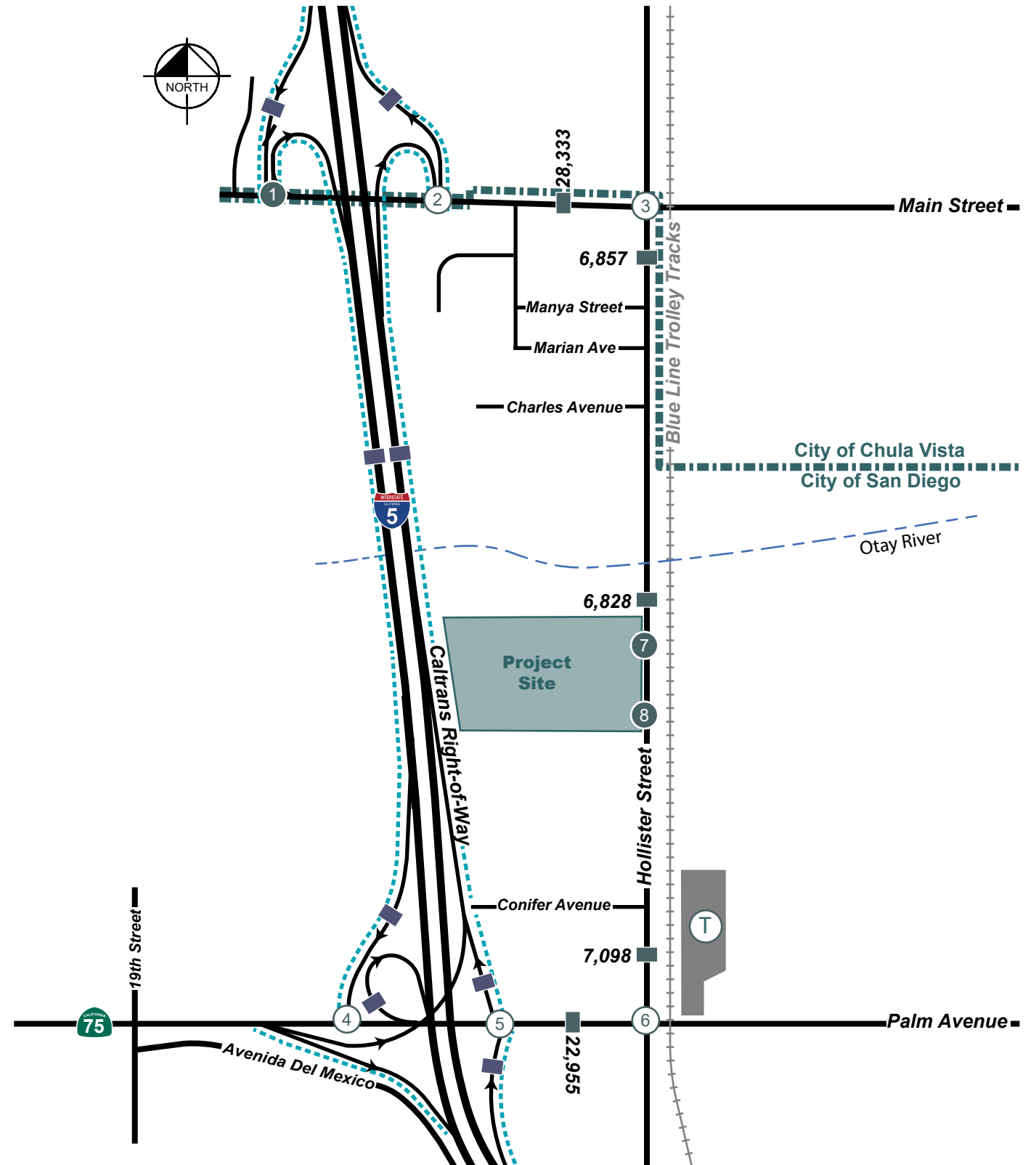


FIGURE 5-2 OPENING YEAR (2021) TRAFFIC VOLUMES

<p>1</p> <p>9 / 14 542 / 588 I-5 SB Ramps</p> <p>284 / 577 59 / 45</p> <p>Main Street</p>	<p>2</p> <p>25 / 26 465 / 415 I-5 NB Ramps</p> <p>438 / 581 312 / 577</p> <p>Main Street</p>	<p>3</p> <p>87 / 137 52 / 88 54 / 70 Hollister Street</p> <p>59 / 70 677 / 959 104 / 180</p> <p>Main Street</p>	<p>4</p> <p>1214 / 1606 158 / 364 I-5 SB Ramps</p> <p>114 / 113 1145 / 925</p> <p>Palm Avenue</p>
<p>9 / 33 33 / 105</p>	<p>12 / 22 552 / 673</p>	<p>78 / 66 829 / 956 36 / 82</p> <p>28 / 46 53 / 78 121 / 139</p>	<p>348 / 413</p>
<p>5</p> <p>I-5 NB Ramps</p> <p>366 / 233 464 / 507</p> <p>Palm Avenue</p>	<p>6</p> <p>94 / 212 71 / 118 20 / 39 Hollister Street</p> <p>30 / 35 607 / 459 27 / 27</p> <p>Palm Avenue</p>	<p>7</p> <p>186 / 368 Hollister Street</p> <p>North Project Driveway</p>	<p>8</p> <p>186 / 368 Hollister Street</p> <p>South Project Driveway</p>
<p>506 / 792</p> <p>794 / 481 0 / 12 139 / 107</p>	<p>116 / 128 415 / 627 40 / 89</p> <p>90 / 82 92 / 85 46 / 42</p>	<p>200 / 261</p>	<p>200 / 261</p>

LEGEND

- Unsignalized Study Intersection
- Signalized Study Intersection
- Future Project Driveway Intersection
- Study Roadway Segment
- Study Freeway Segment
- Palm Avenue Trolley Station
- \circlearrowleft X/Y AM / PM Peak-Hour Traffic Volumes
- X,XXX** ADT Traffic Volumes



5.4 ROADWAY SEGMENT ANALYSIS

Table 5-4 displays the roadway segments analysis under the Opening Year (2021) Conditions. As shown in the table, all study roadway segments would operate at LOS D or better except for the following:

- **Hollister Street** – Main Street to Marian Avenue (LOS E)
- **Hollister Street** – Marian Avenue to North Project Limit (LOS E)
- **Hollister Street** – Conifer Avenue to Palm Avenue (LOS E)

Table 5-4 Opening Year (2021) Conditions Roadway Segment LOS Summary

Roadway Segment	Roadway Classification (a)	LOS E Capacity	Opening Year (2021) Conditions		
			ADT (b)	V/C Ratio (c)	LOS
Main Street					
I-5 NB Ramps to Hollister Street	4 Lane Major Arterial	40,000	28,333	0.708	C
Hollister Street					
Main Street to Marian Avenue	2 Lane Collector (no center turn lane)	8,000	6,857	0.857	E
Marian Avenue to North Project Limit	2 Lane Collector (no center turn lane)	8,000	6,828	0.854	E
North Project Limit to South Project Limit (Project Frontage)	2 Lane Collector (no fronting property)	10,000	6,828	0.683	C
South Project Limit to Conifer Avenue	2 Lane Collector (no fronting property)	10,000	6,828	0.683	C
Conifer Street to Palm Avenue	2 Lane Collector (no center turn lane)	8,000	7,098	0.887	E
Palm Avenue					
I-5 NB Ramps to Hollister Street	4 Lane Collector	30,000	22,955	0.765	D

Notes:

Bold values indicate roadway segments operating at LOS E or F.

- Existing road classifications are based on field work conducted in November 2018.
- Average Daily Traffic (ADT) volumes for the roadway segments were calculated by applying an annual growth rate to the existing traffic volumes for 4 years to estimate Year 2021. The annual growth rate was calculated using volumes documented in the SANDAG Series 12 model runs for 2008 and 2050
- The v/c ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

5.5 FREEWAY ANALYSIS

Table 5-5 displays the LOS analysis results for the freeway analysis under Opening Year (2021) Conditions. As shown in the table, all freeway facilities would be expected to operate at LOS D or better during both peak periods with the exception of the I-5 Southbound weave segment between Main Street and Palm Avenue which would operate at LOS E in the PM Peak.

Table 5-6 displays the 95th percentile queue results for the freeway off-ramps at study area intersections under Opening year (2021) Conditions. As shown in the table, all off-ramp queues would be accommodated within available storage during both peak periods.

Appendix E contains the freeway LOS and off-ramp queue calculation worksheets.

Table 5-5 Opening Year (2021) Conditions Freeway LOS Summary

Freeway Facility	Facility Type	Peak Hour	Opening Year (2021) Conditions		
			Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)
I-5 Northbound					
Palm Ave Off-Ramp	Diverge	AM	67.2	21.5	D
		PM	68.6	17.4	C
Palm Ave to Main St	Weave	AM	59.0	20.2	C
		PM	61.8	16.3	B
Main St On-Ramp	Merge	AM	74.9	15.9	B
		PM	75.4	13.8	B
I-5 Southbound					
Main St Off-Ramp	Diverge	AM	75.4	9.7	A
		PM	67.9	26.7	D
Main St to Palm Ave	Weave	AM	60.1	10.7	B
		PM	50.0	36.1	E
Palm Ave On-Ramp	Merge	AM	75.2	5.1	A
		PM	73.2	19.5	C
SR75 On-Ramp	Merge	AM	70.5	5.9	A
		PM	68.4	22.3	C

Notes:

Bold values indicate roadway segments operating at LOS E or F.

(a) Speed is measured in miles per hour (mph).

(b) Density is measured in passenger cars per mile per lane (pc/mi/ln)

(c) LOS calculations based on methodologies outlined in the 6th Edition HCM and performed using HCS 7.

Table 5-6 Opening Year (2021) Conditions Freeway Off-Ramp Queue Summary

Off-Ramp Location	Traffic Control (a)	Off-Ramp Storage Lengths (ft) (b)	Peak Hour	95 th Percentile Queue Length (ft) (c)
1 I-5 SB Off-Ramp at Main Street	SSSC	1,500	AM	183
			PM	253
2 I-5 NB Off-Ramp at Main Street	Signal	1,100	AM	369
			PM	367
5 I-5 SB Off-Ramp at Palm Avenue	Signal	1,400	AM	408
			PM	784
6 I-5 NB Off-Ramp at Palm Avenue	Signal	1,100	AM	244
			PM	173

Notes:

(a) SSSC= Side Street Stop Control, Signal = Traffic Signal.

(b) Off-ramp storage length measured from theoretical gore point to intersection stop bar for longest lane.

(c) 95th percentile queue lengths measured based on HCM 2010 for signalized intersections, and HCM 2000 for unsignalized intersections.

6 OPENING YEAR (2021) WITH PROJECT CONDITIONS

This section provides a description of the Opening Year (2021) Conditions with the addition of the Bella Mar project traffic, which proposes the construction of a multi-family residential development. Access to the project would be from two driveways on Hollister Street.

The proposed project would generate 2,052 daily trips with 156 morning peak-hour trips (31 in, 125 out) and 176 afternoon peak-hour trips (124 in, 52 out). Opening Year (2021) with Project Conditions volumes were determined by adding the project traffic to the Opening Year (2021) Conditions volumes and are shown in **Figure 6-1**.

6.1 ROADWAY NETWORK CHANGES

The proposed project will include the improvements described in Section 4.1. No other changes to the study roadway network are assumed to take place under Opening Year (2021) with Project Conditions.

6.2 INTERSECTION ANALYSIS

Table 6-1 displays the LOS analysis results for the study intersections under the Opening Year (2021) with Project Conditions. As shown in the table, all intersections within the study area would operate at LOS D or better with the addition of the proposed project except for the following:

- **Intersection 1** – Main Street & I-5 SB Ramps (LOS E in the PM Peak)
- **Intersection 4** – Palm Avenue & I-5 SB Ramps (LOS E in the PM Peak)

The intersection of Main Street at I-5 Southbound Ramps is expected to operate at LOS D during the PM Peak under Opening Year (2021) Conditions and would operate at LOS E with the addition of the proposed project. This intersection is located outside of a ½ mile travel of a major transit stop and projected to degrade the intersection operations to LOS E. Therefore, a direct project effect is anticipated under Opening Year (2021) with Project Conditions.

The intersection of Palm Avenue at I-5 Southbound Ramps is expected to operate at a LOS E during the PM Peak under Opening Year (2021) Conditions and would operate at LOS E with the addition of the proposed project. The project is located within ½ mile of a major transit station and would not degrade the intersection to LOS F operations, which is not considered a direct project effect.

Appendix D-3 contains the intersection LOS calculation worksheets for the Opening Year (2021) with Project Conditions.

6.3 ROADWAY SEGMENT ANALYSIS

Table 6-2 displays the roadway segments analysis under the Opening Year (2021) with Project Conditions.

As shown in the table, all study roadway segments would operate at LOS D or better except for the following:

- **Hollister Street** – Main Street to Marian Avenue (LOS E)
- **Hollister Street** – Marian Avenue to North Project Limit (LOS E)
- **Hollister Street** – Conifer Avenue to Palm Avenue (LOS F)

This results in direct project effects to the roadway segments as a result of the proposed project under Opening Year (2021) with Project Conditions.

FIGURE 6-1 OPENING YEAR (2021) WITH PROJECT TRAFFIC VOLUMES

<p>1</p> <p>9 / 14 ↔ 554 / 638 I-5 SB Ramps</p> <p>↕ ↕ ↕</p> <p>284 / 577 59 / 45</p> <p>Main Street</p> <hr/> <p>9 / 33 33 / 105 ↕</p>	<p>2</p> <p>25 / 26 ↔ 465 / 415 I-5 NB Ramps</p> <p>↕ ↕ ↕</p> <p>488 / 602 312 / 577</p> <p>Main Street</p> <hr/> <p>12 / 22 564 / 723 ↕</p>	<p>3</p> <p>87 / 137 ↔ 54 / 94 54 / 70 Hollister Street</p> <p>↕ ↕ ↕</p> <p>59 / 70 677 / 959 106 / 186</p> <p>Main Street</p> <hr/> <p>78 / 66 829 / 956 48 / 132 ↕</p> <p>78 / 67 59 / 81 127 / 142 ↕</p>	<p>4</p> <p>1214 / 1606 ↔ 158 / 364 I-5 SB Ramps</p> <p>↕ ↕ ↕</p> <p>145 / 126 1164 / 933</p> <p>Palm Avenue</p> <hr/> <p>353 / 432 ↕</p>
<p>5</p> <p>I-5 NB Ramps</p> <p>↕ ↕ ↕</p> <p>366 / 233 514 / 528</p> <p>Palm Avenue</p> <hr/> <p>511 / 811 ↕</p> <p>794 / 481 0 / 12 147 / 138 ↕</p>	<p>6</p> <p>144 / 233 ↔ 77 / 121 26 / 42 Hollister Street</p> <p>↕ ↕ ↕</p> <p>32 / 41 607 / 459 27 / 27</p> <p>Palm Avenue</p> <hr/> <p>128 / 178 415 / 627 40 / 89 ↕</p> <p>90 / 82 94 / 91 46 / 42 ↕</p>	<p>7</p> <p>8 / 31 ↔ 194 / 399 Hollister Avenue</p> <p>↕ ↕ ↕</p> <p>31 / 13</p> <p>North Project Driveway</p> <hr/> <p>31 / 13 ↕</p> <p>8 / 31 231 / 274 ↕</p>	<p>8</p> <p>8 / 31 ↔ 217 / 381 Hollister Street</p> <p>↕ ↕ ↕</p> <p>31 / 13</p> <p>South Project Driveway</p> <hr/> <p>8 / 31 208 / 292 ↕</p>

LEGEND

- Unsignalized Study Intersection
- Signalized Study Intersection
- Study Roadway Segment
- Study Freeway Segment
- Palm Avenue Trolley Station
- X / Y AM / PM Peak-Hour Traffic Volumes
- X,XXX** ADT Traffic Volumes

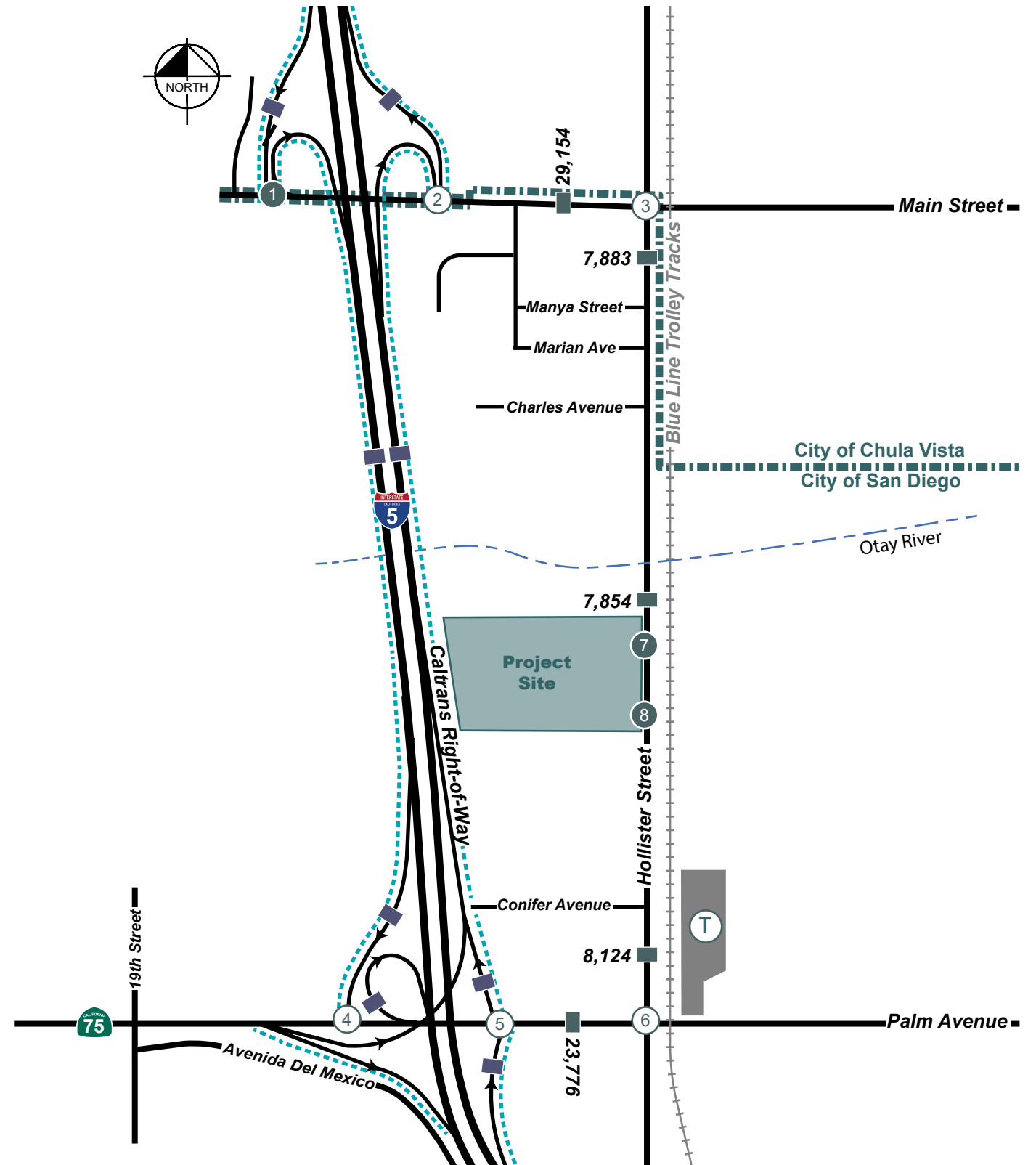


Table 6-1 Opening Year (2021) with Project Conditions Intersection LOS Summary

Intersection	Jurisdiction	Traffic Control (a)	Peak Hour	Opening Year (2021) Baseline Conditions		Opening Year (2021) with Project				
				Delay (b)	LOS (c)	Delay (b)	LOS (c)	Change	Eff? (d)	
1	Main Street & I-5 SB Ramps	Caltrans	SSSC	AM	17.6	C	18.1	C	0.5	NO
				PM	31.0	D	40.9	E	9.9	YES
2	Main Street & I-5 NB Ramps	Caltrans	Signal	AM	16.3	B	17.8	B	1.5	NO
				PM	19.0	B	19.9	B	0.9	NO
3	Hollister Street & Main Street	San Diego & Chula Vista	Signal	AM	12.5	B	13.7	B	1.2	NO
				PM	21.2	C	22.5	C	1.3	NO
4	Palm Avenue & I-5 SB Ramps	Caltrans	Signal	AM	44.0	D	46.6	D	2.6	NO
				PM	73.2	E	73.5	E	0.3	NO
5	Palm Avenue & I-5 NB Ramps	Caltrans	Signal	AM	11.6	B	12.0	B	0.4	NO
				PM	10.5	B	10.8	B	0.3	NO
6	Hollister Street & Palm Avenue	San Diego	Signal	AM	14.3	B	15.7	B	1.4	NO
				PM	16.4	B	17.9	B	1.5	NO
7	Hollister Street & North Project Driveway	San Diego	SSSC	AM	Does Not Exist		10.7	B	10.7	NO
				PM			12.3	B	12.3	NO
8	Hollister Street & South Project Driveway	San Diego	SSSC	AM	Does Not Exist		10.8	B	10.8	NO
				PM			12.2	B	12.2	NO

Notes:

Bold values indicate intersections operating at LOS E or F. **Bold and Shaded** values indicate a project effect.

- (a) Signal = Traffic Signal, SSSC = Side Street Stop Control, TWSC = Two-Way Stop Control
- (b) Delay refers to the average control delay for the entire intersection measured in seconds per vehicle. At SSSC and TWSC intersections, delay refers to the worst movement.
- (c) LOS calculations based on methodologies outlined in the 6th Edition HCM and performed using Synchro 10.
- (d) Project Effect?

6.4 FREEWAY ANALYSIS

Table 6-3 displays the freeway analysis under the Opening Year (2021) with Project Conditions. As shown in the table the I-5 Southbound weave segment between Main Street and Palm Avenue operates at a LOS E during the PM peak period under Opening Year (2021) Conditions. The weave segment on I-5 Southbound would not be considered a project effect.

Table 6-4 displays the 95th percentile queue results for the freeway off-ramps at study area intersections under Opening Year (2021) with Project Conditions. As shown in the table, all off-ramp queues would be accommodated within available storage.

Appendix E contains the freeway LOS and off-ramp queue calculation worksheets.

Table 6-2 Opening Year (2021) with Project Conditions Roadway Segment LOS Summary

Roadway Segment	Opening Year (2021) Conditions					Opening Year (2021) with Project Conditions					Δ in V/C	Effect?
	Roadway Classification (a)	LOS E Capacity	ADT	V/C Ratio (b)	LOS	Roadway Classification (a)	LOS E Capacity	ADT	V/C Ratio (b)	LOS		
Main Street												
I-5 NB Ramps to Hollister Street	4 Lane Major Arterial	40,000	28,333	0.708	C	4 Lane Major Arterial	40,000	29,154	0.729	C	0.021	NO
Hollister Street												
Main Street to Marian Avenue	2 Lane Collector (no center lane)	8,000	6,857	0.857	E	2 Lane Collector (no center lane)	8,000	7,883	0.985	E	0.128	YES
Marian Avenue to North Project Limit	2 Lane Collector (no center lane)	8,000	6,828	0.854	E	2 Lane Collector (no center lane)	8,000	7,854	0.982	E	0.128	YES
North Project Limit to South Project Limit (Project Frontage)	2 Lane Collector (no fronting property)	10,000	6,828	0.683	C	2 Lane Collector (continuous left-turn lane)	15,000	7,854	0.524	C	-0.159	NO
South Project Limit to Conifer Avenue	2 Lane Collector (no fronting property)	10,000	6,828	0.683	C	2 Lane Collector (no fronting property)	10,000	7,854	0.785	D	0.102	NO
Conifer Avenue to Palm Avenue	2 Lane Collector (no center lane)	8,000	7,098	0.887	E	2 Lane Collector (no center lane)	8,000	8,124	1.016	F	0.129	YES
Palm Avenue												
I-5 NB Ramps to Hollister Street	4 Lane Collector	30,000	22,955	0.765	D	4 Lane Collector	30,000	23,776	0.793	D	0.028	NO

Notes:

Bold values indicate roadway segments operating at LOS E or F. **Bold and Shaded** values indicate a project effect.

(a) Existing road classifications are based on field work conducted in November 2018.

(b) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

Table 6-3 Opening Year (2021) with Project Conditions Freeway LOS Summary

Freeway Facility	Facility Type	Peak Hour	Opening Year (2021) Conditions			Opening Year (2021) with Project Conditions				
			Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Δ in density (pc/mi/ln)	Effect?
I-5 Northbound										
Palm Ave Off-Ramp	Diverge	AM	67.2	21.5	D	67.2	21.5	D	0.0	NO
		PM	68.6	17.4	C	68.5	17.5	C	0.1	NO
Palm Ave to Main St	Weave	AM	59.0	20.2	C	59.0	20.2	C	0.0	NO
		PM	61.8	16.3	B	61.8	16.3	B	0.0	NO
Main St On-Ramp	Merge	AM	74.9	15.9	B	74.9	16.0	B	0.1	NO
		PM	75.4	13.8	B	75.4	13.9	B	0.1	NO
I-5 Southbound										
Main St Off-Ramp	Diverge	AM	75.4	9.7	A	75.4	9.7	A	0.0	NO
		PM	67.9	26.7	D	67.7	26.9	D	0.2	NO
Main St to Palm Ave	Weave	AM	60.1	10.7	B	60.1	10.7	B	0.0	NO
		PM	50.0	36.1	E	50.0	36.1	E	0.0	NO
Palm Ave On-Ramp	Merge	AM	75.2	5.1	A	75.2	5.2	A	0.1	NO
		PM	73.2	19.5	C	73.2	19.5	C	0.0	NO
SR75 On-Ramp	Merge	AM	70.5	5.9	A	70.5	5.9	A	0.0	NO
		PM	68.4	22.3	C	68.4	22.3	C	0.0	NO

Notes:

Bold values indicate roadway segments operating at LOS E or F. **Bold and Shaded** values indicate a project effect.

(a) Speed is measured in miles per hour (mph).

(b) Density is measured in passenger cars per mile per lane (pc/mi/ln)

(c) LOS calculations based on methodologies outlined in the 6th Edition HCM and performed using HCS 7.

Table 1-4 Opening Year (2021) with Project Conditions Freeway Off-Ramp Queue Summary

Off-Ramp Location	Traffic Control (a)	Off-Ramp Storage Lengths (ft) (b)	Peak Hour	95 th Percentile Queue Length (ft) (c)	
				Opening Year (2021) Conditions	Opening Year (2021) With Project Conditions
1 I-5 SB Off-Ramp at Main Street	SSSC	1,500	AM	183	194
			PM	253	328
2 I-5 NB Off-Ramp at Main Street	Signal	1,100	AM	369	373
			PM	367	388
5 I-5 SB Off-Ramp at Palm Avenue	Signal	1,400	AM	408	408
			PM	784	785
6 I-5 NB Off-Ramp at Palm Avenue	Signal	1,100	AM	244	266
			PM	173	187

Notes:

(a) SSSC= Side Street Stop Control, Signal = Traffic Signal.

(b) Off-ramp storage length measured from theoretical gore point to intersection stop bar for longest lane.

(c) 95th percentile queue lengths measured based on HCM 2010 for signalized intersections, and HCM 2000 for unsignalized intersections.

6.5 PROJECT EFFECTS AND IMPROVEMENTS

Based on Caltrans guidelines, there would be a project effect at the following intersection under Opening Year (2021) Conditions:

- **Intersection 1: Main Street & I-5 SB Ramps – PM Peak**

As shown in the table, operations at Main Street and I-5 Southbound Ramps could be restored to better than baseline conditions by installing a traffic signal or a roundabout. However, the City of Chula Vista does not currently have a project in this location to pay a fair share contribution towards. Therefore, no improvement is required as part of this project.

Table 6-5 Opening Year (2021) with Project Improvements Intersection LOS Summary

Intersection		Peak Hour	Opening Year (2021) with Project Conditions		Opening Year (2021) with Project Improvements Conditions		
			Delay (a)	LOS (b)	Improvement	Delay (a)	LOS (b)
1	Main Street & I-5 SB Ramps	AM	18.1	C	Signal	6.4	A
					Roundabout	6.8	A
	PM	40.9	E	Signal	7.5	A	
				Roundabout	8.4	A	

Notes:

Bold values indicate intersections operating at LOS E or F. **Bold and Shaded** values indicate a project effect.

(a) Delay refers to the average control delay for the entire intersection measured in seconds per vehicle.

(b) LOS calculations based on methodologies outlined in the 6th Edition HCM and performed using Synchro 10 for the signal and SIDRA 8 for the roundabout. See **Appendix D-3**.

Roadway project effects were caused by project traffic on various segments of Hollister Street between Main Street and Palm Avenue under Opening Year (2021) with Project Conditions. In order to improve the road network LOS a continuous two-way left turn lane is proposed along Hollister Street where feasible. **Table 6-6** shows the proposed improvements to the surrounding area to reduce effects of the project traffic in Opening Year. **Table 6-7** shows the LOS of the road segments once improvement measures are completed. Striping concepts to demonstrate feasibility of the proposed improvements on Hollister Street are also provided in **Appendix I**.

Table 6-6 Opening Year (2021) with Project Roadway Segment Improvements Summary

Roadway Segment	Proposed Improvement
Hollister Street	
Main Street to Marian Avenue	Prior to issuance of the first building permit, Owner/Permittee shall assure the re-striping of Hollister Street between Main Street and Marian Avenue to add a continuous two-way left turn lane, satisfactory to the City of Chula Vista Engineer and the City of San Diego City Engineer. All improvements must be complete and operational prior to first occupancy.
Marian Avenue to North Project Limit	No improvement – this section of roadway is currently not wide enough to re-stripe a two-way left-turn lane
Conifer Avenue to Palm Street	Prior to issuance of the first building permit, Owner/Permittee shall assure the re-striping of Hollister Street between Conifer Avenue and Palm Avenue to add a continuous two-way left turn lane, satisfactory to the City of San Diego City Engineer. All improvements must be complete and operational prior to first occupancy. Improvement will require removal of on-street parking along the east side of Hollister Street.

Table 6-7 Opening Year (2021) with Project Improvements Roadway Segment LOS Summary

Roadway Segment	Opening Year (2021) with Project Conditions					Opening Year (2021) with Project Improvements					Δ in V/C
	Roadway Classification (a)	LOS E Capacity	ADT (b)	V/C Ratio (c)	LOS	Roadway Classification (a)	LOS E Capacity	ADT (b)	V/C Ratio (c)	LOS	
Main Street											
I-5 NB Ramps to Hollister Street	4 Lane Major Arterial	40,000	29,154	0.729	C	4 Lane Major Arterial	40,000	29,154	0.729	C	0.000
Hollister Street											
Main Street to Marian Avenue	2 Lane Collector (no center lane)	8,000	7,883	0.985	E	2 Lane Collector (continuous left-turn lane)	15,000	7,883	0.526	C	-0.459
Marian Avenue to North Project Limit	2 Lane Collector (no center lane)	8,000	7,854	0.982	E	2 Lane Collector (no center lane)	8,000	7,854	0.982	E	0.000
North Project Limit to South Project Limit (Project Frontage)	2 Lane Collector (continuous left-turn lane)	15,000	7,854	0.524	C	2 Lane Collector (continuous left-turn lane)	15,000	7,854	0.524	C	0.000
South Project Limit to Conifer Avenue	2 Lane Collector (no fronting property)	10,000	7,854	0.785	D	2 Lane Collector (no fronting property)	10,000	7,854	0.785	D	0.000
Conifer Avenue to Palm Avenue	2 Lane Collector (no center lane)	8,000	8,124	1.016	F	2 Lane Collector (continuous left-turn lane)	15,000	8,124	0.542	C	-0.474
Palm Avenue											
I-5 NB Ramps to Hollister Street	4 Lane Collector	30,000	23,776	0.793	D	4 Lane Collector	30,000	23,776	0.793	D	0.000

Notes:

Bold values indicate roadway segments operating at LOS E or F.

(a) Existing road classifications are based on field work conducted in November 2018.

(b) Existing Average Daily Traffic (ADT) volumes for the roadway segments were provided by NDS and measured on April 19, 2017.

(c) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

7 HORIZON YEAR (2050) CONDITIONS

This section provides a description of the Horizon Year (2050) Conditions. This scenario establishes a baseline to compare against the Horizon Year (2050) with Project Conditions to determine cumulative project effects. It includes a baseline scenario using model growth and a revised baseline that accounts for the Salt Bay Design District cumulative project.

7.1 ROADWAY NETWORK CHANGES

No changes to the study roadway network are assumed to take place under Horizon Year (2050) Conditions.

7.2 TRAFFIC VOLUMES

The Horizon Year daily volumes were forecasted by applying an annual growth rate to the existing traffic volumes for 33 years to estimate Year 2050. The annual growth rate was calculated using volumes documented in the SANDAG Series 12 model runs for 2008 and 2050 as seen in **Table 7-1**.

Table 7-1 SANDAG Series 12 Model Data and Estimated Growth Rates (By Segment) for Horizon Year (2050)

Roadway Segment	2008 Model ADT	2050 Model ADT	Annual Growth Rate
Main Street			
I-5 NB Ramps to Hollister Street	22,700	27,100	0.4%
Hollister Street			
Main Street to Charles Avenue	6,200	13,400	1.9%
Charles Avenue to Conifer Avenue (Project Frontage)	5,900	12,200	1.7%
Conifer Avenue to Palm Avenue	5,600	11,300	1.7%
Palm Avenue			
I-5 NB Ramps to Hollister Street	22,900	31,600	0.8%

Source: SANDAG Transportation Forecast Information Center. Screenshot provided in **Appendix H**.

Horizon Year peak hour intersection volumes were factored based on the projected ADT volumes along each approach. Through movements were calculated by growing the existing traffic counts using approach growth factors calculated from the SANDAG 2008 and 2050 Series 12 traffic models. Each respective turning movement was calculated using an iterative approach that balances the inflows and outflows for each approach.

The input values include the existing turning movement volumes and the existing and future ADT values along each leg of the intersection. The future peak hour approach volumes are then estimated by applying the existing peak-hour factor (K-factor) and directional distributional percentage (D-factor) to the future ADT volumes along each approach. A more detailed description of the methodology used to forecast turning movement volumes is contained in NCHRP 255 Highway Traffic Data for Urbanized Area Project Planning and Design, Chapter 8. An Excel model computes the forecast turning volumes from existing turning movement volumes and ADT volumes by the techniques described in NCHRP 255.

Appendix J contains the future intersection volume information and calculations.

Figure 7-1 illustrates the resulting Horizon Year (2050) Baseline Conditions peak-hour and daily traffic volumes in the study area.

Traffic from a cumulative nearby project, the Salt Bay Design District was also added to Horizon Year (2050) baseline volume, as the project is not anticipated to be constructed until after Opening Year (2021) and was not accounted for in the SANDAG community buildout traffic model. The proposed Salt Bay Design District is located on Bay Boulevard partially in the City of Chula Vista and partially in the City of San Diego approximately 1.5 miles from the project site. Relevant information from the Salt Bay Design District Draft Traffic Impact Analysis including the total project assignment volumes is included in **Appendix K**.

The Horizon Year (2050) Cumulative Project traffic volumes are shown in **Figure 7-2**. The resulting Horizon Year (2050) with Cumulative Project Condition traffic volumes are shown in **Figure 7-3**. The revised baseline volumes shown in Figure 7-3 that account for the Salt Bay Design District cumulative project are used as the baseline comparison for plus project analyses.

7.3 INTERSECTION ANALYSIS

Table 7-2 displays the LOS analysis results for the study intersections under the Horizon Year (2050) Conditions and the Horizon Year (2050) with Cumulative Project Conditions. As shown in the table, the following intersections within the study area would operate at LOS E or F after factoring in the Salt Bay Design District cumulative project traffic volumes:

- **Intersection 1** – Main Street & I-5 SB Ramps (LOS F in both peaks)
- **Intersection 2** – Main Street & I-5 NB Ramps (LOS E in the PM peak)
- **Intersection 4** – Palm Avenue & I-5 SB Ramps (LOS F in both peaks)

Appendix D-4 contains the intersection LOS calculation worksheets for Horizon Year (2050) Conditions. **Appendix D-5** contains the intersection LOS calculation worksheets for Horizon Year (2050) with Cumulative Project Conditions.

Table 7-2 Horizon Year (2050) Conditions Intersection LOS Summary

Intersection	Jurisdiction	Traffic Control (a)	Peak Hour	Horizon Year (2050) Baseline Conditions		Horizon Year (2050) with Cumulative Project Conditions		
				Delay (b)	LOS (c)	Delay (b)	LOS (c)	
1	Main Street & I-5 SB Ramps	Caltrans	SSSC	AM	18.8	C	251.0	F
				PM	72.4	F	**	F
2	Main Street & I-5 NB Ramps	Caltrans	Signal	AM	20.1	C	31.8	C
				PM	26.2	C	75.3	E
3	Hollister Street & Main Street	San Diego & Chula Vista	Signal	AM	17.0	B	19.6	B
				PM	44.9	D	45.5	D
4	Palm Avenue & I-5 SB Ramps	Caltrans	Signal	AM	174.7	F	174.7	F
				PM	163.6	F	163.6	F
5	Palm Avenue & I-5 NB Ramps	Caltrans	Signal	AM	21.8	C	21.8	C
				PM	12.9	B	12.9	B
6	Hollister Street & Palm Avenue	San Diego	Signal	AM	26.3	C	26.3	C
				PM	35.9	D	35.9	D

Notes:

Bold values indicate intersections operating at LOS E or F.

** Delay is beyond calculable value.

(a) Signal = Traffic Signal, SSSC = Side Street Stop Control

(b) Delay refers to the average control delay for the entire intersection measured in seconds per vehicle. At SSSC intersections, delay refers to the worst movement.

(c) LOS calculations based on methodologies outlined in the 6th Edition HCM and performed using Synchro 10.

FIGURE 7-1 HORIZON YEAR (2050) BASELINE VOLUMES

<p>1</p> <p>↻ 28 / 35 ↻ 542 / 622 I-5 SB Ramps</p> <p>↻ 307 / 596 ↻ 60 / 40</p> <p>Main Street</p> <p>↻ 25 / 76 ↻ 28 / 97</p>	<p>2</p> <p>↻ 25 / 23 ↻ 521 / 494 I-5 NB Ramps</p> <p>↻ 492 / 595 ↻ 326 / 586</p> <p>Main Street</p> <p>↻ 13 / 21 ↻ 517 / 714</p>	<p>3</p> <p>↻ 105 / 160 ↻ 104 / 175 ↻ 31 / 49 Hollister Street</p> <p>↻ 41 / 42 ↻ 660 / 843 ↻ 168 / 285</p> <p>Main Street</p> <p>↻ 96 / 72 ↻ 723 / 909 ↻ 103 / 215</p> <p>↻ 88 / 132 ↻ 108 / 150 ↻ 187 / 234</p>	<p>4</p> <p>↻ 1371 / 1842 ↻ 268 / 550 I-5 SB Ramps</p> <p>↻ 134 / 131 ↻ 1712 / 1416</p> <p>Palm Avenue</p> <p>↻ 463 / 557</p>
<p>5</p> <p>I-5 NB Ramps</p> <p>↻ 285 / 180 ↻ 787 / 784</p> <p>Palm Avenue</p> <p>↻ 715 / 1114</p> <p>↻ 1104 / 697 ↻ 0 / 10 ↻ 173 / 119</p>	<p>6</p> <p>↻ 166 / 352 ↻ 150 / 254 ↻ 27 / 57 Hollister Street</p> <p>↻ 40 / 52 ↻ 666 / 483 ↻ 41 / 43</p> <p>Palm Avenue</p> <p>↻ 203 / 221 ↻ 446 / 685 ↻ 84 / 166</p> <p>↻ 189 / 152 ↻ 186 / 190 ↻ 70 / 67</p>	<p>7</p> <p>↻ 343 / 663 Hollister Street</p> <p>North Project Driveway</p> <p>↻ 383 / 516</p>	<p>8</p> <p>↻ 343 / 663 Hollister Street</p> <p>South Project Driveway</p> <p>↻ 383 / 516</p>

LEGEND

- Unsignalized Study Intersection
- Signalized Study Intersection
- Future Project Driveway Intersection
- Study Roadway Segment
- Study Freeway Segment
- Palm Avenue Trolley Station
- ↻ X / Y AM / PM Peak-Hour Traffic Volumes
- X,XXX** ADT Traffic Volumes

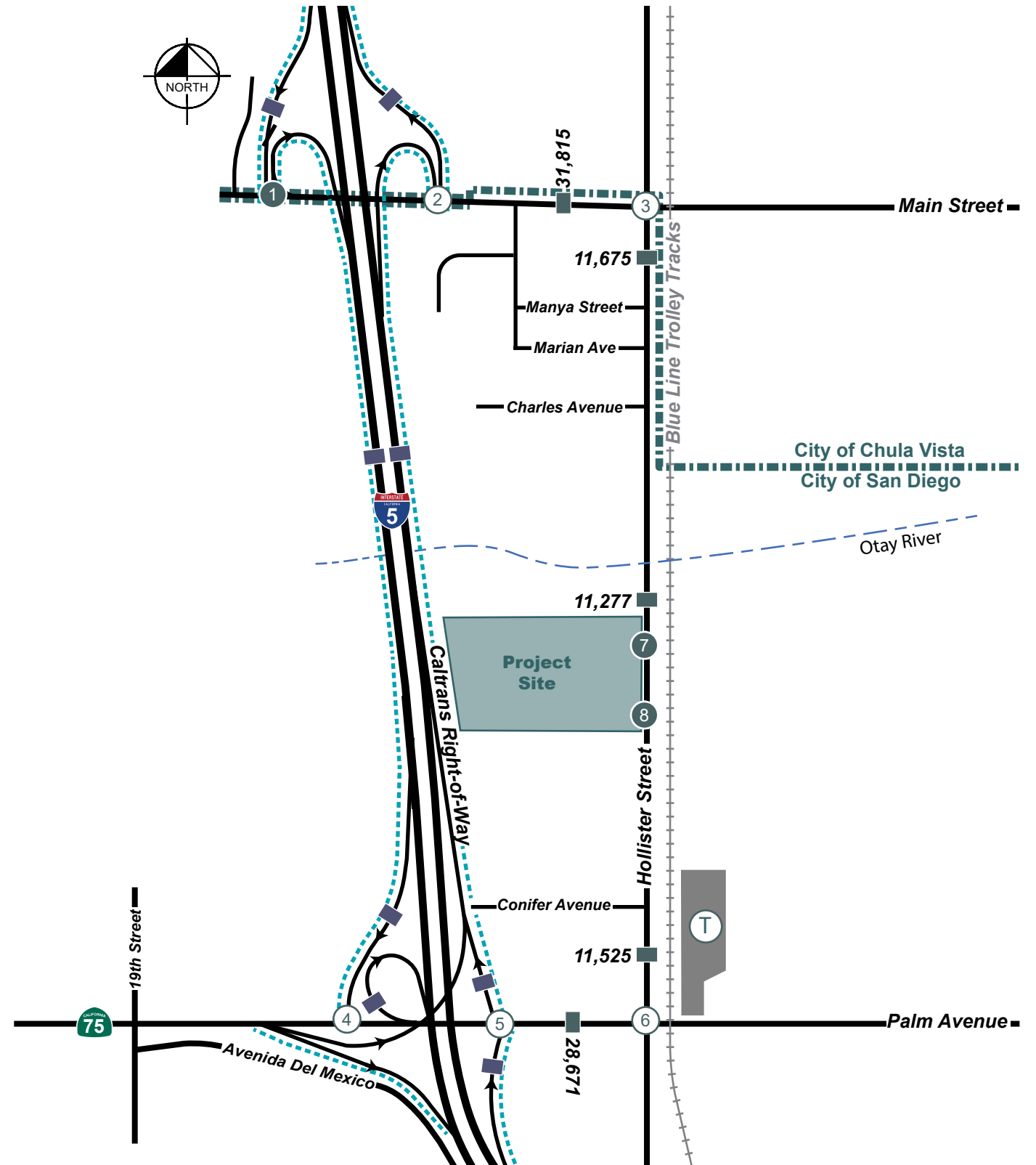








FIGURE 7-2 HORIZON YEAR (2050) CUMULATIVE PROJECT TRAFFIC VOLUMES

<p>1</p> <p>↻ 363 / 155</p> <p>I-5 SB Ramps</p> <p>↻ 289 / 126</p> <p>Main Street</p> <p>62 / 162</p> <p>194 / 487</p>	<p>2</p> <p>↻ 167 / 68</p> <p>I-5 NB Ramps</p> <p>↻ 122 / 58</p> <p>Main Street</p> <p>143 / 371</p> <p>52 / 116</p>	<p>3</p> <p>Hollister Street</p> <p>↻ 66 / 31</p> <p>Main Street</p> <p>28 / 63</p> <p>24 / 53</p> <p>↻ 55 / 26</p>	<p>4</p> <p>I-5 SB Ramps</p> <p>Palm Avenue</p>
<p>5</p> <p>I-5 NB Ramps</p> <p>Palm Avenue</p>	<p>6</p> <p>Hollister Street</p> <p>Palm Avenue</p>	<p>7</p> <p>Hollister Street</p> <p>North Project Driveway</p>	<p>8</p> <p>Hollister Street</p> <p>South Project Driveway</p>

LEGEND

-  Unsignalized Study Intersection
-  Signalized Study Intersection
-  Future Project Driveway Intersection
-  Study Roadway Segment
-  Study Freeway Segment
-  Palm Avenue Trolley Station
- \circlearrowleft X / Y AM / PM Peak-Hour Traffic Volumes
- X,XXX** ADT Traffic Volumes

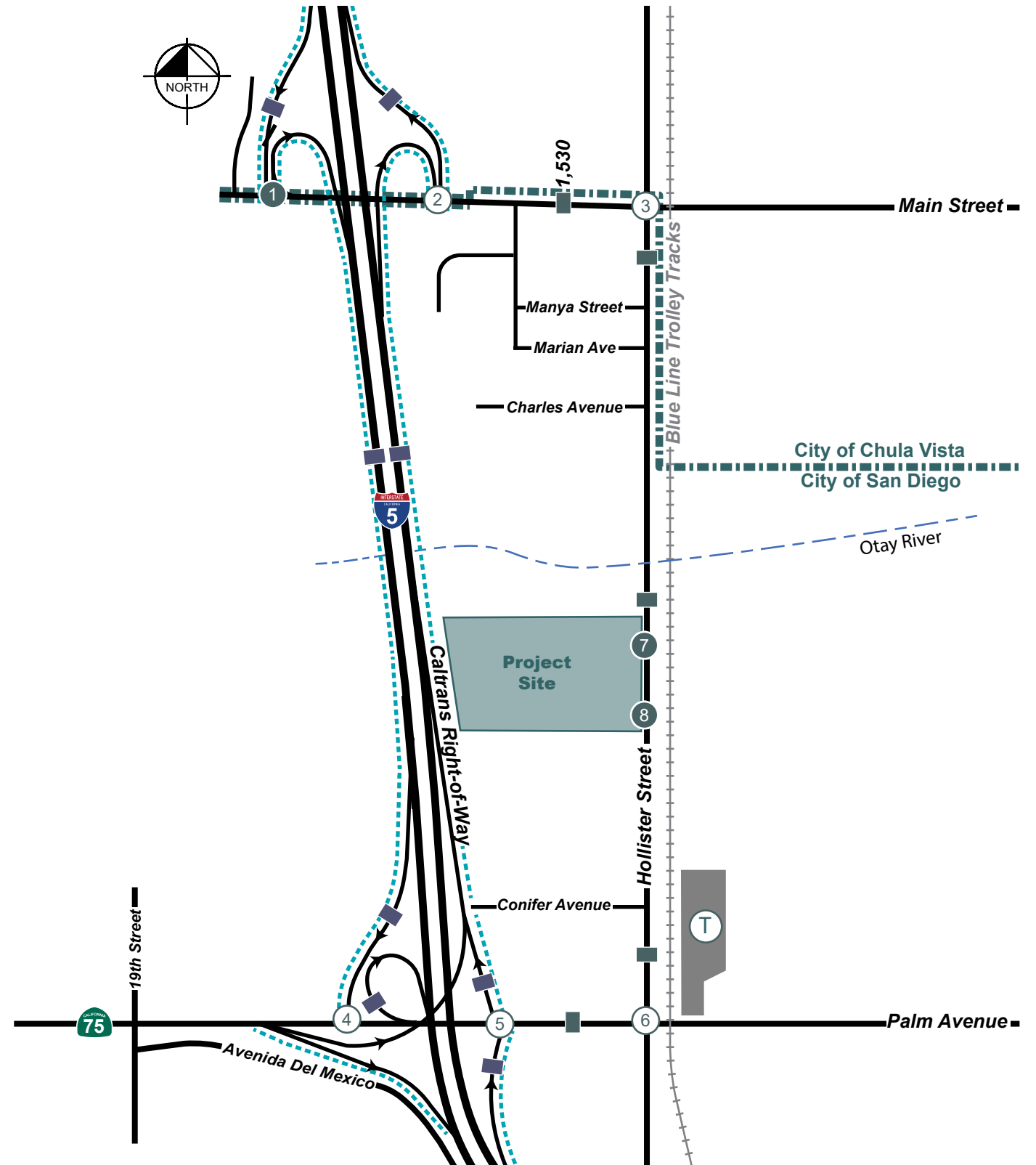
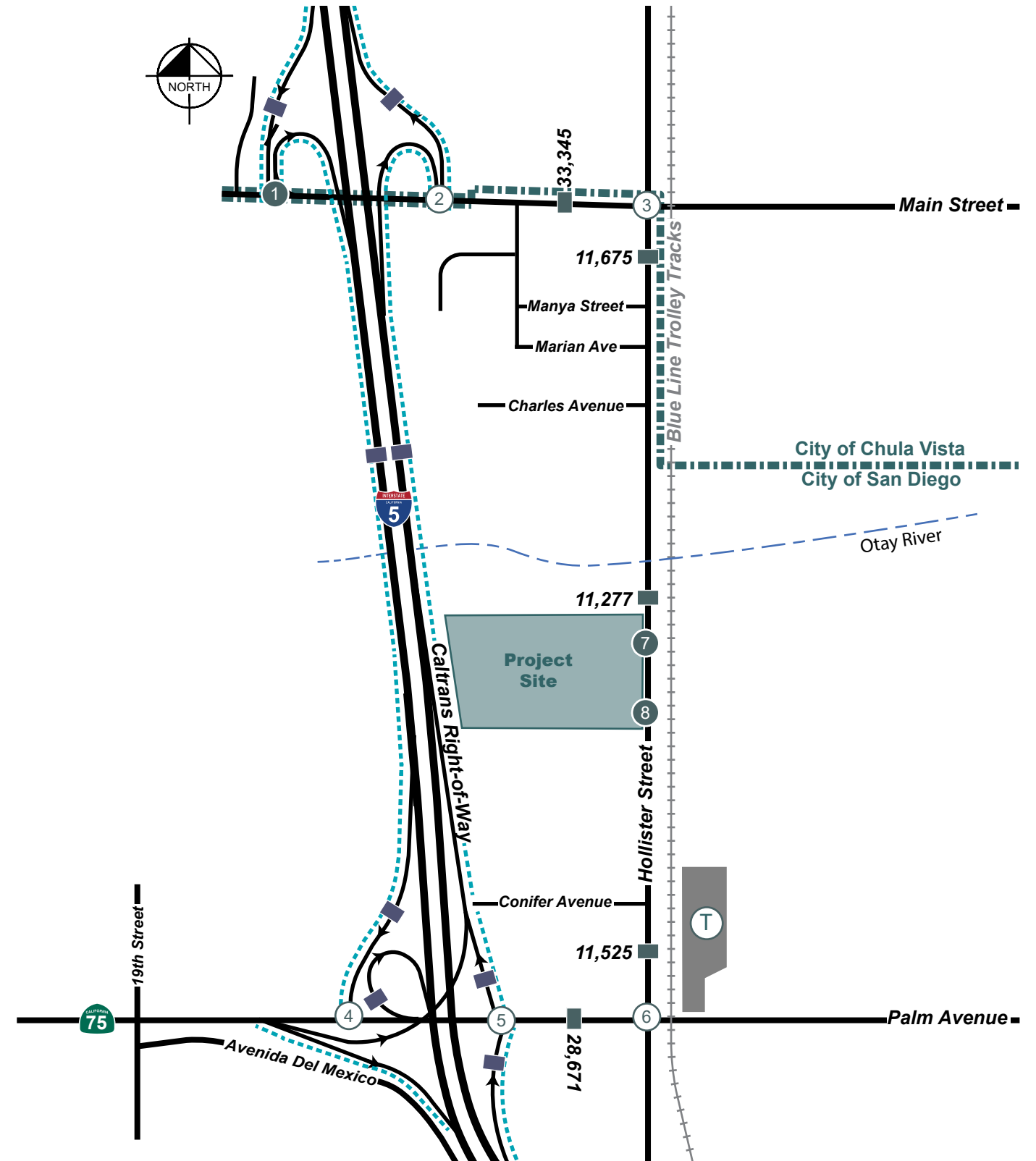


FIGURE 7-3 HORIZON YEAR (2050) WITH CUMULATIVE PROJECT TRAFFIC VOLUMES

<p>1</p> <p>↻ 411 / 190 ↻ 542 / 622 I-5 SB Ramps</p> <p>↻ 307 / 596 ↻ 349 / 166</p> <p>Main Street</p> <p>87 / 238 222 / 584</p>	<p>2</p> <p>↻ 192 / 91 ↻ 521 / 494 I-5 NB Ramps</p> <p>↻ 492 / 595 ↻ 448 / 644</p> <p>Main Street</p> <p>156 / 392 569 / 830</p>	<p>3</p> <p>↻ 105 / 160 ↻ 104 / 175 ↻ 31 / 49 Hollister Street</p> <p>↻ 41 / 42 ↻ 726 / 874 ↻ 168 / 285</p> <p>Main Street</p> <p>96 / 72 751 / 972 127 / 268</p> <p>143 / 158 108 / 150 187 / 234</p>	<p>4</p> <p>↻ 1371 / 1842 ↻ 268 / 550 I-5 SB Ramps</p> <p>↻ 134 / 131 ↻ 1712 / 1416</p> <p>Palm Avenue</p> <p>463 / 557</p>
<p>5</p> <p>I-5 NB Ramps</p> <p>↻ 285 / 180 ↻ 787 / 784</p> <p>Palm Avenue</p> <p>715 / 1114</p> <p>1104 / 697 0 / 10 173 / 119</p>	<p>6</p> <p>↻ 166 / 352 ↻ 150 / 254 ↻ 27 / 57 Hollister Street</p> <p>↻ 40 / 52 ↻ 666 / 483 ↻ 41 / 43</p> <p>Palm Avenue</p> <p>203 / 221 446 / 685 84 / 166</p> <p>189 / 152 186 / 190 70 / 67</p>	<p>7</p> <p>↻ 343 / 663 Hollister Street</p> <p>North Project Driveway</p> <p>383 / 516</p>	<p>8</p> <p>↻ 343 / 663 Hollister Street</p> <p>South Project Driveway</p> <p>383 / 516</p>

LEGEND

- ⊕ Unsignalized Study Intersection
- ⊙ Signalized Study Intersection
- ⊕ Future Project Driveway Intersection
- ▬ Study Roadway Segment
- ▬ Study Freeway Segment
- Ⓣ Palm Avenue Trolley Station
- ↻ X / Y AM / PM Peak-Hour Traffic Volumes
- X,XXX ADT Traffic Volumes



7.4 ROADWAY SEGMENT ANALYSIS

Table 7-3 displays the roadway segments analysis under the Horizon Year (2050) Baseline Conditions and the Horizon Year (2050) with Cumulative Project Conditions. As shown in the table, the following roadway segments would operate at unacceptable LOS under Horizon Year (2050) Conditions:

- **Hollister Street** – Main Street to Marian Avenue (LOS F)
- **Hollister Street** – Marian Avenue to North Project Limit (LOS F)
- **Hollister Street** – North Project Limit to South Project Limit (LOS F)
- **Hollister Street** – South Project Limit to Conifer Avenue (LOS F)
- **Hollister Street** – Conifer Avenue to Palm Avenue (LOS F)
- **Palm Avenue** – I-5 NB Ramps to Hollister Street (LOS E)

Table 7-3 Horizon Year (2050) Conditions Roadway Segment LOS Summary

Roadway Segment	Roadway Classification (a)	LOS E Capacity	Horizon Year (2050) Baseline Conditions			Horizon Year (2050) with Cumulative Project Conditions		
			ADT (b)	V/C Ratio (c)	LOS	ADT (b)	V/C Ratio (c)	LOS
Main Street								
I-5 NB Ramps to Hollister Street	4 Lane Major Arterial	40,000	31,815	0.795	D	33,345	0.834	D
Hollister Street								
Main Street to Marian Avenue	2 Lane Collector (no center turn lane)	8,000	11,675	1.459	F	11,675	1.459	F
Marian Avenue to North Project Limit	2 Lane Collector (no center turn lane)	8,000	11,277	1.410	F	11,277	1.410	F
North Project Limit to South Project Limit (Project Frontage)	2 Lane Collector (no fronting property)	10,000	11,277	1.128	F	11,277	1.128	F
South Project Limit to Conifer Avenue	2 Lane Collector (no fronting property)	10,000	11,277	1.128	F	11,277	1.128	F
Project Site to Palm Avenue	2 Lane Collector (no center turn lane)	8,000	11,525	1.441	F	11,525	1.441	F
Palm Avenue								
I-5 NB Ramps to Hollister Street	4 Lane Collector	30,000	28,671	0.956	E	28,671	0.956	E

Notes:

Bold values indicate roadway segments operating at LOS E or F.

- Existing road classifications are based on field work conducted in November 2018.
- Average Daily Traffic (ADT) volumes for the roadway segments were calculated by applying an annual growth rate to the existing traffic volumes for 33 years to estimate Year 2050. The annual growth rate was calculated using volumes documented in the SANDAG Series 12 model runs for 2008 and 2050.
- The v/c ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

7.5 FREEWAY ANALYSIS

Table 7-4 displays the LOS analysis results for the freeway analysis under Horizon Year (2050) Conditions and the Horizon Year (2050) with Cumulative Project Conditions. As shown in the table, all freeway facilities would operate at LOS D or better during both peak periods except for the following:

- **I-5 Northbound** – Palm Avenue Off-Ramp (LOS E in the AM Peak)
- **I-5 Southbound** – Main Street Off-Ramp (LOS F in the PM Peak)
- **I-5 Southbound** – Weave Segment between Main Street and Palm Avenue (LOS F in the PM Peak)

Table 7-5 displays the 95th percentile queue results for the freeway off-ramps at study area intersections under Horizon Year (2050) with Project Conditions and the Horizon Year (2050) with Cumulative Project Conditions. As shown in the table, the following off ramp has an error in the queue report, indicating the queues exceed capacity of the off-ramp:

- **I-5 Southbound at Main Street**

Appendix E contains the freeway LOS and off-ramp queue calculation worksheets.

Table 7-4 Horizon Year (2050) Conditions Freeway LOS Summary

Freeway Facility	Facility Type	Peak Hour	Horizon Year (2050) Conditions			Horizon Year (2050) with Cumulative Project Conditions		
			Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)
I-5 Northbound								
Palm Ave Off-Ramp	Diverge	AM	65.9	27.0	E	65.9	27.0	E
		PM	67.7	21.8	D	67.7	21.8	D
Palm Ave to Main St	Weave	AM	56.7	24.9	C	56.7	24.9	C
		PM	59.6	20.2	C	59.6	20.2	C
Main St On-Ramp	Merge	AM	73.4	19.2	C	73.1	19.7	C
		PM	74.7	16.4	B	74.3	17.6	B
I-5 Southbound								
Main St Off-Ramp	Diverge	AM	75.4	10.5	A	75.4	11.6	B
		PM	22.8	76.7	F	23.6	75.7	F
Main St to Palm Ave	Weave	AM	58.1	12.7	B	58.1	12.7	B
		PM	53.3	30.6	F	53.3	30.6	F
Palm Ave On-Ramp	Merge	AM	75.2	5.7	A	75.2	5.7	A
		PM	69.5	16.7	B	69.5	16.7	B
SR75 On-Ramp	Merge	AM	70.5	6.6	A	70.5	6.6	A
		PM	68.9	17.4	B	68.9	17.4	B

Notes:

Bold values indicate roadway segments operating at LOS E or F.

(a) Speed is measured in miles per hour (mph).

(b) Density is measured in passenger cars per mile per lane (pc/mi/ln).

(c) LOS calculations based on methodologies outlined in the 6th Edition HCM and performed using HCS 7.

Table 7-5 Horizon Year (2050) Conditions Freeway Off-Ramp Queue Summary

Off-Ramp Location		Traffic Control (a)	Off-Ramp Storage Lengths (ft) (b)	Peak Hour	95 th Percentile Queue Length (ft) (c)	
					Horizon Year (2050) Baseline Conditions	Horizon Year (2050) With Cumulative Project Conditions
1	I-5 SB Off-Ramp at Main Street	SSSC	1,500	AM	207	Error (d)
				PM	473	Error (d)
2	I-5 NB Off-Ramp at Main Street	Signal	1,100	AM	462	520
				PM	545	609
5	I-5 SB Off-Ramp at Palm Avenue	Signal	1,400	AM	643	643
				PM	1,001	1,001
6	I-5 NB Off-Ramp at Palm Avenue	Signal	1,100	AM	657	657
				PM	320	320

Notes:

- (a) SSSC= Side Street Stop Control, Signal = Traffic Signal.
- (b) Off-ramp storage length measured from theoretical gore point to intersection stop bar for longest lane.
- (c) 95th percentile queue lengths measured based on HCM 2010 for signalized intersections, and HCM 2000 for unsignalized intersections.
- (d) Error indicates the capacity of the intersection approach is exceeded by a number that cannot be defined.

8 HORIZON YEAR (2050) WITH PROJECT CONDITIONS

This section provides a description of the Horizon Year (2050) Conditions with the addition of the Bella Mar project traffic, which proposes the construction of a multi-family residential development. Results of the Horizon Year (2050) with Project Conditions are compared to the Horizon Year (2050) with Cumulative Project Conditions in this section. Access to the project would be from two driveways on Hollister Street.

8.1 ROADWAY NETWORK CHANGES

The proposed project will include the improvements described in Section 4.1. No other changes to the study roadway network are assumed to take place under Horizon Year (2050) with Project Conditions.

8.2 TRAFFIC VOLUMES

The proposed project would generate 2,052 daily trips with 156 morning peak hour trips (31 in, 125 out) and 176 afternoon peak-hour trips (124 in, 52 out). Horizon Year (2050) with Project Conditions volumes were determined by adding the project traffic to the Horizon Year (2050) with Cumulative Project Conditions volumes and are shown in **Figure 8-1**.

8.3 INTERSECTION ANALYSIS

Table 8-1 displays the LOS analysis results for the study intersections under the Horizon Year (2050) with Project Conditions. As shown in the table, the following intersections would operate at unacceptable LOS under Horizon Year (2050) Conditions:

- **Intersection 1** – Main Street & I-5 SB Ramps (LOS F in both peaks)
- **Intersection 2** – Main Street & I-5 NB Ramps (LOS E in the PM peak)
- **Intersection 4** – Palm Avenue & I-5 SB Ramps (LOS F in both peaks)

The intersection of Main Street at I-5 Southbound Ramps is expected to operate at a LOS F during the PM Peak, due to the demand of the southbound left-turn movement with the addition of the proposed project. This intersection would be considered a cumulative project effect under Horizon Year (2050) with Project Conditions. This intersection is located outside of a ½ mile travel of a major transit stop and projected to add traffic to an intersection that is already operating at LOS F. Therefore, a cumulative project effect is anticipated under Horizon Year (2050) with Project Conditions.

The intersection of Palm Avenue at I-5 Southbound Ramps is expected to operate at a LOS F during the both peak periods under Horizon Year Conditions and would continue to operate at LOS F with the addition of the proposed project. The project is located within ½ mile of a major transit station, and would add traffic to an intersection that is already operating at LOS F. Therefore, a cumulative project effect is anticipated under Horizon Year (2050) with Project Conditions.

Appendix D-6 contains the intersection LOS calculation worksheets for the Horizon Year (2050) with Project Conditions.

FIGURE 8-1 HORIZON YEAR (2050) WITH PROJECT TRAFFIC VOLUMES

<p>1</p> <p>↔ 411 / 190 ↔ 554 / 672 ↔ I-5 SB Ramps</p> <p>↔ 307 / 596 ↔ 349 / 166</p> <p>Main Street</p>	<p>2</p> <p>↔ 192 / 91 ↔ 521 / 494 ↔ I-5 NB Ramps</p> <p>↔ 542 / 616 ↔ 448 / 644</p> <p>Main Street</p>	<p>3</p> <p>↔ 105 / 160 ↔ 106 / 181 ↔ 31 / 49 ↔ Hollister Street</p> <p>↔ 41 / 42 ↔ 726 / 874 ↔ 170 / 291</p> <p>Main Street</p>	<p>4</p> <p>↔ 1371 / 1842 ↔ 268 / 550 ↔ I-5 SB Ramps</p> <p>↔ 165 / 144 ↔ 1731 / 1424</p> <p>Palm Avenue</p>
<p>87 / 238 ↔ 222 / 584</p>	<p>156 / 392 ↔ 581 / 880</p>	<p>96 / 72 ↔ 751 / 972 ↔ 139 / 318</p>	<p>468 / 576</p>
<p>5</p> <p>↔ I-5 NB Ramps</p> <p>↔ 285 / 180 ↔ 837 / 805</p> <p>Palm Avenue</p>	<p>6</p> <p>↔ 216 / 373 ↔ 156 / 257 ↔ 33 / 60 ↔ Hollister Street</p> <p>↔ 42 / 58 ↔ 666 / 483 ↔ 41 / 43</p> <p>Palm Avenue</p>	<p>7</p> <p>↔ 8 / 31 ↔ 351 / 694 ↔ Hollister Street</p> <p>North Project Driveway</p>	<p>8</p> <p>↔ 8 / 31 ↔ 374 / 676 ↔ Hollister Street</p> <p>South Project Driveway</p>
<p>720 / 1133</p>	<p>215 / 271 ↔ 446 / 685 ↔ 84 / 166</p>	<p>31 / 13 ↔</p>	<p>31 / 13 ↔</p>
<p>1104 / 697 ↔ 0 / 10 ↔ 181 / 150</p>	<p>189 / 152 ↔ 188 / 196 ↔ 70 / 67</p>	<p>8 / 31 ↔ 414 / 529 ↔</p>	<p>8 / 31 ↔ 391 / 547 ↔</p>

LEGEND

- ⊕ Unsignalized Study Intersection
- ⊙ Signalized Study Intersection
- ▬ Study Roadway Segment
- ▬ Study Freeway Segment
- Ⓣ Palm Avenue Trolley Station
- ↔ X / Y AM / PM Peak-Hour Traffic Volumes
- X,XXX ADT Traffic Volumes

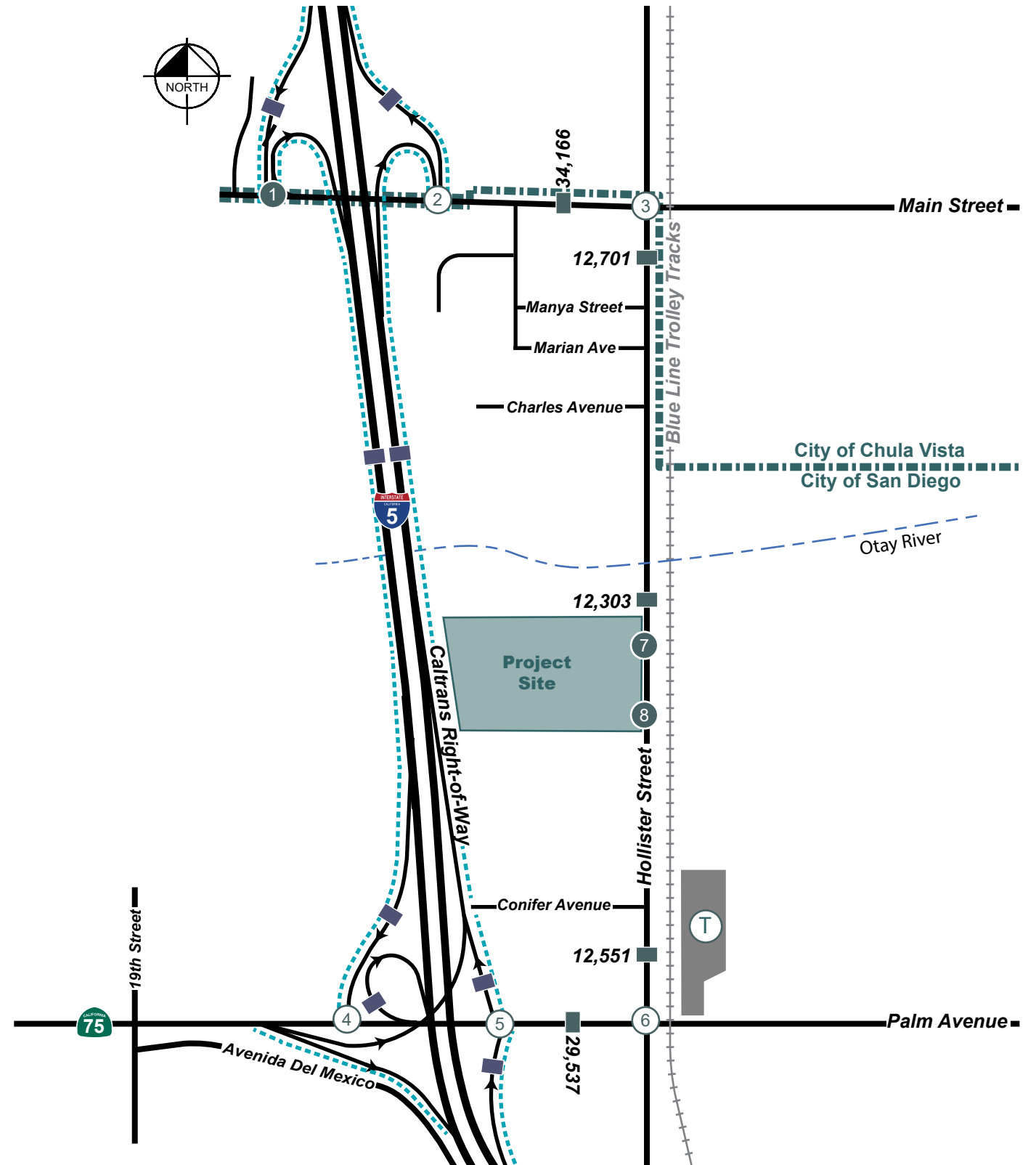


Table 8-1 Horizon Year (2050) with Project Conditions Intersection LOS Summary

Intersection	Jurisdiction	Traffic Control (a)	Peak Hour	Horizon Year (2050) with Cumulative Project Conditions		Horizon Year (2050) with Project Conditions			
				Delay (b)	LOS (c)	Delay (b)	LOS (c)	Change	Eff? (d)
1 Main Street & I-5 SB Ramps	Caltrans	SSSC	AM	251.0	F	263.6	F	244.8	YES
			PM	**	F	**	F	**	YES
2 Main Street & I-5 NB Ramps	Caltrans	Signal	AM	32.0	C	90.1	F	70.0	YES
			PM	86.2	F	28.1	C	1.9	NO
3 Hollister Street & Main Street	San Diego & Chula Vista	Signal	AM	19.4	B	21.8	C	4.8	NO
			PM	62.0	E	62.6	E	17.7	YES
4 Palm Avenue & I-5 SB Ramps	Caltrans	Signal	AM	174.7	F	175.5	F	0.8	YES
			PM	163.6	F	164.0	F	0.4	YES
5 Palm Avenue & I-5 NB Ramps	Caltrans	Signal	AM	21.8	C	23.6	C	1.8	NO
			PM	12.9	B	12.1	B	-0.8	NO
6 Hollister Street & Palm Avenue	San Diego	Signal	AM	26.3	C	30.2	C	3.9	NO
			PM	35.9	D	49.8	D	13.9	NO
7 Hollister Street & North Project Driveway	San Diego	SSSC	AM	Does not exist		12.7	B	12.7	NO
			PM			16.9	C	16.9	NO
8 Hollister Street & South Project Driveway	San Diego	SSSC	AM	Does not exist		12.8	B	12.8	NO
			PM			16.7	C	16.7	NO

Notes:

Bold values indicate intersections operating at LOS E or F. **Bold and Shaded** values indicate a project effect.

** Delay is beyond calculable values.

(a) Signal = Traffic Signal, SSSC = Side Street Stop Control

(b) Delay refers to the average control delay for the entire intersection measured in seconds per vehicle. At SSSC intersections, delay

(c) LOS calculations based on methodologies outlined in the 6th Edition HCM and performed using Synchro 10.

(d) Project Effect?

8.4 ROADWAY SEGMENT ANALYSIS

Table 8-2 displays the roadway segments analysis under the Horizon Year (2050) with Project Conditions. As shown in the table, the following roadway segments would operate at unacceptable LOS under Horizon Year (2050) with Project Conditions:

- **Hollister Street** – Main Street to Marian Avenue: LOS F
- **Hollister Street** – Marian Avenue to North Project Limit: LOS F
- **Hollister Street** – South Project Limit to Conifer Avenue: LOS F
- **Hollister Street** – Conifer Avenue to Palm Avenue: LOS F
- **Palm Avenue** – I-5 NB Ramps to Hollister Street: LOS E

This results in cumulative project effects to the Hollister Street roadway segments and Palm Avenue segment as a result of the proposed project under Horizon Year (2050) with Project Conditions.

Table 8-2 Horizon Year (2050) with Project Conditions Roadway Segment LOS Summary

Roadway Segment	Horizon Year (2050) with Cumulative Project Conditions						Horizon Year (2050) with Project Conditions						
	Roadway Classification (a)	LOS E Capacity	ADT	V/C Ratio (b)	LOS	LOS	Roadway Classification (a)	LOS E Capacity	ADT	V/C Ratio (b)	LOS	Δ in V/C	Effect?
Main Street													
I-5 NB Ramps to Hollister Street	4 Lane Major Arterial	40,000	33,345	0.834	D	NO	4 Lane Major Arterial	40,000	34,166	0.854	D	0.059	NO
Hollister Street													
Main Street to Marian Avenue	2 Lane Collector (no center lane)	8,000	11,675	1.459	F	YES	2 Lane Collector (no center lane)	8,000	12,701	1.588	F	0.129	YES
Marian Avenue to North Project Limit	2 Lane Collector (no center lane)	8,000	11,277	1.410	F	YES	2 Lane Collector (no center lane)	8,000	12,303	1.538	F	0.128	YES
North Project Limit to South Project Limit (Project Frontage)	2 Lane Collector (continuous left-turn lane)	15,000	11,277	0.752	D	NO	2 Lane Collector (continuous left-turn lane)	15,000	12,303	0.820	D	-0.308	NO
South Project Limit to Conifer Avenue	2 Lane Collector (no fronting property)	10,000	11,277	1.128	F	YES	2 Lane Collector (no fronting property)	10,000	11,277	1.128	F	0.000	YES
Conifer Avenue to Palm Avenue	2 Lane Collector (no center lane)	8,000	11,525	1.441	F	YES	2 Lane Collector (no center lane)	8,000	12,551	1.569	F	0.128	YES
Palm Avenue													
I-5 NB Ramps to Hollister Street	4 Lane Collector	30,000	28,671	0.956	E	YES	4 Lane Collector	30,000	29,492	0.983	E	0.027	YES

Notes:

Bold values indicate roadway segments operating at LOS E or F. **Bold** and Shaded values indicate a project effect.

(a) Existing road classifications are based on field work conducted in November 2018.

(b) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

8.5 FREEWAY ANALYSIS

Table 8-3 displays the freeway analysis under the Horizon Year (2050) with Project Conditions. As shown in the table, the following freeway segments do not operate at LOS D or better during one or both peak periods:

- **I-5 Northbound** – Palm Avenue Off-Ramp (LOS E in the AM Peak)
- **I-5 Southbound** – Main Street Off-Ramp (LOS F in the PM Peak)
- **I-5 Southbound** – Weave segment between Main Street and Palm Avenue (LOS F in the PM Peak)

The change in density on these I-5 Southbound diverge and weave points would not be considered project effects.

Table 8-4 displays the 95th percentile queue results for the freeway off-ramps at study area intersections under Horizon Year (2050) with Project Conditions. As shown in the table, the following off ramp has an error in the queue report, indicating the queues exceed capacity of the off-ramp:

- **I-5 Southbound at Main Street**

Appendix E contains the freeway LOS and off-ramp queue calculation worksheets.

Table 8-3 Horizon Year (2050) with Project Conditions Freeway LOS Summary

Freeway Facility	Facility Type	Peak Hour	Horizon Year (2050) with Cumulative Project Conditions			Horizon Year (2050) with Project Conditions				
			Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Δ in density (pc/mi/ln) (d)	Effect?
I-5 Northbound										
Palm Ave Off-Ramp	Diverge	AM	65.9	27.0	E	65.9	27.0	E	0.0	NO
		PM	67.7	21.8	D	67.6	21.9	D	0.1	NO
Palm Ave to Main St	Weave	AM	56.7	24.9	C	56.7	24.9	C	0.0	NO
		PM	59.6	20.2	C	59.6	20.2	C	0.0	NO
Main St On-Ramp	Merge	AM	73.1	19.7	C	73.0	19.8	C	0.6	NO
		PM	74.3	17.6	B	74.2	17.6	B	1.2	NO
I-5 Southbound										
Main St Off-Ramp	Diverge	AM	75.4	11.6	B	75.4	11.6	B	1.1	NO
		PM	23.6	75.7	F	23.9	75.1	F	-1.6	NO
Main St to Palm Ave	Weave	AM	58.1	12.7	B	58.1	12.7	B	0.0	NO
		PM	53.3	30.6	F	53.3	30.6	F	0.0	NO
Palm Ave On-Ramp	Merge	AM	75.2	5.7	A	75.2	5.8	A	0.1	NO
		PM	69.5	16.7	B	69.5	16.7	B	0.0	NO
SR75 On-Ramp	Merge	AM	70.5	6.6	A	70.5	6.6	A	0.0	NO
		PM	68.9	17.4	B	68.9	17.4	B	0.0	NO

Notes:

Bold values indicate roadway segments operating at LOS E or F.

(a) Speed is measured in miles per hour (mph).

(b) Density is measured in passenger cars per mile per lane (pc/mi/ln).

(c) LOS calculations based on methodologies outlined in the 6th Edition HCM and performed using HCS 7.

(d) HCM models may under-predict the extent of congestion in oversaturated conditions.

Table 8-4 Horizon Year (2050) with Project Conditions Freeway Off-Ramp Queue Summary

Off-Ramp Location		Traffic Control (a)	Off-Ramp Storage Lengths (ft) (b)	Peak Hour	95 th Percentile Queue Length (ft) (c)	
					Horizon Year (2050) With Cumulative Project Conditions	Horizon Year (2050) with Project Conditions
1	I-5 SB Off-Ramp at Main Street	SSSC	1,500	AM	Error	Error
				PM	Error	Error
2	I-5 NB Off-Ramp at Main Street	Signal	1,100	AM	520	520
				PM	609	609
5	I-5 SB Off-Ramp at Palm Avenue	Signal	1,400	AM	643	647
				PM	1,001	1,001
6	I-5 NB Off-Ramp at Palm Avenue	Signal	1,100	AM	657	657
				PM	320	400

Notes:

- (a) SSSC= Side Street Stop Control, Signal = Traffic Signal.
- (b) Off-ramp storage length measured from theoretical gore point to intersection stop bar for longest lane.
- (c) 95th percentile queue lengths measured based on HCM 2010 for signalized intersections, and HCM 2000 for unsignalized intersections.

8.6 PROJECT EFFECTS AND IMPROVEMENTS

There would be a cumulative project effect at the following intersections under Horizon Year (2050) Plus Project Conditions:

- **Intersection 1: Main Street & I-5 SB Ramps** – Both Peaks
- **Intersection 2: Main Street & I-5 NB Ramps** – PM Peak
- **Intersection 4: Palm Avenue & I-5 S Ramps** – Both peaks

When comparing the Horizon Year (2050) with Project Conditions to the Horizon Year (2050) with Cumulative Project Conditions, the Bella Mar project does not significantly increase the delay at these intersections. Specifically, the project will add less than 1 second of delay to each of the intersections listed above.

The queuing issue at the I-5 southbound off-ramp at Main Street intersection is a result of large growth of volumes associated with cumulative projects and the operational deficiency identified in the intersection analysis. The proposed project contributes a small portion of volumes to this ramp in comparison to the overall growth and would not independently create queues beyond the ramps. Queues could be improved with construction of a signal or roundabout, similar to operational improvements identified. However, the City of San Diego and City of Chula Vista do not currently have a project at this location for the developer to pay a fair share contribution towards. Therefore, no improvement is required as part of this project.

Cumulative project effects on roadway segments were caused by project traffic on the following roadway segments:

- **Hollister Street** – South Project Limit to Conifer Avenue: LOS F
- **Palm Avenue** – I-5 NB Ramps to Hollister Street: LOS E

Cumulative project effects were caused by project traffic on Hollister Street from the south project limit to Conifer Avenue and on Palm Avenue between I-5 NB ramps and Hollister Street in the Horizon Year (2050) with Project Conditions. Reason for not providing project improvements to reduce effects of the project traffic at these locations are shown in **Table 8-5**.

Palm Avenue currently operates as a 4-lane collector. Providing a raised median in place of a two-way left-turn lane would modify the classification to a 4-lane major arterial according to the City of San Diego Street Design Manual, therefore increasing the capacity of this segment of the roadway to its ultimate classification. However, the City of San Diego does not currently have a project on Palm Avenue for the developer to pay a fair share contribution towards. Therefore, no improvement is required as part of this project.

Table 8-5 Horizon Year (2050) with Project Roadway Segment Improvements Summary

Roadway Segment	Proposed Improvement
Hollister Street	
South Project Limit to Conifer Avenue	No improvement – this section of roadway is currently not wide enough to re-stripe a two-way left-turn lane
Palm Avenue	
I-5 NB Ramps to Hollister Street	No improvement – the City of San Diego does not currently have a project on Palm Avenue for the developer to pay a fair share contribution towards

9 PARKING

Based on the City of San Diego Municipal Code the proposed project is within a Transit Area Overlay Zone and a 2035 Transit Priority Area. However, the project is located in a coastal overlay zone, meaning the parking standards for a transit priority area do not apply. Table 143-07D of the City's Municipal Code provides parking reductions for proximity to transit. The project will provide at least 11% of very low-income housing units and is therefore subject to 0.5 parking spaces per bedroom.

Table 9-1 displays the parking factors assumed (based on 0.5 parking spaces per bedroom rate), the minimum required parking totals, and the provided parking totals. Parking will not be allowed on Hollister Street. Therefore, additional parking beyond code requirements are provided on-site to prevent any potential spillover to nearby streets. A minimum of 360 parking spaces is required for the project, and 437 spaces are being provided.

Within Parcel 1, there will be 280 market rate units, which requires 271 parking spaces. The proposed site plan allocates 316 parking spaces in the following manner:

- 74 units will have an individual garage unit and a tandem space in front of the garage
- 105 units will have an individual garage unit
- 137 parking spaces will be provided in surface parking lots located within Parcel 1. These spaces will be allocated by the property manager for required parking, guest parking, employee parking, and deliveries.

Within Parcel 2, there will be 100 affordable units with a parking requirement of 89 spaces. A total of 121 spaces will be provided in surface parking lots located in Parcel 2. The property manager will allocate this parking to residents, guests, employees and deliveries.

Per the City's Municipal Code, bicycle parking is not required for residential development with individual garages, which accounts for 179 of the units. However, short-term bike parking (bike racks) are required and will be provided on-site. Within Parcel 1, 106 units will not have garages for long-term bike parking, and bike racks will be provided that will allow space for 44 bicycles to park. Within Parcel 2, all 100 units will not have garages for long-term bike parking. bike racks will be provided to allow space for 48 bicycles.

A total of 39 motorcycle spaces will be provided on-site (29 motorcycle spaces in Parcel 1 and 10 motorcycle spaces in Parcel 2) which meets the minimum required number of motorcycle spaces for the proposed development.

Table 9-1 Project Parking Summary

PARCEL 1 (MARKET-RATE)										
		AUTOMOBILE SPACES			MOTORCYCLE SPACES			BICYCLE SPACES (Short-Term)		
TYPE	DU	Spaces per Unit ^a	R	P	Spaces per Unit	R	P	Spaces per Unit	R ^b	P
Studio (>400SF)	0	0.5	-		0.1	-		0	-	
1 Bedroom	85	0.5	43		0.1	9		0.4	27	
2 Bedroom	129	1.0	129		0.1	13		0.5	19	
3 Bedroom	66	1.5	99		0.1	7		0.6	0	
Total			271	316	Total	29	29	Total	46	44

PARCEL 2 (AFFORDABLE)										
		AUTOMOBILE SPACES			MOTORCYCLE SPACES			BICYCLE SPACES (Short-Term)		
TYPE	DU	Spaces per Unit ^a	R	P	Spaces per Unit	R	P	Spaces per Unit	R	P
Studio (>400SF)	0	0.5	-		0.1	-		0	-	
1 Bedroom	48	0.5	24		0.1	5		-	19	
2 Bedroom	26	1.0	26		0.1	3		-	13	
3 Bedroom	26	1.5	39		0.1	3		-	16	
Total			89	121	Total	10	10	Total	48	48

PARKING SUMMARY										
		AUTOMOBILE SPACES			MOTORCYCLE SPACES			BICYCLE SPACES (Short-Term)		
TYPE	UNIT	Spaces per Unit ^a	R	P	Spaces per Unit	R	P	Spaces per Unit	R	P
Parcel 1	280 DU market rate	-	271	316	-	29	29	-	46	44
Parcel 2	100 DU affordable	-	89	121	-	10	10	-	48	48
Total			360	437	Total	39	39	Total	94	92

OTHER AUTOMOBILE PARKING REQUIREMENTS										
TYPE		FACTOR							R	P
Accessible Spaces		2%							12	12

Notes: R = Minimum Required; P = Provided

^a Parking spaces per unit rates based on Table 143-07D of the San Diego Municipal Code

^b Bicycle parking is not required for dwelling units with garage accessible only by the residents of the dwelling unit. The required number of bicycle parking spaces is based on the number of units without private garage access. There are 68 1-bedroom units, and 38 2-bedroom units without private garage access.

10 ADDITIONAL TOPICS

This section discusses pedestrian, bicycle, and transit access to the project and project improvements to these modes.

10.1 SITE ACCESS AND ON-SITE CIRCULATION

Access for the proposed project site is provided via two driveways on Hollister Street. Both driveways would provide full access. The project is adding a continuous two-way left-turn lane along the project frontage to provide additional capacity and a refuge area for vehicles entering the site.

Intersection analyses performed in the study show minimal expected delays at the driveways. Queuing is not anticipated to be an issue turning into the site due to the continuous turn lane being installed by the project, and the relatively low turning movement volumes into the site. The left turn pocket for the south entrance will be 50' long to provide queueing for at least two vehicles at a time. This is based on the project trips anticipated for this movement: 8 vehicles during the AM peak and 31 vehicles during the PM peak.

10.2 PEDESTRIAN FACILITIES

Connections to the north and south of the project site are currently limited by lack of pedestrian infrastructure. The Palm Avenue Transit Station is to the south of the project and on the opposite side of the roadway. There is a walkable dirt shoulder and intermittent sidewalk provided on the west side of Hollister Avenue (same side as the project) between the project site and the traffic signal with crossing at Palm Avenue. These facilities do not meet accessibility requirements. There is also a trail system to the north of the project but walking there from the project site requires either walking in a travel lane or a gravel path.

Project improvements for pedestrians include:

- Accessible routes from the residential units to the street are established within the proposed site plan.
- Non-contiguous sidewalk will be constructed along the west side of Hollister Street along the property frontage.
- Temporary accessible sidewalk will be constructed along the west side of Hollister Street between the property frontage and Conifer Avenue.
- A mid-block crossing across Hollister Street on the north side of the southern project driveway will be constructed. Mid-block crossing warrant evaluation provided in **Appendix F**.
- Non-contiguous sidewalk will be constructed along the east side of Hollister Street between the proposed northbound bus stop and the proposed mid-block crossing.
- Decomposed gravel path will be provided on the east side of Hollister Street between the proposed mid-block crossing and the Otay Valley Regional Trail system connection per agreement with the City of San Diego Parks and Recreation Department.

A mid-block crossing warrant analysis was performed for this location based on the 2015 *City of San Diego Pedestrian Crosswalk Guidelines* and the summary is provided in **Appendix F**.

The proposed site meets the basic warrants and the minimum number of points required for the points warrants. Based on Table 2-3 of the guidelines, the location required Category C crossing treatments. As such, the project proposes narrow lanes (11' wide) and rectangular rapid flashing beacons (RRFBs) for this mid-block crossing.

Collision data along Hollister Street was obtained near the existing mid-block crossing north of the Otay

River bridge, indicating no pedestrian-related collisions have occurred at the mid-block crossing since it was installed in 2010, and upgraded to a high-visibility crosswalk in 2018. One pedestrian-related collision occurred in the last five years on the Hollister Street bridge where there is no sidewalk.

10.3 BICYCLE FACILITIES

Bicycle facilities do not currently exist on any of the roadways within the project study area including Hollister Street, Palm Avenue, and Main Street.

Hollister Avenue is proposed to have Class II Bicycle Lanes based on the City of San Diego Bicycle Master Plan. The project would construct its project frontage to include buffered bike lanes in both directions. North and south of the site, the bicycle connections from the site are limited to sharing space with the vehicle travel lanes due to roadway width constraints until the remainder of the proposed bicycle lanes on Hollister Avenue are completed.

10.4 TRANSIT

The project site is currently served by Metropolitan Transit Service (MTS) Bus Route 932 and is located within 1,500 feet of the Palm Avenue Trolley Station.

Route 932 provides connections between the 8th Street Transit Center in National City, E Street Transit Center in Chula Vista, Palm Avenue Trolley Station and Iris Avenue Transit Center in San Diego. Route 932 provides primarily 10-15 minute headways during the weekdays between 6:00 am and 7:00 pm, with service hourly otherwise. It also operates on Saturdays and Sundays with 30-60 minute headways.

The Palm Avenue Trolley Station provides connections with Route 933, 934, and the Blue Line trolley. The trolley runs every 15 minutes from 5:00 a.m. to 2 a.m. weekdays and weekends. The project's proximity to this station allows for more regional access via transit for the future residents. **Appendix L** contains a copy of the current schedules for MTS Route 932 and documentation of planned improvements.

There is an existing bus stop for northbound service on the Route 932 line at the northeast corner of Palm Avenue and Hollister Avenue. Access to this bus stop requires crossing at the traffic signal of Palm Avenue and Hollister Avenue and walking along dirt shoulder on the west side of Hollister Avenue until reaching the project frontage that will include sidewalk.

There is an existing bus stop for southbound service on the Route 932 line at the northwest corner of Hollister Avenue and Conifer Street, approximately 800 feet south from the proposed project. That stop has a bench and sign but does not provide sidewalk or other features. Per agreement with MTS the project would relocate the southbound bus stop to be in front of project site as part of the frontage improvements.

The project improvements include:

- Installing a northbound bus stop on Hollister Street across from the project site
- Relocating the southbound bus stop on Hollister Street from the northwest corner of Hollister Street and Conifer Avenue to be in front of the project site

The bus stops would provide an accessible connection for residents to the Palm Avenue Trolley Station. For both bus stops on northbound and southbound Hollister Street, MTS would provide the necessary amenities such as a bus shelter and bench according to the anticipated number of riders per day.

Currently, access to the trolley station from the project site requires walking along dirt shoulder on the west side of Hollister Avenue and crossing at the traffic signal of Palm Avenue. As previously mentioned, the project improvements include non-contiguous sidewalk along the project frontage, and temporary accessible sidewalk connection from the project to Conifer Avenue. A mid-block crossing is also proposed at the southern driveway for access to the project site from the proposed northbound bus stop. The project improvements will provide mobility options for residents accessing the Palm Avenue Trolley Station.

11 FINDINGS & CONCLUSIONS

The following section provides a summary of the key findings and study recommendations and includes a summary table that compares the results from the different scenarios.

11.1 SUMMARY OF INTERSECTION ANALYSES

Table 11-1 displays the intersection delay and LOS at all the study intersections for the different scenarios analyzed. As shown in the table, all intersections would operate at LOS D or better for the different scenarios except for the following:

- **Intersection 1** – Main Street & I-5 Southbound Ramps (Opening Year 2021 direct project effect)
- **Intersection 2** – Main Street & I-5 Northbound Ramps (Horizon Year 2050 project effect)
- **Intersection 4** – Palm Avenue & I-5 Southbound Ramps (Horizon Year 2050 project effect)

The City of San Diego and the City of Chula Vista do not currently have projects identified at any of these locations for the developer to pay a fair share contribution towards. Therefore, no improvement is required as part of this project.

11.2 SUMMARY OF ROADWAY SEGMENT ANALYSES

Table 11-2 displays the daily traffic volumes and LOS at all the study roadway segments for the different scenarios analyzed. As part of the proposed project Hollister Street will be widened along the project frontage to provide a continuous left turn lane.

The following roadway segments are considered to have project effects with the addition of project traffic:

- **Hollister Street** between Main Street and Marian Avenue (Opening Year Plus Project direct project effect)
- **Hollister Street** between Marian Avenue and the North Project Limit (Opening Year Plus Project direct project effect)
- **Hollister Street** between the South Project Limit and Conifer Avenue (Horizon Year Plus Project Cumulative project effect)
- **Hollister Street** between Conifer Avenue and Palm Avenue (Opening Year Plus Project direct project effect)
- **Palm Avenue** between I-5 NB Ramps and Hollister Street (Horizon Year Plus Project Cumulative project effect)

Table 11-3 summarizes the proposed improvements to the surrounding area to reduce effects of the project traffic.

Table 11-1 Summary of Intersection Level of Service Analysis

Intersection	Jurisdiction	Traffic Control (a)	Peak Hour	Existing Conditions		Opening Year (2021) Conditions		Opening Year (2021) with Project				Horizon Year (2050) Baseline Conditions		Horizon Year (2050) with Cumulative Project Conditions		Horizon Year (2050) with Project Conditions				
				Delay (b)	LOS (c)	Delay (b)	LOS (c)	Delay (b)	LOS (c)	Change	Eff? (d)	Delay (b)	LOS (c)	Delay (b)	LOS (c)	Delay (b)	LOS (c)	Change	Eff? (d)	
1	Main Street & I-5 SB Ramps	Caltrans	SSSC	AM	14.5	B	17.6	C	18.1	C	0.5	NO	18.8	C	251.0	F	263.6	F	244.8	YES
				PM	26.2	D	31.0	D	40.9	E	9.9	YES	72.4	F	**	F	**	F	**	YES
2	Main Street & I-5 NB Ramps	Caltrans	Signal	AM	14.8	B	16.3	B	17.8	B	1.5	NO	20.1	C	32.0	C	90.1	F	70.0	YES
				PM	15.8	B	19.0	B	19.9	B	0.9	NO	26.2	C	86.2	F	28.1	C	1.9	NO
3	Hollister Street & Main Street	San Diego & Chula Vista	Signal	AM	11.6	B	12.5	B	13.7	B	1.2	NO	17.0	B	19.4	B	21.8	C	4.8	NO
				PM	19.6	B	21.2	C	22.5	C	1.3	NO	44.9	D	62.0	E	62.6	E	17.7	YES
4	Palm Avenue & I-5 SB Ramps	Caltrans	Signal	AM	39.4	D	44.0	D	46.6	D	2.6	NO	174.7	F	174.7	F	175.5	F	0.8	YES
				PM	65.3	E	73.2	E	73.5	E	0.3	NO	163.6	F	163.6	F	164.0	F	0.4	YES
5	Palm Avenue & I-5 NB Ramps	Caltrans	Signal	AM	11.2	B	11.6	B	12.0	B	0.4	NO	21.8	C	21.8	C	23.6	C	1.8	NO
				PM	10.2	B	10.5	B	10.8	B	0.3	NO	12.9	B	12.9	B	12.1	B	-0.8	NO
6	Hollister Street & Palm Avenue	San Diego	Signal	AM	13.6	B	14.3	B	15.7	B	1.4	NO	26.3	C	26.3	C	30.2	C	3.9	NO
				PM	15.3	B	16.4	B	17.9	B	1.5	NO	35.9	D	35.9	D	49.8	D	13.9	NO
7	Hollister Street & North Project Driveway	San Diego	SSSC	AM	Does not exist		Does not exist		10.7	B	10.7	NO	Does not exist		Does not exist		12.7	B	12.7	NO
				PM	Does not exist		Does not exist		12.3	B	12.3	NO	Does not exist		Does not exist		16.9	C	16.9	NO
8	Hollister Street & South Project Driveway	San Diego	SSSC	AM	Does not exist		Does not exist		10.8	B	10.8	NO	Does not exist		Does not exist		12.8	B	12.8	NO
				PM	Does not exist		Does not exist		12.2	B	12.2	NO	Does not exist		Does not exist		16.7	C	16.7	NO

Notes:

Bold values indicate intersections operating at LOS E or F. **Bold and Shaded** values indicate a project effect.

** Delay is beyond calculable values.

(a) Signal = Traffic Signal, SSSC = Side Street Stop Control

(b) Delay refers to the average control delay for the entire intersection measured in seconds per vehicle. At SSSC intersections, delay refers to the worst movement.

(c) LOS calculations based on methodologies outlined in the 6th Edition HCM and performed using Synchro 10.

(d) Project Effect?

Table 11-2 Summary of Roadway Segment Level of Service Analysis

Roadway Segment	Without Project Conditions		With Project Conditions		Existing Conditions (d)			Opening Year (2021) Conditions (d)			Opening Year (2021) with Project Conditions (f)			Horizon Year (2050) Baseline Conditions (d)			Horizon Year (2050) with Cumulative Project Conditions (d)			Horizon Year (2050) with Project Conditions (f)		
	Roadway Classification (a)	LOS E Capacity	Roadway Classification	LOS E Capacity	ADT (b)	V/C Ratio (c)	LOS	ADT (e)	V/C Ratio (c)	LOS	ADT	V/C Ratio (c)	LOS	ADT (e)	V/C Ratio (c)	LOS	ADT (g)	V/C Ratio (c)	LOS	ADT	V/C Ratio (c)	LOS
Main Street																						
I-5 NB Ramps to Hollister Street	4 Lane Major Arterial	40,000	4 Lane Major Arterial	40,000	26,312	0.658	C	28,333	0.708	C	29,154	0.729	C	31,815	0.795	D	33,345	0.834	D	34,166	0.854	D
Hollister Street																						
Main Street to Marian Avenue	2 Lane Collector (no center turn lane)	8,000	2 Lane Collector (no center turn lane)	8,000	6,372	0.797	D	6,857	0.857	E	7,883	0.985	E	11,675	1.459	F	11,675	1.459	F	12,701	1.588	F
Marian Avenue to North Project Limit	2 Lane Collector (no center turn lane)	8,000	2 Lane Collector (no center turn lane)	8,000	6,372	0.797	D	6,828	0.854	E	7,854	0.982	E	11,277	1.410	F	11,277	1.410	F	12,303	1.538	F
North Project Limit to South Project Limit (Project Frontage)	2 Lane Collector (no fronting property)	10,000	2 Lane Collector (continuous left turn)	15,000	6,372	0.637	C	6,828	0.683	C	7,854	0.524	C	11,277	1.128	F	11,277	1.128	F	12,303	0.820	D
South Project Limits to Conifer Avenue	2 Lane Collector (no fronting property)	10,000	2 Lane Collector (no fronting property)	10,000	6,372	0.637	C	6,828	0.683	C	7,854	0.785	D	11,277	1.128	F	11,277	1.128	F	12,303	1.203	F
Conifer Avenue to Palm Avenue	2 Lane Collector (no center turn lane)	8,000	2 Lane Collector (no center turn lane)	8,000	6,639	0.830	E	7,098	0.887	E	8,124	1.016	F	11,525	1.441	F	11,525	1.441	F	12,551	1.569	F
Palm Avenue																						
I-5 NB Ramps to Hollister Street	4 Lane Collector	30,000	4 Lane Collector	30,000	22,262	0.742	D	22,955	0.765	D	23,776	0.793	D	28,671	0.956	E	28,671	0.956	E	29,492	0.983	E

Notes:

Bold values indicate roadway segments operating at LOS E or F. **Bold and Shaded** values indicate a project effect.

- (a) Existing road classifications are based on field work conducted in November 2018.
- (b) Average Daily Traffic (ADT) volumes for the roadway segments were provided by NDS and measured on April 19, 2017.
- (c) The v/c ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.
- (d) Roadway Classification the same as Without Project Conditions
- (e) Average Daily Traffic (ADT) volumes for the roadway segments were calculated by applying a growth rates derived from the SANDAG Series 12 Model to the existing volumes. Growth rates can be found in Table 5-2 of this report.
- (f) Roadway Classification the same as With Project Conditions
- (g) Average Daily Traffic (ADT) volumes for roadway segments were calculated by adding a horizon year cumulative project traffic volumes (provided in Appendix K) to the Horizon Year (2050) Baseline Conditions volumes.

Table 11-3 Project Improvements for Roadway Segments

Roadway Segment	Project Effect	Proposed Improvement
Hollister Street		
Main Street to Marian Avenue	Opening year 2021 plus project direct project effect	Prior to issuance of the first building permit, Owner/Permittee shall assure the re-striping of Hollister Street between Main Street and Marian Avenue to add a continuous two-way left turn lane, satisfactory to the City of Chula Vista Engineer and the City of San Diego City Engineer. All improvements must be complete and operational prior to first occupancy.
Marian Avenue to North Project Limit	Opening year 2021 plus project direct project effect	No improvement – this section of roadway is currently not wide enough to re-stripe a two-way left-turn lane
North Project Limit to South Project Limit (Project Frontage)	Opening Year 2021 Plus project direct project effect.	Prior to issuance of the first building permit, Owner/Permittee shall assure by permit and bond the widening of Hollister Street along the project frontage by 16 feet and the restriping of Hollister Street to include two lanes of travel, a continuous two-way left turn land and buffered bike lanes, satisfactory to the City of San Diego City Engineer. All improvements must be complete and operational prior to first occupancy.
South Project Limit to Conifer Avenue	Horizon year 2050 plus project cumulative project effect	No improvement – this section of roadway is currently not wide enough to re-stripe a two-way left-turn lane
Conifer Avenue to Palm Street	Opening year 2021 plus project direct project effect	Prior to issuance of the first building permit, Owner/Permittee shall assure the re-striping of Hollister Street between Conifer Avenue and Palm Avenue to add a continuous two-way left turn lane, satisfactory to the City of San Diego City Engineer. All improvements must be complete and operational prior to first occupancy. Improvement will require removal of on-street parking along the east side of Hollister Street.
Palm Avenue		
I-5 NB Ramps to Hollister Street	Horizon year 2050 plus project cumulative project effect	No improvement – City of San Diego does not currently have a project on Palm Avenue for the developer to pay a fair share contribution towards.

11.3 SUMMARY OF FREEWAY ANALYSES

Table 11-4 displays the freeway speed, density, LOS at all the study freeway facilities for the different scenarios analyzed. As shown in the table, all study freeway facilities would operate at LOS D or better with the addition of the proposed project except for the I-5 Northbound Palm Avenue Off-Ramp, I-5 Southbound Main Street Off-Ramp, and the I-5 Southbound weave segment between Main Street and Palm Avenue. These segments are expected to operate at a LOS E or F during the AM or PM peak period under Opening Year (2021) and Horizon Year (2050) Conditions. The diverge and weave segments would not be negatively affected by the project and no project effect would occur.

Table 11-5 displays the freeway off-ramp 95th percentile queue lengths for the study area intersections. This determines whether queue lengths can be expected to affect freeway mainline operations based on the storage length available for the off-ramps. As shown in the table, the following off-ramp will be affected by project traffic:

- I-5 Southbound at Main Street (Horizon Year Plus Project Cumulative project effect)

The queuing issue at this intersection is a result of large growth of volumes associated with cumulative projects and the operational deficiency identified in the intersection analysis. The proposed project contributes a small portion of volumes to this ramp in comparison to the overall growth and would not independently create queues beyond the ramps. Queues could be improved with construction of a signal or roundabout, similar to operational improvements identified. However, the City of San Diego and City of Chula Vista do not currently have a project at this location for the developer to pay a fair share contribution towards. Therefore, no improvement is required as part of this project.

Table 11-4 Summary of Freeway Level of Service Analysis

Freeway Facility	Facility Type	Peak Hour	Existing Conditions			Opening Year (2021) Conditions			Opening Year (2021) with Project Conditions					Horizon Year (2050) Conditions			Horizon Year (2050) with Cumulative Project Conditions			Horizon Year (2050) with Project Conditions				
			Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Δ in density (pc/mi/ln)	Effect?	Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Speed (mph) (a)	Density (pc/mi/ln) (b)	LOS (c)	Δ in density (pc/mi/ln) (d)	Effect?
I-5 Northbound																								
Palm Ave Off-Ramp	Diverge	AM	67.3	19.7	C	67.2	21.5	D	67.2	21.5	D	0.0	NO	65.9	27.0	E	65.9	27.0	E	65.9	27.0	E	0.0	NO
		PM	68.7	16.0	C	68.6	17.4	C	68.5	17.5	C	0.1	NO	67.7	21.8	D	67.7	21.8	D	67.6	21.9	D	0.1	NO
Palm Ave to Main St	Weave	AM	60.2	18.1	B	59.0	20.2	C	59.0	20.2	C	0.0	NO	56.7	24.9	C	56.7	24.9	C	56.7	24.9	C	0.0	NO
		PM	62.7	14.8	B	61.8	16.3	B	61.8	16.3	B	0.0	NO	59.6	20.2	C	59.6	20.2	C	59.6	20.2	C	0.0	NO
Main St On-Ramp	Merge	AM	75.3	14.5	B	74.9	15.9	B	74.9	16.0	B	0.1	NO	73.4	19.2	C	73.1	19.7	C	73.0	19.8	C	0.6	NO
		PM	75.4	12.6	B	75.4	13.8	B	75.4	13.9	B	0.1	NO	74.7	16.4	B	74.3	17.6	B	74.2	17.6	B	1.2	NO
I-5 Southbound																								
Main St Off-Ramp	Diverge	AM	75.4	8.4	A	75.4	9.3	A	75.4	9.3	A	0.0	NO	75.4	10.5	A	75.4	11.6	B	75.4	11.6	B	1.1	NO
		PM	70.2	23.8	C	67.9	26.7	D	67.7	26.9	D	0.2	NO	22.8	76.7	F	23.6	75.7	F	23.9	75.1	F	-1.6	NO
Main St to Palm Ave	Weave	AM	60.5	9.7	A	60.1	10.7	B	60.1	10.7	B	0.0	NO	58.1	12.7	B	58.1	12.7	B	58.1	12.7	B	0.0	NO
		PM	51.2	32.4	D	50.0	36.1	E	50.0	36.1	E	0.0	NO	53.3	30.6	F	53.3	30.6	F	53.3	30.6	F	0.0	NO
Palm Ave On-Ramp	Merge	AM	75.2	4.5	A	75.2	5.1	A	75.2	5.2	A	0.1	NO	75.2	5.7	A	75.2	5.7	A	75.2	5.8	A	0.1	NO
		PM	74.3	17.4	B	73.2	19.5	C	73.2	19.5	C	0.0	NO	69.5	16.7	B	69.5	16.7	B	69.5	16.7	B	0.0	NO
SR75 On-Ramp	Merge	AM	70.5	5.2	A	70.5	5.9	A	70.5	5.9	A	0.0	NO	70.5	6.6	A	70.5	6.6	A	70.5	6.6	A	0.0	NO
		PM	68.7	20.2	B	68.4	22.3	C	68.4	22.3	C	0.0	NO	68.9	17.4	B	68.9	17.4	B	68.9	17.4	B	0.0	NO

Notes:

Bold values indicate roadway segments operating at LOS E or F.

(a) Speed is measured in miles per hour (mph).

(b) Density is measured in passenger cars per mile per lane (pc/mi/ln).

(c) LOS calculations based on methodologies outlined in the 6th Edition HCM and performed using HCS 7.

(d) HCM models may under-predict the extent of congestion in oversaturated conditions.

Table 11-5 Freeway Off-Ramp Queue Summary

Intersection	Intersection Control Type (a)	Off-Ramp Storage Length (ft) (b)	Peak Movement	Peak Hour	95 th Percentile Queue Lengths (ft)					
					Existing Conditions	Opening Year (2021) Conditions	Opening Year (2021) with Project Conditions	Horizon Year (2050) Baseline Conditions	Horizon Year (2050) with Cumulative Project Conditions	Horizon Year (2050) with Project Conditions
I-5 SB Off-Ramp at Main Street	SSSC	1,500	SB	AM	118	183	194	207	ERROR (d)	ERROR (d)
				PM	211	253	328	473	ERROR (d)	ERROR (d)
I-5 NB Off-Ramp at Main Street	Signal	1,100	SB*	AM	317	369	373	462	520	520
				PM	329	367	388	545	609	609
I-5 SB Off-Ramp at Palm Avenue	Signal	1,400	SB	AM	389	408	408	643	643	647
				PM	750	784	785	1001	1001	1001
I-5 NB Off-Ramp at Palm Avenue	Signal	1,100	NB	AM	227	244	266	657	657	687
				PM	163	173	187	320	320	400

Notes:

(a) SSSC = Side Street Stop Control, Signal = Traffic Signal.

(b) Off-ramp storage length measured from theoretical gore point to intersection stop bar for longest lane.

(c) 95th percentile queue determined based on Synchro 6th Edition results for signalized intersections, and Synchro 2000 queue reports for unsignalized intersections as Synchro 6th Edition does not provide queue results for unsignalized intersections.

(d) Error indicates the capacity of the intersection approach is exceeded by a number that cannot be defined.

** Northbound off-ramp becomes southbound approach to ramp terminus intersection.

11.4 SUMMARY OF PARKING

The project will provide more parking spaces than is required by the City of San Diego Municipal Code for its proposed uses. The project will also provide bike racks for a total of 92 bikes.

11.5 ALTERNATIVE MODES OF TRANSPORTATION

The project is located in the Otay-Mesa Nestor community of San Diego is located approximately 1,500 feet from the Palm Avenue Transit Station. The site is well served by the existing transit network, however pedestrian and bicycle connections to the trolley station and northbound bus line are lacking accessible infrastructure along Hollister Avenue. Pedestrian and bicycle connection to both the north and south of the site are currently lacking facilities and opportunities to provide them are limited by the current street width.

The development of the project site will include the following improvements for alternative modes of transportation:

- Stripe buffered bike lanes along the project frontage.
- Relocate the southbound bus stop on Hollister Street for Bus Route 932 to be in front of the project site.
- Construct a bus stop on northbound Hollister Street for Bus Route 932 across from the project site.
- Construct a mid-block crossing across Hollister Street on the north side of the southern project driveway with a rectangular rapid flashing beacon (RRFB). Mid-block crossing warrant evaluation provided in **Appendix F**.
- Construct non-contiguous sidewalk facilities along the project frontage on southbound Hollister Street
- Construct non-contiguous sidewalk facilities along northbound Hollister Street from the proposed bus stop to the proposed mid-block crossing.
- Construct temporary accessible sidewalk along southbound Hollister Street between the project site and Conifer Avenue.
- Provide decomposed gravel path on northbound Hollister Street for connection to Otay Valley Regional Trail system per agreement with the City of San Diego Parks and Recreation Department.

These multi-modal improvements will provide mobility options for Bella Mar residents to access the Palm Avenue Trolley Station.

APPENDICES

- Appendix A** Existing Traffic Count Data
- Appendix B** Existing Traffic Signal Timing Data
- Appendix C** Otay Mesa-Nestor Community Plan
- Appendix D-1** Intersection LOS Worksheets – Existing Conditions
- Appendix D-2** Intersection LOS Worksheets – Opening Year (2021) Conditions
- Appendix D-3** Intersection LOS Worksheets – Opening Year (2021) with Project Conditions
- Appendix D-4** Intersection LOS Worksheets – Horizon Year (2050) Baseline Conditions
- Appendix D-5** Intersection LOS Worksheets – Horizon Year (2050) with Cumulative Project Conditions
- Appendix D-6** Intersection LOS Worksheets – Horizon Year (2050) with Project Conditions
- Appendix E** Freeway LOS Worksheets
- Appendix F** Mid-Block Pedestrian Crossing Warrant
- Appendix G** Cumulative Project (Otay River Business Park) Information
- Appendix H** SANDAG Travel Forecast Information Center Data
- Appendix I** Striping Concept for Hollister Street
- Appendix J** Horizon Year (2050) Intersection Volume Information
- Appendix K** Cumulative Project (Salt Bay Design District) Information
- Appendix L** Bus Route Information
- Appendix M** CEQA VMT Memorandum (including SANDAG VMT screening map)

APPENDIX A

EXISTING TRAFFIC COUNT DATA

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-4111-002

Day: Wednesday

City: San Diego

Date: 4/19/2017

NS/EW Streets:	AM												TOTAL
	I-5 SB Ramps			I-5 SB Ramps			Main St			Main St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	0	0	1	0	1	0	1	0	0	1	1	
7:00 AM	0	0	0	58	0	5	3	5	0	0	12	54	137
7:15 AM	0	0	0	96	0	2	1	7	0	0	13	74	193
7:30 AM	0	0	0	108	0	4	1	5	0	0	14	70	202
7:45 AM	0	0	0	133	0	1	1	9	0	0	13	74	231
8:00 AM	0	0	0	112	0	2	2	9	0	0	12	62	199
8:15 AM	0	0	0	105	0	2	5	9	0	0	19	66	206
8:30 AM	0	0	0	89	0	7	0	6	0	0	11	64	177
8:45 AM	0	0	0	111	0	7	7	9	0	0	14	87	235
TOTAL VOLUMES :	0	0	0	812	0	30	20	59	0	0	108	551	1580
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	96.44%	0.00%	3.56%	25.32%	74.68%	0.00%	0.00%	16.39%	83.61%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	0	0	458	0	9	9	32	0	0	58	272	838
PEAK HR FACTOR :	0.000			0.871			0.732			0.948			0.907

UTURNS			
NB	SB	EB	WB
0	1	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	1	0	0
0	0	0	0
0	1	0	0
0	0	0	0
0	0	0	0
0	3	0	0

CONTROL : 1-Way Stop(SB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-4111-002

Day: Wednesday

City: San Diego

Date: 4/19/2017

PM

NS/EW Streets:	I-5 SB Ramps			I-5 SB Ramps			Main St			Main St			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR		
	0	0	0	1	0	1	0	1	0	0	1	1		
4:00 PM	0	0	0	124	0	2	21	24	0	0	10	129	310	
4:15 PM	0	0	0	129	0	7	3	29	0	0	11	142	321	
4:30 PM	0	0	0	148	0	3	11	19	0	0	14	115	310	
4:45 PM	0	0	0	133	0	3	5	27	0	0	14	128	310	
5:00 PM	0	0	0	147	0	1	13	28	0	0	5	152	346	
5:15 PM	0	0	0	150	0	2	8	14	0	0	6	123	303	
5:30 PM	0	0	0	109	0	2	4	16	0	0	9	113	253	
5:45 PM	0	0	0	120	0	3	4	16	0	0	7	113	263	
TOTAL VOLUMES :	0	0	0	1060	0	23	69	173	0	0	76	1015	2416	
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	97.88%	0.00%	2.12%	28.51%	71.49%	0.00%	0.00%	6.97%	93.03%		
PEAK HR START TIME :	415 PM												TOTAL	
PEAK HR VOL :	0	0	0	557	0	14	32	103	0	0	44	537	1287	
PEAK HR FACTOR :				0.000			0.945			0.823			0.925	0.930

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	1	0	0
0	1	0	0
0	3	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	5	0	0

CONTROL : 1-Way Stop(SB)

ITM Peak Hour Summary

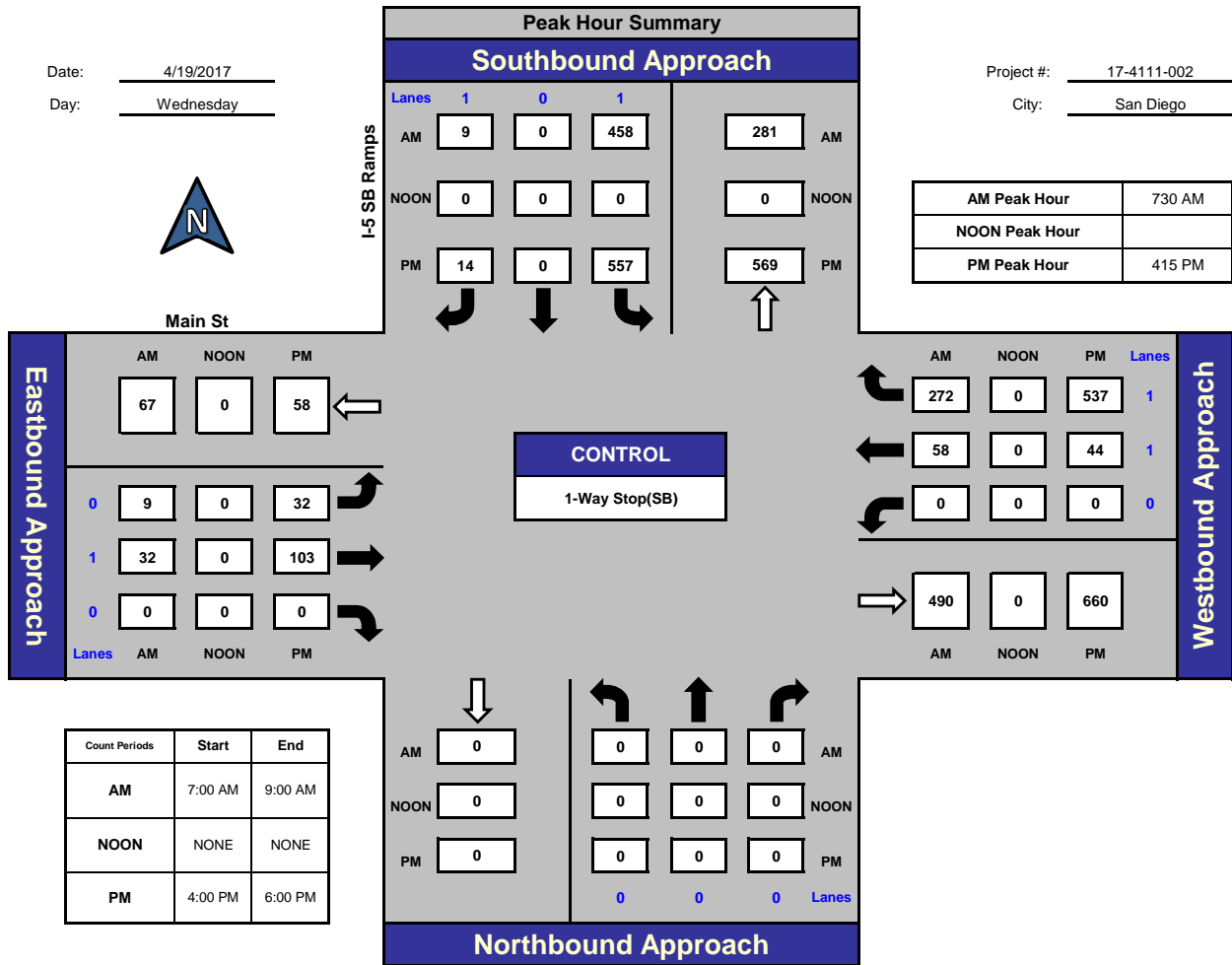


Prepared by:
National Data & Surveying Services

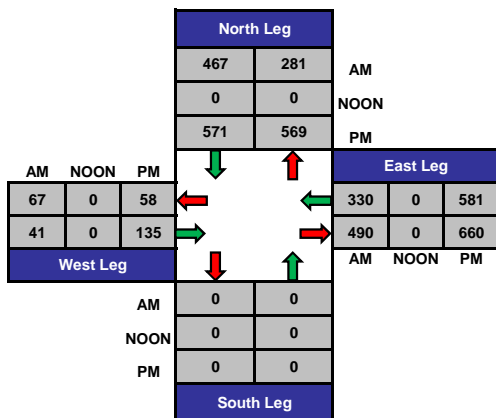
I-5 SB Ramps and Main St., San Diego

Date: 4/19/2017
Day: Wednesday

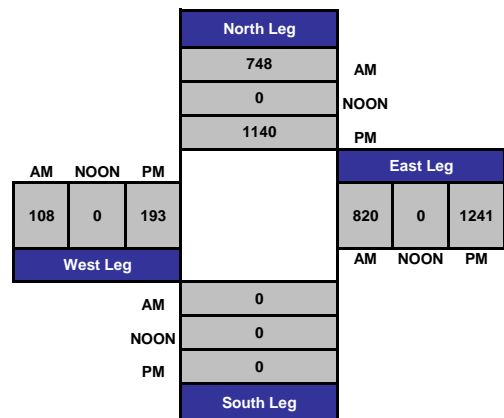
Project #: 17-4111-002
City: San Diego



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-4111-001

Day: Wednesday

City: San Diego

Date: 4/19/2017

NS/EW Streets:	AM												TOTAL
	Hollister St			Hollister St			Main St			Main St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
7:00 AM	5	13	14	8	9	22	9	83	7	19	140	5	334
7:15 AM	6	11	9	8	8	19	14	135	7	9	171	4	401
7:30 AM	9	10	20	7	7	24	13	155	4	15	157	14	435
7:45 AM	8	12	31	10	14	22	17	175	15	29	173	10	516
8:00 AM	4	15	25	13	12	13	24	160	10	31	127	20	454
8:15 AM	5	12	26	8	15	22	18	181	4	18	149	7	465
8:30 AM	7	14	20	10	10	17	16	135	10	27	131	14	411
8:45 AM	6	18	23	9	14	27	14	137	16	27	154	8	453
TOTAL VOLUMES :	50	105	168	73	89	166	125	1161	73	175	1202	82	3469
APPROACH %'s :	15.48%	32.51%	52.01%	22.26%	27.13%	50.61%	9.20%	85.43%	5.37%	11.99%	82.39%	5.62%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	26	49	102	38	48	81	72	671	33	93	606	51	1870
PEAK HR FACTOR :	0.868			0.908			0.937			0.884			0.906

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	2
0	0	1	0
0	0	0	0
0	0	0	1
0	0	2	0
NB	SB	EB	WB
0	0	3	3

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-4111-001

Day: Wednesday

City: San Diego

Date: 4/19/2017

PM

NS/EW Streets:	Hollister St			Hollister St			Main St			Main St			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 0	SL 1	ST 1	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	
4:00 PM	10	12	36	8	15	40	16	191	20	35	193	19	595
4:15 PM	10	9	25	14	17	48	13	210	11	30	194	17	598
4:30 PM	9	17	29	17	16	24	15	209	19	44	178	17	594
4:45 PM	8	20	26	14	31	39	17	216	17	37	186	8	619
5:00 PM	20	15	27	16	18	36	19	223	24	44	232	12	686
5:15 PM	6	20	40	11	17	28	10	209	16	32	193	16	598
5:30 PM	11	20	24	10	13	22	9	177	11	29	162	10	498
5:45 PM	8	15	28	10	14	21	17	167	17	30	157	14	498
TOTAL VOLUMES :	82	128	235	100	141	258	116	1602	135	281	1495	113	4686
APPROACH %'s :	18.43%	28.76%	52.81%	20.04%	28.26%	51.70%	6.26%	86.45%	7.29%	14.88%	79.14%	5.98%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	43	72	122	58	82	127	61	857	76	157	789	53	2497
PEAK HR FACTOR :	0.898			0.795			0.934			0.867			0.910

UTURNS			
NB	SB	EB	WB
0	0	3	1
0	0	4	0
0	0	3	0
0	0	1	0
0	0	2	0
0	0	2	0
0	0	1	0
0	0	0	0
0	0	16	1

CONTROL : Signalized

ITM Peak Hour Summary

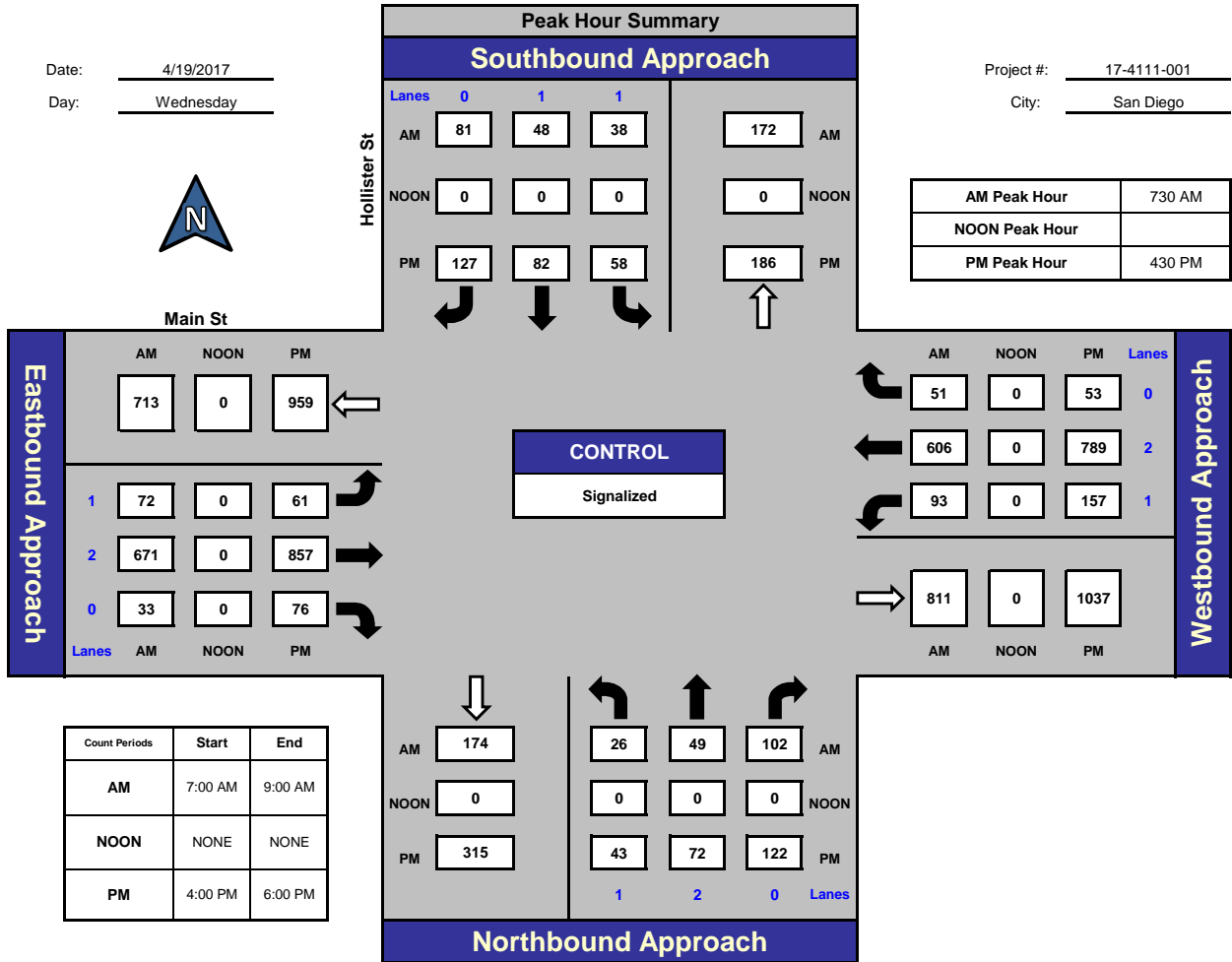


Prepared by:
National Data & Surveying Services

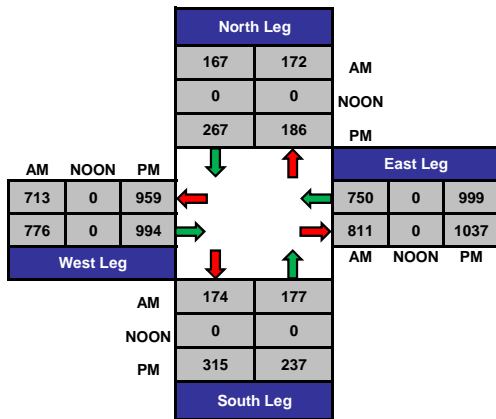
Hollister St and Main St, San Diego

Date: 4/19/2017
Day: Wednesday

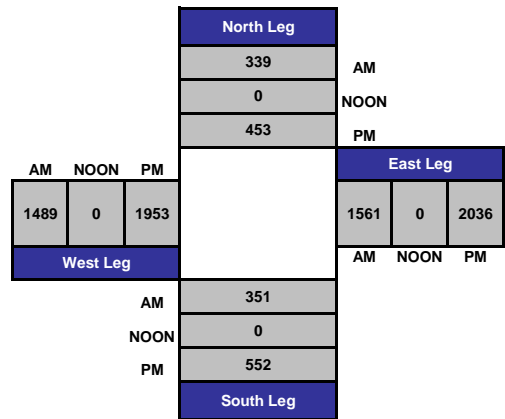
Project #: 17-4111-001
City: San Diego



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-4111-003

Day: Wednesday

City: San Diego

Date: 4/19/2017

NS/EW Streets:	AM												TOTAL
	I-5 NB Ramps			I-5 NB Ramps			Main St			Main St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	0	0	1	0	1	1	1	0	0	1	1	
7:00 AM	0	0	0	55	0	6	0	65	0	0	63	131	320
7:15 AM	0	0	0	85	0	7	4	101	0	0	77	114	388
7:30 AM	0	0	0	83	0	3	1	113	0	0	79	121	400
7:45 AM	0	0	0	124	0	8	4	138	0	0	74	110	458
8:00 AM	0	0	0	114	0	7	4	110	0	0	69	92	396
8:15 AM	0	0	0	107	0	7	3	107	0	0	77	92	393
8:30 AM	0	0	0	73	0	5	3	91	0	0	75	103	350
8:45 AM	0	0	0	69	0	7	3	117	0	0	86	106	388
TOTAL VOLUMES :	0	0	0	710	0	50	22	842	0	0	600	869	3093
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	93.42%	0.00%	6.58%	2.55%	97.45%	0.00%	0.00%	40.84%	59.16%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	0	0	428	0	25	12	468	0	0	299	415	1647
PEAK HR FACTOR :	0.000			0.858			0.845			0.893			0.899

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-4111-003

Day: Wednesday

City: San Diego

Date: 4/19/2017

PM

NS/EW Streets:	I-5 NB Ramps			I-5 NB Ramps			Main St			Main St			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	0	0	1	0	1	1	1	0	0	1	1	
4:00 PM	0	0	0	85	0	9	5	143	0	0	142	134	518
4:15 PM	0	0	0	107	0	4	6	153	0	0	136	118	524
4:30 PM	0	0	0	82	0	11	3	158	0	0	116	115	485
4:45 PM	0	0	0	118	0	6	8	160	0	0	132	116	540
5:00 PM	0	0	0	92	0	5	5	170	0	0	153	149	574
5:15 PM	0	0	0	93	0	6	6	142	0	0	124	106	477
5:30 PM	0	0	0	73	0	3	4	124	0	0	119	81	404
5:45 PM	0	0	0	89	0	3	3	133	0	0	107	82	417
TOTAL VOLUMES :	0	0	0	739	0	47	40	1183	0	0	1029	901	3939
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	94.02%	0.00%	5.98%	3.27%	96.73%	0.00%	0.00%	53.32%	46.68%	
PEAK HR START TIME :	415 PM												TOTAL
PEAK HR VOL :	0	0	0	399	0	26	22	641	0	0	537	498	2123
PEAK HR FACTOR :				0.000			0.857			0.947			0.925

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	1	1	0
0	0	0	0
0	1	1	0
0	1	1	0

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

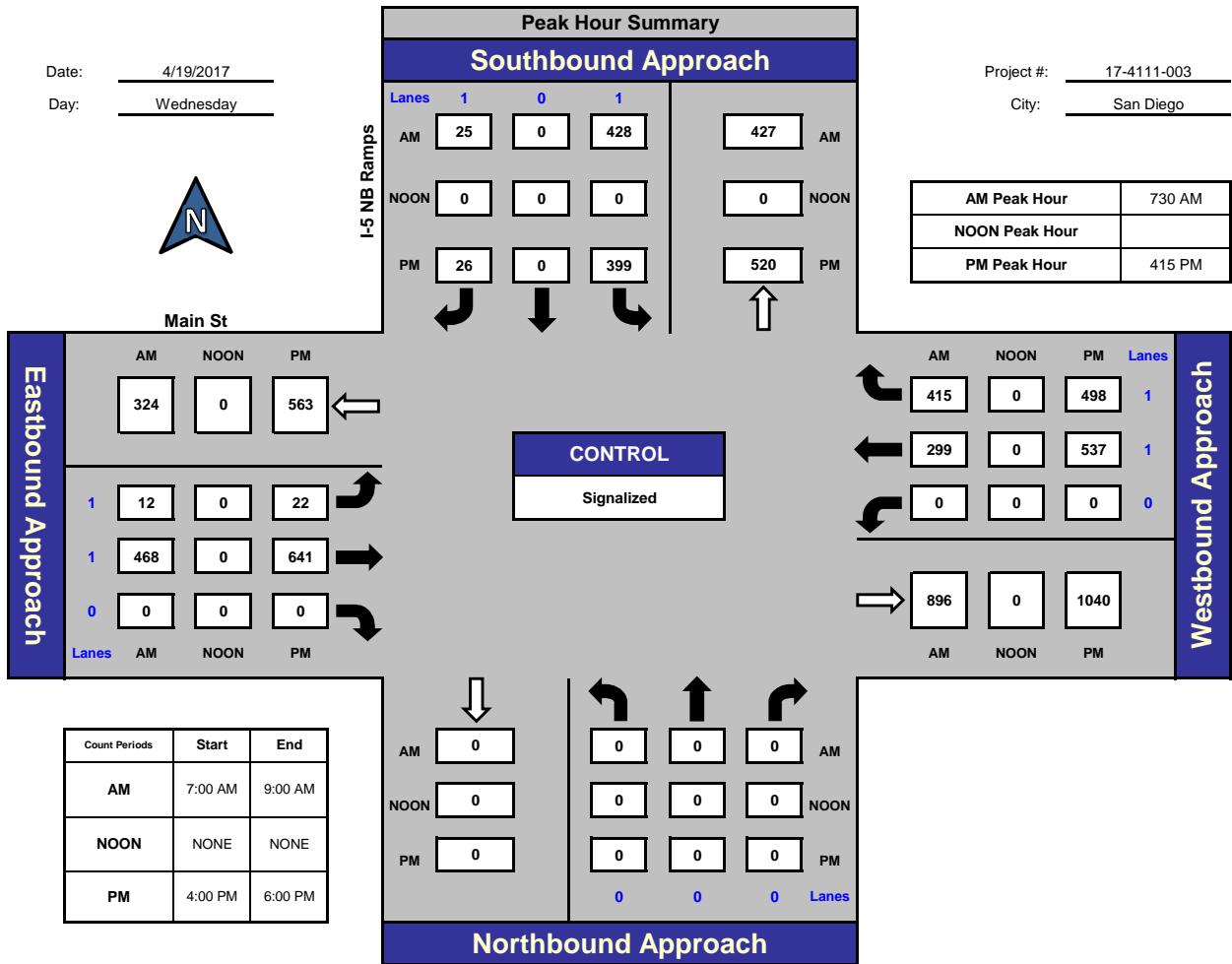
I-5 NB Ramps and Main St., San Diego

Date: 4/19/2017

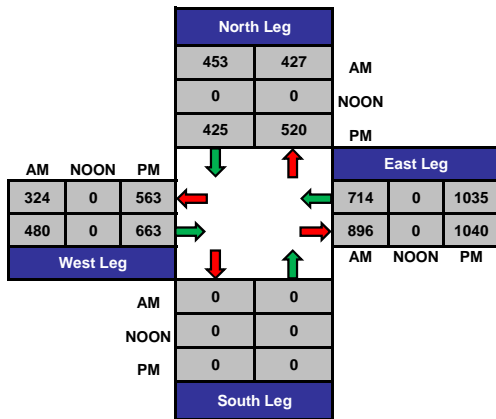
Day: Wednesday

Project #: 17-4111-003

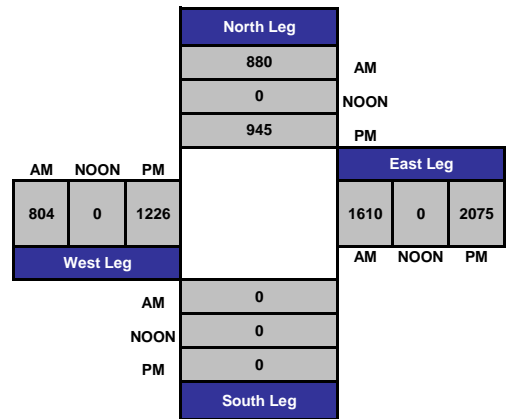
City: San Diego



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-4111-004

Day: Wednesday

City: San Diego

Date: 4/19/2017

NS/EW Streets:	AM												TOTAL
	Hollister St			Hollister St			Palm Ave			Palm Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	1	1	0	1	1	0	0	3	0	1	2	0	
7:00 AM	28	13	13	2	14	20	15	66	9	2	136	0	318
7:15 AM	20	13	9	4	6	20	16	86	7	3	147	1	332
7:30 AM	19	16	11	3	14	22	28	113	6	2	136	9	379
7:45 AM	19	28	11	7	20	18	27	98	12	9	165	4	418
8:00 AM	20	18	9	4	15	28	32	96	7	6	139	8	382
8:15 AM	26	14	12	5	14	20	21	81	12	8	127	7	347
8:30 AM	26	11	3	3	16	17	15	63	11	7	120	9	301
8:45 AM	26	14	2	5	9	29	31	57	8	4	105	5	295
TOTAL VOLUMES :	184	127	70	33	108	174	185	660	72	41	1075	43	2772
APPROACH %'s :	48.29%	33.33%	18.37%	10.48%	34.29%	55.24%	20.17%	71.97%	7.85%	3.54%	92.75%	3.71%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	84	76	43	19	63	88	108	388	37	25	567	28	1526
PEAK HR FACTOR :	0.875			0.904			0.906			0.871			0.913

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	1	0
0	0	0	0
0	0	1	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-4111-004

Day: Wednesday

City: San Diego

Date: 4/19/2017

PM

NS/EW Streets:	Hollister St			Hollister St			Palm Ave			Palm Ave			TOTAL
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	1	1	0	1	1	0	0	3	0	1	2	0	
4:00 PM	16	13	8	9	24	30	27	137	10	6	132	4	416
4:15 PM	21	15	9	13	25	39	30	122	15	11	96	4	400
4:30 PM	24	21	7	4	32	40	28	127	17	3	104	7	414
4:45 PM	19	19	6	7	19	53	29	174	22	10	117	5	480
5:00 PM	17	18	12	16	13	65	30	131	29	7	93	14	445
5:15 PM	17	15	14	9	36	40	33	154	15	5	115	7	460
5:30 PM	18	13	5	11	13	32	30	122	23	9	120	9	405
5:45 PM	16	18	9	12	18	30	23	132	13	10	124	11	416
TOTAL VOLUMES :	148	132	70	81	180	329	230	1099	144	61	901	61	3436
APPROACH %'s :	42.29%	37.71%	20.00%	13.73%	30.51%	55.76%	15.61%	74.61%	9.78%	5.96%	88.07%	5.96%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	77	73	39	36	100	198	120	586	83	25	429	33	1799
PEAK HR FACTOR :	0.909			0.888			0.877			0.922			0.937

UTURNS			
NB	SB	EB	WB
0	0	2	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	3	0
0	0	0	0
0	0	4	0
0	0	0	0
0	0	9	0

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:

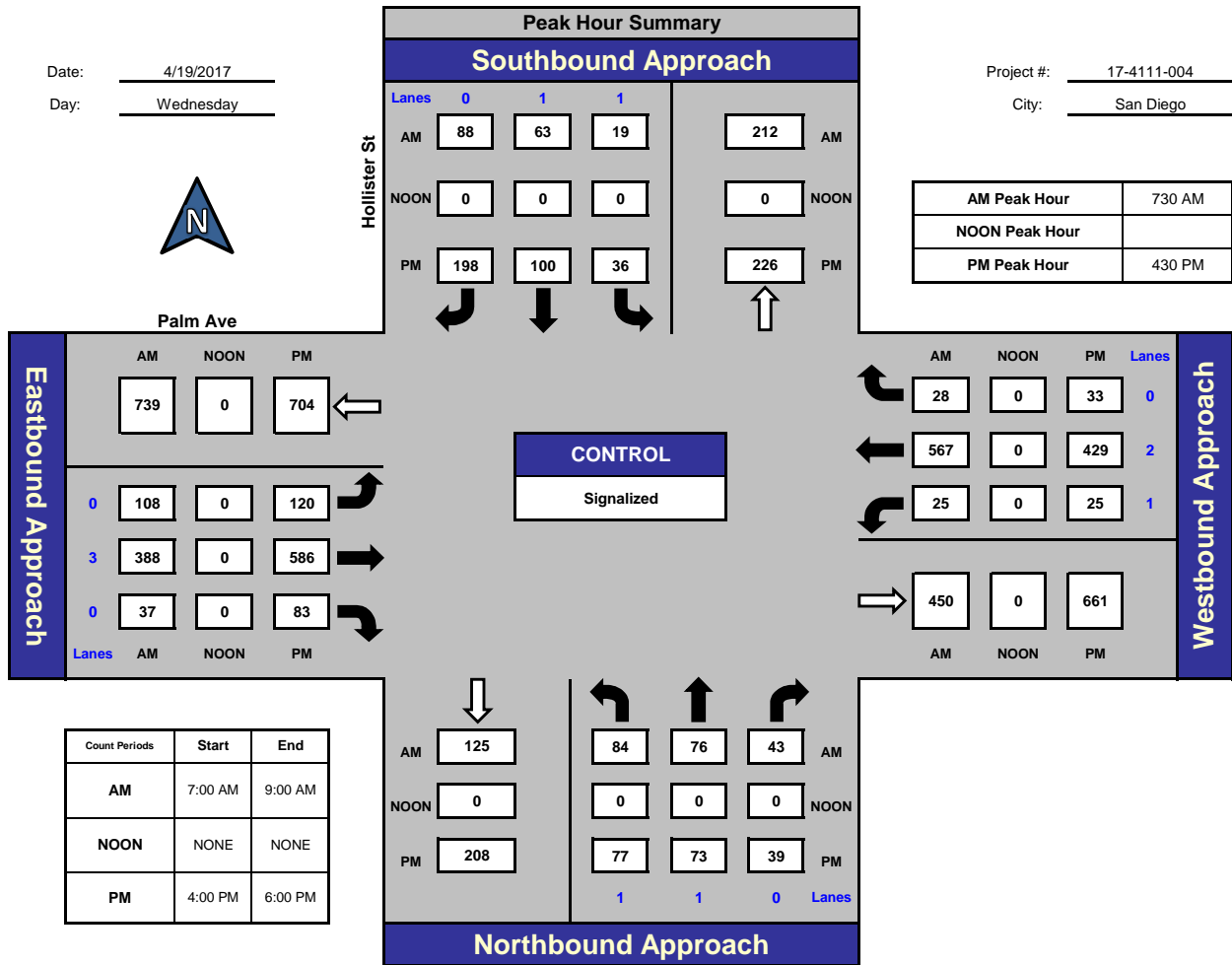


National Data & Surveying Services

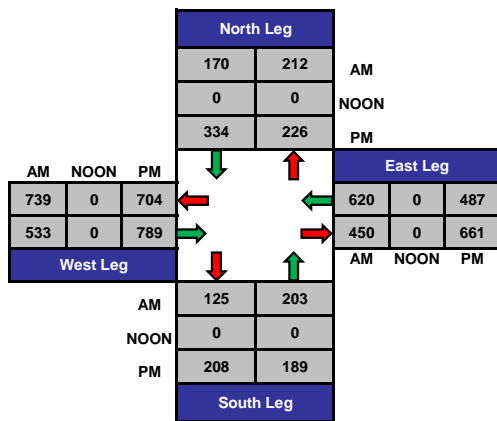
Hollister St and Palm Ave, San Diego

Date: 4/19/2017
Day: Wednesday

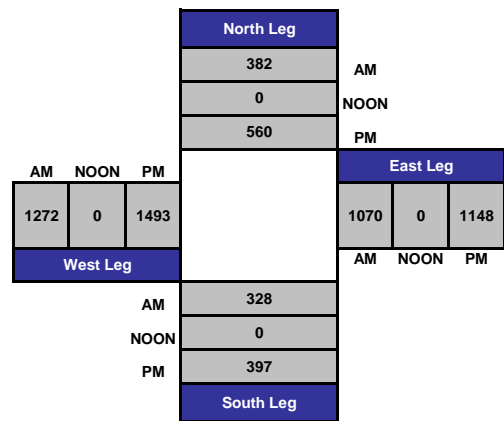
Project #: 17-4111-004
City: San Diego



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-4111-005

Day: Wednesday

City: San Diego

Date: 4/19/2017

NS/EW Streets:	AM												TOTAL
	I-5 NB Ramps			I-5 NB Ramps			Palm Ave			Palm Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1.3	0.3	0.3	0	0	0	0	2	0	0	2	0	
7:00 AM	230	2	27	0	0	0	0	81	0	0	95	107	542
7:15 AM	211	0	40	0	0	0	0	92	0	0	103	92	538
7:30 AM	194	0	30	0	0	0	0	142	0	0	99	88	553
7:45 AM	189	0	37	0	0	0	0	119	0	0	118	101	564
8:00 AM	175	0	28	0	0	0	0	137	0	0	129	74	543
8:15 AM	160	0	17	0	0	0	0	85	0	0	115	86	463
8:30 AM	154	0	23	0	0	0	0	96	0	0	96	77	446
8:45 AM	140	0	18	0	0	0	0	95	0	0	112	58	423
TOTAL VOLUMES :	1453	2	220	0	0	0	0	847	0	0	867	683	4072
APPROACH %'s :	86.75%	0.12%	13.13%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	55.94%	44.06%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	769	0	135	0	0	0	0	490	0	0	449	355	2198
PEAK HR FACTOR :	0.900		0.000			0.863			0.918			0.974	

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

CONTROL : Signalized

ITM Peak Hour Summary

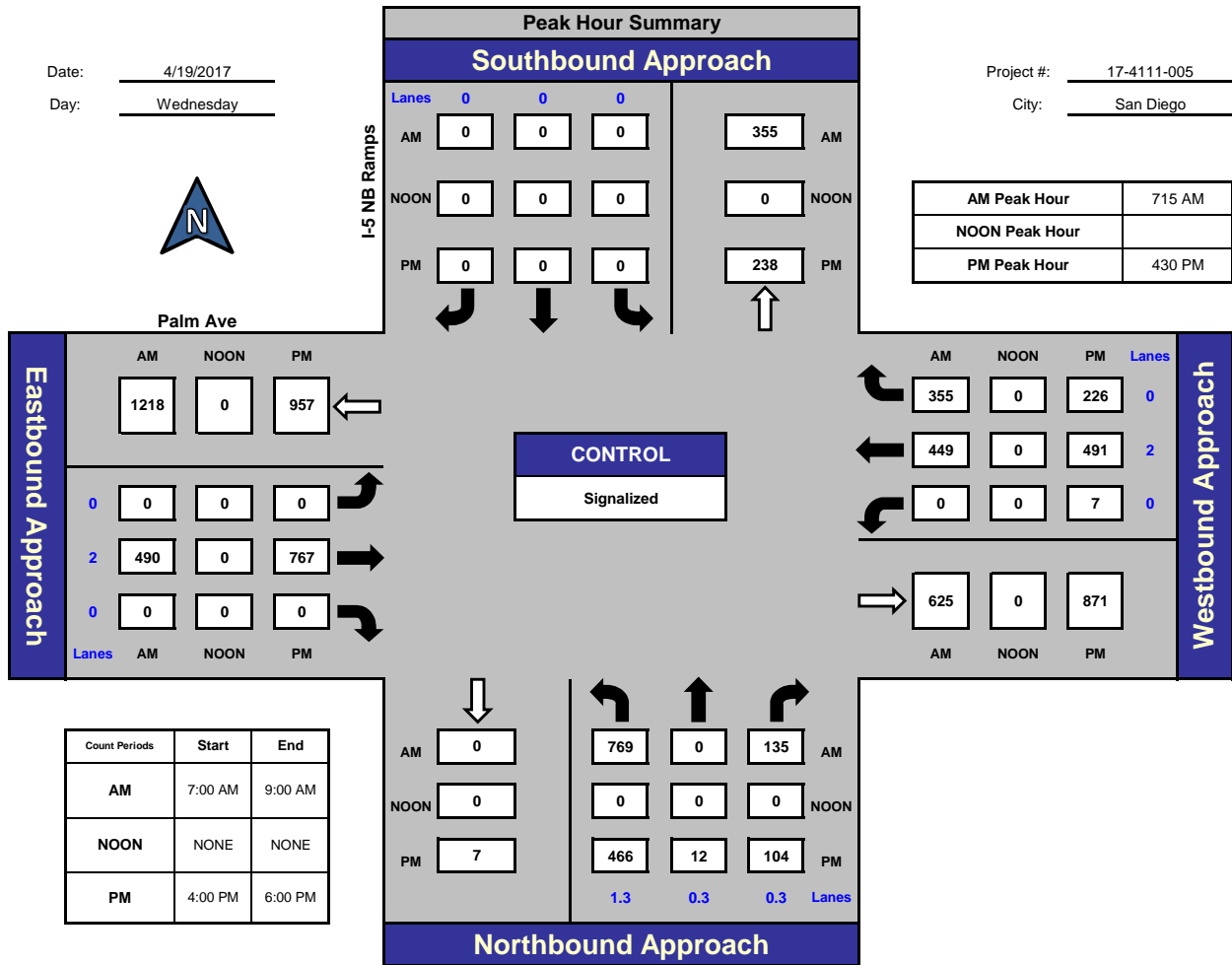


Prepared by:
National Data & Surveying Services

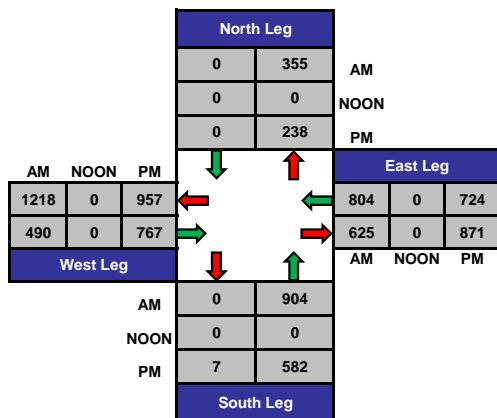
I-5 NB Ramps and Palm Ave, San Diego

Date: 4/19/2017
Day: Wednesday

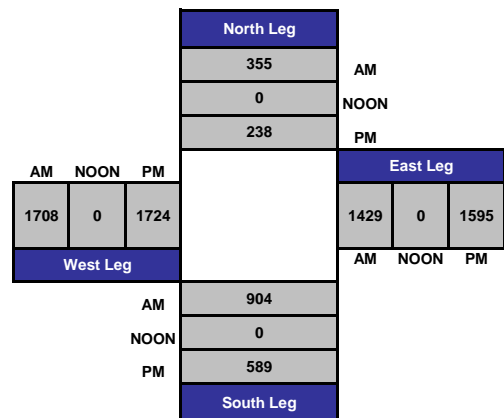
Project #: 17-4111-005
City: San Diego



Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-4111-006

Day: Wednesday

City: San Diego

Date: 4/19/2017

AM														
NS/EW Streets:	I-5 SB Ramps			I-5 SB Ramps			Palm Ave			Palm Ave				
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	
	0	0	0	1	0	2	0	2	0	0	2	1		
7:00 AM	0	0	0	18	0	256	0	62	0	0	300	13	649	
7:15 AM	0	0	0	29	0	295	0	65	0	0	301	26	716	
7:30 AM	0	0	0	42	0	272	0	91	0	0	273	23	701	
7:45 AM	0	0	0	45	0	330	0	81	0	0	253	32	741	
8:00 AM	0	0	0	37	0	279	0	100	0	0	282	29	727	
8:15 AM	0	0	0	25	0	272	0	65	0	0	270	18	650	
8:30 AM	0	0	0	31	0	286	0	61	0	0	222	22	622	
8:45 AM	0	0	0	28	0	272	0	72	0	0	229	13	614	
TOTAL VOLUMES :	0	0	0	255	0	2262	0	597	0	0	2130	176	5420	
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	10.13%	0.00%	89.87%	0.00%	100.00%	0.00%	0.00%	92.37%	7.63%		
PEAK HR START TIME :	715 AM												TOTAL	
PEAK HR VOL :	0	0	0	153	0	1176	0	337	0	0	1109	110	2885	
PEAK HR FACTOR :				0.000			0.886			0.843			0.932	0.973

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-4111-006

Day: Wednesday

City: San Diego

Date: 4/19/2017

PM

NS/EW Streets:	I-5 SB Ramps			I-5 SB Ramps			Palm Ave			Palm Ave			TOTAL	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR		
	0	0	0	1	0	2	0	2	0	0	2	1		
4:00 PM	0	0	0	80	0	387	0	90	0	0	219	42	818	
4:15 PM	0	0	0	79	0	374	0	95	0	0	175	22	745	
4:30 PM	0	0	0	74	0	387	0	108	0	0	200	41	810	
4:45 PM	0	0	0	89	0	357	0	96	0	0	180	25	747	
5:00 PM	0	0	0	92	0	403	0	106	0	0	219	21	841	
5:15 PM	0	0	0	94	0	386	0	107	0	0	271	23	881	
5:30 PM	0	0	0	77	0	365	0	91	0	0	225	37	795	
5:45 PM	0	0	0	90	0	402	0	96	0	0	181	28	797	
TOTAL VOLUMES :	0	0	0	675	0	3061	0	789	0	0	1670	239	6434	
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	18.07%	0.00%	81.93%	0.00%	100.00%	0.00%	0.00%	87.48%	12.52%		
PEAK HR START TIME :	500 PM												TOTAL	
PEAK HR VOL :	0	0	0	353	0	1556	0	400	0	0	896	109	3314	
PEAK HR FACTOR :				0.000			0.964			0.935			0.855	0.940

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:

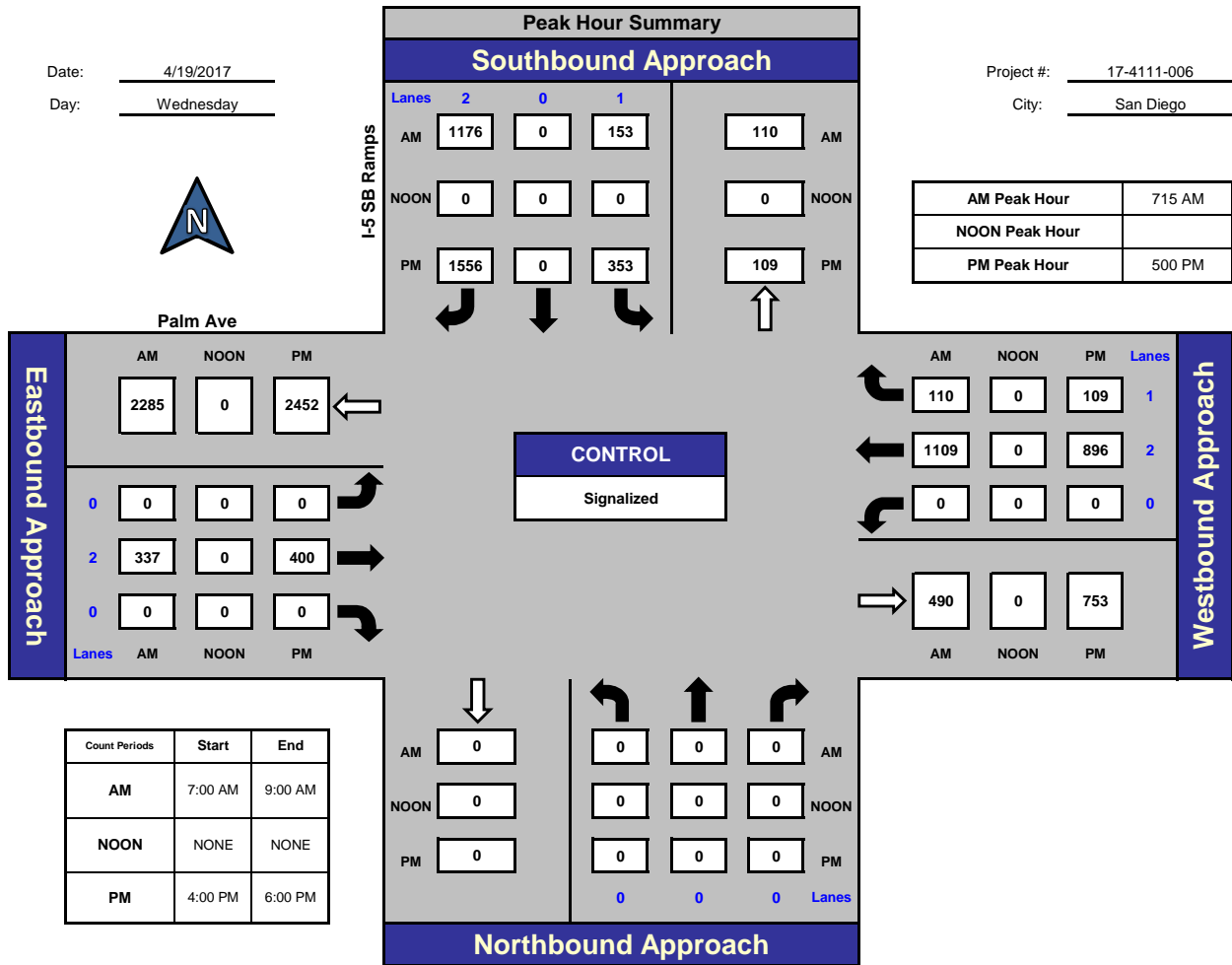


National Data & Surveying Services

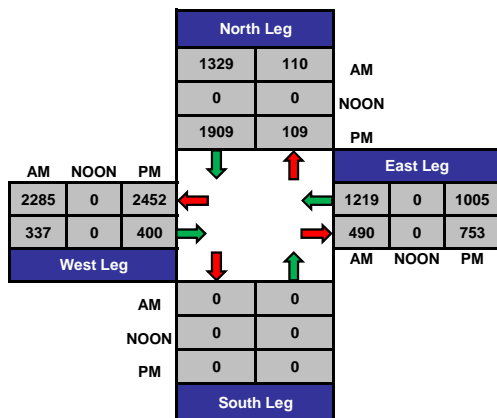
I-5 SB Ramps and Palm Ave, San Diego

Date: 4/19/2017
Day: Wednesday

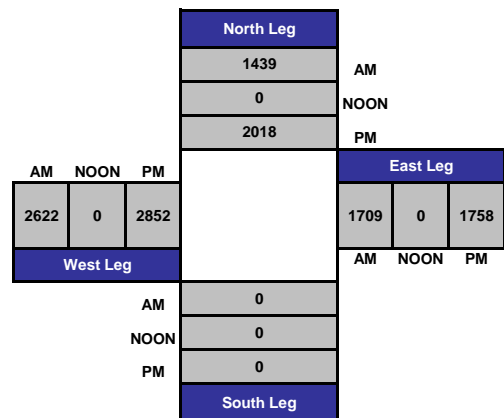
Project #: 17-4111-006
City: San Diego



Total Ins & Outs



Total Volume Per Leg



VOLUME

Main St Bet. I-5 NB Ramps & Hollister St

Day: Wednesday
Date: 4/19/2017

City: San Diego
Project #: CA17_4112_001

DAILY TOTALS						NB	SB	EB	WB	Total
						0	0	12,813	13,499	26,312

AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL			
0:00			40	22	62	12:00			203	268	471			
0:15			24	19	43	12:15			226	230	456			
0:30			29	21	50	12:30			198	228	426			
0:45			15	108	13	75	12:45		221	848	206	932	427	1780
1:00			31	11	42	13:00			186	226	412			
1:15			19	16	35	13:15			184	228	412			
1:30			23	14	37	13:30			231	214	445			
1:45			16	89	13	54	13:45		244	845	206	874	450	1719
2:00			19	10	29	14:00			215	217	432			
2:15			14	16	30	14:15			225	231	456			
2:30			16	19	35	14:30			270	324	594			
2:45			19	68	21	66	14:45		263	973	261	1033	524	2006
3:00			18	17	35	15:00			253	248	501			
3:15			22	26	48	15:15			255	232	487			
3:30			25	20	45	15:30			278	271	549			
3:45			20	85	21	84	15:45		236	1022	245	996	481	2018
4:00			18	18	36	16:00			227	233	460			
4:15			27	43	70	16:15			247	242	489			
4:30			42	56	98	16:30			237	212	449			
4:45			41	128	58	175	16:45		257	968	227	914	484	1882
5:00			51	95	146	17:00			259	278	537			
5:15			55	136	191	17:15			228	224	452			
5:30			73	168	241	17:30			187	190	377			
5:45			103	282	156	555	17:45		199	873	186	878	385	1751
6:00			84	154	238	18:00			218	199	417			
6:15			89	165	254	18:15			185	181	366			
6:30			91	153	244	18:30			184	162	346			
6:45			112	376	149	621	18:45		178	765	178	720	356	1485
7:00			95	186	281	19:00			165	163	328			
7:15			167	200	367	19:15			146	119	265			
7:30			172	209	381	19:30			143	138	281			
7:45			218	652	187	782	19:45		109	563	109	529	218	1092
8:00			187	154	341	20:00			105	121	226			
8:15			200	175	375	20:15			99	107	206			
8:30			158	173	331	20:30			105	121	226			
8:45			166	711	197	699	20:45		103	412	113	462	216	874
9:00			161	195	356	21:00			136	89	225			
9:15			176	193	369	21:15			105	109	214			
9:30			186	168	354	21:30			101	85	186			
9:45			177	700	167	723	21:45		81	423	74	357	155	780
10:00			167	186	353	22:00			67	58	125			
10:15			175	195	370	22:15			55	54	109			
10:30			160	175	335	22:30			66	52	118			
10:45			198	700	204	760	22:45		54	242	45	209	99	451
11:00			198	211	409	23:00			57	34	91			
11:15			193	201	394	23:15			52	45	97			
11:30			191	220	411	23:30			47	34	81			
11:45			202	784	237	869	23:45		40	196	19	132	59	328
TOTALS			4683	5463	10146	TOTALS			8130	8036	16166			
SPLIT %			46.2%	53.8%	38.6%	SPLIT %			50.3%	49.7%	61.4%			

DAILY TOTALS						NB	SB	EB	WB	Total
						0	0	12,813	13,499	26,312

AM Peak Hour			11:45	11:45	11:45	PM Peak Hour			14:45	14:30	14:30
AM Pk Volume			829	963	1792	PM Pk Volume			1049	1065	2106
PK Hr Factor			0.917	0.898	0.951	PK Hr Factor			0.943	0.822	0.886
7 - 9 Volume	0	0	1363	1481	2844	4 - 6 Volume	0	0	1841	1792	3633
7 - 9 Peak Hour			7:30	7:00	7:30	4 - 6 Peak Hour			16:15	16:15	16:15
7 - 9 Pk Volume	0	0	777	782	1502	4 - 6 Pk Volume	0	0	1000	959	1959
PK Hr Factor	0.000	0.000	0.891	0.935	0.927	PK Hr Factor	0.000	0.000	0.965	0.862	0.912

VOLUME

Hollister St Bet. Main St & Manya St

Day: Wednesday
Date: 4/19/2017

City: San Diego
Project #: CA17_4112_002

DAILY TOTALS					NB	SB	EB	WB	Total
					3,103	3,269	0	0	6,372

AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL	
0:00	6	11			17	12:00	56	49			105	
0:15	10	10			20	12:15	49	58			107	
0:30	6	5			11	12:30	49	57			106	
0:45	3	25	5	31	8	12:45	51	205	54	218	105	423
1:00	5	10			15	13:00	52	56			108	
1:15	5	9			14	13:15	41	42			83	
1:30	4	7			11	13:30	53	42			95	
1:45	3	17	4	30	7	13:45	52	198	42	182	94	380
2:00	3	6			9	14:00	53	52			105	
2:15	4	1			5	14:15	57	51			108	
2:30	4	1			5	14:30	48	62			110	
2:45	3	14	2	10	5	14:45	45	203	49	214	94	417
3:00	2	2			4	15:00	53	68			121	
3:15	4	1			5	15:15	54	54			108	
3:30	1	2			3	15:30	43	67			110	
3:45	2	9	2	7	4	15:45	64	214	60	249	124	463
4:00	5	3			8	16:00	52	66			118	
4:15	2	5			7	16:15	45	67			112	
4:30	7	7			14	16:30	54	72			126	
4:45	7	21	12	27	19	16:45	50	201	89	294	139	495
5:00	7	7			14	17:00	57	80			137	
5:15	8	5			13	17:15	70	67			137	
5:30	13	6			19	17:30	52	50			102	
5:45	20	48	10	28	30	17:45	47	226	62	259	109	485
6:00	22	19			41	18:00	47	59			106	
6:15	28	13			41	18:15	34	44			78	
6:30	32	18			50	18:30	38	44			82	
6:45	20	102	24	74	44	18:45	50	169	59	206	109	375
7:00	32	36			68	19:00	51	52			103	
7:15	27	28			55	19:15	33	45			78	
7:30	46	30			76	19:30	25	33			58	
7:45	53	158	58	152	111	19:45	31	140	36	166	67	306
8:00	50	57			107	20:00	24	31			55	
8:15	44	39			83	20:15	25	23			48	
8:30	43	45			88	20:30	28	34			62	
8:45	55	192	51	192	106	20:45	40	117	29	117	69	234
9:00	51	55			106	21:00	27	25			52	
9:15	46	39			85	21:15	16	31			47	
9:30	45	42			87	21:30	21	24			45	
9:45	63	205	44	180	107	21:45	15	79	19	99	34	178
10:00	58	53			111	22:00	33	23			56	
10:15	46	44			90	22:15	10	25			35	
10:30	41	41			82	22:30	10	17			27	
10:45	52	197	51	189	103	22:45	9	62	18	83	27	145
11:00	72	62			134	23:00	11	20			31	
11:15	56	43			99	23:15	12	17			29	
11:30	73	57			130	23:30	8	15			23	
11:45	60	261	36	198	96	23:45	9	40	12	64	21	104
TOTALS	1249	1118			2367	TOTALS	1854	2151			4005	
SPLIT %	52.8%	47.2%			37.1%	SPLIT %	46.3%	53.7%			62.9%	

DAILY TOTALS					NB	SB	EB	WB	Total
					3,103	3,269	0	0	6,372

AM Peak Hour	11:00	10:45			466	PM Peak Hour	16:30	16:15			539
AM Pk Volume	261	213			466	PM Pk Volume	231	308			539
PK Hr Factor	0.894	0.859			0.869	PK Hr Factor	0.825	0.865			0.969
7 - 9 Volume	350	344	0	0	694	4 - 6 Volume	427	553	0	0	980
7 - 9 Peak Hour	7:30	7:45			7:45	4 - 6 Peak Hour	16:30	16:15			16:30
7 - 9 Pk Volume	193	199	0	0	389	PK Hr Factor	0.825	0.865	0.825	0.865	0.969
PK Hr Factor	0.910	0.858	0.825	0.865	0.876	PK Hr Factor	0.825	0.865	0.825	0.865	0.969

VOLUME

Hollister St Bet. Conifer Ave & Palm Ave

Day: Wednesday
Date: 4/19/2017

City: San Diego
Project #: CA17_4112_003

DAILY TOTALS					NB	SB	EB	WB	Total		
					3,178	3,461	0	0	6,639		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
0:00	5	16			21	12:00	46	57			103
0:15	10	10			20	12:15	57	52			109
0:30	8	5			13	12:30	49	56			105
0:45	4	27	5	36	9	12:45	65	217	49	214	114
1:00	4	7			11	13:00	41	56			97
1:15	2	2			4	13:15	48	49			97
1:30	5	4			9	13:30	50	40			90
1:45	2	13	4	17	6	13:45	53	192	49	194	102
2:00	2	4			6	14:00	42	53			95
2:15	4	1			5	14:15	60	56			116
2:30	4	1			5	14:30	50	64			114
2:45	3	13	2	8	5	14:45	45	197	51	224	96
3:00	6	2			8	15:00	52	61			113
3:15	3	1			4	15:15	44	57			101
3:30	1	1			2	15:30	51	64			115
3:45	3	13	3	7	6	15:45	51	198	57	239	108
4:00	5	1			6	16:00	46	66			112
4:15	4	5			9	16:15	56	67			123
4:30	9	6			15	16:30	56	73			129
4:45	8	26	11	23	19	16:45	61	219	83	289	144
5:00	8	9			17	17:00	59	91			150
5:15	13	6			19	17:15	58	70			128
5:30	16	11			27	17:30	59	56			115
5:45	26	63	12	38	38	17:45	50	226	61	278	111
6:00	30	26			56	18:00	48	61			109
6:15	30	21			51	18:15	44	58			102
6:30	35	26			61	18:30	54	54			108
6:45	34	129	27	100	61	18:45	49	195	57	230	106
7:00	31	40			71	19:00	59	58			117
7:15	33	29			62	19:15	40	45			85
7:30	56	38			94	19:30	31	48			79
7:45	66	186	40	147	106	19:45	34	164	32	183	66
8:00	57	50			107	20:00	25	38			63
8:15	40	38			78	20:15	27	28			55
8:30	37	33			70	20:30	37	61			98
8:45	63	197	43	164	106	20:45	44	133	52	179	96
9:00	46	36			82	21:00	27	44			71
9:15	44	39			83	21:15	23	44			67
9:30	42	46			88	21:30	22	46			68
9:45	47	179	40	161	87	21:45	21	93	31	165	52
10:00	53	51			104	22:00	24	43			67
10:15	41	42			83	22:15	10	27			37
10:30	36	47			83	22:30	11	17			28
10:45	46	176	49	189	95	22:45	12	57	21	108	33
11:00	53	55			108	23:00	12	22			34
11:15	61	54			115	23:15	10	16			26
11:30	63	58			121	23:30	8	14			22
11:45	48	225	41	208	89	23:45	10	40	8	60	18
TOTALS	1247	1098			2345	TOTALS	1931	2363			4294
SPLIT %	53.2%	46.8%			35.3%	SPLIT %	45.0%	55.0%			64.7%

DAILY TOTALS					NB	SB	EB	WB	Total
					3,178	3,461	0	0	6,639

AM Peak Hour	11:00	10:45			439	PM Peak Hour	16:45	16:30			317
AM Pk Volume	225	216			439	PM Pk Volume	237	317			551
PK Hr Factor	0.893	0.931			0.907	PK Hr Factor	0.971	0.871			0.918
7 - 9 Volume	383	311	0	0	694	4 - 6 Volume	445	567	0	0	1012
7 - 9 Peak Hour	7:30	7:30			7:30	4 - 6 Peak Hour	16:45	16:30			16:30
7 - 9 Pk Volume	219	166	0	0	385	Volume	237	317	0	0	551
PK Hr Factor	0.830	0.830	0.000	0.000	0.900	PK Hr Factor	0.971	0.871	0.000	0.000	0.918

VOLUME

Palm Ave Bet. I-5 NB Ramps & Hollister St

Day: Wednesday
Date: 4/19/2017

City: San Diego
Project #: CA17_4112_004

DAILY TOTALS					NB	SB	EB	WB	Total
					0	0	10,604	11,658	22,262

AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL			
0:00			29	34	63	12:00			143	171	314			
0:15			39	27	66	12:15			150	158	308			
0:30			21	22	43	12:30			149	159	308			
0:45			25	114	19	102	12:45		179	621	147	635	326	1256
1:00			18	16	34	13:00			156	167	323			
1:15			19	23	42	13:15			162	177	339			
1:30			24	20	44	13:30			163	168	331			
1:45			16	77	17	76	13:45		173	654	160	672	333	1326
2:00			18	15	33	14:00			191	181	372			
2:15			24	17	41	14:15			176	160	336			
2:30			12	16	28	14:30			208	171	379			
2:45			17	71	18	66	14:45		224	799	172	684	396	1483
3:00			15	18	33	15:00			196	181	377			
3:15			15	26	41	15:15			204	186	390			
3:30			13	26	39	15:30			231	167	398			
3:45			20	63	26	96	15:45		177	808	166	700	343	1508
4:00			18	30	48	16:00			196	191	387			
4:15			26	49	75	16:15			192	173	365			
4:30			33	69	102	16:30			188	185	373			
4:45			24	101	62	210	16:45		227	803	169	718	396	1521
5:00			44	100	144	17:00			225	181	406			
5:15			43	131	174	17:15			214	199	413			
5:30			46	155	201	17:30			185	181	366			
5:45			55	188	129	515	17:45		178	802	178	739	356	1541
6:00			50	166	216	18:00			186	186	372			
6:15			70	155	225	18:15			203	160	363			
6:30			63	174	237	18:30			191	160	351			
6:45			78	261	149	644	18:45		163	743	154	660	317	1403
7:00			113	197	310	19:00			143	143	286			
7:15			120	197	317	19:15			143	124	267			
7:30			162	192	354	19:30			144	127	271			
7:45			157	552	220	806	19:45		134	564	126	520	260	1084
8:00			174	209	383	20:00			116	140	256			
8:15			103	192	295	20:15			104	137	241			
8:30			105	179	284	20:30			101	129	230			
8:45			115	497	166	746	20:45		112	433	104	510	216	943
9:00			111	160	271	21:00			87	96	183			
9:15			117	157	274	21:15			93	89	182			
9:30			125	136	261	21:30			92	81	173			
9:45			130	483	149	602	21:45		101	373	77	343	178	716
10:00			119	147	266	22:00			88	70	158			
10:15			118	146	264	22:15			75	60	135			
10:30			123	166	289	22:30			62	51	113			
10:45			118	478	161	620	22:45		64	289	44	225	108	514
11:00			144	156	300	23:00			57	38	95			
11:15			171	139	310	23:15			49	40	89			
11:30			164	174	338	23:30			47	33	80			
11:45			159	638	155	624	23:45		39	192	34	145	73	337
TOTALS			3523	5107	8630	TOTALS			7081	6551	13632			
SPLIT %			40.8%	59.2%	38.8%	SPLIT %			51.9%	48.1%	61.2%			

DAILY TOTALS					NB	SB	EB	WB	Total
					0	0	10,604	11,658	22,262

AM Peak Hour			11:00	7:15	7:15	PM Peak Hour			14:45	17:15	16:30
AM Pk Volume			638	818	1431	PM Pk Volume			855	744	1588
PK Hr Factor			0.933	0.930	0.934	PK Hr Factor			0.925	0.935	0.961
7 - 9 Volume	0	0	1049	1552	2601	4 - 6 Volume	0	0	1605	1457	3062
7 - 9 Peak Hour			7:15	7:15	7:15	4 - 6 Peak Hour			16:30	17:00	16:30
7 - 9 Pk Volume	0	0	613	818	1431	4 - 6 Pk Volume	0	0	854	739	1588
PK Hr Factor	0.933	0.930	0.881	0.930	0.934	PK Hr Factor	0.933	0.930	0.941	0.928	0.961

APPENDIX B

EXISTING TRAFFIC SIGNAL TIMING DATA

INTERVAL	PHASE TIMING								PRE-EMPTION	F											
	1	2	3	4	5	6	7	8		9	E	FLAGS	1	2	3	4	5	6	7	8	
0 WALK	1	1	1	1	1	1	1	7	CLK RST	EV SEL	0	PERMIT		2	3	4	5	6	8	0	
1 DONT WALK	1	1	1	1	1	1	1	18		RR1 CLR	15	RED LOCK				4				1	
2 MIN GREEN	1	5	7	5	5	5	1	1		EVA DLY	0	YEL LOCK			3					2	
3 TYPE 3 DET	0	0	0	0	0	0	0	0		EVA CLR	5	V RECALL		2			6			3	
4 ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		EVB DLY	0	P RECALL								4	
5 PASSAGE	0.9	5.0	0.9	3.0	2.0	5.0	0.9	0.9		EVB CLR	5	PED PHASES							8	5	
6 MAX GAP	0.9	7.0	0.9	3.0	2.0	7.0	0.9	0.9		EVC DLY	0	RT OLA								6	
7 MIN GAP	0.9	3.0	0.9	3.0	2.0	3.0	0.9	0.9		EVC CLR	5	RT OLB								7	
8 MAX EXT	9	30	9	30	15	30	9	9		EVD DLY	0	DBL ENTRY								8	
9 MAX 2									YR	EVD CLR	5	MAX 2 PHASES								9	
A MAX 3									MO	MAX EV	255	LAG PHASES	READ ONLY								A
B									DAY	RR2 CLR	15	RED REST								B	
C REDUCE BY	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	DOW			REST-IN-WALK								C	
D EVERY	1.0	0.6	1.0	1.0	1.0	0.6	1.0	1.0	HR			MAX 3 PHASES								D	
E YELLOW	3.0	4.1	4.1	4.1	3.7	4.1	3.0	4.1	MIN			YEL START UP		2			6			E	
F RED	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	SEC			FIRST PHASE				4				F	
3.5' PED XING FT								77'					1	2	3	4	5	6	7	8	
BIKE XING FT																					

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CCI FLASH ONLY

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	30
FOF	5

FCO	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0

FDO TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1

CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

Note: Phantom FZ3 to allow FZ8 ped headstart, preceeding left turn at FZ4

		CONTROL PLANS									Y-COORD			LAG PHASE	FLAGS									
		1	2	3	4	5	6	7	8	9		C	D	E	F	1	2	3	4	5	6	7	8	
0	CYCLE LENGTH														LAG FZ FREE		2		4		6		8	0
1	FZ1 GRN FCTR													GAPOUT CP1	LAG FZ CP 1									1
2														GAPOUT CP2	LAG FZ CP 2									2
3	FZ3 GRN FCTR													GAPOUT CP3	LAG FZ CP 3									3
4	FZ4 GRN FCTR										PERM TIME			GAPOUT CP4	LAG FZ CP 4									4
5	FZ5 GRN FCTR										LAG OFFSET			GAPOUT CP5	LAG FZ CP 5									5
6											FORCE OFF			GAPOUT CP6	LAG FZ CP 6									6
7	FZ7 GRN FCTR										LONG GRN			GAPOUT CP7	LAG FZ CP 7									7
8	FZ8 GRN FCTR										NO GREEN			GAPOUT CP8	LAG FZ CP 8									8
9	MULTI CYCLE													GAPOUT CP9	LAG FZ CP 9									9
A	OFFSET A										OFFSET				LAG C COORD									A
B	OFFSET B														LAG D COORD									B
C	OFFSET C														COORD FAZES		2				6			C
D	FZ 3 EXT																							D
E	FZ 7 EXT																							E
F	OFFSET INTRPT																							F

CO1 MANUAL CP

CO2 MASTER CP

CO3 CURRENT CP

CO4 LAST CP

CO7 TRNSMT CP

COD MANUAL OFFSET

CAO LOCAL CYCLE TIMER

CBO MASTER CYCLE TIMER

CAA LOCAL OFFSET

CBA MASTER OFFSET

FEATURE

	OFF	ON
1		
2		
3		
4		
5		
6		
7		
8		

LOCATION

	OFF	ON
1		1
2		
3		
4		
5		
6		
7		
8		

COO = 1

CCB/CDB OFFSET TIMER

CCC/CDC LAG GREEN TIMER

CCD/CDD FORCE OFF TIMER

CCE/CDE LONG GREEN TIMER

CCF/CDF NO GREEN TIMER

	D	FLAGS								E	FLAGS								F	FLAGS							
	MAX	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	PED	1	2	3	4	5	6	7	8
0	RCL								RCL									RCL									
1	CP 1								CP 1									CP 1									
2	CP 2								CP 2									CP 2									
3	CP 3								CP 3									CP 3									
4	CP 4								CP 4									CP 4									
5	CP 5								CP 5									CP 5									
6	CP 6								CP 6									CP 6									
7	CP 7								CP 7									CP 7									
8	CP 8								CP 8									CP 8									
9	CP 9								CP 9									CP 9									
A																		RCL 1									
B																		RCL 2									
C																											
D																											
E																											
F																											
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8

	E	FLAGS								F	FLAGS															
	FUNCTION	1	2	3	4	5	6	7	8	FUNCTION	1	2	3	4	5	6	7	8								
0										CODE 4																0
1										CODE 5																1
2										C-RECALL																2
3										D-RECALL																3
4										EXCLUSIVE																4
5										2 PED		2														5
6										6 PED							6									6
7										4 PED			4													7
8										8 PED																8
9																										9
A	OLA NOT									OLA ON																A
B	OLB NOT									OLB ON																B
C	OLC NOT									OLC ON																C
D	OLD NOT									OLD ON																D
E																										E
F																										F
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8								

LAST POWER FAILURE REGISTER

HOUR = D-A-E
 MINUTE = D-B-E
 DAY = D-C-E

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES
 (CALL ACTIVE LIGHTS)
 RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES
 (CALL ACTIVE LIGHTS)

LAST FLASH TIME REGISTER

HOUR = D-A-F
 MINUTE = D-B-F
 DAY = D-C-F

D-E-E = C8 VERSION NUMBER
 D-E-F = LITHIUM BATTERY CONDITION
 84 = BAD
 85 = GOOD

F+C+F+1+2+3+E+B+ E-PHASES or TYPE+EVENT NO.									
			PHASES		TYPE				
			C	D			E	F	
0	I1	1		5,6		J1	5	5,6	
1	I2U	2		5,6		J2U	6	5,6	
2	I2L	2		5,6		J2L	6	5,6	
3	I3U	2		5,6		J3U	6	5,6	5
4	I3L	2		5		J3L	6	5	
5	I4	2		7,8	5,6	J4	6	7,8	5
6	I5	3		5,6		J5	7	5,6	
7	I6U	4		5,6		J6U	8	5,6	
8	I6L	4		5,6		J6L	8	5,6	
9	I7U	4		5,6	5	J7U	8	5,6	
A	I7L	4		5		J7L	8	5	
B	I8	4		7,8	5	J8	8	7,8	
C	I9U	1		5,6		J9U	5	5,6	
D	I9L	3		5,6		J9L	7	5,6	

DETECTOR TYPE

- 1 RED LOCK
- 2 YELLOW LOCK
- 5 EXTENSION
- 6 COUNT
- 7 CALLING
- 8 TYPE 3 DISCONNECT

DETECTOR SETTINGS											
I FILE					J FILE						
		DELAY		CARRYOVER				DELAY		CARRYOVER	
I1	D10			D30				J1	D20		D40
I2U	D11			D31				J2U	D21		D41
I2L	D12			D32				J2L	D22		D42
I3U	D13			D33				J3U	D23		D43
I3L	D14			D34				J3L	D24		D44
I4	D15			D35				J4	D25		D45
I5	D16			D36				J5	D26		D46
I6U	D17			D37				J6U	D27		D47
I6L	D18			D38				J6L	D28		D48
I7U	D19			D39				J7U	D29		D49
I7L	D1A			D3A				J7L	D2A		D4A
I8	D1B			D3B				J8	D2B		D4B
I9U	D1C			D3C				J9U	D2C		D4C
I9L	D1D			D3D				J9L	D2D		D4D

REASSIGNS DETECTORS TO VARIOUS PHASES / FUNCTIONS

F-C-F MUST EQUAL ZERO WHEN FINISHED

LOWER CASE NUMBERS ARE DEFAULT VALUES

BLANK SPACES CONTAIN DEFAULTS (DO NOT ZERO OUT)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
11	SD	5	5.4	30	53

Enrique P. Bernal 04-15-09
 REGISTERED ELECTRICAL ENGINEER DATE
 05-04-09
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 ENRIQUE P. BERNAL
 No. 15675
 Exp. 6-30-10
 ELECTRICAL
 STATE OF CALIFORNIA

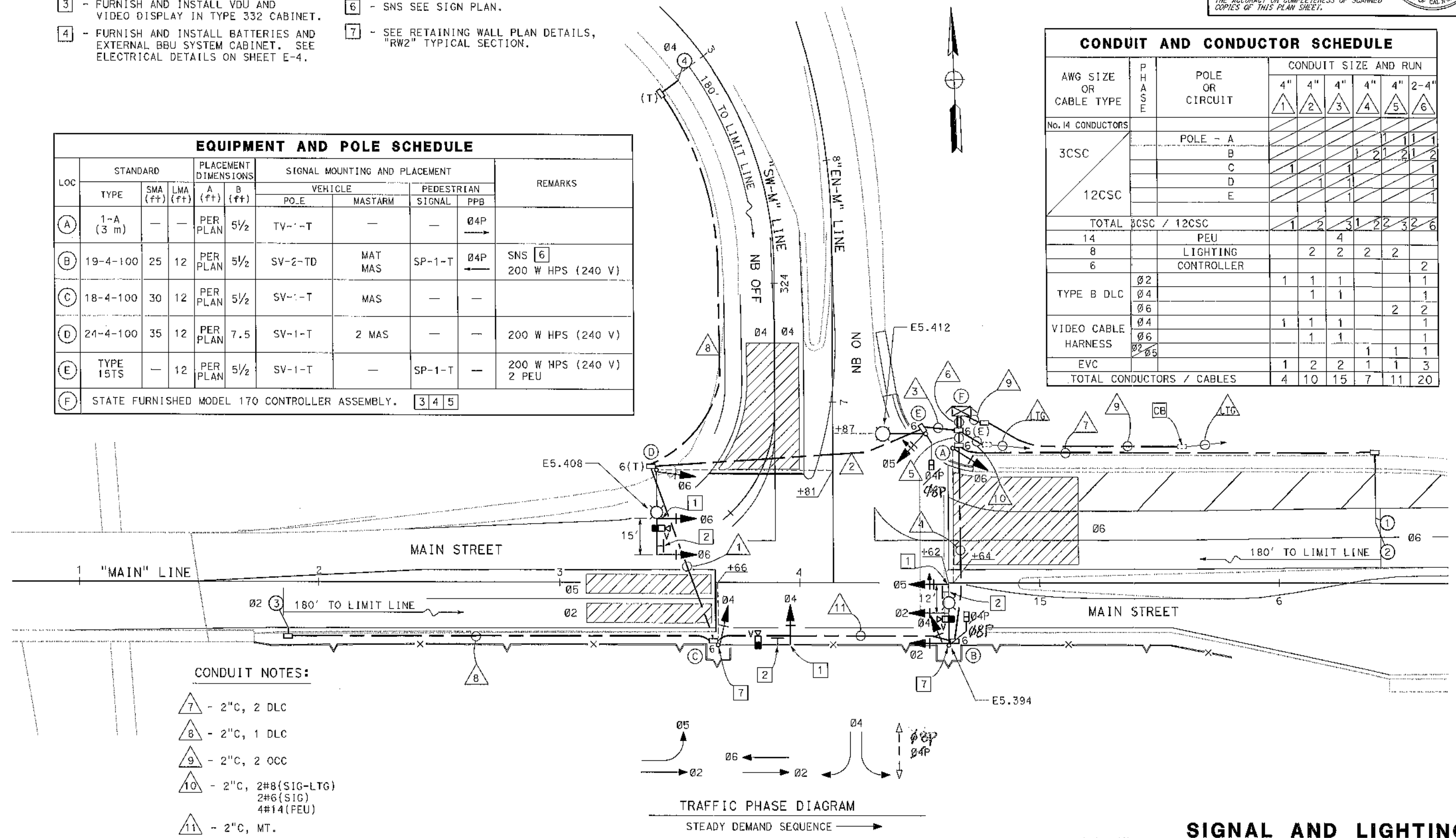
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES:

- 1 - TERMINATE EVC IN RED SECTION OF HOUSING. LEAVE 1 m OF SLACK.
- 2 - DETAIL "U" ES-7N, SEE SIGN PLANS.
- 3 - FURNISH AND INSTALL VDU AND VIDEO DISPLAY IN TYPE 332 CABINET.
- 4 - FURNISH AND INSTALL BATTERIES AND EXTERNAL BBU SYSTEM CABINET. SEE ELECTRICAL DETAILS ON SHEET E-4.
- 5 - FURNISH AND INSTALL COMMUNICATION EQUIPMENT PER COMPONENT DIAGRAM. SEE ELECTRICAL DETAILS ON SHEET E-5.
- 6 - SNS SEE SIGN PLAN.
- 7 - SEE RETAINING WALL PLAN DETAILS, "RW2" TYPICAL SECTION.

LOC	STANDARD		PLACEMENT DIMENSIONS		SIGNAL MOUNTING AND PLACEMENT				REMARKS	
	TYPE	SMA (ft)	LMA (ft)	A (ft)	B (ft)	VEHICLE		PEDESTRIAN		
						PO_E	MASTARM	SIGNAL		PPB
A	1-A (3 m)	-	-	PER PLAN	5 1/2	TV--T	-	-	Ø4P	
B	19-4-100	25	12	PER PLAN	5 1/2	SV-2-TD	MAT MAS	SP-1-T	Ø4P	SNS 6 200 W HPS (240 V)
C	18-4-100	30	12	PER PLAN	5 1/2	SV--T	MAS	-	-	
D	24-4-100	35	12	PER PLAN	7.5	SV-1-T	2 MAS	-	-	200 W HPS (240 V)
E	TYPE 15TS	-	12	PER PLAN	5 1/2	SV-1-T	-	SP-1-T	-	200 W HPS (240 V) 2 PEU
F	STATE FURNISHED MODEL 170 CONTROLLER ASSEMBLY. 3 4 5									

AWG SIZE OR CABLE TYPE	P H A S E	POLE OR CIRCUIT	CONDUIT SIZE AND RUN								
			4" 1	4" 2	4" 3	4" 4	4" 5	2-4" 6			
No. 14 CONDUCTORS											
3CSC		POLE - A						1	1	1	
		B						1	2	1	2
		C		1	1	1					1
		D			1	1					1
		E				1					1
12CSC											
TOTAL 3CSC / 12CSC			1	2	3	1	2	2	3	2	6
14		PEU					4				
8		LIGHTING		2	2	2	2				
6		CONTROLLER									
TYPE B DLC	Ø2		1	1	1					1	
	Ø4			1	1					1	
	Ø6								2	2	
VIDEO CABLE HARNESS	Ø4		1	1	1					1	
	Ø6			1	1					1	
EVC	Ø2							1	1	1	
	Ø5										3
TOTAL CONDUCTORS / CABLES			4	10	15	7	11	20			



CONDUIT NOTES:

- 7 - 2" C, 2 DLC
- 8 - 2" C, 1 DLC
- 9 - 2" C, 2 OCC
- 10 - 2" C, 2#8(SIG-LTG)
2#6(SIG)
4#14(PEU)
- 11 - 2" C, MT.

TRAFFIC PHASE DIAGRAM

STEADY DEMAND SEQUENCE →

ROUTE 5 NB AT
MAIN STREET
SIGNAL No. P5.416

SIGNAL AND LIGHTING

SCALE: 1"=20'

E-3

THIS PLAN ACCURATE FOR ELECTRICAL WORK ONLY.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 ENRIQUE P. BERNAL
 DALE WILSON
 HUA SAWAYA
 REVISOR
 CHECKED BY
 DESIGNED BY
 DATE REVISOR

LAST REVISION DATE PLOTTED => 07-APR-2010
 04-21-09 TIME PLOTTED => 13:22

	INTERVAL	PHASE TIMING								9	PRE-EMPTION E	F											
		1	2	3	4	5	6	7	8			FLAGS	1	2	3	4	5	6	7	8			
0	WALK	1	1	1	1	1	7	1	7	CLK RST	EV SEL	0	PERMIT			2				6		8	0
1	DONT WALK	1	1	1	1	1	5	1	20		RR1 CLR	5	RED LOCK										1
2	MIN GREEN	1	5	1	1	1	5	1	5		EVA DLY	0	YEL LOCK										2
3	TYPE 3 DET	0	0	0	0	0	0	0	0		EVA CLR	5	V RECALL		2					6			3
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		EVB DLY	0	P RECALL										4
5	PASSAGE	0.9	5.0	0.9	0.9	0.9	5.5	0.9	2.0		EVB CLR	5	PED PHASES							6		8	5
6	MAX GAP	0.9	6.2	0.9	0.9	0.9	7.0	0.9	2.0		EVC DLY	0	RT OLA										6
7	MIN GAP	0.9	3.0	0.9	0.9	0.9	3.0	0.9	2.0		EVC CLR	5	RT OLB										7
8	MAX EXT	9	35	9	9	9	35	9	25		EVD DLY	0	DBL ENTRY										8
9	MAX 2									YR	EVD CLR	5	MAX 2 PHASES										9
A	MAX 3									MO	MAX EV	255	LAG PHASES	READ ONLY								A	
B										DAY	RR2 CLR	5	RED REST										B
C	REDUCE BY	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	DOW			REST-IN-WALK										C
D	EVERY	1.0	0.8	1.0	1.0	1.0	0.6	1.0	1.0	HR			MAX 3 PHASES										D
E	YELLOW	3.0	4.4	3.0	3.0	3.0	4.4	3.0	4.1	MIN			YEL START UP		2					6			E
F	RED	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	SEC			FIRST PHASE									8	F
3.3'	PED XING FT						35'		85'						1	2	3	4	5	6	7	8	

NOTES: MPH = 40

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY



FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5

FCO	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0

FDO TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1

CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

		CONTROL PLANS									Y-COORD			LAG PHASE	FLAGS									
		1	2	3	4	5	6	7	8	9	C	D	E	F	1	2	3	4	5	6	7	8		
0	CYCLE LENGTH														LAG FZ FREE		2		4		6		8	0
1	FZ1 GRN FCTR													GAPOUT CP1	LAG FZ CP 1									1
2														GAPOUT CP2	LAG FZ CP 2									2
3	FZ3 GRN FCTR													GAPOUT CP3	LAG FZ CP 3									3
4	FZ4 GRN FCTR										PERM TIME			GAPOUT CP4	LAG FZ CP 4									4
5	FZ5 GRN FCTR										LAG OFFSET			GAPOUT CP5	LAG FZ CP 5									5
6											FORCE OFF			GAPOUT CP6	LAG FZ CP 6									6
7	FZ7 GRN FCTR										LONG GRN			GAPOUT CP7	LAG FZ CP 7									7
8	FZ8 GRN FCTR										NO GREEN			GAPOUT CP8	LAG FZ CP 8									8
9	MULTI CYCLE													GAPOUT CP9	LAG FZ CP 9									9
A	OFFSET A										OFFSET				LAG C COORD									A
B	OFFSET B														LAG D COORD									B
C	OFFSET C														COORD FAZES		2			6				C
D	FZ 3 EXT																							D
E	FZ 7 EXT																							E
F	OFFSET INTRPT																							F

CO1 MANUAL CP
 CO2 MASTER CP
 CO3 CURRENT CP
 CO4 LAST CP
 CO7 TRNSMT CP
 COD MANUAL OFFSET
 CAO LOCAL CYCLE TIMER
 CBO MASTER CYCLE TIMER
 CAA LOCAL OFFSET
 CBA MASTER OFFSET

SYSTEM MASTER:
 7th / DELAWARE ST.

FEATURE	OFF	ON
1		
2		
3		
4		
5		
6		
7		
8		

LOCATION	OFF	ON
1		1
2		
3		
4		
5		
6		
7		
8		

COC = 1

CCB/CDB OFFSET TIMER
 CCC/CDC LAG GREEN TIMER
 CCD/CDD FORCE OFF TIMER
 CCE/CDE LONG GREEN TIMER
 CCF/CDF NO GREEN TIMER

	D	FLAGS								E	FLAGS								F	FLAGS								
		MAX	1	2	3	4	5	6	7		8	MIN	1	2	3	4	5	6		7	8	PED	1	2	3	4	5	6
0	RCL									RCL									RCL									
1	CP 1									CP 1									CP 1									
2	CP 2									CP 2									CP 2									
3	CP 3									CP 3									CP 3									
4	CP 4									CP 4									CP 4									
5	CP 5									CP 5									CP 5									
6	CP 6									CP 6									CP 6									
7	CP 7									CP 7									CP 7									
8	CP 8									CP 8									CP 8									
9	CP 9									CP 9									CP 9									
A																			RCL 1									
B																			RCL 2									
C																												
D																												
E																												
F																												
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	

	E	FLAGS								F	FLAGS																		
		FUNCTION	1	2	3	4	5	6	7		8	FUNCTION	1	2	3	4	5	6	7	8									
0										CODE 4																	0		
1										CODE 5																		1	
2										C-RECALL																		2	
3										D-RECALL																		3	
4										EXCLUSIVE																		4	
5										2 PED		2																5	
6										6 PED								6										6	
7										4 PED			4															7	
8										8 PED																8		8	
9																												9	
A	OLA NOT									OLA ON																		A	
B	OLB NOT									OLB ON																			B
C	OLC NOT									OLC ON																			C
D	OLD NOT									OLD ON																			D
E																												E	
F																												F	
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		

LAST POWER FAILURE REGISTER

HOUR = D-A-E
 MINUTE = D-B-E
 DAY = D-C-E

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES
 (CALL ACTIVE LIGHTS)
 RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES
 (CALL ACTIVE LIGHTS)

LAST FLASH TIME REGISTER

HOUR = D-A-F
 MINUTE = D-B-F
 DAY = D-C-F

D-E-E = C8 VERSION NUMBER
 D-E-F = LITHIUM BATTERY CONDITION
 84 = BAD
 85 = GOOD

F+C+F+1+2+3+E+B+ E+PHASES or TYPE+EVENT NO.											
		PHASES		TYPE				PHASES		TYPE	
		C		D				E		F	
0	I1	1		5,6		J1	5		5,6		
1	I2U	2		5,6		J2U	6		5,6		
2	I2L	2		5,6		J2L	6		5,6		
3	I3U	2		5,6		J3U	6		5,6		
4	I3L	2		5		J3L	6		5		
5	I4	2		7,8	5,6	J4	6		7,8	5,6	
6	I5	3		5,6		J5	7		5,6		
7	I6U	4		5,6		J6U	8		5,6		
8	I6L	4		5,6		J6L	8		5,6		
9	I7U	4		5,6		J7U	8		5,6		
A	I7L	4		5		J7L	8		5		
B	I8	4		7,8		J8	8		7,8		
C	I9U	1		5,6		J9U	5		5,6		
D	I9L	3		5,6		J9L	7		5,6		

DETECTOR TYPE

- 1 RED LOCK
- 2 YELLOW LOCK
- 5 EXTENSION
- 6 COUNT
- 7 CALLING
- 8 TYPE 3 DISCONNECT

DETECTOR SETTINGS											
I FILE					J FILE						
		DELAY		CARRYOVER				DELAY		CARRYOVER	
I1	D10			D30		J1	D20			D40	
I2U	D11			D31		J2U	D21			D41	
I2L	D12			D32		J2L	D22			D42	
I3U	D13			D33		J3U	D23			D43	
I3L	D14			D34		J3L	D24			D44	
I4	D15			D35		J4	D25			D45	
I5	D16			D36		J5	D26			D46	
I6U	D17			D37		J6U	D27			D47	
I6L	D18			D38		J6L	D28			D48	
I7U	D19			D39		J7U	D29			D49	
I7L	D1A			D3A		J7L	D2A			D4A	
I8	D1B			D3B		J8	D2B			D4B	
I9U	D1C			D3C		J9U	D2C			D4C	
I9L	D1D			D3D		J9L	D2D			D4D	

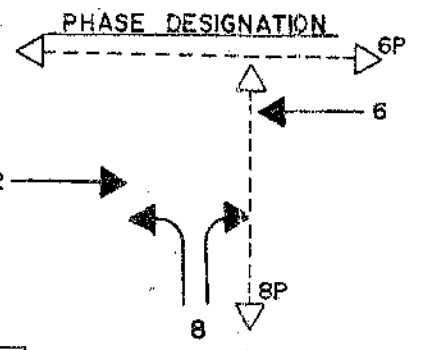
REASSIGNS DETECTORS TO VARIOUS PHASES / FUNCTIONS

F-C-F MUST EQUAL ZERO WHEN FINISHED

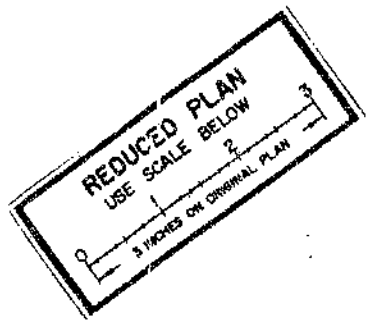
LOWER CASE NUMBERS ARE DEFAULT VALUES

BLANK SPACES CONTAIN DEFAULTS (DO NOT ZERO OUT)

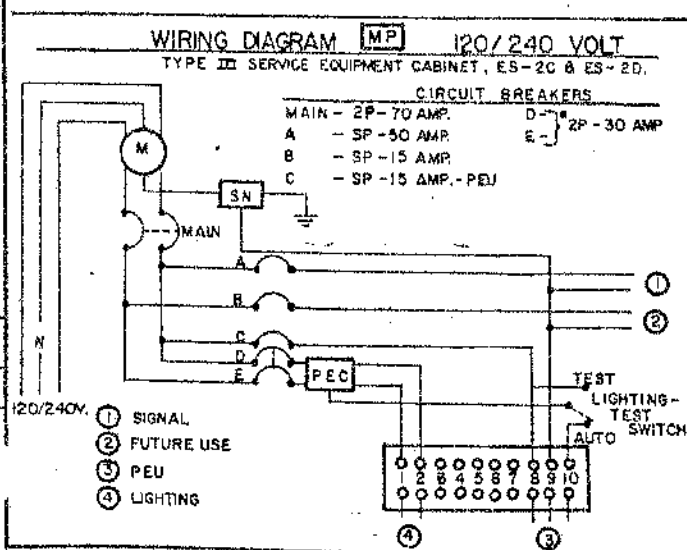
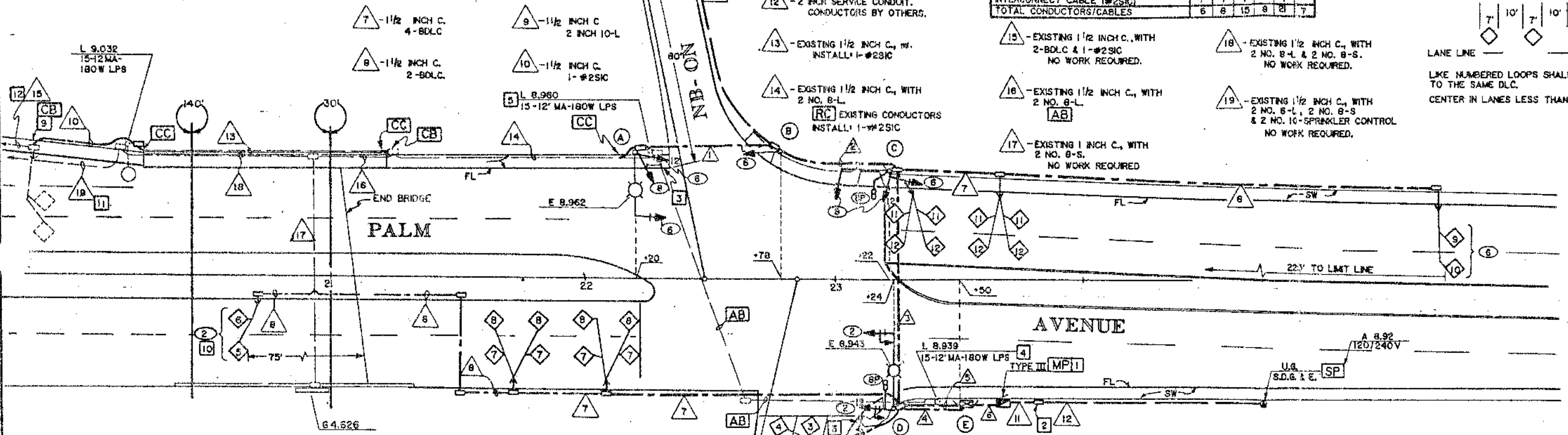
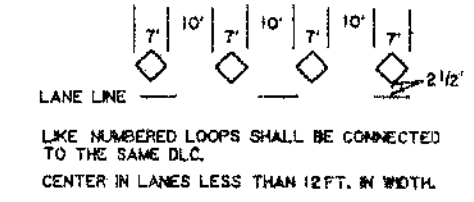
POLE SCHEDULE									
LOC.	STANDARD TYPE	PLACEMENT DIMENSIONS		SIGNAL MOUNTING & PLACEMENT				REMARKS	
		MASTARM SIG. LUM.	A ft.	B ft.	VEHICLE		PEDESTRIAN		
					POLE	MASTARM	SIGNAL	P.P.B.	
(A)	D-4-BC	25' 12"	PER PLAN	6 1/2	SV-2-TD	MAS	(8)	(8)	180 WATT LPS LUMINAIRE (240V BALLAST)
(B)	1-A (60')		PER PLAN	5 1/2	TV-1		(6)	(6)	
(C)	S-2-BC	20'	PER PLAN	6 1/2	SV-2-TD	MAS	SP-1-T	(8)	
(D)	D-4-BC	30' 12"	PER PLAN	6 1/2	SV-2-TD	MAS	SP-1-T	(8)	180 WATT LPS LUMINAIRE (240V BALLAST) PEU
(E)	STATE-FURNISHED MODEL 170 CONTROLLER ASSEMBLY. FOUNDATION DETAILS, ES-48. LOCATE PER PLAN.								
(F)	15 FROM	12'	PER PLAN	3					180 WATT LPS LUMINAIRE (240V BALLAST)



CONDUCTOR SCHEDULE						
AWG SIZE OR CABLE TYPE	PHASE	POLE OR CIRCUIT	CONDUIT SIZE & RUN			
			2"	2 1/2"	3"	3 1/2"
NO. 14 CABLES		POLE - A				
		B				
		C				
		D				
		E				
		F				
NO. 14 CABLES						
TOTAL CABLES - 3	CONDUCT./12 CONDUCT.		1	2	3	4
6	SIGNAL SERVICE					2
10	LIGHTING		2	2	2	2
14	PEU					3
TYPE 'B' DLC	2 LOOP LEAD-IN					4
8						4
8						4
EMERGENCY VEHICLE DETECTOR (EV-DLC)	INTERCONNECT CABLE (1#25SC)		1	1	2	3
TOTAL CONDUCTORS/CABLES			6	8	15	8



TYPICAL 'B' LOOP DETECTOR PLACEMENT

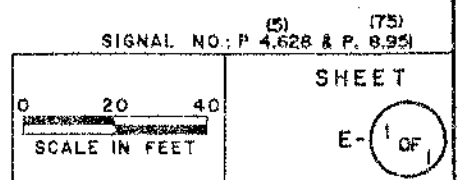


LEGEND

- MODEL 170 CONTROLLER ASSEMBLY. ORIENT DOORS AS SHOWN AT PLAN SITE.
- EV-DLC - EMERGENCY VEHICLE DETECTOR LEAD-IN CABLE (FUTURE USE). TERMINATE IN GREEN SECTION ON END OF MASTARM SIGNAL HEAD. LEAVE ONE FOOT OF SLACK.
- LPS - LOW PRESSURE SODIUM VAPOR
- L = LIGHTING
- S = SIGN

- 1 - TYPE III SERVICE EQUIPMENT ENCLOSURE. - SEE WIRING DIAGRAM, THIS SHEET.
- 2 - TERMINATING PULL BOX, NO. 6. - MARKING AND LABELING AS REQUIRED BY UTILITY COMPANY.
- 3 - PEDESTRIAN BARRICADE, ES-6A. - INSTALL STATE-FURNISHED SIGN PANEL.
- 4 - [RS] EXISTING ELECTROLIER.
- 5 - [RR] EXISTING TYPE 15 LIGHTING STANDARD WITH 12' MASTARM. - [RS] EXISTING 180 WATT LPS LUMINAIRE WITH 480V BALLAST.
- 6 - DETAIL 'U', ES-6T REQUIRED. - INSTALL STATE-FURNISHED SIGN PANEL.
- 7 - DETAIL 'U', ES-6T, NOT REQUIRED.
- 8 - PROVIDE WEATHER RESISTANT COVER FOR UNUSED MAST ARM TENON.
- 9 - [SC] INTERCONNECT CABLE.
- 10 - LOOP DETECTORS IN BRIDGE DECK: SHALL BE TYPE I LOOP WIRE, INSTALLED IN ONE HORIZONTAL LAYER 3/8" DEEP BY 7/8" WIDE.
- 11 - TO EXISTING 480V SERVICE (A9.97). LOCATED AT SOUTHWEST QUADRANT OF RTE 75/5 INTERCHANGE, SOUTH SIDE OF FRONTAGE ROAD.
- 12 - TO EXISTING TRAFFIC SIGNAL (P4.645) AT RTE 5 S.B. OFF RAMP AND PALM AVE.

I-5 NB
AT
PALM AVE
IN
SAN DIEGO
SIGNAL AND LIGHTING



INTERVAL	PHASE TIMING									PRE-EMPTION	F										
	1	2	3	4	5	6	7	8	9		E	FLAGS	1	2	3	4	5	6	7	8	
0 WALK	1	7	1	1	1	1	1	1	1	CLK RST	EV SEL	0	PERMIT	1	2			6		8	0
1 DONT WALK	1	12	1	1	1	1	1	1	1		RR1 CLR	5	RED LOCK								1
2 MIN GREEN	5	5	1	1	1	5	1	5			EVA DLY	0	YEL LOCK								2
3 TYPE 3 DET	0	0	0	0	0	0	0	0			EVA CLR	5	V RECALL		2			6			3
4 ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			EVB DLY	0	P RECALL								4
5 PASSAGE	2.0	5.5	0.9	0.9	0.9	5.5	0.9	2.0			EVB CLR	5	PED PHASES		2						5
6 MAX GAP	2.0	7.0	0.9	0.9	0.9	7.0	0.9	2.0			EVC DLY	0	RT OLA								6
7 MIN GAP	2.0	3.0	0.9	0.9	0.9	3.0	0.9	2.0			EVC CLR	5	RT OLB								7
8 MAX EXT	15	25	9	9	9	25	9	15			EVD DLY	0	DBL ENTRY								8
9 MAX 2	10							25	YR	EVD CLR	5	MAX 2 PHASES	1							8	9
A MAX 3	25								MO	MAX EV	255	LAG PHASES	READ ONLY								A
B									DAY	RR2 CLR	5	RED REST									B
C REDUCE BY	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	DOW			REST-IN-WALK									C
D EVERY	1.0	0.6	1.0	1.0	1.0	0.6	1.0	1.0	HR			MAX 3 PHASES	1								D
E YELLOW	4.1	4.5	3.0	3.0	3.0	4.5	3.0	4.1	MIN			YEL START UP		2			6				E
F RED	1.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	SEC			FIRST PHASE								8	F
3.5' PED XING FT		59'											1	2	3	4	5	6	7	8	

NOTES: MPH = 40

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5

FCO	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0

FDO TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1

CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY



		CONTROL PLANS									Y-COORD			LAG PHASE	FLAGS									
		1	2	3	4	5	6	7	8	9		C	D	E	F	1	2	3	4	5	6	7	8	
0	CYCLE LENGTH														LAG FZ FREE		2		4		6		8	0
1	FZ1 GRN FCTR													GAPOUT CP1	LAG FZ CP 1									1
2														GAPOUT CP2	LAG FZ CP 2									2
3	FZ3 GRN FCTR													GAPOUT CP3	LAG FZ CP 3									3
4	FZ4 GRN FCTR										PERM TIME			GAPOUT CP4	LAG FZ CP 4									4
5	FZ5 GRN FCTR										LAG OFFSET			GAPOUT CP5	LAG FZ CP 5									5
6											FORCE OFF			GAPOUT CP6	LAG FZ CP 6									6
7	FZ7 GRN FCTR										LONG GRN			GAPOUT CP7	LAG FZ CP 7									7
8	FZ8 GRN FCTR										NO GREEN			GAPOUT CP8	LAG FZ CP 8									8
9	MULTI CYCLE													GAPOUT CP9	LAG FZ CP 9									9
A	OFFSET A										OFFSET				LAG C COORD									A
B	OFFSET B														LAG D COORD									B
C	OFFSET C														COORD FAZES		2				6			C
D	FZ 3 EXT																							D
E	FZ 7 EXT																							E
F	OFFSET INTRPT																							F

- CO1 MANUAL CP
- CO2 MASTER CP
- CO3 CURRENT CP
- CO4 LAST CP
- CO7 TRNSMT CP
- COD MANUAL OFFSET
- CAO LOCAL CYCLE TIMER
- CBO MASTER CYCLE TIMER
- CAA LOCAL OFFSET
- CBA MASTER OFFSET

SYSTEM MASTER:
7th / DELAWARE ST.

FEATURE	OFF	ON
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8	<input checked="" type="checkbox"/>	<input type="checkbox"/>

LOCATION	OFF	ON
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8	<input checked="" type="checkbox"/>	<input type="checkbox"/>

COO = 2

- CCB/CDB OFFSET TIMER
- CCC/CDC LAG GREEN TIMER
- CCD/CDD FORCE OFF TIMER
- CCE/CDE LONG GREEN TIMER
- CCF/CDF NO GREEN TIMER

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

	D	FLAGS								E	FLAGS								F	FLAGS								
	MAX	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	PED	1	2	3	4	5	6	7	8	
0	RCL								RCL										RCL									
1	CP 1								CP 1										CP 1									
2	CP 2								CP 2										CP 2									
3	CP 3								CP 3										CP 3									
4	CP 4								CP 4										CP 4									
5	CP 5								CP 5										CP 5									
6	CP 6								CP 6										CP 6									
7	CP 7								CP 7										CP 7									
8	CP 8								CP 8										CP 8									
9	CP 9								CP 9										CP 9									
A																			RCL 1									
B																			RCL 2									
C																												
D																												
E																												
F																												

	E	FLAGS								F	FLAGS							
	FUNCTION	1	2	3	4	5	6	7	8	FUNCTION	1	2	3	4	5	6	7	8
0										CODE 4								
1										CODE 5								
2										C-RECALL								
3										D-RECALL								
4										EXCLUSIVE								
5										2 PED		2						
6										6 PED					6			
7										4 PED				4				
8										8 PED								8
9																		
A	OLA NOT		2							OLA ON		1						8
B	OLB NOT									OLB ON								
C	OLC NOT									OLC ON								
D	OLD NOT									OLD ON								
E																		
F																		

LAST POWER FAILURE REGISTER

HOUR = D-A-E
 MINUTE = D-B-E
 DAY = D-C-E

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES
 (CALL ACTIVE LIGHTS)

RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES
 (CALL ACTIVE LIGHTS)

LAST FLASH TIME REGISTER

HOUR = D-A-F
 MINUTE = D-B-F
 DAY = D-C-F

D-E-E = C8 VERSION NUMBER

D-E-F = LITHIUM BATTERY CONDITION

84 = BAD
 85 = GOOD

F+C+F+1+2+3+E+B+ E+PHASES or TYPE+EVENT NO.									
		PHASES		TYPE		PHASES		TYPE	
		C		D		E		F	
0	I1	1		5,6	J1	5		5,6	
1	I2U	2		5,6	J2U	6		5,6	
2	I2L	2		5,6	J2L	6		5,6	
3	I3U	2		5,6	J3U	6		5,6	
4	I3L	2		5	J3L	6		5	
5	I4	2		7,8	J4	6		7,8	5,6
6	I5	3		5,6	J5	7		5,6	
7	I6U	4		5,6	J6U	8		5,6	
8	I6L	4		5,6	J6L	8		5,6	
9	I7U	4		5,6	J7U	8		5,6	
A	I7L	4		5	J7L	8		5	5,6
B	I8	4		7,8	J8	8		7,8	5
C	I9U	1		5,6	J9U	5	1	5,6	
D	I9L	3		5,6	J9L	7	1	5,6	

DETECTOR TYPE

- 1 RED LOCK
- 2 YELLOW LOCK
- 5 EXTENSION
- 6 COUNT
- 7 CALLING
- 8 TYPE 3 DISCONNECT

DETECTOR SETTINGS									
I FILE					J FILE				
DELAY		CARRYOVER			DELAY		CARRYOVER		
I1	D10			D30		J1	D20		D40
I2U	D11			D31		J2U	D21		D41
I2L	D12			D32		J2L	D22		D42
I3U	D13			D33		J3U	D23		D43
I3L	D14			D34		J3L	D24		D44
I4	D15			D35		J4	D25		D45
I5	D16			D36		J5	D26		D46
I6U	D17			D37		J6U	D27		D47
I6L	D18			D38		J6L	D28		D48
I7U	D19			D39		J7U	D29		D49
I7L	D1A			D3A		J7L	D2A		D4A
I8	D1B			D3B		J8	D2B		D4B
I9U	D1C			D3C		J9U	D2C		D4C
I9L	D1D			D3D		J9L	D2D		D4D

REASSIGNS DETECTORS TO VARIOUS PHASES / FUNCTIONS

F-C-F MUST EQUAL ZERO WHEN FINISHED

LOWER CASE NUMBERS ARE DEFAULT VALUES

BLANK SPACES CONTAIN DEFAULTS (DO NOT ZERO OUT)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	5	R0.3/R10.0	58	88

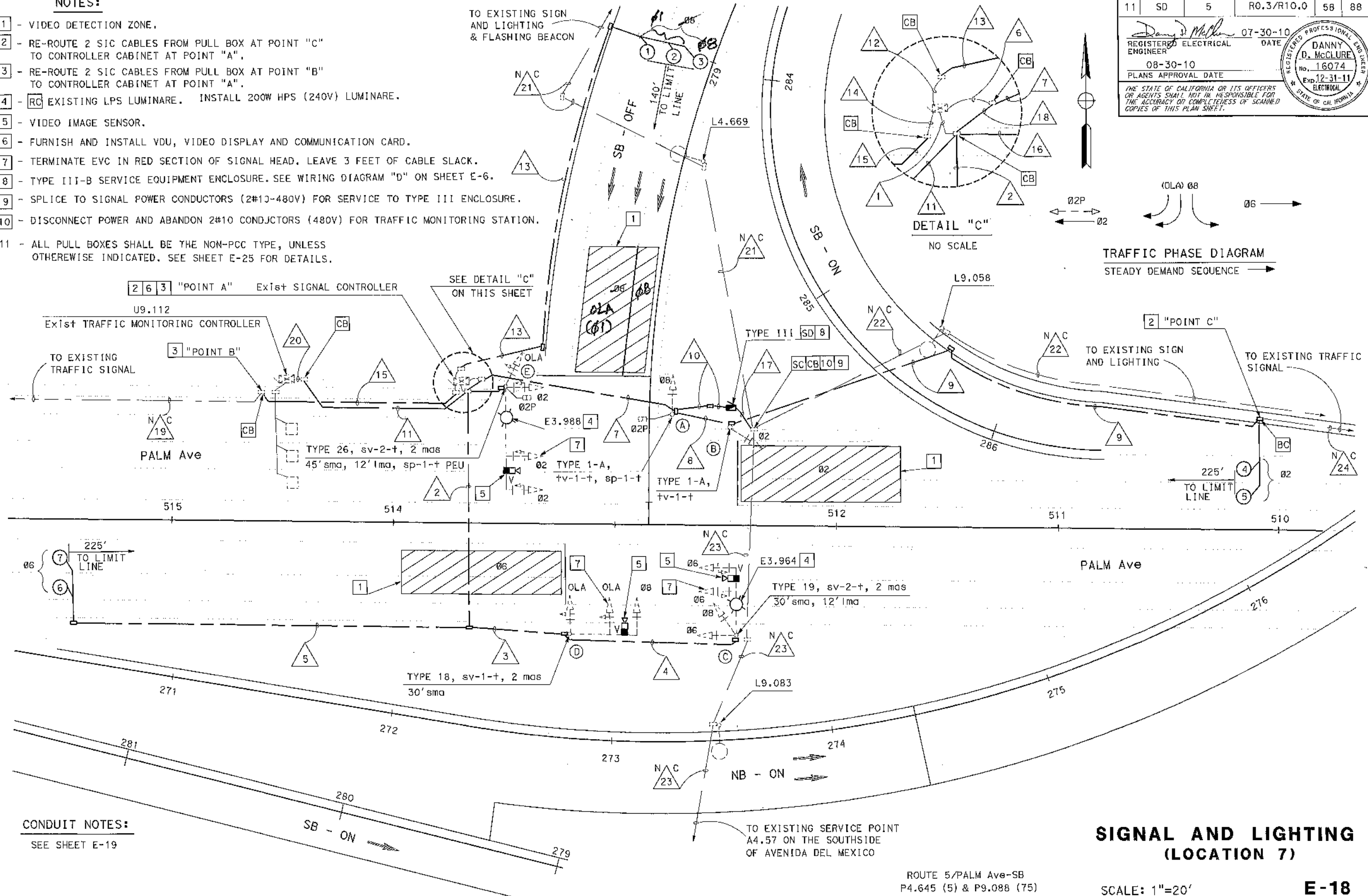
REGISTERED ELECTRICAL ENGINEER	DATE	07-30-10
PLANS APPROVAL DATE		
08-30-10		

REGISTERED PROFESSIONAL ENGINEER	DATE	07-30-10
PLANS APPROVAL DATE		
08-30-10		

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES:

- 1 - VIDEO DETECTION ZONE.
- 2 - RE-ROUTE 2 SIC CABLES FROM PULL BOX AT POINT "C" TO CONTROLLER CABINET AT POINT "A".
- 3 - RE-ROUTE 2 SIC CABLES FROM PULL BOX AT POINT "B" TO CONTROLLER CABINET AT POINT "A".
- 4 - [RC] EXISTING LPS LUMINARE. INSTALL 200W HPS (240V) LUMINARE.
- 5 - VIDEO IMAGE SENSOR.
- 6 - FURNISH AND INSTALL VDU, VIDEO DISPLAY AND COMMUNICATION CARD.
- 7 - TERMINATE EVC IN RED SECTION OF SIGNAL HEAD. LEAVE 3 FEET OF CABLE SLACK.
- 8 - TYPE III-B SERVICE EQUIPMENT ENCLOSURE. SEE WIRING DIAGRAM "D" ON SHEET E-6.
- 9 - SPLICE TO SIGNAL POWER CONDUCTORS (2#10-480V) FOR SERVICE TO TYPE III ENCLOSURE.
- 10 - DISCONNECT POWER AND ABANDON 2#10 CONDUCTORS (480V) FOR TRAFFIC MONITORING STATION.
- 11 - ALL PULL BOXES SHALL BE THE NON-PCC TYPE, UNLESS OTHERWISE INDICATED. SEE SHEET E-25 FOR DETAILS.



CONDUIT NOTES:
SEE SHEET E-19

**SIGNAL AND LIGHTING
(LOCATION 7)**

ROUTE 5/PALM Ave-SB
P4.645 (5) & P9.088 (75)

SCALE: 1"=20'

E-18

THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Ed Gilbert TRAFFIC ELECTRICAL
 FUNCTIONAL SUPERVISOR
 DALE J. WILSON
 CHECKED BY
 CALCULATED/DESIGNED BY
 ENRIQUE BERNAL
 DATE REVISOR
 DATE REVISOR
 REVISOR
 DATE REVISOR

LAST REVISION DATE PLOTTED => 04-MAY-2011
 08-26-10 TIME PLOTTED => 08:52

Ascencio, Yari

From: Hooper, Douglas C@DOT <douglas.hooper@dot.ca.gov>
Sent: Tuesday, February 5, 2019 11:02 AM
To: Loomis, Mychal
Subject: RE: Bella Mar (408 Hollister) Traffic Study Scope

Categories: External

Anytime Mychal. I was going to add that the “operating window” when they are operational would be from 0530 – 0930 Monday to Friday and they would be 2 cars per green.

From: Loomis, Mychal <mychal.loomis@kimley-horn.com>
Sent: Tuesday, February 5, 2019 11:00 AM
To: Hooper, Douglas C@DOT <douglas.hooper@dot.ca.gov>; Perez Valdes, Jorge Antonio@DOT <jorge.perez-valdes@dot.ca.gov>; Sanchez Rangel, Rogelio@DOT <roger.sanchez-rangel@dot.ca.gov>
Cc: Abboud, Roy@DOT <roy.abboud@dot.ca.gov>; Bernard, Nicola J@DOT <nicola.bernard@dot.ca.gov>; Robles, Jose Luis L@DOT <jose.luis.robles@dot.ca.gov>; Sepassi, Shahin@DOT <shahin.sepassi@dot.ca.gov>; Adibi, Shahin T@DOT <shahin.adibi@dot.ca.gov>; Chowdhoury, Hassan A@DOT <hassan.chowdhoury@dot.ca.gov>; Sayler, Ken J@DOT <ken.sayler@dot.ca.gov>
Subject: RE: Bella Mar (408 Hollister) Traffic Study Scope

Thank you Douglas (and all!)

Mychal Loomis, PE (CA), PTOE
Kimley-Horn | 401 B Street, Suite 600, San Diego, CA 92101
Direct: 619 744 0161 | www.kimley-horn.com

From: Hooper, Douglas C@DOT <douglas.hooper@dot.ca.gov>
Sent: Tuesday, February 5, 2019 10:58 AM
To: Perez Valdes, Jorge Antonio@DOT <jorge.perez-valdes@dot.ca.gov>; Sanchez Rangel, Rogelio@DOT <roger.sanchez-rangel@dot.ca.gov>; Loomis, Mychal <mychal.loomis@kimley-horn.com>
Cc: Abboud, Roy@DOT <roy.abboud@dot.ca.gov>; Bernard, Nicola J@DOT <nicola.bernard@dot.ca.gov>; Robles, Jose Luis L@DOT <jose.luis.robles@dot.ca.gov>; Sepassi, Shahin@DOT <shahin.sepassi@dot.ca.gov>; Adibi, Shahin T@DOT <shahin.adibi@dot.ca.gov>; Chowdhoury, Hassan A@DOT <hassan.chowdhoury@dot.ca.gov>; Sayler, Ken J@DOT <ken.sayler@dot.ca.gov>
Subject: RE: Bella Mar (408 Hollister) Traffic Study Scope

Good Morning Mychal,

Regarding the Main St and Palm Ave to NB I-5 Ramp Meters, the hardware is on the on-ramp, however, they are not yet operational. These Meters will be ready to operate after the Traffic Analysis and public notification is complete.

For now, a good range to use for the Palm Ave to NB 5 Meter would be 850 to 400 veh/hr. Main St should be 900 to 480 veh/hr. SB I-5 near these SB on-ramps may be activated in the future depending on ML volumes.

Let me know if you have any other questions. Thank you,

From: Perez Valdes, Jorge Antonio@DOT
Sent: Monday, February 4, 2019 10:57 AM
To: Sanchez Rangel, Rogelio@DOT <roger.sanchez-rangel@dot.ca.gov>
Cc: Abboud, Roy@DOT <roy.abboud@dot.ca.gov>; Bernard, Nicola J@DOT <nicola.bernard@dot.ca.gov>; Robles, Jose Luis L@DOT <jose.luis.robles@dot.ca.gov>; Sepassi, Shahin@DOT <shahin.sepassi@dot.ca.gov>; Adibi, Shahin T@DOT <shahin.adibi@dot.ca.gov>; Chowdhoury, Hassan A@DOT <hassan.chowdhoury@dot.ca.gov>; Hooper, Douglas C@DOT <douglas.hooper@dot.ca.gov>; Sayler, Ken J@DOT <ken.sayler@dot.ca.gov>
Subject: RE: Bella Mar (408 Hollister) Traffic Study Scope

Hi Roger,

Thank you very much for your email. I suggest contacting Shahin Sepassi, Shahin Adibi, Hassan Chowdhoury or Douglas Hooper from the Ramp Metering Branch at the TMC for information regarding ramp metering rates. Ken Sayler was the Project Engineer of the project that installed ramp meter systems at the Palm Ave and Main Street NB on-ramps to enter I-5. He may have additional information.

There is currently a SB on ramp to enter I-5 from WB Main Street (loop on-ramp). There are currently two SB on-ramps to enter I-5 from Palm Ave (WB Palm Ave to SB I-5 loop on-ramp, and EB Palm Ave to SB I-5 diamond on-ramp). It appears that none of those ramps is metered.

Our 11-43033 project proposes loop detectors at certain ramps of the I-5/Main Street and I-5/Palm Ave interchanges as listed below:

Junction Route 75				
23	NB OFF TO PALM AVE / 75	4.464	ND	CS 822 Bad loops (See Rte 75): Lane 2 SB 75 to NB 5 and SB 75 to SB 5 need loop repairs.
24	SB ON FRM EB PALM AVE / 75	4.546	LP	Bad loop, loop included in count station 822
	Count Station 901, Jct. Rte. 75 West	4.632	LP	Using RMIS, old loops, needs new/upgraded detection.
25	NB SB ON FRM SB RTE 75	4.673	ND	Detection
26	SB ON FRM WB PALM AVE / 75	4.685	ND	Detection
27	SEG NB ON FRM WB PALM AVE	4.738	ND	Detection
28	SEG NB ON FRM SB RTE 75	4.739	ND	Bad loop, loop included in count station 822, needs loop repair.
29	SB OFF TO PALM AVE / 75	4.848	ND	Detection
Main Street				
30	NB ON FRM MAIN ST	5.531	ND	Detection
31	SB OFF TO MAIN ST	5.609	ND	Detection

Other proposed improvements recommended by the Project Initiation Report (PIR) prepared for the 11-43033 project, in the vicinity of the I-5/Main Street and I-5/Palm Ave interchanges, are shown on the attached PDF.

Please let me know if you have any questions or if you would like to discuss further.

Sincerely,

JORGE A. PEREZ VALDES | Transportation Engineer
Caltrans District 11 | Trade Corridor Design
4050 Taylor Street - MS 334 | San Diego, CA 92110
619.688.3164 | e-mail: jorge.perez-valdes@dot.ca.gov

From: Sanchez Rangel, Rogelio@DOT
Sent: Monday, February 4, 2019 9:50 AM
To: Perez Valdes, Jorge Antonio@DOT <jorge.perez-valdes@dot.ca.gov>
Cc: Abboud, Roy@DOT <roy.abboud@dot.ca.gov>
Subject: FW: Bella Mar (408 Hollister) Traffic Study Scope

Hi Jorge,

Could you please advise on the questions for the project below, or let us know if we should follow up with another unit?

Thank you

Roger Sanchez
Caltrans D 11
Development Review Branch
roger.sanchez-rangel@dot.ca.gov
Tel (619) 688-6494

From: Loomis, Mychal <mychal.loomis@kimley-horn.com>
Sent: Thursday, January 31, 2019 12:32 PM
To: Sanchez Rangel, Rogelio@DOT <roger.sanchez-rangel@dot.ca.gov>
Cc: Abboud, Roy@DOT <roy.abboud@dot.ca.gov>; Armstrong, Jacob M@DOT <jacob.armstrong@dot.ca.gov>; Foster, Emily <emily.foster@kimley-horn.com>
Subject: RE: Bella Mar (408 Hollister) Traffic Study Scope

Hello,

Just to clarify for the ramp metering analysis:

- The Northbound Ramps to enter I-5 at both Main and Palm are existing. We will include those in all scenarios
 - o Do you have ramp meter rates that we should use? Or assume a general 450 veh/hr/ln?
- The Southbound Ramps to enter I-5 at both Main and Palm do not exist; we are planning to assume they will be in place in our buildout (Year 2035) scenario

Let us know if you have info you can share, and any other feedback on the above.

Thanks!

Mychal Loomis, PE (CA), PTOE
Kimley-Horn | 401 B Street, Suite 600, San Diego, CA 92101
Direct: 619 744 0161 | www.kimley-horn.com

From: Sanchez Rangel, Rogelio@DOT <roger.sanchez-rangel@dot.ca.gov>
Sent: Saturday, December 15, 2018 10:56 AM

To: Loomis, Mychal <mychal.loomis@kimley-horn.com>

Cc: Abboud, Roy@DOT <roy.abboud@dot.ca.gov>; Armstrong, Jacob M@DOT <jacob.armstrong@dot.ca.gov>

Subject: RE: Bella Mar (408 Hollister) Traffic Study Scope

Hi Mychal,

In addition to our Traffic Branch being Okay with your Traffic Scope, we found three improvements in the area,

- Ramp Metering on both Main and Palm Avenue, please see the Monster DSMP excel sheet list and the link to the Ramp Metering Plan. (see attachment)
- The 2010 I-5 South Multimodal Corridor Study project summary report mentions improvements to the Main Street Overcrossings. (see attachment)
- The Monster DSMP calls for adding managed lanes to the corridor in this area. (see attachment)

<http://www.dot.ca.gov/trafficops/tech/docs/RampMeteringDevelopmentPlan.pdf>

<https://www.sandag.org/index.asp?classid=13&projectid=387&fuseaction=projects.detail>

Our Trade Corridor Improvement branch (TCIF) is currently in the early stages of putting together a SHOPP study that would identify locations/interchanges that need improvements in this area. We asked TCIF if they could share any possible improvements that they may have already identified, they should get back to us next week.

I will be on vacation starting next week, I have asked Roy Abboud (thank you Roy) to cover this project review while I am gone. Please follow up with him and cc Jacob next week for any additional improvements that our TCIF branch may provide.

Thank you

Contact

Roy Abboud

619 688 6968

Roger Sanchez

Caltrans D 11

Development Review Branch

roger.sanchez-rangel@dot.ca.gov

Tel (619) 688-6494

From: "Armstrong, Jacob M@DOT" <jacob.armstrong@dot.ca.gov>

Date: December 14, 2018 at 5:21:08 PM PST

To: "Loomis, Mychal" <mychal.loomis@kimley-horn.com>

Subject: Re: Bella Mar (408 Hollister) Traffic Study Scope

Hi Mychal,

We are good with the traffic scope. We are still looking into anything we can find as far as I-5/Main St. and will get back to you, but can also work with you on exploring any options. Thanks

Sent from my iPhone

On Dec 5, 2018, at 9:10 AM, Loomis, Mychal <mychal.loomis@kimley-horn.com> wrote:

Just a quick update - I don't see anything related to the Main St and I-5 Southbound ramps in the Chula Vista Western TDIF. It had a signal included for the northbound ramps, which has been built, and Main Street bridge widening, but nothing mentioned about the southbound ramps. I am confirming with City of Chula Vista staff.

We will explore possible mitigations – off-ramp widening to provide a turn lane, a signal, or a roundabout. Not sure if we will have a chance to not require the applicant to fully fund and build it; but let me know if your team finds anything further to guide how you all envision that intersection to operate.

Mychal Loomis, PE (CA), PTOE

Kimley-Horn | 401 B Street, Suite 600, San Diego, CA 92101

Direct: 619 744 0161 | www.kimley-horn.com

From: Armstrong, Jacob M@DOT <jacob.armstrong@dot.ca.gov>

Sent: Monday, December 3, 2018 8:07 AM

To: Loomis, Mychal <mychal.loomis@kimley-horn.com>

Subject: Re: Bella Mar (408 Hollister) Traffic Study Scope

Hi Mychal. Hope all has been well. Thanks for reaching out to us. Let me look into this and get back to you. We will check on I-5/Main. One thing that comes to mind is I believe the Chula Vista Western TDIF has improvements identified? We will get back to you.

Yes, sorry your Beavers has a rough year. I remember the glory years in the late 90's early 2000's when I was at Oregon and the Civil War was the game of the year for the conference. Things will get better!

Sent from my iPhone

On Dec 2, 2018, at 11:29 PM, Loomis, Mychal <mychal.loomis@kimley-horn.com> wrote:

Hi Jacob,

We are working on a traffic study for a proposed multi-family residential development in the City of San Diego's Otay Mesa-Nestor community, project name Bella Mar. The project is close to I-5 and both the Main Street and Palm Avenue interchanges are assumed to be a major part of the traffic study. So while the City of San Diego will be the approving jurisdiction, we want to include Caltrans in the traffic scope. The attached scope letter is attached and being shared with City of San Diego, City of Chula Vista, and Caltrans representatives. We are moving forward with the traffic study and aiming to meet a January submittal.

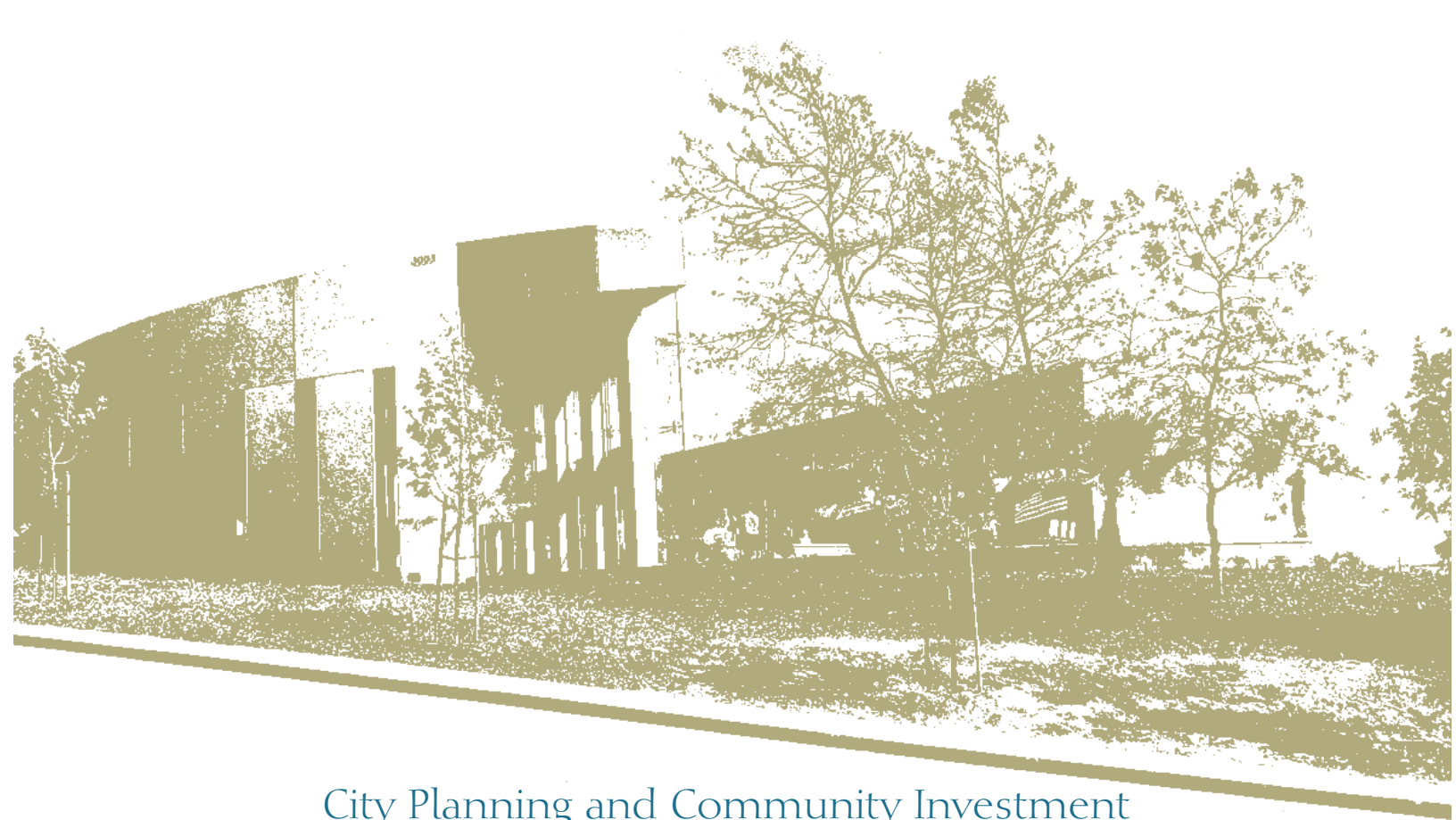
We are seeing that the existing conditions at the Main St/I-5 interchange has deficient operations. Are there any plans in place to improve that interchange? Or where is the best source to look for that info?

APPENDIX C

OTAY MESA-NESTOR COMMUNITY PLAN



Otay Mesa-Nestor Community Plan



City Planning and Community Investment

Jerry Sanders
Mayor

This information, or this document (or portions thereof), will be made available in alternative formats upon request.

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OTAY MESA-NESTOR

COMMUNITY PLAN



OTAY MESA-NESTOR COMMUNITY PLAN

The following amendments have been incorporated into this February 2016 posting of this Plan:

Amendment	Date Approved by Planning Commission	Resolution Number	Date Adopted by City Council	Resolution Number
Adopted the Otay Mesa-Nestor Community Plan Update	December 12, 1996	2331-PC	May 6, 1997	R-288632
Redesignated 18 acres from School to Low-Medium Density Residential (10- <15 du/net acre).	October 9, 2014	2331-PC	November 17, 2014	R-309313
Certified Environmental Negative Declaration No. 95-0233 on May 6, 1997 by R-288630				
Certified by the California Coastal Commission on August 13, 1997 by Amendment No. 1-97B/Otay Mesa-Nestor Community Plan				

(Editors Note: In an effort to create a single, comprehensive document, this Otay Mesa-Nestor Community Plan has been reformatted.)



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I. EXECUTIVE SUMMARY



EXECUTIVE SUMMARY

The Otay Mesa-Nestor Community Plan (Plan) process analyzed existing conditions to determine the community's positive attributes and identified areas or conditions in need of improvement. The Plan identifies issues, articulates community visions, and recommends strategies for improvement and for achieving the visions.

One of the most significant issues identified by residents is the general lack of identity of the community as a unique part of San Diego. Due to its conventional residential character, the absence of a distinct business center, the fragmentation of the community into several neighborhoods, and the neglect of Otay Mesa-Nestor's natural resources, a strong, recognizable community image has not been established. Residents feel that their community has been neglected by the City, and that they are not receiving an equitable share of City services and resources.

Unexpected growth in the area has brought additional problems. One-third of the population is school age or younger. School overcrowding is increasing. A series of amendments to the adopted community plan resulted in the addition of residential areas and increased residential densities, thus exacerbating school and other public facility deficiencies. The increase of residentially planned land reduced opportunities for commercial development. Future planned growth in Otay Mesa will place an added strain on the community's facilities until adequate facilities are provided to serve Otay Mesa. Older neighborhoods are showing signs of deterioration and are in need of rehabilitation. Border related commercial traffic through the community impacts previously quiet residential streets. Graffiti and lack of street maintenance are issues of growing concern.

Recognizing that Otay Mesa-Nestor is a mostly built out, urbanized community, this Plan employs a new approach. It focuses on specific geographic areas and communitywide issues in a comprehensive manner, unlike more traditional community plans that address land uses and services in independent elements.

The Plan introduces the concept of neighborhood centers as potential opportunity areas for improvement and revitalization. The Plan proposes a concentration of neighborhood and community-serving uses in neighborhood centers, including the augmentation of existing, and the establishment of new neighborhood centers. The Plan acknowledges that Otay Mesa-Nestor is a conglomeration of distinct neighborhoods, and that existing development patterns dictate the form of the community. Rather than try to create one artificial central community core, each center will provide a neighborhood focus and help create local identity and pride. Combined, the neighborhood centers will provide a wide range of shopping and commercial services, open space and recreation, civic and transit-oriented uses, and residential opportunities to the community. The cumulative effect of building the community incrementally by reinforcing and modifying the unique aspects of existing neighborhoods will result in a distinct community identity.



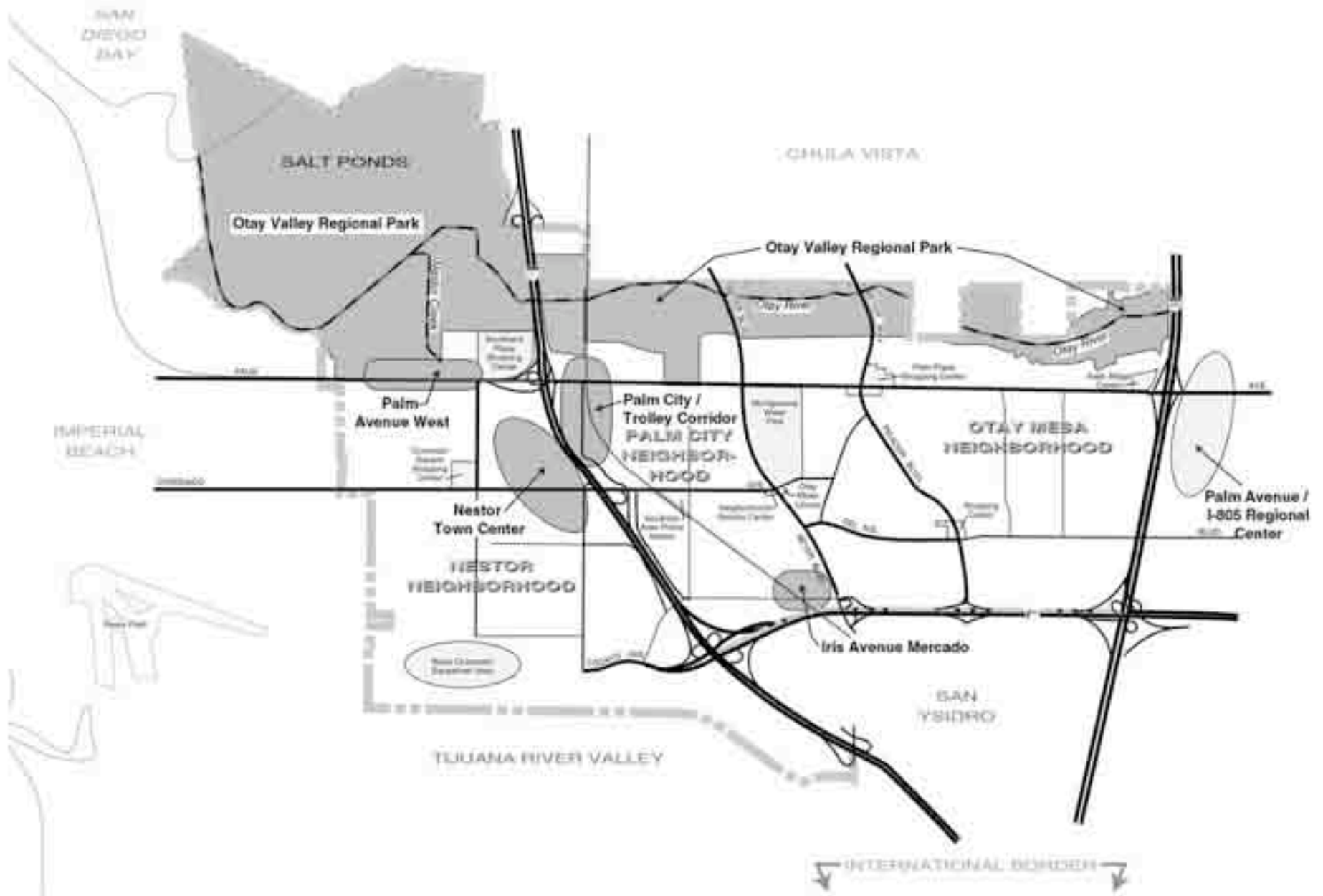
In addition to the neighborhood centers addressed by the Topic Sheets and highlighted on the Vision Map, other existing neighborhood centers are also identified on the Community Vision map (see **Figure 1**) and discussed in the Introduction. Continued development consistent with the planned land use is recommended in these areas, which contributes to strengthening the community fabric.

The community improvement programs and strategies address communitywide issues that are not specific to one neighborhood center or geographic area. They include housing programs and provision of community facilities and services. They also recommend strategies for public education about the community planning process, and citizen involvement and responsibility for improving the community.

Fundamental to the successful implementation of this action-oriented Plan, is the creation of the Community Plan Implementation Team (described on page 10). It is intended that this Plan will be a guide for the orderly and deliberate improvement of the community by the cooperative efforts of community members, private interests, the City and other development and regulatory agencies.



II. INTRODUCTION





INTRODUCTION

SCOPE AND PURPOSE

This Otay Mesa-Nestor Community Plan (Plan) represents the first comprehensive update of the original Otay Mesa-Nestor Community Plan that was adopted in December, 1978. Development of the Plan was a joint effort of the Otay Mesa-Nestor Community Planning Committee and City Planning Department staff. Because the community is approximately 95 percent developed, the planning process used in creating this Plan went beyond the scope of the traditional land use plan. A wide range of issues identified by community members, business operators, and residents was addressed. The purpose of the Plan is to serve as a guide for the future development and improvement of the community. This Plan incorporates the Local Coastal Program for the Otay Mesa-Nestor community.

PLAN APPROACH

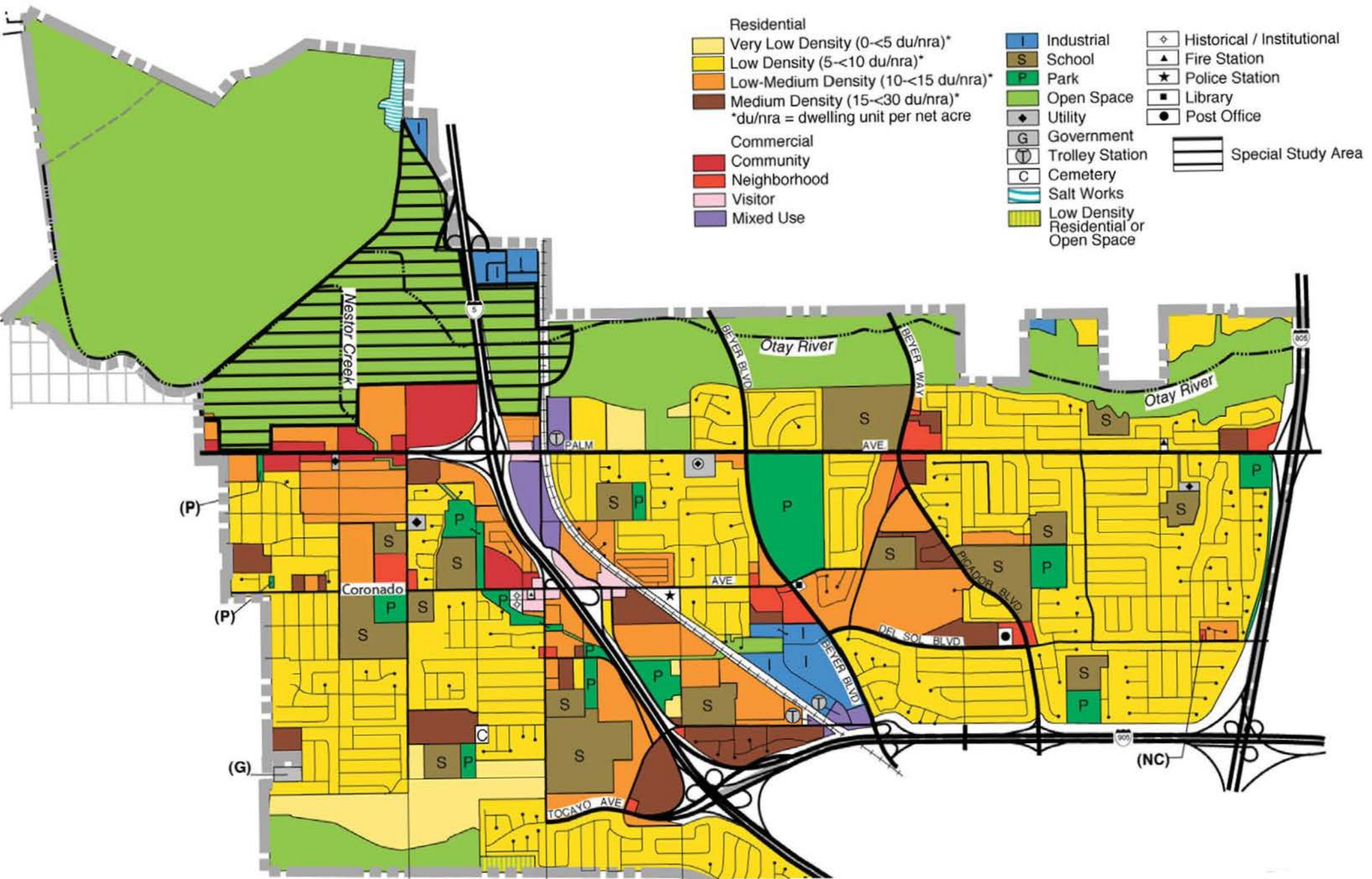
The approach used in creating this Plan relied heavily upon the foundation provided in the Community Conditions Report (October, 1993), a comprehensive assessment of existing conditions that provided a basic knowledge of the community. It includes detailed information about the history of the community, its demographics, and existing land uses. The Otay Mesa-Nestor Community Conditions Report is available for review or purchase through the City Publications Center.

In addition to the Community Conditions Report, the update process utilized a community survey. The survey provided community members an opportunity to provide their opinions about the community. It was designed to identify issues, problems, strengths, and positive attributes that are desired to be preserved.

A prevailing issue identified during the plan update process is the general lack of identity and lack of a strong community core. By addressing individual neighborhood centers and unique natural areas that have potential for improvement, the Plan emphasizes opportunity areas that could augment the community's existing strengths and provide neighborhood identity. The combination of the existing vital neighborhood areas with the future improved areas recommended in this Plan will create the foundation for a vibrant, balanced community.

Each of the community's neighborhoods is unique, reflecting different eras of development, different topography and natural features, and distinct neighborhood centers. Together, these areas provide a wide range of residential, civic, shopping, employment and recreational opportunities. Collectively, they contribute to a community of neighborhoods.

The following are some of the strengths and attributes that were identified as worthy of perpetuation and preservation:



- Residential**
- Very Low Density (0-<5 du/nra)*
 - Low Density (5-<10 du/nra)*
 - Low-Medium Density (10-<15 du/nra)*
 - Medium Density (15-<30 du/nra)*
- *du/nra = dwelling unit per net acre
- Commercial**
- Community
 - Neighborhood
 - Visitor
 - Mixed Use

- Industrial
- School
- Park
- Open Space
- Utility
- Government
- Trolley Station
- Cemetery
- Salt Works
- Low Density Residential or Open Space
- Historical / Institutional
- Fire Station
- Police Station
- Library
- Post Office
- Special Study Area





- Quiet and safe neighborhoods.
- Single-family homes mostly owner occupied.
- Affordable housing.
- Ethnically diverse community.
- Close knit neighborhoods.
- Feeling of "small town" community where there is no fear of letting children out to play.
- Good neighbors - less crime and fear.
- Recreational facilities and programs.
- Proximity to Otay River Valley and Tijuana River Valley.

OTAY MESA-NESTOR NEIGHBORHOODS

Otay Mesa-Nestor is comprised of several neighborhoods, each including one or more neighborhood centers or focal points, in addition to parks and schools. Some of these neighborhood centers have been identified as having revitalization potential or providing opportunities for enhancement, and are addressed by the Topics. Other existing neighborhood centers and unique areas are considered to be in healthier condition and contribute to the community's cultural and economic diversity and vitality. The centers are identified on the Community Vision map (**Figure 1**). The following is a brief description of the community's principal neighborhoods and their neighborhood centers.

Nestor

This older neighborhood is located between Interstate 5 (I-5) and Saturn Boulevard, and bordered by the Salt Ponds on the north and the Tijuana River Valley to the south. In addition to containing Nestor Town Center (Topic 2B) it includes several small neighborhood commercial centers. The portion of the neighborhood south of Leon and Tocayo Avenues retains a rural character by maintaining existing large lot residential development and equestrian uses.

Egger Highlands

Located west of Saturn Boulevard between the Salt Ponds and the Tijuana River Valley, Egger Highlands is the gateway to the City and the community from Imperial Beach. It includes Palm Avenue West (Topic 2C), which is the main commercial and circulation corridor in this part of the community, and has revitalization potential. The community's largest shopping centers, Southland Plaza and Coronado Square, are also located in this neighborhood.

Palm City

Palm City, historically the transportation hub for the community, is characterized by the variety of land uses located along the trolley corridor, including the community's two industrial parks. The proposed mixed use Palm City (Topic 2A) and Iris Avenue Mercado (Topic 2D) neighborhood centers will revitalize the areas of the community's two transit stations. The Southern Area Police Station is centrally located in this neighborhood.



Otay Mesa

This newer, primarily residential neighborhood, contains several smaller commercial centers including Palm Plaza and the Palm Ridge Shopping Center. A neighborhood commercial center is located at the intersection of Del Sol and Picador Boulevards. Montgomery-Waller Park, the Otay Mesa Branch Library, the City's Neighborhood Service Center and another shopping center form a civic and commercial focus in the vicinity of Coronado Avenue and Beyer Boulevard.

Although not specifically addressed by the plan Topics, the plan supports the established neighborhood centers by designating appropriate land uses and applying corresponding zoning. Continued development consistent with the planned land use is recommended in these areas.

COMMUNITY PLAN IMPLEMENTATION AND CITIZEN PARTICIPATION

It is intended that by focusing on the key community issues in a concise, topic-oriented format, that this Plan is an effective planning and communication tool for community improvement. The plan approach should not only facilitate plan implementation, but also foster community involvement. It provides strategies and direction for numerous community improvement projects. While not being able to fully control all the factors that will contribute to plan implementation such as private investment, public funding, and unforeseen social and economic trends, community members can use this Plan as a guide for future development. By prioritizing the topics, community members can begin working with the City, other agencies, and private interests to direct funding and revitalization resources to those areas of the community where they are needed most.

Another prevailing issue identified during the plan update process is the community members' perception that their voice, and the interests of their community, are not heard and considered as strongly as those of other communities. Through the formation of the Community Plan Implementation Team and the direction provided by this plan, community members can increase their involvement and commitment to improving their own community and improve their effectiveness in influencing local government and other forces that ultimately shape the quality of life in Otay Mesa-Nestor.

COMMUNITY PLAN IMPLEMENTATION TEAM

Issues

Community improvement recommendations contained in community plans frequently go unrealized. This is due in part because of poor communication and coordination within the City organization and because community-based organizations are often poorly connected with City Hall. Also, funding for implementation programs is almost always inadequate. Plan implementation has particularly been a problem in urbanized areas where most neighborhood improvement projects require services and expertise from a variety of City departments, outside agencies and community groups.



Strategies

Develop and put into effect a multi-disciplinary approach (a team comprised of City staff, community representatives, community planning members, business operators, students, and other agencies as needed) toward implementing the community plan.

The team shall be involved in implementing the visions, strategies and other recommendations contained in the maps, topics and appendices in this community plan.

The team shall create a community plan implementation work plan and assign priorities and develop a schedule to carry out the plan.

Foster public participation through focused outreach and education programs. Fully utilize the services provided by the Neighborhood Service Center as a community-City agencies liaison. Provide technical support to the community as needed. Represent the community's interest at City Hall.

The Team will ensure its commitment and accountability to the community by holding regular meetings, biannual community meetings, and issuing progress reports annually to the Planning Commission and City Council on the team's progress in implementing the community plan.

Responsibility

The City Manager, working with the community, shall be responsible for creating the Team. The Team shall have representatives from City departments as needed.

To ensure its long-term commitment, the City will strive to adequately staff the Team.

Schedule

Create the Team and commence community plan implementation immediately following plan adoption.





PLANNING CONTEXT

THE COMMUNITY PLANNING AREA

The Otay Mesa-Nestor Community is located within the southern region of the City, in what is generally referred to as the South Bay area. It is bounded on the north by the city of Chula Vista, and on the south by the Tijuana River Valley and the San Ysidro Communities. The city of Imperial Beach is on the west and the Otay Mesa community on the east.

The community extends about a mile and a half from north to south and four miles from east to west, and totals approximately 4,500 acres. Adoption of this update will expand the community planning area further north and west to include 740 acres of the Salt Ponds.

DEVELOPMENT AND PLANNING HISTORY

The community's planning history as part of the City of San Diego (City) began in 1957 when this unincorporated area was annexed to the City from the county of San Diego. In 1957 there were less than 1,000 housing units in the area. Shortly after annexation to the City, single-family residential subdivision development began. By the late 1960s, residential development had accelerated dramatically causing serious problems in supplying adequate public facilities in the Otay Mesa-Nestor and San Ysidro areas. In 1973, the City Council rezoned a number of vacant properties to a lower density to reduce deficiencies in, and future demand on, public facilities and services.

The City Council directed City staff to work with the then newly recognized Otay Mesa Community Planning Group in the preparation of a Community Plan. In February 1976, the City Council authorized expansion of the study area to include the Nestor Community, to consolidate planning efforts within the South Bay area. The first Otay Mesa-Nestor Community Plan was adopted in 1979 to serve as a comprehensive guide for development within the area through the ensuing 15 to 20 years.

Since the adoption of the 1979 Plan, there have been fifteen plan amendments varying from one-acre redesignations to a 320-acre southerly extension of the plan area boundary, which resulted in an adjustment to the Tijuana River Valley community planning area. The cumulative effect of the plan amendments was to permit 1,200-1,500 more residential units than had originally been designated in the 1979 Plan.

Many of the land use recommendations of the 1979 Plan, and its subsequent amendments, have been implemented and the community has generally developed according to plan. This updated Plan has considered existing and anticipated conditions which will influence future development, and includes recommendations for the expected final buildout and future redevelopment of the Otay Mesa-Nestor Community.



URBAN AND ENVIRONMENTAL SETTING

The Otay Mesa-Nestor Community is located in the southern portion of the Coastal Plain of San Diego County. The community is characterized by river valleys, steep slopes, mesas and hydrologic features including Nestor Creek and the salt evaporation ponds of southern San Diego Bay.

Otay and Tijuana River Valleys

Two river valleys, the Otay and the Tijuana, generally define the northern and southern boundaries, respectively, of the community. The valleys, which are characterized by wetlands and riparian habitats, are predominately influenced by seasonal rains and stream flow. Land uses in the fertile and productive valleys have included agriculture and mineral extraction. Development within the valleys is constrained by application of the Floodway Zone and the Floodplain Fringe Overlay Zone.

Sand and Gravel Operations

The Otay Valley riverbed has been a source of sand and gravel extraction for many years. Extraction operations existed in the vicinity of Beyer Boulevard. Terrace escarpments in the vicinity of Beyer Way, north of Montgomery High School, are currently being excavated. These operations have resulted in substantial landform alteration, scarring and loss of native vegetation on the valley's floor and southern slopes.

Steep Slopes and Mesas

Steep, north-facing slopes on the south side of the Otay River Valley approach 200 feet in height and are home to sensitive vegetation resources. Steep topography also occurs south of the Otay River Valley and north of Palm Avenue between Hollister Street and Beyer Way. Development on the slopes is constrained by topography and the Hillside Review Overlay Zone.

Contrasting with the valleys and steep bluffs are the community's level marine terraces and transitional areas. Elevations range from 25 to 100 feet within the western Nestor Terrace. Elevations from approximately 125 feet to 250 feet form a transition zone between the Nestor Terrace and the Otay Terrace, which lies east of the community and is greater than 400 feet in elevation. Mesa rims at the crest of the steep slopes, and high mesa ridgelines located throughout the eastern portion of the planning area offer excellent view opportunities in all directions.

Nestor Creek and the Salt Ponds

In addition to the two river valleys, Nestor Creek is a less significant, but still important hydrologic feature of the community. Nestor Creek flows generally aboveground in open channels from 30th Street westerly, meets the Otay River in the marshlands of the lower Otay River Valley, and then empties into San Diego Bay.



The salt evaporation ponds comprise the majority of the approximately 740-acre portion of the community located in San Diego Bay. Terrestrial-based uses, including the salt processing plant, auxiliary buildings, storage yards and vacant land, comprise the remainder of the area.

Development and Circulation Patterns

Otay Mesa-Nestor is an urbanized community that is primarily developed with residential land uses. Over 57 percent of the planning area (not including the Salt Ponds) is covered with residential land uses (approximately 17,000 housing units). In comparison, commercial and industrial land uses comprise only eight percent (five percent and three percent, respectively) of the plan area. Twenty percent of the planning area consists of schools, parks, transit and other public facilities. Vacant, undeveloped, agricultural and mineral extraction and processing uses comprise the remaining 15 percent of the planning area, and occur predominately in portions of the Otay and Tijuana River Valleys.

The community's circulation system includes three interstate freeways (I-5, I-805, I-905) that intersect in a grid pattern of local streets within the community. A light rail transit system connects the community to downtown San Diego and the Mexican border. Bus routes link the two transit stops at Palm Avenue and Iris Avenue to connect passengers to outlying areas.



PLAN ORGANIZATION

The Otay Mesa-Nestor Community Plan is comprised of the following three main components:

1. COMMUNITY VISION/COMMUNITY LAND USE MAP

The Community Vision Map and statements represent the future and describe the vision of an improved quality of community life that includes conservation of natural resources, adequate provision of public services and facilities, and revitalized neighborhoods. The Visions found at the beginning of each Topic or section, set the tone of the Plan and are the basis for the Plan's recommendations. The Vision map illustrates the general setting of the community relative to other South Bay communities and highlights its distinct existing and proposed neighborhood features.

The Community Land Use Map designates land uses for the entire community planning area. These land uses are consistent with the strategies and guidelines recommended in the Topic Sheets and the Appendix. The Commercial Land Use Designations and Residential Densities charts explain the predominant land use designations of the Land Use Map. The Street Classifications map designates community streets according to City standards.

The Community Land Use Map may be used as an independent document that conveys the community's basic characteristics, planned land uses, and vision for the future. Readers interested in learning more about the community including specific issues, strategies, and guidelines can refer to the Introduction, and the two other main plan components, the Topic Sheets and Appendix.

2. TOPIC SHEETS

Each Topic Sheet includes a discussion of the issues and provides strategies to implement the related community vision. Each Topic Sheet addresses either a geographic area within the community or a subject relevant to the entire community. Topics are grouped in chapters by subject. Most chapters address more than one Topic, although two chapters are single-Topic.

The format organizes categories of information in a similar outline on each of the Topic Sheets. The format allows flexible arrangement of individual map and graphic information. Each Topic Sheet contains all or some of the following categories of information:

- **Vision**

Vision statements represent community members' desires for a future improved quality of community life, relative to the particular Topic. Written in the future tense, they present an image of the community as it will be after the community plan



strategies, guidelines and recommendations have been implemented. Visions are either provided at the beginning of each Topic category when there is only one Vision for several sub-Topics (e.g., Community Facilities, Topic 4), or provided for individual sub-Topics, as appropriate (e.g., Palm City, Topic 2a).

- **Issues**

This category identifies the existing and potential future conditions that warrant attention and are the focus of this Plan. Issues can explore the range of conditions from significant problems requiring abatement or improvement to opportunities for enhancement.

- **Strategies**

Strategies respond to the items addressed in the Issues category. They are the recommendations for land use and physical improvement, provision of infrastructure and services, and development of neighborhood improvement programs.

- **Implementation Block**

The Implementation Block includes the following five sub-categories:

Responsibility

This category recommends the participation of the agencies, organizations or ad hoc groups that should be involved in the implementation of the strategies recommended in the particular Topic. Inclusion in this listing is based on areas of expertise, regulatory authority, ownership or business interest. This listing should be considered a guide; and as the implementation process for particular strategies evolves, additional or other more appropriate responsible parties may be identified. Community members and the Community Plan Implementation Team are always included in this category.

Funding

Most projects identified by the strategies in this Plan are unfunded. Except for a few cases where funds have been specifically identified, these recommendations identify potential funding sources and suggest funding strategies for Plan implementation. The potential sources may include a combination of City, other public agency and private funding sources.

Schedule

The implementation schedule shall be established by prioritization of all the plan strategies by the Community Plan Implementation Team and community members. Available or potential funding will be a consideration when establishing priorities. Except for projects or programs which are ongoing, or for which a schedule is identified, the recommendation is: "To be determined."



Land Use

Indicates the planned land use, which is designated on the Community Land Use map, and provides recommendations for interim, future or alternative land uses. Also provided are listings of discretionary permits or other actions required in conjunction with the planned land use, and references to other guidelines or policy documents which provide direction for development of particular sites.

Zoning

This category provides recommendations for future zoning, consistent with planned or future land uses, and identifies requirements or conditions for future application of recommended zones.

At the time this Plan was being prepared, the City of San Diego zoning code was being updated. Since new or revised citywide zone classifications were not adopted by the time this Plan was completed, proposed zoning was described by land use and development criteria rather than specifying a particular zone. Future rezonings should be based on selecting those zones that best match the prescribed criteria.

- **Guidelines**

Guidelines are provided in the Otay Valley Regional Park & Salt Ponds, Neighborhood Centers and Parks Topics. These Topics address anticipated or recommended physical site development. The guidelines may address land use, pedestrian and transit orientation, site planning, and architectural and landscape design associated with future project development.

- **Vicinity Maps**

Vicinity maps are provided in the geographically oriented Topics - the Otay Valley Regional Park & Salt Ponds, and Neighborhood Centers. They indicate the general Topic vicinity, which corresponds to the Topic areas shown on the Community Vision Map.

- **Reference Block**

Reference Blocks, located in the lower right corner of the first page of each Topic Sheet, refer the reader to related or supporting information located elsewhere in the Topic, in other related Topics, on the Community Vision map, or in the Appendix. References are not typically made within the Topic text.

3. APPENDIX

The Appendix contains generic information or recommendations applicable to the entire community or this plan update process, and specific detailed information referred to in the Topic Sheets. A complete list of Appendices is provided in the Index.



III. TOPICS

- 1 OTAY VALLEY REGIONAL PARK AND SALT PONDS**
- 2 NEIGHBORHOOD CENTERS**
- 3 HOUSING**
- 4 COMMUNITY FACILITIES**
- 5 PUBLIC SAFETY AND ENFORCEMENT**
- 6 TRANSPORTATION FACILITIES**



TRANSPORTATION FACILITIES



TOPIC 6 TRANSPORTATION FACILITIES

VISION

A safe, efficient, attractive, and environmentally sensitive transportation system consisting of vehicular, pedestrian, bicycle, and transit facilities will be provided to all who reside and conduct business in Otay Mesa-Nestor. Transportation improvement projects will enhance the community through the creative use of street lighting, public art, community signs and landscaping.

ISSUES

The community is served by a convenient grid-style street system, three accessible freeways, several bicycle routes and five bus routes which connect to the South Line Trolley. The San Diego Trolley is a regional light rail system that stops at two locations within the community.



Both Hollister Street south of Coronado Avenue, and Saturn Boulevard between Leon Avenue and Palm Avenue are not wide enough to accommodate projected traffic volumes. In addition, these streets have two below standard intersections; Saturn Boulevard at Palm Avenue, and Hollister Street at Coronado Avenue.

Over the course of the community's development, very little landscaping or streetscaping was designed into transportation projects. As a result, the community has only one half-mile of landscaped area along Del Sol Boulevard, thirty street trees along Palm Avenue, and a few street trees along Coronado Avenue.

Community members also report inadequate landscaping along the trolley right-of-way as compared to other jurisdictions. Other transit issues in the past have included bus service and conditions inferior to those elsewhere in the region. Although in recent years timed transfers have improved and newer buses have been added to the fleet, the community wants to ensure continued progress in this direction.

The bicycle system adopted in the 1979 Plan has never been completed. However, in response to regional goals to better recognize the aesthetic and cultural value of the San Diego Bay, efforts are underway to improve and finish various links of a regional bike system called the "Bayshore Bikeway." The Bayshore Bikeway currently takes bicyclists from Chula Vista, down along the Otay River Valley bike path, to the bike lane along Saturn Boulevard, then westwardly along the Palm Avenue bike lane to Imperial Beach.



STRATEGIES

- Widen Hollister Street to a four-lane collector street between Coronado Avenue and Tocayo Avenue to accommodate the projected traffic for this roadway. Coordinate this project with Caltrans' plans for improving the Hollister Street and Coronado Avenue intersection by adding a southbound to eastbound left-turn lane, and a southbound to westbound right-turn lane.
- Widen Saturn Boulevard to a four-lane collector street from Leon Avenue to Palm Avenue to accommodate the projected traffic for this roadway. Coordinate this project with Caltrans' plans to add the following improvements to the Palm Avenue and Saturn Boulevard intersection:
 - 1) A westbound to southbound left-turn lane.
 - 2) An extension of the length of the westbound to northbound right-turn lane.
 - 3) An eastbound to southbound right-turn lane.
 - 4) A southbound to westbound right-turn lane.



(The segment of Saturn Boulevard between Palm Avenue and Coronado Avenue is included in the City's Capital Improvement Program and funding is scheduled for FY 1999.)

- Improve traffic flow along Palm Avenue, Coronado Avenue, Beyer Boulevard, Beyer Way, and Picador Boulevard by coordinating the traffic signals with the City's Master Traffic Control System.
- Monitor bus service and conditions to ensure appropriate service and facilities equal to those elsewhere in the City of San Diego.
- Utilize remaining Palm Avenue Improvement project funds to install community identification signs at both ends of Palm Avenue.
- Incorporate landscaping, street lights, unique community identification signs, and public art in transportation Capital Improvement Projects.



- Strategically place additional street lights in the community. Utilize thematic streetlights in unique areas such as Nestor Town Center.
- Provide additional landscaping within the Trolley right-of-way.
- Seek City Council approval for site-specific weight restrictions in residential areas to minimize tractor trailer traffic and parking impacts within the community.
- Complete the Bicycle System Plan as outlined in **Appendix 6**.
- Study alternative routes for the Bayshore Bikeway to bypass the auto traffic on Palm Avenue. Coordinate this effort with the Otay Valley Regional Park Planning efforts and with the SANDAG Bayshore Bikeway Project. (See **Topic 1, Otay Valley Regional Park and Salt Ponds** for additional discussion on the Bayshore Bikeway.)

RESPONSIBILITY

Community Plan Implementation Team, community members, City departments including Community and Economic Development Department, Engineering and Capital Projects, and Transportation, CalTrans and MTDB.

FUNDING

Capital Improvement Project, Transnet, CDBG, Non-profit sources.

SCHEDULE

Hollister Street Improvement Project by year 2000. Improvements to Transit Plan beginning in 1996. Others to be determined.



Reference: Community Vision Map; Community Land Use Map;. Appendix 6, Transportation Facilities; Appendix B, Street Tree Plan.

APPENDIX 6 TRANSPORTATION FACILITIES



Street Classification with Future Traffic Volumes
Otay Mesa-Nestor Community Plan

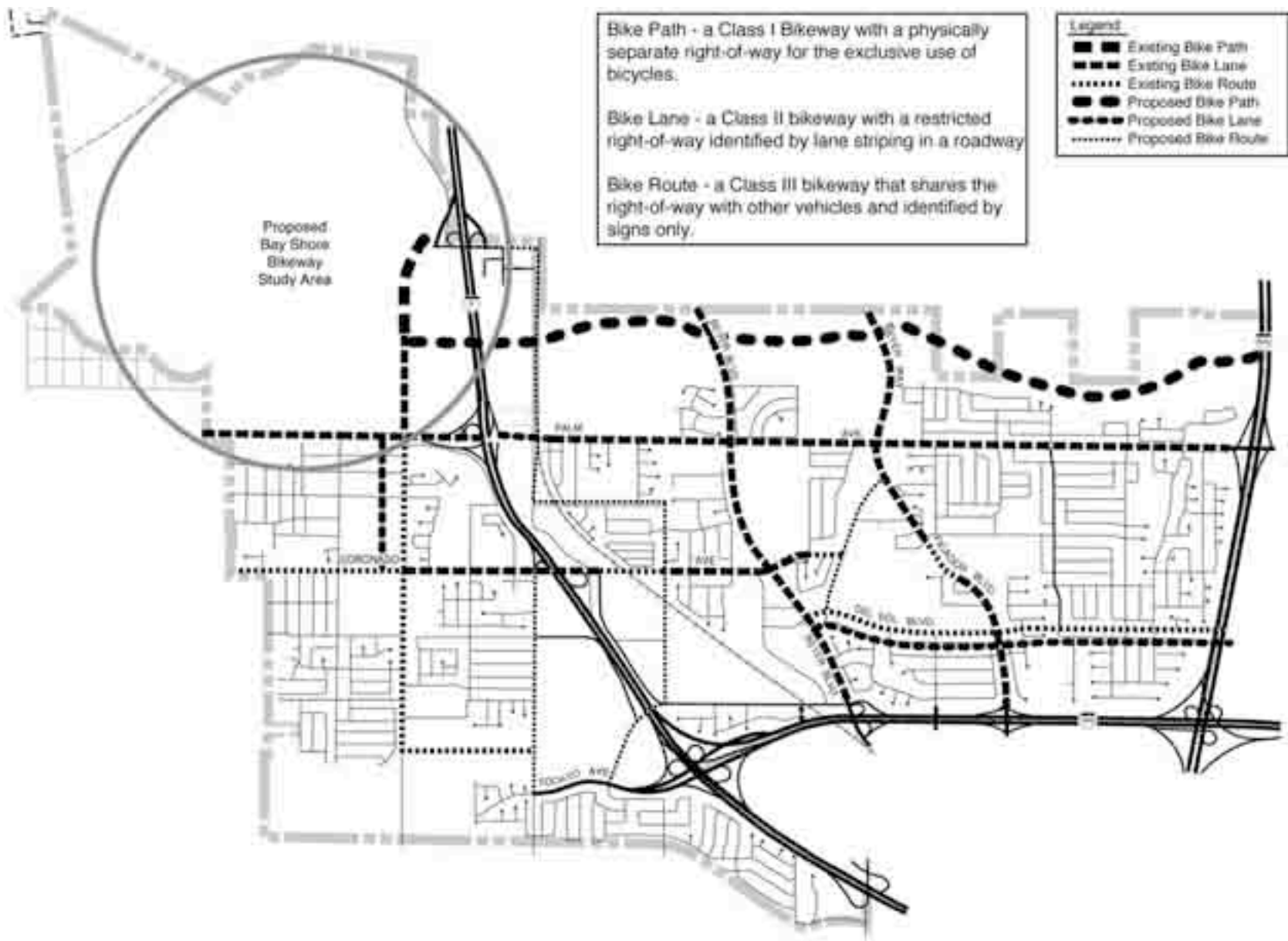
5

FIGURE





Intersection Level of Service
 Otay Mesa-Nestor Community Plan



APPENDIX D-1

INTERSECTION LOS WORKSHEETS – EXISTING CONDITIONS

Intersection

Int Delay, s/veh 12.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	9	32	58	272	458	9
Future Vol, veh/h	9	32	58	272	458	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	-	0	320
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	35	64	299	503	10

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	64	0	0	119	64
Stage 1	-	-	-	64	-
Stage 2	-	-	-	55	-
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	1538	-	0	877	1000
Stage 1	-	-	0	959	-
Stage 2	-	-	0	968	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1538	-	-	871	1000
Mov Cap-2 Maneuver	-	-	-	871	-
Stage 1	-	-	-	952	-
Stage 2	-	-	-	968	-

Approach

	EB	WB	SB
HCM Control Delay, s	1.6	0	14.5
HCM LOS			B

Minor Lane/Major Mvmt

	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1538	-	-	871	1000
HCM Lane V/C Ratio	0.006	-	-	0.578	0.01
HCM Control Delay (s)	7.4	0	-	14.6	8.6
HCM Lane LOS	A	A	-	B	A
HCM 95th %tile Q(veh)	0	-	-	3.8	0

Bella Mar
2: Main Street & I-5 NB Ramp

Existing Baseline
Timing Plan: AM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	468	299	415	428	25
Future Volume (veh/h)	12	468	299	415	428	25
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	13	520	332	461	476	28
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	29	895	689	584	567	505
Arrive On Green	0.02	0.48	0.37	0.37	0.32	0.32
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	13	520	332	461	476	28
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	0.4	10.1	6.8	13.0	12.5	0.6
Cycle Q Clear(g_c), s	0.4	10.1	6.8	13.0	12.5	0.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	29	895	689	584	567	505
V/C Ratio(X)	0.44	0.58	0.48	0.79	0.84	0.06
Avail Cap(c_a), veh/h	709	2223	1303	1105	1241	1105
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.5	9.5	12.2	14.1	15.9	11.9
Incr Delay (d2), s/veh	10.1	0.6	0.5	2.4	3.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	3.0	2.3	4.0	4.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.5	10.1	12.7	16.6	19.3	11.9
LnGrp LOS	C	B	B	B	B	B
Approach Vol, veh/h		533	793		504	
Approach Delay, s/veh		10.7	14.9		18.9	
Approach LOS		B	B		B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		29.1		21.1	5.5	23.6
Change Period (Y+Rc), s		5.1		5.1	* 4.7	5.1
Max Green Setting (Gmax), s		59.7		35.0	* 20	35.0
Max Q Clear Time (g_c+I1), s		12.1		14.5	2.4	15.0
Green Ext Time (p_c), s		3.5		1.5	0.0	3.5
Intersection Summary						
HCM 6th Ctrl Delay			14.8			
HCM 6th LOS			B			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Bella Mar
3: Hollister Street & Main Street

Existing Baseline
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	671	33	93	606	51	26	49	102	38	48	81
Future Volume (veh/h)	72	671	33	93	606	51	26	49	102	38	48	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	79	737	36	102	666	56	29	54	112	42	53	89
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	1284	63	134	1297	109	320	316	268	380	106	178
Arrive On Green	0.06	0.37	0.37	0.07	0.39	0.39	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	1781	3449	168	1781	3318	279	1246	1870	1585	1220	627	1053
Grp Volume(v), veh/h	79	380	393	102	356	366	29	54	112	42	0	142
Grp Sat Flow(s),veh/h/ln	1781	1777	1840	1781	1777	1820	1246	1870	1585	1220	0	1681
Q Serve(g_s), s	1.5	6.0	6.0	2.0	5.4	5.4	0.8	0.9	2.2	1.1	0.0	2.7
Cycle Q Clear(g_c), s	1.5	6.0	6.0	2.0	5.4	5.4	3.5	0.9	2.2	1.9	0.0	2.7
Prop In Lane	1.00		0.09	1.00		0.15	1.00		1.00	1.00		0.63
Lane Grp Cap(c), veh/h	100	662	685	134	695	712	320	316	268	380	0	284
V/C Ratio(X)	0.79	0.57	0.57	0.76	0.51	0.51	0.09	0.17	0.42	0.11	0.00	0.50
Avail Cap(c_a), veh/h	1114	2526	2616	1114	2526	2588	960	1276	1082	1007	0	1147
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	16.4	8.8	8.8	16.0	8.2	8.2	14.8	12.5	13.1	13.3	0.0	13.3
Incr Delay (d2), s/veh	12.6	0.8	0.8	8.7	0.6	0.6	0.1	0.3	1.0	0.1	0.0	1.4
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/lr	0.8	1.5	1.5	0.9	1.3	1.3	0.2	0.3	0.7	0.2	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.0	9.6	9.6	24.7	8.7	8.7	15.0	12.8	14.1	13.5	0.0	14.6
LnGrp LOS	C	A	A	C	A	A	B	B	B	B	A	B
Approach Vol, veh/h		852			824			195			184	
Approach Delay, s/veh		11.4			10.7			13.9			14.4	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	18.7		10.9	6.1	18.1		10.9				
Change Period (Y+Rc), s	3.5	5.0		5.0	3.5	5.0		5.0				
Max Green Setting (Gmax), s	22.0	50.0		24.0	22.0	50.0		24.0				
Max Q Clear Time (g_c+1), s	13.5	7.4		4.7	4.0	8.0		5.5				
Green Ext Time (p_c), s	0.1	4.7		0.8	0.2	5.1		0.6				

Intersection Summary

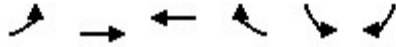
HCM 6th Ctrl Delay	11.6
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Bella Mar
4: Palm Avenue & I-5 SB Ramps

Existing Baseline
Timing Plan: AM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↗↗	↖	↗	↘↘
Traffic Volume (veh/h)	1	337	1109	110	153	1176
Future Volume (veh/h)	1	337	1109	110	153	1176
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	347	1143	0	158	1212
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	551	2417	1114		372	1446
Arrive On Green	0.31	0.68	0.31	0.00	0.21	0.21
Sat Flow, veh/h	1781	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	1	347	1143	0	158	1212
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1395
Q Serve(g_s), s	0.0	3.3	30.0	0.0	7.4	20.0
Cycle Q Clear(g_c), s	0.0	3.3	30.0	0.0	7.4	20.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	551	2417	1114		372	1446
V/C Ratio(X)	0.00	0.14	1.03		0.42	0.84
Avail Cap(c_a), veh/h	551	2417	1114		372	1446
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	22.8	5.4	32.8	0.0	32.9	19.6
Incr Delay (d2), s/veh	0.0	0.0	33.8	0.0	0.8	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/lr	0.0	1.0	17.3	0.0	3.1	11.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.8	5.4	66.6	0.0	33.6	24.2
LnGrp LOS	C	A	F		C	C
Approach Vol, veh/h		348	1143	A	1370	
Approach Delay, s/veh		5.5	66.6		25.3	
Approach LOS		A	E		C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	35.1	35.5			70.6	25.1
Change Period (Y+Rc), s	5.5	5.5			5.5	5.1
Max Green Setting (Gmax), s	29.6	30.0			65.1	20.0
Max Q Clear Time (g_c+1.2), s	12.0	32.0			5.3	22.0
Green Ext Time (p_c), s	0.0	0.0			2.3	0.0

Intersection Summary

HCM 6th Ctrl Delay	39.4
HCM 6th LOS	D

Notes

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

Bella Mar
5: I-5 NB Ramps & Palm Avenue

Existing Baseline
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑				
Traffic Volume (veh/h)	0	490	0	0	449	355	769	0	135	0	0	0
Future Volume (veh/h)	0	490	0	0	449	355	769	0	135	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	505	0	0	463	366	923	0	0			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1374	0	0	731	576	1274	669	0			
Arrive On Green	0.00	0.39	0.00	0.00	0.39	0.39	0.36	0.00	0.00			
Sat Flow, veh/h	0	3741	0	0	1983	1489	3563	1870	0			
Grp Volume(v), veh/h	0	505	0	0	435	394	923	0	0			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1602	1781	1870	0			
Q Serve(g_s), s	0.0	4.2	0.0	0.0	8.2	8.2	9.2	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	4.2	0.0	0.0	8.2	8.2	9.2	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		0.93	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1374	0	0	687	620	1274	669	0			
V/C Ratio(X)	0.00	0.37	0.00	0.00	0.63	0.64	0.72	0.00	0.00			
Avail Cap(c_a), veh/h	0	3460	0	0	1730	1560	2601	1366	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	9.0	0.0	0.0	10.2	10.2	11.4	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	1.0	1.1	0.8	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			
%ile BackOfQ(50%),veh/lr0.0		1.1	0.0	0.0	2.3	2.1	2.6	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	9.2	0.0	0.0	11.2	11.3	12.2	0.0	0.0			
LnGrp LOS	A	A	A	A	B	B	B	A	A			
Approach Vol, veh/h		505			829			923				
Approach Delay, s/veh		9.2			11.3			12.2				
Approach LOS		A			B			B				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		21.3				21.3		19.8				
Change Period (Y+Rc), s		5.4				5.4		5.1				
Max Green Setting (Gmax), s		40.0				40.0		30.0				
Max Q Clear Time (g_c+I1), s		6.2				10.2		11.2				
Green Ext Time (p_c), s		3.4				5.7		3.5				

Intersection Summary

HCM 6th Ctrl Delay	11.2
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Bella Mar
6: Hollister Street & Palm Avenue

Existing Baseline
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	108	388	37	25	567	28	84	76	43	19	63	88
Future Volume (veh/h)	108	388	37	25	567	28	84	76	43	19	63	88
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		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	119	426	41	27	623	31	92	84	47	21	69	97
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	191	1255	120	46	1039	52	344	254	142	377	159	223
Arrive On Green	0.11	0.38	0.38	0.03	0.30	0.30	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1781	3277	314	1781	3445	171	1220	1127	630	1259	703	989
Grp Volume(v), veh/h	119	230	237	27	321	333	92	0	131	21	0	166
Grp Sat Flow(s),veh/h/ln	1781	1777	1814	1781	1777	1840	1220	0	1757	1259	0	1692
Q Serve(g_s), s	2.7	3.8	3.9	0.6	6.4	6.5	2.9	0.0	2.6	0.6	0.0	3.5
Cycle Q Clear(g_c), s	2.7	3.8	3.9	0.6	6.4	6.5	6.5	0.0	2.6	3.2	0.0	3.5
Prop In Lane	1.00		0.17	1.00		0.09	1.00		0.36	1.00		0.58
Lane Grp Cap(c), veh/h	191	681	695	46	536	555	344	0	396	377	0	382
V/C Ratio(X)	0.62	0.34	0.34	0.59	0.60	0.60	0.27	0.00	0.33	0.06	0.00	0.44
Avail Cap(c_a), veh/h	1277	2582	2635	1277	2548	2638	1235	0	1679	1297	0	1618
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	17.9	9.1	9.2	20.2	12.5	12.5	16.7	0.0	13.6	14.9	0.0	13.9
Incr Delay (d2), s/veh	3.3	0.3	0.3	11.4	1.1	1.0	0.4	0.0	0.5	0.1	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.1	1.1	0.4	2.0	2.1	0.7	0.0	0.9	0.1	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.1	9.4	9.4	31.6	13.5	13.5	17.1	0.0	14.0	15.0	0.0	14.7
LnGrp LOS	C	A	A	C	B	B	B	A	B	B	A	B
Approach Vol, veh/h		586			681			223				187
Approach Delay, s/veh		11.8			14.2			15.3				14.7
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	22.0		14.3	8.9	18.6		14.3				
Change Period (Y+Rc), s	4.4	* 6		4.9	4.4	6.0		4.9				
Max Green Setting (Gmax), s	30.0	* 61		40.0	30.0	60.0		40.0				
Max Q Clear Time (g_c+I), s	12.6	5.9		5.5	4.7	8.5		8.5				
Green Ext Time (p_c), s	0.0	2.8		1.1	0.3	4.2		1.1				

Intersection Summary

HCM 6th Ctrl Delay	13.6
HCM 6th LOS	B

Notes

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

Intersection

Int Delay, s/veh 20.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↕	↕	↕
Traffic Vol, veh/h	32	103	44	537	557	14
Future Vol, veh/h	32	103	44	537	557	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	150	0	320
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	111	47	577	599	15

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	47	0	0	226	47
Stage 1	-	-	-	47	-
Stage 2	-	-	-	179	-
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	1560	-	0	762	1022
Stage 1	-	-	0	975	-
Stage 2	-	-	0	852	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1560	-	-	744	1022
Mov Cap-2 Maneuver	-	-	-	744	-
Stage 1	-	-	-	953	-
Stage 2	-	-	-	852	-

Approach

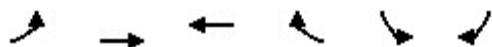
	EB	WB	SB
HCM Control Delay, s	1.7	0	26.2
HCM LOS			D

Minor Lane/Major Mvmt

	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1560	-	-	744	1022
HCM Lane V/C Ratio	0.022	-	-	0.805	0.015
HCM Control Delay (s)	7.4	0	-	26.6	8.6
HCM Lane LOS	A	A	-	D	A
HCM 95th %tile Q(veh)	0.1	-	-	8.4	0

Bella Mar
2: Main Street & I-5 NB Ramp

Existing Baseline
Timing Plan: PM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	641	537	498	399	26
Future Volume (veh/h)	22	641	537	498	399	26
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	24	689	577	535	429	28
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	49	998	790	670	509	453
Arrive On Green	0.03	0.53	0.42	0.42	0.29	0.29
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	24	689	577	535	429	28
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	0.7	15.4	14.5	16.6	12.8	0.7
Cycle Q Clear(g_c), s	0.7	15.4	14.5	16.6	12.8	0.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	49	998	790	670	509	453
V/C Ratio(X)	0.48	0.69	0.73	0.80	0.84	0.06
Avail Cap(c_a), veh/h	631	1978	1160	983	1105	983
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.0	9.7	13.6	14.2	19.0	14.7
Incr Delay (d2), s/veh	7.2	0.9	1.3	3.0	3.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	4.6	5.0	5.1	5.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.2	10.6	14.9	17.2	22.9	14.7
LnGrp LOS	C	B	B	B	C	B
Approach Vol, veh/h		713	1112		457	
Approach Delay, s/veh		11.4	16.0		22.4	
Approach LOS		B	B		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		35.2		21.2	6.3	28.9
Change Period (Y+Rc), s		5.1		5.1	* 4.7	5.1
Max Green Setting (Gmax), s		59.7		35.0	* 20	35.0
Max Q Clear Time (g_c+I1), s		17.4		14.8	2.7	18.6
Green Ext Time (p_c), s		5.1		1.3	0.0	5.2
Intersection Summary						
HCM 6th Ctrl Delay			15.8			
HCM 6th LOS			B			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Bella Mar
3: Hollister Street & Main Street

Existing Baseline
Timing Plan: PM Peak Period



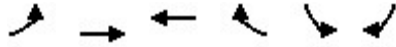
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	857	76	157	789	53	43	72	122	58	82	127
Future Volume (veh/h)	61	857	76	157	789	53	43	72	122	58	82	127
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	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	942	84	173	867	58	47	79	134	64	90	140
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	87	1720	153	213	2000	134	169	372	315	277	131	204
Arrive On Green	0.05	0.52	0.52	0.12	0.59	0.59	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1781	3300	294	1781	3380	226	1151	1870	1585	1168	660	1026
Grp Volume(v), veh/h	67	507	519	173	456	469	47	79	134	64	0	230
Grp Sat Flow(s),veh/h/ln	1781	1777	1817	1781	1777	1830	1151	1870	1585	1168	0	1686
Q Serve(g_s), s	3.1	16.1	16.1	8.0	11.8	11.8	3.3	3.0	6.2	4.1	0.0	10.6
Cycle Q Clear(g_c), s	3.1	16.1	16.1	8.0	11.8	11.8	14.0	3.0	6.2	7.0	0.0	10.6
Prop In Lane	1.00		0.16	1.00		0.12	1.00		1.00	1.00		0.61
Lane Grp Cap(c), veh/h	87	926	947	213	1051	1082	169	372	315	277	0	335
V/C Ratio(X)	0.77	0.55	0.55	0.81	0.43	0.43	0.28	0.21	0.43	0.23	0.00	0.69
Avail Cap(c_a), veh/h	382	926	947	382	1051	1082	310	601	509	420	0	542
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)	0.61	0.61	0.61	1.00	1.00	1.00	0.96	0.96	0.96	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.5	13.5	13.5	36.1	9.4	9.4	37.7	28.2	29.5	31.1	0.0	31.2
Incr Delay (d2), s/veh	8.3	1.4	1.4	7.3	1.3	1.3	0.9	0.3	0.9	0.4	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	5.9	6.1	3.7	4.2	4.3	0.9	1.3	2.4	1.1	0.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.7	14.9	14.9	43.4	10.7	10.7	38.6	28.4	30.3	31.5	0.0	33.7
LnGrp LOS	D	B	B	D	B	B	D	C	C	C	A	C
Approach Vol, veh/h		1093			1098			260			294	
Approach Delay, s/veh		16.9			15.9			31.2			33.3	
Approach LOS		B			B			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	54.7		21.7	13.5	48.8		21.7				
Change Period (Y+Rc), s	3.5	5.0		5.0	3.5	5.0		5.0				
Max Green Setting (Gmax), s	18.0	25.5		27.0	18.0	25.5		27.0				
Max Q Clear Time (g_c+1), s	15.1	13.8		12.6	10.0	18.1		16.0				
Green Ext Time (p_c), s	0.1	4.3		1.3	0.3	3.6		0.7				

Intersection Summary

HCM 6th Ctrl Delay		19.6	
HCM 6th LOS		B	

Bella Mar
4: Palm Avenue & I-5 SB Ramps

Existing Baseline
Timing Plan: PM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↗	↖	↖	↖
Traffic Volume (veh/h)	1	400	896	109	353	1556
Future Volume (veh/h)	1	400	896	109	353	1556
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	426	953	0	376	1655
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	296	1912	1099		608	1416
Arrive On Green	0.17	0.54	0.31	0.00	0.34	0.34
Sat Flow, veh/h	1781	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	1	426	953	0	376	1655
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1395
Q Serve(g_s), s	0.0	5.5	22.2	0.0	15.5	30.0
Cycle Q Clear(g_c), s	0.0	5.5	22.2	0.0	15.5	30.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	296	1912	1099		608	1416
V/C Ratio(X)	0.00	0.22	0.87		0.62	1.17
Avail Cap(c_a), veh/h	296	2026	1213		608	1416
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	30.6	10.7	28.6	0.0	24.2	21.6
Incr Delay (d2), s/veh	0.0	0.1	6.4	0.0	1.9	84.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/lr	0.0	1.9	9.8	0.0	6.4	29.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	30.6	10.7	35.0	0.0	26.1	105.6
LnGrp LOS	C	B	D		C	F
Approach Vol, veh/h		427	953	A	2031	
Approach Delay, s/veh		10.8	35.0		90.9	
Approach LOS		B	D		F	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	30.1	32.7			52.8	35.1
Change Period (Y+Rc), s	5.5	5.5			5.5	5.1
Max Green Setting (Gmax), s	14.6	30.0			50.1	30.0
Max Q Clear Time (g_c+1/2C), s	12.0	24.2			7.5	32.0
Green Ext Time (p_c), s	0.0	2.9			2.9	0.0

Intersection Summary

HCM 6th Ctrl Delay	65.3
HCM 6th LOS	E

Notes

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

Bella Mar
5: I-5 NB Ramps & Palm Avenue

Existing Baseline
Timing Plan: PM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑				
Traffic Volume (veh/h)	0	767	0	0	491	226	466	12	104	0	0	0
Future Volume (veh/h)	0	767	0	0	491	226	466	12	104	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	825	0	0	528	243	313	276	112			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1410	0	0	939	431	579	411	167			
Arrive On Green	0.00	0.40	0.00	0.00	0.40	0.40	0.33	0.33	0.33			
Sat Flow, veh/h	0	3741	0	0	2460	1085	1781	1265	513			
Grp Volume(v), veh/h	0	825	0	0	396	375	313	0	388			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1675	1781	0	1778			
Q Serve(g_s), s	0.0	6.9	0.0	0.0	6.5	6.6	5.4	0.0	7.1			
Cycle Q Clear(g_c), s	0.0	6.9	0.0	0.0	6.5	6.6	5.4	0.0	7.1			
Prop In Lane	0.00		0.00	0.00		0.65	1.00		0.29			
Lane Grp Cap(c), veh/h	0	1410	0	0	705	664	579	0	578			
V/C Ratio(X)	0.00	0.59	0.00	0.00	0.56	0.56	0.54	0.00	0.67			
Avail Cap(c_a), veh/h	0	3765	0	0	1883	1775	1415	0	1413			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	8.9	0.0	0.0	8.8	8.9	10.4	0.0	11.0			
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.7	0.8	0.8	0.0	1.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/lr0.0		1.7	0.0	0.0	1.6	1.6	1.5	0.0	2.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	9.3	0.0	0.0	9.5	9.6	11.2	0.0	12.4			
LnGrp LOS	A	A	A	A	A	A	B	A	B			
Approach Vol, veh/h		825			771			701				
Approach Delay, s/veh		9.3			9.6			11.8				
Approach LOS		A			A			B				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		20.4				20.4		17.4				
Change Period (Y+Rc), s		5.4				5.4		5.1				
Max Green Setting (Gmax), s		40.0				40.0		30.0				
Max Q Clear Time (g_c+I1), s		8.9				8.6		9.1				
Green Ext Time (p_c), s		6.1				5.1		3.2				

Intersection Summary

HCM 6th Ctrl Delay	10.2
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Bella Mar
6: Hollister Street & Palm Avenue

Existing Baseline
Timing Plan: PM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	586	83	25	429	33	77	73	39	36	100	198
Future Volume (veh/h)	120	586	83	25	429	33	77	73	39	36	100	198
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	128	623	88	27	456	35	82	78	41	38	106	211
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	193	1006	142	46	800	61	313	350	184	486	169	337
Arrive On Green	0.11	0.32	0.32	0.03	0.24	0.24	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1781	3127	441	1781	3345	256	1063	1154	607	1273	559	1112
Grp Volume(v), veh/h	128	354	357	27	242	249	82	0	119	38	0	317
Grp Sat Flow(s),veh/h/ln	1781	1777	1791	1781	1777	1824	1063	0	1761	1273	0	1670
Q Serve(g_s), s	3.0	7.4	7.4	0.7	5.2	5.3	3.1	0.0	2.2	1.0	0.0	7.1
Cycle Q Clear(g_c), s	3.0	7.4	7.4	0.7	5.2	5.3	10.3	0.0	2.2	3.2	0.0	7.1
Prop In Lane	1.00		0.25	1.00		0.14	1.00		0.34	1.00		0.67
Lane Grp Cap(c), veh/h	193	571	576	46	425	436	313	0	534	486	0	506
V/C Ratio(X)	0.66	0.62	0.62	0.59	0.57	0.57	0.26	0.00	0.22	0.08	0.00	0.63
Avail Cap(c_a), veh/h	1221	2468	2488	1221	2436	2501	962	0	1610	1264	0	1527
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(l)	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	18.8	12.6	12.6	21.1	14.7	14.7	17.5	0.0	11.4	12.6	0.0	13.1
Incr Delay (d2), s/veh	3.9	1.1	1.1	11.7	1.2	1.2	0.4	0.0	0.2	0.1	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	2.3	2.4	0.4	1.8	1.9	0.7	0.0	0.7	0.2	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.6	13.7	13.7	32.8	15.9	15.9	18.0	0.0	11.6	12.7	0.0	14.4
LnGrp LOS	C	B	B	C	B	B	B	A	B	B	A	B
Approach Vol, veh/h		839			518			201			355	
Approach Delay, s/veh		15.0			16.7			14.2			14.2	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	20.1		18.2	9.1	16.5		18.2				
Change Period (Y+Rc), s	4.4	* 6		4.9	4.4	6.0		4.9				
Max Green Setting (Gmax), s	30.0	* 61		40.0	30.0	60.0		40.0				
Max Q Clear Time (g_c+1), s	12.7	9.4		9.1	5.0	7.3		12.3				
Green Ext Time (p_c), s	0.0	4.7		2.2	0.3	3.0		1.0				

Intersection Summary

HCM 6th Ctrl Delay	15.3
HCM 6th LOS	B

Notes

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

APPENDIX D-2

INTERSECTION LOS WORKSHEETS – OPENING YEAR (2021) CONDITIONS

Intersection

Int Delay, s/veh 15

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	9	33	59	284	542	9
Future Vol, veh/h	9	33	59	284	542	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	-	0	320
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	36	65	312	596	10

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	65	0	0	121	65
Stage 1	-	-	-	65	-
Stage 2	-	-	-	56	-
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	1537	-	0	874	999
Stage 1	-	-	0	958	-
Stage 2	-	-	0	967	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1537	-	-	868	999
Mov Cap-2 Maneuver	-	-	-	868	-
Stage 1	-	-	-	951	-
Stage 2	-	-	-	967	-

Approach

	EB	WB	SB
HCM Control Delay, s	1.6	0	17.6
HCM LOS			C

Minor Lane/Major Mvmt

	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1537	-	-	868	999
HCM Lane V/C Ratio	0.006	-	-	0.686	0.01
HCM Control Delay (s)	7.4	0	-	17.7	8.6
HCM Lane LOS	A	A	-	C	A
HCM 95th %tile Q(veh)	0	-	-	5.6	0

Bella Mar
2: Main Street & I-5 NB Ramp

Near Term Baseline
Timing Plan: AM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	552	312	438	465	25
Future Volume (veh/h)	12	552	312	438	465	25
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	13	613	347	487	517	28
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	29	895	706	598	600	534
Arrive On Green	0.02	0.48	0.38	0.38	0.34	0.34
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	13	613	347	487	517	28
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	0.4	14.1	7.8	15.3	15.0	0.7
Cycle Q Clear(g_c), s	0.4	14.1	7.8	15.3	15.0	0.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	29	895	706	598	600	534
V/C Ratio(X)	0.45	0.68	0.49	0.81	0.86	0.05
Avail Cap(c_a), veh/h	644	2019	1184	1003	1128	1003
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	11.2	13.2	15.5	17.1	12.4
Incr Delay (d2), s/veh	10.3	0.9	0.5	2.8	3.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.5	2.8	4.8	5.6	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	37.3	12.1	13.7	18.2	20.9	12.4
LnGrp LOS	D	B	B	B	C	B
Approach Vol, veh/h		626	834		545	
Approach Delay, s/veh		12.6	16.3		20.5	
Approach LOS		B	B		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		31.6		23.7	5.6	26.0
Change Period (Y+Rc), s		5.1		5.1	* 4.7	5.1
Max Green Setting (Gmax), s		59.7		35.0	* 20	35.0
Max Q Clear Time (g_c+I1), s		16.1		17.0	2.4	17.3
Green Ext Time (p_c), s		4.3		1.6	0.0	3.6
Intersection Summary						
HCM 6th Ctrl Delay			16.3			
HCM 6th LOS			B			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Bella Mar
3: Hollister Street & Main Street

Near Term Baseline
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗	↖	↗	↖	↗
Traffic Volume (veh/h)	78	829	36	104	677	59	28	53	121	54	52	87
Future Volume (veh/h)	78	829	36	104	677	59	28	53	121	54	52	87
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	86	911	40	114	744	65	31	58	133	59	57	96
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	112	1449	64	152	1456	127	282	320	271	346	107	180
Arrive On Green	0.06	0.42	0.42	0.09	0.44	0.44	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	1781	3468	152	1781	3306	289	1234	1870	1585	1192	626	1054
Grp Volume(v), veh/h	86	467	484	114	400	409	31	58	133	59	0	153
Grp Sat Flow(s),veh/h/ln	1781	1777	1843	1781	1777	1818	1234	1870	1585	1192	0	1681
Q Serve(g_s), s	2.0	8.6	8.6	2.6	6.7	6.7	1.0	1.1	3.1	1.8	0.0	3.4
Cycle Q Clear(g_c), s	2.0	8.6	8.6	2.6	6.7	6.7	4.4	1.1	3.1	2.9	0.0	3.4
Prop In Lane	1.00		0.08	1.00		0.16	1.00		1.00	1.00		0.63
Lane Grp Cap(c), veh/h	112	742	770	152	782	801	282	320	271	346	0	287
V/C Ratio(X)	0.77	0.63	0.63	0.75	0.51	0.51	0.11	0.18	0.49	0.17	0.00	0.53
Avail Cap(c_a), veh/h	947	2146	2226	947	2146	2196	787	1084	919	833	0	974
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(l)	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	19.1	9.5	9.5	18.5	8.4	8.4	17.7	14.7	15.5	15.9	0.0	15.7
Incr Delay (d2), s/veh	10.6	0.9	0.9	7.3	0.5	0.5	0.2	0.3	1.4	0.2	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.3	2.4	1.2	1.7	1.7	0.2	0.4	1.0	0.4	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.7	10.4	10.4	25.8	8.9	8.9	17.8	15.0	16.9	16.2	0.0	17.2
LnGrp LOS	C	B	B	C	A	A	B	B	B	B	A	B
Approach Vol, veh/h		1037			923			222			212	
Approach Delay, s/veh		12.0			11.0			16.5			16.9	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.1	23.2		12.1	7.0	22.3		12.1				
Change Period (Y+Rc), s	3.5	5.0		5.0	3.5	5.0		5.0				
Max Green Setting (Gmax), s	22.0	50.0		24.0	22.0	50.0		24.0				
Max Q Clear Time (g_c+14), s	14.0	8.7		5.4	4.6	10.6		6.4				
Green Ext Time (p_c), s	0.2	5.4		1.0	0.2	6.7		0.7				

Intersection Summary

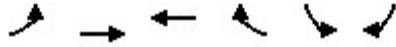
HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Bella Mar
4: Palm Avenue & I-5 SB Ramps

Near Term Baseline
Timing Plan: AM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↗↗	↖	↖	↖↖
Traffic Volume (veh/h)	0	348	1145	114	158	1214
Future Volume (veh/h)	0	348	1145	114	158	1214
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	359	1180	0	163	1252
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	558	2417	1114		372	1458
Arrive On Green	0.00	0.68	0.31	0.00	0.21	0.21
Sat Flow, veh/h	1781	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	0	359	1180	0	163	1252
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1395
Q Serve(g_s), s	0.0	3.4	30.0	0.0	7.6	20.0
Cycle Q Clear(g_c), s	0.0	3.4	30.0	0.0	7.6	20.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	558	2417	1114		372	1458
V/C Ratio(X)	0.00	0.15	1.06		0.44	0.86
Avail Cap(c_a), veh/h	558	2417	1114		372	1458
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.4	32.8	0.0	33.0	19.8
Incr Delay (d2), s/veh	0.0	0.0	44.1	0.0	0.8	5.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/lr	0.0	1.0	18.9	0.0	3.3	11.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	5.5	77.0	0.0	33.8	25.2
LnGrp LOS	A	A	F		C	C
Approach Vol, veh/h		359	1180	A	1415	
Approach Delay, s/veh		5.5	77.0		26.2	
Approach LOS		A	E		C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	35.1	35.5			70.6	25.1
Change Period (Y+Rc), s	5.1	5.5			5.5	5.1
Max Green Setting (Gmax), s	30.0	30.0			65.1	20.0
Max Q Clear Time (g_c+10), s	10.0	32.0			5.4	22.0
Green Ext Time (p_c), s	0.0	0.0			2.4	0.0

Intersection Summary

HCM 6th Ctrl Delay	44.0
HCM 6th LOS	D

Notes

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

Bella Mar
5: I-5 NB Ramps & Palm Avenue

Near Term Baseline
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑				
Traffic Volume (veh/h)	0	506	0	0	464	366	794	0	139	0	0	0
Future Volume (veh/h)	0	506	0	0	464	366	794	0	139	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	522	0	0	478	377	952	0	0			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1390	0	0	740	582	1293	679	0			
Arrive On Green	0.00	0.39	0.00	0.00	0.39	0.39	0.36	0.00	0.00			
Sat Flow, veh/h	0	3741	0	0	1984	1488	3563	1870	0			
Grp Volume(v), veh/h	0	522	0	0	449	406	952	0	0			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1602	1781	1870	0			
Q Serve(g_s), s	0.0	4.5	0.0	0.0	8.8	8.8	9.9	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	4.5	0.0	0.0	8.8	8.8	9.9	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		0.93	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1390	0	0	695	627	1293	679	0			
V/C Ratio(X)	0.00	0.38	0.00	0.00	0.65	0.65	0.74	0.00	0.00			
Avail Cap(c_a), veh/h	0	3329	0	0	1665	1501	2503	1314	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	9.3	0.0	0.0	10.6	10.6	11.8	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	1.0	1.1	0.8	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			
%ile BackOfQ(50%),veh/lr0.0	0.0	1.2	0.0	0.0	2.5	2.3	2.9	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	9.4	0.0	0.0	11.6	11.7	12.7	0.0	0.0			
LnGrp LOS	A	A	A	A	B	B	B	A	A			
Approach Vol, veh/h		522			855			952				
Approach Delay, s/veh		9.4			11.7			12.7				
Approach LOS		A			B			B				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		22.1				22.1		20.6				
Change Period (Y+Rc), s		5.4				5.4		5.1				
Max Green Setting (Gmax), s		40.0				40.0		30.0				
Max Q Clear Time (g_c+I1), s		6.5				10.8		11.9				
Green Ext Time (p_c), s		3.5				5.9		3.6				

Intersection Summary

HCM 6th Ctrl Delay	11.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Bella Mar
6: Hollister Street & Palm Avenue

Near Term Baseline
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	415	40	27	607	30	90	92	46	20	71	94
Future Volume (veh/h)	116	415	40	27	607	30	90	92	46	20	71	94
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		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	127	456	44	30	667	33	99	101	51	22	78	103
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	190	1279	123	50	1074	53	339	280	141	368	175	230
Arrive On Green	0.11	0.39	0.39	0.03	0.31	0.31	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1781	3276	315	1781	3446	170	1203	1172	592	1235	731	965
Grp Volume(v), veh/h	127	247	253	30	344	356	99	0	152	22	0	181
Grp Sat Flow(s),veh/h/ln	1781	1777	1814	1781	1777	1840	1203	0	1764	1235	0	1697
Q Serve(g_s), s	3.1	4.4	4.4	0.7	7.4	7.4	3.4	0.0	3.2	0.7	0.0	4.1
Cycle Q Clear(g_c), s	3.1	4.4	4.4	0.7	7.4	7.4	7.5	0.0	3.2	3.9	0.0	4.1
Prop In Lane	1.00		0.17	1.00		0.09	1.00		0.34	1.00		0.57
Lane Grp Cap(c), veh/h	190	694	708	50	554	573	339	0	421	368	0	405
V/C Ratio(X)	0.67	0.36	0.36	0.60	0.62	0.62	0.29	0.00	0.36	0.06	0.00	0.45
Avail Cap(c_a), veh/h	1198	2422	2473	1198	2390	2475	1131	0	1582	1181	0	1522
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(l)	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	19.2	9.6	9.6	21.4	13.1	13.1	17.6	0.0	14.1	15.8	0.0	14.5
Incr Delay (d2), s/veh	4.0	0.3	0.3	11.3	1.1	1.1	0.5	0.0	0.5	0.1	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.3	1.3	0.4	2.4	2.5	0.9	0.0	1.1	0.2	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.2	9.9	9.9	32.7	14.2	14.2	18.1	0.0	14.7	15.8	0.0	15.2
LnGrp LOS	C	A	A	C	B	B	B	A	B	B	A	B
Approach Vol, veh/h		627			730			251			203	
Approach Delay, s/veh		12.6			15.0			16.0			15.3	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.6	23.4		15.5	9.2	19.9		15.5				
Change Period (Y+Rc), s	4.4	* 6		4.9	4.4	6.0		4.9				
Max Green Setting (Gmax), s	30.0	* 61		40.0	30.0	60.0		40.0				
Max Q Clear Time (g_c+1), s	12.5	6.4		6.1	5.1	9.4		9.5				
Green Ext Time (p_c), s	0.0	3.0		1.2	0.3	4.5		1.2				

Intersection Summary

HCM 6th Ctrl Delay	14.3
HCM 6th LOS	B

Notes

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

Intersection

Int Delay, s/veh 24.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↖	↗
Traffic Vol, veh/h	33	105	45	577	588	14
Future Vol, veh/h	33	105	45	577	588	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	150	0	320
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	113	48	620	632	15

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	48	0	-	0	231
Stage 1	-	-	-	-	48
Stage 2	-	-	-	-	183
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1559	-	-	0	757
Stage 1	-	-	-	0	974
Stage 2	-	-	-	0	848
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1559	-	-	-	739
Mov Cap-2 Maneuver	-	-	-	-	739
Stage 1	-	-	-	-	951
Stage 2	-	-	-	-	848

Approach

	EB	WB	SB
HCM Control Delay, s	1.8	0	31
HCM LOS			D

Minor Lane/Major Mvmt

	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1559	-	-	739	1021
HCM Lane V/C Ratio	0.023	-	-	0.856	0.015
HCM Control Delay (s)	7.4	0	-	31.5	8.6
HCM Lane LOS	A	A	-	D	A
HCM 95th %tile Q(veh)	0.1	-	-	10.1	0

Bella Mar
2: Main Street & I-5 NB Ramp

Near Term Baseline
Timing Plan: PM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	673	577	581	415	26
Future Volume (veh/h)	22	673	577	581	415	26
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	24	724	620	625	446	28
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	48	1037	851	721	515	458
Arrive On Green	0.03	0.55	0.46	0.46	0.29	0.29
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	24	724	620	625	446	28
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	0.9	18.3	17.6	23.1	15.5	0.8
Cycle Q Clear(g_c), s	0.9	18.3	17.6	23.1	15.5	0.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	48	1037	851	721	515	458
V/C Ratio(X)	0.50	0.70	0.73	0.87	0.87	0.06
Avail Cap(c_a), veh/h	547	1714	1005	852	957	852
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.3	10.6	14.5	16.0	22.0	16.8
Incr Delay (d2), s/veh	7.8	0.9	2.2	8.3	4.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	5.8	6.6	8.4	6.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.0	11.4	16.7	24.2	26.5	16.8
LnGrp LOS	D	B	B	C	C	B
Approach Vol, veh/h		748	1245		474	
Approach Delay, s/veh		12.3	20.5		25.9	
Approach LOS		B	C		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		41.2		23.9	6.5	34.8
Change Period (Y+Rc), s		5.1		5.1	* 4.7	5.1
Max Green Setting (Gmax), s		59.7		35.0	* 20	35.0
Max Q Clear Time (g_c+I1), s		20.3		17.5	2.9	25.1
Green Ext Time (p_c), s		5.5		1.4	0.0	4.5
Intersection Summary						
HCM 6th Ctrl Delay			19.0			
HCM 6th LOS			B			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Bella Mar
3: Hollister Street & Main Street

Near Term Baseline
Timing Plan: PM Peak Period



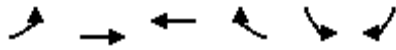
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗	↗	↖	↗	
Traffic Volume (veh/h)	66	956	82	180	959	70	46	78	139	70	88	137
Future Volume (veh/h)	66	956	82	180	959	70	46	78	139	70	88	137
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		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		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	73	1051	90	198	1054	77	51	86	153	77	97	151
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	95	1632	140	239	1924	141	173	398	337	285	140	218
Arrive On Green	0.05	0.49	0.49	0.13	0.57	0.57	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1781	3313	284	1781	3358	245	1132	1870	1585	1141	659	1026
Grp Volume(v), veh/h	73	564	577	198	558	573	51	86	153	77	0	248
Grp Sat Flow(s),veh/h/ln	1781	1777	1819	1781	1777	1826	1132	1870	1585	1141	0	1686
Q Serve(g_s), s	3.4	19.8	19.8	9.1	16.4	16.4	3.7	3.2	7.1	5.0	0.0	11.4
Cycle Q Clear(g_c), s	3.4	19.8	19.8	9.1	16.4	16.4	15.1	3.2	7.1	8.2	0.0	11.4
Prop In Lane	1.00		0.16	1.00		0.13	1.00		1.00	1.00		0.61
Lane Grp Cap(c), veh/h	95	875	896	239	1018	1047	173	398	337	285	0	358
V/C Ratio(X)	0.77	0.64	0.64	0.83	0.55	0.55	0.30	0.22	0.45	0.27	0.00	0.69
Avail Cap(c_a), veh/h	382	875	896	382	1018	1047	296	601	509	409	0	542
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)	0.58	0.58	0.58	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.2	15.8	15.8	35.4	11.2	11.2	37.5	27.3	28.8	30.7	0.0	30.5
Incr Delay (d2), s/veh	7.2	2.1	2.1	8.1	2.1	2.1	0.9	0.3	0.9	0.5	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	7.5	7.7	4.3	6.0	6.1	1.0	1.4	2.7	1.4	0.0	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.4	18.0	17.9	43.5	13.3	13.2	38.4	27.6	29.7	31.2	0.0	32.9
LnGrp LOS	D	B	B	D	B	B	D	C	C	C	A	C
Approach Vol, veh/h		1214			1329			290			325	
Approach Delay, s/veh		19.7			17.8			30.6			32.5	
Approach LOS		B			B			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	53.1		22.9	14.8	46.4		22.9				
Change Period (Y+Rc), s	3.5	5.0		5.0	3.5	5.0		5.0				
Max Green Setting (Gmax), s	18.0	25.5		27.0	18.0	25.5		27.0				
Max Q Clear Time (g_c+I), s	15.4	18.4		13.4	11.1	21.8		17.1				
Green Ext Time (p_c), s	0.1	3.8		1.4	0.3	2.2		0.8				

Intersection Summary

HCM 6th Ctrl Delay		21.2										
HCM 6th LOS			C									

Bella Mar
4: Palm Avenue & I-5 SB Ramps

Near Term Baseline
Timing Plan: PM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↑↑	↗	↖	↗↗
Traffic Volume (veh/h)	0	413	925	113	364	1606
Future Volume (veh/h)	0	413	925	113	364	1606
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	439	984	0	387	1709
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	302	1924	1117		604	1418
Arrive On Green	0.00	0.54	0.31	0.00	0.34	0.34
Sat Flow, veh/h	1781	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	0	439	984	0	387	1709
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1395
Q Serve(g_s), s	0.0	5.7	23.2	0.0	16.2	30.0
Cycle Q Clear(g_c), s	0.0	5.7	23.2	0.0	16.2	30.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	302	1924	1117		604	1418
V/C Ratio(X)	0.00	0.23	0.88		0.64	1.21
Avail Cap(c_a), veh/h	302	2011	1204		604	1418
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	10.6	28.8	0.0	24.7	21.8
Incr Delay (d2), s/veh	0.0	0.1	7.4	0.0	2.3	99.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.0	10.3	0.0	6.8	32.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	10.7	36.2	0.0	27.0	121.1
LnGrp LOS	A	B	D		C	F
Approach Vol, veh/h		439	984	A	2096	
Approach Delay, s/veh		10.7	36.2		103.7	
Approach LOS		B	D		F	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	20.1	33.3			53.4	35.1
Change Period (Y+Rc), s	5.1	5.5			5.5	5.1
Max Green Setting (Gmax), s	15.0	30.0			50.1	30.0
Max Q Clear Time (g_c+I), s	10.0	25.2			7.7	32.0
Green Ext Time (p_c), s	0.0	2.6			3.0	0.0

Intersection Summary

HCM 6th Ctrl Delay	73.2
HCM 6th LOS	E

Notes

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

Bella Mar
5: I-5 NB Ramps & Palm Avenue

Near Term Baseline
Timing Plan: PM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑				
Traffic Volume (veh/h)	0	792	0	0	507	233	481	12	107	0	0	0
Future Volume (veh/h)	0	792	0	0	507	233	481	12	107	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	852	0	0	545	251	322	285	115			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1428	0	0	950	437	587	417	168			
Arrive On Green	0.00	0.40	0.00	0.00	0.40	0.40	0.33	0.33	0.33			
Sat Flow, veh/h	0	3741	0	0	2459	1086	1781	1267	511			
Grp Volume(v), veh/h	0	852	0	0	409	387	322	0	400			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1675	1781	0	1778			
Q Serve(g_s), s	0.0	7.4	0.0	0.0	7.0	7.0	5.8	0.0	7.6			
Cycle Q Clear(g_c), s	0.0	7.4	0.0	0.0	7.0	7.0	5.8	0.0	7.6			
Prop In Lane	0.00		0.00	0.00		0.65	1.00		0.29			
Lane Grp Cap(c), veh/h	0	1428	0	0	714	673	587	0	586			
V/C Ratio(X)	0.00	0.60	0.00	0.00	0.57	0.58	0.55	0.00	0.68			
Avail Cap(c_a), veh/h	0	3639	0	0	1819	1715	1368	0	1366			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	9.2	0.0	0.0	9.1	9.1	10.7	0.0	11.3			
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.7	0.8	0.8	0.0	1.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.8	0.0	0.0	1.8	1.7	1.7	0.0	2.3			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	9.6	0.0	0.0	9.8	9.9	11.5	0.0	12.7			
LnGrp LOS	A	A	A	A	A	A	B	A	B			
Approach Vol, veh/h		852			796			722				
Approach Delay, s/veh		9.6			9.8			12.2				
Approach LOS		A			A			B				
Timer - Assigned Phs		2			6			8				
Phs Duration (G+Y+Rc), s		21.1			21.1			18.0				
Change Period (Y+Rc), s		5.4			5.4			5.1				
Max Green Setting (Gmax), s		40.0			40.0			30.0				
Max Q Clear Time (g_c+I1), s		9.4			9.0			9.6				
Green Ext Time (p_c), s		6.3			5.3			3.3				

Intersection Summary

HCM 6th Ctrl Delay	10.5
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)	128	627	89	27	459	35	82	85	42	39	118	212
Future Volume (veh/h)	128	627	89	27	459	35	82	85	42	39	118	212
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		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	136	667	95	29	488	37	87	90	45	41	126	226
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	187	1032	147	48	845	64	298	381	190	486	194	348
Arrive On Green	0.10	0.33	0.33	0.03	0.25	0.25	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1781	3123	444	1781	3348	253	1029	1176	588	1254	600	1076
Grp Volume(v), veh/h	136	379	383	29	258	267	87	0	135	41	0	352
Grp Sat Flow(s),veh/h/ln	1781	1777	1790	1781	1777	1825	1029	0	1764	1254	0	1677
Q Serve(g_s), s	3.5	8.7	8.7	0.8	6.1	6.1	3.8	0.0	2.7	1.2	0.0	8.6
Cycle Q Clear(g_c), s	3.5	8.7	8.7	0.8	6.1	6.1	12.4	0.0	2.7	3.9	0.0	8.6
Prop In Lane	1.00		0.25	1.00		0.14	1.00		0.33	1.00		0.64
Lane Grp Cap(c), veh/h	187	587	592	48	449	461	298	0	571	486	0	543
V/C Ratio(X)	0.73	0.65	0.65	0.61	0.58	0.58	0.29	0.00	0.24	0.08	0.00	0.65
Avail Cap(c_a), veh/h	1115	2254	2271	1115	2224	2284	824	0	1472	1127	0	1399
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	20.8	13.7	13.7	23.1	15.7	15.7	19.2	0.0	11.9	13.3	0.0	13.9
Incr Delay (d2), s/veh	5.4	1.2	1.2	11.9	1.2	1.2	0.5	0.0	0.2	0.1	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	2.9	2.9	0.4	2.1	2.2	0.8	0.0	0.9	0.3	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.2	14.9	14.9	35.0	16.8	16.8	19.7	0.0	12.1	13.4	0.0	15.2
LnGrp LOS	C	B	B	C	B	B	B	A	B	B	A	B
Approach Vol, veh/h		898			554			222				393
Approach Delay, s/veh		16.6			17.8			15.1				15.0
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	21.8		20.4	9.4	18.1		20.4				
Change Period (Y+Rc), s	4.4	* 6		4.9	4.4	6.0		4.9				
Max Green Setting (Gmax), s	30.0	* 61		40.0	30.0	60.0		40.0				
Max Q Clear Time (g_c+1), s	12.8	10.7		10.6	5.5	8.1		14.4				
Green Ext Time (p_c), s	0.0	5.1		2.5	0.3	3.2		1.1				

Intersection Summary

HCM 6th Ctrl Delay	16.4
HCM 6th LOS	B

Notes

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

APPENDIX D-3

INTERSECTION LOS WORKSHEETS – OPENING YEAR (2021) WITH PROJECT CONDITIONS

Intersection						
Int Delay, s/veh	15.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	9	33	59	284	554	9
Future Vol, veh/h	9	33	59	284	554	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	-	0	320
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	36	65	312	609	10

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	65	0	-	0	121
Stage 1	-	-	-	-	65
Stage 2	-	-	-	-	56
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1537	-	-	0	874
Stage 1	-	-	-	0	958
Stage 2	-	-	-	0	967
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1537	-	-	-	868
Mov Cap-2 Maneuver	-	-	-	-	868
Stage 1	-	-	-	-	951
Stage 2	-	-	-	-	967

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	18.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1537	-	-	868	999
HCM Lane V/C Ratio	0.006	-	-	0.701	0.01
HCM Control Delay (s)	7.4	0	-	18.3	8.6
HCM Lane LOS	A	A	-	C	A
HCM 95th %tile Q(veh)	0	-	-	6	0

Bella Mar
2: Main Street & I-5 NB Ramp

Near Term with Project
Timing Plan: AM PEAK PERIOD



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	564	312	488	465	25
Future Volume (veh/h)	12	564	312	488	465	25
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	13	627	347	542	517	28
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	29	930	754	639	593	528
Arrive On Green	0.02	0.50	0.40	0.40	0.33	0.33
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	13	627	347	542	517	28
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	0.4	15.2	8.2	18.6	16.4	0.7
Cycle Q Clear(g_c), s	0.4	15.2	8.2	18.6	16.4	0.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	29	930	754	639	593	528
V/C Ratio(X)	0.45	0.67	0.46	0.85	0.87	0.05
Avail Cap(c_a), veh/h	593	1859	1090	923	1038	923
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.3	11.4	13.1	16.3	18.8	13.6
Incr Delay (d2), s/veh	10.5	0.9	0.4	5.2	4.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	5.0	2.9	6.4	6.4	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.8	12.3	13.6	21.5	23.0	13.7
LnGrp LOS	D	B	B	C	C	B
Approach Vol, veh/h		640	889		545	
Approach Delay, s/veh		12.8	18.4		22.5	
Approach LOS		B	B		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		35.0		25.1	5.7	29.3
Change Period (Y+Rc), s		5.1		5.1	* 4.7	5.1
Max Green Setting (Gmax), s		59.7		35.0	* 20	35.0
Max Q Clear Time (g_c+I1), s		17.2		18.4	2.4	20.6
Green Ext Time (p_c), s		4.5		1.6	0.0	3.6

Intersection Summary

HCM 6th Ctrl Delay	17.8
HCM 6th LOS	B

Notes

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

Bella Mar
3: Hollister Street & Main Street

Near Term with Project
Timing Plan: AM PEAK PERIOD



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	829	48	106	677	59	78	59	127	54	54	87
Future Volume (veh/h)	78	829	48	106	677	59	78	59	127	54	54	87
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	86	911	53	116	744	65	86	65	140	59	59	96
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	112	1394	81	154	1429	125	316	391	332	370	134	218
Arrive On Green	0.06	0.41	0.41	0.09	0.43	0.43	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1781	3413	199	1781	3306	289	1232	1870	1585	1177	641	1042
Grp Volume(v), veh/h	86	474	490	116	400	409	86	65	140	59	0	155
Grp Sat Flow(s),veh/h/ln	1781	1777	1835	1781	1777	1818	1232	1870	1585	1177	0	1683
Q Serve(g_s), s	2.2	9.8	9.8	2.9	7.5	7.5	3.0	1.3	3.5	2.0	0.0	3.7
Cycle Q Clear(g_c), s	2.2	9.8	9.8	2.9	7.5	7.5	6.7	1.3	3.5	3.3	0.0	3.7
Prop In Lane	1.00		0.11	1.00		0.16	1.00		1.00	1.00		0.62
Lane Grp Cap(c), veh/h	112	726	750	154	768	786	316	391	332	370	0	352
V/C Ratio(X)	0.77	0.65	0.65	0.75	0.52	0.52	0.27	0.17	0.42	0.16	0.00	0.44
Avail Cap(c_a), veh/h	858	1944	2008	858	1944	1990	706	982	833	742	0	884
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	21.1	10.9	10.9	20.4	9.5	9.5	18.6	14.8	15.7	16.1	0.0	15.7
Incr Delay (d2), s/veh	10.4	1.0	1.0	7.1	0.5	0.5	0.5	0.2	0.9	0.2	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	2.9	3.0	1.3	2.1	2.2	0.8	0.5	1.1	0.5	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.4	11.9	11.9	27.5	10.0	10.0	19.1	15.0	16.5	16.3	0.0	16.6
LnGrp LOS	C	B	B	C	B	B	B	B	B	B	A	B
Approach Vol, veh/h		1050			925			291			214	
Approach Delay, s/veh		13.5			12.2			16.9			16.5	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.4	24.8		14.6	7.5	23.7		14.6				
Change Period (Y+Rc), s	3.5	5.0		5.0	3.5	5.0		5.0				
Max Green Setting (Gmax), s	22.0	50.0		24.0	22.0	50.0		24.0				
Max Q Clear Time (g_c+1), s	14.2	9.5		5.7	4.9	11.8		8.7				
Green Ext Time (p_c), s	0.2	5.4		1.0	0.2	6.8		0.9				

Intersection Summary

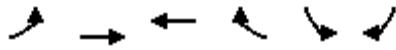
HCM 6th Ctrl Delay	13.7
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Bella Mar
4: Palm Avenue & I-5 SB Ramps

Near Term with Project
Timing Plan: AM PEAK PERIOD



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↗↗	↖	↖	↖↖
Traffic Volume (veh/h)	0	353	1164	145	158	1214
Future Volume (veh/h)	0	353	1164	145	158	1214
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	364	1200	0	163	1252
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	558	2417	1114		372	1458
Arrive On Green	0.00	0.68	0.31	0.00	0.21	0.21
Sat Flow, veh/h	1781	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	0	364	1200	0	163	1252
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1395
Q Serve(g_s), s	0.0	3.5	30.0	0.0	7.6	20.0
Cycle Q Clear(g_c), s	0.0	3.5	30.0	0.0	7.6	20.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	558	2417	1114		372	1458
V/C Ratio(X)	0.00	0.15	1.08		0.44	0.86
Avail Cap(c_a), veh/h	558	2417	1114		372	1458
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.5	32.8	0.0	33.0	19.8
Incr Delay (d2), s/veh	0.0	0.0	50.3	0.0	0.8	5.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.1	19.9	0.0	3.3	11.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	5.5	83.2	0.0	33.8	25.2
LnGrp LOS	A	A	F		C	C
Approach Vol, veh/h		364	1200	A	1415	
Approach Delay, s/veh		5.5	83.2		26.2	
Approach LOS		A	F		C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	35.1	35.5			70.6	25.1
Change Period (Y+Rc), s	5.1	5.5			5.5	5.1
Max Green Setting (Gmax), s	30.0	30.0			65.1	20.0
Max Q Clear Time (g_c+1), s	10.0	32.0			5.5	22.0
Green Ext Time (p_c), s	0.0	0.0			2.4	0.0

Intersection Summary

HCM 6th Ctrl Delay	46.6
HCM 6th LOS	D

Notes

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

Bella Mar
5: I-5 NB Ramps & Palm Avenue

Near Term with Project
Timing Plan: AM PEAK PERIOD



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑				
Traffic Volume (veh/h)	0	511	0	0	514	366	794	0	147	0	0	0
Future Volume (veh/h)	0	511	0	0	514	366	794	0	147	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	527	0	0	530	377	961	0	0			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1434	0	0	801	569	1286	675	0			
Arrive On Green	0.00	0.40	0.00	0.00	0.40	0.40	0.36	0.00	0.00			
Sat Flow, veh/h	0	3741	0	0	2077	1410	3563	1870	0			
Grp Volume(v), veh/h	0	527	0	0	475	432	961	0	0			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1617	1781	1870	0			
Q Serve(g_s), s	0.0	4.6	0.0	0.0	9.7	9.7	10.5	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	4.6	0.0	0.0	9.7	9.7	10.5	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		0.87	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1434	0	0	717	652	1286	675	0			
V/C Ratio(X)	0.00	0.37	0.00	0.00	0.66	0.66	0.75	0.00	0.00			
Avail Cap(c_a), veh/h	0	3186	0	0	1593	1449	2395	1258	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	9.3	0.0	0.0	10.8	10.8	12.5	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	1.1	1.2	0.9	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			
%ile BackOfQ(50%),veh/ln	0.0	1.3	0.0	0.0	2.8	2.6	3.2	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	9.5	0.0	0.0	11.9	12.0	13.4	0.0	0.0			
LnGrp LOS	A	A	A	A	B	B	B	A	A			
Approach Vol, veh/h		527			907			961				
Approach Delay, s/veh		9.5			11.9			13.4				
Approach LOS		A			B			B				
Timer - Assigned Phs		2			6			8				
Phs Duration (G+Y+Rc), s		23.4			23.4			21.2				
Change Period (Y+Rc), s		5.4			5.4			5.1				
Max Green Setting (Gmax), s		40.0			40.0			30.0				
Max Q Clear Time (g_c+I1), s		6.6			11.7			12.5				
Green Ext Time (p_c), s		3.6			6.3			3.6				

Intersection Summary

HCM 6th Ctrl Delay	12.0
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Bella Mar
6: Hollister Street & Palm Avenue

Near Term with Project
Timing Plan: AM PEAK PERIOD



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	128	415	40	27	607	32	90	94	46	26	77	144
Future Volume (veh/h)	128	415	40	27	607	32	90	94	46	26	77	144
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		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	141	456	44	30	667	35	99	103	51	29	85	158
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	190	1254	121	49	1043	55	318	321	159	399	159	296
Arrive On Green	0.11	0.38	0.38	0.03	0.30	0.30	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1781	3276	315	1781	3435	180	1137	1181	585	1233	586	1089
Grp Volume(v), veh/h	141	247	253	30	345	357	99	0	154	29	0	243
Grp Sat Flow(s),veh/h/ln	1781	1777	1814	1781	1777	1838	1137	0	1765	1233	0	1674
Q Serve(g_s), s	3.7	4.8	4.8	0.8	8.1	8.1	3.9	0.0	3.4	0.9	0.0	6.0
Cycle Q Clear(g_c), s	3.7	4.8	4.8	0.8	8.1	8.1	9.9	0.0	3.4	4.3	0.0	6.0
Prop In Lane	1.00		0.17	1.00		0.10	1.00		0.33	1.00		0.65
Lane Grp Cap(c), veh/h	190	680	694	49	540	558	318	0	480	399	0	456
V/C Ratio(X)	0.74	0.36	0.37	0.61	0.64	0.64	0.31	0.00	0.32	0.07	0.00	0.53
Avail Cap(c_a), veh/h	1110	2243	2290	1110	2214	2290	953	0	1466	1088	0	1391
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	20.9	10.7	10.7	23.2	14.5	14.5	19.1	0.0	14.0	15.7	0.0	14.9
Incr Delay (d2), s/veh	5.7	0.3	0.3	11.8	1.3	1.2	0.6	0.0	0.4	0.1	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	1.5	1.5	0.5	2.7	2.8	0.9	0.0	1.2	0.2	0.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.5	11.0	11.0	35.0	15.8	15.7	19.7	0.0	14.4	15.8	0.0	15.9
LnGrp LOS	C	B	B	C	B	B	B	A	B	B	A	B
Approach Vol, veh/h		641			732			253				272
Approach Delay, s/veh		14.4			16.5			16.4				15.9
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	24.4		18.0	9.5	20.6		18.0				
Change Period (Y+Rc), s	4.4	* 6		4.9	4.4	6.0		4.9				
Max Green Setting (Gmax), s	30.0	* 61		40.0	30.0	60.0		40.0				
Max Q Clear Time (g_c+1), s	12.8	6.8		8.0	5.7	10.1		11.9				
Green Ext Time (p_c), s	0.0	3.0		1.6	0.3	4.5		1.3				

Intersection Summary

HCM 6th Ctrl Delay	15.7
HCM 6th LOS	B

Notes

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

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	31	8	231	194	8
Future Vol, veh/h	31	31	8	231	194	8
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	-	100	-	-	-
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	34	9	251	211	9

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	485	216	220	0	-	0
Stage 1	216	-	-	-	-	-
Stage 2	269	-	-	-	-	-
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	541	824	1349	-	-	-
Stage 1	820	-	-	-	-	-
Stage 2	776	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	537	824	1349	-	-	-
Mov Cap-2 Maneuver	607	-	-	-	-	-
Stage 1	814	-	-	-	-	-
Stage 2	776	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1349	-	699	-	-
HCM Lane V/C Ratio	0.006	-	0.096	-	-
HCM Control Delay (s)	7.7	-	10.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	31	8	208	217	8
Future Vol, veh/h	31	31	8	208	217	8
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	-	100	-	-	-
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	34	9	226	236	9

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	485	241	245	0	-	0
Stage 1	241	-	-	-	-	-
Stage 2	244	-	-	-	-	-
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	541	798	1321	-	-	-
Stage 1	799	-	-	-	-	-
Stage 2	797	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	537	798	1321	-	-	-
Mov Cap-2 Maneuver	608	-	-	-	-	-
Stage 1	793	-	-	-	-	-
Stage 2	797	-	-	-	-	-

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)	1321	-	690	-	-
HCM Lane V/C Ratio	0.007	-	0.098	-	-
HCM Control Delay (s)	7.7	-	10.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection						
Int Delay, s/veh	32.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↖	↗
Traffic Vol, veh/h	33	105	45	577	638	14
Future Vol, veh/h	33	105	45	577	638	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	150	0	320
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	113	48	620	686	15

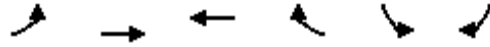
Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	48	0	-	0	231
Stage 1	-	-	-	-	48
Stage 2	-	-	-	-	183
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1559	-	-	0	757
Stage 1	-	-	-	0	974
Stage 2	-	-	-	0	848
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1559	-	-	-	739
Mov Cap-2 Maneuver	-	-	-	-	739
Stage 1	-	-	-	-	951
Stage 2	-	-	-	-	848

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	40.9
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1559	-	-	739	1021
HCM Lane V/C Ratio	0.023	-	-	0.928	0.015
HCM Control Delay (s)	7.4	0	-	41.6	8.6
HCM Lane LOS	A	A	-	E	A
HCM 95th %tile Q(veh)	0.1	-	-	13.1	0

Bella Mar
2: Main Street & I-5 NB Ramp

Near Term with Project
Timing Plan: PM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	723	577	602	415	26
Future Volume (veh/h)	22	723	577	602	415	26
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	24	777	620	647	446	28
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	48	1046	864	732	513	457
Arrive On Green	0.03	0.56	0.46	0.46	0.29	0.29
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	24	777	620	647	446	28
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	0.9	20.9	17.8	24.8	15.9	0.9
Cycle Q Clear(g_c), s	0.9	20.9	17.8	24.8	15.9	0.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	48	1046	864	732	513	457
V/C Ratio(X)	0.50	0.74	0.72	0.88	0.87	0.06
Avail Cap(c_a), veh/h	533	1671	980	830	933	830
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.1	11.1	14.5	16.3	22.6	17.2
Incr Delay (d2), s/veh	7.9	1.1	2.2	10.2	4.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	6.7	6.7	9.3	6.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.9	12.2	16.7	26.5	27.3	17.3
LnGrp LOS	D	B	B	C	C	B
Approach Vol, veh/h		801	1267		474	
Approach Delay, s/veh		13.0	21.7		26.7	
Approach LOS		B	C		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		42.5		24.3	6.5	36.0
Change Period (Y+Rc), s		5.1		5.1	* 4.7	5.1
Max Green Setting (Gmax), s		59.7		35.0	* 20	35.0
Max Q Clear Time (g_c+I1), s		22.9		17.9	2.9	26.8
Green Ext Time (p_c), s		6.1		1.4	0.0	4.1

Intersection Summary

HCM 6th Ctrl Delay	19.9
HCM 6th LOS	B

Notes

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

Bella Mar
3: Hollister Street & Main Street

Near Term with Project
Timing Plan: PM Peak Period



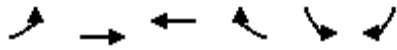
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	956	132	186	959	70	67	81	142	70	94	137
Future Volume (veh/h)	66	956	132	186	959	70	67	81	142	70	94	137
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	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	73	1051	145	204	1054	77	74	89	156	77	103	151
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	95	1472	203	245	1857	136	195	435	369	306	159	234
Arrive On Green	0.05	0.47	0.47	0.14	0.55	0.55	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1781	3137	432	1781	3358	245	1126	1870	1585	1135	685	1004
Grp Volume(v), veh/h	73	595	601	204	558	573	74	89	156	77	0	254
Grp Sat Flow(s),veh/h/ln	1781	1777	1793	1781	1777	1826	1126	1870	1585	1135	0	1690
Q Serve(g_s), s	3.4	22.4	22.5	9.4	17.2	17.2	5.3	3.2	7.0	4.9	0.0	11.4
Cycle Q Clear(g_c), s	3.4	22.4	22.5	9.4	17.2	17.2	16.7	3.2	7.0	8.1	0.0	11.4
Prop In Lane	1.00		0.24	1.00		0.13	1.00		1.00	1.00		0.59
Lane Grp Cap(c), veh/h	95	833	841	245	983	1010	195	435	369	306	0	393
V/C Ratio(X)	0.77	0.71	0.72	0.83	0.57	0.57	0.38	0.20	0.42	0.25	0.00	0.65
Avail Cap(c_a), veh/h	382	833	841	382	983	1010	295	601	509	407	0	543
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)	0.54	0.54	0.54	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.2	17.8	17.8	35.3	12.2	12.2	36.7	26.0	27.4	29.3	0.0	29.1
Incr Delay (d2), s/veh	6.7	2.8	2.8	8.8	2.4	2.3	1.2	0.2	0.8	0.4	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	8.7	8.8	4.5	6.4	6.6	1.5	1.4	2.6	1.3	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.0	20.6	20.7	44.1	14.6	14.5	37.9	26.2	28.2	29.7	0.0	30.9
LnGrp LOS	D	C	C	D	B	B	D	C	C	C	A	C
Approach Vol, veh/h		1269			1335			319			331	
Approach Delay, s/veh		22.1			19.1			29.9			30.6	
Approach LOS		C			B			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	51.5		24.5	15.1	44.4		24.5				
Change Period (Y+Rc), s	3.5	5.0		5.0	3.5	5.0		5.0				
Max Green Setting (Gmax), s	10.0	25.5		27.0	18.0	25.5		27.0				
Max Q Clear Time (g_c+1), s	15.4	19.2		13.4	11.4	24.5		18.7				
Green Ext Time (p_c), s	0.1	3.5		1.5	0.3	0.7		0.8				

Intersection Summary

HCM 6th Ctrl Delay	22.5
HCM 6th LOS	C

Bella Mar
4: Palm Avenue & I-5 SB Ramps

Near Term with Project
Timing Plan: PM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↑↑	↗	↖	↗↗
Traffic Volume (veh/h)	0	432	933	126	364	1606
Future Volume (veh/h)	0	432	933	126	364	1606
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	460	993	0	387	1709
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	301	1927	1122		602	1415
Arrive On Green	0.00	0.54	0.32	0.00	0.34	0.34
Sat Flow, veh/h	1781	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	0	460	993	0	387	1709
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1395
Q Serve(g_s), s	0.0	6.0	23.5	0.0	16.3	30.0
Cycle Q Clear(g_c), s	0.0	6.0	23.5	0.0	16.3	30.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	301	1927	1122		602	1415
V/C Ratio(X)	0.00	0.24	0.88		0.64	1.21
Avail Cap(c_a), veh/h	301	2007	1202		602	1415
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	10.7	28.8	0.0	24.8	21.9
Incr Delay (d2), s/veh	0.0	0.1	7.8	0.0	2.3	100.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.1	10.5	0.0	6.8	32.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	10.7	36.6	0.0	27.2	122.2
LnGrp LOS	A	B	D		C	F
Approach Vol, veh/h		460	993	A	2096	
Approach Delay, s/veh		10.7	36.6		104.7	
Approach LOS		B	D		F	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	20.1	33.5			53.6	35.1
Change Period (Y+Rc), s	5.1	5.5			5.5	5.1
Max Green Setting (Gmax), s	15.0	30.0			50.1	30.0
Max Q Clear Time (g_c+1), s	10.0	25.5			8.0	32.0
Green Ext Time (p_c), s	0.0	2.5			3.1	0.0

Intersection Summary

HCM 6th Ctrl Delay	73.5
HCM 6th LOS	E

Notes

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

Bella Mar
5: I-5 NB Ramps & Palm Avenue

Near Term with Project
Timing Plan: PM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑				
Traffic Volume (veh/h)	0	811	0	0	528	233	481	12	138	0	0	0
Future Volume (veh/h)	0	811	0	0	528	233	481	12	138	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	872	0	0	568	251	339	262	148			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1436	0	0	969	428	598	377	213			
Arrive On Green	0.00	0.40	0.00	0.00	0.40	0.40	0.34	0.34	0.34			
Sat Flow, veh/h	0	3741	0	0	2492	1058	1781	1122	634			
Grp Volume(v), veh/h	0	872	0	0	420	399	339	0	410			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1680	1781	0	1756			
Q Serve(g_s), s	0.0	7.8	0.0	0.0	7.5	7.5	6.3	0.0	8.2			
Cycle Q Clear(g_c), s	0.0	7.8	0.0	0.0	7.5	7.5	6.3	0.0	8.2			
Prop In Lane	0.00		0.00	0.00		0.63	1.00		0.36			
Lane Grp Cap(c), veh/h	0	1436	0	0	718	679	598	0	590			
V/C Ratio(X)	0.00	0.61	0.00	0.00	0.59	0.59	0.57	0.00	0.69			
Avail Cap(c_a), veh/h	0	3519	0	0	1760	1664	1323	0	1305			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	9.5	0.0	0.0	9.4	9.4	11.0	0.0	11.6			
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.8	0.8	0.8	0.0	1.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.0	0.0	0.0	2.0	1.9	1.9	0.0	2.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	9.9	0.0	0.0	10.2	10.2	11.8	0.0	13.1			
LnGrp LOS	A	A	A	A	B	B	B	A	B			
Approach Vol, veh/h		872			819			749				
Approach Delay, s/veh		9.9			10.2			12.5				
Approach LOS		A			B			B				
Timer - Assigned Phs		2			6			8				
Phs Duration (G+Y+Rc), s		21.7			21.7			18.7				
Change Period (Y+Rc), s		5.4			5.4			5.1				
Max Green Setting (Gmax), s		40.0			40.0			30.0				
Max Q Clear Time (g_c+I1), s		9.8			9.5			10.2				
Green Ext Time (p_c), s		6.5			5.5			3.4				

Intersection Summary

HCM 6th Ctrl Delay	10.8
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Bella Mar
6: Hollister Street & Palm Avenue

Near Term with Project
Timing Plan: PM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	178	627	89	27	459	41	82	91	42	42	121	233
Future Volume (veh/h)	178	627	89	27	459	41	82	91	42	42	121	233
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	189	667	95	29	488	44	87	97	45	45	129	248
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	249	1085	154	47	771	69	279	405	188	482	192	368
Arrive On Green	0.14	0.35	0.35	0.03	0.23	0.23	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1781	3123	444	1781	3297	296	1006	1209	561	1246	572	1100
Grp Volume(v), veh/h	189	379	383	29	262	270	87	0	142	45	0	377
Grp Sat Flow(s),veh/h/ln	1781	1777	1790	1781	1777	1817	1006	0	1769	1246	0	1672
Q Serve(g_s), s	5.4	9.3	9.3	0.8	7.0	7.0	4.3	0.0	3.0	1.4	0.0	10.2
Cycle Q Clear(g_c), s	5.4	9.3	9.3	0.8	7.0	7.0	14.4	0.0	3.0	4.5	0.0	10.2
Prop In Lane	1.00		0.25	1.00		0.16	1.00		0.32	1.00		0.66
Lane Grp Cap(c), veh/h	249	617	622	47	415	425	279	0	592	482	0	560
V/C Ratio(X)	0.76	0.61	0.62	0.62	0.63	0.64	0.31	0.00	0.24	0.09	0.00	0.67
Avail Cap(c_a), veh/h	1018	2058	2074	1018	2031	2077	709	0	1348	1015	0	1275
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	21.7	14.2	14.2	25.3	18.1	18.1	21.2	0.0	12.6	14.2	0.0	15.0
Incr Delay (d2), s/veh	4.7	1.0	1.0	12.6	1.6	1.6	0.6	0.0	0.2	0.1	0.0	1.4
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	3.2	3.2	0.5	2.6	2.7	0.9	0.0	1.1	0.4	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.4	15.2	15.2	37.9	19.7	19.7	21.8	0.0	12.8	14.3	0.0	16.4
LnGrp LOS	C	B	B	D	B	B	C	A	B	B	A	B
Approach Vol, veh/h		951			561			229			422	
Approach Delay, s/veh		17.4			20.6			16.2			16.2	
Approach LOS		B			C			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	24.2		22.5	11.7	18.3		22.5				
Change Period (Y+Rc), s	4.4	* 6		4.9	4.4	6.0		4.9				
Max Green Setting (Gmax), s	30.0	* 61		40.0	30.0	60.0		40.0				
Max Q Clear Time (g_c+1), s	12.8	11.3		12.2	7.4	9.0		16.4				
Green Ext Time (p_c), s	0.0	5.1		2.7	0.5	3.3		1.1				

Intersection Summary

HCM 6th Ctrl Delay	17.9
HCM 6th LOS	B

Notes

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

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	13	31	274	399	31
Future Vol, veh/h	13	13	31	274	399	31
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	-	100	-	-	-
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	14	14	34	298	434	34

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	817	451	468	0	-	0
Stage 1	451	-	-	-	-	-
Stage 2	366	-	-	-	-	-
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	346	608	1094	-	-	-
Stage 1	642	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	335	608	1094	-	-	-
Mov Cap-2 Maneuver	453	-	-	-	-	-
Stage 1	622	-	-	-	-	-
Stage 2	702	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1094	-	519	-	-
HCM Lane V/C Ratio	0.031	-	0.054	-	-
HCM Control Delay (s)	8.4	-	12.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	13	31	292	381	31
Future Vol, veh/h	13	13	31	292	381	31
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	-	100	-	-	-
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	14	14	34	317	414	34

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	816	431	448	0	-	0
Stage 1	431	-	-	-	-	-
Stage 2	385	-	-	-	-	-
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	347	624	1112	-	-	-
Stage 1	655	-	-	-	-	-
Stage 2	688	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	336	624	1112	-	-	-
Mov Cap-2 Maneuver	454	-	-	-	-	-
Stage 1	635	-	-	-	-	-
Stage 2	688	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1112	-	526	-	-
HCM Lane V/C Ratio	0.03	-	0.054	-	-
HCM Control Delay (s)	8.3	-	12.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

MOVEMENT SUMMARY

Site: 1 [NTWP AM MITIGATED - I-5 SB & Main]

Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov	Turn	Demand Flows	Deg.	Average	Level of	95% Back of Queue	Prop.	Effective	Aver. No.	Cycles	Average	Speed
ID	Total	HV	Satn	Delay	Service	Vehicles	Queued	Stop Rate	Stop Rate	Aver. No.	Cycles	Speed
	veh/h	%	v/c	sec	ft	ft	ft	ft	ft	ft	ft	mph
East: WB Main Street												
6	T1	65	2.0	0.281	5.1	LOSA	1.6	40.4	0.08	0.02	0.08	17.3
16	R2	312	2.0	0.281	5.1	LOSA	1.6	40.4	0.08	0.02	0.08	29.7
Approach												
		377	2.0	0.281	5.1	LOSA	1.6	40.4	0.08	0.02	0.08	27.8
North: SB I-5 Ramp												
7	L2	609	2.0	0.484	7.9	LOSA	3.1	78.6	0.27	0.13	0.27	26.5
14	R2	10	2.0	0.484	7.9	LOSA	3.1	78.6	0.27	0.13	0.27	20.0
Approach												
		619	2.0	0.484	7.9	LOSA	3.1	78.6	0.27	0.13	0.27	26.4
West: EB Main Street												
5	L2	10	2.0	0.064	5.7	LOSA	0.2	6.3	0.57	0.49	0.57	28.2
2	T1	36	2.0	0.064	5.7	LOSA	0.2	6.3	0.57	0.49	0.57	26.5
Approach												
		46	2.0	0.064	5.7	LOSA	0.2	6.3	0.57	0.49	0.57	26.9
All Vehicles												
		1042	2.0	0.484	6.8	LOSA	3.1	78.6	0.21	0.10	0.21	26.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Roundabout LOS Method: Same as Sign Control.
 Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
 LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
 Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
 Roundabout Capacity Model: US HCM 6.
 HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
 Gap-Acceptance Capacity: Traditional M1.
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Bella Mar
1: Main Street & I-5 SB Ramps

Near Term with Project MITIGATED
Timing Plan: AM Peak Period



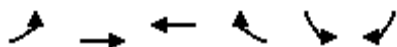
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↶		↶	↶
Traffic Volume (veh/h)	9	33	59	284	554	9
Future Volume (veh/h)	9	33	59	284	554	9
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	36	65	0	609	10
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	235	117	211		831	740
Arrive On Green	0.11	0.11	0.11	0.00	0.47	0.47
Sat Flow, veh/h	268	1034	1870	0	1781	1585
Grp Volume(v), veh/h	46	0	65	0	609	10
Grp Sat Flow(s),veh/h/ln	1302	0	1870	0	1781	1585
Q Serve(g_s), s	0.4	0.0	0.7	0.0	5.9	0.1
Cycle Q Clear(g_c), s	1.1	0.0	0.7	0.0	5.9	0.1
Prop In Lane	0.22			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	352	0	211		831	740
V/C Ratio(X)	0.13	0.00	0.31		0.73	0.01
Avail Cap(c_a), veh/h	1604	0	1573		2746	2443
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	9.1	0.0	8.7	0.0	4.6	3.1
Incr Delay (d2), s/veh	0.2	0.0	0.8	0.0	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.2	0.0	0.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.3	0.0	9.5	0.0	5.9	3.1
LnGrp LOS	A	A	A		A	A
Approach Vol, veh/h		46	65	A	619	
Approach Delay, s/veh		9.3	9.5		5.8	
Approach LOS		A	A		A	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				6.9	14.5	6.9
Change Period (Y+Rc), s				4.5	4.5	4.5
Max Green Setting (Gmax), s				18.0	33.0	18.0
Max Q Clear Time (g_c+I1), s				3.1	7.9	2.7
Green Ext Time (p_c), s				0.1	2.1	0.2

Intersection Summary

HCM 6th Ctrl Delay	6.4
HCM 6th LOS	A

Notes

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↖	↗	↖	↗
Traffic Volume (veh/h)	12	564	312	488	465	25
Future Volume (veh/h)	12	564	312	488	465	25
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	13	627	347	542	517	28
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	50	963	782	663	619	551
Arrive On Green	0.03	0.52	0.42	0.42	0.35	0.35
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	13	627	347	542	517	28
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	0.4	14.3	7.7	17.6	15.6	0.7
Cycle Q Clear(g_c), s	0.4	14.3	7.7	17.6	15.6	0.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	50	963	782	663	619	551
V/C Ratio(X)	0.26	0.65	0.44	0.82	0.83	0.05
Avail Cap(c_a), veh/h	632	1158	1158	981	1103	981
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.7	10.3	12.1	15.0	17.5	12.6
Incr Delay (d2), s/veh	2.7	1.0	0.4	3.5	3.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.5	2.7	5.7	5.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	30.4	11.3	12.5	18.5	20.5	12.7
LnGrp LOS	C	B	B	B	C	B
Approach Vol, veh/h		640	889		545	
Approach Delay, s/veh		11.7	16.2		20.1	
Approach LOS		B	B		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		34.0		24.3	5.6	28.4
Change Period (Y+Rc), s		5.1		5.1	* 4.7	5.1
Max Green Setting (Gmax), s		35.0		35.0	* 20	35.0
Max Q Clear Time (g_c+I1), s		16.3		17.6	2.4	19.6
Green Ext Time (p_c), s		3.8		1.6	0.0	3.7
Intersection Summary						
HCM 6th Ctrl Delay			15.8			
HCM 6th LOS			B			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Bella Mar
3: Hollister Street & Main Street

Near Term with Project MITIGATED
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	829	48	106	677	59	78	59	127	54	54	87
Future Volume (veh/h)	78	829	48	106	677	59	78	59	127	54	54	87
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	86	911	53	116	744	65	86	65	140	59	59	96
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	93	1459	85	136	1493	130	346	430	364	398	147	239
Arrive On Green	0.05	0.43	0.41	0.08	0.45	0.43	0.23	0.23	0.23	0.23	0.23	0.21
Sat Flow, veh/h	1781	3413	199	1781	3306	289	1232	1870	1585	1177	641	1042
Grp Volume(v), veh/h	86	474	490	116	400	409	86	65	140	59	0	155
Grp Sat Flow(s),veh/h/ln	1781	1777	1835	1781	1777	1818	1232	1870	1585	1177	0	1683
Q Serve(g_s), s	2.2	9.4	9.4	2.9	7.2	7.2	2.9	1.2	3.4	1.9	0.0	3.6
Cycle Q Clear(g_c), s	2.2	9.4	9.4	2.9	7.2	7.2	6.4	1.2	3.4	3.1	0.0	3.6
Prop In Lane	1.00		0.11	1.00		0.16	1.00		1.00	1.00		0.62
Lane Grp Cap(c), veh/h	93	760	784	136	802	821	346	430	364	398	0	387
V/C Ratio(X)	0.92	0.62	0.62	0.85	0.50	0.50	0.25	0.15	0.38	0.15	0.00	0.40
Avail Cap(c_a), veh/h	851	2013	2079	851	2013	2060	747	1039	880	781	0	935
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	21.2	10.1	10.1	20.5	8.7	8.8	17.5	13.8	14.6	15.1	0.0	15.0
Incr Delay (d2), s/veh	28.1	0.8	0.8	13.9	0.5	0.5	0.4	0.2	0.7	0.2	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	2.6	2.7	1.5	1.9	2.0	0.7	0.5	1.1	0.4	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.4	10.9	10.9	34.5	9.2	9.3	17.8	14.0	15.3	15.3	0.0	15.7
LnGrp LOS	D	B	B	C	A	A	B	B	B	B	A	B
Approach Vol, veh/h		1050			925			291			214	
Approach Delay, s/veh		14.1			12.4			15.8			15.5	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	24.3		14.3	7.4	23.2		14.3				
Change Period (Y+Rc), s	3.5	5.0		5.0	3.5	5.0		5.0				
Max Green Setting (Gmax), s	22.0	50.0		24.0	22.0	50.0		24.0				
Max Q Clear Time (g_c+I), s	14.2	9.2		5.6	4.9	11.4		8.4				
Green Ext Time (p_c), s	0.2	5.4		1.0	0.2	6.8		0.9				

Intersection Summary

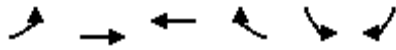
HCM 6th Ctrl Delay	13.8
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Bella Mar
4: Palm Avenue & I-5 SB Ramps

Near Term with Project MITIGATED
Timing Plan: AM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↗↗	↖	↖	↖↖
Traffic Volume (veh/h)	0	353	1164	145	158	1214
Future Volume (veh/h)	0	353	1164	145	158	1214
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	364	1200	0	163	1252
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	558	2458	1170		393	1522
Arrive On Green	0.00	0.69	0.33	0.00	0.22	0.22
Sat Flow, veh/h	1781	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	0	364	1200	0	163	1252
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1395
Q Serve(g_s), s	0.0	3.4	31.5	0.0	7.5	21.1
Cycle Q Clear(g_c), s	0.0	3.4	31.5	0.0	7.5	21.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	558	2458	1170		393	1522
V/C Ratio(X)	0.00	0.15	1.03		0.42	0.82
Avail Cap(c_a), veh/h	558	2458	1170		393	1522
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.1	32.1	0.0	32.0	17.9
Incr Delay (d2), s/veh	0.0	0.0	33.1	0.0	0.7	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.0	18.0	0.0	3.2	10.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	5.1	65.2	0.0	32.7	21.7
LnGrp LOS	A	A	F		C	C
Approach Vol, veh/h		364	1200	A	1415	
Approach Delay, s/veh		5.1	65.2		23.0	
Approach LOS		A	E		C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	35.1	35.5			70.6	25.1
Change Period (Y+Rc), s	5.1	5.5			5.5	5.1
Max Green Setting (Gmax), s	30.0	30.0			30.0	20.0
Max Q Clear Time (g_c+1), s	10.0	33.5			5.4	23.1
Green Ext Time (p_c), s	0.0	0.0			2.2	0.0

Intersection Summary

HCM 6th Ctrl Delay	37.8
HCM 6th LOS	D

Notes

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

Bella Mar
5: I-5 NB Ramps & Palm Avenue

Near Term with Project MITIGATED
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑				
Traffic Volume (veh/h)	0	511	0	0	514	366	794	0	147	0	0	0
Future Volume (veh/h)	0	511	0	0	514	366	794	0	147	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	527	0	0	530	377	961	0	0			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1544	0	0	862	613	1361	715	0			
Arrive On Green	0.00	0.43	0.00	0.00	0.43	0.40	0.38	0.00	0.00			
Sat Flow, veh/h	0	3741	0	0	2077	1410	3563	1870	0			
Grp Volume(v), veh/h	0	527	0	0	475	432	961	0	0			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1617	1781	1870	0			
Q Serve(g_s), s	0.0	4.3	0.0	0.0	9.0	9.2	10.0	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	4.3	0.0	0.0	9.0	9.2	10.0	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		0.87	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1544	0	0	772	702	1361	715	0			
V/C Ratio(X)	0.00	0.34	0.00	0.00	0.61	0.62	0.71	0.00	0.00			
Avail Cap(c_a), veh/h	0	3373	0	0	1686	1534	2540	1334	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	8.2	0.0	0.0	9.5	10.1	11.4	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.8	0.9	0.7	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.1	0.0	0.0	2.4	2.4	2.9	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	8.3	0.0	0.0	10.3	10.9	12.1	0.0	0.0			
LnGrp LOS	A	A	A	A	B	B	B	A	A			
Approach Vol, veh/h		527			907			961				
Approach Delay, s/veh		8.3			10.6			12.1				
Approach LOS		A			B			B				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		23.0				23.0		20.7				
Change Period (Y+Rc), s		5.4				5.4		5.1				
Max Green Setting (Gmax), s		40.0				40.0		30.0				
Max Q Clear Time (g_c+I1), s		6.3				11.2		12.0				
Green Ext Time (p_c), s		3.6				6.3		3.6				

Intersection Summary

HCM 6th Ctrl Delay	10.7
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Bella Mar
6: Hollister Street & Palm Avenue

Near Term with Project MITIGATED
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	128	415	40	27	607	32	90	94	46	26	77	144
Future Volume (veh/h)	128	415	40	27	607	32	90	94	46	26	77	144
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		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	141	456	44	30	667	35	99	103	51	29	85	158
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	1321	127	64	1170	61	343	341	169	425	169	315
Arrive On Green	0.12	0.40	0.38	0.04	0.34	0.30	0.29	0.29	0.27	0.29	0.29	0.27
Sat Flow, veh/h	1781	3276	315	1781	3435	180	1137	1181	585	1233	586	1089
Grp Volume(v), veh/h	141	247	253	30	345	357	99	0	154	29	0	243
Grp Sat Flow(s),veh/h/ln	1781	1777	1814	1781	1777	1838	1137	0	1765	1233	0	1674
Q Serve(g_s), s	3.6	4.5	4.6	0.8	7.5	7.5	3.7	0.0	3.2	0.9	0.0	5.7
Cycle Q Clear(g_c), s	3.6	4.5	4.6	0.8	7.5	7.5	9.5	0.0	3.2	4.1	0.0	5.7
Prop In Lane	1.00		0.17	1.00		0.10	1.00		0.33	1.00		0.65
Lane Grp Cap(c), veh/h	206	717	732	64	605	626	343	0	510	425	0	484
V/C Ratio(X)	0.68	0.34	0.35	0.47	0.57	0.57	0.29	0.00	0.30	0.07	0.00	0.50
Avail Cap(c_a), veh/h	1148	2306	2354	1148	2336	2417	1000	0	1531	1138	0	1452
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	20.0	9.7	9.8	22.3	12.7	12.8	17.9	0.0	13.2	14.7	0.0	14.2
Incr Delay (d2), s/veh	4.0	0.3	0.3	5.2	0.8	0.8	0.5	0.0	0.3	0.1	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	1.3	1.4	0.4	2.4	2.5	0.9	0.0	1.1	0.2	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.0	10.0	10.1	27.5	13.6	13.6	18.4	0.0	13.5	14.7	0.0	15.0
LnGrp LOS	C	B	B	C	B	B	B	A	B	B	A	B
Approach Vol, veh/h		641			732			253				272
Approach Delay, s/veh		13.1			14.2			15.4				15.0
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	23.8		17.6	9.5	20.1		17.6				
Change Period (Y+Rc), s	4.4	* 6		4.9	4.4	6.0		4.9				
Max Green Setting (Gmax), s	30.0	* 60		40.0	30.0	60.0		40.0				
Max Q Clear Time (g_c+1), s	12.8	6.6		7.7	5.6	9.5		11.5				
Green Ext Time (p_c), s	0.0	3.0		1.6	0.3	4.5		1.3				

Intersection Summary

HCM 6th Ctrl Delay	14.1
HCM 6th LOS	B

Notes

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

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	31	8	231	194	8
Future Vol, veh/h	31	31	8	231	194	8
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	-	100	-	-	-
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	34	9	251	211	9

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	485	216	220	0	-	0
Stage 1	216	-	-	-	-	-
Stage 2	269	-	-	-	-	-
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	541	824	1349	-	-	-
Stage 1	820	-	-	-	-	-
Stage 2	776	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	537	824	1349	-	-	-
Mov Cap-2 Maneuver	607	-	-	-	-	-
Stage 1	814	-	-	-	-	-
Stage 2	776	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1349	-	699	-	-
HCM Lane V/C Ratio	0.006	-	0.096	-	-
HCM Control Delay (s)	7.7	-	10.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	31	8	208	217	8
Future Vol, veh/h	31	31	8	208	217	8
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	-	100	-	-	-
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	34	9	226	236	9

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	485	241	245	0	-	0
Stage 1	241	-	-	-	-	-
Stage 2	244	-	-	-	-	-
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	541	798	1321	-	-	-
Stage 1	799	-	-	-	-	-
Stage 2	797	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	537	798	1321	-	-	-
Mov Cap-2 Maneuver	608	-	-	-	-	-
Stage 1	793	-	-	-	-	-
Stage 2	797	-	-	-	-	-

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)	1321	-	690	-	-
HCM Lane V/C Ratio	0.007	-	0.098	-	-
HCM Control Delay (s)	7.7	-	10.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

MOVEMENT SUMMARY

Site: 1 [NTWP PM MITIGATED - I-5 SB & Main]

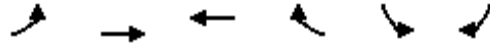
Roundabout
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov	Turn	Demand Flows	Deg.	Average	Level of	95% Back of Queue	Queued	Prop.	Effective	Aver. No. Cycles	Average	Speed
ID	Total	HV	Satn	Delay	Service	Vehicles	Distance	Stop Rate	Stop Rate	Cycles	Speed	mph
	veh/h	%	v/c	sec	veh	ft						
East: WB Main Street												
6	T1	48	2.0	0.513	8.2	LOSA	4.1	103.5	0.24	0.09	0.24	15.9
16	R2	620	2.0	0.513	8.2	LOSA	4.1	103.5	0.24	0.09	0.24	27.7
Approach												
		669	2.0	0.513	8.2	LOSA	4.1	103.5	0.24	0.09	0.24	26.9
North: SB I-5 Ramp												
7	L2	686	2.0	0.541	8.7	LOSA	4.0	101.4	0.26	0.11	0.26	26.0
14	R2	15	2.0	0.541	8.7	LOSA	4.0	101.4	0.26	0.11	0.26	19.7
Approach												
		701	2.0	0.541	8.7	LOSA	4.0	101.4	0.26	0.11	0.26	25.9
West: EB Main Street												
5	L2	35	2.0	0.224	8.1	LOSA	0.9	23.5	0.64	0.64	0.64	26.1
2	T1	113	2.0	0.224	8.1	LOSA	0.9	23.5	0.64	0.64	0.64	24.2
Approach												
		148	2.0	0.224	8.1	LOSA	0.9	23.5	0.64	0.64	0.64	24.7
All Vehicles												
		1518	2.0	0.541	8.4	LOSA	4.1	103.5	0.29	0.15	0.29	26.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Roundabout LOS Method: Same as Sign Control.
 Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
 LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
 Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
 Roundabout Capacity Model: US HCM 6.
 HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
 Gap-Acceptance Capacity: Traditional M1.
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Bella Mar
1: Main Street & I-5 SB Ramps

Near Term with Project MITIGATED
Timing Plan: PM Peak Period



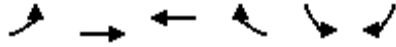
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↗	↖	↗
Traffic Volume (veh/h)	33	105	45	577	638	14
Future Volume (veh/h)	33	105	45	577	638	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	35	113	48	0	686	15
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	228	208	278		878	782
Arrive On Green	0.15	0.15	0.15	0.00	0.49	0.49
Sat Flow, veh/h	339	1403	1870	1585	1781	1585
Grp Volume(v), veh/h	148	0	48	0	686	15
Grp Sat Flow(s),veh/h/ln	1742	0	1870	1585	1781	1585
Q Serve(g_s), s	1.3	0.0	0.6	0.0	8.0	0.1
Cycle Q Clear(g_c), s	2.0	0.0	0.6	0.0	8.0	0.1
Prop In Lane	0.24			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	436	0	278		878	782
V/C Ratio(X)	0.34	0.00	0.17		0.78	0.02
Avail Cap(c_a), veh/h	1446	0	1378		2306	2052
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	9.9	0.0	9.3	0.0	5.2	3.3
Incr Delay (d2), s/veh	0.5	0.0	0.3	0.0	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.1	0.0	0.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.4	0.0	9.6	0.0	6.8	3.3
LnGrp LOS	B	A	A		A	A
Approach Vol, veh/h		148	48	A	701	
Approach Delay, s/veh		10.4	9.6		6.7	
Approach LOS		B	A		A	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				8.2	16.9	8.2
Change Period (Y+Rc), s				4.5	4.5	4.5
Max Green Setting (Gmax), s				18.5	32.5	18.5
Max Q Clear Time (g_c+I1), s				4.0	10.0	2.6
Green Ext Time (p_c), s				0.6	2.4	0.1

Intersection Summary

HCM 6th Ctrl Delay	7.5
HCM 6th LOS	A

Notes

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↖	↗	↖	↗
Traffic Volume (veh/h)	22	723	577	602	415	26
Future Volume (veh/h)	22	723	577	602	415	26
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	24	777	620	647	446	28
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	67	1077	892	756	537	478
Arrive On Green	0.04	0.58	0.48	0.48	0.30	0.30
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	24	777	620	647	446	28
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	0.9	19.7	16.9	23.6	15.2	0.8
Cycle Q Clear(g_c), s	0.9	19.7	16.9	23.6	15.2	0.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	67	1077	892	756	537	478
V/C Ratio(X)	0.36	0.72	0.70	0.86	0.83	0.06
Avail Cap(c_a), veh/h	565	1077	1034	876	985	876
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.7	10.0	13.4	15.1	21.2	16.2
Incr Delay (d2), s/veh	3.2	2.4	1.7	7.5	3.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	6.5	6.1	8.3	6.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	33.8	12.4	15.1	22.6	24.6	16.3
LnGrp LOS	C	B	B	C	C	B
Approach Vol, veh/h		801	1267		474	
Approach Delay, s/veh		13.1	18.9		24.1	
Approach LOS		B	B		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		41.6		23.7	6.5	35.1
Change Period (Y+Rc), s		5.1		5.1	* 4.7	5.1
Max Green Setting (Gmax), s		35.0		35.0	* 20	35.0
Max Q Clear Time (g_c+I1), s		21.7		17.2	2.9	25.6
Green Ext Time (p_c), s		4.3		1.4	0.0	4.5

Intersection Summary

HCM 6th Ctrl Delay	18.0
HCM 6th LOS	B

Notes

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

Bella Mar
3: Hollister Street & Main Street

Near Term with Project MITIGATED
Timing Plan: PM Peak Period



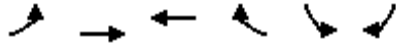
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗	↖	↗	↖	↗
Traffic Volume (veh/h)	66	956	132	186	959	70	67	81	142	70	94	137
Future Volume (veh/h)	66	956	132	186	959	70	67	81	142	70	94	137
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	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		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	73	1051	145	204	1054	77	74	89	156	77	103	151
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	85	1513	208	236	1903	139	207	454	385	318	166	244
Arrive On Green	0.05	0.48	0.47	0.13	0.57	0.55	0.24	0.24	0.24	0.24	0.24	0.23
Sat Flow, veh/h	1781	3137	432	1781	3358	245	1126	1870	1585	1135	685	1004
Grp Volume(v), veh/h	73	595	601	204	558	573	74	89	156	77	0	254
Grp Sat Flow(s),veh/h/ln	1781	1777	1793	1781	1777	1826	1126	1870	1585	1135	0	1690
Q Serve(g_s), s	3.4	21.9	22.0	9.4	16.6	16.7	5.3	3.2	6.9	4.9	0.0	11.3
Cycle Q Clear(g_c), s	3.4	21.9	22.0	9.4	16.6	16.7	16.6	3.2	6.9	8.0	0.0	11.3
Prop In Lane	1.00		0.24	1.00		0.13	1.00		1.00	1.00		0.59
Lane Grp Cap(c), veh/h	85	857	864	236	1007	1035	207	454	385	318	0	410
V/C Ratio(X)	0.86	0.69	0.70	0.87	0.55	0.55	0.36	0.20	0.41	0.24	0.00	0.62
Avail Cap(c_a), veh/h	371	857	864	371	1007	1035	309	623	528	421	0	563
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)	0.57	0.57	0.57	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.7	16.9	17.1	35.7	11.5	11.5	35.8	25.3	26.7	28.5	0.0	28.6
Incr Delay (d2), s/veh	13.0	2.7	2.7	12.1	2.2	2.1	1.0	0.2	0.7	0.4	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	8.4	8.6	4.7	6.1	6.3	1.5	1.4	2.6	1.3	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.7	19.6	19.7	47.8	13.7	13.7	36.8	25.5	27.4	28.9	0.0	30.2
LnGrp LOS	D	B	B	D	B	B	D	C	C	C	A	C
Approach Vol, veh/h		1269			1335			319			331	
Approach Delay, s/veh		21.6			18.9			29.1			29.9	
Approach LOS		C			B			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	51.6		24.4	15.1	44.5		24.4				
Change Period (Y+Rc), s	3.5	5.0		5.0	3.5	5.0		5.0				
Max Green Setting (Gmax), s	18.0	25.5		27.0	18.0	25.5		27.0				
Max Q Clear Time (g_c+1), s	15.4	18.7		13.3	11.4	24.0		18.6				
Green Ext Time (p_c), s	0.1	3.7		1.5	0.3	1.0		0.8				

Intersection Summary

HCM 6th Ctrl Delay		22.0										
HCM 6th LOS			C									

Bella Mar
4: Palm Avenue & I-5 SB Ramps

Near Term with Project MITIGATED
Timing Plan: PM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↗	↖	↖	↖
Traffic Volume (veh/h)	0	432	933	126	364	1606
Future Volume (veh/h)	0	432	933	126	364	1606
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	460	993	0	387	1709
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	302	1966	1174		627	1490
Arrive On Green	0.00	0.55	0.33	0.00	0.35	0.35
Sat Flow, veh/h	1781	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	0	460	993	0	387	1709
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1395
Q Serve(g_s), s	0.0	5.9	23.0	0.0	15.9	31.1
Cycle Q Clear(g_c), s	0.0	5.9	23.0	0.0	15.9	31.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	302	1966	1174		627	1490
V/C Ratio(X)	0.00	0.23	0.85		0.62	1.15
Avail Cap(c_a), veh/h	302	1966	1266		627	1490
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	10.1	27.5	0.0	23.7	20.6
Incr Delay (d2), s/veh	0.0	0.1	5.2	0.0	1.8	74.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.0	9.9	0.0	6.5	28.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	10.2	32.7	0.0	25.6	95.3
LnGrp LOS	A	B	C		C	F
Approach Vol, veh/h		460	993	A	2096	
Approach Delay, s/veh		10.2	32.7		82.4	
Approach LOS		B	C		F	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	30.1	33.2			53.3	35.1
Change Period (Y+Rc), s	5.1	5.5			5.5	5.1
Max Green Setting (Gmax), s	15.0	30.0			30.0	30.0
Max Q Clear Time (g_c+1), s	10.0	25.0			7.9	33.1
Green Ext Time (p_c), s	0.0	2.7			2.8	0.0

Intersection Summary

HCM 6th Ctrl Delay	59.1
HCM 6th LOS	E

Notes

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

Bella Mar
5: I-5 NB Ramps & Palm Avenue

Near Term with Project MITIGATED
Timing Plan: PM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑				
Traffic Volume (veh/h)	0	811	0	0	528	233	481	12	138	0	0	0
Future Volume (veh/h)	0	811	0	0	528	233	481	12	138	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	872	0	0	568	251	339	262	148			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1548	0	0	1045	461	644	406	229			
Arrive On Green	0.00	0.44	0.00	0.00	0.44	0.40	0.36	0.36	0.33			
Sat Flow, veh/h	0	3741	0	0	2492	1058	1781	1122	634			
Grp Volume(v), veh/h	0	872	0	0	420	399	339	0	410			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1680	1781	0	1756			
Q Serve(g_s), s	0.0	7.2	0.0	0.0	6.9	7.1	5.9	0.0	7.7			
Cycle Q Clear(g_c), s	0.0	7.2	0.0	0.0	6.9	7.1	5.9	0.0	7.7			
Prop In Lane	0.00		0.00	0.00		0.63	1.00		0.36			
Lane Grp Cap(c), veh/h	0	1548	0	0	774	732	644	0	635			
V/C Ratio(X)	0.00	0.56	0.00	0.00	0.54	0.54	0.53	0.00	0.65			
Avail Cap(c_a), veh/h	0	3735	0	0	1868	1766	1407	0	1387			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	8.3	0.0	0.0	8.2	8.6	9.9	0.0	10.7			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.6	0.6	0.7	0.0	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			
%ile BackOfQ(50%),veh/ln	0.0	1.7	0.0	0.0	1.7	1.7	1.7	0.0	2.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	8.6	0.0	0.0	8.8	9.2	10.6	0.0	11.8			
LnGrp LOS	A	A	A	A	A	A	B	A	B			
Approach Vol, veh/h		872			819			749				
Approach Delay, s/veh		8.6			9.0			11.2				
Approach LOS		A			A			B				
Timer - Assigned Phs		2			6			8				
Phs Duration (G+Y+Rc), s		21.2			21.2			18.2				
Change Period (Y+Rc), s		5.4			5.4			5.1				
Max Green Setting (Gmax), s		40.0			40.0			30.0				
Max Q Clear Time (g_c+I1), s		9.2			9.1			9.7				
Green Ext Time (p_c), s		6.5			5.5			3.4				

Intersection Summary

HCM 6th Ctrl Delay	9.6
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Bella Mar
6: Hollister Street & Palm Avenue

Near Term with Project MITIGATED
Timing Plan: PM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	178	627	89	27	459	41	82	91	42	42	121	233
Future Volume (veh/h)	178	627	89	27	459	41	82	91	42	42	121	233
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	189	667	95	29	488	44	87	97	45	45	129	248
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	262	1146	163	61	888	80	300	422	196	505	200	384
Arrive On Green	0.15	0.37	0.34	0.03	0.27	0.23	0.35	0.35	0.33	0.35	0.35	0.33
Sat Flow, veh/h	1781	3123	444	1781	3297	296	1006	1209	561	1246	572	1100
Grp Volume(v), veh/h	189	379	383	29	262	270	87	0	142	45	0	377
Grp Sat Flow(s),veh/h/ln	1781	1777	1790	1781	1777	1817	1006	0	1769	1246	0	1672
Q Serve(g_s), s	5.2	8.8	8.9	0.8	6.5	6.6	4.1	0.0	2.9	1.4	0.0	9.8
Cycle Q Clear(g_c), s	5.2	8.8	8.9	0.8	6.5	6.6	13.9	0.0	2.9	4.3	0.0	9.8
Prop In Lane	1.00		0.25	1.00		0.16	1.00		0.32	1.00		0.66
Lane Grp Cap(c), veh/h	262	652	657	61	479	489	300	0	618	505	0	584
V/C Ratio(X)	0.72	0.58	0.58	0.48	0.55	0.55	0.29	0.00	0.23	0.09	0.00	0.65
Avail Cap(c_a), veh/h	1055	2119	2135	1055	2147	2195	750	0	1410	1062	0	1333
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	20.9	13.1	13.2	24.3	16.1	16.2	19.9	0.0	11.9	13.3	0.0	14.3
Incr Delay (d2), s/veh	3.7	0.8	0.8	5.7	1.0	1.0	0.5	0.0	0.2	0.1	0.0	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	2.1	2.9	2.9	0.4	2.3	2.4	0.9	0.0	1.0	0.3	0.0	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.6	13.9	14.0	30.0	17.0	17.2	20.4	0.0	12.1	13.4	0.0	15.5
LnGrp LOS	C	B	B	C	B	B	C	A	B	B	A	B
Approach Vol, veh/h		951			561			229			422	
Approach Delay, s/veh		16.1			17.8			15.3			15.3	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	23.6		21.9	11.6	17.8		21.9				
Change Period (Y+Rc), s	4.4	* 6		4.9	4.4	6.0		4.9				
Max Green Setting (Gmax), s	30.0	* 60		40.0	30.0	60.0		40.0				
Max Q Clear Time (g_c+1), s	12.8	10.9		11.8	7.2	8.6		15.9				
Green Ext Time (p_c), s	0.0	5.1		2.7	0.5	3.3		1.2				

Intersection Summary

HCM 6th Ctrl Delay	16.3
HCM 6th LOS	B

Notes

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

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	13	31	274	399	31
Future Vol, veh/h	13	13	31	274	399	31
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	-	100	-	-	-
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	14	14	34	298	434	34

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	817	451	468	0	-	0
Stage 1	451	-	-	-	-	-
Stage 2	366	-	-	-	-	-
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	346	608	1094	-	-	-
Stage 1	642	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	335	608	1094	-	-	-
Mov Cap-2 Maneuver	453	-	-	-	-	-
Stage 1	622	-	-	-	-	-
Stage 2	702	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1094	-	519	-	-
HCM Lane V/C Ratio	0.031	-	0.054	-	-
HCM Control Delay (s)	8.4	-	12.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	13	31	292	381	31
Future Vol, veh/h	13	13	31	292	381	31
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	-	100	-	-	-
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	14	14	34	317	414	34

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	816	431	448	0	-	0
Stage 1	431	-	-	-	-	-
Stage 2	385	-	-	-	-	-
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	347	624	1112	-	-	-
Stage 1	655	-	-	-	-	-
Stage 2	688	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	336	624	1112	-	-	-
Mov Cap-2 Maneuver	454	-	-	-	-	-
Stage 1	635	-	-	-	-	-
Stage 2	688	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1112	-	526	-	-
HCM Lane V/C Ratio	0.03	-	0.054	-	-
HCM Control Delay (s)	8.3	-	12.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

APPENDIX D-4

INTERSECTION LOS WORKSHEETS – HORIZON YEAR (2050) BASELINE
CONDITIONS

Bella Mar
1: Main Street & I-5 SB Ramps

Horizon Year Baseline
Timing Plan: AM Peak Period

Intersection						
Int Delay, s/veh	16					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	25	28	60	307	542	28
Future Vol, veh/h	25	28	60	307	542	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	-	0	320
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	27	30	65	334	589	30

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	65	0	0	149	65
Stage 1	-	-	-	65	-
Stage 2	-	-	-	84	-
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	1537	-	0	843	999
Stage 1	-	-	0	958	-
Stage 2	-	-	0	939	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1537	-	-	828	999
Mov Cap-2 Maneuver	-	-	-	828	-
Stage 1	-	-	-	941	-
Stage 2	-	-	-	939	-

Approach	EB	WB	SB
HCM Control Delay, s	3.5	0	18.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1537	-	-	828	999
HCM Lane V/C Ratio	0.018	-	-	0.712	0.03
HCM Control Delay (s)	7.4	0	-	19.3	8.7
HCM Lane LOS	A	A	-	C	A
HCM 95th %tile Q(veh)	0.1	-	-	6.1	0.1

Bella Mar
2: Main Street & I-5 NB Ramp

Horizon Year Baseline
Timing Plan: AM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	517	326	492	521	25
Future Volume (veh/h)	13	517	326	492	521	25
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	562	354	535	566	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	31	905	736	624	636	566
Arrive On Green	0.02	0.48	0.39	0.39	0.36	0.36
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	14	562	354	535	566	27
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	0.5	14.2	9.1	19.8	19.2	0.7
Cycle Q Clear(g_c), s	0.5	14.2	9.1	19.8	19.2	0.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	31	905	736	624	636	566
V/C Ratio(X)	0.46	0.62	0.48	0.86	0.89	0.05
Avail Cap(c_a), veh/h	555	1739	1019	864	971	864
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.3	12.2	14.6	17.8	19.5	13.5
Incr Delay (d2), s/veh	10.2	0.7	0.5	6.4	6.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	4.9	3.4	7.1	8.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	41.5	12.9	15.0	24.2	26.4	13.5
LnGrp LOS	D	B	B	C	C	B
Approach Vol, veh/h		576	889		593	
Approach Delay, s/veh		13.6	20.5		25.8	
Approach LOS		B	C		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		36.2		28.0	5.8	30.4
Change Period (Y+Rc), s		5.1		5.1	* 4.7	5.1
Max Green Setting (Gmax), s		59.7		35.0	* 20	35.0
Max Q Clear Time (g_c+l1), s		16.2		21.2	2.5	21.8
Green Ext Time (p_c), s		3.8		1.7	0.0	3.4
Intersection Summary						
HCM 6th Ctrl Delay			20.1			
HCM 6th LOS			C			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Bella Mar
3: Hollister Street & Main Street

Horizon Year Baseline
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	723	103	168	660	41	88	108	187	31	104	105
Future Volume (veh/h)	96	723	103	168	660	41	88	108	187	31	104	105
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		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	104	786	112	183	717	45	96	117	203	34	113	114
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	138	1139	162	239	1431	90	293	473	401	348	216	218
Arrive On Green	0.08	0.36	0.36	0.13	0.42	0.42	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1781	3122	445	1781	3396	213	1154	1870	1585	1060	854	861
Grp Volume(v), veh/h	104	447	451	183	375	387	96	117	203	34	0	227
Grp Sat Flow(s),veh/h/ln	1781	1777	1790	1781	1777	1832	1154	1870	1585	1060	0	1715
Q Serve(g_s), s	3.1	11.6	11.6	5.4	8.4	8.4	4.3	2.7	6.0	1.4	0.0	6.2
Cycle Q Clear(g_c), s	3.1	11.6	11.6	5.4	8.4	8.4	10.5	2.7	6.0	4.1	0.0	6.2
Prop In Lane	1.00		0.25	1.00		0.12	1.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	138	648	653	239	749	772	293	473	401	348	0	434
V/C Ratio(X)	0.75	0.69	0.69	0.77	0.50	0.50	0.33	0.25	0.51	0.10	0.00	0.52
Avail Cap(c_a), veh/h	720	1633	1645	720	1633	1684	510	825	699	547	0	757
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	24.6	14.7	14.7	22.7	11.5	11.5	22.0	16.2	17.4	17.8	0.0	17.5
Incr Delay (d2), s/veh	8.1	1.3	1.3	5.1	0.5	0.5	0.6	0.3	1.0	0.1	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	4.0	4.0	2.3	2.7	2.8	1.1	1.1	2.0	0.3	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.7	16.0	16.0	27.8	12.1	12.0	22.6	16.5	18.4	18.0	0.0	18.5
LnGrp LOS	C	B	B	C	B	B	C	B	B	B	A	B
Approach Vol, veh/h		1002			945			416			261	
Approach Delay, s/veh		17.7			15.1			18.8			18.4	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.7	27.9		18.8	10.8	24.8		18.8				
Change Period (Y+Rc), s	3.5	5.0		5.0	3.5	5.0		5.0				
Max Green Setting (Gmax), s	22.0	50.0		24.0	22.0	50.0		24.0				
Max Q Clear Time (g_c+1.5), s	11.5	10.4		8.2	7.4	13.6		12.5				
Green Ext Time (p_c), s	0.2	5.0		1.2	0.4	6.2		1.3				

Intersection Summary

HCM 6th Ctrl Delay	17.0
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Bella Mar
4: Palm Avenue & I-5 SB Ramps

Horizon Year Baseline
Timing Plan: AM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↗	↖	↖	↖
Traffic Volume (veh/h)	0	463	1712	134	268	1371
Future Volume (veh/h)	0	463	1712	134	268	1371
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	503	1861	0	291	1490
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	558	2417	1114		372	1458
Arrive On Green	0.00	0.68	0.31	0.00	0.21	0.21
Sat Flow, veh/h	1781	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	0	503	1861	0	291	1490
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1395
Q Serve(g_s), s	0.0	5.0	30.0	0.0	14.8	20.0
Cycle Q Clear(g_c), s	0.0	5.0	30.0	0.0	14.8	20.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	558	2417	1114		372	1458
V/C Ratio(X)	0.00	0.21	1.67		0.78	1.02
Avail Cap(c_a), veh/h	558	2417	1114		372	1458
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.7	32.8	0.0	35.8	22.8
Incr Delay (d2), s/veh	0.0	0.0	305.7	0.0	10.3	29.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/lr	0.0	1.5	59.4	0.0	7.2	20.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	5.7	338.6	0.0	46.1	52.2
LnGrp LOS	A	A	F		D	F
Approach Vol, veh/h		503	1861	A	1781	
Approach Delay, s/veh		5.7	338.6		51.2	
Approach LOS		A	F		D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	35.1	35.5			70.6	25.1
Change Period (Y+Rc), s	5.1	5.5			5.5	5.1
Max Green Setting (Gmax), s	30.0	30.0			65.1	20.0
Max Q Clear Time (g_c+10), s	10.0	32.0			7.0	22.0
Green Ext Time (p_c), s	0.0	0.0			3.5	0.0

Intersection Summary

HCM 6th Ctrl Delay		174.7	
HCM 6th LOS		F	

Notes

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

Bella Mar
5: I-5 NB Ramps & Palm Avenue

Horizon Year Baseline
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑				
Traffic Volume (veh/h)	0	715	0	0	787	285	1104	0	173	0	0	0
Future Volume (veh/h)	0	715	0	0	787	285	1104	0	173	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	777	0	0	855	310	1375	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1513	0	0	1089	394	1498	786	0			
Arrive On Green	0.00	0.43	0.00	0.00	0.43	0.43	0.42	0.00	0.00			
Sat Flow, veh/h	0	3741	0	0	2650	925	3563	1870	0			
Grp Volume(v), veh/h	0	777	0	0	594	571	1375	0	0			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1704	1781	1870	0			
Q Serve(g_s), s	0.0	11.0	0.0	0.0	19.7	19.8	24.9	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	11.0	0.0	0.0	19.7	19.8	24.9	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		0.54	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1513	0	0	757	726	1498	786	0			
V/C Ratio(X)	0.00	0.51	0.00	0.00	0.78	0.79	0.92	0.00	0.00			
Avail Cap(c_a), veh/h	0	2082	0	0	1041	998	1565	822	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	14.4	0.0	0.0	16.9	16.9	18.7	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	2.7	2.9	8.8	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			
%ile BackOfQ(50%),veh/lr0.0		3.8	0.0	0.0	7.3	7.1	10.4	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	14.7	0.0	0.0	19.6	19.9	27.5	0.0	0.0			
LnGrp LOS	A	B	A	A	B	B	C	A	A			
Approach Vol, veh/h		777			1165			1375				
Approach Delay, s/veh		14.7			19.8			27.5				
Approach LOS		B			B			C				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		34.5				34.5		33.8				
Change Period (Y+Rc), s		5.4				5.4		5.1				
Max Green Setting (Gmax), s		40.0				40.0		30.0				
Max Q Clear Time (g_c+I1), s		13.0				21.8		26.9				
Green Ext Time (p_c), s		5.5				7.3		1.8				

Intersection Summary

HCM 6th Ctrl Delay	21.8
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Bella Mar
6: Hollister Street & Palm Avenue

Horizon Year Baseline
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖		↖	↖	
Traffic Volume (veh/h)	203	446	84	41	666	40	189	186	70	27	150	166
Future Volume (veh/h)	203	446	84	41	666	40	189	186	70	27	150	166
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	221	485	91	45	724	43	205	202	76	29	163	180
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	267	1185	221	58	951	56	329	502	189	389	315	348
Arrive On Green	0.15	0.40	0.40	0.03	0.28	0.28	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1781	2989	558	1781	3408	202	1038	1295	487	1101	812	897
Grp Volume(v), veh/h	221	287	289	45	377	390	205	0	278	29	0	343
Grp Sat Flow(s),veh/h/ln	1781	1777	1770	1781	1777	1834	1038	0	1783	1101	0	1709
Q Serve(g_s), s	10.1	9.7	9.8	2.1	16.2	16.2	15.7	0.0	9.4	1.6	0.0	12.8
Cycle Q Clear(g_c), s	10.1	9.7	9.8	2.1	16.2	16.2	28.6	0.0	9.4	11.1	0.0	12.8
Prop In Lane	1.00		0.32	1.00		0.11	1.00		0.27	1.00		0.52
Lane Grp Cap(c), veh/h	267	705	702	58	496	512	329	0	691	389	0	663
V/C Ratio(X)	0.83	0.41	0.41	0.78	0.76	0.76	0.62	0.00	0.40	0.07	0.00	0.52
Avail Cap(c_a), veh/h	640	1294	1289	640	1277	1318	424	0	854	489	0	819
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(l)	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	34.4	18.1	18.2	40.1	27.6	27.6	30.5	0.0	18.5	22.6	0.0	19.6
Incr Delay (d2), s/veh	6.4	0.4	0.4	19.9	2.4	2.4	1.9	0.0	0.4	0.1	0.0	0.6
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	4.6	3.7	3.7	1.2	6.7	7.0	3.9	0.0	3.7	0.4	0.0	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.9	18.5	18.5	60.0	30.0	29.9	32.5	0.0	18.9	22.6	0.0	20.2
LnGrp LOS	D	B	B	E	C	C	C	A	B	C	A	C
Approach Vol, veh/h		797			812			483				372
Approach Delay, s/veh		24.7			31.6			24.7				20.4
Approach LOS		C			C			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	39.1		37.3	16.9	29.3		37.3				
Change Period (Y+Rc), s	4.4	* 6		4.9	4.4	6.0		4.9				
Max Green Setting (Gmax), s	30.0	* 61		40.0	30.0	60.0		40.0				
Max Q Clear Time (g_c+14), s	11.8			14.8	12.1	18.2		30.6				
Green Ext Time (p_c), s	0.1	3.6		2.3	0.5	5.0		1.8				

Intersection Summary

HCM 6th Ctrl Delay	26.3
HCM 6th LOS	C

Notes

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

Intersection

Int Delay, s/veh 55.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↖	↗
Traffic Vol, veh/h	76	97	40	596	622	35
Future Vol, veh/h	76	97	40	596	622	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	150	0	320
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	83	105	43	648	676	38

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	43	0	-	0	314 43
Stage 1	-	-	-	-	43 -
Stage 2	-	-	-	-	271 -
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	1566	-	-	0	679 1027
Stage 1	-	-	-	0	979 -
Stage 2	-	-	-	0	775 -
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1566	-	-	-	~ 641 1027
Mov Cap-2 Maneuver	-	-	-	-	~ 641 -
Stage 1	-	-	-	-	924 -
Stage 2	-	-	-	-	775 -

Approach

	EB	WB	SB
HCM Control Delay, s	3.3	0	72.4
HCM LOS			F

Minor Lane/Major Mvmt

	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1566	-	-	641	1027
HCM Lane V/C Ratio	0.053	-	-	1.055	0.037
HCM Control Delay (s)	7.4	0	-	76	8.6
HCM Lane LOS	A	A	-	F	A
HCM 95th %tile Q(veh)	0.2	-	-	18.3	0.1

Notes

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

Bella Mar
2: Main Street & I-5 NB Ramp

Horizon Year Baseline
Timing Plan: PM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	714	586	595	494	23
Future Volume (veh/h)	21	714	586	595	494	23
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	776	637	647	537	25
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	45	993	828	702	594	529
Arrive On Green	0.03	0.53	0.44	0.44	0.33	0.33
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	23	776	637	647	537	25
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	1.0	25.0	21.7	28.9	21.6	0.8
Cycle Q Clear(g_c), s	1.0	25.0	21.7	28.9	21.6	0.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	45	993	828	702	594	529
V/C Ratio(X)	0.51	0.78	0.77	0.92	0.90	0.05
Avail Cap(c_a), veh/h	473	1484	870	737	828	737
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.2	14.2	17.7	19.7	23.9	17.0
Incr Delay (d2), s/veh	8.6	1.6	4.0	16.6	10.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	9.0	9.0	12.3	9.8	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.8	15.8	21.7	36.3	34.2	17.0
LnGrp LOS	D	B	C	D	C	B
Approach Vol, veh/h		799	1284		562	
Approach Delay, s/veh		16.6	29.1		33.4	
Approach LOS		B	C		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		45.0		30.2	6.6	38.4
Change Period (Y+Rc), s		5.1		5.1	* 4.7	5.1
Max Green Setting (Gmax), s		59.7		35.0	* 20	35.0
Max Q Clear Time (g_c+I1), s		27.0		23.6	3.0	30.9
Green Ext Time (p_c), s		6.0		1.5	0.0	2.4
Intersection Summary						
HCM 6th Ctrl Delay			26.2			
HCM 6th LOS			C			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Bella Mar
3: Hollister Street & Main Street

Horizon Year Baseline
Timing Plan: PM Peak Period



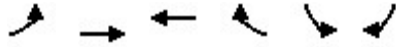
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	909	215	285	843	42	132	150	234	49	175	160
Future Volume (veh/h)	72	909	215	285	843	42	132	150	234	49	175	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		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		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	78	988	234	310	916	46	143	163	254	53	190	174
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	102	920	217	348	1586	80	228	601	509	335	289	265
Arrive On Green	0.06	0.32	0.32	0.20	0.46	0.46	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1781	2852	674	1781	3443	173	1018	1870	1585	969	899	823
Grp Volume(v), veh/h	78	615	607	310	473	489	143	163	254	53	0	364
Grp Sat Flow(s),veh/h/ln	1781	1777	1749	1781	1777	1839	1018	1870	1585	969	0	1722
Q Serve(g_s), s	3.6	27.1	27.1	14.2	16.4	16.4	11.7	5.4	10.9	3.6	0.0	15.3
Cycle Q Clear(g_c), s	3.6	27.1	27.1	14.2	16.4	16.4	27.0	5.4	10.9	9.1	0.0	15.3
Prop In Lane	1.00		0.39	1.00		0.09	1.00		1.00	1.00		0.48
Lane Grp Cap(c), veh/h	102	573	564	348	818	847	228	601	509	335	0	554
V/C Ratio(X)	0.76	1.07	1.08	0.89	0.58	0.58	0.63	0.27	0.50	0.16	0.00	0.66
Avail Cap(c_a), veh/h	382	573	564	382	818	847	228	601	509	335	0	554
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)	0.46	0.46	0.46	1.00	1.00	1.00	0.83	0.83	0.83	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.0	28.5	28.5	32.9	16.6	16.6	36.2	21.2	23.0	24.6	0.0	24.5
Incr Delay (d2), s/veh	5.4	47.3	49.1	20.9	3.0	2.9	4.5	0.2	0.6	0.2	0.0	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	1.7	18.1	18.1	7.8	6.6	6.9	3.1	2.3	3.9	0.8	0.0	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.5	75.7	77.5	53.8	19.6	19.5	40.7	21.4	23.7	24.8	0.0	27.4
LnGrp LOS	D	F	F	D	B	B	D	C	C	C	A	C
Approach Vol, veh/h		1300			1272			560				417
Approach Delay, s/veh		74.7			27.9			27.3				27.0
Approach LOS		E			C			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	43.7		32.0	19.9	32.1		32.0				
Change Period (Y+Rc), s	3.5	5.0		5.0	3.5	5.0		5.0				
Max Green Setting (Gmax), s	18.0	25.5		27.0	18.0	25.5		27.0				
Max Q Clear Time (g_c+1), s	15.6	18.4		17.3	16.2	29.1		29.0				
Green Ext Time (p_c), s	0.1	3.2		1.7	0.2	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay	44.9
HCM 6th LOS	D

Bella Mar
4: Palm Avenue & I-5 SB Ramps

Horizon Year Baseline
Timing Plan: PM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷	↷	↶	↷
Traffic Volume (veh/h)	0	557	1416	131	550	1842
Future Volume (veh/h)	0	557	1416	131	550	1842
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	605	1539	0	598	2002
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	295	1963	1175		589	1384
Arrive On Green	0.00	0.55	0.33	0.00	0.33	0.33
Sat Flow, veh/h	1781	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	0	605	1539	0	598	2002
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1395
Q Serve(g_s), s	0.0	8.3	30.0	0.0	30.0	30.0
Cycle Q Clear(g_c), s	0.0	8.3	30.0	0.0	30.0	30.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	295	1963	1175		589	1384
V/C Ratio(X)	0.00	0.31	1.31		1.01	1.45
Avail Cap(c_a), veh/h	295	1963	1175		589	1384
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	11.0	30.3	0.0	30.3	22.9
Incr Delay (d2), s/veh	0.0	0.1	145.4	0.0	40.9	205.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/lr	0.0	2.9	35.6	0.0	18.6	52.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	11.0	175.7	0.0	71.2	227.9
LnGrp LOS	A	B	F		F	F
Approach Vol, veh/h		605	1539	A	2600	
Approach Delay, s/veh		11.0	175.7		191.8	
Approach LOS		B	F		F	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	30.1	35.5			55.6	35.1
Change Period (Y+Rc), s	5.1	5.5			5.5	5.1
Max Green Setting (Gmax), s	30.0	30.0			50.1	30.0
Max Q Clear Time (g_c+10), s	32.0	32.0			10.3	32.0
Green Ext Time (p_c), s	0.0	0.0			4.3	0.0

Intersection Summary

HCM 6th Ctrl Delay		163.6	
HCM 6th LOS		F	

Notes

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

Bella Mar
5: I-5 NB Ramps & Palm Avenue

Horizon Year Baseline
Timing Plan: PM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑				
Traffic Volume (veh/h)	0	1114	0	0	784	180	697	10	119	0	0	0
Future Volume (veh/h)	0	1114	0	0	784	180	697	10	119	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	1211	0	0	852	196	886	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1706	0	0	1377	317	1147	602	0			
Arrive On Green	0.00	0.48	0.00	0.00	0.48	0.48	0.32	0.00	0.00			
Sat Flow, veh/h	0	3741	0	0	2962	660	3563	1870	0			
Grp Volume(v), veh/h	0	1211	0	0	528	520	886	0	0			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1752	1781	1870	0			
Q Serve(g_s), s	0.0	14.3	0.0	0.0	11.6	11.7	11.9	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	14.3	0.0	0.0	11.6	11.7	11.9	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		0.38	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1706	0	0	853	841	1147	602	0			
V/C Ratio(X)	0.00	0.71	0.00	0.00	0.62	0.62	0.77	0.00	0.00			
Avail Cap(c_a), veh/h	0	2681	0	0	1340	1321	2016	1058	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	10.9	0.0	0.0	10.2	10.2	16.2	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.7	0.7	1.1	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/lr0.0	0.0	4.1	0.0	0.0	3.4	3.4	4.1	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	11.4	0.0	0.0	10.9	10.9	17.4	0.0	0.0			
LnGrp LOS	A	B	A	A	B	B	B	A	A			
Approach Vol, veh/h		1211			1048			886				
Approach Delay, s/veh		11.4			10.9			17.4				
Approach LOS		B			B			B				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		30.9				30.9		22.2				
Change Period (Y+Rc), s		5.4				5.4		5.1				
Max Green Setting (Gmax), s		40.0				40.0		30.0				
Max Q Clear Time (g_c+I1), s		16.3				13.7		13.9				
Green Ext Time (p_c), s		9.2				7.3		3.2				

Intersection Summary

HCM 6th Ctrl Delay	12.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Bella Mar
6: Hollister Street & Palm Avenue

Horizon Year Baseline
Timing Plan: PM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	221	685	166	43	483	52	152	190	67	57	254	352
Future Volume (veh/h)	221	685	166	43	483	52	152	190	67	57	254	352
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		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	240	745	180	47	525	57	165	207	73	62	276	383
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	284	969	234	61	698	76	161	597	210	466	320	445
Arrive On Green	0.16	0.34	0.34	0.03	0.22	0.22	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	1781	2838	686	1781	3234	350	775	1321	466	1099	709	984
Grp Volume(v), veh/h	240	466	459	47	288	294	165	0	280	62	0	659
Grp Sat Flow(s),veh/h/ln	1781	1777	1747	1781	1777	1807	775	0	1787	1099	0	1693
Q Serve(g_s), s	11.6	20.8	20.8	2.3	13.4	13.5	9.1	0.0	9.0	3.4	0.0	30.9
Cycle Q Clear(g_c), s	11.6	20.8	20.8	2.3	13.4	13.5	40.0	0.0	9.0	12.5	0.0	30.9
Prop In Lane	1.00		0.39	1.00		0.19	1.00		0.26	1.00		0.58
Lane Grp Cap(c), veh/h	284	607	596	61	384	390	161	0	807	466	0	765
V/C Ratio(X)	0.84	0.77	0.77	0.77	0.75	0.75	1.03	0.00	0.35	0.13	0.00	0.86
Avail Cap(c_a), veh/h	603	1220	1199	603	1204	1225	161	0	807	466	0	765
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(l)	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	36.1	26.0	26.0	42.4	32.5	32.5	42.0	0.0	15.8	19.8	0.0	21.8
Incr Delay (d2), s/veh	6.8	2.1	2.1	18.6	3.0	3.0	78.3	0.0	0.3	0.1	0.0	9.9
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/lr	5.3	8.5	8.4	1.3	5.8	5.9	6.9	0.0	3.5	0.9	0.0	13.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.9	28.1	28.2	61.0	35.4	35.5	120.4	0.0	16.0	20.0	0.0	31.7
LnGrp LOS	D	C	C	E	D	D	F	A	B	B	A	C
Approach Vol, veh/h		1165			629			445			721	
Approach Delay, s/veh		31.2			37.4			54.7			30.7	
Approach LOS		C			D			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	36.2		44.9	18.5	25.1		44.9				
Change Period (Y+Rc), s	4.4	* 6		4.9	4.4	6.0		4.9				
Max Green Setting (Gmax), s	30.0	* 61		40.0	30.0	60.0		40.0				
Max Q Clear Time (g_c+14), s	14.3	22.8		32.9	13.6	15.5		42.0				
Green Ext Time (p_c), s	0.1	6.6		2.7	0.6	3.6		0.0				

Intersection Summary

HCM 6th Ctrl Delay	35.9
HCM 6th LOS	D

Notes

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

APPENDIX D-5

INTERSECTION LOS WORKSHEETS – HORIZON YEAR (2050) WITH CUMULATIVE PROJECT CONDITIONS

Intersection						
Int Delay, s/veh	149					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	87	222	349	307	542	411
Future Vol, veh/h	87	222	349	307	542	411
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	-	0	320
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	95	241	379	334	589	447

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	379	0	-	0	810 379
Stage 1	-	-	-	-	379 -
Stage 2	-	-	-	-	431 -
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	1179	-	-	0 ~ 349	668
Stage 1	-	-	-	0	692 -
Stage 2	-	-	-	0	655 -
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1179	-	-	- ~ 317	668
Mov Cap-2 Maneuver	-	-	-	- ~ 317	-
Stage 1	-	-	-	-	628 -
Stage 2	-	-	-	-	655 -

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	251.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1179	-	-	317	668
HCM Lane V/C Ratio	0.08	-	-	1.858	0.669
HCM Control Delay (s)	8.3	0	-	425.9	20.6
HCM Lane LOS	A	A	-	F	C
HCM 95th %tile Q(veh)	0.3	-	-	39.6	5.1

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

Bella Mar
2: Main Street & I-5 NB Ramp

Horizon Year Baseline + CP
Timing Plan: AM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	156	569	448	492	521	192
Future Volume (veh/h)	156	569	448	492	521	192
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	170	618	487	535	566	209
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	206	1002	686	582	623	554
Arrive On Green	0.12	0.54	0.37	0.37	0.35	0.35
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	170	618	487	535	566	209
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	8.3	20.4	19.8	28.7	26.9	8.8
Cycle Q Clear(g_c), s	8.3	20.4	19.8	28.7	26.9	8.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	206	1002	686	582	623	554
V/C Ratio(X)	0.82	0.62	0.71	0.92	0.91	0.38
Avail Cap(c_a), veh/h	286	1132	732	620	819	729
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.4	14.3	24.1	26.9	27.6	21.7
Incr Delay (d2), s/veh	12.8	0.8	3.0	18.4	11.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	7.8	8.6	12.9	12.5	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	51.2	15.2	27.1	45.3	39.1	22.1
LnGrp LOS	D	B	C	D	D	C
Approach Vol, veh/h		788	1022		775	
Approach Delay, s/veh		22.9	36.6		34.5	
Approach LOS		C	D		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		52.7		36.2	15.0	37.7
Change Period (Y+Rc), s		5.1		5.1	* 4.7	5.1
Max Green Setting (Gmax), s		53.8		40.9	* 14	34.8
Max Q Clear Time (g_c+I1), s		22.4		28.9	10.3	30.7
Green Ext Time (p_c), s		4.2		2.2	0.2	1.9
Intersection Summary						
HCM 6th Ctrl Delay			31.8			
HCM 6th LOS			C			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Bella Mar
3: Hollister Street & Main Street

Horizon Year Baseline + CP
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	751	127	168	726	41	143	108	187	31	104	105
Future Volume (veh/h)	96	751	127	168	726	41	143	108	187	31	104	105
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		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	104	816	138	183	789	45	155	117	203	34	113	114
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	136	1108	187	234	1433	82	326	547	463	373	250	252
Arrive On Green	0.08	0.36	0.36	0.13	0.42	0.42	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1781	3040	514	1781	3417	195	1154	1870	1585	1060	854	861
Grp Volume(v), veh/h	104	477	477	183	410	424	155	117	203	34	0	227
Grp Sat Flow(s),veh/h/ln	1781	1777	1778	1781	1777	1835	1154	1870	1585	1060	0	1715
Q Serve(g_s), s	3.6	14.9	14.9	6.3	11.1	11.1	8.1	3.0	6.6	1.6	0.0	6.9
Cycle Q Clear(g_c), s	3.6	14.9	14.9	6.3	11.1	11.1	14.9	3.0	6.6	4.6	0.0	6.9
Prop In Lane	1.00		0.29	1.00		0.11	1.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	136	647	648	234	745	770	326	547	463	373	0	502
V/C Ratio(X)	0.77	0.74	0.74	0.78	0.55	0.55	0.48	0.21	0.44	0.09	0.00	0.45
Avail Cap(c_a), veh/h	378	1205	1206	582	1409	1455	568	940	796	595	0	862
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	28.9	17.6	17.6	26.8	14.0	14.0	24.5	17.0	18.3	18.7	0.0	18.4
Incr Delay (d2), s/veh	8.7	1.7	1.7	5.7	0.6	0.6	1.1	0.2	0.7	0.1	0.0	0.6
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	1.8	5.4	5.5	2.8	3.8	4.0	2.1	1.2	2.3	0.4	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.5	19.2	19.2	32.4	14.6	14.6	25.5	17.2	18.9	18.9	0.0	19.0
LnGrp LOS	D	B	B	C	B	B	C	B	B	B	A	B
Approach Vol, veh/h		1058			1017			475			261	
Approach Delay, s/veh		21.0			17.8			20.7			19.0	
Approach LOS		C			B			C			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.4	31.7		23.6	11.9	28.2		23.6				
Change Period (Y+Rc), s	3.5	5.0		5.0	3.5	5.0		5.0				
Max Green Setting (Gmax), s	13.5	50.5		32.0	20.8	43.2		32.0				
Max Q Clear Time (g_c+1), s	13.6	13.1		8.9	8.3	16.9		16.9				
Green Ext Time (p_c), s	0.1	5.6		1.4	0.4	6.4		1.7				

Intersection Summary

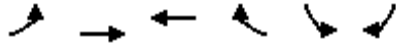
HCM 6th Ctrl Delay	19.6
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Bella Mar
4: Palm Avenue & I-5 SB Ramps

Horizon Year Baseline + CP
Timing Plan: AM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	463	1712	134	268	1371
Future Volume (veh/h)	0	463	1712	134	268	1371
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	503	1861	0	291	1490
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	558	2417	1114		372	1458
Arrive On Green	0.00	0.68	0.31	0.00	0.21	0.21
Sat Flow, veh/h	1781	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	0	503	1861	0	291	1490
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1395
Q Serve(g_s), s	0.0	5.0	30.0	0.0	14.8	20.0
Cycle Q Clear(g_c), s	0.0	5.0	30.0	0.0	14.8	20.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	558	2417	1114		372	1458
V/C Ratio(X)	0.00	0.21	1.67		0.78	1.02
Avail Cap(c_a), veh/h	558	2417	1114		372	1458
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.7	32.8	0.0	35.8	22.8
Incr Delay (d2), s/veh	0.0	0.0	305.7	0.0	10.3	29.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.5	59.4	0.0	7.2	20.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	5.7	338.6	0.0	46.1	52.2
LnGrp LOS	A	A	F		D	F
Approach Vol, veh/h		503	1861	A	1781	
Approach Delay, s/veh		5.7	338.6		51.2	
Approach LOS		A	F		D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	35.1	35.5			70.6	25.1
Change Period (Y+Rc), s	5.1	5.5			5.5	5.1
Max Green Setting (Gmax), s	30.0	30.0			65.1	20.0
Max Q Clear Time (g_c+1), s	10.0	32.0			7.0	22.0
Green Ext Time (p_c), s	0.0	0.0			3.5	0.0

Intersection Summary

HCM 6th Ctrl Delay	174.7
HCM 6th LOS	F

Notes

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

Bella Mar
5: I-5 NB Ramps & Palm Avenue

Horizon Year Baseline + CP
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑				
Traffic Volume (veh/h)	0	715	0	0	787	285	1104	0	173	0	0	0
Future Volume (veh/h)	0	715	0	0	787	285	1104	0	173	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	777	0	0	855	310	1375	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1513	0	0	1089	394	1498	786	0			
Arrive On Green	0.00	0.43	0.00	0.00	0.43	0.43	0.42	0.00	0.00			
Sat Flow, veh/h	0	3741	0	0	2650	925	3563	1870	0			
Grp Volume(v), veh/h	0	777	0	0	594	571	1375	0	0			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1704	1781	1870	0			
Q Serve(g_s), s	0.0	11.0	0.0	0.0	19.7	19.8	24.9	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	11.0	0.0	0.0	19.7	19.8	24.9	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		0.54	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1513	0	0	757	726	1498	786	0			
V/C Ratio(X)	0.00	0.51	0.00	0.00	0.78	0.79	0.92	0.00	0.00			
Avail Cap(c_a), veh/h	0	2082	0	0	1041	998	1565	822	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	14.4	0.0	0.0	16.9	16.9	18.7	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	2.7	2.9	8.8	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			
%ile BackOfQ(50%),veh/ln	0.0	3.8	0.0	0.0	7.3	7.1	10.4	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	14.7	0.0	0.0	19.6	19.9	27.5	0.0	0.0			
LnGrp LOS	A	B	A	A	B	B	C	A	A			
Approach Vol, veh/h		777			1165			1375				
Approach Delay, s/veh		14.7			19.8			27.5				
Approach LOS		B			B			C				
Timer - Assigned Phs		2			6			8				
Phs Duration (G+Y+Rc), s		34.5			34.5			33.8				
Change Period (Y+Rc), s		5.4			5.4			5.1				
Max Green Setting (Gmax), s		40.0			40.0			30.0				
Max Q Clear Time (g_c+I1), s		13.0			21.8			26.9				
Green Ext Time (p_c), s		5.5			7.3			1.8				

Intersection Summary

HCM 6th Ctrl Delay	21.8
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Bella Mar
6: Hollister Street & Palm Avenue

Horizon Year Baseline + CP
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	203	446	84	41	666	40	189	186	70	27	150	166
Future Volume (veh/h)	203	446	84	41	666	40	189	186	70	27	150	166
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	221	485	91	45	724	43	205	202	76	29	163	180
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	267	1185	221	58	951	56	329	502	189	389	315	348
Arrive On Green	0.15	0.40	0.40	0.03	0.28	0.28	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1781	2989	558	1781	3408	202	1038	1295	487	1101	812	897
Grp Volume(v), veh/h	221	287	289	45	377	390	205	0	278	29	0	343
Grp Sat Flow(s),veh/h/ln	1781	1777	1770	1781	1777	1834	1038	0	1783	1101	0	1709
Q Serve(g_s), s	10.1	9.7	9.8	2.1	16.2	16.2	15.7	0.0	9.4	1.6	0.0	12.8
Cycle Q Clear(g_c), s	10.1	9.7	9.8	2.1	16.2	16.2	28.6	0.0	9.4	11.1	0.0	12.8
Prop In Lane	1.00		0.32	1.00		0.11	1.00		0.27	1.00		0.52
Lane Grp Cap(c), veh/h	267	705	702	58	496	512	329	0	691	389	0	663
V/C Ratio(X)	0.83	0.41	0.41	0.78	0.76	0.76	0.62	0.00	0.40	0.07	0.00	0.52
Avail Cap(c_a), veh/h	640	1294	1289	640	1277	1318	424	0	854	489	0	819
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	34.4	18.1	18.2	40.1	27.6	27.6	30.5	0.0	18.5	22.6	0.0	19.6
Incr Delay (d2), s/veh	6.4	0.4	0.4	19.9	2.4	2.4	1.9	0.0	0.4	0.1	0.0	0.6
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	4.6	3.7	3.7	1.2	6.7	7.0	3.9	0.0	3.7	0.4	0.0	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.9	18.5	18.5	60.0	30.0	29.9	32.5	0.0	18.9	22.6	0.0	20.2
LnGrp LOS	D	B	B	E	C	C	C	A	B	C	A	C
Approach Vol, veh/h		797			812			483			372	
Approach Delay, s/veh		24.7			31.6			24.7			20.4	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	39.1		37.3	16.9	29.3		37.3				
Change Period (Y+Rc), s	4.4	* 6		4.9	4.4	6.0		4.9				
Max Green Setting (Gmax), s	30.0	* 61		40.0	30.0	60.0		40.0				
Max Q Clear Time (g_c+14), s	14.1	11.8		14.8	12.1	18.2		30.6				
Green Ext Time (p_c), s	0.1	3.6		2.3	0.5	5.0		1.8				

Intersection Summary

HCM 6th Ctrl Delay	26.3
HCM 6th LOS	C

Notes

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

Intersection

Int Delay, s/veh 739.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↖	↗
Traffic Vol, veh/h	238	584	166	596	622	190
Future Vol, veh/h	238	584	166	596	622	190
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	150	0	320
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	259	635	180	648	676	207

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	180	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1396	-	0 ~ 170
Stage 1	-	-	0 851
Stage 2	-	-	0 ~ 301
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1396	-	- ~ 121
Mov Cap-2 Maneuver	-	-	- ~ 121
Stage 1	-	-	- ~ 607
Stage 2	-	-	- ~ 301

Approach

	EB	WB	SB
HCM Control Delay, s	2.4	0	\$ 1637.7
HCM LOS			F

Minor Lane/Major Mvmt

	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1396	-	-	121	863
HCM Lane V/C Ratio	0.185	-	-	5.587	0.239
HCM Control Delay (s)	8.2	0	\$ 2134.7	10.5	
HCM Lane LOS	A	A	-	F	B
HCM 95th %tile Q(veh)	0.7	-	-	72.9	0.9

Notes

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

Bella Mar
2: Main Street & I-5 NB Ramp

Horizon Year Baseline+ CP
Timing Plan: PM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↕	↗	↖	↗	↘	↘
Traffic Volume (veh/h)	392	830	644	595	494	91
Future Volume (veh/h)	392	830	644	595	494	91
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	426	902	700	647	537	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	379	1161	679	576	503	447
Arrive On Green	0.21	0.62	0.36	0.36	0.28	0.28
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	426	902	700	647	537	99
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	22.3	37.1	38.1	38.1	29.6	5.0
Cycle Q Clear(g_c), s	22.3	37.1	38.1	38.1	29.6	5.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	379	1161	679	576	503	447
V/C Ratio(X)	1.12	0.78	1.03	1.12	1.07	0.22
Avail Cap(c_a), veh/h	379	1161	679	576	503	447
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.3	14.6	33.4	33.4	37.7	28.8
Incr Delay (d2), s/veh	84.7	3.4	42.6	76.4	59.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.3	14.5	24.3	26.0	20.6	5.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	126.0	18.0	76.0	109.8	97.3	29.1
LnGrp LOS	F	B	F	F	F	C
Approach Vol, veh/h		1328	1347		636	
Approach Delay, s/veh		52.6	92.2		86.7	
Approach LOS		D	F		F	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		70.2		34.7	27.0	43.2
Change Period (Y+Rc), s		5.1		5.1	* 4.7	5.1
Max Green Setting (Gmax), s		65.1		29.6	* 22	38.1
Max Q Clear Time (g_c+I1), s		39.1		31.6	24.3	40.1
Green Ext Time (p_c), s		7.2		0.0	0.0	0.0
Intersection Summary						
HCM 6th Ctrl Delay			75.3			
HCM 6th LOS			E			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Bella Mar
3: Hollister Street & Main Street

Horizon Year Baseline+ CP
Timing Plan: PM Peak Period



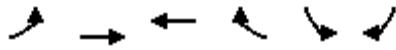
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	972	268	285	874	42	158	150	234	49	175	160
Future Volume (veh/h)	72	972	268	285	874	42	158	150	234	49	175	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		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		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	78	1057	291	310	950	46	172	163	254	53	190	174
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	101	991	271	324	1674	81	197	557	472	309	268	245
Arrive On Green	0.06	0.36	0.36	0.18	0.49	0.49	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1781	2758	754	1781	3450	167	1018	1870	1585	969	899	823
Grp Volume(v), veh/h	78	678	670	310	489	507	172	163	254	53	0	364
Grp Sat Flow(s),veh/h/ln	1781	1777	1735	1781	1777	1840	1018	1870	1585	969	0	1722
Q Serve(g_s), s	3.6	30.2	30.2	14.5	16.4	16.4	9.2	5.6	11.3	3.7	0.0	15.8
Cycle Q Clear(g_c), s	3.6	30.2	30.2	14.5	16.4	16.4	25.0	5.6	11.3	9.4	0.0	15.8
Prop In Lane	1.00		0.43	1.00		0.09	1.00		1.00	1.00		0.48
Lane Grp Cap(c), veh/h	101	639	624	324	862	893	197	557	472	309	0	513
V/C Ratio(X)	0.77	1.06	1.07	0.96	0.57	0.57	0.87	0.29	0.54	0.17	0.00	0.71
Avail Cap(c_a), veh/h	197	639	624	324	862	893	197	557	472	309	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)	0.33	0.33	0.33	1.00	1.00	1.00	0.83	0.83	0.83	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.1	26.9	26.9	34.0	15.4	15.4	39.0	22.7	24.7	26.3	0.0	26.3
Incr Delay (d2), s/veh	4.2	39.2	43.7	38.1	2.7	2.6	28.0	0.2	1.0	0.3	0.0	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	18.5	18.8	9.3	6.5	6.7	5.0	2.4	4.1	0.9	0.0	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.3	66.1	70.6	72.1	18.1	18.0	67.0	22.9	25.7	26.6	0.0	30.8
LnGrp LOS	D	F	F	E	B	B	E	C	C	C	A	C
Approach Vol, veh/h		1426			1306			589			417	
Approach Delay, s/veh		67.0			30.9			37.0			30.3	
Approach LOS		E			C			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	45.7		30.0	18.8	35.2		30.0				
Change Period (Y+Rc), s	3.5	5.0		5.0	3.5	5.0		5.0				
Max Green Setting (Gmax), s	3	36.2		25.0	15.3	30.2		25.0				
Max Q Clear Time (g_c+1), s	15.6	18.4		17.8	16.5	32.2		27.0				
Green Ext Time (p_c), s	0.0	5.8		1.4	0.0	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay	45.5
HCM 6th LOS	D

Bella Mar
4: Palm Avenue & I-5 SB Ramps

Horizon Year Baseline+ CP
Timing Plan: PM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑	↗	↘	↗↗
Traffic Volume (veh/h)	0	557	1416	131	550	1842
Future Volume (veh/h)	0	557	1416	131	550	1842
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	605	1539	0	598	2002
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	295	1963	1175		589	1384
Arrive On Green	0.00	0.55	0.33	0.00	0.33	0.33
Sat Flow, veh/h	1781	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	0	605	1539	0	598	2002
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1395
Q Serve(g_s), s	0.0	8.3	30.0	0.0	30.0	30.0
Cycle Q Clear(g_c), s	0.0	8.3	30.0	0.0	30.0	30.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	295	1963	1175		589	1384
V/C Ratio(X)	0.00	0.31	1.31		1.01	1.45
Avail Cap(c_a), veh/h	295	1963	1175		589	1384
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	11.0	30.3	0.0	30.3	22.9
Incr Delay (d2), s/veh	0.0	0.1	145.4	0.0	40.9	205.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.9	35.6	0.0	18.6	52.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	11.0	175.7	0.0	71.2	227.9
LnGrp LOS	A	B	F		F	F
Approach Vol, veh/h		605	1539	A	2600	
Approach Delay, s/veh		11.0	175.7		191.8	
Approach LOS		B	F		F	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	20.1	35.5			55.6	35.1
Change Period (Y+Rc), s	5.1	5.5			5.5	5.1
Max Green Setting (Gmax), s	15.0	30.0			50.1	30.0
Max Q Clear Time (g_c+1), s	10.0	32.0			10.3	32.0
Green Ext Time (p_c), s	0.0	0.0			4.3	0.0

Intersection Summary

HCM 6th Ctrl Delay	163.6
HCM 6th LOS	F

Notes

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

Bella Mar
5: I-5 NB Ramps & Palm Avenue

Horizon Year Baseline+ CP
Timing Plan: PM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑				
Traffic Volume (veh/h)	0	1114	0	0	784	180	697	10	119	0	0	0
Future Volume (veh/h)	0	1114	0	0	784	180	697	10	119	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	1211	0	0	852	196	886	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1706	0	0	1377	317	1147	602	0			
Arrive On Green	0.00	0.48	0.00	0.00	0.48	0.48	0.32	0.00	0.00			
Sat Flow, veh/h	0	3741	0	0	2962	660	3563	1870	0			
Grp Volume(v), veh/h	0	1211	0	0	528	520	886	0	0			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1752	1781	1870	0			
Q Serve(g_s), s	0.0	14.3	0.0	0.0	11.6	11.7	11.9	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	14.3	0.0	0.0	11.6	11.7	11.9	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		0.38	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1706	0	0	853	841	1147	602	0			
V/C Ratio(X)	0.00	0.71	0.00	0.00	0.62	0.62	0.77	0.00	0.00			
Avail Cap(c_a), veh/h	0	2681	0	0	1340	1321	2016	1058	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	10.9	0.0	0.0	10.2	10.2	16.2	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.7	0.7	1.1	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	4.1	0.0	0.0	3.4	3.4	4.1	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	11.4	0.0	0.0	10.9	10.9	17.4	0.0	0.0			
LnGrp LOS	A	B	A	A	B	B	B	A	A			
Approach Vol, veh/h		1211			1048			886				
Approach Delay, s/veh		11.4			10.9			17.4				
Approach LOS		B			B			B				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		30.9				30.9		22.2				
Change Period (Y+Rc), s		5.4				5.4		5.1				
Max Green Setting (Gmax), s		40.0				40.0		30.0				
Max Q Clear Time (g_c+I1), s		16.3				13.7		13.9				
Green Ext Time (p_c), s		9.2				7.3		3.2				

Intersection Summary

HCM 6th Ctrl Delay	12.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Bella Mar
6: Hollister Street & Palm Avenue

Horizon Year Baseline+ CP
Timing Plan: PM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	221	685	166	43	483	52	152	190	67	57	254	352
Future Volume (veh/h)	221	685	166	43	483	52	152	190	67	57	254	352
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		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	240	745	180	47	525	57	165	207	73	62	276	383
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	284	969	234	61	698	76	161	597	210	466	320	445
Arrive On Green	0.16	0.34	0.34	0.03	0.22	0.22	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	1781	2838	686	1781	3234	350	775	1321	466	1099	709	984
Grp Volume(v), veh/h	240	466	459	47	288	294	165	0	280	62	0	659
Grp Sat Flow(s),veh/h/ln	1781	1777	1747	1781	1777	1807	775	0	1787	1099	0	1693
Q Serve(g_s), s	11.6	20.8	20.8	2.3	13.4	13.5	9.1	0.0	9.0	3.4	0.0	30.9
Cycle Q Clear(g_c), s	11.6	20.8	20.8	2.3	13.4	13.5	40.0	0.0	9.0	12.5	0.0	30.9
Prop In Lane	1.00		0.39	1.00		0.19	1.00		0.26	1.00		0.58
Lane Grp Cap(c), veh/h	284	607	596	61	384	390	161	0	807	466	0	765
V/C Ratio(X)	0.84	0.77	0.77	0.77	0.75	0.75	1.03	0.00	0.35	0.13	0.00	0.86
Avail Cap(c_a), veh/h	603	1220	1199	603	1204	1225	161	0	807	466	0	765
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	36.1	26.0	26.0	42.4	32.5	32.5	42.0	0.0	15.8	19.8	0.0	21.8
Incr Delay (d2), s/veh	6.8	2.1	2.1	18.6	3.0	3.0	78.3	0.0	0.3	0.1	0.0	9.9
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	5.3	8.5	8.4	1.3	5.8	5.9	6.9	0.0	3.5	0.9	0.0	13.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.9	28.1	28.2	61.0	35.4	35.5	120.4	0.0	16.0	20.0	0.0	31.7
LnGrp LOS	D	C	C	E	D	D	F	A	B	B	A	C
Approach Vol, veh/h		1165			629			445			721	
Approach Delay, s/veh		31.2			37.4			54.7			30.7	
Approach LOS		C			D			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	36.2		44.9	18.5	25.1		44.9				
Change Period (Y+Rc), s	4.4	* 6		4.9	4.4	6.0		4.9				
Max Green Setting (Gmax), s	30.0	* 61		40.0	30.0	60.0		40.0				
Max Q Clear Time (g_c+1), s	14.3	22.8		32.9	13.6	15.5		42.0				
Green Ext Time (p_c), s	0.1	6.6		2.7	0.6	3.6		0.0				

Intersection Summary

HCM 6th Ctrl Delay	35.9
HCM 6th LOS	D

Notes

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

APPENDIX D-6

INTERSECTION LOS WORKSHEETS – HORIZON YEAR (2050) WITH PROJECT CONDITIONS

Intersection

Int Delay, s/veh 157.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	87	222	349	307	554	411
Future Vol, veh/h	87	222	349	307	554	411
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	-	0	320
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	95	241	379	334	602	447

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	379	0	-	0	810 379
Stage 1	-	-	-	-	379 -
Stage 2	-	-	-	-	431 -
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	1179	-	-	0 ~ 349	668
Stage 1	-	-	-	0	692 -
Stage 2	-	-	-	0	655 -
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1179	-	-	- ~ 317	668
Mov Cap-2 Maneuver	-	-	-	- ~ 317	-
Stage 1	-	-	-	-	628 -
Stage 2	-	-	-	-	655 -

Approach

	EB	WB	SB
HCM Control Delay, s	2.3	0	263.6
HCM LOS			F

Minor Lane/Major Mvmt

	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1179	-	-	317	668
HCM Lane V/C Ratio	0.08	-	-	1.9	0.669
HCM Control Delay (s)	8.3	0	-	443.9	20.6
HCM Lane LOS	A	A	-	F	C
HCM 95th %tile Q(veh)	0.3	-	-	41.1	5.1

Notes

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

Bella Mar
2: Main Street & I-5 NB Ramp

Horizon Year + CP with Project
Timing Plan: AM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	156	581	448	542	521	192
Future Volume (veh/h)	156	581	448	542	521	192
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	170	632	487	589	566	209
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	205	1014	703	596	620	551
Arrive On Green	0.12	0.54	0.38	0.38	0.35	0.35
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	170	632	487	589	566	209
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	8.6	21.6	20.3	34.1	28.1	9.2
Cycle Q Clear(g_c), s	8.6	21.6	20.3	34.1	28.1	9.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	205	1014	703	596	620	551
V/C Ratio(X)	0.83	0.62	0.69	0.99	0.91	0.38
Avail Cap(c_a), veh/h	275	1088	703	596	787	701
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	14.7	24.3	28.7	28.8	22.7
Incr Delay (d2), s/veh	14.4	1.0	2.9	33.7	12.9	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	8.3	8.9	17.5	13.3	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	54.5	15.7	27.3	62.4	41.7	23.1
LnGrp LOS	D	B	C	E	D	C
Approach Vol, veh/h		802	1076		775	
Approach Delay, s/veh		23.9	46.5		36.7	
Approach LOS		C	D		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		55.2		37.3	15.3	39.9
Change Period (Y+Rc), s		5.1		5.1	* 4.7	5.1
Max Green Setting (Gmax), s		53.8		40.9	* 14	34.8
Max Q Clear Time (g_c+I1), s		23.6		30.1	10.6	36.1
Green Ext Time (p_c), s		4.3		2.1	0.1	0.0
Intersection Summary						
HCM 6th Ctrl Delay			36.8			
HCM 6th LOS			D			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Bella Mar
3: Hollister Street & Main Street

Horizon Year + CP with Project
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	751	139	170	726	41	193	114	193	31	106	105
Future Volume (veh/h)	96	751	139	170	726	41	193	114	193	31	106	105
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	104	816	151	185	789	45	210	124	210	34	115	114
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	135	1058	196	231	1393	79	361	617	523	395	284	282
Arrive On Green	0.08	0.35	0.35	0.13	0.41	0.41	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1781	2994	554	1781	3417	195	1152	1870	1585	1046	862	855
Grp Volume(v), veh/h	104	484	483	185	410	424	210	124	210	34	0	229
Grp Sat Flow(s),veh/h/ln	1781	1777	1771	1781	1777	1835	1152	1870	1585	1046	0	1717
Q Serve(g_s), s	4.1	17.5	17.5	7.3	12.9	12.9	12.5	3.4	7.4	1.7	0.0	7.5
Cycle Q Clear(g_c), s	4.1	17.5	17.5	7.3	12.9	12.9	19.9	3.4	7.4	5.2	0.0	7.5
Prop In Lane	1.00		0.31	1.00		0.11	1.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	135	628	626	231	724	748	361	617	523	395	0	566
V/C Ratio(X)	0.77	0.77	0.77	0.80	0.57	0.57	0.58	0.20	0.40	0.09	0.00	0.40
Avail Cap(c_a), veh/h	328	995	992	480	1148	1186	554	931	789	571	0	855
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	32.8	20.8	20.8	30.5	16.5	16.5	26.4	17.4	18.7	19.2	0.0	18.7
Incr Delay (d2), s/veh	8.9	2.0	2.1	6.3	0.7	0.7	1.5	0.2	0.5	0.1	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	6.8	6.8	3.3	4.7	4.9	3.3	1.4	0.1	0.4	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.7	22.8	22.8	36.8	17.2	17.2	27.9	17.5	19.2	19.3	0.0	19.2
LnGrp LOS	D	C	C	D	B	B	C	B	B	B	A	B
Approach Vol, veh/h		1071			1019			544			263	
Approach Delay, s/veh		24.6			20.7			22.2			19.2	
Approach LOS		C			C			C			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	34.5		28.8	12.9	30.6		28.8				
Change Period (Y+Rc), s	3.5	5.0		5.0	3.5	5.0		5.0				
Max Green Setting (Gmax), s	33.3	46.7		36.0	19.5	40.5		36.0				
Max Q Clear Time (g_c+1/10), s	10.1	14.9		9.5	9.3	19.5		21.9				
Green Ext Time (p_c), s	0.1	5.5		1.5	0.3	6.0		1.9				

Intersection Summary

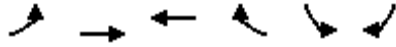
HCM 6th Ctrl Delay	22.3
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Bella Mar
4: Palm Avenue & I-5 SB Ramps

Horizon Year + CP with Project
Timing Plan: AM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑	↗	↘	↗↗
Traffic Volume (veh/h)	0	468	1731	165	268	1371
Future Volume (veh/h)	0	468	1731	165	268	1371
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	509	1882	0	291	1490
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	551	2417	1129		372	1446
Arrive On Green	0.00	0.68	0.32	0.00	0.21	0.21
Sat Flow, veh/h	1781	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	0	509	1882	0	291	1490
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1395
Q Serve(g_s), s	0.0	5.1	30.4	0.0	14.8	20.0
Cycle Q Clear(g_c), s	0.0	5.1	30.4	0.0	14.8	20.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	551	2417	1129		372	1446
V/C Ratio(X)	0.00	0.21	1.67		0.78	1.03
Avail Cap(c_a), veh/h	551	2417	1129		372	1446
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	5.7	32.6	0.0	35.8	23.1
Incr Delay (d2), s/veh	0.0	0.0	304.2	0.0	10.3	31.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.5	59.9	0.0	7.2	20.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	5.8	336.8	0.0	46.1	54.9
LnGrp LOS	A	A	F		D	F
Approach Vol, veh/h		509	1882	A	1781	
Approach Delay, s/veh		5.8	336.8		53.5	
Approach LOS		A	F		D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	34.7	35.9			70.6	25.1
Change Period (Y+Rc), s	5.1	5.5			5.5	5.1
Max Green Setting (Gmax), s	29.6	30.4			65.1	20.0
Max Q Clear Time (g_c+1), s	10.0	32.4			7.1	22.0
Green Ext Time (p_c), s	0.0	0.0			3.6	0.0

Intersection Summary

HCM 6th Ctrl Delay	175.5
HCM 6th LOS	F

Notes

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

Bella Mar
5: I-5 NB Ramps & Palm Avenue

Horizon Year + CP with Project
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑				
Traffic Volume (veh/h)	0	720	0	0	837	285	1104	0	181	0	0	0
Future Volume (veh/h)	0	720	0	0	837	285	1104	0	181	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	783	0	0	910	310	1384	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1436	0	0	1052	357	1594	837	0			
Arrive On Green	0.00	0.40	0.00	0.00	0.40	0.40	0.45	0.00	0.00			
Sat Flow, veh/h	0	3741	0	0	2698	884	3563	1870	0			
Grp Volume(v), veh/h	0	783	0	0	620	600	1384	0	0			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1711	1781	1870	0			
Q Serve(g_s), s	0.0	11.9	0.0	0.0	22.6	22.8	24.8	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	11.9	0.0	0.0	22.6	22.8	24.8	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		0.52	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1436	0	0	718	691	1594	837	0			
V/C Ratio(X)	0.00	0.55	0.00	0.00	0.86	0.87	0.87	0.00	0.00			
Avail Cap(c_a), veh/h	0	1563	0	0	781	753	1960	1029	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	16.1	0.0	0.0	19.3	19.3	17.6	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	9.3	10.0	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			
%ile BackOfQ(50%),veh/ln	0.0	4.3	0.0	0.0	9.8	9.7	9.3	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	16.4	0.0	0.0	28.6	29.4	21.4	0.0	0.0			
LnGrp LOS	A	B	A	A	C	C	C	A	A			
Approach Vol, veh/h		783			1220			1384				
Approach Delay, s/veh		16.4			29.0			21.4				
Approach LOS		B			C			C				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		34.0				34.0		36.7				
Change Period (Y+Rc), s		5.4				5.4		5.1				
Max Green Setting (Gmax), s		31.1				31.1		38.9				
Max Q Clear Time (g_c+I1), s		13.9				24.8		26.8				
Green Ext Time (p_c), s		4.8				3.8		4.8				

Intersection Summary

HCM 6th Ctrl Delay	23.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Bella Mar
6: Hollister Street & Palm Avenue

Horizon Year + CP with Project
Timing Plan: AM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	446	84	41	666	42	189	188	70	33	156	216
Future Volume (veh/h)	215	446	84	41	666	42	189	188	70	33	156	216
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	234	485	91	45	724	46	205	204	76	36	170	235
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	273	1151	215	58	896	57	315	555	207	425	304	420
Arrive On Green	0.15	0.39	0.39	0.03	0.26	0.26	0.43	0.43	0.43	0.43	0.43	0.43
Sat Flow, veh/h	1781	2989	558	1781	3393	215	980	1299	484	1099	711	983
Grp Volume(v), veh/h	234	287	289	45	379	391	205	0	280	36	0	405
Grp Sat Flow(s),veh/h/ln	1781	1777	1770	1781	1777	1832	980	0	1783	1099	0	1693
Q Serve(g_s), s	12.6	11.7	11.8	2.5	19.6	19.6	19.6	0.0	10.5	2.3	0.0	17.7
Cycle Q Clear(g_c), s	12.6	11.7	11.8	2.5	19.6	19.6	37.3	0.0	10.5	12.8	0.0	17.7
Prop In Lane	1.00		0.32	1.00		0.12	1.00		0.27	1.00		0.58
Lane Grp Cap(c), veh/h	273	684	682	58	469	484	315	0	762	425	0	723
V/C Ratio(X)	0.86	0.42	0.42	0.78	0.81	0.81	0.65	0.00	0.37	0.08	0.00	0.56
Avail Cap(c_a), veh/h	500	1068	1064	174	728	750	516	0	1126	650	0	1069
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	40.6	22.2	22.2	47.2	33.9	33.9	35.3	0.0	19.2	23.5	0.0	21.2
Incr Delay (d2), s/veh	7.6	0.4	0.4	20.1	3.8	3.8	2.3	0.0	0.3	0.1	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	4.7	4.7	1.4	8.6	8.8	4.7	0.0	4.2	0.6	0.0	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.2	22.6	22.6	67.4	37.7	37.6	37.5	0.0	19.4	23.6	0.0	21.9
LnGrp LOS	D	C	C	E	D	D	D	A	B	C	A	C
Approach Vol, veh/h		810			815			485			441	
Approach Delay, s/veh		30.0			39.3			27.1			22.0	
Approach LOS		C			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	43.9		46.9	19.5	32.0		46.9				
Change Period (Y+Rc), s	4.4	* 6		4.9	4.4	6.0		4.9				
Max Green Setting (Gmax), s	9.6	* 59		62.1	27.6	40.3		62.1				
Max Q Clear Time (g_c+1), s	14.5	13.8		19.7	14.6	21.6		39.3				
Green Ext Time (p_c), s	0.0	3.6		3.0	0.5	4.3		2.7				

Intersection Summary

HCM 6th Ctrl Delay	31.0
HCM 6th LOS	C

Notes

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

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	31	8	414	351	8
Future Vol, veh/h	31	31	8	414	351	8
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	-	100	-	-	-
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	34	9	450	382	9

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	855	387	391	0	-	0
Stage 1	387	-	-	-	-	-
Stage 2	468	-	-	-	-	-
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	329	661	1168	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	630	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	326	661	1168	-	-	-
Mov Cap-2 Maneuver	447	-	-	-	-	-
Stage 1	681	-	-	-	-	-
Stage 2	630	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1168	-	533	-	-
HCM Lane V/C Ratio	0.007	-	0.126	-	-
HCM Control Delay (s)	8.1	-	12.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	31	8	391	374	8
Future Vol, veh/h	31	31	8	391	374	8
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	-	100	-	-	-
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	34	9	425	407	9

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	855	412	416	0	-	0
Stage 1	412	-	-	-	-	-
Stage 2	443	-	-	-	-	-
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	329	640	1143	-	-	-
Stage 1	669	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	326	640	1143	-	-	-
Mov Cap-2 Maneuver	448	-	-	-	-	-
Stage 1	664	-	-	-	-	-
Stage 2	647	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1143	-	527	-	-
HCM Lane V/C Ratio	0.008	-	0.128	-	-
HCM Control Delay (s)	8.2	-	12.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection						
Int Delay, s/veh	850.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↖	↗
Traffic Vol, veh/h	238	584	166	596	672	190
Future Vol, veh/h	238	584	166	596	672	190
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	150	0	320
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	259	635	180	648	730	207
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	180	0	-	0	1333	180
Stage 1	-	-	-	-	180	-
Stage 2	-	-	-	-	1153	-
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	1396	-	-	0 ~ 170	863	
Stage 1	-	-	-	0	851	-
Stage 2	-	-	-	0 ~ 301	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1396	-	-	- ~ 121	863	
Mov Cap-2 Maneuver	-	-	-	- ~ 121	-	
Stage 1	-	-	-	- ~ 607	-	
Stage 2	-	-	-	- ~ 301	-	
Approach	EB	WB	SB			
HCM Control Delay, s	2.4	0	\$ 1823.7			
HCM LOS			F			
Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1	SBLn2	
Capacity (veh/h)	1396	-	-	121	863	
HCM Lane V/C Ratio	0.185	-	-	6.037	0.239	
HCM Control Delay (s)	8.2	0	\$ 2336.4	10.5		
HCM Lane LOS	A	A	-	F	B	
HCM 95th %tile Q(veh)	0.7	-	-	79.6	0.9	
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Bella Mar
2: Main Street & I-5 NB Ramp

Horizon Year + CP with Project
Timing Plan: PM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	392	880	644	616	494	91
Future Volume (veh/h)	392	880	644	616	494	91
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	426	957	700	670	537	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	345	1161	715	606	503	447
Arrive On Green	0.19	0.62	0.38	0.38	0.28	0.28
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	426	957	700	670	537	99
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	20.3	41.7	38.8	40.1	29.6	5.0
Cycle Q Clear(g_c), s	20.3	41.7	38.8	40.1	29.6	5.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	345	1161	715	606	503	447
V/C Ratio(X)	1.24	0.82	0.98	1.11	1.07	0.22
Avail Cap(c_a), veh/h	345	1161	715	606	503	447
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.3	15.5	32.0	32.4	37.7	28.8
Incr Delay (d2), s/veh	128.7	5.0	28.4	69.0	59.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	20.9	16.7	22.0	26.0	20.6	5.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	171.0	20.4	60.4	101.4	97.3	29.1
LnGrp LOS	F	C	E	F	F	C
Approach Vol, veh/h		1383	1370		636	
Approach Delay, s/veh		66.8	80.4		86.7	
Approach LOS		E	F		F	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		70.2		34.7	25.0	45.2
Change Period (Y+Rc), s		5.1		5.1	* 4.7	5.1
Max Green Setting (Gmax), s		65.1		29.6	* 20	40.1
Max Q Clear Time (g_c+I1), s		43.7		31.6	22.3	42.1
Green Ext Time (p_c), s		7.4		0.0	0.0	0.0
Intersection Summary						
HCM 6th Ctrl Delay			76.0			
HCM 6th LOS			E			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Bella Mar
3: Hollister Street & Main Street

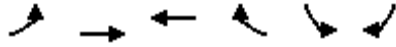
Horizon Year + CP with Project
Timing Plan: PM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖	↖↗	↖	↖	↖
Traffic Volume (veh/h)	72	972	318	291	874	42	179	153	237	49	181	160
Future Volume (veh/h)	72	972	318	291	874	42	179	153	237	49	181	160
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		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	78	1057	346	316	950	46	195	166	258	53	197	174
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	101	1005	326	286	1674	81	192	557	472	306	273	241
Arrive On Green	0.06	0.38	0.38	0.16	0.49	0.49	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1781	2639	854	1781	3450	167	1011	1870	1585	963	916	809
Grp Volume(v), veh/h	78	708	695	316	489	507	195	166	258	53	0	371
Grp Sat Flow(s),veh/h/ln	1781	1777	1717	1781	1777	1840	1011	1870	1585	963	0	1725
Q Serve(g_s), s	3.6	32.0	32.0	13.5	16.4	16.4	8.8	5.7	11.5	3.8	0.0	16.2
Cycle Q Clear(g_c), s	3.6	32.0	32.0	13.5	16.4	16.4	25.0	5.7	11.5	9.5	0.0	16.2
Prop In Lane	1.00		0.50	1.00		0.09	1.00		1.00	1.00		0.47
Lane Grp Cap(c), veh/h	101	677	654	286	862	893	192	557	472	306	0	513
V/C Ratio(X)	0.77	1.05	1.06	1.10	0.57	0.57	1.02	0.30	0.55	0.17	0.00	0.72
Avail Cap(c_a), veh/h	197	677	654	286	862	893	192	557	472	306	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)	0.28	0.28	0.28	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.1	26.0	26.0	35.3	15.4	15.4	39.6	22.7	24.7	26.4	0.0	26.4
Incr Delay (d2), s/veh	3.6	31.7	38.0	83.9	2.7	2.6	69.0	0.3	1.3	0.3	0.0	5.0
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	1.6	18.1	18.6	12.2	6.5	6.7	7.6	2.5	4.3	0.9	0.0	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.7	57.7	64.0	119.2	18.1	18.0	108.6	23.0	26.1	26.7	0.0	31.4
LnGrp LOS	D	F	F	F	B	B	F	C	C	C	A	C
Approach Vol, veh/h		1481			1312			619			424	
Approach Delay, s/veh		59.9			42.4			51.2			30.8	
Approach LOS		E			D			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	3.3	45.7		30.0	17.0	37.0		30.0				
Change Period (Y+Rc), s	3.5	5.0		5.0	3.5	5.0		5.0				
Max Green Setting (Gmax), s	3	36.2		25.0	13.5	32.0		25.0				
Max Q Clear Time (g_c+1), s	11.6	18.4		18.2	15.5	34.0		27.0				
Green Ext Time (p_c), s	0.0	5.8		1.4	0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay												49.3
HCM 6th LOS												D

Bella Mar
4: Palm Avenue & I-5 SB Ramps

Horizon Year + CP with Project
Timing Plan: PM Peak Period



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↗↗	↖	↖	↖↖
Traffic Volume (veh/h)	0	576	1424	144	550	1842
Future Volume (veh/h)	0	576	1424	144	550	1842
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	626	1548	0	598	2002
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	295	1963	1175		589	1384
Arrive On Green	0.00	0.55	0.33	0.00	0.33	0.33
Sat Flow, veh/h	1781	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	0	626	1548	0	598	2002
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1395
Q Serve(g_s), s	0.0	8.7	30.0	0.0	30.0	30.0
Cycle Q Clear(g_c), s	0.0	8.7	30.0	0.0	30.0	30.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	295	1963	1175		589	1384
V/C Ratio(X)	0.00	0.32	1.32		1.01	1.45
Avail Cap(c_a), veh/h	295	1963	1175		589	1384
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	11.0	30.3	0.0	30.3	22.9
Incr Delay (d2), s/veh	0.0	0.1	148.7	0.0	40.9	205.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.0	36.1	0.0	18.6	52.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	11.1	179.1	0.0	71.2	227.9
LnGrp LOS	A	B	F		F	F
Approach Vol, veh/h		626	1548	A	2600	
Approach Delay, s/veh		11.1	179.1		191.8	
Approach LOS		B	F		F	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	30.1	35.5			55.6	35.1
Change Period (Y+Rc), s	5.1	5.5			5.5	5.1
Max Green Setting (Gmax), s	15.0	30.0			50.1	30.0
Max Q Clear Time (g_c+1), s	10.0	32.0			10.7	32.0
Green Ext Time (p_c), s	0.0	0.0			4.5	0.0

Intersection Summary

HCM 6th Ctrl Delay	164.0
HCM 6th LOS	F

Notes

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

Bella Mar
5: I-5 NB Ramps & Palm Avenue

Horizon Year + CP with Project
Timing Plan: PM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑				
Traffic Volume (veh/h)	0	1133	0	0	805	180	697	10	150	0	0	0
Future Volume (veh/h)	0	1133	0	0	805	180	697	10	150	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	1232	0	0	875	196	918	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1928	0	0	1565	350	1051	552	0			
Arrive On Green	0.00	0.54	0.00	0.00	0.54	0.51	0.29	0.00	0.00			
Sat Flow, veh/h	0	3741	0	0	2978	646	3563	1870	0			
Grp Volume(v), veh/h	0	1232	0	0	539	532	918	0	0			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1754	1781	1870	0			
Q Serve(g_s), s	0.0	11.9	0.0	0.0	9.8	9.9	12.0	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	11.9	0.0	0.0	9.8	9.9	12.0	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		0.37	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1928	0	0	964	951	1051	552	0			
V/C Ratio(X)	0.00	0.64	0.00	0.00	0.56	0.56	0.87	0.00	0.00			
Avail Cap(c_a), veh/h	0	4192	0	0	2096	2069	1051	552	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	7.9	0.0	0.0	7.4	7.6	16.5	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.5	0.5	8.3	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.8	0.0	0.0	2.4	2.4	5.1	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	8.2	0.0	0.0	7.9	8.1	24.8	0.0	0.0			
LnGrp LOS	A	A	A	A	A	A	C	A	A			
Approach Vol, veh/h		1232			1071			918				
Approach Delay, s/veh		8.2			8.0			24.8				
Approach LOS		A			A			C				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		30.7				30.7		18.5				
Change Period (Y+Rc), s		5.4				5.4		5.1				
Max Green Setting (Gmax), s		56.6				56.6		13.4				
Max Q Clear Time (g_c+I1), s		13.9				11.9		14.0				
Green Ext Time (p_c), s		11.3				8.3		0.0				

Intersection Summary

HCM 6th Ctrl Delay	12.9
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Bella Mar
6: Hollister Street & Palm Avenue

Horizon Year + CP with Project
Timing Plan: PM Peak Period



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	271	685	166	43	483	58	152	196	67	60	257	373
Future Volume (veh/h)	271	685	166	43	483	58	152	196	67	60	257	373
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	295	745	180	47	525	63	165	213	73	65	279	405
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	338	1053	254	61	689	82	110	573	196	429	297	430
Arrive On Green	0.19	0.37	0.37	0.03	0.22	0.22	0.43	0.43	0.43	0.43	0.43	0.43
Sat Flow, veh/h	1781	2838	686	1781	3196	382	757	1332	456	1093	689	1001
Grp Volume(v), veh/h	295	466	459	47	291	297	165	0	286	65	0	684
Grp Sat Flow(s),veh/h/ln	1781	1777	1747	1781	1777	1802	757	0	1788	1093	0	1690
Q Serve(g_s), s	15.0	20.8	20.8	2.4	14.3	14.4	4.0	0.0	10.1	4.0	0.0	36.0
Cycle Q Clear(g_c), s	15.0	20.8	20.8	2.4	14.3	14.4	40.0	0.0	10.1	14.1	0.0	36.0
Prop In Lane	1.00		0.39	1.00		0.21	1.00		0.26	1.00		0.59
Lane Grp Cap(c), veh/h	338	659	648	61	383	388	110	0	769	429	0	727
V/C Ratio(X)	0.87	0.71	0.71	0.77	0.76	0.76	1.50	0.00	0.37	0.15	0.00	0.94
Avail Cap(c_a), veh/h	575	1162	1142	575	1146	1162	110	0	769	429	0	727
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	36.6	24.9	24.9	44.5	34.2	34.2	45.9	0.0	18.0	22.7	0.0	25.4
Incr Delay (d2), s/veh	7.7	1.4	1.4	18.4	3.1	3.2	267.5	0.0	0.3	0.2	0.0	20.3
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	6.9	8.4	8.3	1.4	6.2	6.4	10.7	0.0	4.0	1.0	0.0	17.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.2	26.3	26.4	62.9	37.3	37.4	313.4	0.0	18.3	22.9	0.0	45.6
LnGrp LOS	D	C	C	E	D	D	F	A	B	C	A	D
Approach Vol, veh/h		1220			635			451			749	
Approach Delay, s/veh		30.7			39.3			126.2			43.7	
Approach LOS		C			D			F			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	40.5		44.9	22.0	26.1		44.9				
Change Period (Y+Rc), s	4.4	* 6		4.9	4.4	6.0		4.9				
Max Green Setting (Gmax), s	30.0	* 61		40.0	30.0	60.0		40.0				
Max Q Clear Time (g_c+1), s	14.4	22.8		38.0	17.0	16.4		42.0				
Green Ext Time (p_c), s	0.1	6.6		1.0	0.7	3.7		0.0				

Intersection Summary

HCM 6th Ctrl Delay	49.8
HCM 6th LOS	D

Notes

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

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	13	31	529	694	31
Future Vol, veh/h	13	13	31	529	694	31
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	-	100	-	-	-
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	14	14	34	575	754	34

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1414	771	788	0	-	0
Stage 1	771	-	-	-	-	-
Stage 2	643	-	-	-	-	-
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	152	400	831	-	-	-
Stage 1	456	-	-	-	-	-
Stage 2	523	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	146	400	831	-	-	-
Mov Cap-2 Maneuver	283	-	-	-	-	-
Stage 1	437	-	-	-	-	-
Stage 2	523	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.9	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	831	-	331	-	-
HCM Lane V/C Ratio	0.041	-	0.085	-	-
HCM Control Delay (s)	9.5	-	16.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	13	31	547	676	31
Future Vol, veh/h	13	13	31	547	676	31
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	-	100	-	-	-
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	14	14	34	595	735	34

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1415	752	769	0	-	0
Stage 1	752	-	-	-	-	-
Stage 2	663	-	-	-	-	-
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	151	410	845	-	-	-
Stage 1	466	-	-	-	-	-
Stage 2	512	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	145	410	845	-	-	-
Mov Cap-2 Maneuver	284	-	-	-	-	-
Stage 1	447	-	-	-	-	-
Stage 2	512	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.7	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	845	-	336	-	-
HCM Lane V/C Ratio	0.04	-	0.084	-	-
HCM Control Delay (s)	9.4	-	16.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

APPENDIX E

FREEWAY LOS WORKSHEETS

HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	12/4/2018
Agency	Caltrans	Analysis Year	Existing Conditions NB
Jurisdiction		Time Period Analyzed	AM Peak
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.89		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 NB South of Palm	100	4
2	Diverge	Diverge	I-5 NB Palm Off-Ramp	1500	4
3	Basic	Basic	I-5 NB between Palm Off-Ramp & On-Ramp	2455	4
4	Weaving	Weaving	I-5 NB Palm On-Ramp to Main Off-Ramp	3110	5
5	Basic	Basic	I-5 NB between Main Off-Ramp & On-Ramp	1330	4
6	Merge	Basic	I-5 NB Main On-Ramp	1500	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	5305	9600	0.55	74.1	17.9	B

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	5305	922	9600	2000	0.55	0.46	67.3	58.3	19.7	27.4	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	4365	9600	0.45	75.1	14.5	B

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	5450	9562	0.57	60.2	18.1	B

Segment 5: Basic

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		5006		9600		0.52		74.6		16.8		B

Segment 6: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	5442	436	12000	2000	0.45	0.22	75.3	75.3	14.5	14.5	B

Facility Time Period Results

T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	68.2	16.8	16.1	1.70	B

Facility Overall Results

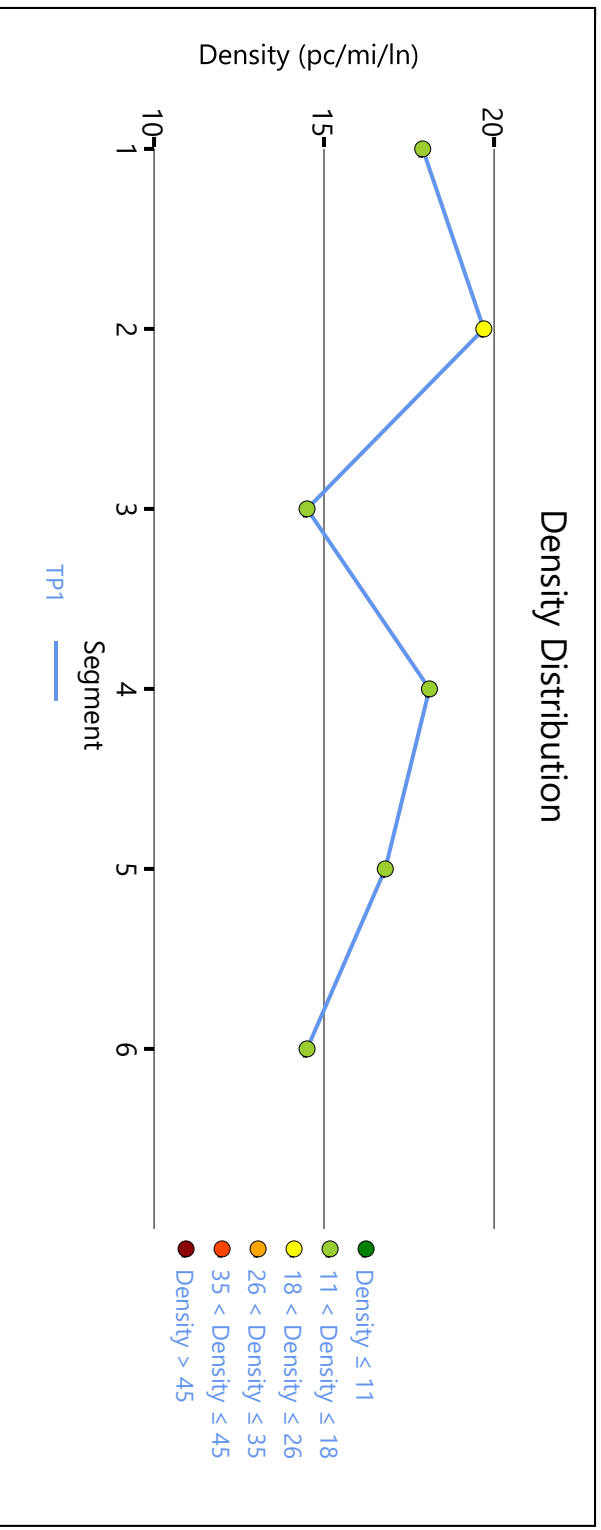
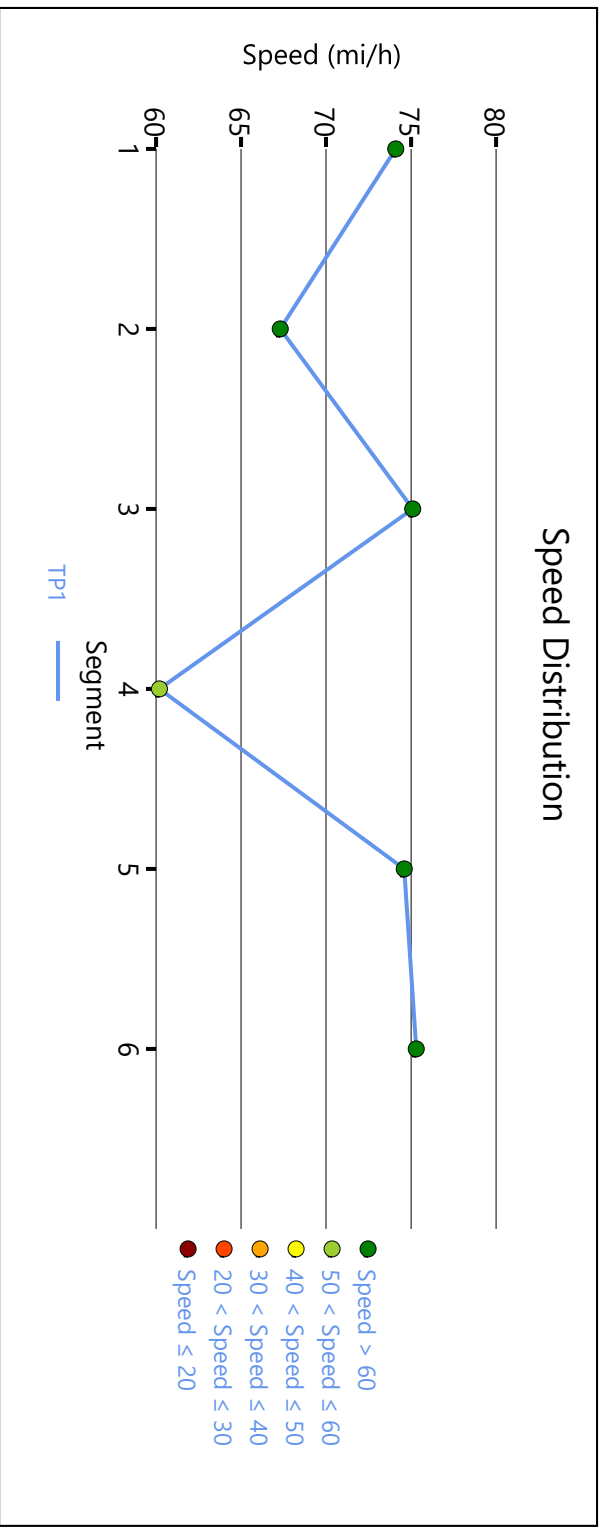
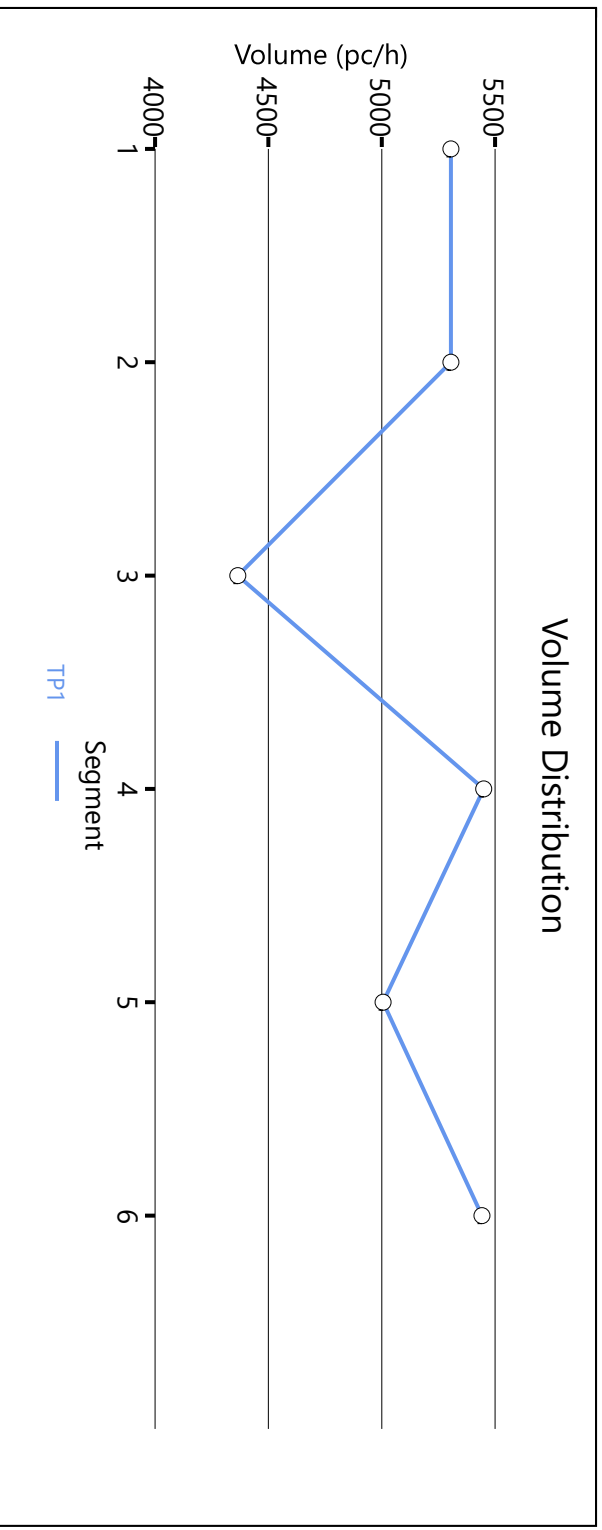
Space Mean Speed, mi/h	68.2	Density, veh/mi/ln	16.1
Average Travel Time, min	1.70	Density, pc/mi/ln	16.8

Messages

WARNING 1	Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.
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Comments

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HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	12/4/2018
Agency	Caltrans	Analysis Year	Existing Conditions NB
Jurisdiction		Time Period Analyzed	PM Peak
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.89		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 NB South of Palm	100	4
2	Diverge	Diverge	I-5 NB Palm Off-Ramp	1500	4
3	Basic	Basic	I-5 NB between Palm Off-Ramp & On-Ramp	2455	4
4	Weaving	Weaving	I-5 NB Palm On-Ramp to Main Off-Ramp	3110	5
5	Basic	Basic	I-5 NB between Main Off-Ramp & On-Ramp	1330	4
6	Merge	Basic	I-5 NB Main On-Ramp	1500	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	4401	9600	0.46	75.3	14.6	B

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	4401	594	9600	2000	0.46	0.30	68.7	59.3	16.0	22.4	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	3796	9600	0.40	75.1	12.6	B

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	4626	10000	0.46	62.7	14.8	B

Segment 5: Basic

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		4206		9600		0.44		75.1		14.0		B

Segment 6: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	4737	531	12000	2000	0.39	0.27	75.4	75.4	12.6	12.6	B

Facility Time Period Results

T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	69.6	14.0	13.5	1.60	B

Facility Overall Results

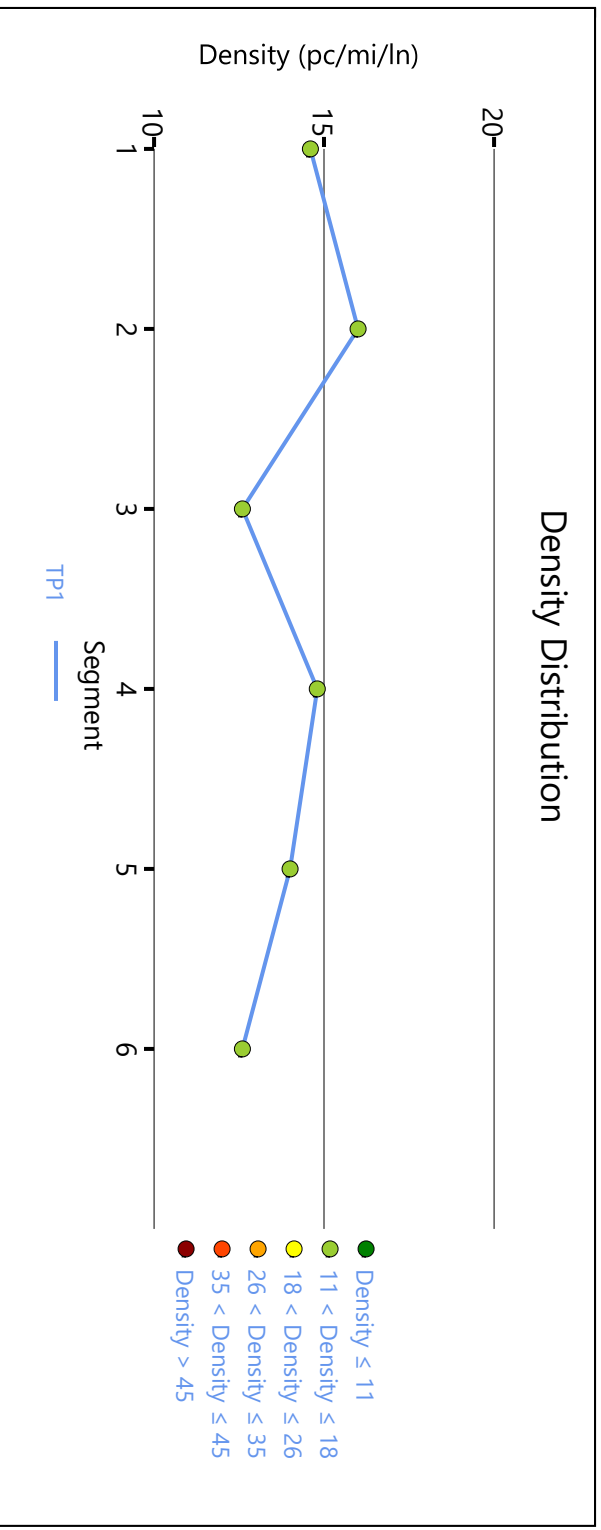
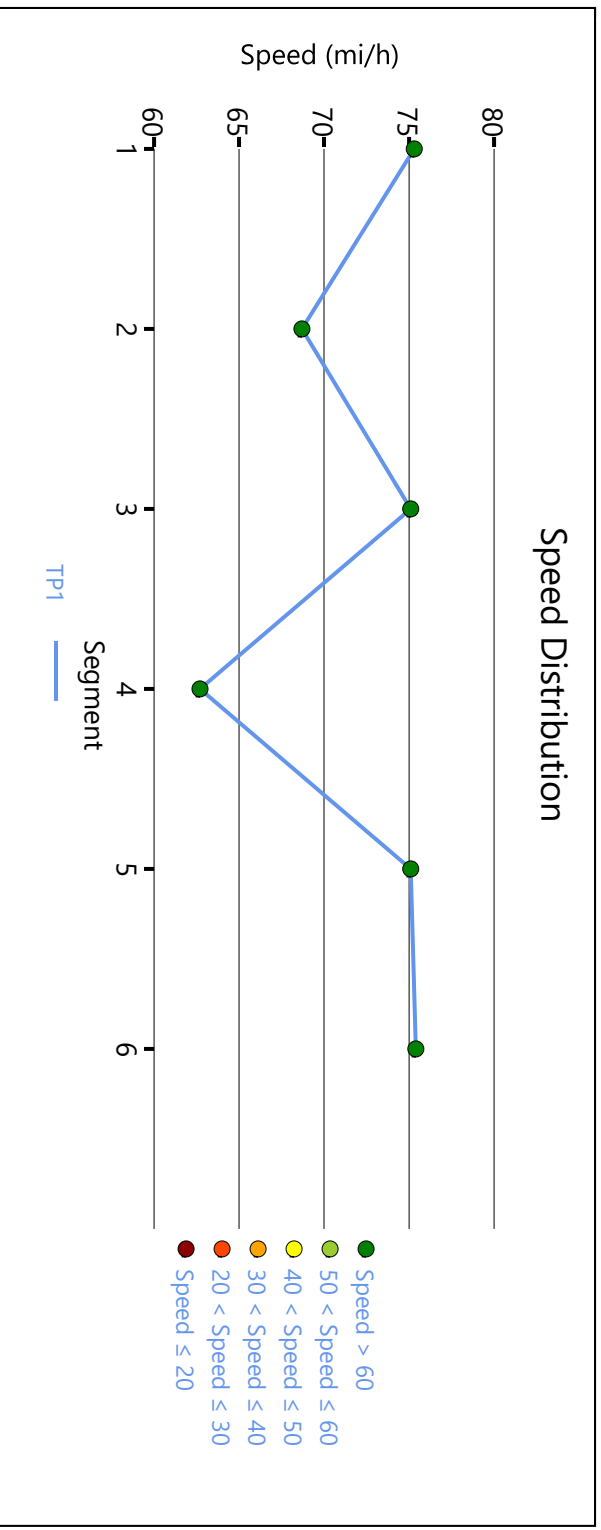
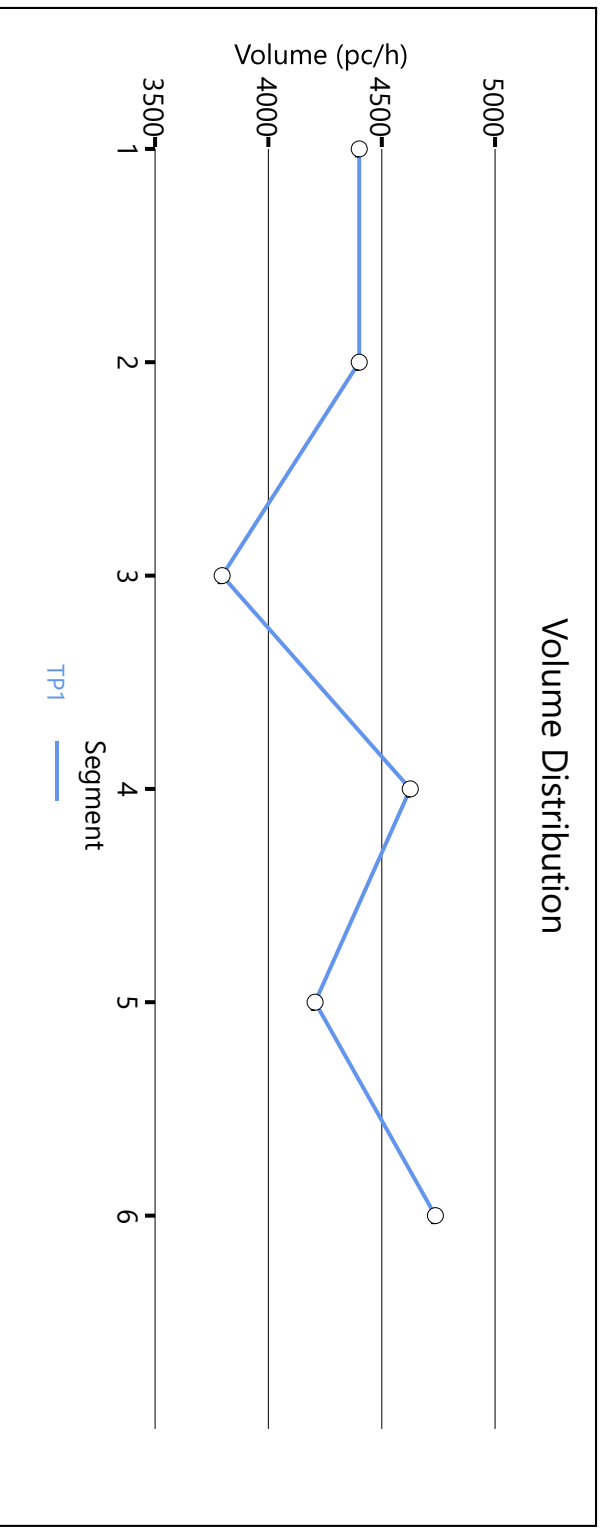
Space Mean Speed, mi/h	69.6	Density, veh/mi/ln	13.5
Average Travel Time, min	1.60	Density, pc/mi/ln	14.0

Messages

WARNING 1	Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.
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Comments

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HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	12/4/2018
Agency	Caltrans	Analysis Year	Existing Conditions SB
Jurisdiction		Time Period Analyzed	AM Peak
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	7
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.48		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 SB North of Main	100	5
2	Diverge	Basic	I-5 SB Main Off-Ramp	1500	5
3	Basic	Basic	I-5 SB between Main Off-Ramp & On-Ramp	1750	4
4	Weaving	Weaving	I-5 SB Main On-Ramp to Palm Off-Ramp	1855	5
5	Basic	Basic	I-5 SB between Palm Off-Ramp & On-Ramp	1480	4
6	Merge	Basic	I-5 SB Palm On-Ramp	570	5
7	Merge	Merge	I-5 SB SR-75 On-Ramp	565	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	3164	12000	0.26	75.4	8.4	A

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	3164	477	12000	2000	0.26	0.24	75.4	75.4	8.4	8.4	A

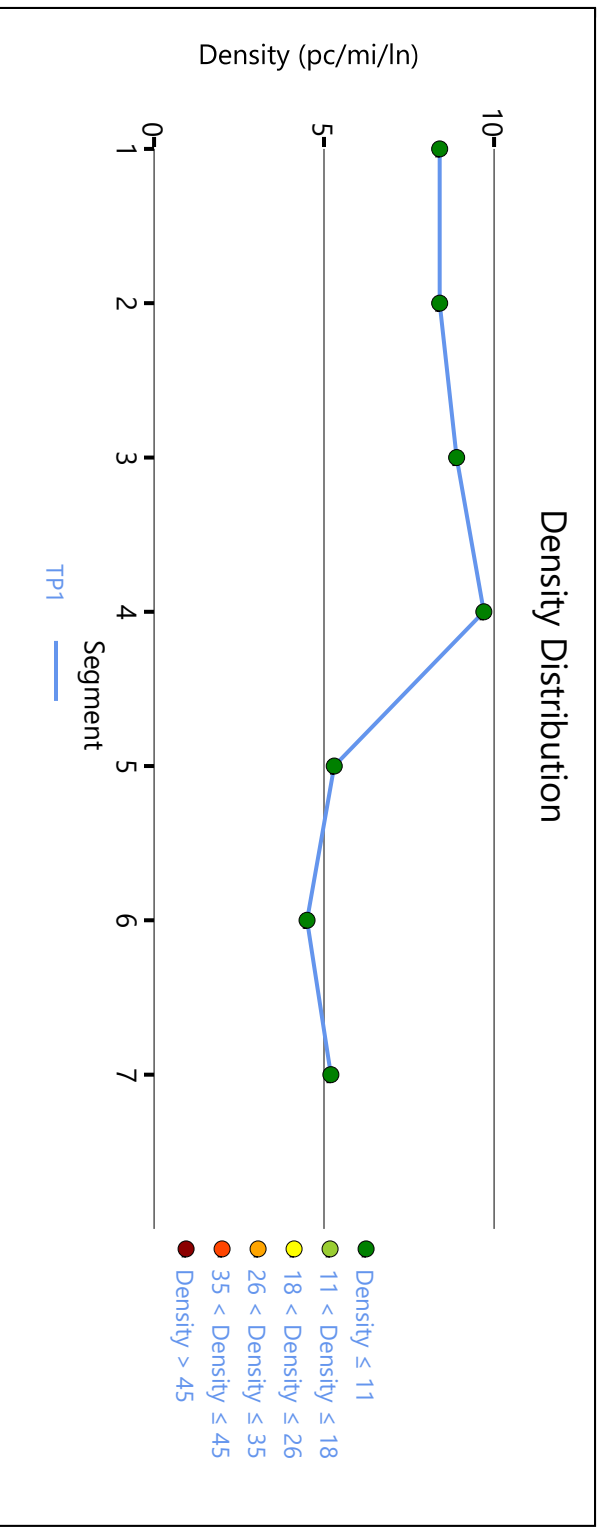
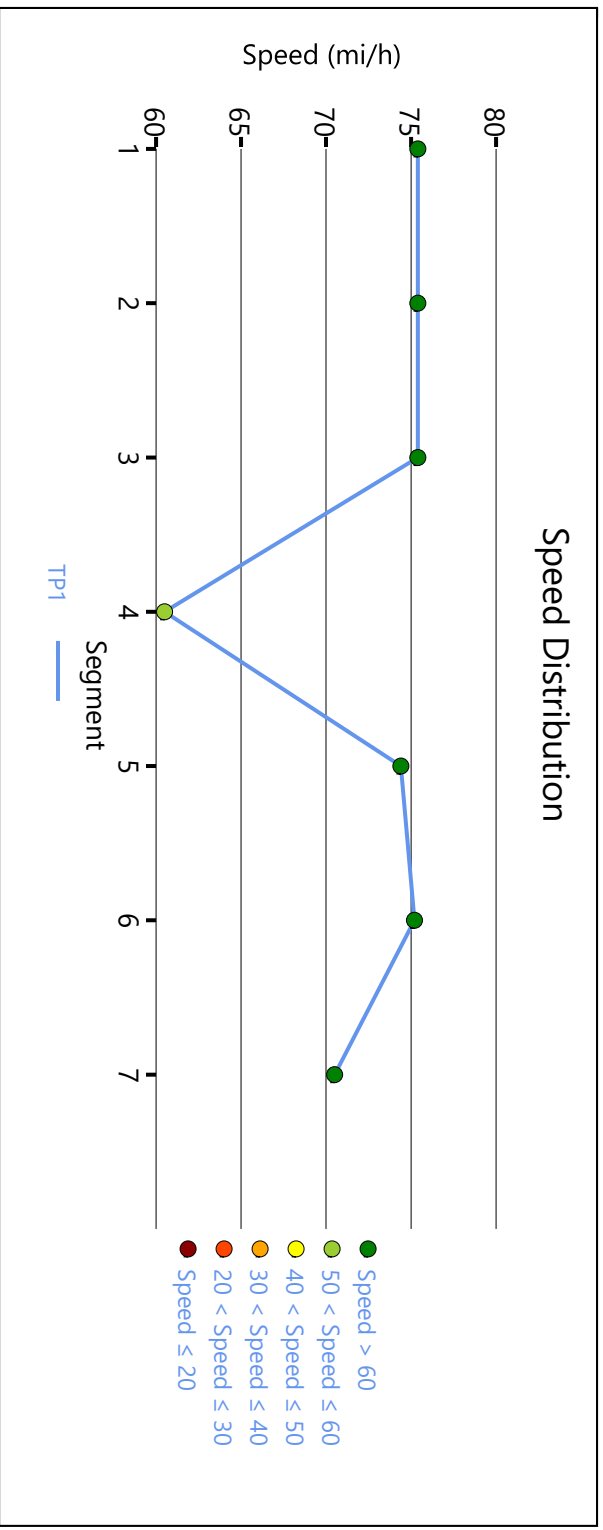
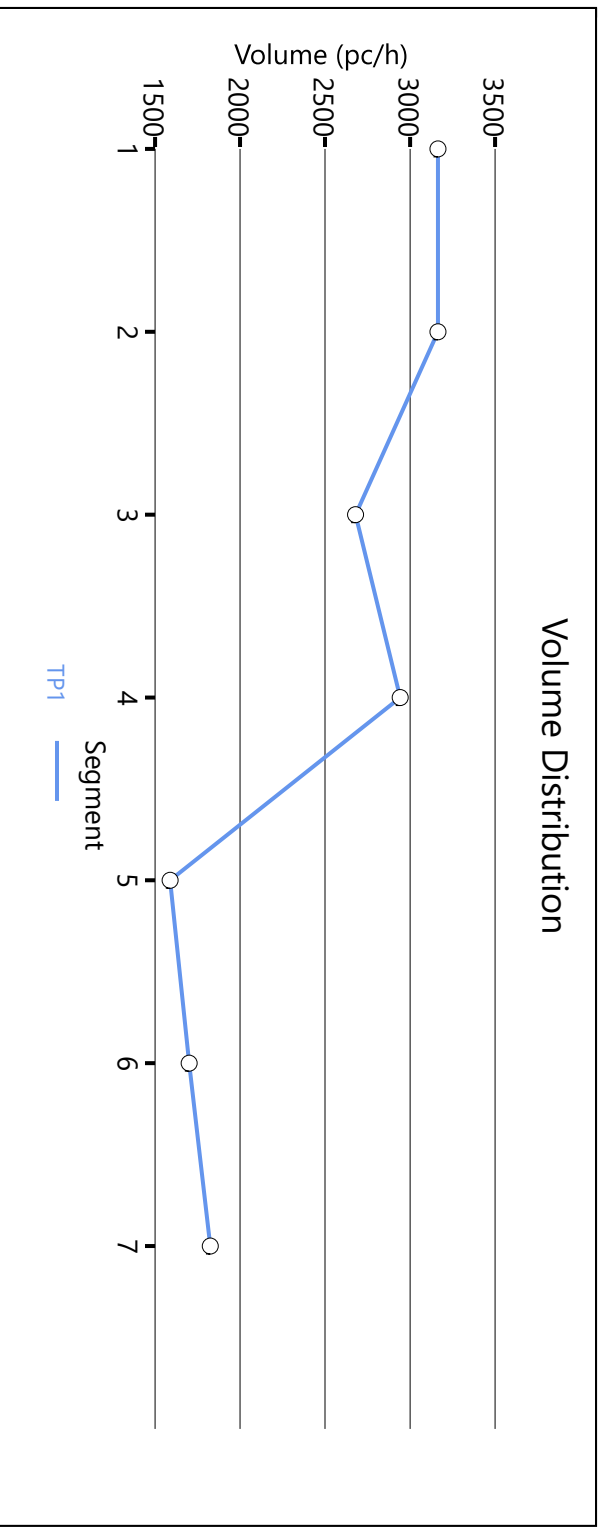
Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	2679	9600	0.28	75.4	8.9	A

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	2942	5139	0.57	60.5	9.7	A

Segment 5: Basic															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		1589		9600		0.17		74.4		5.3		A
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	1701	112	12000	2000	0.14	0.06	75.2	75.4	4.5	4.5	A
Segment 7: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	1825	121	12000	2000	0.15	0.06	70.5	66.3	5.2	6.2	A
Facility Time Period Results															
T	Speed, mi/h		Density, pc/mi/ln		Density, veh/mi/ln		Travel Time, min		LOS						
1	70.2		7.8		7.5		1.30		A						
Facility Overall Results															
Space Mean Speed, mi/h			70.2			Density, veh/mi/ln			7.5						
Average Travel Time, min			1.30			Density, pc/mi/ln			7.8						
Messages															
ERROR 1			Acceleration lane length is longer than the segment length for merge segment 6.												
ERROR 2			Acceleration lane length is longer than the segment length for merge segment 7.												
WARNING 1			Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.												
Comments															



HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	12/4/2018
Agency	Caltrans	Analysis Year	Existing Conditions SB
Jurisdiction		Time Period Analyzed	PM Peak
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	7
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.48		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 SB North of Main	100	5
2	Diverge	Basic	I-5 SB Main Off-Ramp	1500	5
3	Basic	Basic	I-5 SB between Main Off-Ramp & On-Ramp	1750	4
4	Weaving	Weaving	I-5 SB Main On-Ramp to Palm Off-Ramp	1855	5
5	Basic	Basic	I-5 SB between Palm Off-Ramp & On-Ramp	1480	4
6	Merge	Basic	I-5 SB Palm On-Ramp	570	5
7	Merge	Merge	I-5 SB SR-75 On-Ramp	565	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	8344	12000	0.70	70.2	23.8	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	8344	583	12000	2000	0.70	0.29	70.2	70.2	23.8	23.8	C

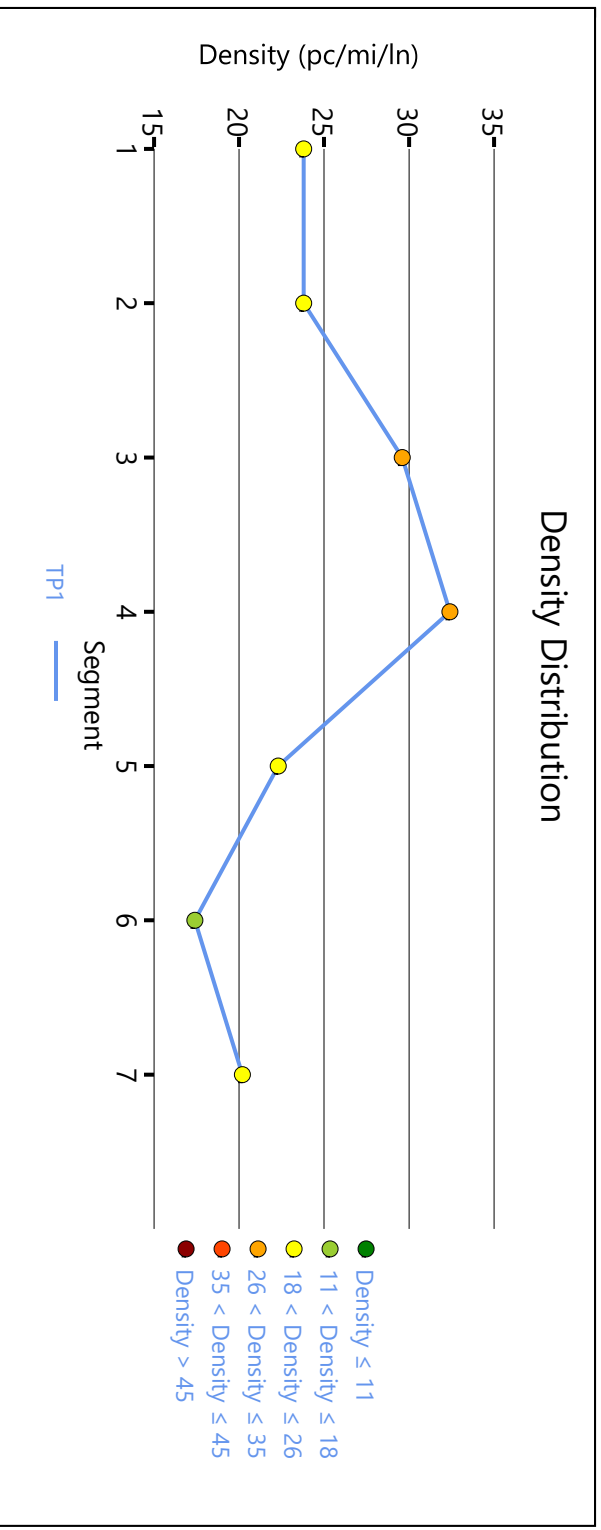
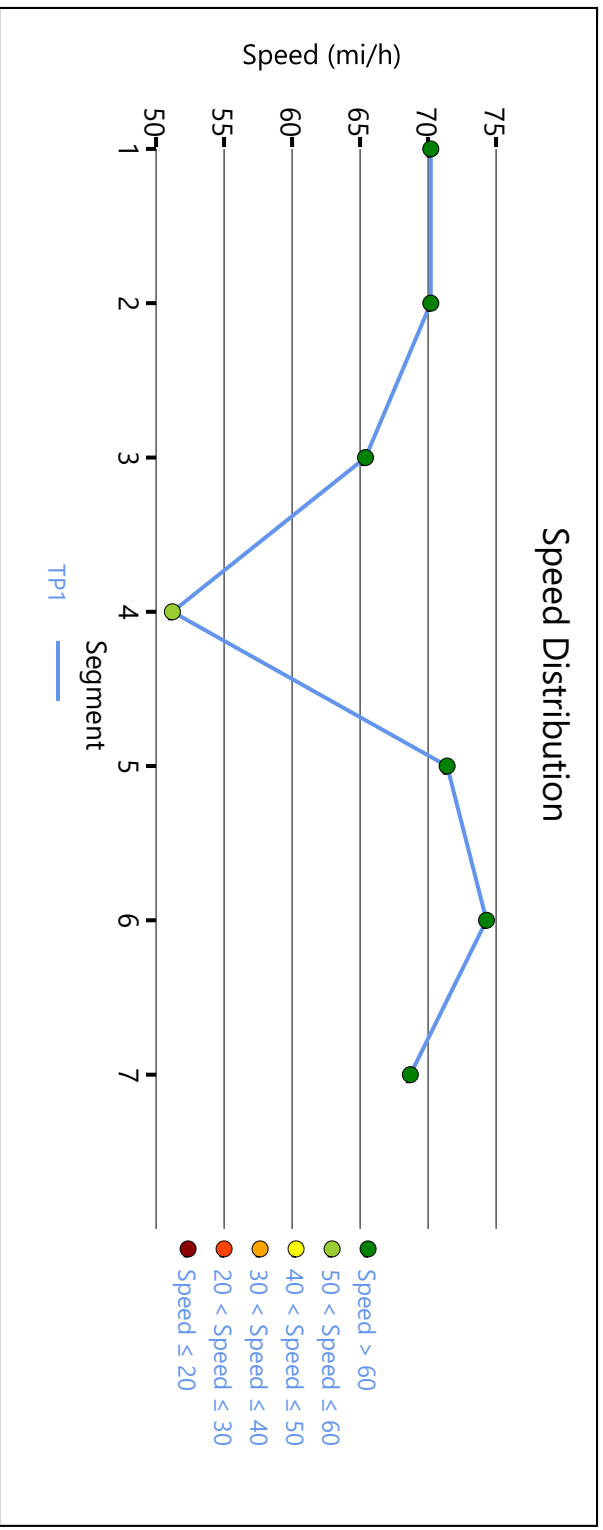
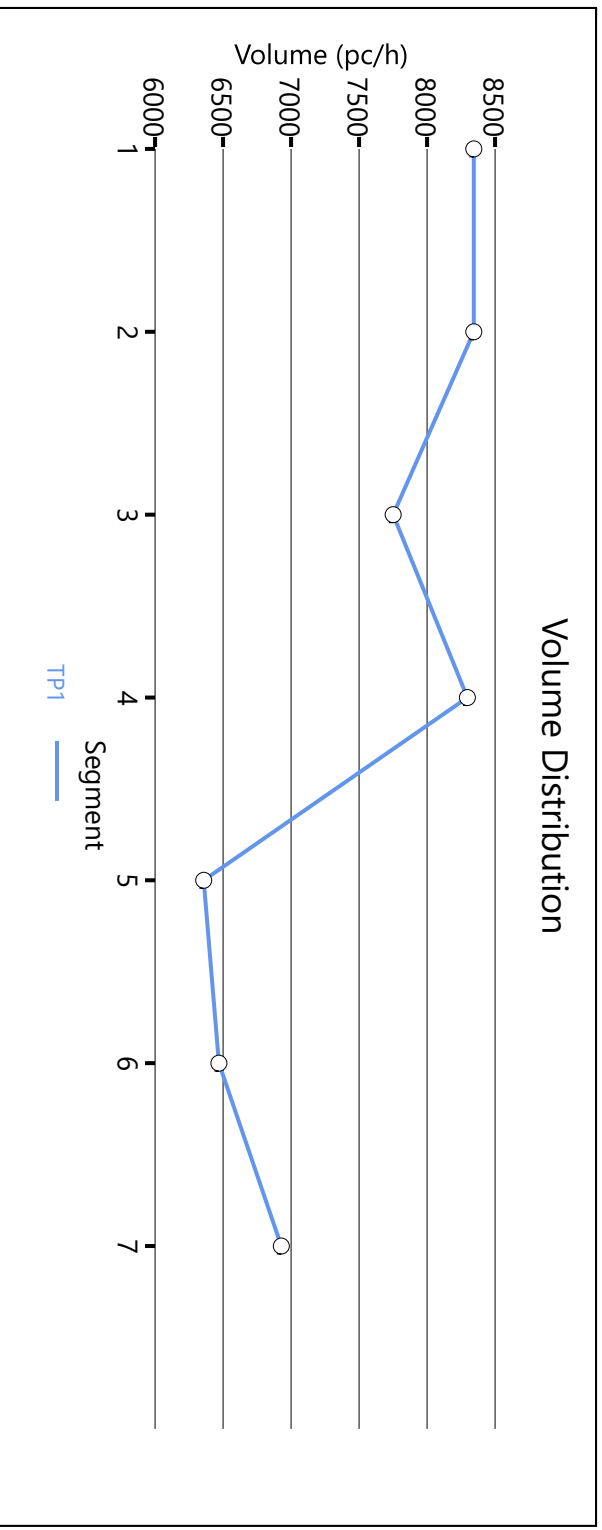
Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	7751	9600	0.81	65.4	29.6	D

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	8297	8824	0.94	51.2	32.4	D

Segment 5: Basic															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		6358		9600		0.66		71.4		22.3		C
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	6469	111	12000	2000	0.54	0.06	74.3	74.3	17.4	17.4	B
Segment 7: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	6928	457	12000	2000	0.58	0.23	68.7	65.1	20.2	19.2	B
Facility Time Period Results															
T	Speed, mi/h		Density, pc/mi/ln		Density, veh/mi/ln		Travel Time, min		LOS						
1	63.3		26.1		25.1		1.40		D						
Facility Overall Results															
Space Mean Speed, mi/h			63.3			Density, veh/mi/ln			25.1						
Average Travel Time, min			1.40			Density, pc/mi/ln			26.1						
Messages															
ERROR 1			Acceleration lane length is longer than the segment length for merge segment 6.												
ERROR 2			Acceleration lane length is longer than the segment length for merge segment 7.												
WARNING 1			Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.												
Comments															



HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	5/13/2020
Agency	Caltrans	Analysis Year	Opening Year NB
Jurisdiction		Time Period Analyzed	AM Peak
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.89		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 NB South of Palm	100	4
2	Diverge	Diverge	I-5 NB Palm Off-Ramp	1500	4
3	Basic	Basic	I-5 NB between Palm Off-Ramp & On-Ramp	2455	4
4	Weaving	Weaving	I-5 NB Palm On-Ramp to Main Off-Ramp	3110	5
5	Basic	Basic	I-5 NB between Main Off-Ramp & On-Ramp	1330	4
6	Merge	Basic	I-5 NB Main On-Ramp	1500	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	5773	9600	0.60	73.1	19.7	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	5773	952	9600	2000	0.60	0.48	67.2	58.2	21.5	29.3	D

Segment 3: Basic

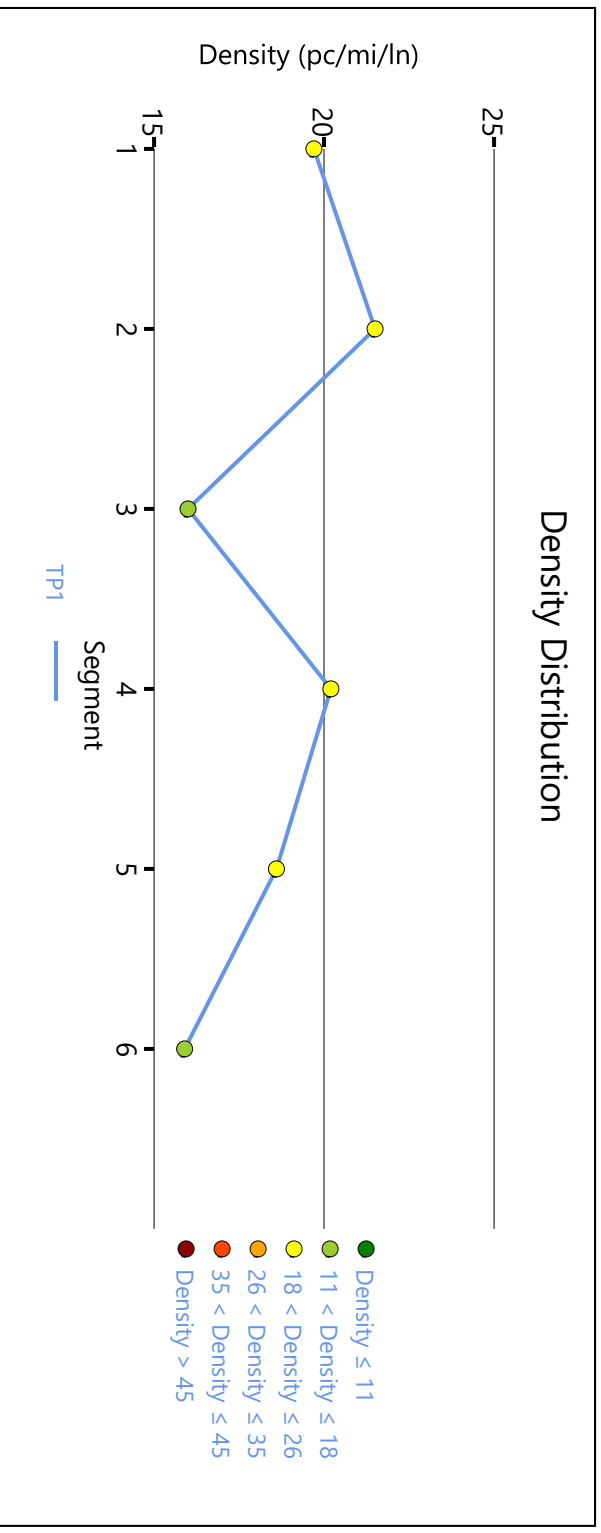
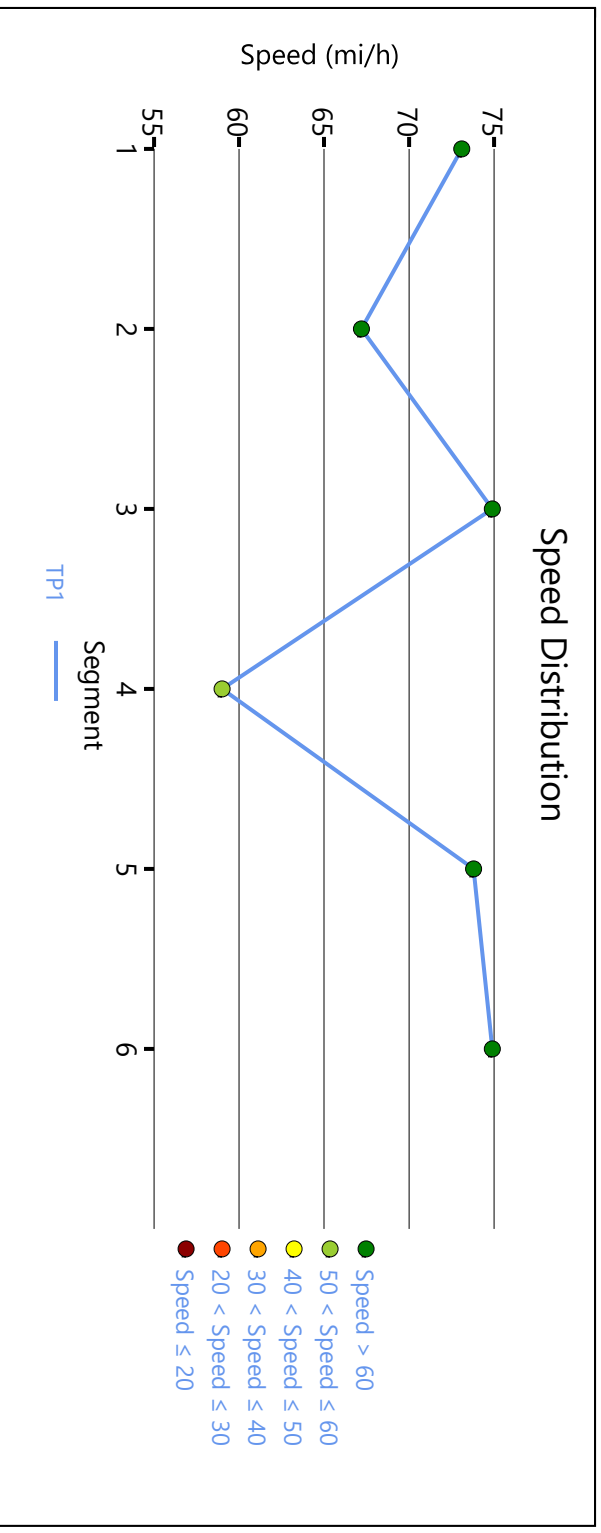
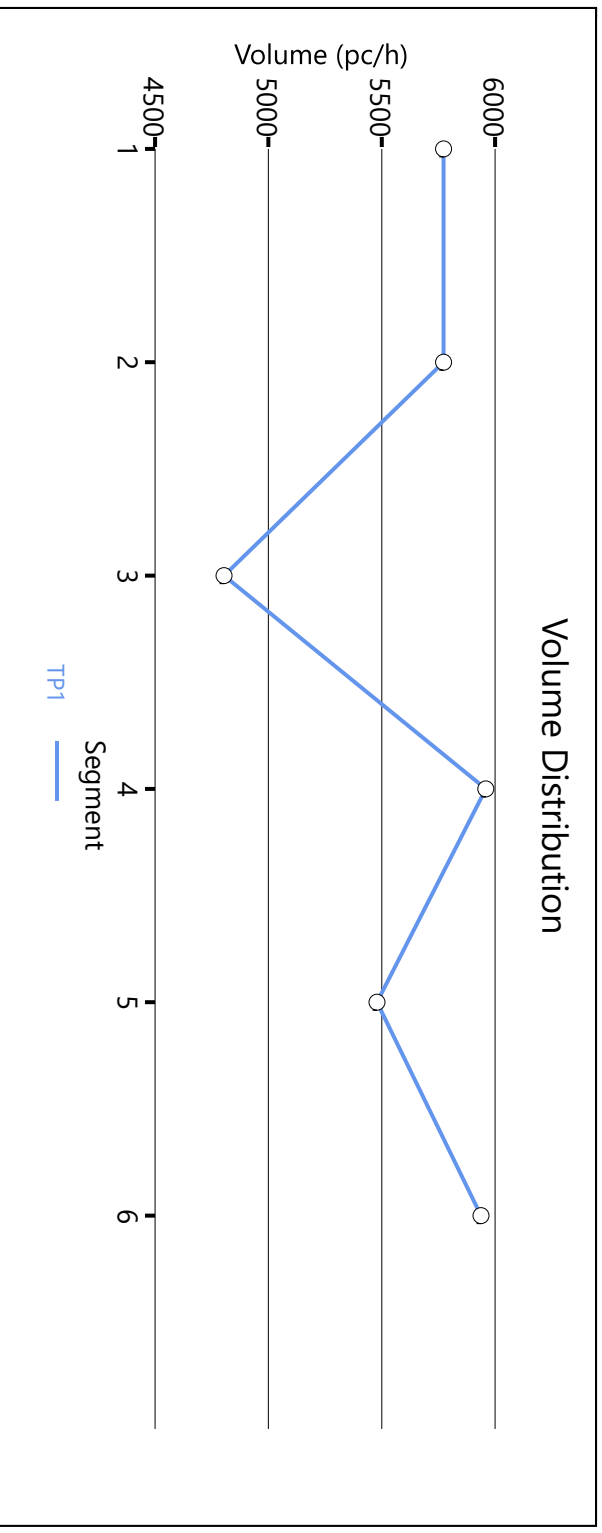
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	4804	9600	0.50	74.9	16.0	B

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	5959	9756	0.61	59.0	20.2	C

Segment 5: Basic

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		5479		9600		0.57		73.8		18.6		C
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	5938	459	12000	2000	0.49	0.23	74.9	74.9	15.9	15.9	B
Facility Time Period Results															
T	Speed, mi/h				Density, pc/mi/ln		Density, veh/mi/ln		Travel Time, min				LOS		
1	67.5				18.5		17.8		1.70				C		
Facility Overall Results															
Space Mean Speed, mi/h					67.5			Density, veh/mi/ln				17.8			
Average Travel Time, min					1.70			Density, pc/mi/ln				18.5			
Messages															
WARNING 1					Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.										
Comments															



- Density ≤ 11
- 11 < Density ≤ 18
- 18 < Density ≤ 26
- 26 < Density ≤ 35
- 35 < Density ≤ 45
- Density > 45

- Speed > 60
- 50 < Speed ≤ 60
- 40 < Speed ≤ 50
- 30 < Speed ≤ 40
- 20 < Speed ≤ 30
- Speed ≤ 20

HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	5/13/2020
Agency	Caltrans	Analysis Year	Opening Year NB
Jurisdiction		Time Period Analyzed	PM Peak
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.89		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 NB South of Palm	100	4
2	Diverge	Diverge	I-5 NB Palm Off-Ramp	1500	4
3	Basic	Basic	I-5 NB between Palm Off-Ramp & On-Ramp	2455	4
4	Weaving	Weaving	I-5 NB Palm On-Ramp to Main Off-Ramp	3110	5
5	Basic	Basic	I-5 NB between Main Off-Ramp & On-Ramp	1330	4
6	Merge	Basic	I-5 NB Main On-Ramp	1500	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	4774	9600	0.50	74.9	15.9	B

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	4774	612	9600	2000	0.50	0.31	68.6	59.3	17.4	23.9	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	4151	9600	0.43	75.1	13.8	B

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	5036	10213	0.49	61.8	16.3	B

Segment 5: Basic

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		4602		9600		0.48		75.0		15.3		B

Segment 6: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	5217	615	12000	2000	0.43	0.31	75.4	75.4	13.8	13.8	B

Facility Time Period Results

T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	69.2	15.4	14.8	1.60	B

Facility Overall Results

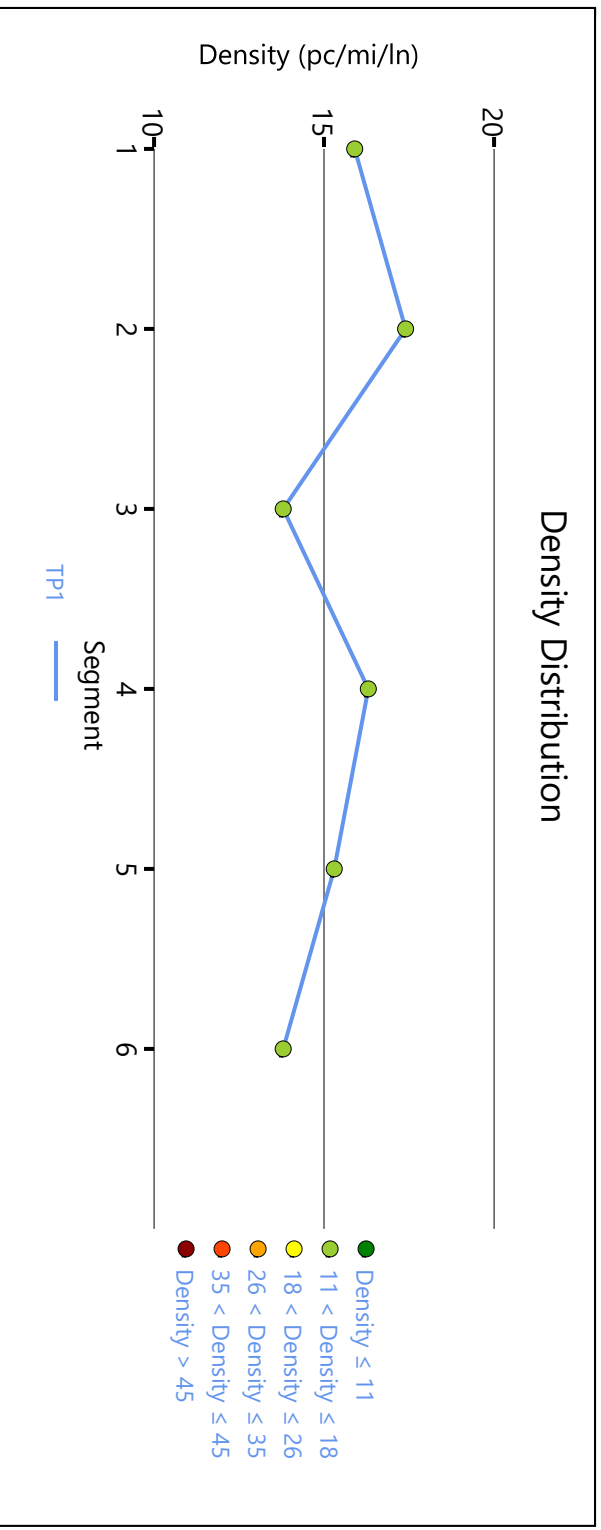
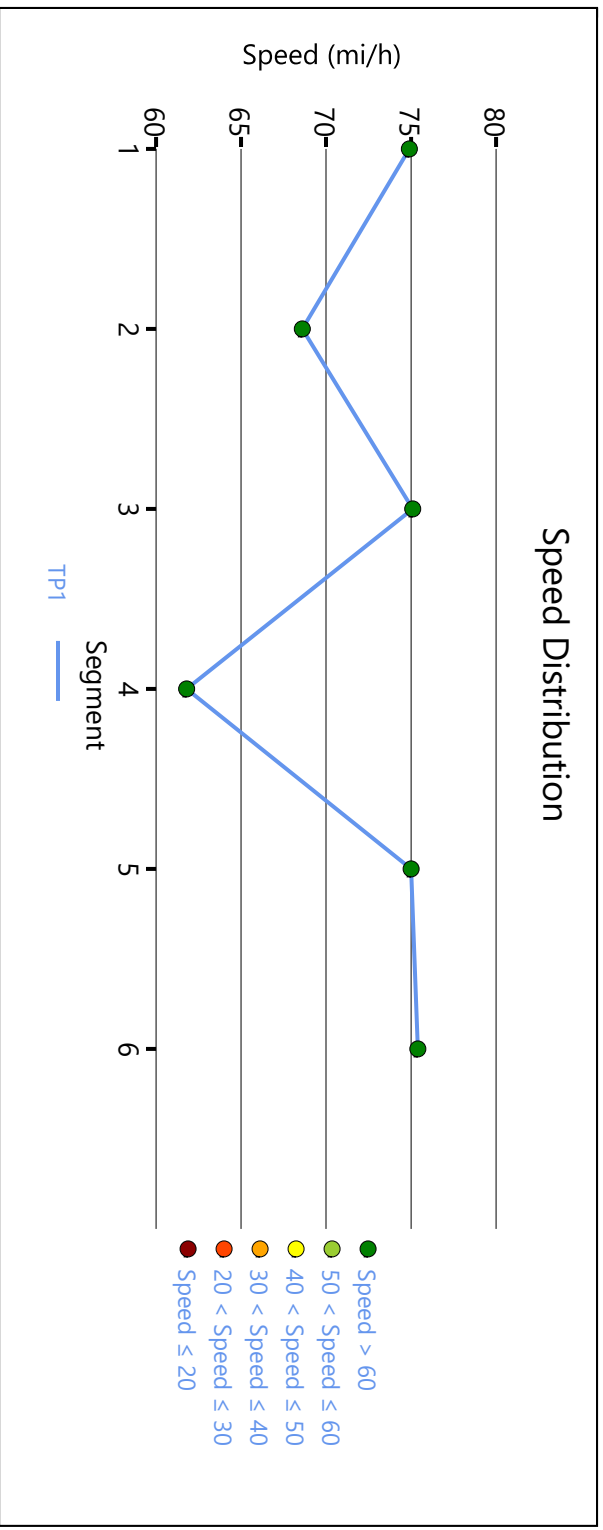
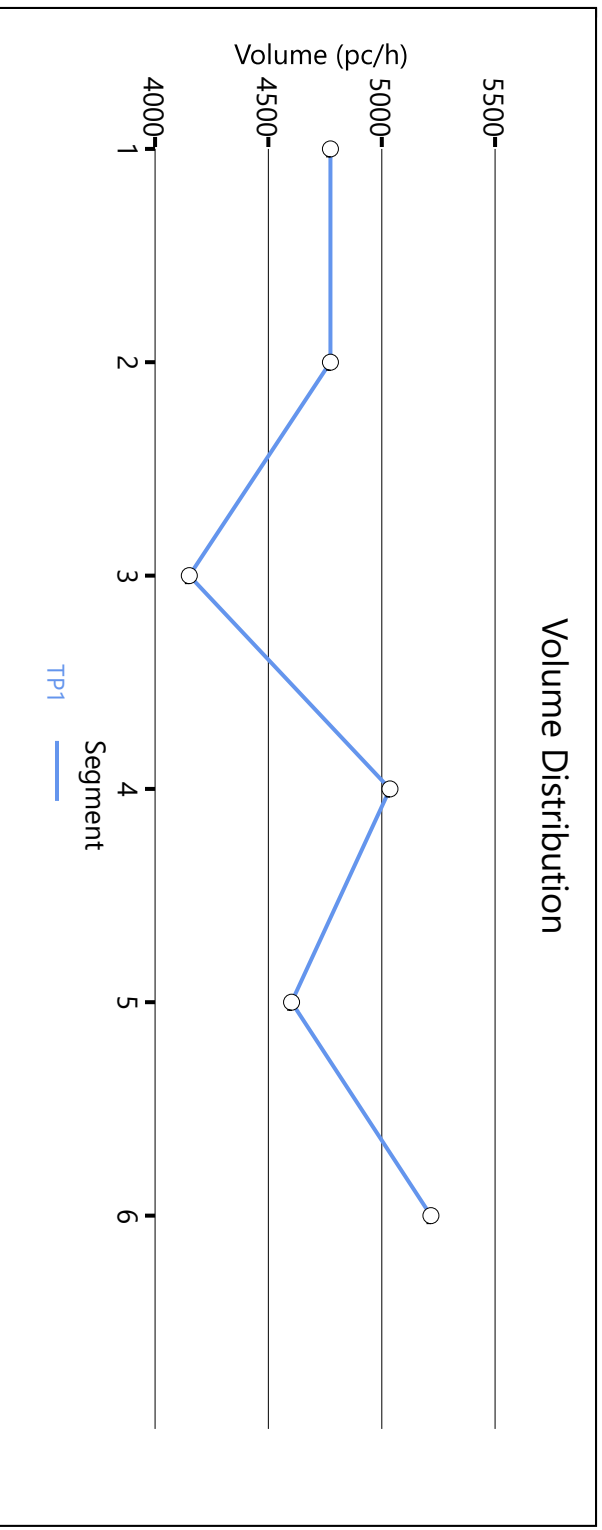
Space Mean Speed, mi/h	69.2	Density, veh/mi/ln	14.8
Average Travel Time, min	1.60	Density, pc/mi/ln	15.4

Messages

WARNING 1	Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.
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Comments

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HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	12/4/2018
Agency	Caltrans	Analysis Year	Opening Year SB
Jurisdiction		Time Period Analyzed	AM Peak Hour
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	7
Total Time Periods	2	Time Period Duration, min	15
Facility Length, mi	1.48		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 SB North of Main	100	5
2	Diverge	Basic	I-5 SB Main Off-Ramp	1500	5
3	Basic	Basic	I-5 SB between Main Off-Ramp & On-Ramp	1750	4
4	Weaving	Weaving	I-5 SB Main On-Ramp to Palm Off-Ramp	1855	5
5	Basic	Basic	I-5 SB between Palm Off-Ramp & On-Ramp	1480	4
6	Merge	Basic	I-5 SB Palm On-Ramp	570	5
7	Merge	Merge	I-5 SB SR-75 On-Ramp	565	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	3505	12000	0.29	75.4	9.3	A
2	1.00	0.962	9055	12000	0.75	67.9	26.7	D

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	3505	562	12000	2000	0.29	0.28	75.4	75.4	9.3	9.3	A
2	1.00	1.00	0.962	0.980	8847	653	12000	2000	0.75	0.33	68.0	68.0	26.0	26.0	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	2932	9600	0.31	75.4	9.7	A
2	1.00	0.962	8008	9600	0.87	32.9	60.9	F

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	3207	5369	0.60	60.1	10.7	B
2	1.00	0.962	8216	8823	1.02	53.8	30.5	F

Segment 5: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	1811	9600	0.19	74.4	6.0	A
2	1.00	0.962	6258	9600	0.72	71.7	21.8	C

Segment 6: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	1932	121	12000	2000	0.16	0.06	75.2	75.4	5.1	5.1	A
2	1.00	1.00	0.962	0.980	6378	120	12000	2000	0.59	0.06	69.3	69.3	18.4	18.4	C

Segment 7: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	2067	132	12000	2000	0.17	0.07	70.5	66.2	5.9	6.9	A
2	1.00	1.00	0.962	0.980	6583	495	12000	2000	0.63	0.25	68.8	65.2	19.1	18.6	B

Facility Time Period Results

T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	70.1	8.6	8.3	1.30	A
2	52.0	32.2	31.0	1.70	F

Facility Overall Results

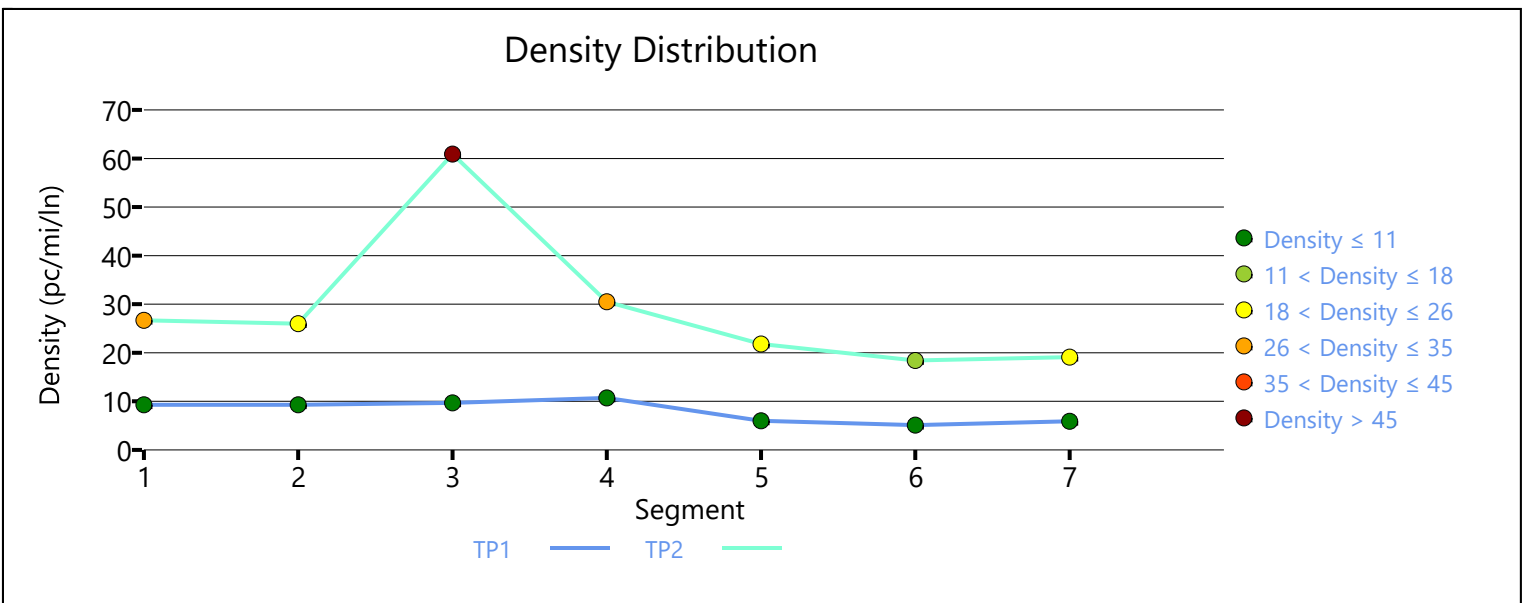
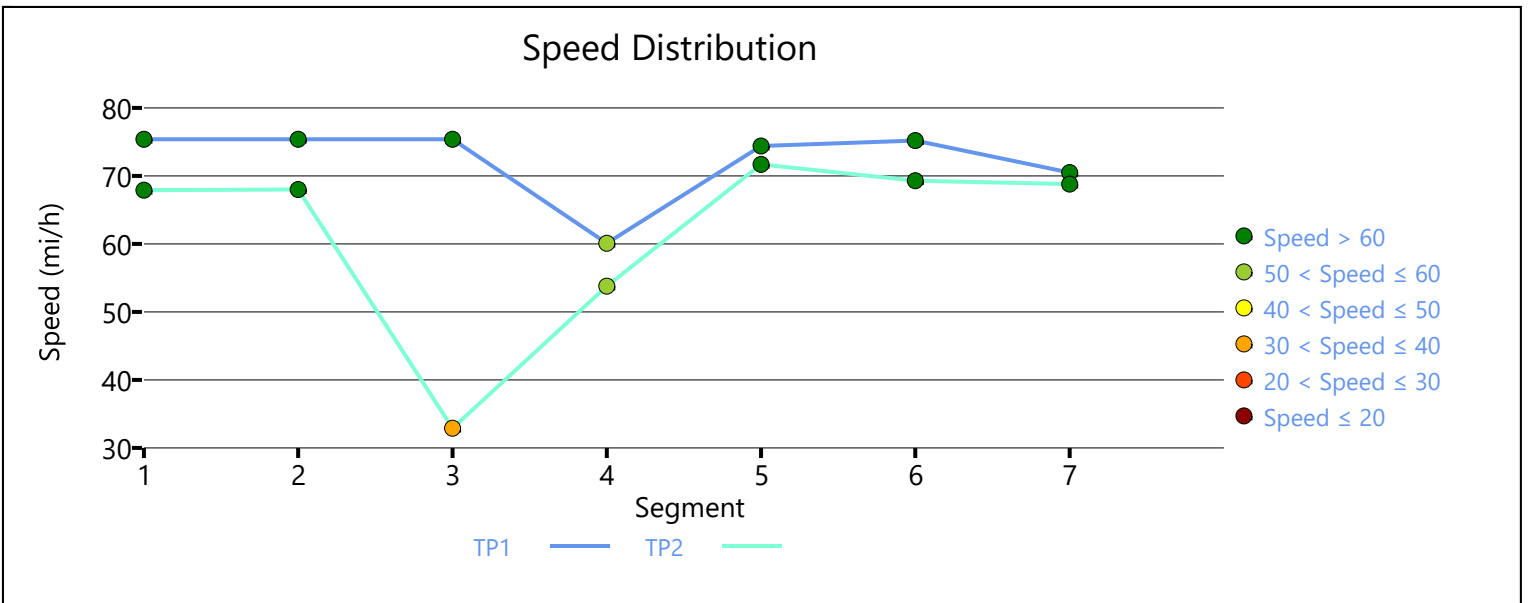
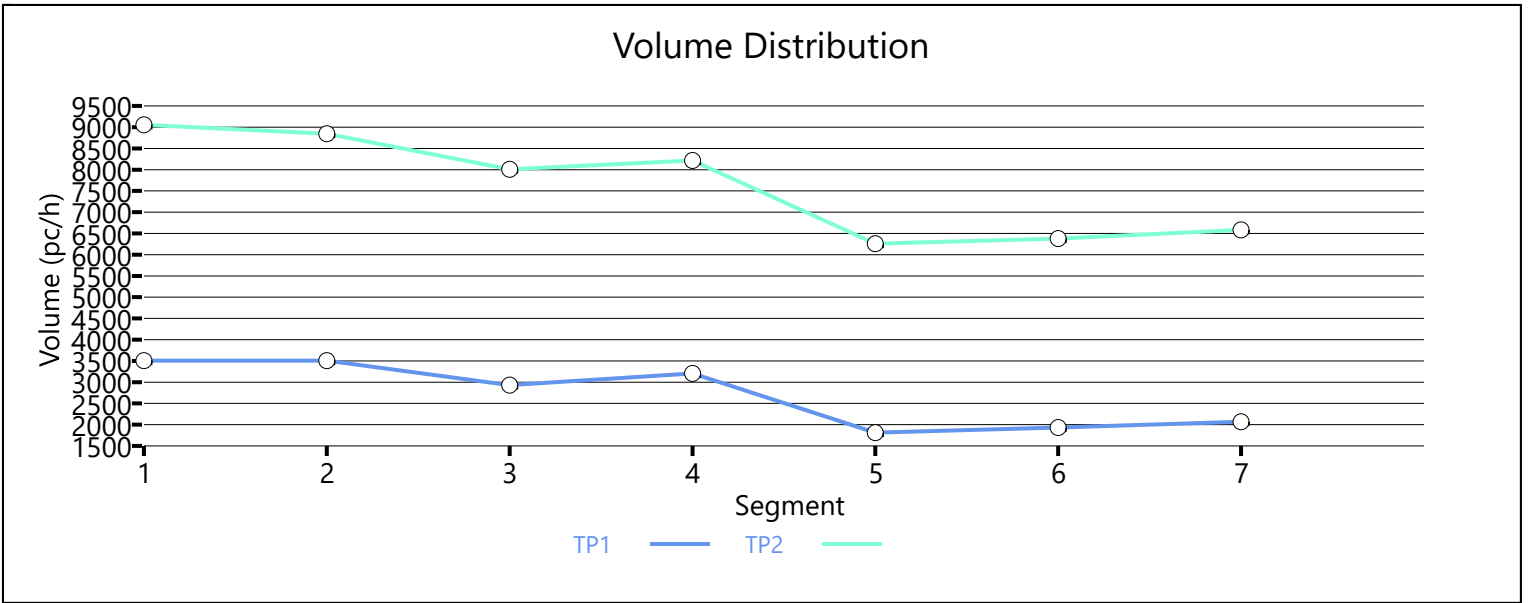
Space Mean Speed, mi/h	55.9	Density, veh/mi/ln	19.6
Average Travel Time, min	1.60	Density, pc/mi/ln	20.4

Messages

ERROR 1	Acceleration lane length is longer than the segment length for merge segment 6.
ERROR 2	Acceleration lane length is longer than the segment length for merge segment 7.
WARNING 1	Oversaturated conditions currently exist in boundary time period 2. Results may not be reliable. Consider expanding analysis in time and/or space to resolve this warning.
WARNING 2	Oversaturated conditions currently exist on segment 1, which is less than 300 feet. Due to time step size, these segments may produce unreliable results. Consider reviewing facility segmentation to resolve this warning.
WARNING 3	Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.

Comments

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HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	5/13/2020
Agency	Caltrans	Analysis Year	Opening Year SB
Jurisdiction		Time Period Analyzed	AM Peak Hour
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	7
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.48		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 SB North of Main	100	5
2	Diverge	Basic	I-5 SB Main Off-Ramp	1500	5
3	Basic	Basic	I-5 SB between Main Off-Ramp & On-Ramp	1750	4
4	Weaving	Weaving	I-5 SB Main On-Ramp to Palm Off-Ramp	1855	5
5	Basic	Basic	I-5 SB between Palm Off-Ramp & On-Ramp	1480	4
6	Merge	Basic	I-5 SB Palm On-Ramp	570	5
7	Merge	Merge	I-5 SB SR-75 On-Ramp	565	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	9055	12000	0.75	67.9	26.7	D

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	9055	614	12000	2000	0.75	0.31	67.9	67.9	26.7	26.7	D

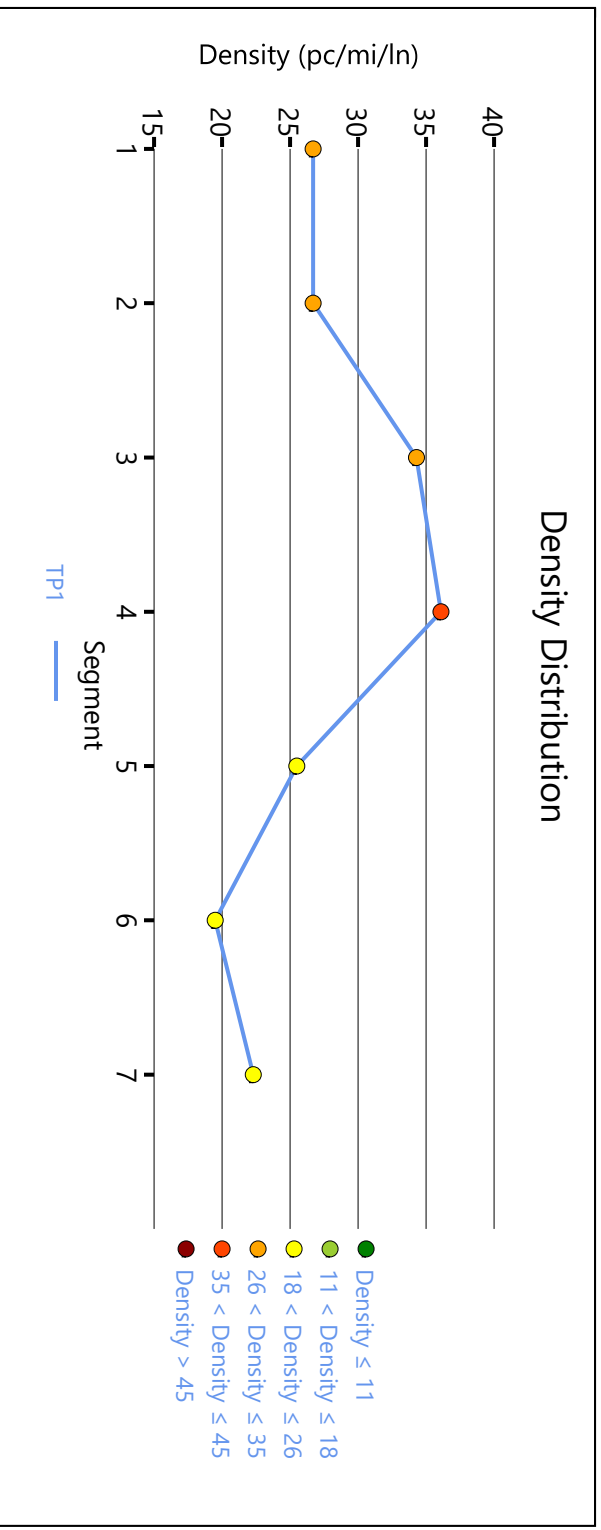
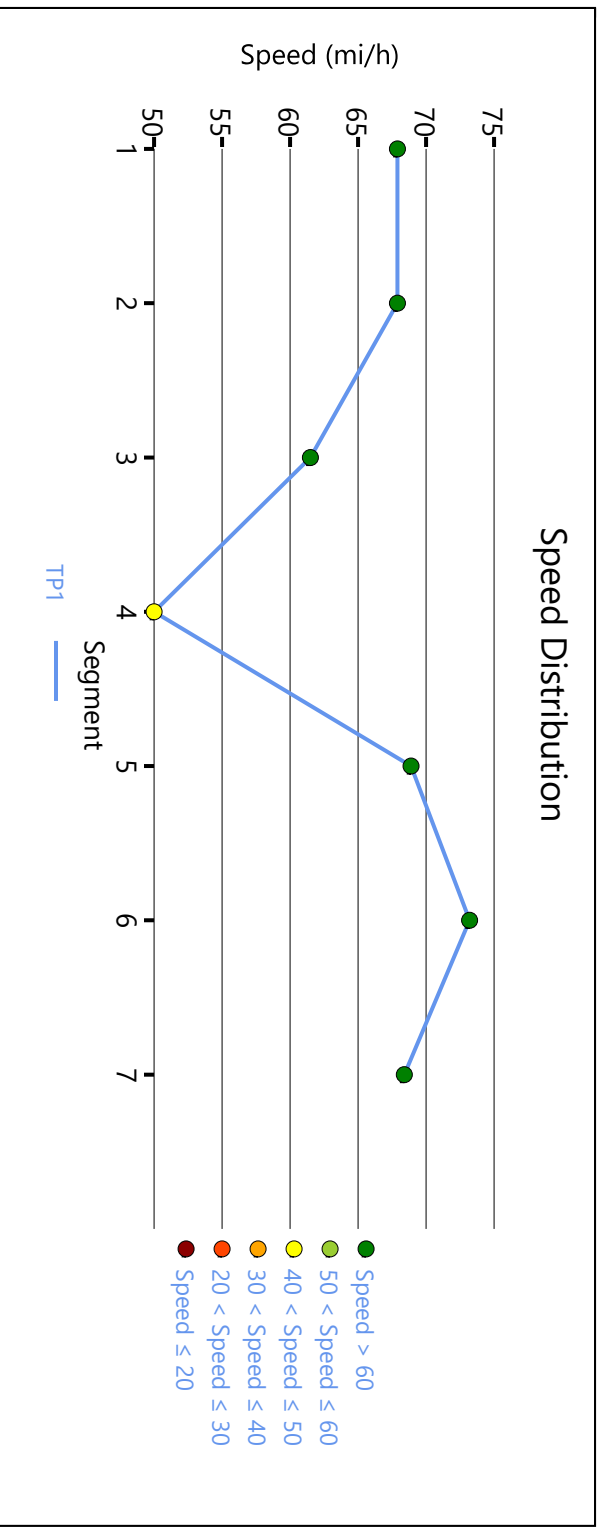
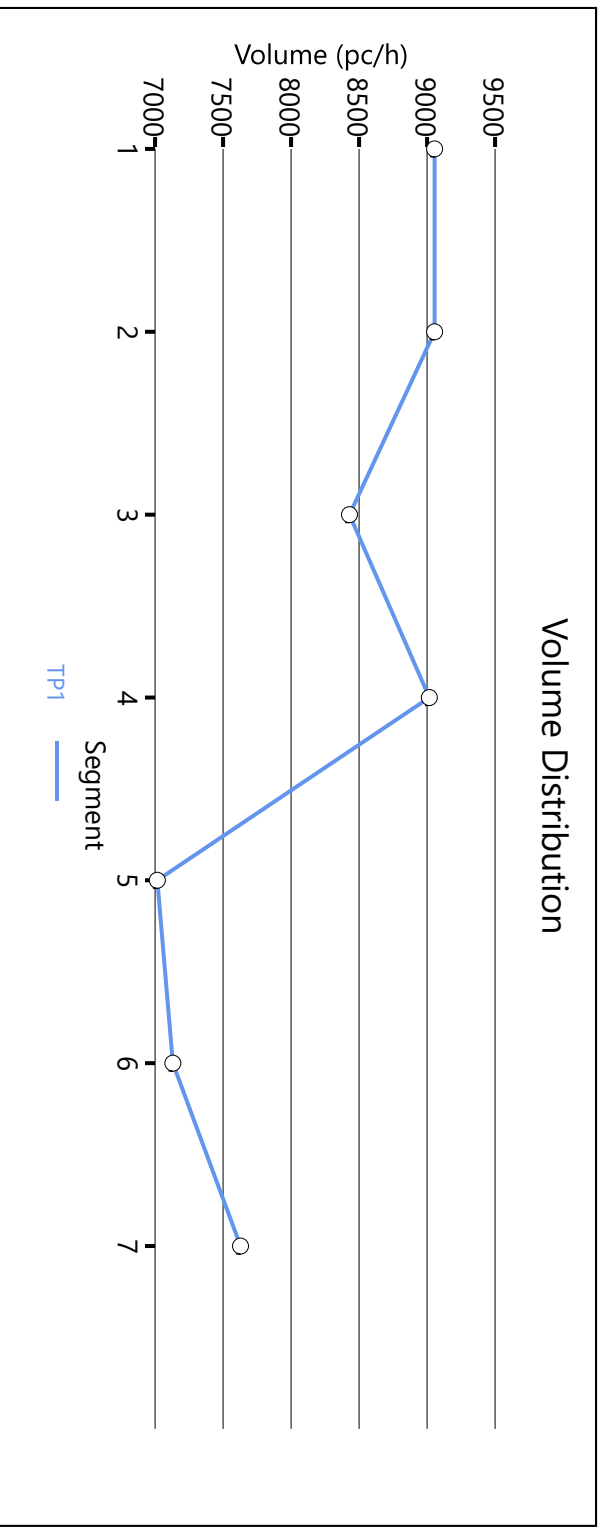
Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	8429	9600	0.88	61.5	34.3	D

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	9017	9196	0.98	50.0	36.1	E

Segment 5: Basic															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		7016		9600		0.73		68.9		25.5		C
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	7131	115	12000	2000	0.59	0.06	73.2	73.2	19.5	19.5	C
Segment 7: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	7628	495	12000	2000	0.64	0.25	68.4	64.8	22.3	20.4	C
Facility Time Period Results															
T	Speed, mi/h		Density, pc/mi/ln		Density, veh/mi/ln		Travel Time, min		LOS						
1	61.2		29.5		28.4		1.50		D						
Facility Overall Results															
Space Mean Speed, mi/h			61.2			Density, veh/mi/ln			28.4						
Average Travel Time, min			1.50			Density, pc/mi/ln			29.5						
Messages															
ERROR 1			Acceleration lane length is longer than the segment length for merge segment 6.												
ERROR 2			Acceleration lane length is longer than the segment length for merge segment 7.												
WARNING 1			Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.												
Comments															



HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	12/4/2018
Agency	Caltrans	Analysis Year	Opening Year WP NB
Jurisdiction		Time Period Analyzed	AM Peak
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.89		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 NB South of Palm	100	4
2	Diverge	Diverge	I-5 NB Palm Off-Ramp	1500	4
3	Basic	Basic	I-5 NB between Palm Off-Ramp & On-Ramp	2455	4
4	Weaving	Weaving	I-5 NB Palm On-Ramp to Main Off-Ramp	3110	5
5	Basic	Basic	I-5 NB between Main Off-Ramp & On-Ramp	1330	4
6	Merge	Basic	I-5 NB Main On-Ramp	1500	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	5782	9600	0.60	73.1	19.8	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	5782	960	9600	2000	0.60	0.48	67.2	58.2	21.5	29.3	D

Segment 3: Basic

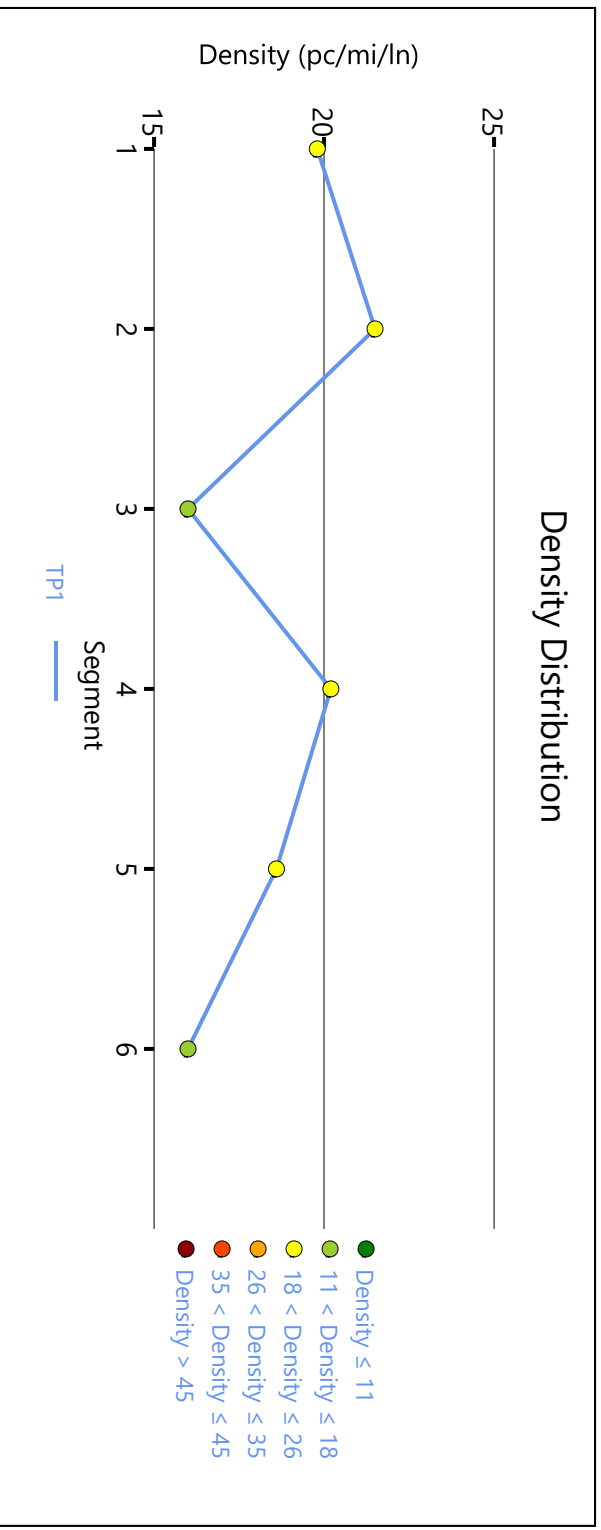
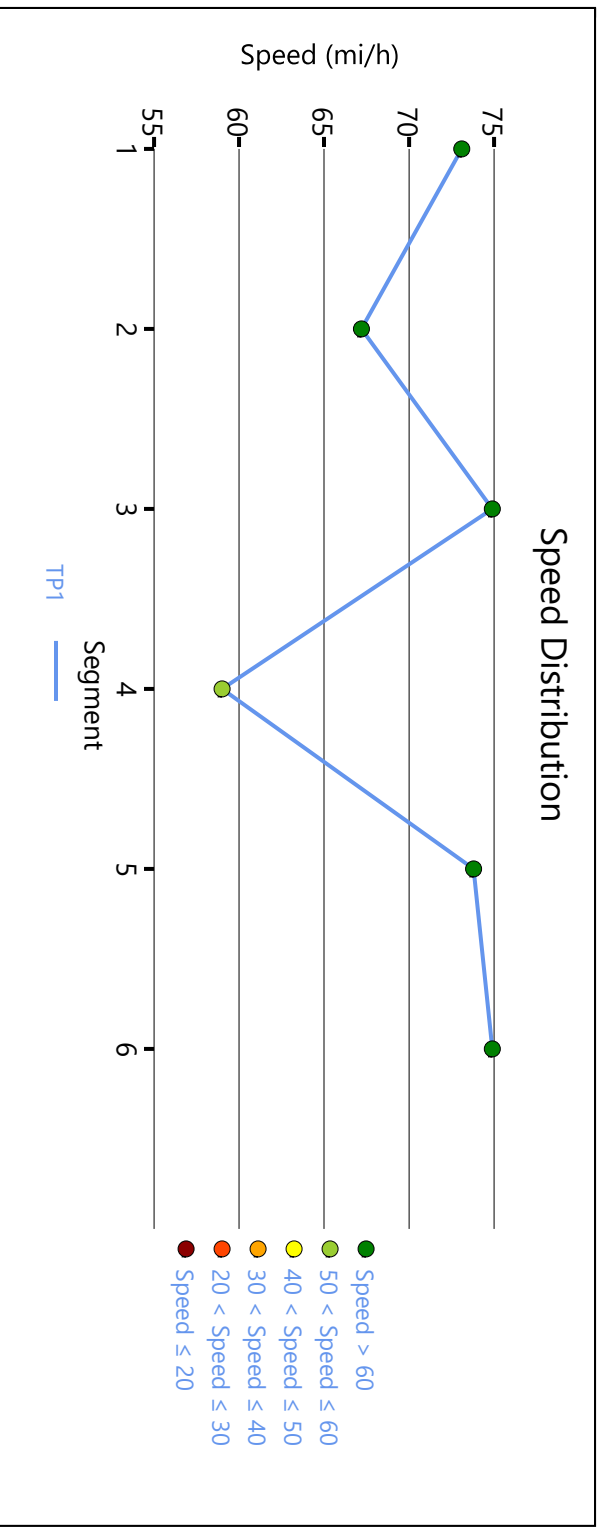
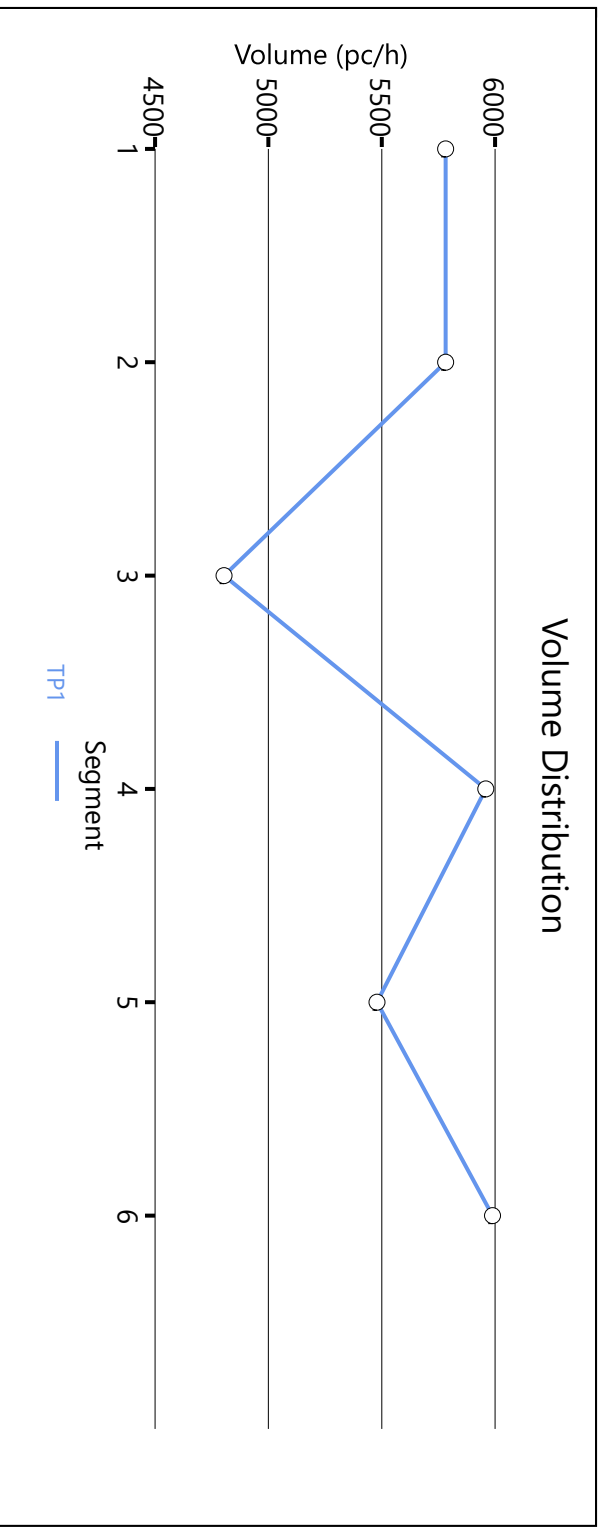
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	4804	9600	0.50	74.9	16.0	B

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	5959	9756	0.61	59.0	20.2	C

Segment 5: Basic

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		5479		9600		0.57		73.8		18.6		C
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	5989	510	12000	2000	0.50	0.26	74.9	74.9	16.0	16.0	B
Facility Time Period Results															
T	Speed, mi/h				Density, pc/mi/ln		Density, veh/mi/ln		Travel Time, min				LOS		
1	67.5				18.6		17.8		1.70				C		
Facility Overall Results															
Space Mean Speed, mi/h					67.5			Density, veh/mi/ln				17.8			
Average Travel Time, min					1.70			Density, pc/mi/ln				18.6			
Messages															
WARNING 1					Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.										
Comments															



- Density ≤ 11
- 11 < Density ≤ 18
- 18 < Density ≤ 26
- 26 < Density ≤ 35
- 35 < Density ≤ 45
- Density > 45

- Speed > 60
- 50 < Speed ≤ 60
- 40 < Speed ≤ 50
- 30 < Speed ≤ 40
- 20 < Speed ≤ 30
- Speed ≤ 20

HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	5/13/2020
Agency	Caltrans	Analysis Year	Opening Year WP NB
Jurisdiction		Time Period Analyzed	PM Peak
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.89		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 NB South of Palm	100	4
2	Diverge	Diverge	I-5 NB Palm Off-Ramp	1500	4
3	Basic	Basic	I-5 NB between Palm Off-Ramp & On-Ramp	2455	4
4	Weaving	Weaving	I-5 NB Palm On-Ramp to Main Off-Ramp	3110	5
5	Basic	Basic	I-5 NB between Main Off-Ramp & On-Ramp	1330	4
6	Merge	Basic	I-5 NB Main On-Ramp	1500	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	4807	9600	0.50	74.9	16.0	B

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	4807	644	9600	2000	0.50	0.32	68.5	59.2	17.5	24.1	C

Segment 3: Basic

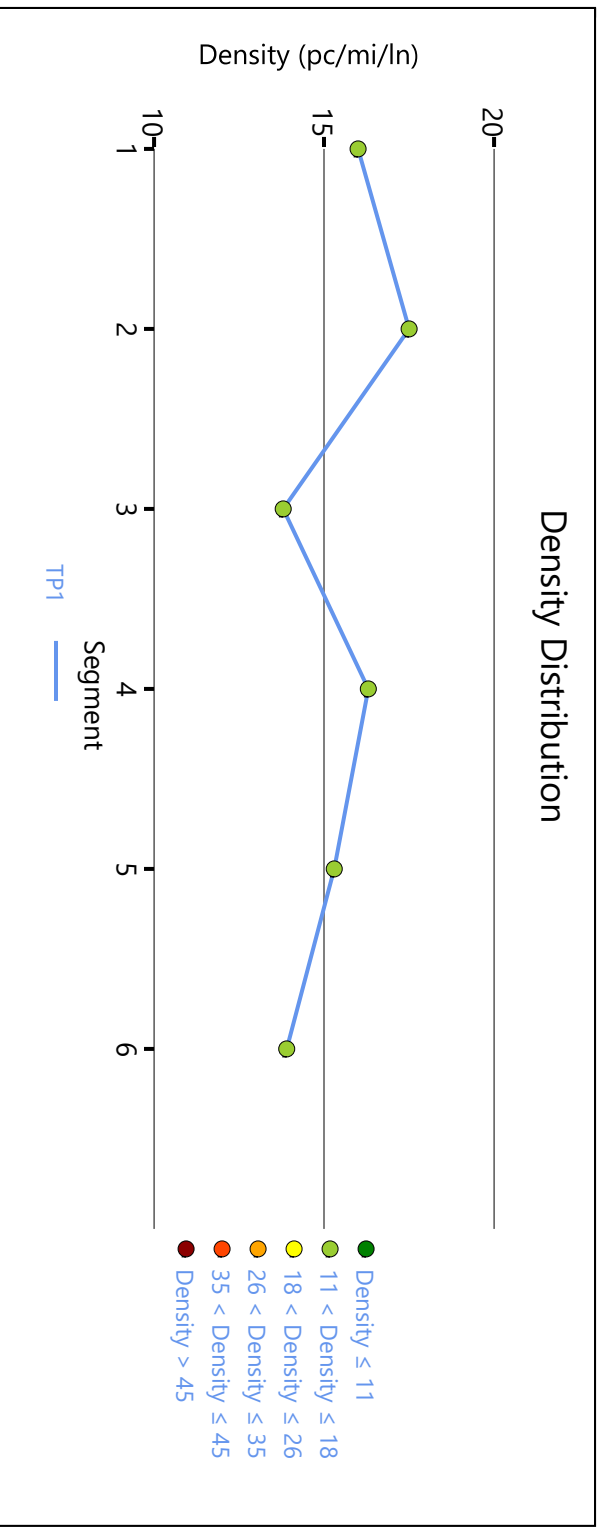
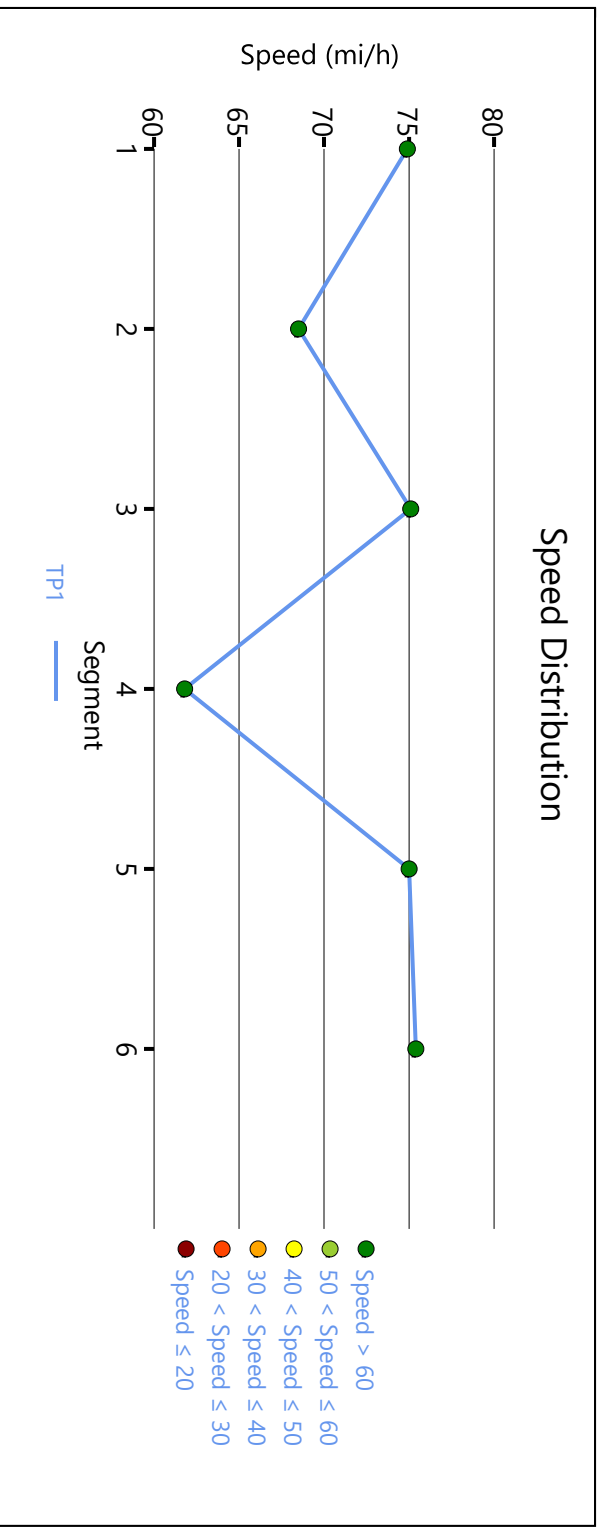
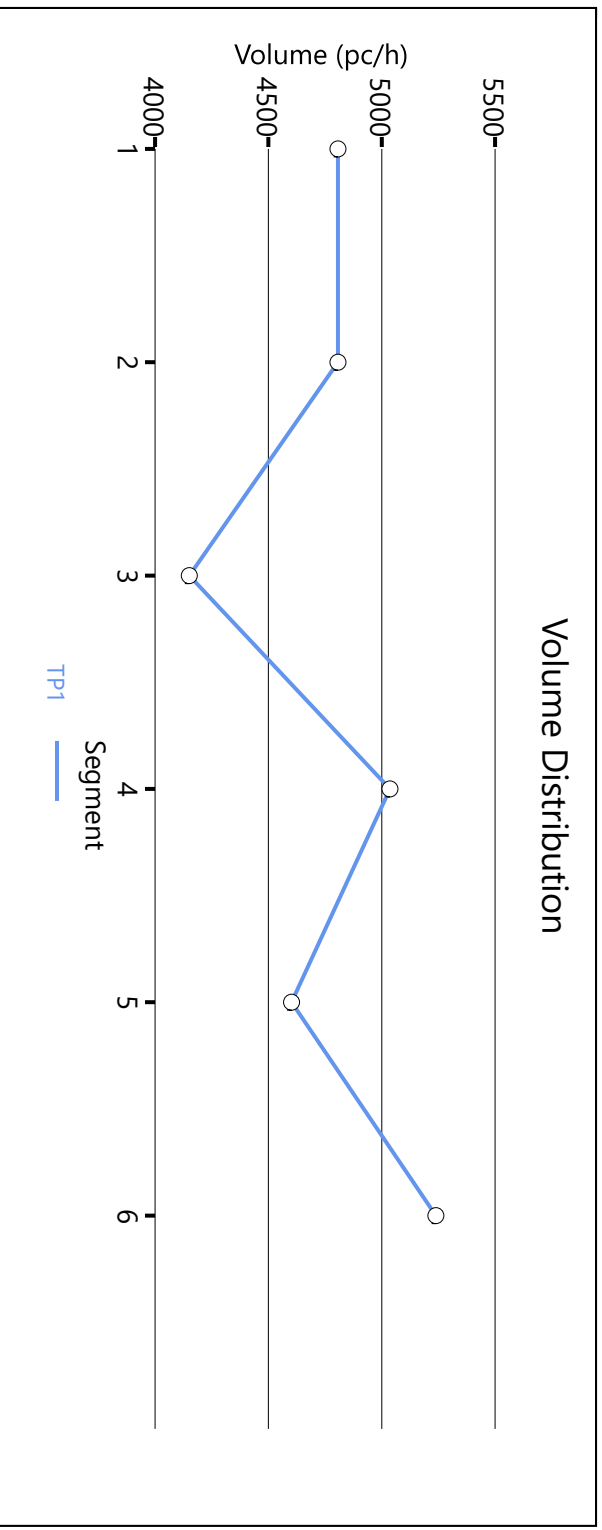
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	4151	9600	0.43	75.1	13.8	B

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	5036	10213	0.49	61.8	16.3	B

Segment 5: Basic

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		4602		9600		0.48		75.0		15.3		B
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	5239	637	12000	2000	0.44	0.32	75.4	75.4	13.9	13.9	B
Facility Time Period Results															
T	Speed, mi/h				Density, pc/mi/ln		Density, veh/mi/ln		Travel Time, min				LOS		
1	69.2				15.4		14.8		1.60				B		
Facility Overall Results															
Space Mean Speed, mi/h					69.2			Density, veh/mi/ln				14.8			
Average Travel Time, min					1.60			Density, pc/mi/ln				15.4			
Messages															
WARNING 1					Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.										
Comments															



- Density ≤ 11
- 11 < Density ≤ 18
- 18 < Density ≤ 26
- 26 < Density ≤ 35
- 35 < Density ≤ 45
- Density > 45

- Speed > 60
- 50 < Speed ≤ 60
- 40 < Speed ≤ 50
- 30 < Speed ≤ 40
- 20 < Speed ≤ 30
- Speed ≤ 20

HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	12/4/2018
Agency	Caltrans	Analysis Year	Opening Year WP SB
Jurisdiction		Time Period Analyzed	AM Peak Hour
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	7
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.48		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 SB North of Main	100	5
2	Diverge	Basic	I-5 SB Main Off-Ramp	1500	5
3	Basic	Basic	I-5 SB between Main Off-Ramp & On-Ramp	1750	4
4	Weaving	Weaving	I-5 SB Main On-Ramp to Palm Off-Ramp	1855	5
5	Basic	Basic	I-5 SB between Palm Off-Ramp & On-Ramp	1480	4
6	Merge	Basic	I-5 SB Palm On-Ramp	570	5
7	Merge	Merge	I-5 SB SR-75 On-Ramp	565	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	3518	12000	0.29	75.4	9.3	A

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	3518	574	12000	2000	0.29	0.29	75.4	75.4	9.3	9.3	A

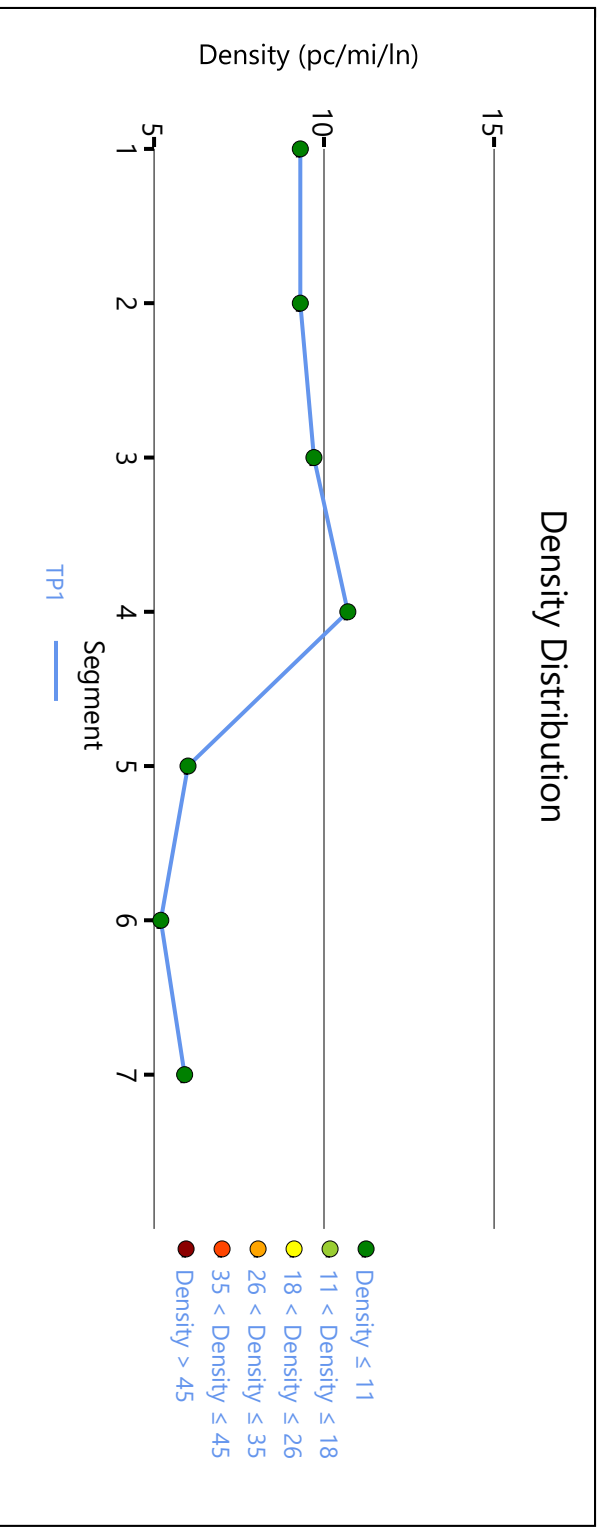
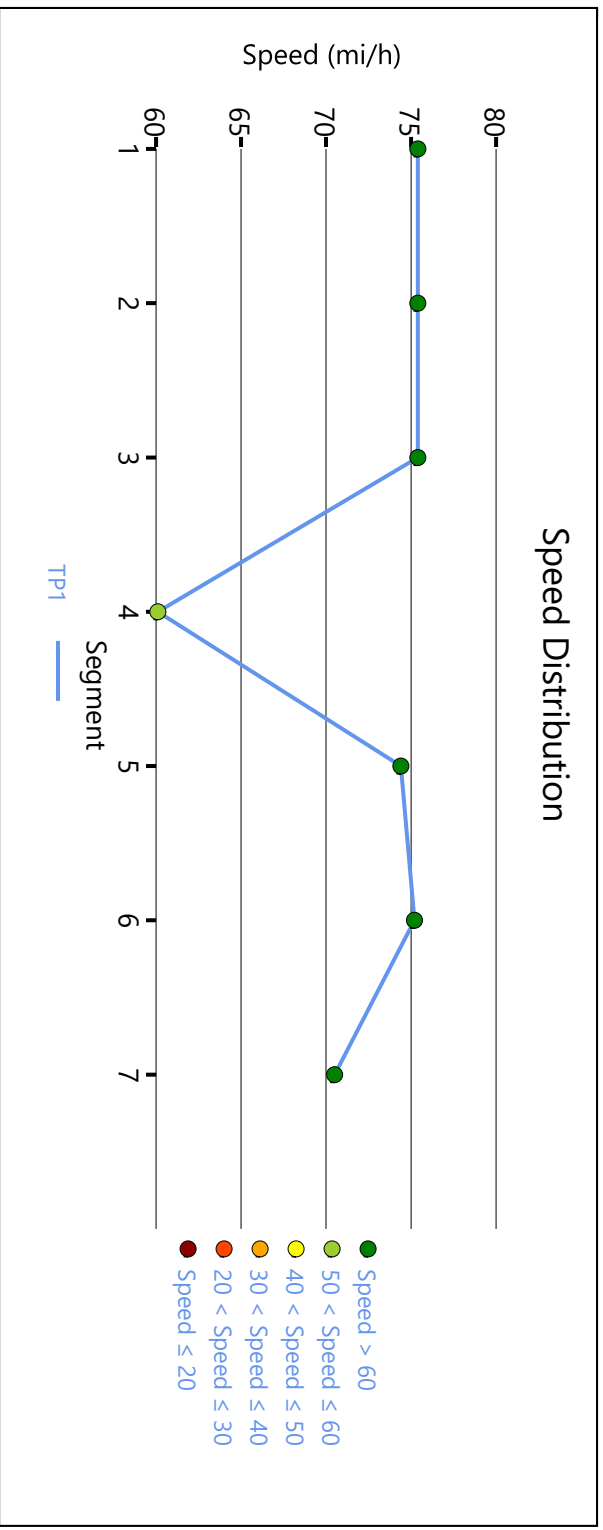
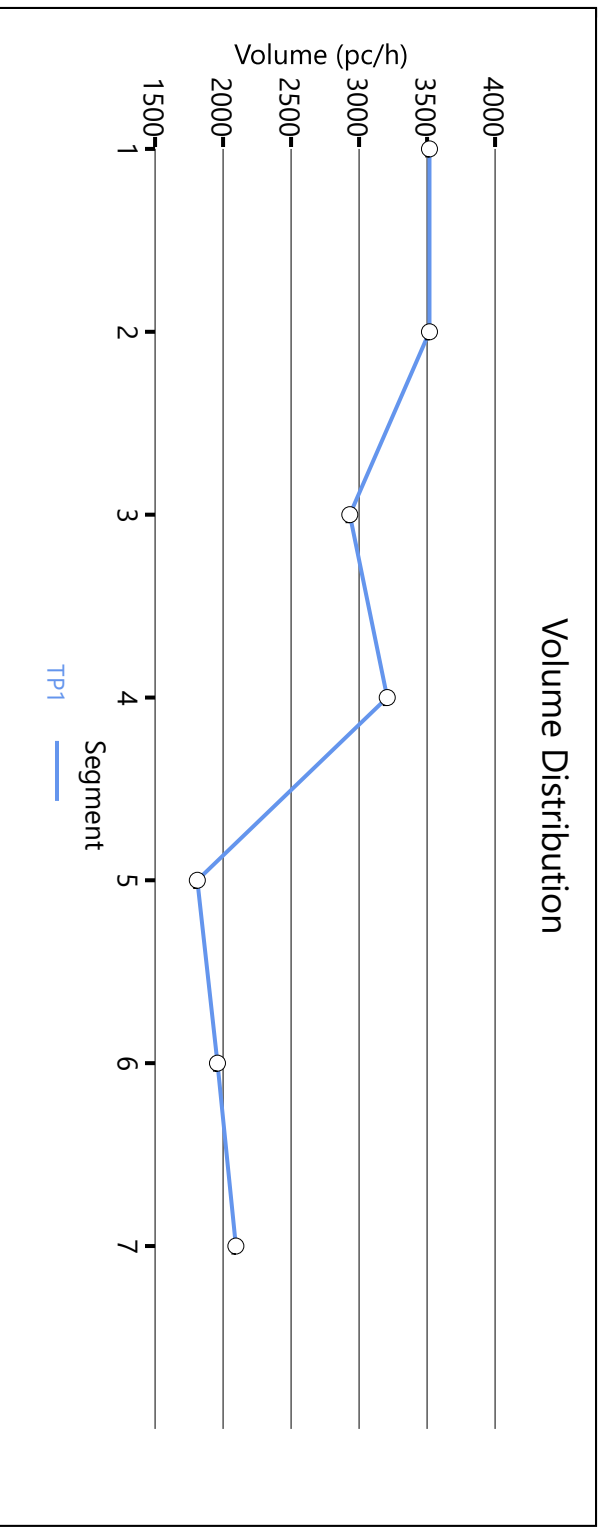
Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	2932	9600	0.31	75.4	9.7	A

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	3207	5369	0.60	60.1	10.7	B

Segment 5: Basic															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		1811		9600		0.19		74.4		6.0		A
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	1959	148	12000	2000	0.16	0.07	75.2	75.4	5.2	5.2	A
Segment 7: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	2094	132	12000	2000	0.17	0.07	70.5	66.2	5.9	6.9	A
Facility Time Period Results															
T	Speed, mi/h		Density, pc/mi/ln		Density, veh/mi/ln		Travel Time, min		LOS						
1	70.1		8.6		8.3		1.30		A						
Facility Overall Results															
Space Mean Speed, mi/h					70.1			Density, veh/mi/ln				8.3			
Average Travel Time, min					1.30			Density, pc/mi/ln				8.6			
Messages															
ERROR 1					Acceleration lane length is longer than the segment length for merge segment 6.										
ERROR 2					Acceleration lane length is longer than the segment length for merge segment 7.										
WARNING 1					Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.										
Comments															



HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	5/13/2020
Agency	Caltrans	Analysis Year	Opening Year WP SB
Jurisdiction		Time Period Analyzed	PM Peak
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	7
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.48		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 SB North of Main	100	5
2	Diverge	Basic	I-5 SB Main Off-Ramp	1500	5
3	Basic	Basic	I-5 SB between Main Off-Ramp & On-Ramp	1750	4
4	Weaving	Weaving	I-5 SB Main On-Ramp to Palm Off-Ramp	1855	5
5	Basic	Basic	I-5 SB between Palm Off-Ramp & On-Ramp	1480	4
6	Merge	Basic	I-5 SB Palm On-Ramp	570	5
7	Merge	Merge	I-5 SB SR-75 On-Ramp	565	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	9107	12000	0.76	67.7	26.9	D

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	9107	665	12000	2000	0.76	0.33	67.7	67.7	26.9	26.9	D

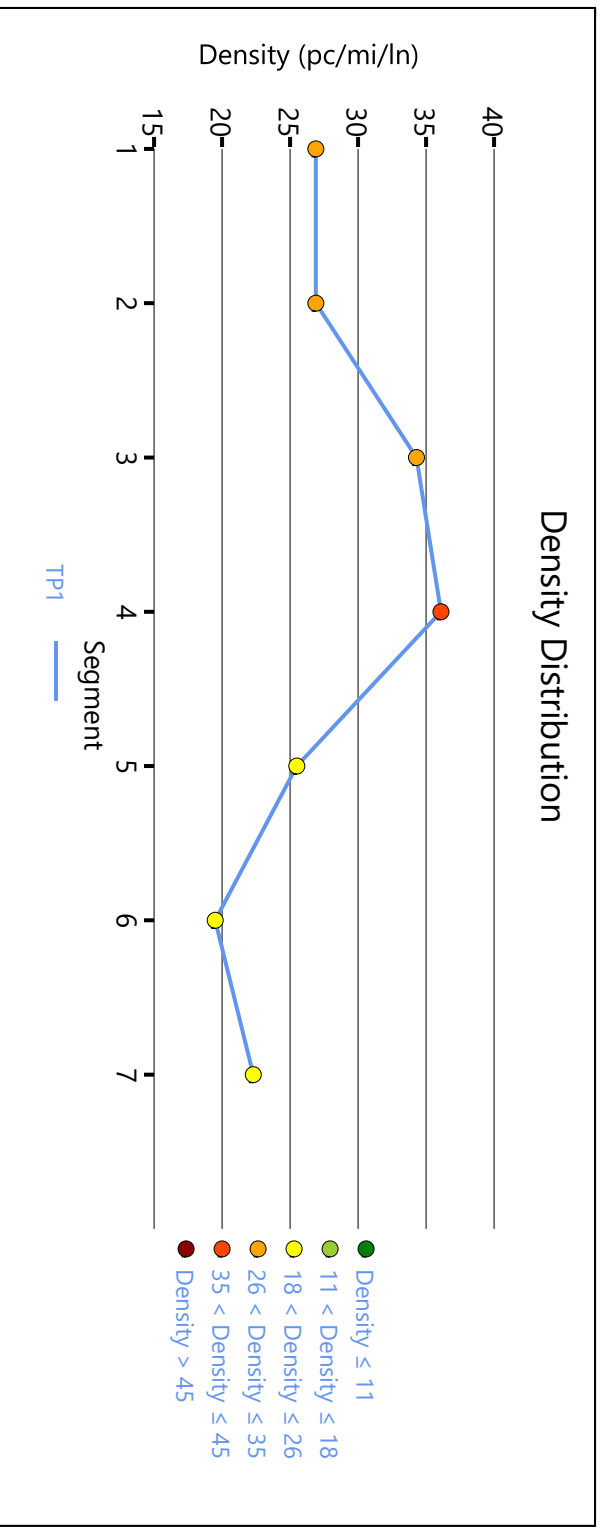
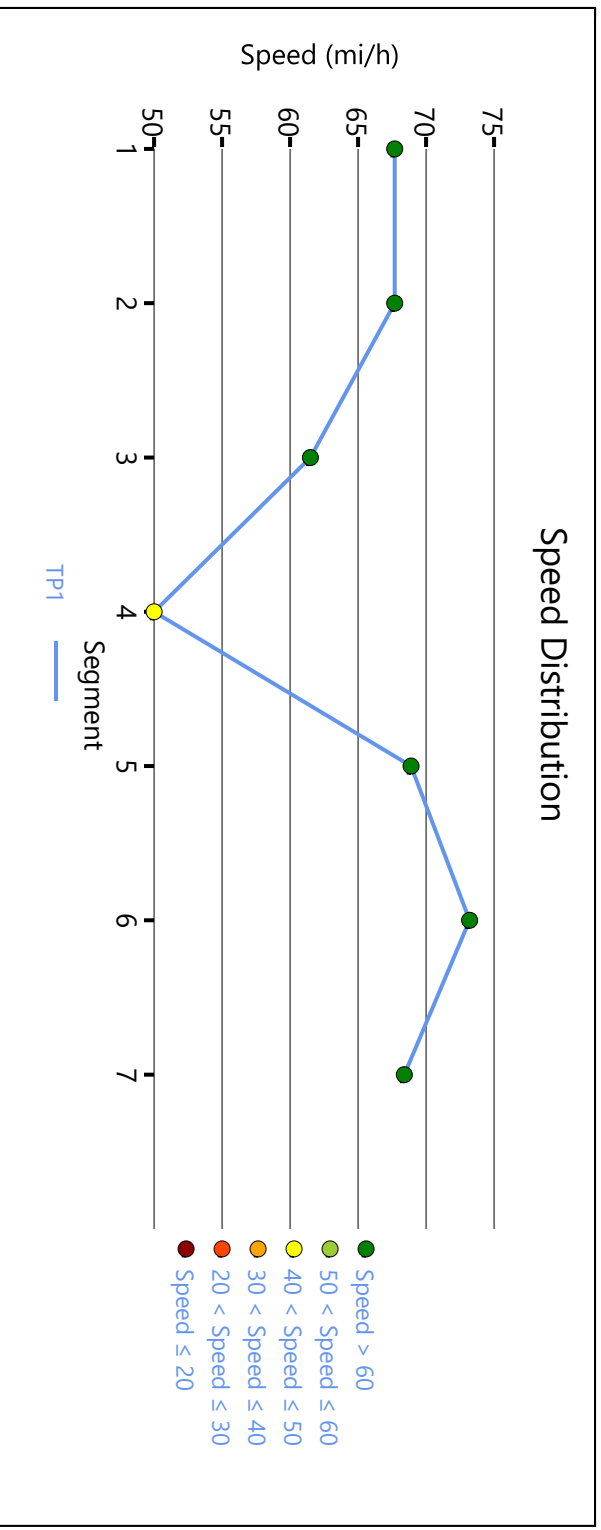
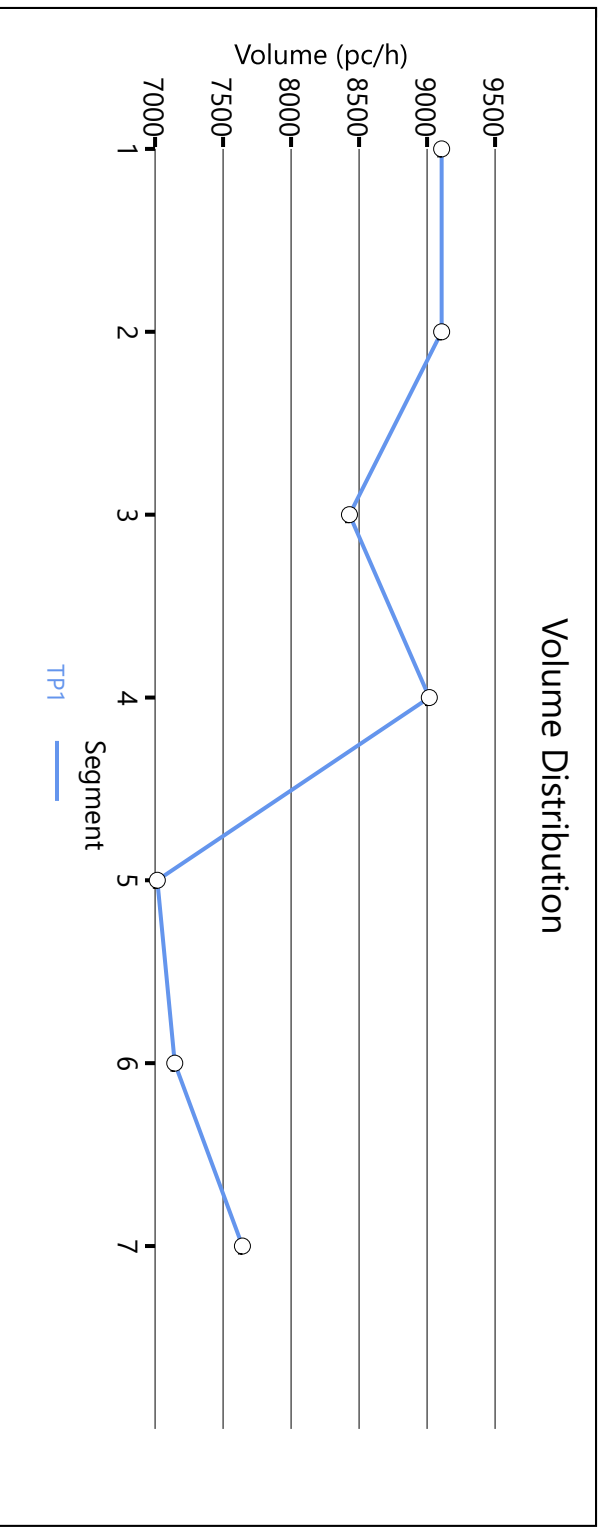
Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	8429	9600	0.88	61.5	34.3	D

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	9017	9196	0.98	50.0	36.1	E

Segment 5: Basic															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		7016		9600		0.73		68.9		25.5		C
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	7145	129	12000	2000	0.60	0.06	73.2	73.2	19.5	19.5	C
Segment 7: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	7642	495	12000	2000	0.64	0.25	68.4	64.8	22.3	20.4	C
Facility Time Period Results															
T	Speed, mi/h		Density, pc/mi/ln		Density, veh/mi/ln		Travel Time, min		LOS						
1	61.2		29.5		28.4		1.50		D						
Facility Overall Results															
Space Mean Speed, mi/h					61.2			Density, veh/mi/ln				28.4			
Average Travel Time, min					1.50			Density, pc/mi/ln				29.5			
Messages															
ERROR 1					Acceleration lane length is longer than the segment length for merge segment 6.										
ERROR 2					Acceleration lane length is longer than the segment length for merge segment 7.										
WARNING 1					Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.										
Comments															



HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	5/13/2020
Agency	Caltrans	Analysis Year	Horizon Year NB
Jurisdiction		Time Period Analyzed	AM Peak
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.89		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 NB South of Palm	100	4
2	Diverge	Diverge	I-5 NB Palm Off-Ramp	1500	4
3	Basic	Basic	I-5 NB between Palm Off-Ramp & On-Ramp	2455	4
4	Weaving	Weaving	I-5 NB Palm On-Ramp to Main Off-Ramp	3110	5
5	Basic	Basic	I-5 NB between Main Off-Ramp & On-Ramp	1330	4
6	Merge	Basic	I-5 NB Main On-Ramp	1500	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	7128	9600	0.74	68.4	26.1	D

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	7128	1303	9600	2000	0.74	0.65	65.9	57.2	27.0	36.0	E

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	5800	9600	0.60	73.0	19.9	C

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	7059	10435	0.68	56.7	24.9	C

Segment 5: Basic

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		6524		9600		0.68		70.8		23.0		C

Segment 6: Merge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	7039	515	12000	2000	0.59	0.26	73.4	73.4	19.2	19.2	C

Facility Time Period Results

T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	65.4	22.9	22.1	1.70	C

Facility Overall Results

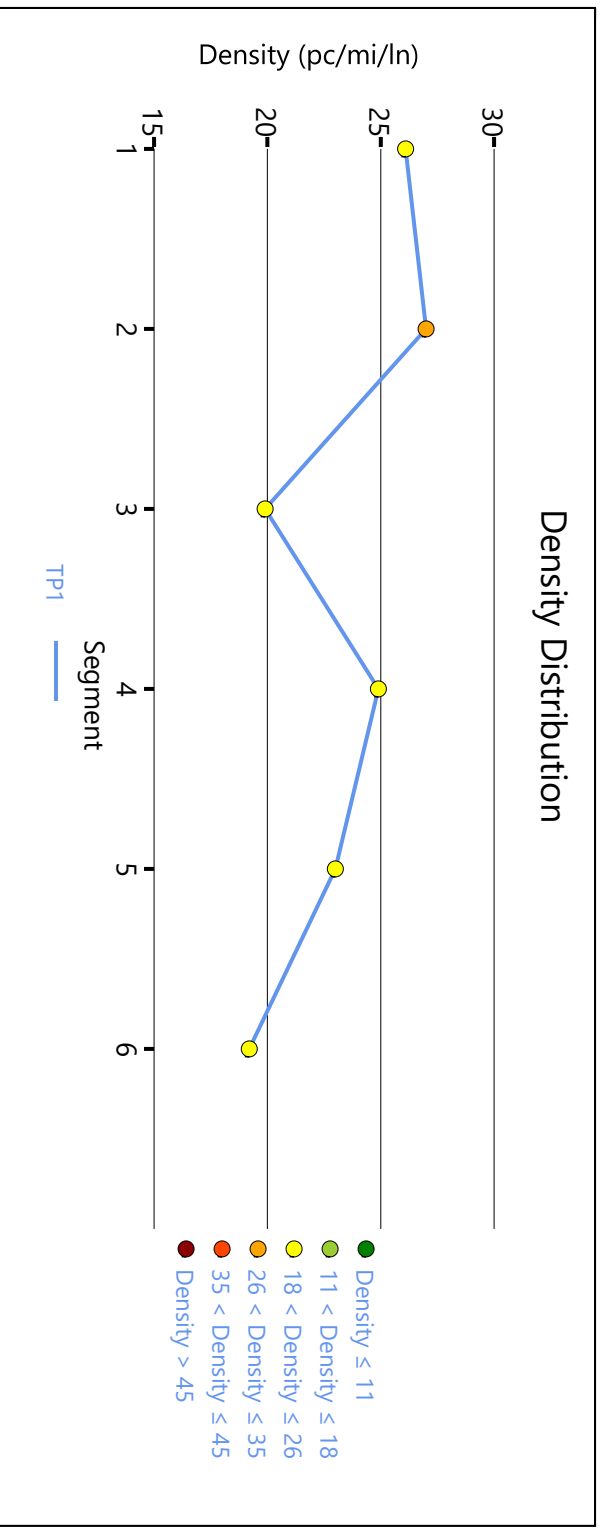
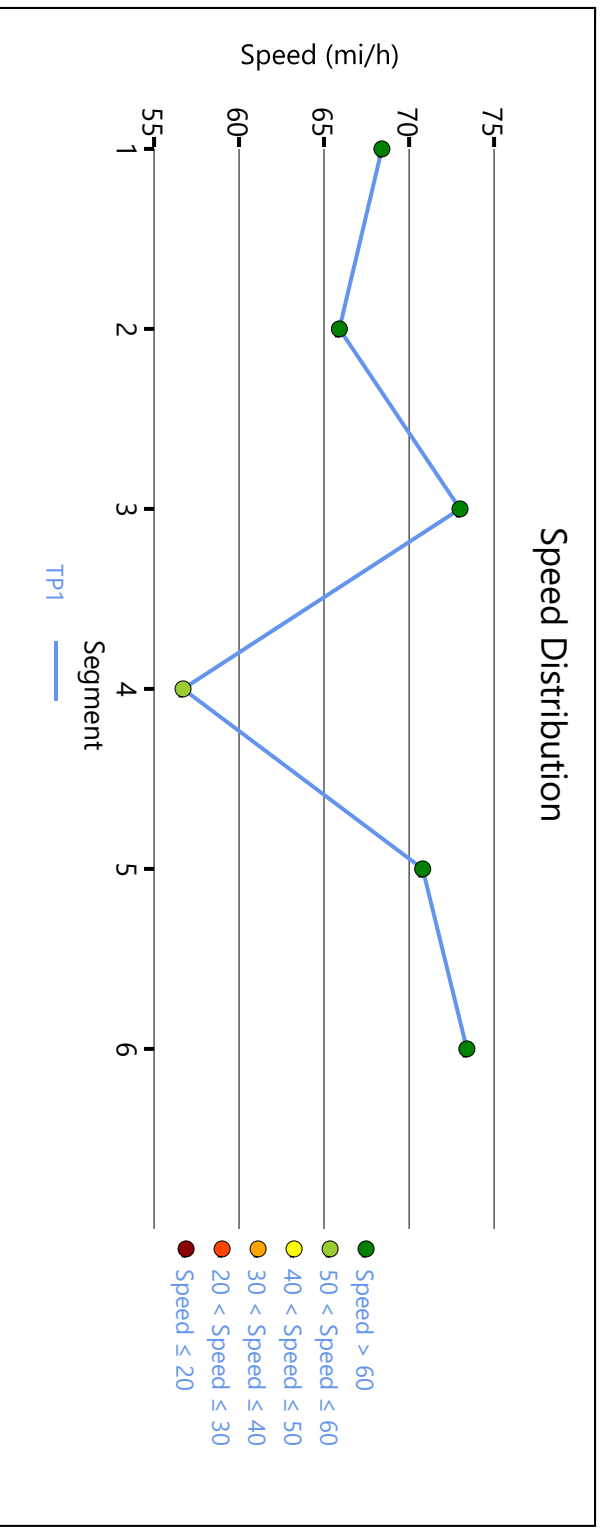
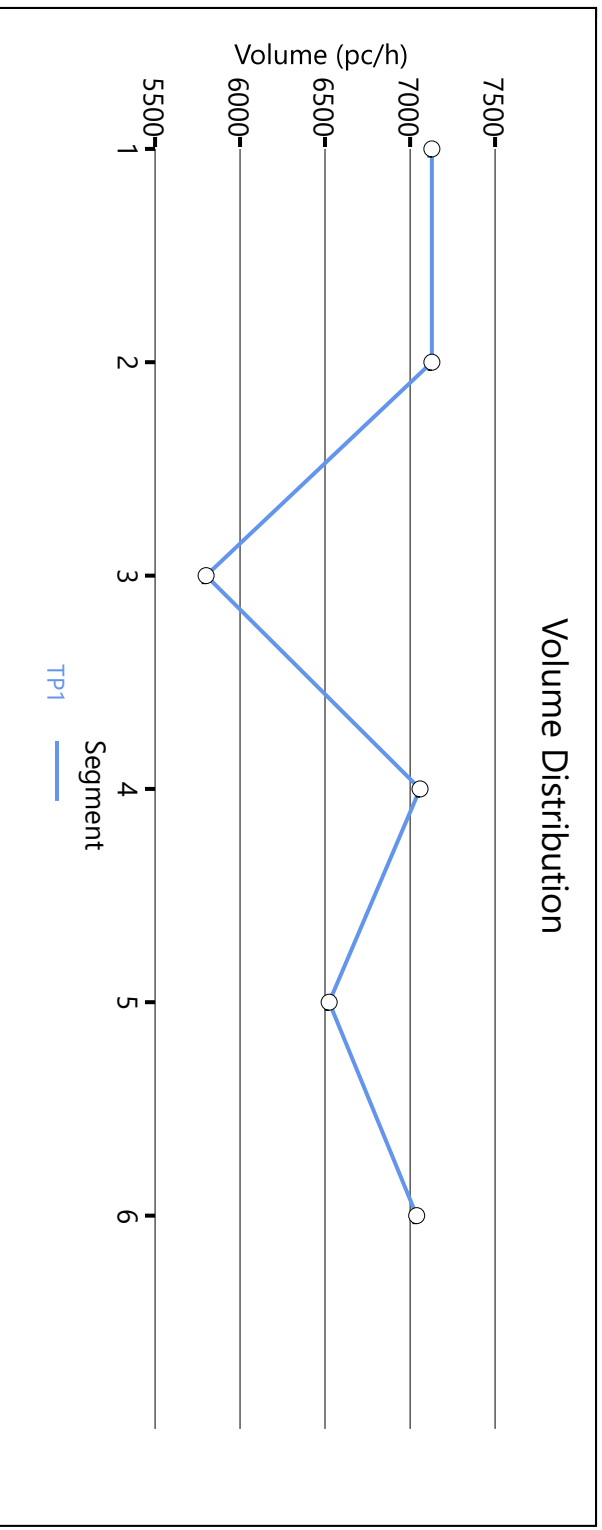
Space Mean Speed, mi/h	65.4	Density, veh/mi/ln	22.1
Average Travel Time, min	1.70	Density, pc/mi/ln	22.9

Messages

WARNING 1	Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.
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Comments

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- Density ≤ 11
- 11 < Density ≤ 18
- 18 < Density ≤ 26
- 26 < Density ≤ 35
- 35 < Density ≤ 45
- Density > 45

- Speed > 60
- 50 < Speed ≤ 60
- 40 < Speed ≤ 50
- 30 < Speed ≤ 40
- 20 < Speed ≤ 30
- Speed ≤ 20

HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	5/13/2020
Agency	Caltrans	Analysis Year	Horizon Year NB
Jurisdiction		Time Period Analyzed	PM Peak
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.89		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 NB South of Palm	100	4
2	Diverge	Diverge	I-5 NB Palm Off-Ramp	1500	4
3	Basic	Basic	I-5 NB between Palm Off-Ramp & On-Ramp	2455	4
4	Weaving	Weaving	I-5 NB Palm On-Ramp to Main Off-Ramp	3110	5
5	Basic	Basic	I-5 NB between Main Off-Ramp & On-Ramp	1330	4
6	Merge	Basic	I-5 NB Main On-Ramp	1500	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	5898	9600	0.61	72.8	20.2	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	5898	843	9600	2000	0.61	0.42	67.7	58.6	21.8	29.2	D

Segment 3: Basic

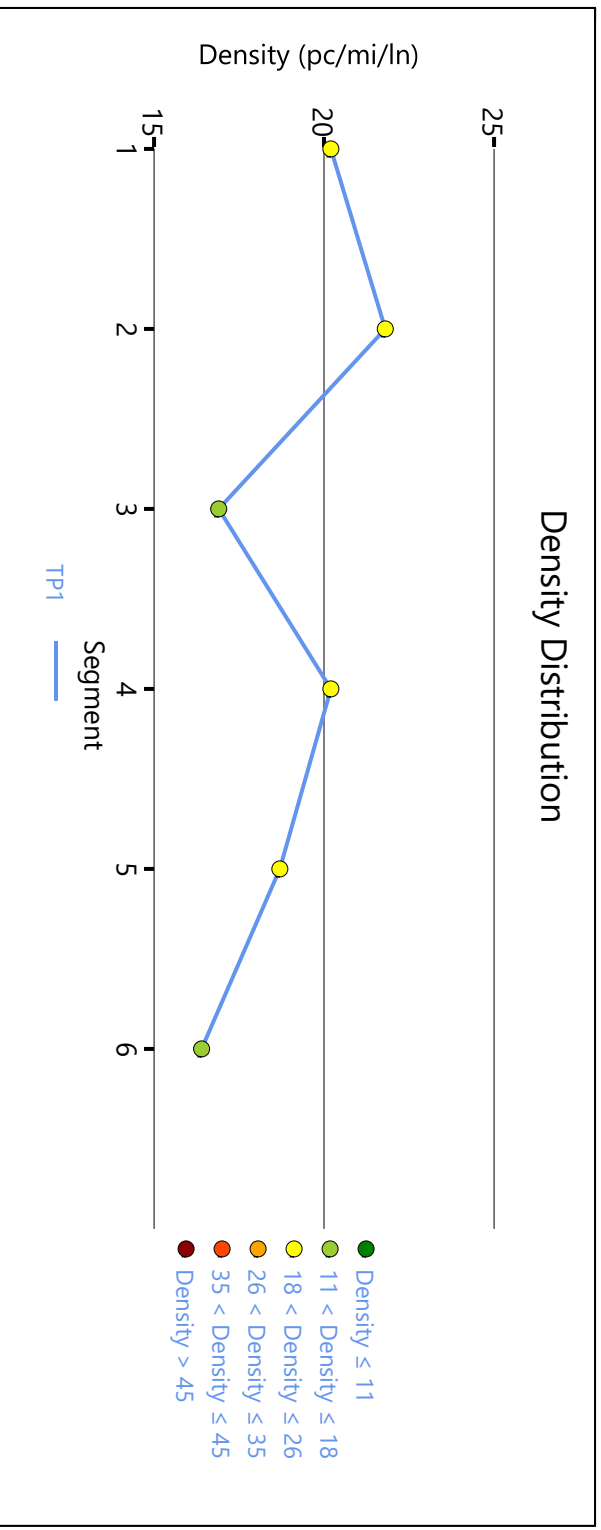
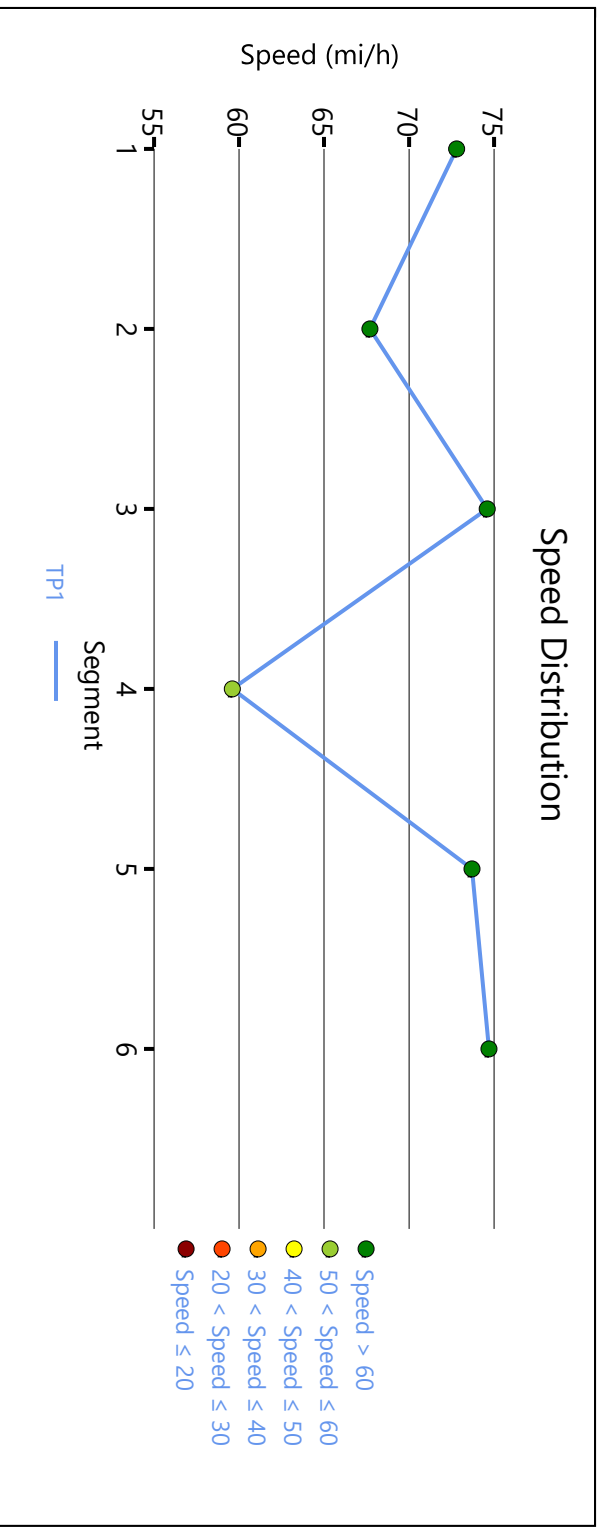
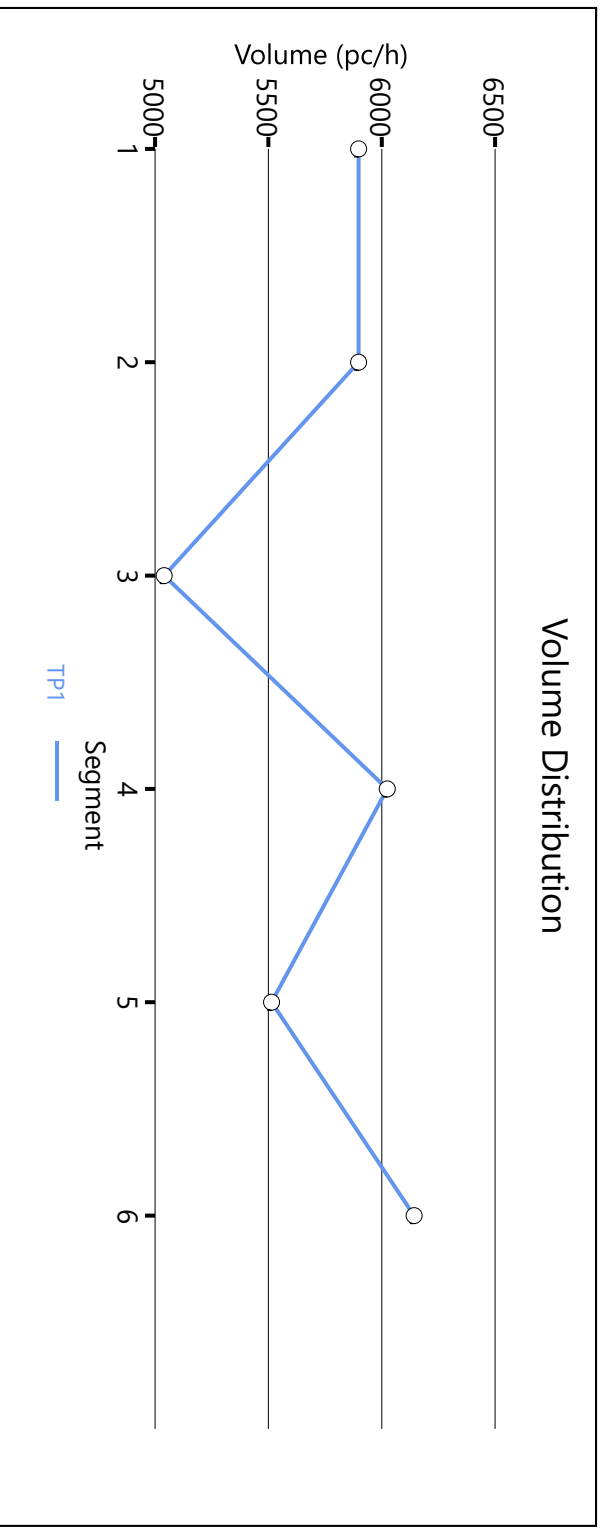
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	5040	9600	0.53	74.6	16.9	B

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	6024	10762	0.56	59.6	20.2	C

Segment 5: Basic

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		5514		9600		0.57		73.7		18.7		C
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	6143	629	12000	2000	0.51	0.31	74.7	74.7	16.4	16.4	B
Facility Time Period Results															
T	Speed, mi/h				Density, pc/mi/ln		Density, veh/mi/ln		Travel Time, min				LOS		
1	67.8				18.9		18.2		1.70				C		
Facility Overall Results															
Space Mean Speed, mi/h					67.8			Density, veh/mi/ln				18.2			
Average Travel Time, min					1.70			Density, pc/mi/ln				18.9			
Messages															
WARNING 1					Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.										
Comments															



HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	5/13/2020
Agency	Caltrans	Analysis Year	Horizon Year SB
Jurisdiction		Time Period Analyzed	AM Peak Hour
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	7
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.48		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 SB North of Main	100	5
2	Diverge	Basic	I-5 SB Main Off-Ramp	1500	5
3	Basic	Basic	I-5 SB between Main Off-Ramp & On-Ramp	1750	4
4	Weaving	Weaving	I-5 SB Main On-Ramp to Palm Off-Ramp	1855	5
5	Basic	Basic	I-5 SB between Palm Off-Ramp & On-Ramp	1480	4
6	Merge	Basic	I-5 SB Palm On-Ramp	570	5
7	Merge	Merge	I-5 SB SR-75 On-Ramp	565	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	3962	12000	0.33	75.4	10.5	A

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	3962	582	12000	2000	0.33	0.29	75.4	75.4	10.5	10.5	A

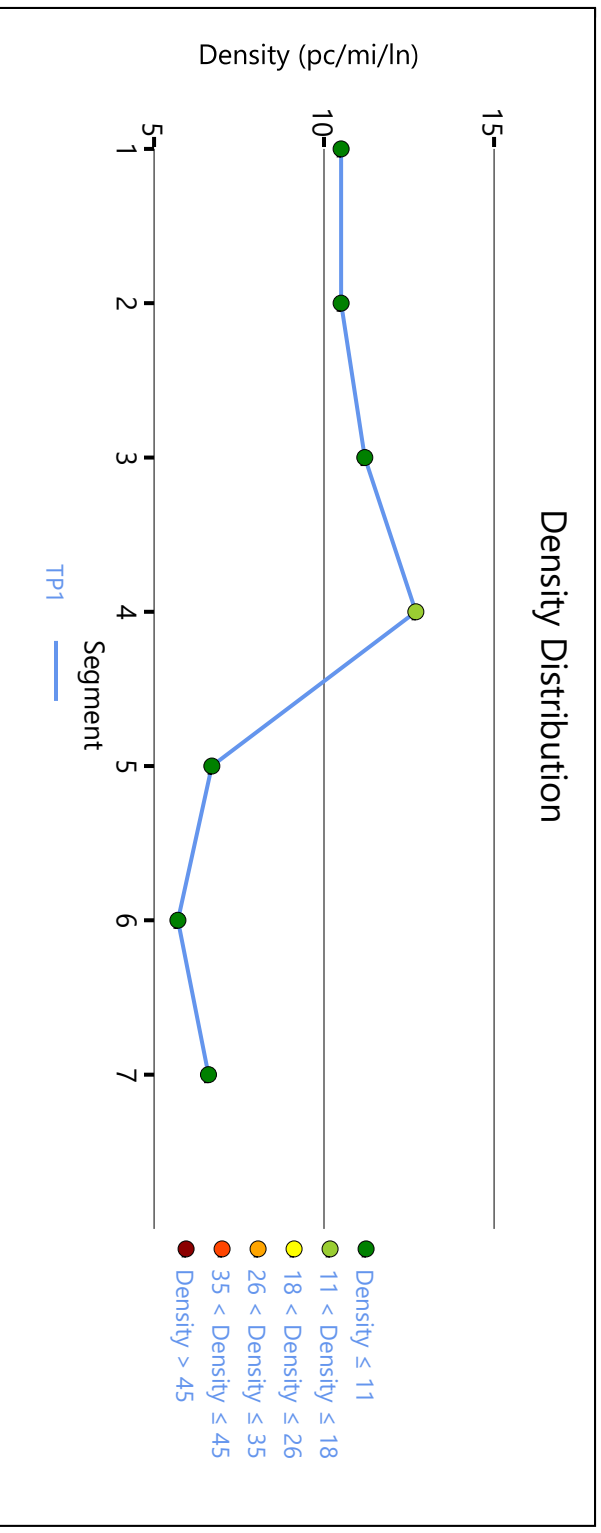
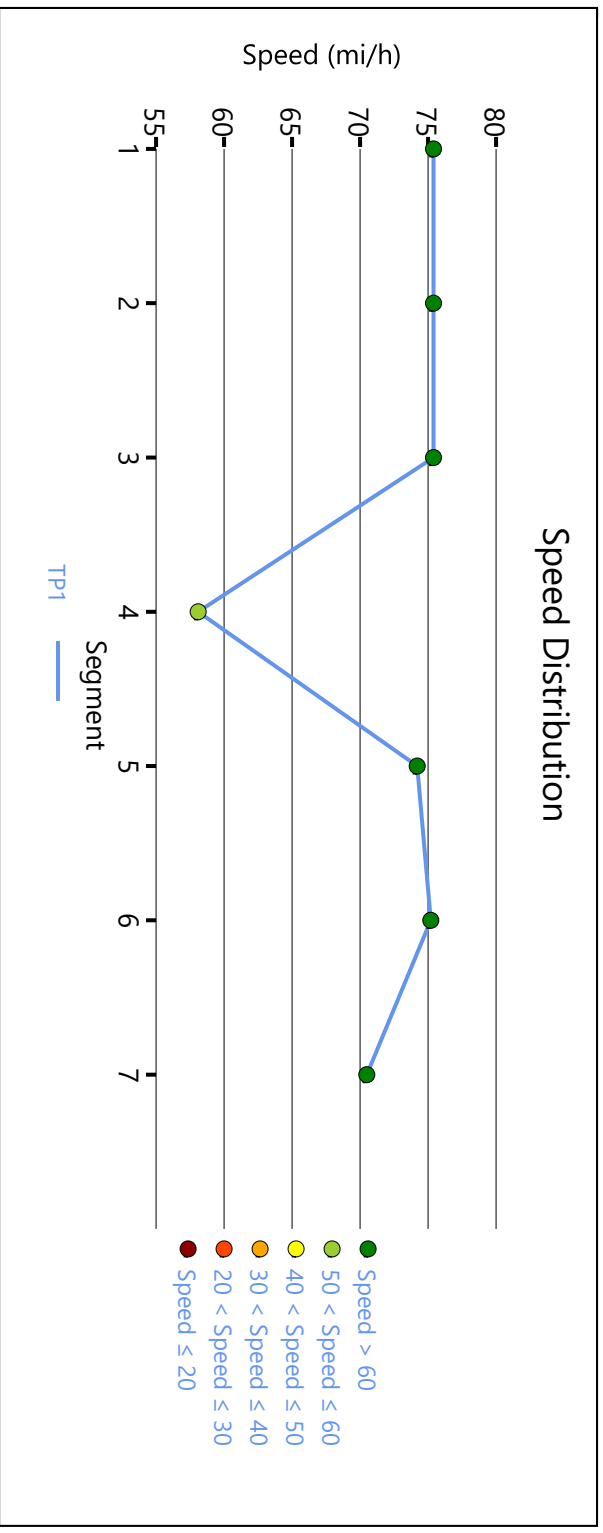
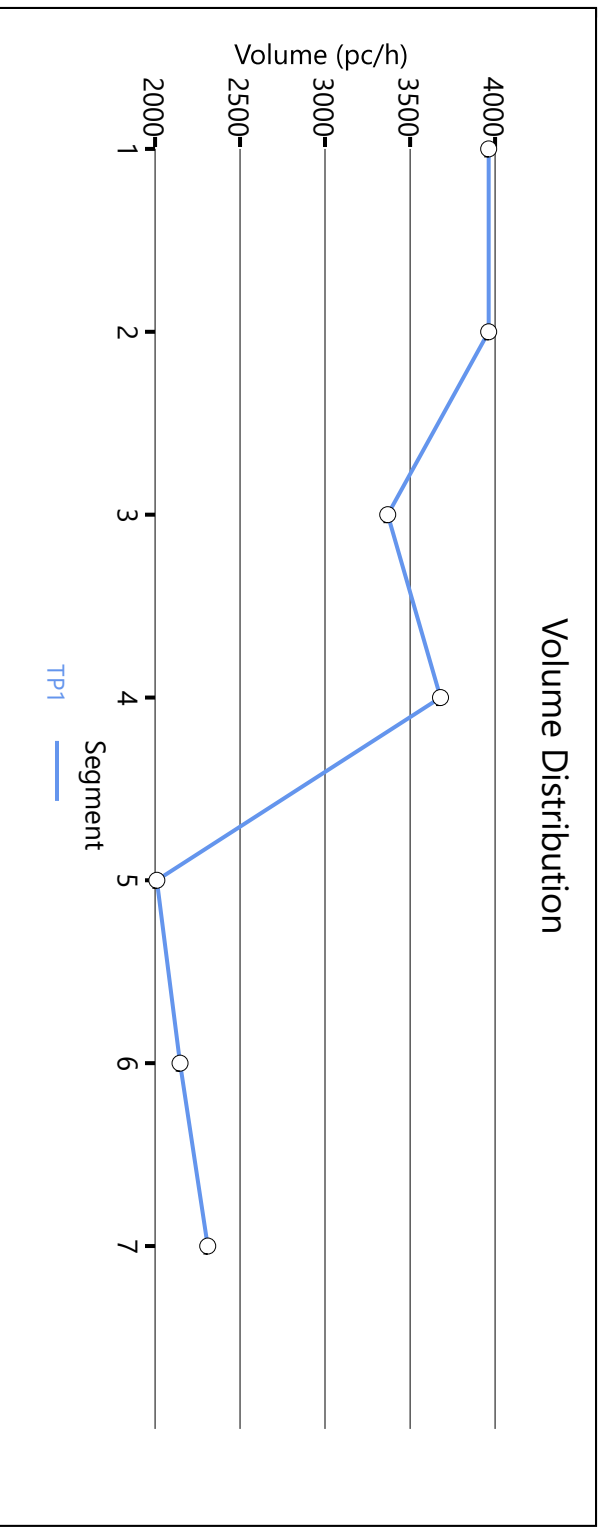
Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	3369	9600	0.35	75.4	11.2	B

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	3679	5195	0.71	58.1	12.7	B

Segment 5: Basic															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		2010		9600		0.21		74.2		6.7		A
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	2147	137	12000	2000	0.18	0.07	75.2	75.4	5.7	5.7	A
Segment 7: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	2310	160	12000	2000	0.19	0.08	70.5	66.2	6.6	7.6	A
Facility Time Period Results															
T	Speed, mi/h		Density, pc/mi/ln		Density, veh/mi/ln		Travel Time, min		LOS						
1	69.2		9.9		9.5		1.30		A						
Facility Overall Results															
Space Mean Speed, mi/h					69.2			Density, veh/mi/ln				9.5			
Average Travel Time, min					1.30			Density, pc/mi/ln				9.9			
Messages															
ERROR 1					Acceleration lane length is longer than the segment length for merge segment 6.										
ERROR 2					Acceleration lane length is longer than the segment length for merge segment 7.										
WARNING 1					Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.										
Comments															



HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	5/13/2020
Agency	Caltrans	Analysis Year	Horizon Year SB
Jurisdiction		Time Period Analyzed	PM Peak Hour
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	7
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.48		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 SB North of Main	100	5
2	Diverge	Basic	I-5 SB Main Off-Ramp	1500	5
3	Basic	Basic	I-5 SB between Main Off-Ramp & On-Ramp	1750	4
4	Weaving	Weaving	I-5 SB Main On-Ramp to Palm Off-Ramp	1855	5
5	Basic	Basic	I-5 SB between Palm Off-Ramp & On-Ramp	1480	4
6	Merge	Basic	I-5 SB Palm On-Ramp	570	5
7	Merge	Merge	I-5 SB SR-75 On-Ramp	565	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	9058	12000	0.85	22.5	80.5	F

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	8754	670	12000	2000	0.85	0.34	22.8	22.8	76.7	76.7	F

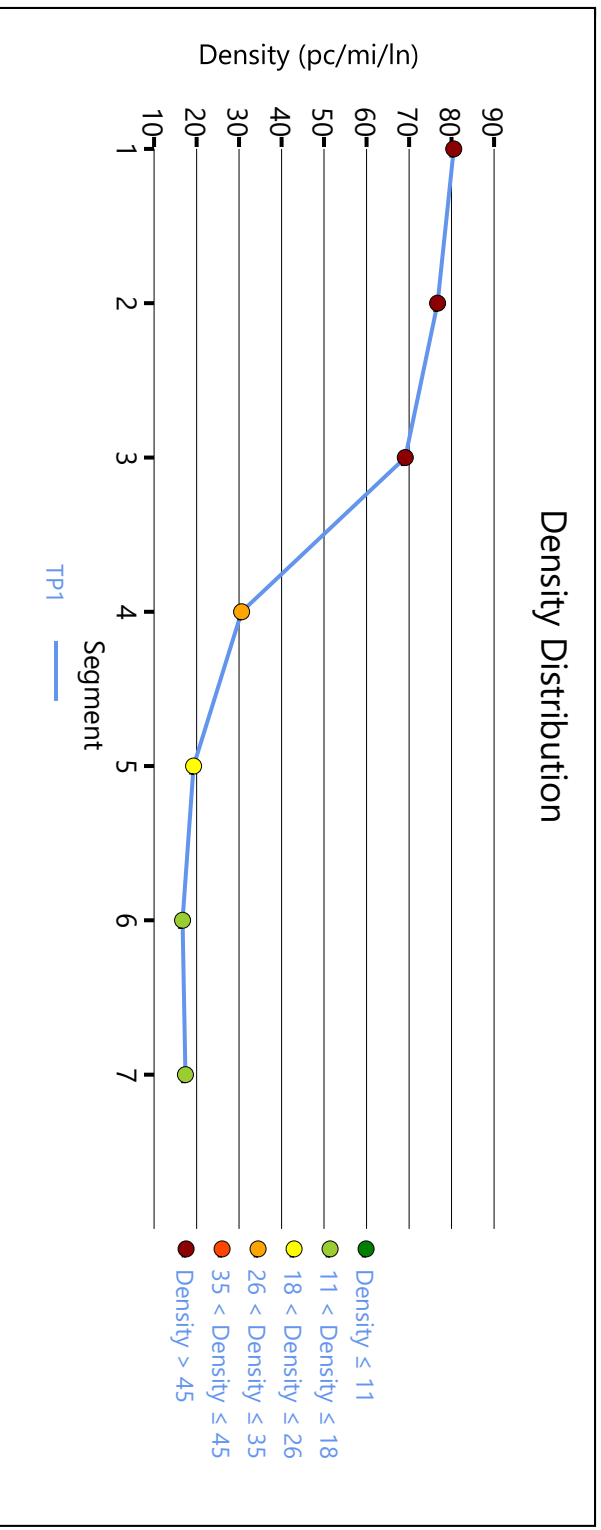
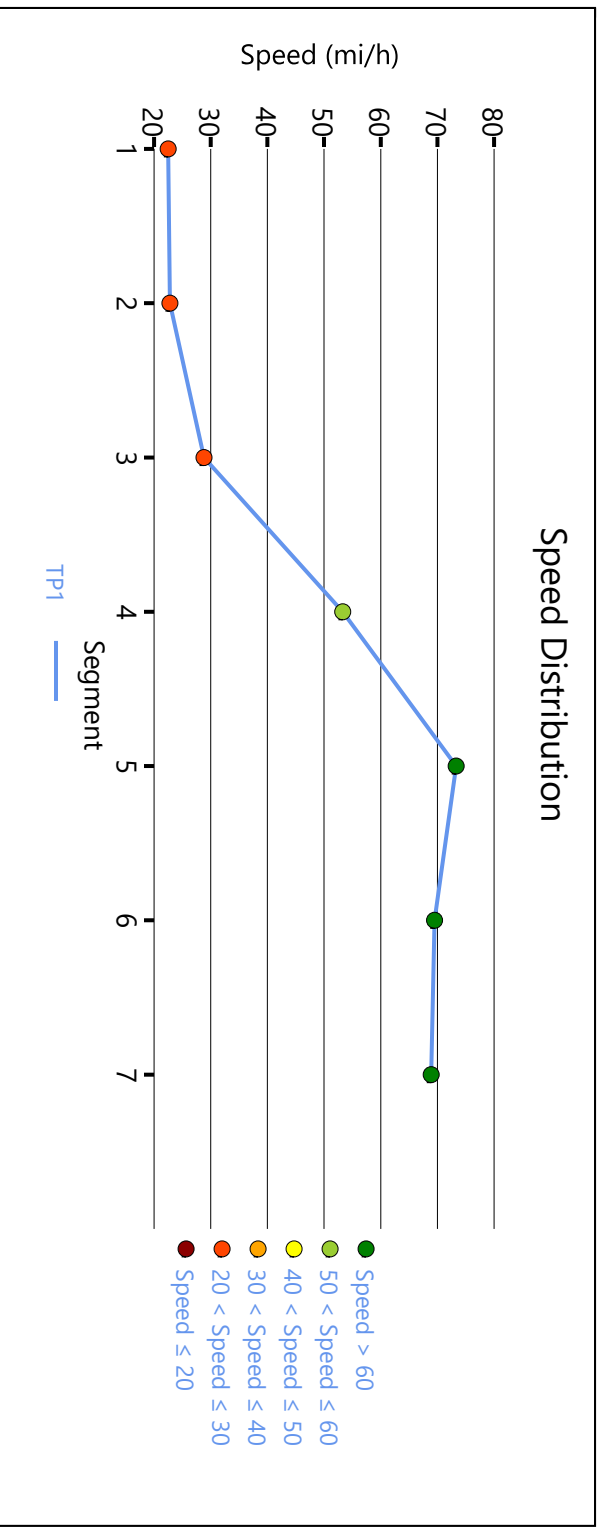
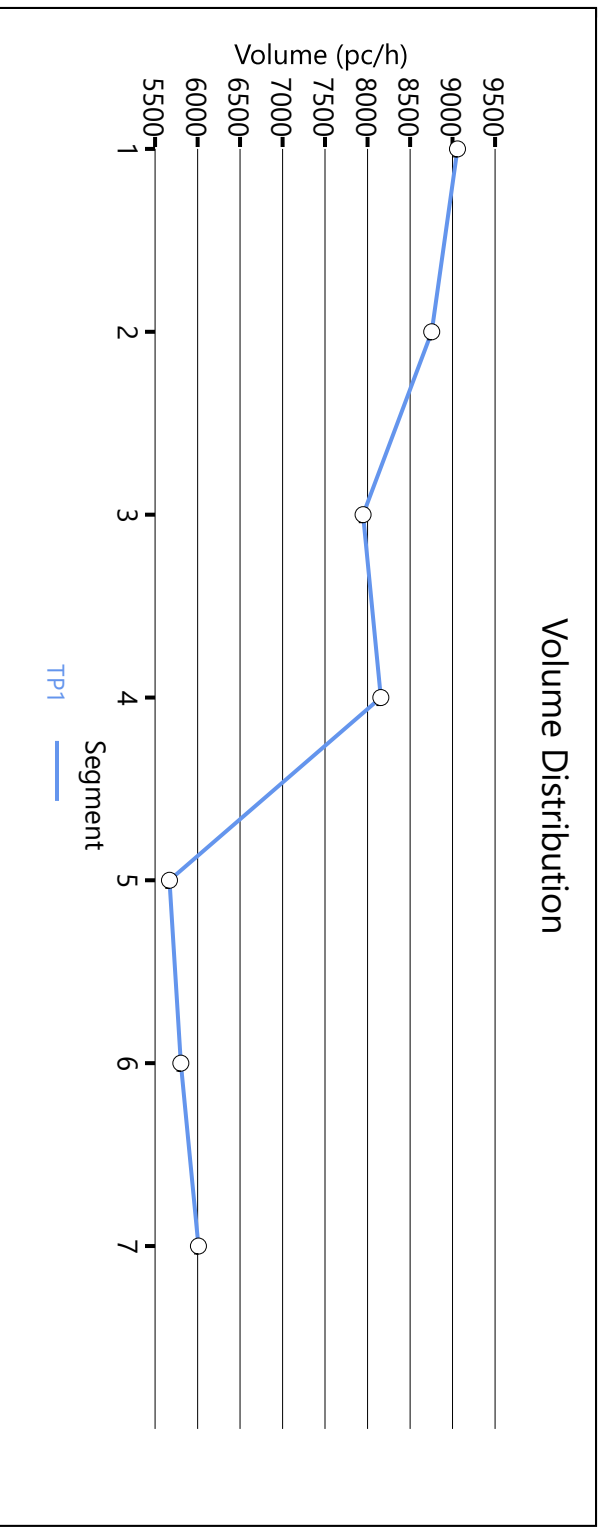
Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	7948	9600	0.99	28.8	69.1	F

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	8156	8759	1.16	53.3	30.6	F

Segment 5: Basic															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		5670		9600		0.81		73.3		19.3		C
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	5804	134	12000	2000	0.66	0.07	69.5	69.5	16.7	16.7	B
Segment 7: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	6011	611	12000	2000	0.71	0.31	68.9	65.2	17.4	18.2	B
Facility Time Period Results															
T	Speed, mi/h		Density, pc/mi/ln		Density, veh/mi/ln		Travel Time, min		LOS						
1	36.5		44.4		42.8		2.40		F						
Facility Overall Results															
Space Mean Speed, mi/h					36.5			Density, veh/mi/ln				42.8			
Average Travel Time, min					2.40			Density, pc/mi/ln				44.4			
Messages															
ERROR 1					Acceleration lane length is longer than the segment length for merge segment 6.										
ERROR 2					Acceleration lane length is longer than the segment length for merge segment 7.										
WARNING 1					Oversaturated conditions currently exist in boundary time period 1. Results may not be reliable. Consider expanding analysis in time and/or space to resolve this warning.										
WARNING 2					Oversaturated conditions currently exist on segment 1, which is less than 300 feet. Due to time step size, these segments may produce unreliable results. Consider reviewing facility segmentation to resolve this warning.										
WARNING 3					Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.										
WARNING 4					Queue extends past the beginning of the facility on time period 1. Consider expanding the length of the facility to account for these vehicles performance and affect on upstream segments.										
Comments															



HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	5/13/2020
Agency	Caltrans	Analysis Year	HY with CP NB
Jurisdiction		Time Period Analyzed	AM Peak
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.89		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 NB South of Palm	100	4
2	Diverge	Diverge	I-5 NB Palm Off-Ramp	1500	4
3	Basic	Basic	I-5 NB between Palm Off-Ramp & On-Ramp	2455	4
4	Weaving	Weaving	I-5 NB Palm On-Ramp to Main Off-Ramp	3110	5
5	Basic	Basic	I-5 NB between Main Off-Ramp & On-Ramp	1330	4
6	Merge	Basic	I-5 NB Main On-Ramp	1500	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	7128	9600	0.74	68.4	26.1	D

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	7128	1303	9600	2000	0.74	0.65	65.9	57.2	27.0	36.0	E

Segment 3: Basic

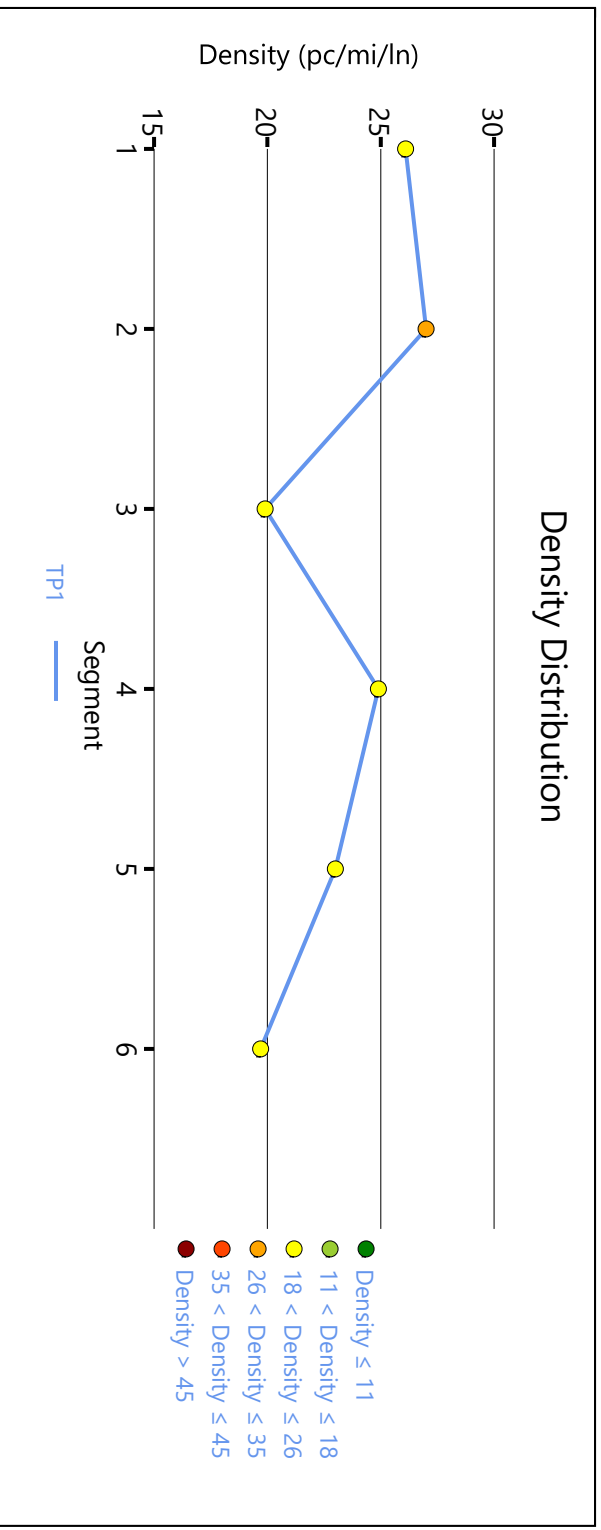
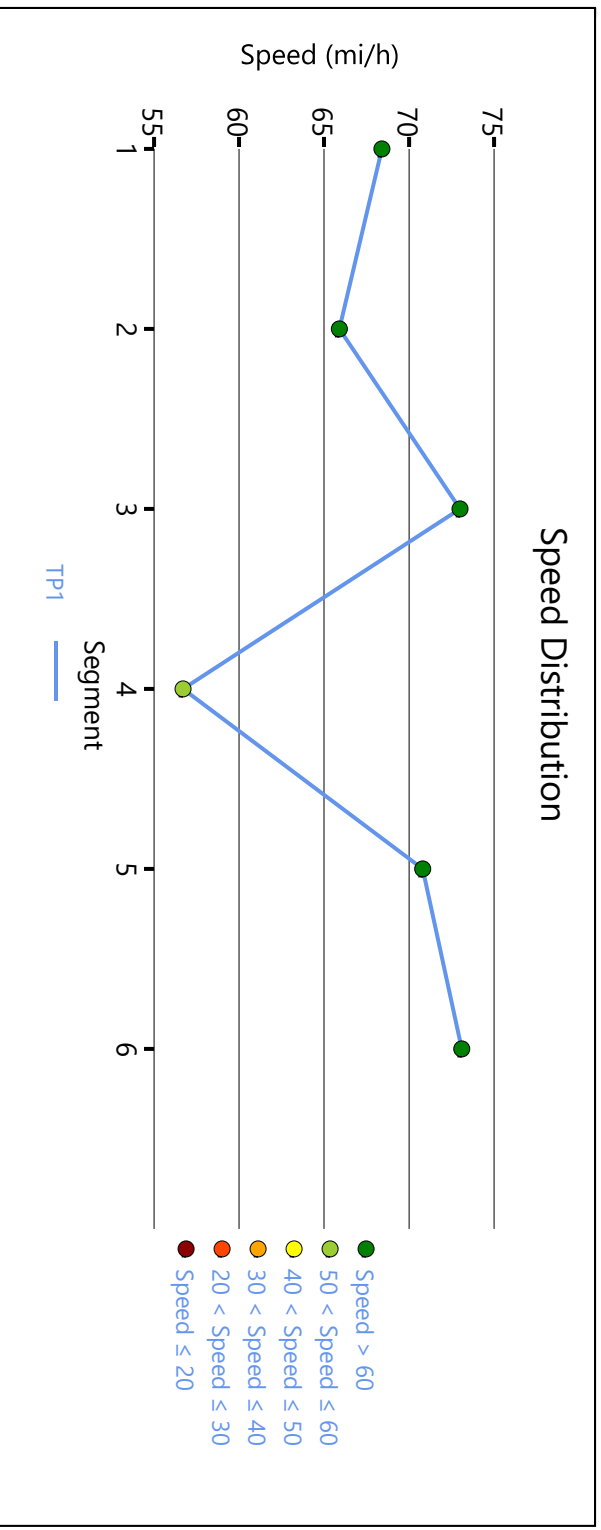
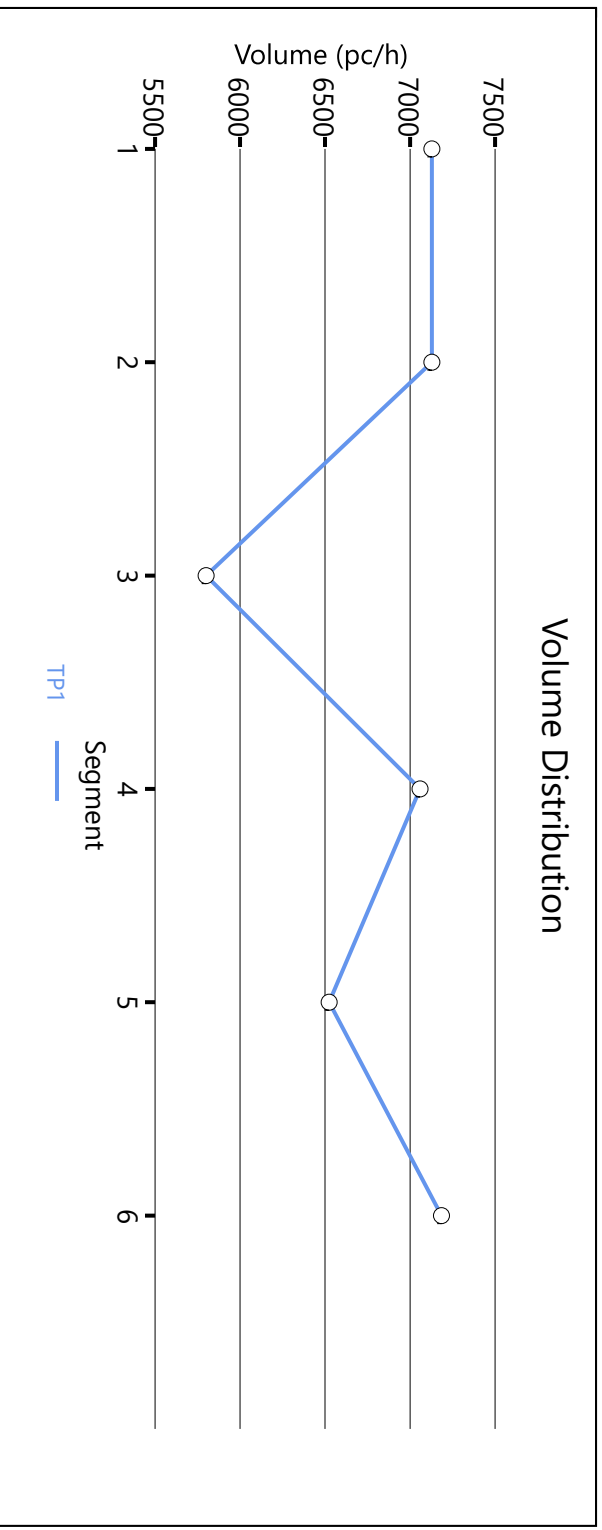
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	5800	9600	0.60	73.0	19.9	C

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	7059	10435	0.68	56.7	24.9	C

Segment 5: Basic

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		6524		9600		0.68		70.8		23.0		C
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	7185	661	12000	2000	0.60	0.33	73.1	73.1	19.7	19.7	C
Facility Time Period Results															
T	Speed, mi/h				Density, pc/mi/ln		Density, veh/mi/ln		Travel Time, min				LOS		
1	65.4				23.0		22.1		1.70				C		
Facility Overall Results															
Space Mean Speed, mi/h					65.4			Density, veh/mi/ln				22.1			
Average Travel Time, min					1.70			Density, pc/mi/ln				23.0			
Messages															
WARNING 1					Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.										
Comments															



- Density ≤ 11
- 11 < Density ≤ 18
- 18 < Density ≤ 26
- 26 < Density ≤ 35
- 35 < Density ≤ 45
- Density > 45

- Speed > 60
- 50 < Speed ≤ 60
- 40 < Speed ≤ 50
- 30 < Speed ≤ 40
- 20 < Speed ≤ 30
- Speed ≤ 20

HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	5/13/2020
Agency	Caltrans	Analysis Year	HY with CP NB
Jurisdiction		Time Period Analyzed	PM Peak
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.89		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 NB South of Palm	100	4
2	Diverge	Diverge	I-5 NB Palm Off-Ramp	1500	4
3	Basic	Basic	I-5 NB between Palm Off-Ramp & On-Ramp	2455	4
4	Weaving	Weaving	I-5 NB Palm On-Ramp to Main Off-Ramp	3110	5
5	Basic	Basic	I-5 NB between Main Off-Ramp & On-Ramp	1330	4
6	Merge	Basic	I-5 NB Main On-Ramp	1500	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	5898	9600	0.61	72.8	20.2	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	5898	843	9600	2000	0.61	0.42	67.7	58.6	21.8	29.2	D

Segment 3: Basic

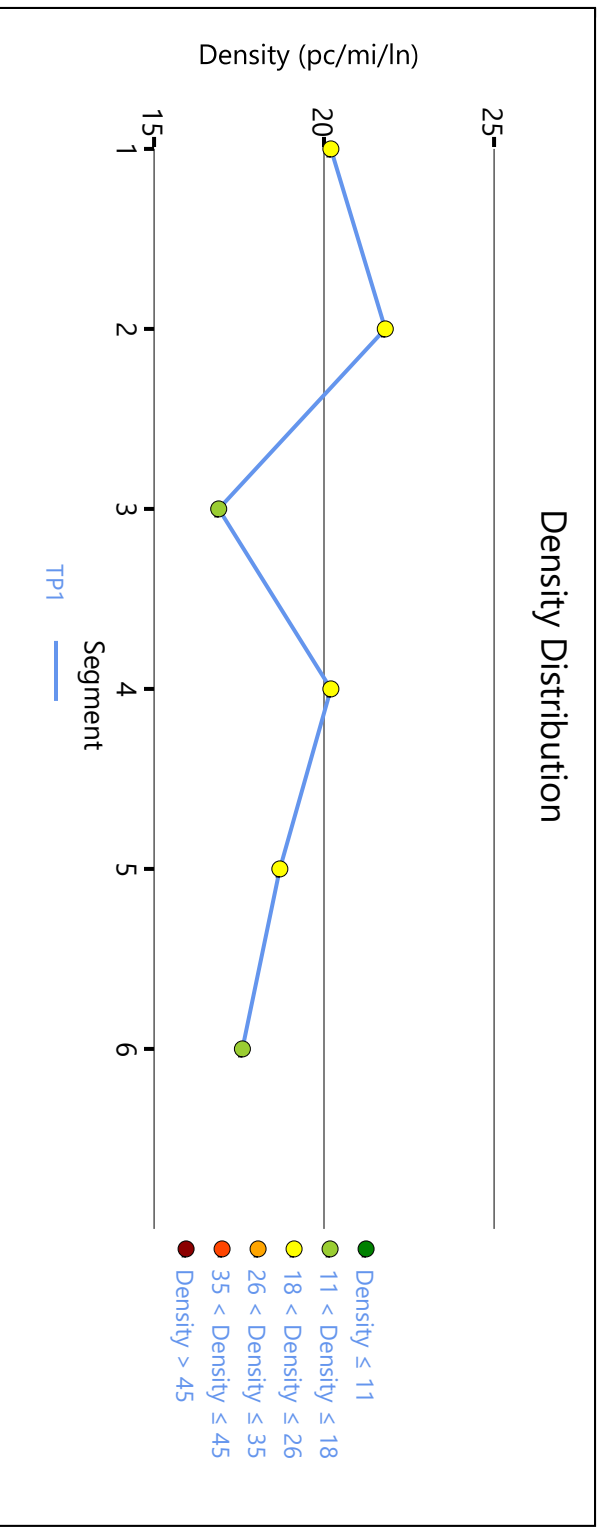
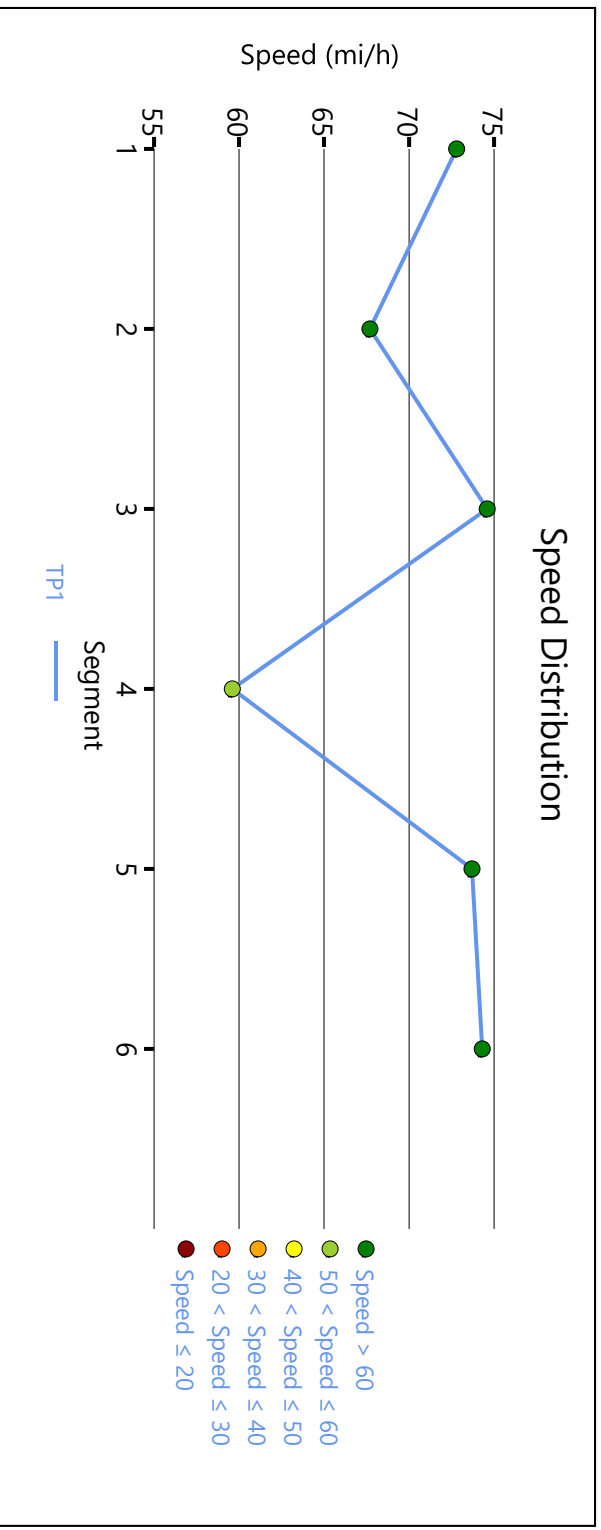
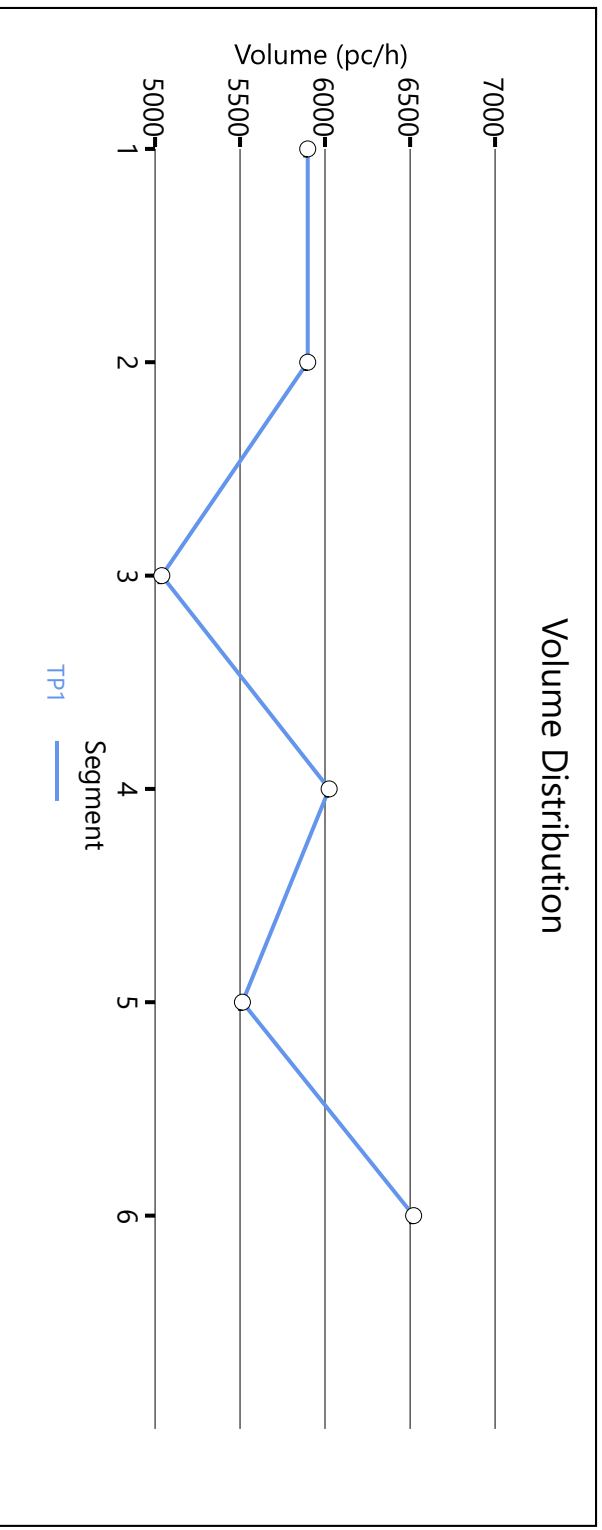
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	5040	9600	0.53	74.6	16.9	B

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	6024	10762	0.56	59.6	20.2	C

Segment 5: Basic

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		5514		9600		0.57		73.7		18.7		C
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	6521	1007	12000	2000	0.54	0.50	74.3	74.3	17.6	17.6	B
Facility Time Period Results															
T	Speed, mi/h				Density, pc/mi/ln				Density, veh/mi/ln				Travel Time, min		LOS
1	67.8				19.1				18.4				1.70		C
Facility Overall Results															
Space Mean Speed, mi/h					67.8				Density, veh/mi/ln				18.4		
Average Travel Time, min					1.70				Density, pc/mi/ln				19.1		
Messages															
WARNING 1					Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.										
Comments															



HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	5/13/2020
Agency	Caltrans	Analysis Year	HY with CP SB
Jurisdiction		Time Period Analyzed	AM Peak Hour
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	7
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.48		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 SB North of Main	100	5
2	Diverge	Basic	I-5 SB Main Off-Ramp	1500	5
3	Basic	Basic	I-5 SB between Main Off-Ramp & On-Ramp	1750	4
4	Weaving	Weaving	I-5 SB Main On-Ramp to Palm Off-Ramp	1855	5
5	Basic	Basic	I-5 SB between Palm Off-Ramp & On-Ramp	1480	4
6	Merge	Basic	I-5 SB Palm On-Ramp	570	5
7	Merge	Merge	I-5 SB SR-75 On-Ramp	565	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	4360	12000	0.36	75.4	11.6	B

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	4360	972	12000	2000	0.36	0.49	75.4	75.4	11.6	11.6	B

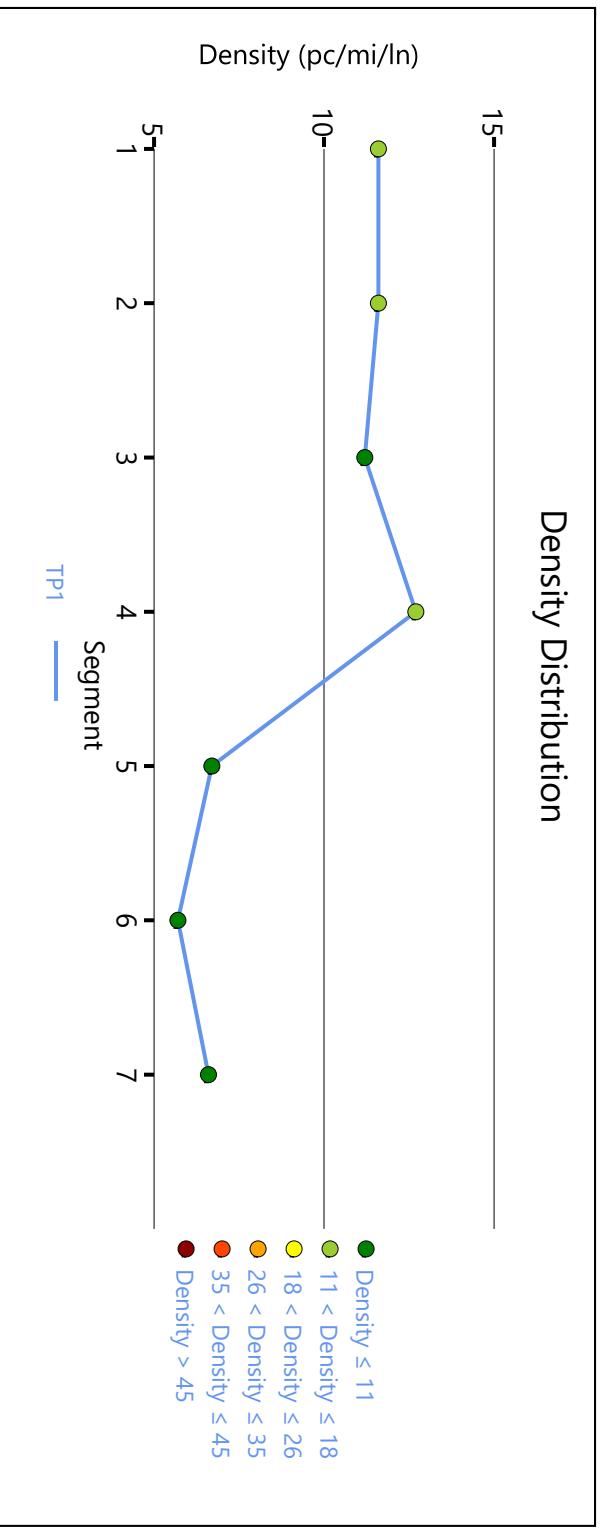
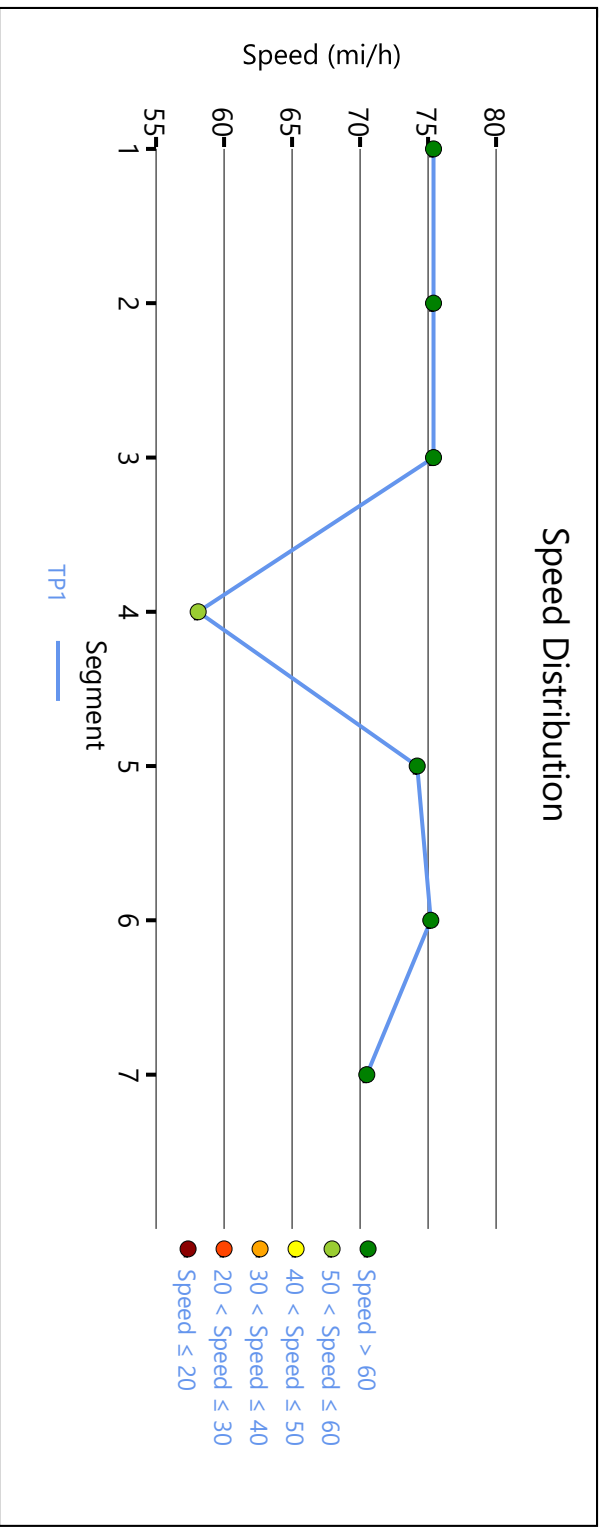
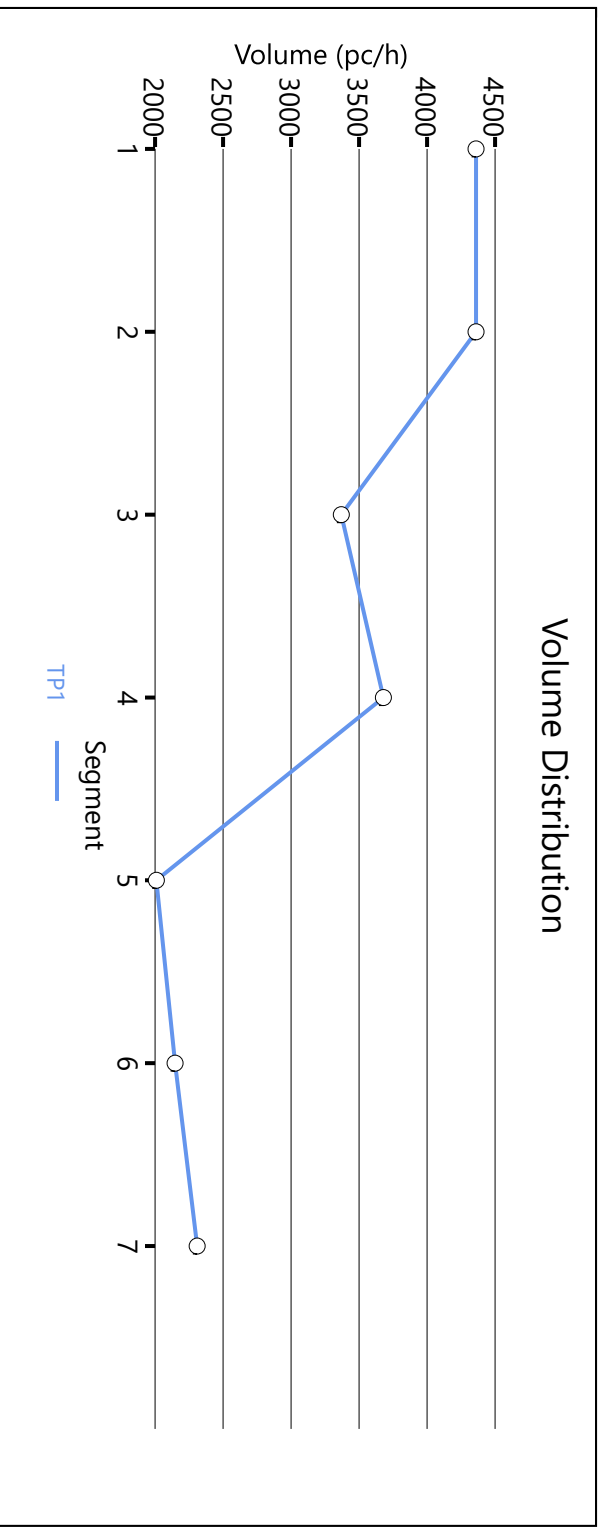
Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	3369	9600	0.35	75.4	11.2	B

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	3679	5195	0.71	58.1	12.7	B

Segment 5: Basic															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		2010		9600		0.21		74.2		6.7		A
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	2147	137	12000	2000	0.18	0.07	75.2	75.4	5.7	5.7	A
Segment 7: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	2310	160	12000	2000	0.19	0.08	70.5	66.2	6.6	7.6	A
Facility Time Period Results															
T	Speed, mi/h				Density, pc/mi/ln				Density, veh/mi/ln				Travel Time, min		LOS
1	69.4				10.1				9.8				1.30		A
Facility Overall Results															
Space Mean Speed, mi/h					69.4				Density, veh/mi/ln				9.8		
Average Travel Time, min					1.30				Density, pc/mi/ln				10.1		
Messages															
ERROR 1					Acceleration lane length is longer than the segment length for merge segment 6.										
ERROR 2					Acceleration lane length is longer than the segment length for merge segment 7.										
WARNING 1					Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.										
Comments															



HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	5/13/2020
Agency	Caltrans	Analysis Year	HY with CP SB
Jurisdiction		Time Period Analyzed	PM Peak Hour
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	7
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.48		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 SB North of Main	100	5
2	Diverge	Basic	I-5 SB Main Off-Ramp	1500	5
3	Basic	Basic	I-5 SB between Main Off-Ramp & On-Ramp	1750	4
4	Weaving	Weaving	I-5 SB Main On-Ramp to Palm Off-Ramp	1855	5
5	Basic	Basic	I-5 SB between Palm Off-Ramp & On-Ramp	1480	4
6	Merge	Basic	I-5 SB Palm On-Ramp	570	5
7	Merge	Merge	I-5 SB SR-75 On-Ramp	565	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	9201	12000	0.87	23.3	78.8	F

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	8913	829	12000	2000	0.87	0.41	23.6	23.6	75.5	75.5	F

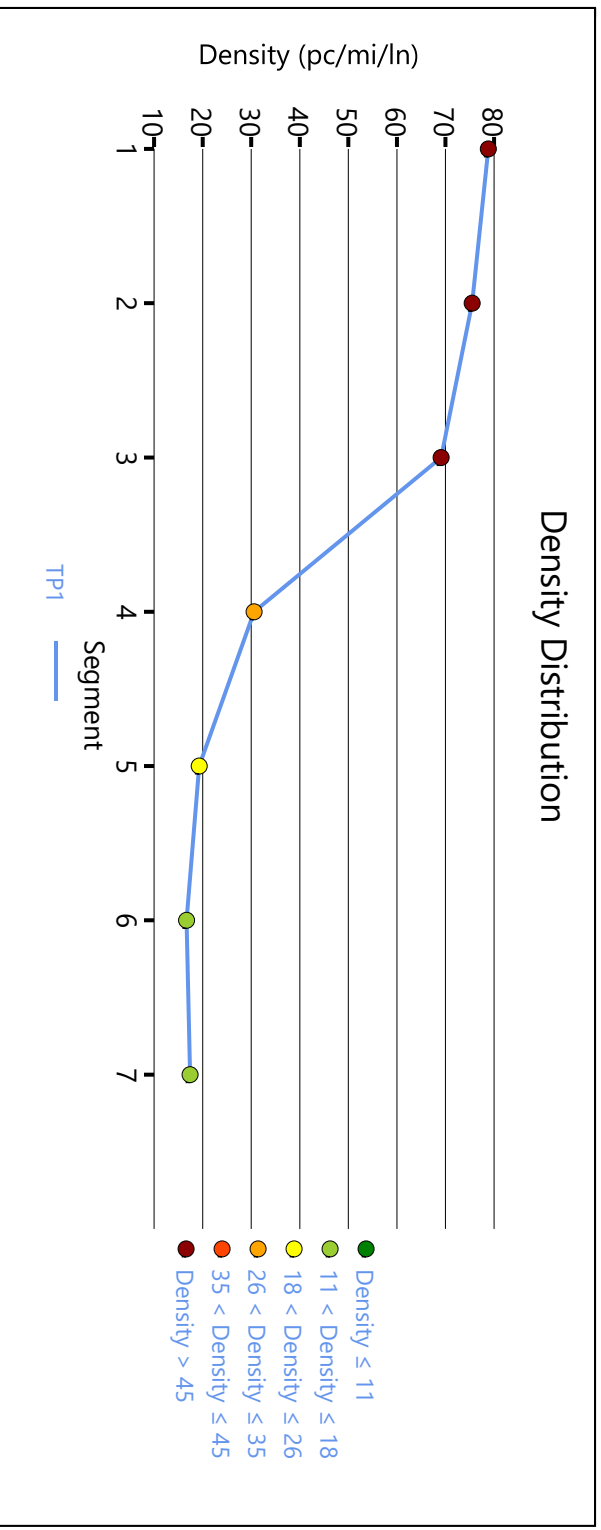
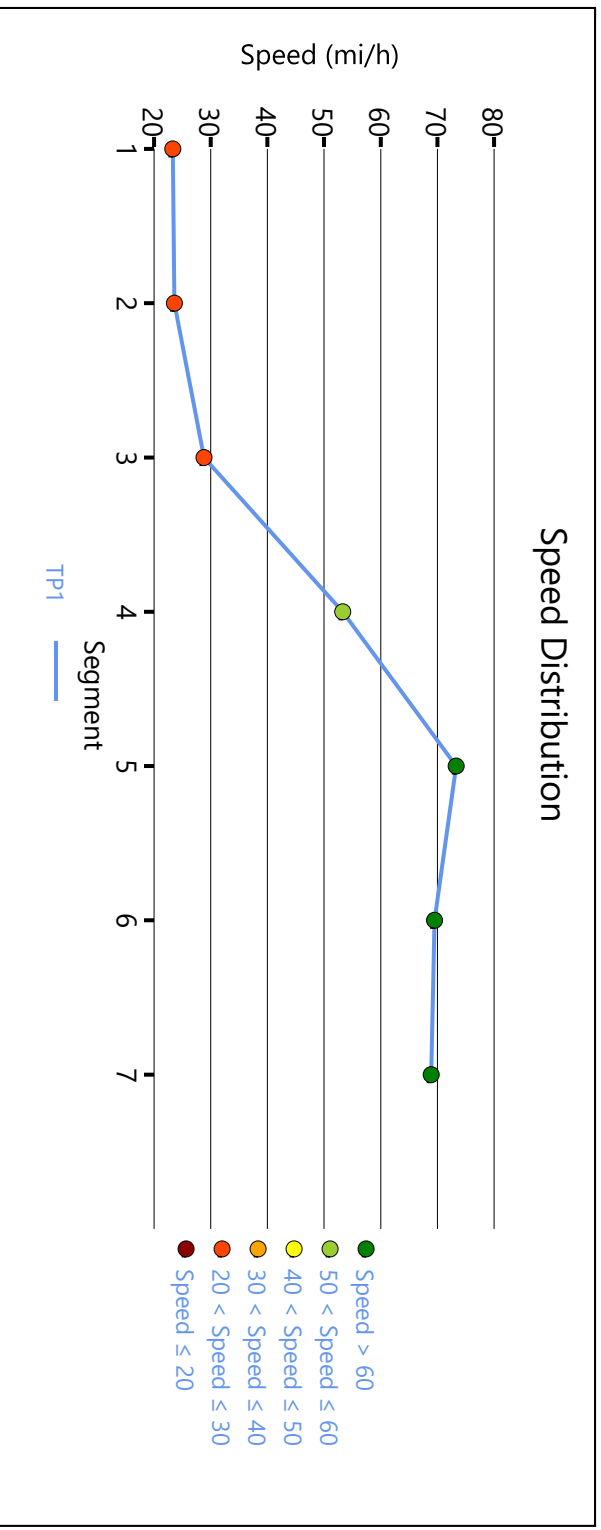
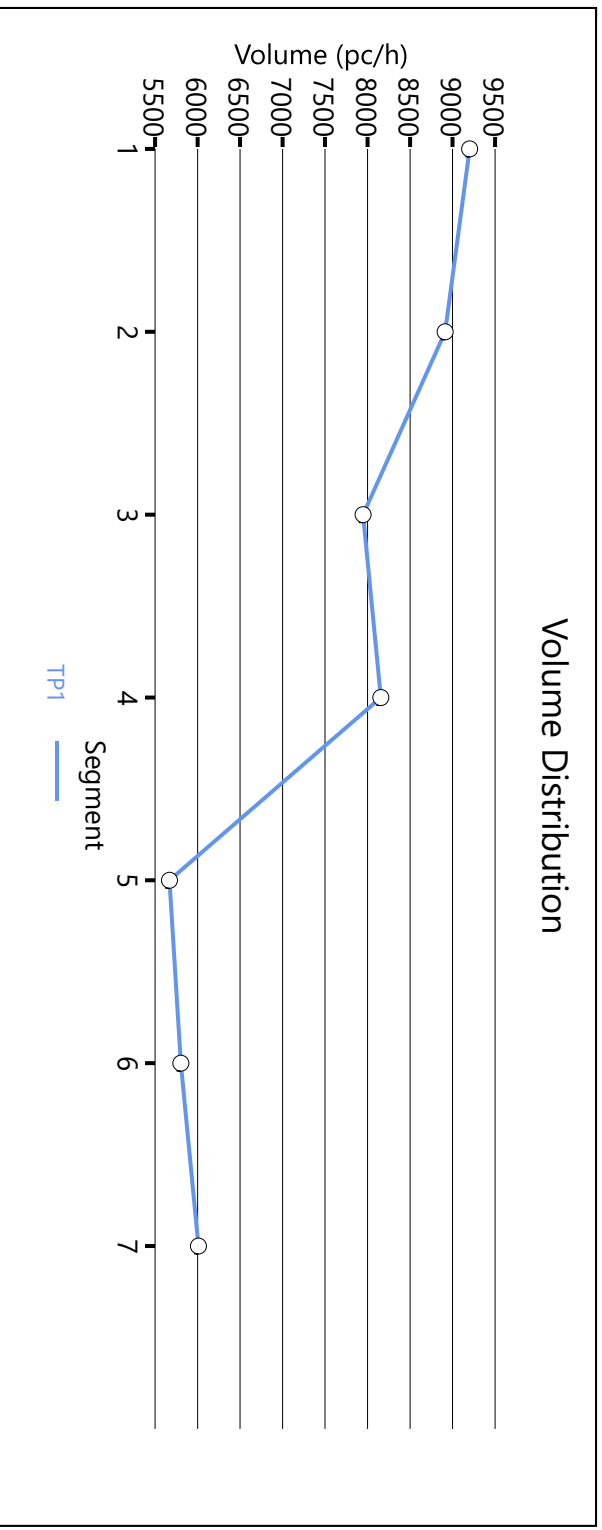
Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	7948	9600	0.99	28.8	69.1	F

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	8156	8759	1.16	53.3	30.6	F

Segment 5: Basic															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		5670		9600		0.81		73.3		19.3		C
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	5804	134	12000	2000	0.66	0.07	69.5	69.5	16.7	16.7	B
Segment 7: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	6011	611	12000	2000	0.71	0.31	68.9	65.2	17.4	18.2	B
Facility Time Period Results															
T	Speed, mi/h		Density, pc/mi/ln		Density, veh/mi/ln		Travel Time, min		LOS						
1	36.9		44.2		42.5		2.40		F						
Facility Overall Results															
Space Mean Speed, mi/h					36.9			Density, veh/mi/ln				42.5			
Average Travel Time, min					2.40			Density, pc/mi/ln				44.2			
Messages															
ERROR 1					Acceleration lane length is longer than the segment length for merge segment 6.										
ERROR 2					Acceleration lane length is longer than the segment length for merge segment 7.										
WARNING 1					Oversaturated conditions currently exist in boundary time period 1. Results may not be reliable. Consider expanding analysis in time and/or space to resolve this warning.										
WARNING 2					Oversaturated conditions currently exist on segment 1, which is less than 300 feet. Due to time step size, these segments may produce unreliable results. Consider reviewing facility segmentation to resolve this warning.										
WARNING 3					Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.										
WARNING 4					Queue extends past the beginning of the facility on time period 1. Consider expanding the length of the facility to account for these vehicles performance and affect on upstream segments.										
Comments															



HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	5/13/2020
Agency	Caltrans	Analysis Year	Horizon Year WP NB
Jurisdiction		Time Period Analyzed	AM Peak
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.89		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 NB South of Palm	100	4
2	Diverge	Diverge	I-5 NB Palm Off-Ramp	1500	4
3	Basic	Basic	I-5 NB between Palm Off-Ramp & On-Ramp	2455	4
4	Weaving	Weaving	I-5 NB Palm On-Ramp to Main Off-Ramp	3110	5
5	Basic	Basic	I-5 NB between Main Off-Ramp & On-Ramp	1330	4
6	Merge	Basic	I-5 NB Main On-Ramp	1500	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	7128	9600	0.74	68.4	26.1	D

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	7128	1303	9600	2000	0.74	0.65	65.9	57.2	27.0	36.0	E

Segment 3: Basic

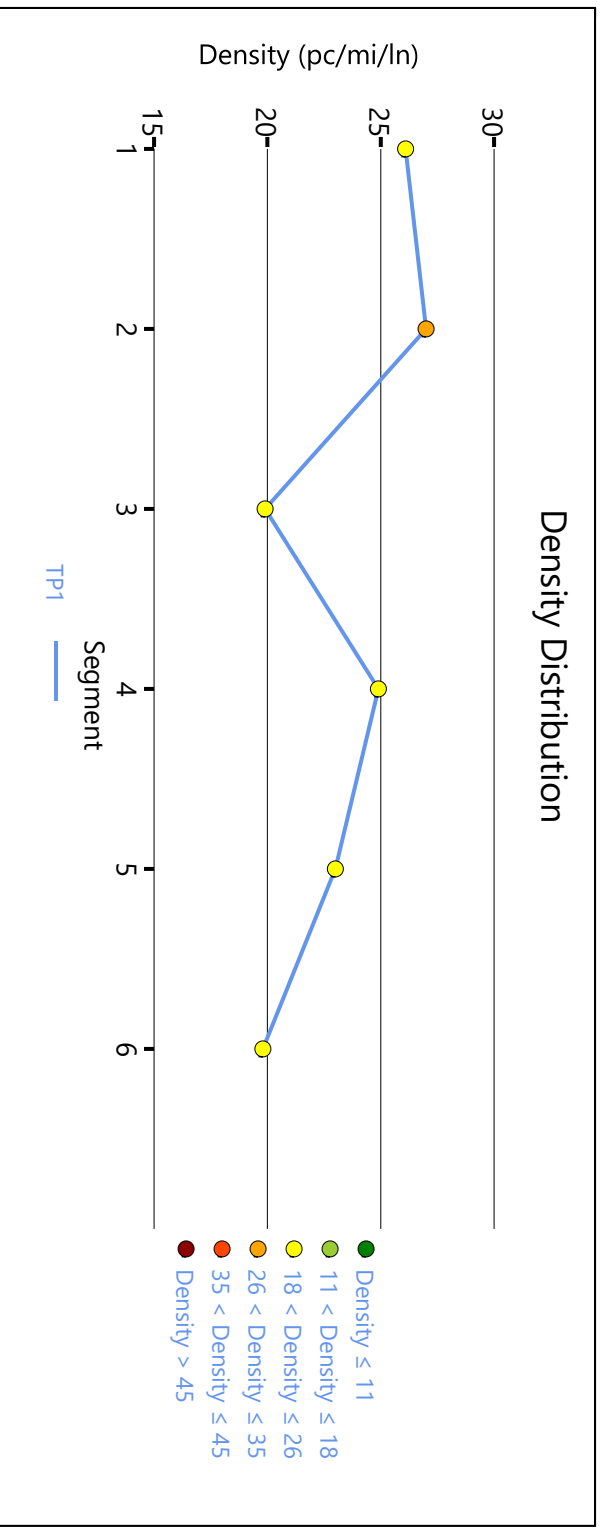
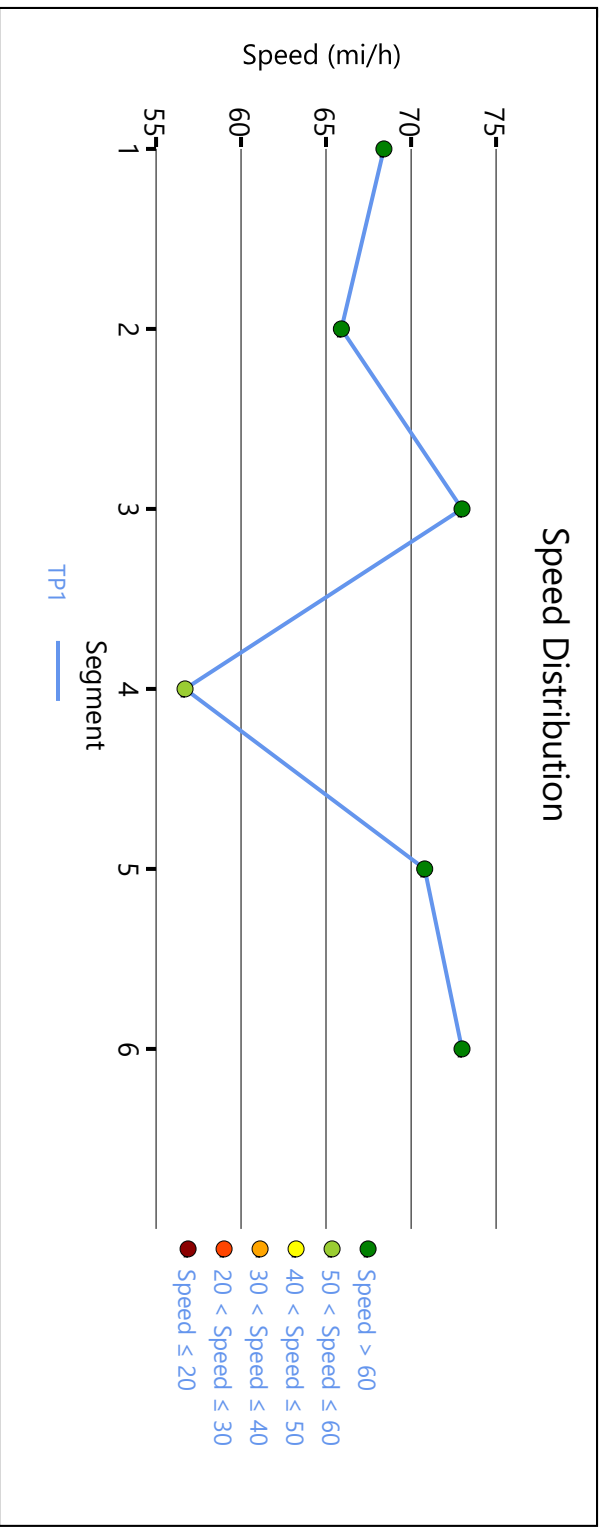
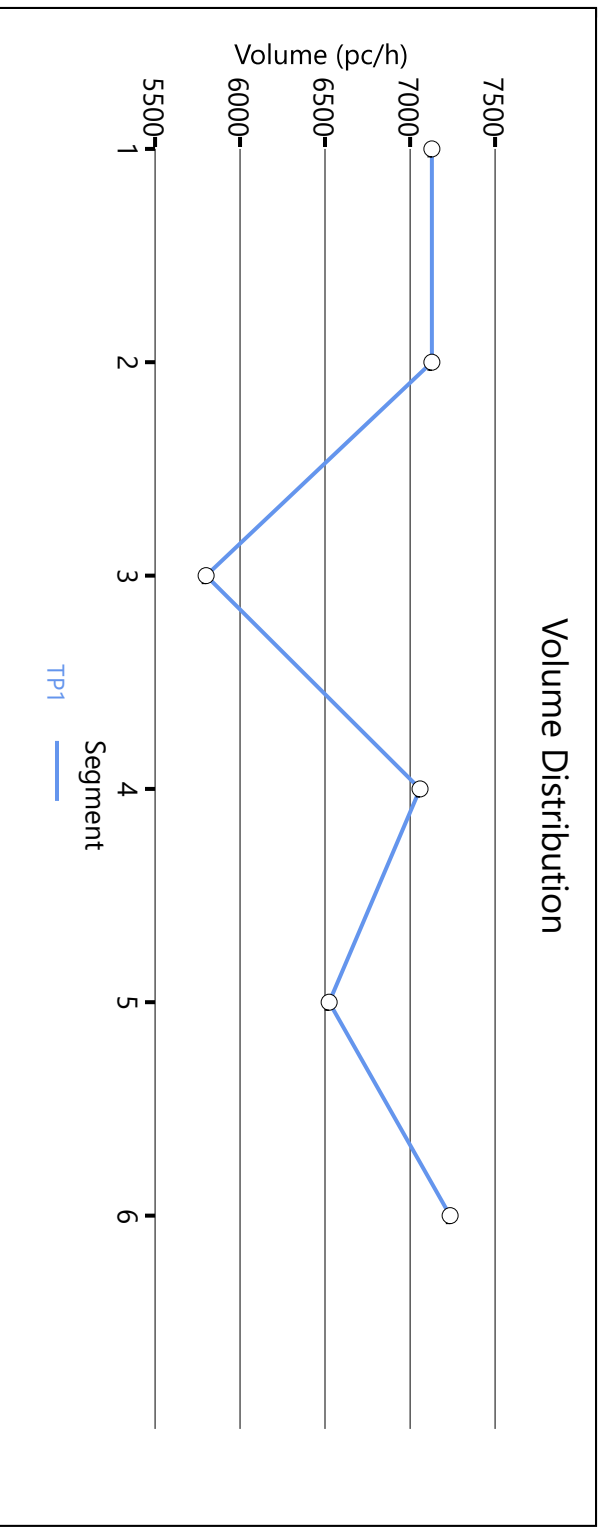
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	5800	9600	0.60	73.0	19.9	C

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	7059	10435	0.68	56.7	24.9	C

Segment 5: Basic

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		6524		9600		0.68		70.8		23.0		C
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	7236	712	12000	2000	0.60	0.36	73.0	73.0	19.8	19.8	C
Facility Time Period Results															
T	Speed, mi/h				Density, pc/mi/ln		Density, veh/mi/ln		Travel Time, min				LOS		
1	65.4				23.0		22.1		1.70				C		
Facility Overall Results															
Space Mean Speed, mi/h					65.4			Density, veh/mi/ln				22.1			
Average Travel Time, min					1.70			Density, pc/mi/ln				23.0			
Messages															
WARNING 1					Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.										
Comments															



- Density ≤ 11
- 11 < Density ≤ 18
- 18 < Density ≤ 26
- 26 < Density ≤ 35
- 35 < Density ≤ 45
- Density > 45

- Speed > 60
- 50 < Speed ≤ 60
- 40 < Speed ≤ 50
- 30 < Speed ≤ 40
- 20 < Speed ≤ 30
- Speed ≤ 20

HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	5/13/2020
Agency	Caltrans	Analysis Year	Horizon Year WP NB
Jurisdiction		Time Period Analyzed	PM Peak
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.89		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 NB South of Palm	100	4
2	Diverge	Diverge	I-5 NB Palm Off-Ramp	1500	4
3	Basic	Basic	I-5 NB between Palm Off-Ramp & On-Ramp	2455	4
4	Weaving	Weaving	I-5 NB Palm On-Ramp to Main Off-Ramp	3110	5
5	Basic	Basic	I-5 NB between Main Off-Ramp & On-Ramp	1330	4
6	Merge	Basic	I-5 NB Main On-Ramp	1500	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	5930	9600	0.62	72.7	20.4	C

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	5930	874	9600	2000	0.62	0.44	67.6	58.5	21.9	29.5	D

Segment 3: Basic

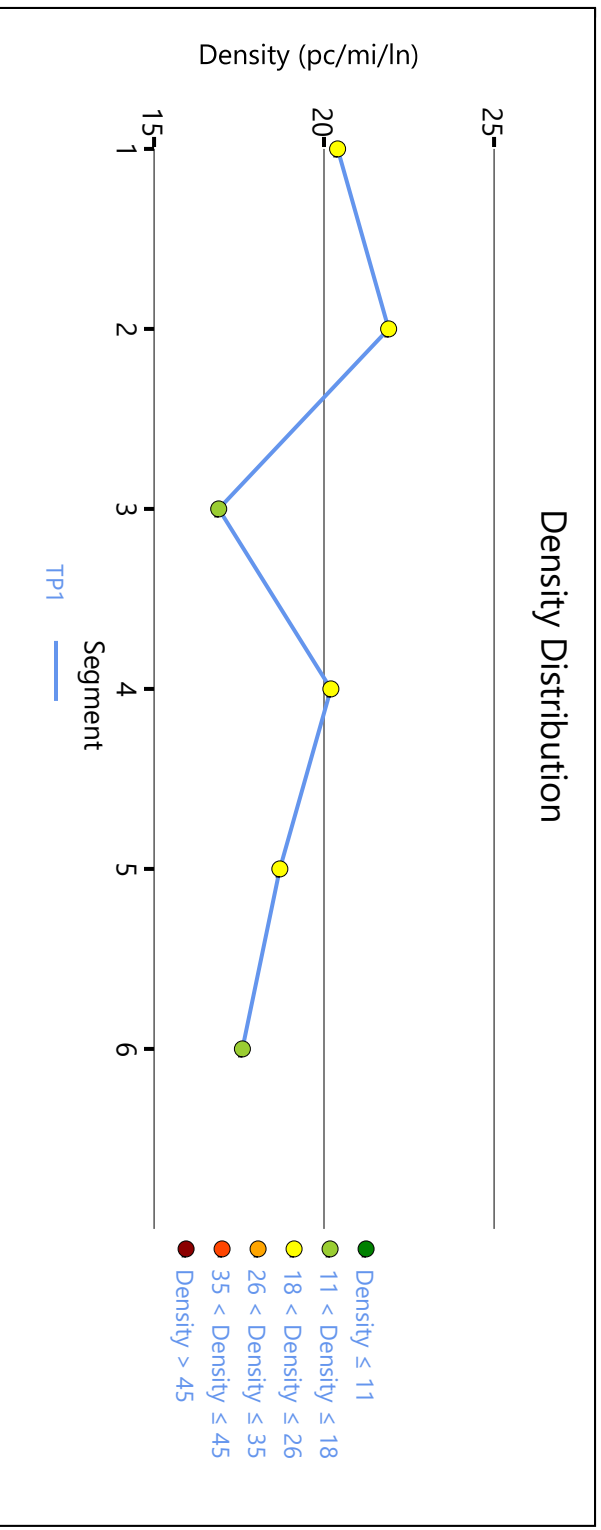
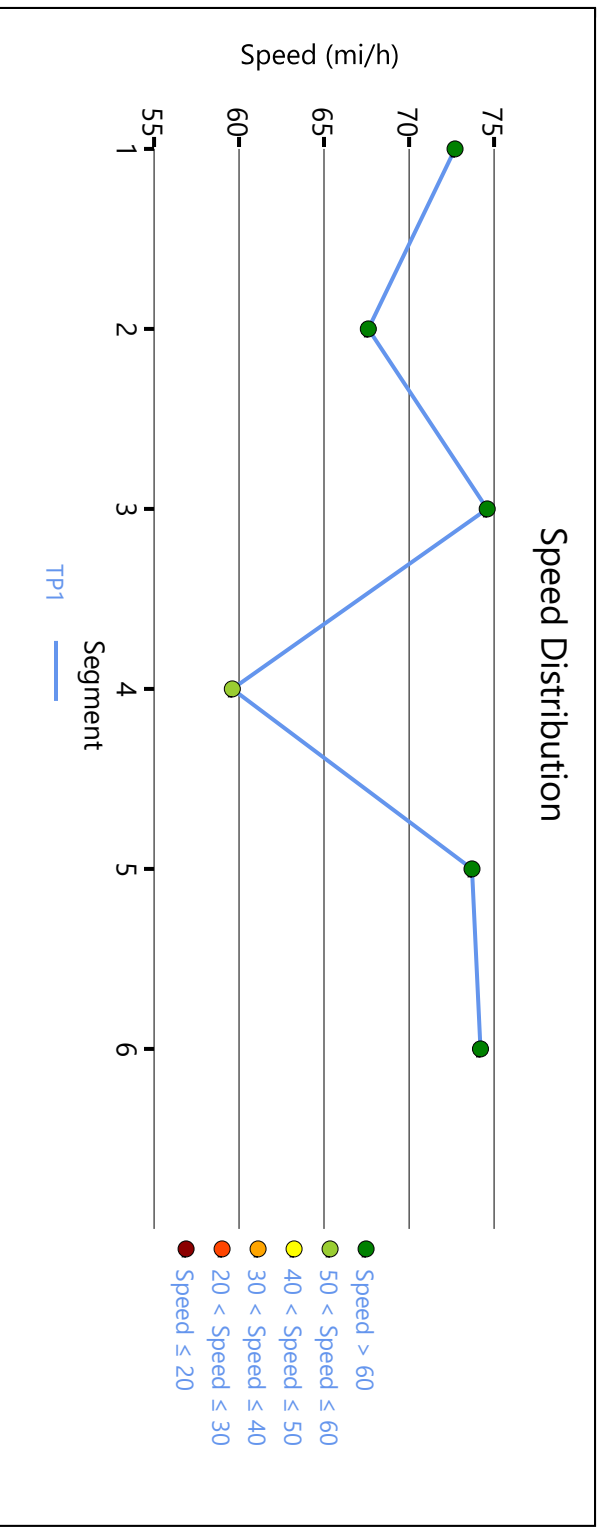
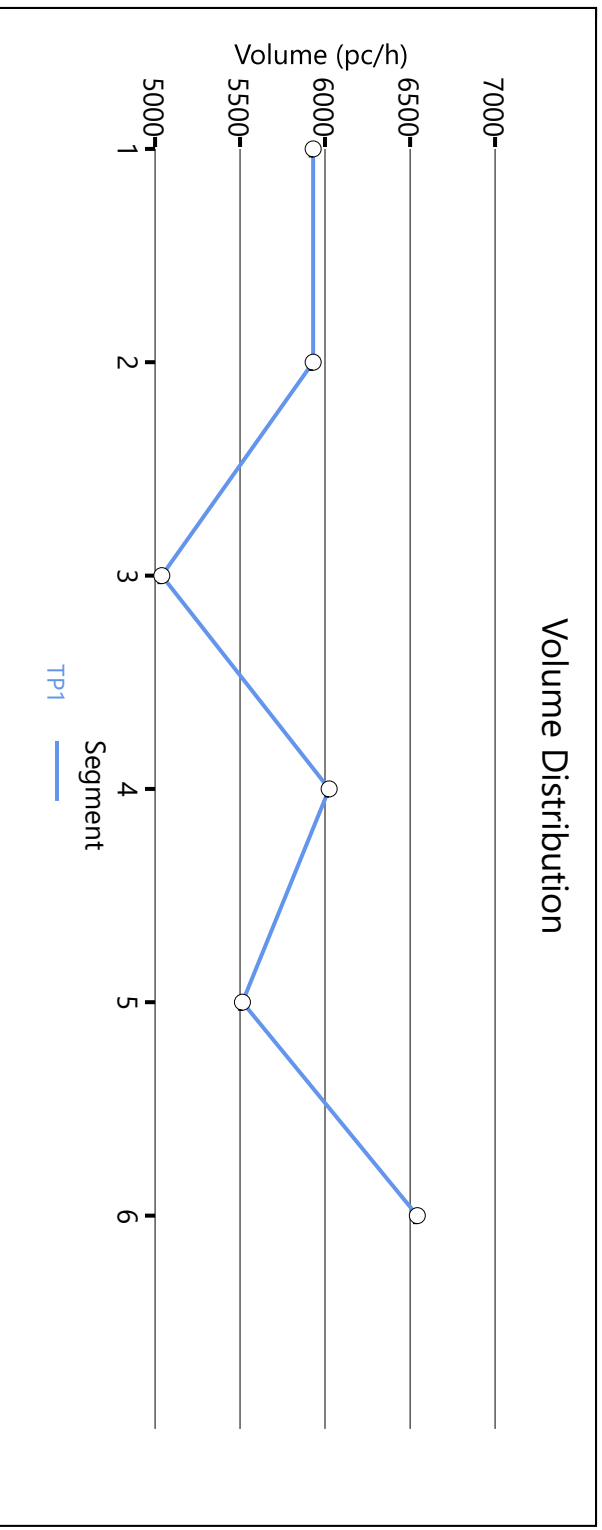
Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	5040	9600	0.53	74.6	16.9	B

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	6024	10762	0.56	59.6	20.2	C

Segment 5: Basic

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		5514		9600		0.57		73.7		18.7		C
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	6543	1029	12000	2000	0.55	0.51	74.2	74.2	17.6	17.6	B
Facility Time Period Results															
T	Speed, mi/h				Density, pc/mi/ln		Density, veh/mi/ln		Travel Time, min				LOS		
1	67.8				19.1		18.4		1.70				C		
Facility Overall Results															
Space Mean Speed, mi/h					67.8			Density, veh/mi/ln				18.4			
Average Travel Time, min					1.70			Density, pc/mi/ln				19.1			
Messages															
WARNING 1					Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.										
Comments															



HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	5/13/2020
Agency	Caltrans	Analysis Year	Horizon Year WP SB
Jurisdiction		Time Period Analyzed	AM Peak Hour
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	7
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.48		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 SB North of Main	100	5
2	Diverge	Basic	I-5 SB Main Off-Ramp	1500	5
3	Basic	Basic	I-5 SB between Main Off-Ramp & On-Ramp	1750	4
4	Weaving	Weaving	I-5 SB Main On-Ramp to Palm Off-Ramp	1855	5
5	Basic	Basic	I-5 SB between Palm Off-Ramp & On-Ramp	1480	4
6	Merge	Basic	I-5 SB Palm On-Ramp	570	5
7	Merge	Merge	I-5 SB SR-75 On-Ramp	565	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	4372	12000	0.36	75.4	11.6	B

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	4372	985	12000	2000	0.36	0.49	75.4	75.4	11.6	11.6	B

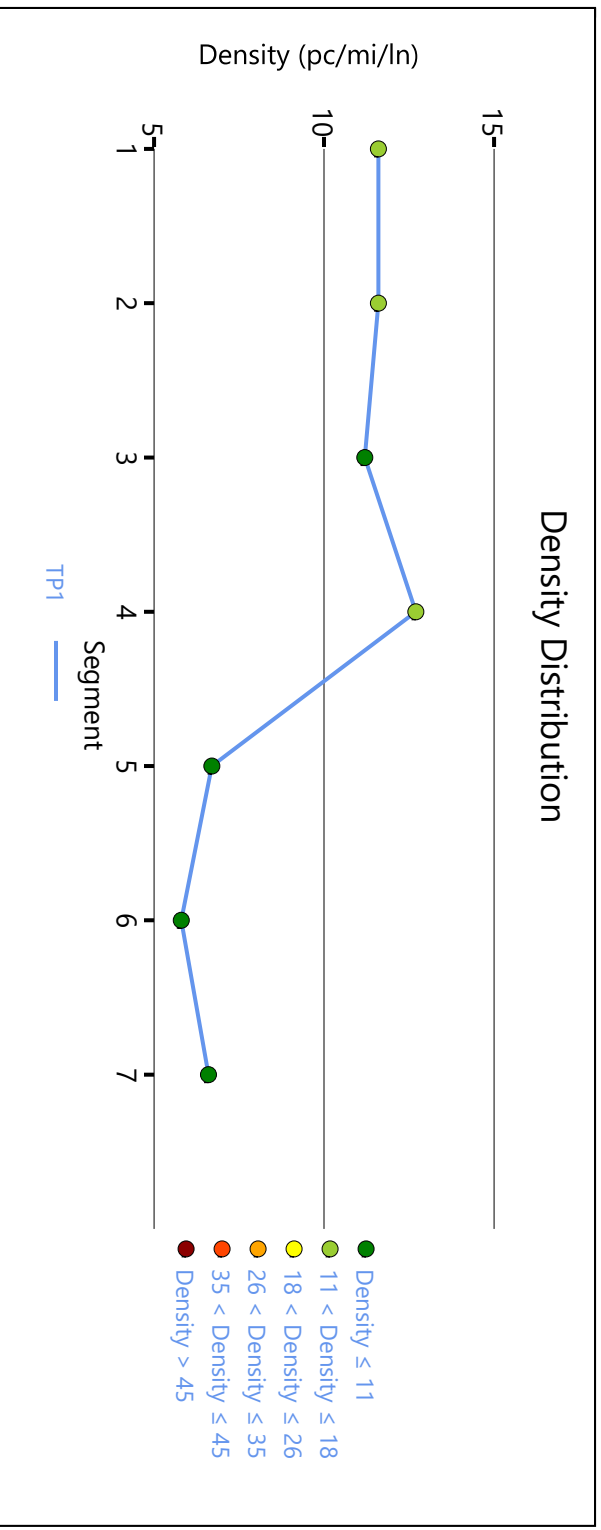
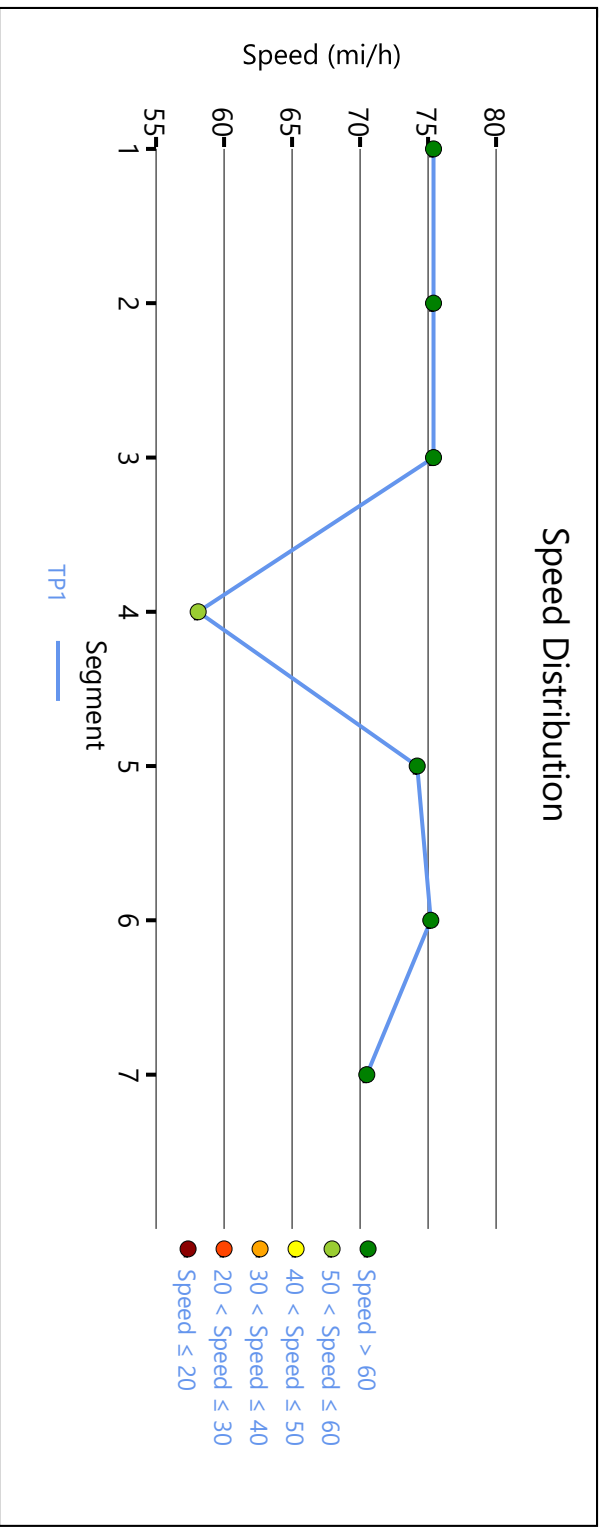
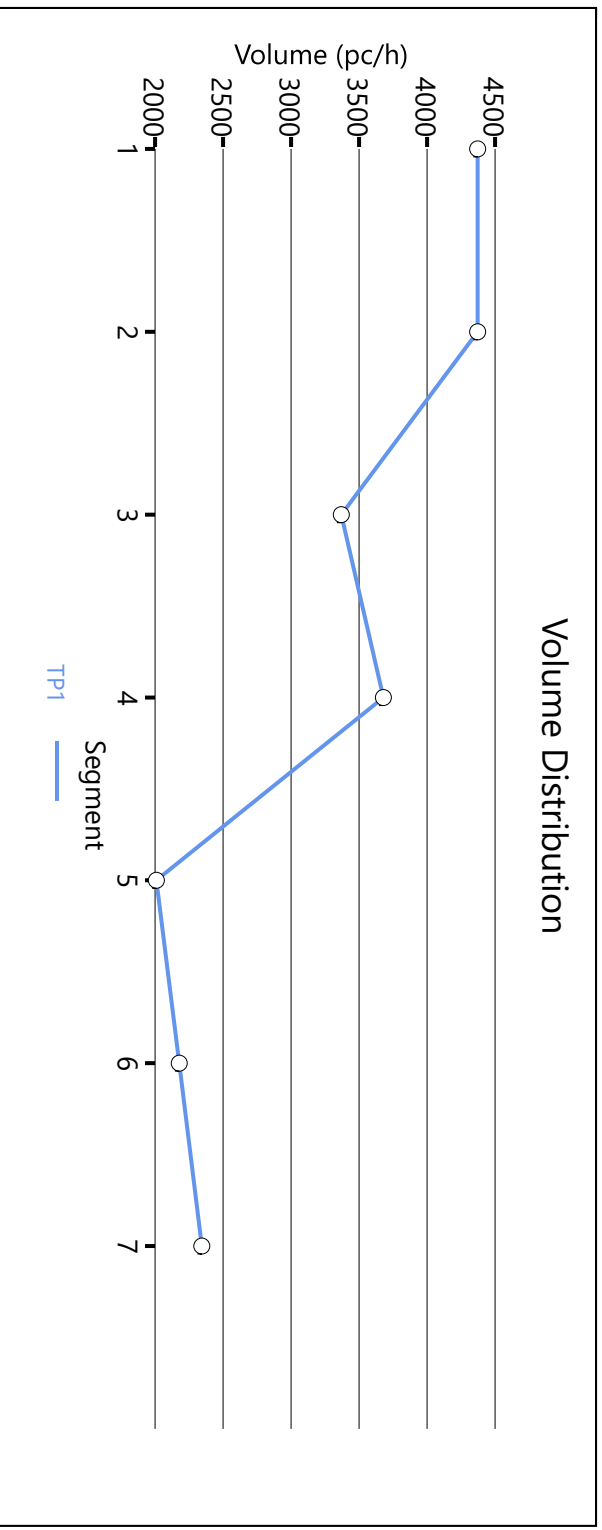
Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	3369	9600	0.35	75.4	11.2	B

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	3679	5195	0.71	58.1	12.7	B

Segment 5: Basic															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	1.00		0.962		2010		9600		0.21		74.2		6.7		A
Segment 6: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	2178	168	12000	2000	0.18	0.08	75.2	75.4	5.8	5.8	A
Segment 7: Merge															
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	2344	162	12000	2000	0.20	0.08	70.5	66.2	6.6	7.7	A
Facility Time Period Results															
T	Speed, mi/h				Density, pc/mi/ln				Density, veh/mi/ln				Travel Time, min		LOS
1	69.4				10.1				9.8				1.30		A
Facility Overall Results															
Space Mean Speed, mi/h					69.4				Density, veh/mi/ln				9.8		
Average Travel Time, min					1.30				Density, pc/mi/ln				10.1		
Messages															
ERROR 1					Acceleration lane length is longer than the segment length for merge segment 6.										
ERROR 2					Acceleration lane length is longer than the segment length for merge segment 7.										
WARNING 1					Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.										
Comments															



HCS7 Freeway Facilities Report

Project Information

Analyst	Kimley-Horn	Date	5/13/2020
Agency	Caltrans	Analysis Year	Horizon Year WP SB
Jurisdiction		Time Period Analyzed	PM Peak Hour
Project Description	Bella Mar	Unit	United States Customary

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	7
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	1.48		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-5 SB North of Main	100	5
2	Diverge	Basic	I-5 SB Main Off-Ramp	1500	5
3	Basic	Basic	I-5 SB between Main Off-Ramp & On-Ramp	1750	4
4	Weaving	Weaving	I-5 SB Main On-Ramp to Palm Off-Ramp	1855	5
5	Basic	Basic	I-5 SB between Palm Off-Ramp & On-Ramp	1480	4
6	Merge	Basic	I-5 SB Palm On-Ramp	570	5
7	Merge	Merge	I-5 SB SR-75 On-Ramp	565	5

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	9247	12000	0.87	23.6	78.3	F

Segment 2: Diverge

Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp	
1	1.00	1.00	0.962	0.980	8964	880	12000	2000	0.87	0.44	23.9	23.9	75.1	75.1	F

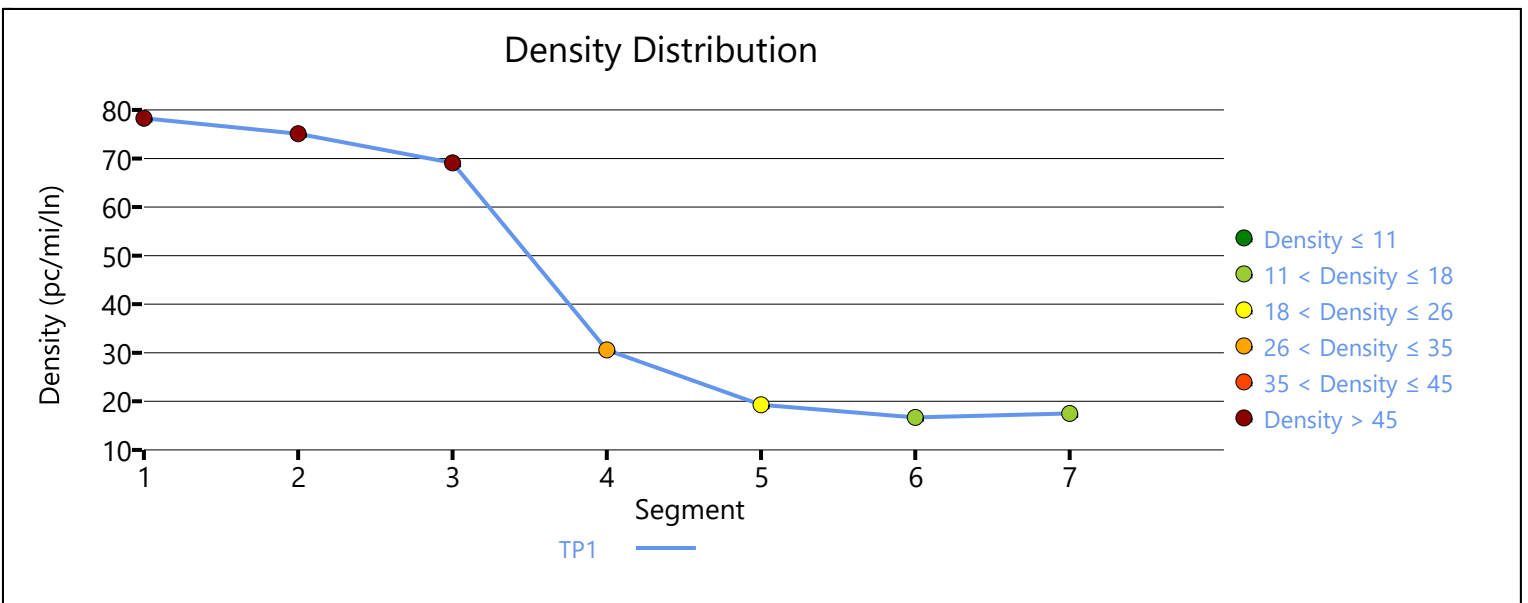
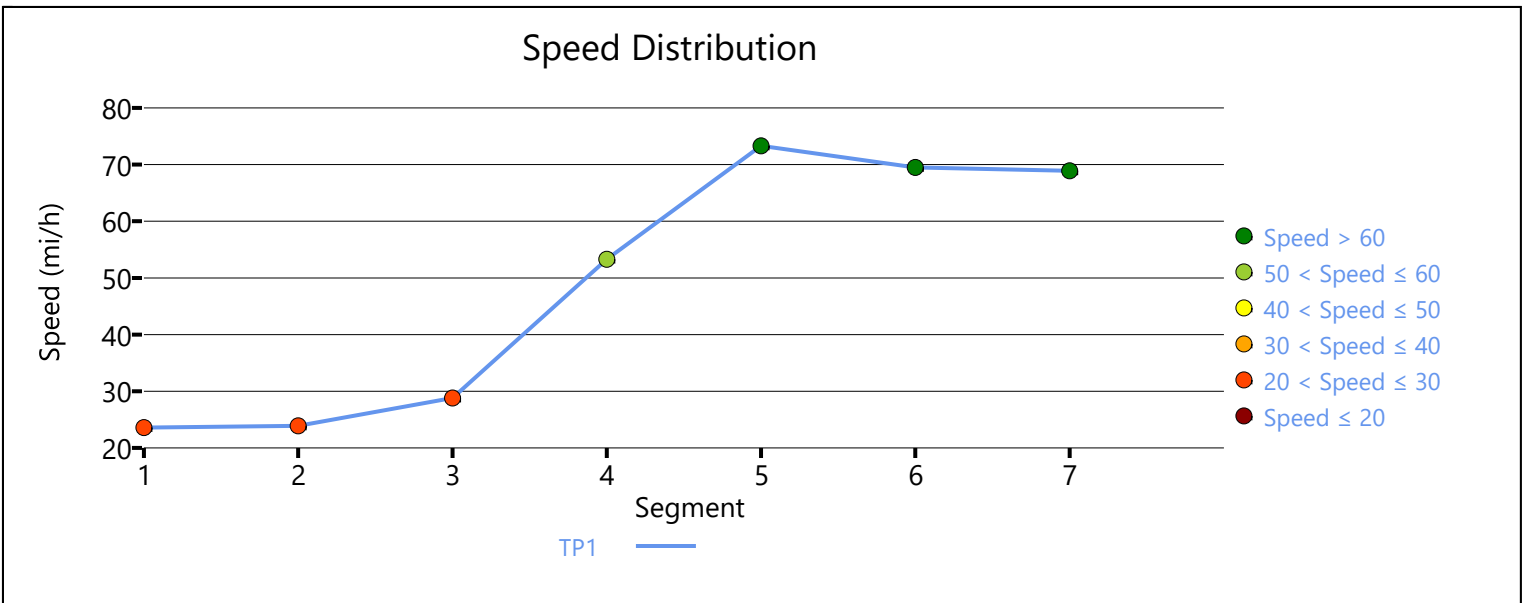
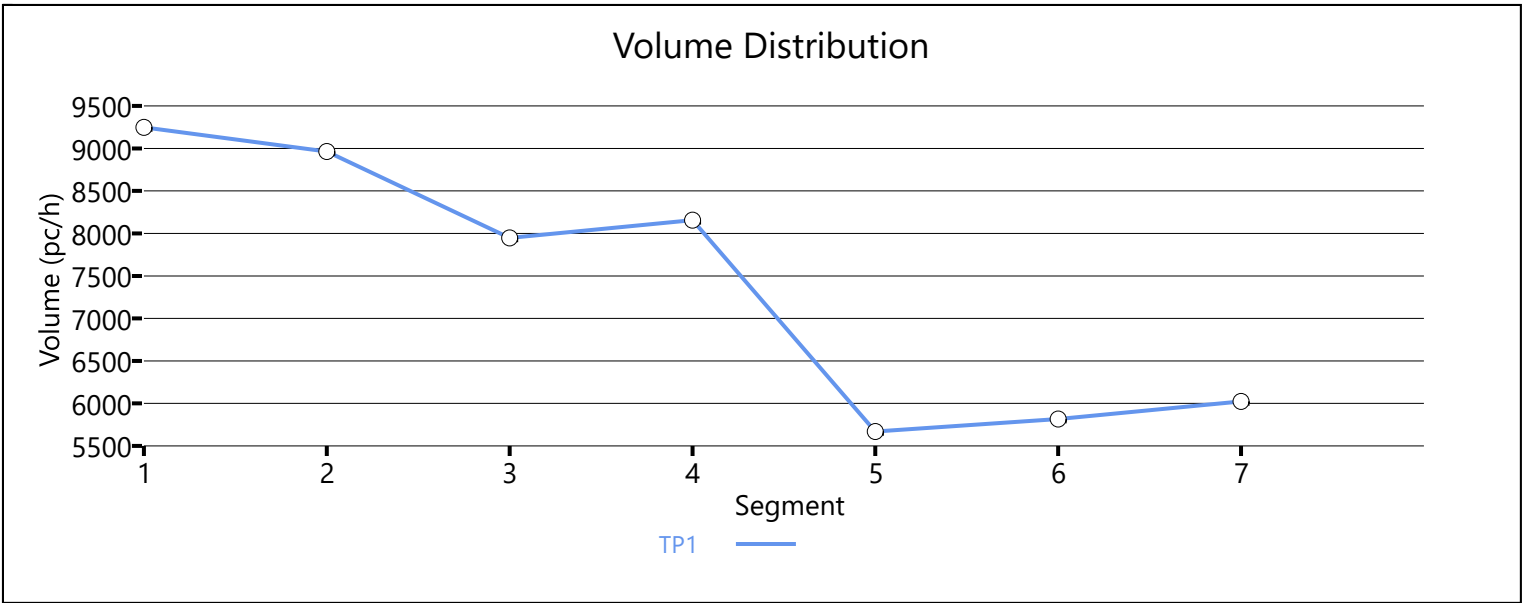
Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	7948	9600	0.99	28.8	69.1	F

Segment 4: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	1.00	0.962	8156	8759	1.16	53.3	30.6	F

Segment 5: Basic																
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS	
1	1.00		0.962		5670		9600		0.81		73.3		19.3		C	
Segment 6: Merge																
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS	
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp		
1	1.00	1.00	0.962	0.980	5817	147	12000	2000	0.66	0.07	69.5	69.5	16.7	16.7	B	
Segment 7: Merge																
Time Period	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS	
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R	Freeway	Ramp		
1	1.00	1.00	0.962	0.980	6024	611	12000	2000	0.71	0.31	68.9	65.2	17.5	18.2	B	
Facility Time Period Results																
T	Speed, mi/h		Density, pc/mi/ln		Density, veh/mi/ln		Travel Time, min		LOS							
1	37.0		44.1		42.5		2.40		F							
Facility Overall Results																
Space Mean Speed, mi/h					37.0			Density, veh/mi/ln				42.5				
Average Travel Time, min					2.40			Density, pc/mi/ln				44.1				
Messages																
ERROR 1					Acceleration lane length is longer than the segment length for merge segment 6.											
ERROR 2					Acceleration lane length is longer than the segment length for merge segment 7.											
WARNING 1					Oversaturated conditions currently exist in boundary time period 1. Results may not be reliable. Consider expanding analysis in time and/or space to resolve this warning.											
WARNING 2					Oversaturated conditions currently exist on segment 1, which is less than 300 feet. Due to time step size, these segments may produce unreliable results. Consider reviewing facility segmentation to resolve this warning.											
WARNING 3					Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution when interpreting results of a Freeway Facility without a basic segment bounding the beginning and end of the facility.											
WARNING 4					Queue extends past the beginning of the facility on time period 1. Consider expanding the length of the facility to account for these vehicles performance and affect on upstream segments.											
Comments																



APPENDIX F

MID-BLOCK PEDESTRIAN CROSSING WARRANT

City of San Diego Pedestrian Crosswalk Guidelines 2015



Prepared for:
City of San Diego



Prepared by:



CHEN + RYAN

Safe Transportation
Research & Education Center
SafeTREC

City of San Diego

Pedestrian Crosswalk Guidelines

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EXECUTIVE SUMMARY

The City of San Diego’s Pedestrian Crosswalk Guidelines seeks to improve pedestrian safety with enhanced street crossings. These guidelines serve to accomplish the following safety improvements for pedestrians in the City of San Diego:

- More pedestrian crossings will qualify for marked crosswalks.
- More marked crosswalks will have features like traffic calming or flashing beacons.

The California Vehicle Code specifies that crosswalks can be either unmarked or marked. The Pedestrian Crosswalk Guidelines provides a systematic approach to evaluate pedestrian crossing locations for the installation of marked crosswalks and additional pedestrian safety treatments. The creation of a pedestrian risk model assisted in the development of the uncontrolled crosswalk warrant system, crossing treatment thresholds, and crossing treatment categories, presented in Chapter 2.

Pedestrian Risk Model

A pedestrian risk model was developed to assess built environment and behavioral factors thought to influence a pedestrian’s risk while crossing roadways. The model used 14 years of pedestrian-related collision data (1999 – 2012) from the City of San Diego, representing over 7,000 total pedestrian-related collisions.

The model identified variables with a statistically significant relationship to pedestrian risk. The following variables are associated with increased pedestrian risk: ADT, posted speed limit, crosswalk condition, marked crosswalks, and locations where pedestrian crossing is restricted but evidence shows pedestrians are illegally crossing. Variables associated with decreased pedestrian risk include the following: the presence of pedestrian warning signage, the presence of pedestrian signal heads, population levels, and employment levels.

Uncontrolled Crosswalk Warrant and Implementation

The uncontrolled crosswalk warrant recommendations provide guidance for evaluating uncontrolled locations for the installation of marked crosswalks and additional pedestrian safety treatments. This warrant system builds on the previous warrant system in the 1990 Council Policy 200-07, and was developed using results from the pedestrian risk model. Similar to the existing warrant system, the recommended system contains both Basic Warrants and Point Warrants.

A proposed location must satisfy each of the Basic Warrants and score a minimum of 16 points out of 38 possible points in the Point Warrant system to qualify for a marked crosswalk. Under the previous Point Warrant system, a location needed to score a minimum of 16 points out of 34 possible. In addition, the “Pedestrian Volume Warrant” threshold was reduced; a new “Latent Pedestrian Demand Warrant” was created and may be used in lieu of the “Pedestrian Volume Warrant”; individual “General Condition Warrant” point values were increased from

EXECUTIVE SUMMARY

two points to three points, and the general conditions were consolidated from seven into six. Finally, the “Gap Time Warrant” scoring was revised to follow a bell-shaped distribution rather than a linear distribution. This warrant system elevates the pedestrian to a more balanced status with vehicles, bicycles, and other modes of transportation. It is expected to result in an increase in the number of locations qualifying for marked crosswalks.

If a location meets each of the Basic Warrants and scores a minimum of 16 points in the Point Warrants it qualifies for a marked crosswalk. However, before the installation of a marked crosswalk can be approved, additional treatments must be installed. A table identifies the category of crossing treatment that is needed based on vehicle volumes, vehicle speeds, and crossing distance. Another table lists the crossing treatments available to choose from within each category. Treatment descriptions are provided in a supplemental table.

A final table identifies potential treatments to consider at controlled intersections, including a description and general guidance regarding their installation or use.

2. CROSSWALK WARRANTS AND TREATMENT GUIDELINES

Basic Warrants

In order for a proposed uncontrolled location to qualify for a marked crosswalk and supplemental treatments, a location must meet each of the following Basic Warrants.

1. Pedestrian Volume Warrant

Pedestrian volumes must be equal to or greater than ten (10) pedestrians per hour during the peak pedestrian hour. Children under 13, elderly over 64 years and/or disabled persons count as 1.5 pedestrians. Alternatively, this warrant can be satisfied using Latent Pedestrian Demand if conditions (a), (b), or (c) under Table 2-2, 2-2.1b are met.

Crossing does not exist - Latent Pedestrian Demand used instead since condition (c) in Table 2-2.1b is met.

2. Approach Speed Warrant

The 85th percentile approach speed must be equal to or lower than 40 MPH. This warrant does not apply when a pedestrian hybrid beacon or a pedestrian traffic signal will be installed.

85th percentile speed on Hollister Street is currently 42 MPH. With the proposed project improvements, narrower lanes and more development, speeds can be expected to decrease.

3. Nearest Controlled Crossing

The proposed location must be further than 250 feet from the nearest controlled crossing location (measured from the nearest edge of the proposed marked crosswalk to the closest edge of the controlled crossing).

Proposed location is approximately 1,000' from the nearest controlled crossing location.

4. Visibility Warrant

The motorist must have an unrestricted view of all pedestrians at the proposed location for the distance required by the following table (stopping sight distance is to be interpolated when 85th percentile speed is between 5 mph increments):

85 th Percentile Speed (MPH)	Stopping Sight Distance (feet)
25	150
30	200
35	250
40	300

Source: Caltrans Highway Design Manual, Table 201.1(March 7, 2014)

The unrestricted view to the south is approximately 750' and the unrestricted view to the north is approximately 700'.

The unrestricted view of pedestrians of at least 300' in each direction is due to the relatively straight alignment and level grade of the roadway.

5. Illumination Warrant

The proposed location must have existing lighting.

The project is proposing lighting at the proposed crosswalk location and bus stop.

6. Accessibility Warrant

The proposed location must have existing accessibility to disabled pedestrians or have accessibility improvements programmed.

The design of the crosswalk is ADA compliant.

2. CROSSWALK WARRANTS AND TREATMENT GUIDELINES

Point Warrants

The Point Warrant has a total possible score of 38 points. As stated above, to qualify for installation of a marked crosswalk, a location must meet each of the Basic Warrants and score a minimum of 16 points in the Point Warrants. A summary of each of the Point Warrants and the allocation of points is presented in **Table 2-2**. A discussion of each of the Point Warrant variables follows the table.

Table 2-2: Point Warrants

2-2.1a Pedestrian Volume Warrant		
Number of Pedestrians (Peak Hour)	Points	Total Available Points
10 – 25	4	10
26 – 50	8	
51+	10	
2-2.1b Latent Pedestrian Demand Warrant (in lieu of Pedestrian Volume Warrant)		
Condition	Points	Total Available Points
(a) The proposed crosswalk is in a commercial, mixed land use, or high density residential area.	3	10
(b) A pedestrian or shared use path is interrupted by a restricted crossing.	3	
(c) A pedestrian attractor/generator is directly adjacent to the proposed crosswalk as defined in the explanatory notes below.	4	
2-2.2 General Condition Warrant		
Condition	Points	Total Available Points
(a) The nearest controlled crossing is greater than 300 feet from the proposed crosswalk.	3	18
(b) The proposed crosswalk will position pedestrians to be better seen by motorists.	3	
(c) The proposed crosswalk will establish a mid-block crossing between adjacent signalized intersections or it will connect an existing pedestrian path.	3	
(d) The proposed crosswalk is located within ¼ mile of pedestrian attractors/generators as defined in the explanatory notes below.	3	
(e) An existing bus stop is located within 100 feet of the proposed crosswalk.	3	
(f) Other factors.	3	

proposed bus stop

2. CROSSWALK WARRANTS AND TREATMENT GUIDELINES

Table 2-2: Point Warrants (continued)

2-2.3 Gap Time Warrant		
Average Number of Vehicular Gaps per 5-Minute Period	Points	Total Available Points
0 – 0.99	0	10
1 – 1.99	1	
2 – 2.99	8	
3 – 3.99	10	
4 – 4.99	8	
5 – 5.99	1	
6 or over	0	
Total Available Points		38

Site achieves 16 points.

See attached field work

Table 2-2 Explanatory Notes:

2-2.1a Pedestrian Volume Warrant

The Pedestrian Volume Warrant assigns point values based on pedestrian crossing volumes at the proposed crosswalk. Children under 13, elderly over 64 years and/or disabled persons count as 1.5 pedestrians.

2-2.1b Latent Pedestrian Demand Warrant (in lieu of Pedestrian Volume Warrant)

The Latent Pedestrian Demand Warrant may be used in lieu of the Pedestrian Volume Warrant.

2-2.2 General Condition Warrant

The General Condition Warrant presents six (6) unique categories. A location can score either zero (0) or three (3) points for each unique category, making a total 18 possible points available. The general conditions include the following:

- (a) *The nearest controlled crossing is greater than 300 feet from the proposed crosswalk.*
The distance should be measured from the proposed location of the crosswalk to the nearest controlled intersection, i.e. stop sign, traffic signal, etc.
- (b) *The proposed crosswalk will position pedestrians to be better seen by motorists.*
This condition should be considered at locations where one leg of the intersection provides better sight distance than the other legs.
- (c) *The proposed crosswalk will establish a mid-block crossing between adjacent signalized intersections.*
This warrant refers to a condition where there is a high pedestrian attractor/generator nearby, and adequate crossing can be provided that could help channelize a recognized heavy flow of mid-block pedestrians.
- (d) *The proposed crosswalk is located within ¼ mile of the following pedestrian attractors/generators as defined below:*
 - International Border Crossing
 - Major Multi-Modal Transit Centers (>10,000 boardings per day)
 - Transit Stops (>1,000 boardings per day)
 - Elementary/Middle/ High Schools
 - Universities and Colleges
 - Neighborhood Civic Facilities (Libraries, Post Office & Religious Facilities)

2. CROSSWALK WARRANTS AND TREATMENT GUIDELINES

- Neighborhood and Community Retail
- Pedestrian Intensive Beaches
- Parks & Recreation (excludes non-useable open space)
- Mixed Land Uses (housing near employment and/or commercial)

(e) *A bus stop is located within 100 feet of the proposed crosswalk.*
This warrant is applicable if there is a bus stop within 100-feet of the proposed crosswalk.

(f) *Other factors.*
Other factors allow for extenuating circumstances not covered in the proposed warrants. This is to be evaluated using engineering judgment.

2-2.3 Gap Time Warrant

Gap time is the time needed for a pedestrian to cross the travelled lanes of a roadway at an average walking speed without the need for a driver to yield. The number of usable gaps (or gaps that exceed the minimum time needed to cross) are counted during the peak vehicular hour and averaged per five-minute period.

Crossing Treatments

If the proposed crossing location meets the criteria set by both the Basic and Point Warrants, the next step is to evaluate the most appropriate crossing treatment(s) to be installed with the marked crosswalk. **Table 2-3** provides thresholds for determining whether additional treatments are required prior to installing a marked crosswalk. The thresholds are based on vehicle volumes, vehicle speeds, and pedestrian crossing distance at the proposed location. Location types are divided into categories A, B, C and D, and are used to determine the appropriate treatment for the proposed location.

Table 2-3: Crossing Treatment Thresholds for Uncontrolled Marked Crosswalks if Warrants are Met

Crossing Distance ²	Roadway ADT (vehicles per day)					
	< 1,500	1,501 – 5,000	5,001 – 12,000	12,001 – 15,000	> 15,000	
< 40'	A	B	B	C	C	D ¹
40' to 52'	A	B	C	C	D ¹	D
> 52'	A	B	C ¹	C	D ¹	D

1. For streets with more than one lane at an approach or posted speed limit 30 mph or greater.
2. Crossing distance can be measured to a pedestrian refuge island if one is present.

Source: City of San Diego (February, 2015)

Crossing Treatments

Table 2-4 presents treatment requirements for the categories shown in **Table 2-3**. As new devices or treatments are proven, they may be considered in lieu of these treatments, with the City Engineer's approval.

2. CROSSWALK WARRANTS AND TREATMENT GUIDELINES

Table 2-4: Crossing Treatments for Uncontrolled Marked Crosswalks if Warrants are Met

Category	Crossing Treatments
A	<p>The following is required:</p> <ul style="list-style-type: none"> • (W11-2) Pedestrian Warning Signage with the corresponding (W16-7P) arrow plaque
B	<p>At least one of the following is required:</p> <ul style="list-style-type: none"> • (R1-6) State Law – Yield to Pedestrian sign if median is present • Rectangular Rapid Flashing Beacons (RRFBs) • Raised crosswalk or other traffic calming treatments if the City of San Diego’s Traffic Calming Guidelines are met
C	<p>At least two of the following are required:</p> <ul style="list-style-type: none"> • Radar Speed Feedback Signs • Striping changes such as narrower lanes, painted medians, road diets, or other speed reducing treatments. • RRFBs • Staggered crosswalks and pedestrian refuge island • Horizontal deflection traffic calming treatments¹ if the City of San Diego’s Traffic Calming Guidelines are met
D	<p>A Traffic Signal is required if the CA MUTCD warrants are met and it is recommended by a traffic engineering study. Otherwise at least one of the following is required:</p> <ul style="list-style-type: none"> • Pedestrian Hybrid Beacon if the CA MUTCD warrants are met • Horizontal deflection traffic calming treatment¹ with RRFBs if the City of San Diego’s Traffic Calming Guidelines are met
<p>1. Horizontal deflection treatments include, but are not limited to: roundabouts, pedestrian refuge islands, and pedestrian bulb-outs.</p>	

Source: City of San Diego (February, 2015)

Continental Crosswalks

The continental crosswalk, which is a high visibility crosswalk, is the City’s standard crosswalk design for all marked crosswalk locations. Continental crosswalks have been shown to be more visible to approaching motorists and have been shown to improve yielding behavior. Continental crosswalks, along with the treatments identified in **Table 2-4** will enhance the pedestrian environment at marked crosswalks.

Table 2-5 provides a toolbox of crossing treatments including a graphic example and definition of the treatments.

Bella Mar Field Work

February 3, 2020 7:00AM-8:30AM

Pedestrian Gap Study

- Within 5-minute periods during peak hour morning traffic, measured the number of times there is a gap long enough for a pedestrian to safely cross the street.
- Each test was videoed
- Results:

	Test #1	Test #2	Test #3
Time	7:36 AM-7:41 AM	7:42 AM – 7:47 AM	7:48 AM – 7:53 AM
# of gaps long enough for a pedestrian to cross safely	9	13	9

APPENDIX G

CUMULATIVE PROJECT (OTAY RIVER BUSINESS PARK) INFORMATION

Otay River Business Park
City of Chula Vista (SW Corner of Main St/4th Ave)
March 22, 2017

Traffic Impact Analysis

Prepared for:

Sudberry Properties
5465 Morehouse Drive, Suite 260
San Diego, CA 92121

Prepared by Justin Rasas (RCE 60690) a principal with:

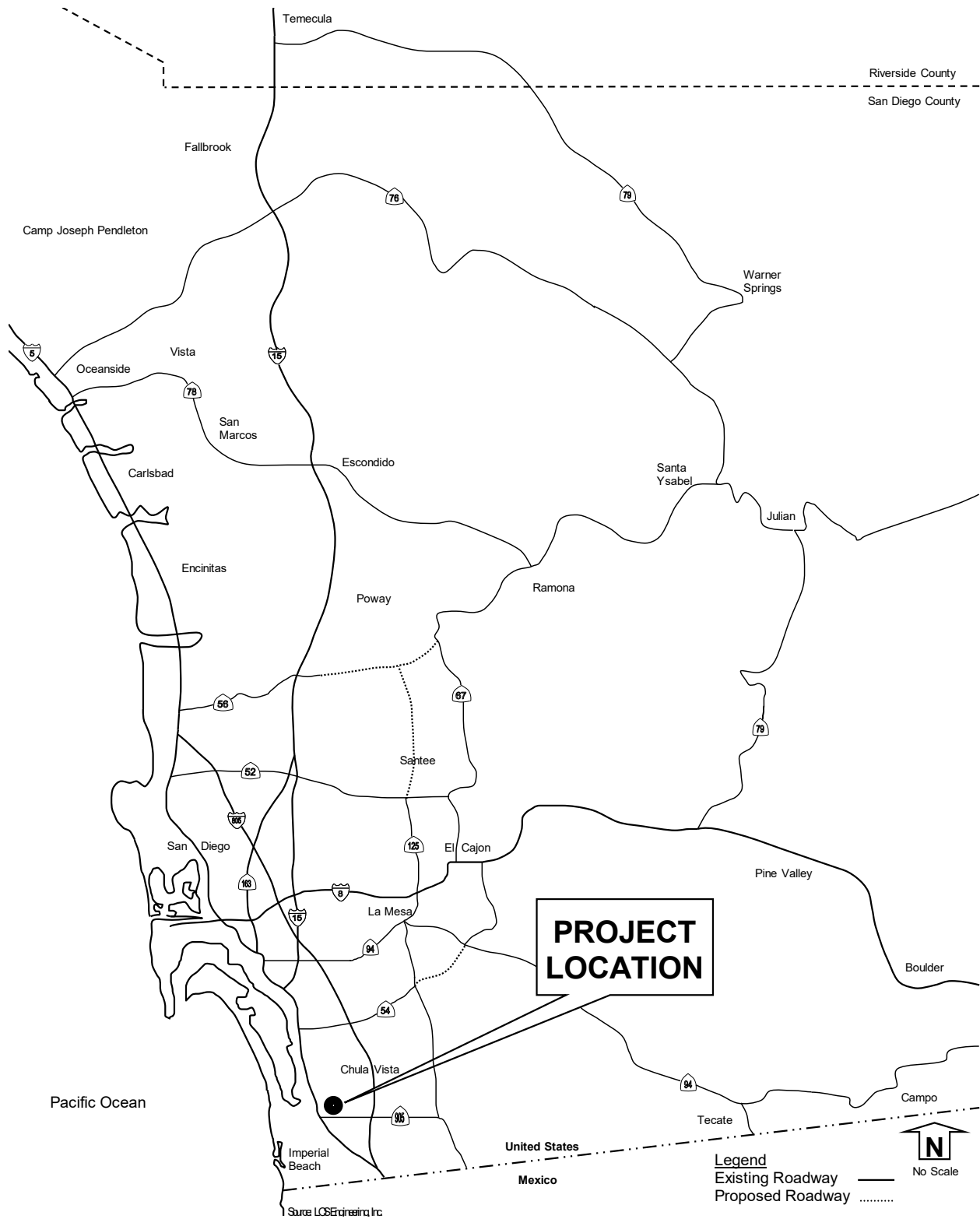


LOS Engineering, Inc.

11622 El Camino Real, Suite 100, San Diego, CA 92130
Phone 619-890-1253, Fax 619-374-7247

Job #1503

Figure 1: Project Location



4.0 Project Description

The proposed project of approximately 53 gross acres includes a Shopping Center (2.94 acres), an Industrial/Business Park (10.34 acres), an Industrial Park without commercial (17.97 acres), a Park (13.90 acres), new on-site roadways, and other areas that are not traffic generating that account for the remaining acreage. Opening day for the project may be as early as 2017.

4.1 Project Traffic Generation

The project has four unique land uses that include a Shopping Center, an Industrial/Business Park, an Industrial Park, and a Future Park. 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. SANDAG provides trip generation rates and definitions of the unique land uses as follows:

Shopping Center is typically less than 15 acres and may include a drugstore, cleaners, beauty & barber shops, and fast food services. Since the exact tenants are unknown, the SANDAG acreage trip rate of 1,200 daily trips per acre were applied.

Industrial/Business Park includes a mix of industrial/manufacturing uses and commercial uses, which can include office, service, retail, wholesale, social club, food service, and health club. The SANDAG trip generation rates were averaged from eight Industrial/Business Parks that had an average breakdown of 56% industrial uses and 44% commercial uses. Since the exact tenants are unknown, the SANDAG trip rate of 200 daily trips per acre were applied.

Industrial Park includes a mix of industrial/manufacturing uses and limited commercial, which can include office and service. The SANDAG trip generation rates were averaged from three Industrial/Business Parks that had an average use of 92% industrial and 8% commercial. Since the exact tenants are unknown, the SANDAG trip rate of 90 daily trips per acre were applied.

Future Park is a park developed with sports facilities. The SANDAG trip generation rate is 50 daily trips per acre.

Two trip generation rates were applied: a driveway rate for project access points and a cumulative rate (accounts for primary and diverted trips) that was applied for all other analyzed roadways.

The project driveway volumes were calculated at 7,908 ADT with 658 AM peak hour trips and 857 PM peak hour trips. The cumulative traffic volumes were calculated at 6,414 ADT with 601 AM peak hour trips and 717 PM peak hour trips. Please note this traffic analysis was based on an initial site design that was slightly larger than the final site plan due to lot line revisions. Therefore, this traffic analysis is slightly conservative and is based on the following trip generation with project driveway volumes calculated at 8,133 ADT, 679 AM peak hour trips, and 886 PM peak hour trips. The cumulative traffic volumes were calculated at 6,610 ADT with 621 AM peak hour trips and 742 PM peak hour trips. The reduction in the usable site resulted in 225 less daily driveway trips, 21 less AM trips, and 29 less PM trips while the cumulative trips saw a reduction of 196 daily trips, 20

less AM trips, and 25 less PM trips. The original trip generation (as analyzed in this traffic analysis) and the reduced trip generation based on the current site are both shown in **Table 8**.

TABLE 8: PROJECT TRAFFIC GENERATION

Original trip generation analyzed within this traffic study (higher than final lot sizes)

Proposed Land Use	Rate	Size & Units	ADT	%	Split	AM			PM		
						IN	OUT	%	Split	IN	OUT
<u>Driveway Rate (for intersections and driveways adjacent to project site)</u>											
Neighborhood Shopping Center	1,200 /Acre	3 Acres	3,600	4%	0.6 0.4	86	58	10%	0.5 0.5	180	180
Industrial Park (With Commercial)	200 /Acre	12 Acres	2,400	12%	0.8 0.2	230	58	12%	0.2 0.8	58	230
Industrial Park (No Commercial)	90 /Acre	17.2 Acres	1,548	11%	0.9 0.1	153	17	12%	0.2 0.8	37	149
Developed Park	50 /Acre	11.7 Acres	585	13%	0.5 0.5	38	38	9%	0.5 0.5	26	26
Driveway Trip Generation						508	171			301	585
<u>SANDAG Pass-By Trip Reductions (for surrounding study roadways)</u>											
Neighborhood Shopping Center (Daily and AM 40%*, PM 40%)			-1,440			-35	-23			-72	-72
Industrial Park With Commercial (Daily 2%, PM 0%)			-48			0	0			0	0
Industrial Park No Commercial (Daily 0%, PM 0%)			0			0	0			0	0
Developed Park (Daily 2%, PM 0%)			-35			0	0			0	0
Pass-by Trip Reductions						-35	-23			-72	-72
Cumulative Trip Generation						473	148			229	513

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002.

*SANDAG did not list AM & daily pass-by; therefore, City of San Diego daily pass-by rate of 40% applied.

Final project lot size trip generation (less than above)

Proposed Land Use	Rate	Size & Units	ADT	%	Split	AM			PM		
						IN	OUT	%	Split	IN	OUT
<u>Driveway Rate (for intersections and driveways adjacent to project site)</u>											
Neighborhood Shopping Center	1,200 /Acre	2.94 Acres	3,528	4%	0.6 0.4	85	56	10%	0.5 0.5	176	176
Industrial Park (With Commercial)	200 /Acre	10.34 Acres	2,068	12%	0.8 0.2	199	50	12%	0.2 0.8	50	199
Industrial Park (No Commercial)	90 /Acre	17.97 Acres	1,617	11%	0.9 0.1	160	18	12%	0.2 0.8	39	155
Developed Park	50 /Acre	13.90 Acres	695	13%	0.5 0.5	45	45	9%	0.5 0.5	31	31
Driveway Trip Generation						488	170			296	561
<u>SANDAG Pass-By Trip Reductions (for surrounding study roadways)</u>											
Neighborhood Shopping Center (Daily and AM 40%*, PM 40%)			-1,411			-34	-23			-71	-71
Industrial Park With Commercial (Daily 2%, AM & PM 0%)			-41			0	0			0	0
Industrial Park No Commercial (Daily 0%, AM & PM 0%)			0			0	0			0	0
Developed Park (Daily 6%, AM & PM 0%)			-42			0	0			0	0
Pass-by Trip Reductions						-34	-23			-71	-71
Cumulative Trip Generation						454	147			226	491

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. Excel rounding may result in ± 1 to the above numbers. *SANDAG did not list AM & daily pass-by; therefore, City of San Diego daily pass-by rate of 40% applied.

4.2 Project Streets and Alley Access

Project access will be from Main Street, Broadway, 7th Avenue, 4th Avenue, and a new on-site roadway (Street A/Faivre St) that will connect Broadway to 4th Avenue and from project driveways on Main Street, Broadway/Beyer Blvd, and 4th Avenue. A few project trips may use the existing alley between Broadway and 7th Avenue that runs parallel to and south of Main Street.

The project frontage along the alley includes Lots 1 and 2 with up to three potential driveways that would connect with the alley. The project applicant proposed to improve the alley with details and limits of improvements included on the civil engineering plans. Only a small percentage (i.e. 5%) of project traffic is anticipated to use the alley because there are better and wider roadways serving the project. Lots 1 and 2 are calculated to generate about 880 daily trips. Five percent of 880 is about 44 daily trips. If the remainder of the project added another 10 daily trips, the anticipated project traffic using the alley would be about 54 ADT. The City of Chula Vista does not have a capacity standard or threshold published for an alley; therefore, other agency documents were

reviewed and found that most described the function of an alley, but did not cite a specific ADT range, except for the City of Vista that did provide a range of up to 500 ADT for an alley (excerpt included in **Appendix F**).

4.3 Project Distribution and Assignment

Project traffic was distributed to the study area roadways based on a distinct distributions for the Shopping Center, the Industrial/Business Park, the Industrial Park, and the City Park. The distribution were reviewed and adjusted by City of Chula Vista Engineering staff. The individual distributions are shown in **Figures 5, 7, 9, and 10**, respectively for each project type while the trip assignments are shown individually in **Figures 6, 8, 10, and 12**, respectively. The combined project assignment is shown in **Figure 13**.

4.4 Project On-site Parking

On-site parking details will be included on the architectural site plan(s) once a lot is sold/leased and the exact building size and footprint is known.

4.5 Project On-site Truck Access, Loading, and Circulation

The final design and building configuration of the individual lots will only be available once an individual lot(s) is/are sold and designed for a specific buyer/tenant; therefore, the exact truck access, loading, and circulation cannot be established at this time. However, an example of a potential truck access, loading, and circulation plan is shown in **Figure 14**. The truck circulation template used by Smith Consulting Architects was based on a California Legal 65 foot truck.

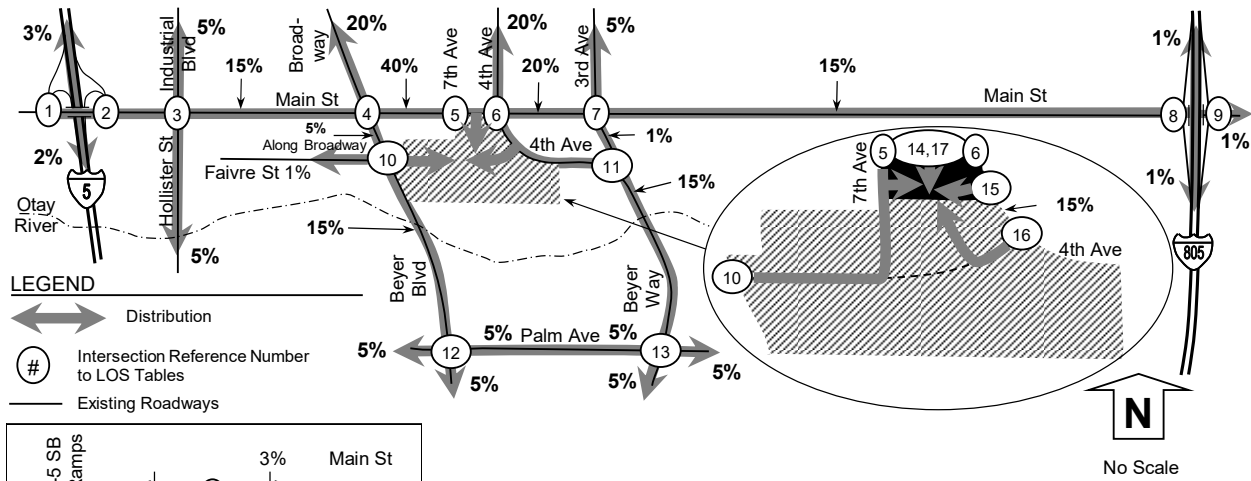
4.6 Project Construction Traffic

Construction traffic will include truck traffic for soil export, trucks bringing in building materials, and construction crews. A detailed construction phasing plan can only be prepared after the final lot site designs are completed, thus the exact number and frequency of trucks is unknown. However, the applicant does not anticipated more than 20 or 25 trucks per hour, which falls below the 50 peak hour trip SANTEC criteria typically used to determine if a truck haul route analysis is required. The construction crews will create less traffic than the final project; therefore, the analysis of the final project covers the traffic associated with the construction crews.

4.7 Transit Access

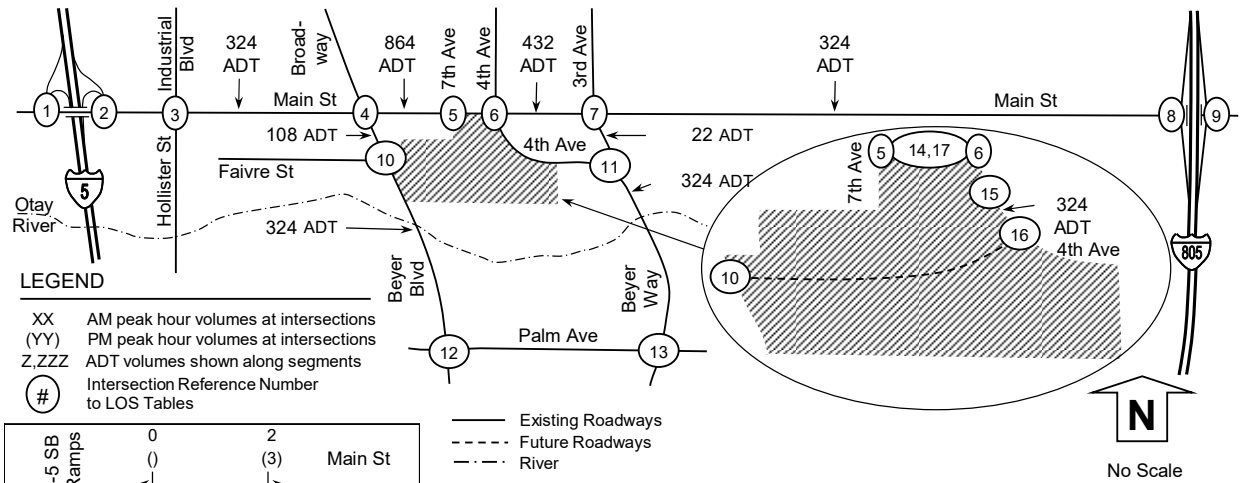
In the project vicinity, there are three bus routes as shown in **Appendix G**. Bus route 701 serves Main St from 4th Avenue to Hilltop Drive. Bus route 929 serves Beyer Way while bus route 932 serves Main St from Hollister St to Broadway.

Figure 5: Project Distribution – Shopping Center



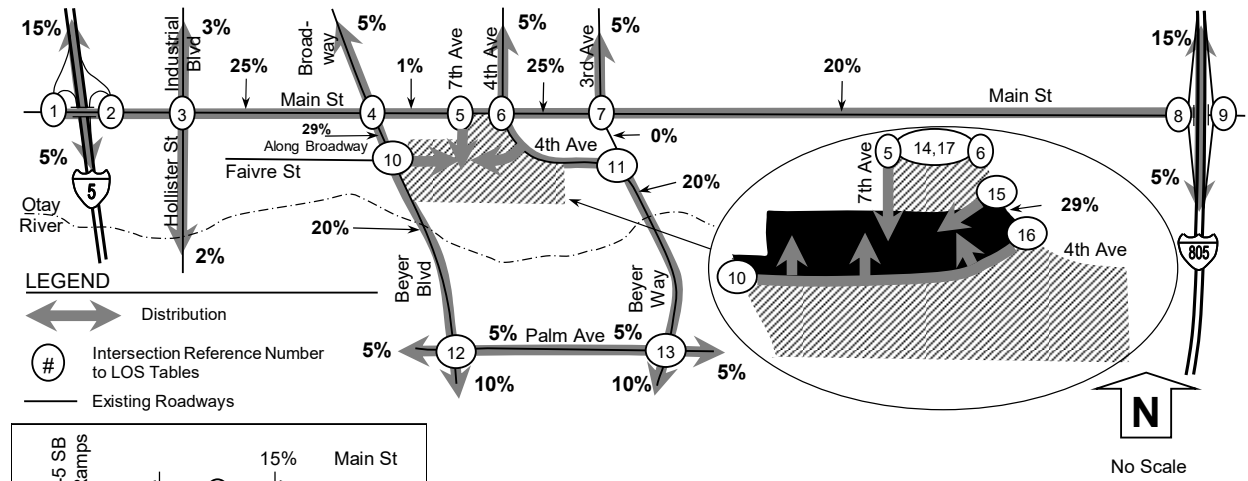
<p>I-5 SB Ramps</p> <p>3% Main St</p> <p>2%</p> <p>①</p>	<p>Industrial Blvd</p> <p>5% Main St</p> <p>5%</p> <p>③</p>	<p>Broadway</p> <p>20% Main St</p> <p>20%</p> <p>15%</p> <p>④</p>
<p>I-5 NB Ramps</p> <p>2% Main St</p> <p>3%</p> <p>②</p>	<p>Hollister St</p> <p>5%</p> <p>5%</p> <p>5%</p> <p>⑥</p>	<p>3rd Ave</p> <p>5% Main St</p> <p>5%</p> <p>15%</p> <p>⑦</p>
<p>7th Ave</p> <p>20% Main St</p> <p>15%</p> <p>15%</p> <p>⑤</p>	<p>4th Ave</p> <p>10% Main St</p> <p>10%</p> <p>10%</p> <p>10%</p> <p>⑧</p>	<p>I-805 SB Ramps</p> <p>1% Main St</p> <p>2%</p> <p>1%</p> <p>⑨</p>
<p>I-805 NB Ramps</p> <p>1% Main St</p> <p>1%</p> <p>1%</p> <p>⑧</p>	<p>Beyer Blvd</p> <p>5% Palm Ave</p> <p>5%</p> <p>5%</p> <p>5%</p> <p>⑫</p>	<p>Broadway</p> <p>5% Street A</p> <p>1%</p> <p>10%</p> <p>10%</p> <p>⑩</p>
<p>Beyer Way</p> <p>1%</p> <p>1%</p> <p>15%</p> <p>⑪</p>	<p>Beyer Way</p> <p>5% Palm Ave</p> <p>5%</p> <p>5%</p> <p>5%</p> <p>⑬</p>	<p>Faivre St</p> <p>5%</p> <p>10%</p> <p>⑪</p>
<p>4th Ave</p> <p>15%</p> <p>Beyer Way</p> <p>⑪</p>	<p>Project Dwy</p> <p>20%</p> <p>15%</p> <p>10%</p> <p>⑮</p>	<p>Street A</p> <p>15%</p> <p>20%</p> <p>15%</p> <p>⑯</p>
<p>Main St</p> <p>10%</p> <p>10%</p> <p>20%</p> <p>10%</p> <p>⑭</p>	<p>4th Ave</p> <p>10%</p> <p>⑮</p>	<p>Main St</p> <p>10%</p> <p>10%</p> <p>20%</p> <p>⑰</p>

Figure 6: Project Assignment – Shopping Center



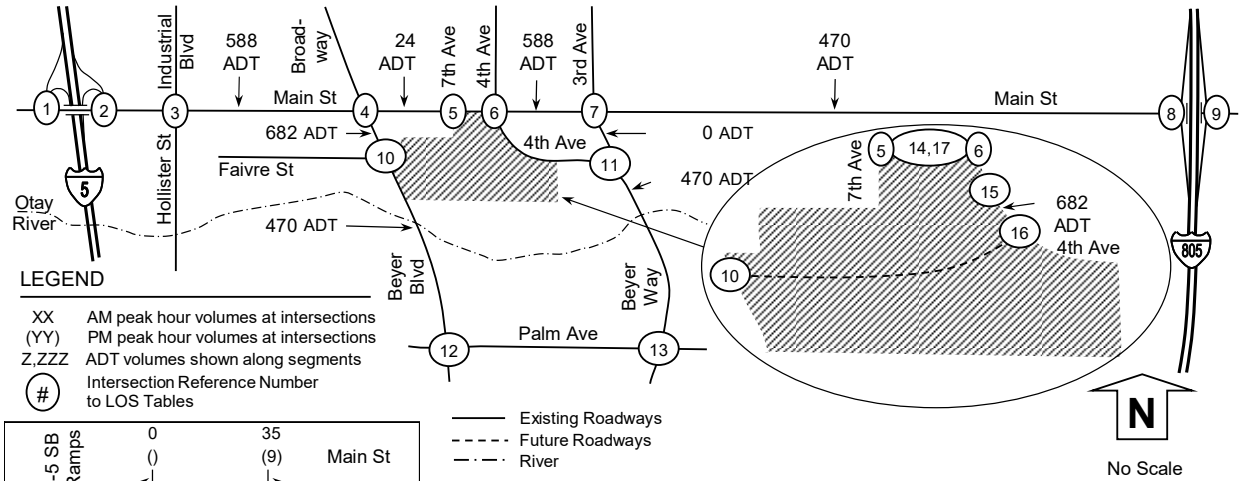
<p>I-5 SB Ramps</p> <p>0 (0) → (1)</p> <p>0 (0) → (2)</p>	<p>Main St</p> <p>2 (3) → (2)</p> <p>1 (2) → (0)</p>	<p>Industrial Blvd</p> <p>0 (0) → (3)</p> <p>0 (0) → (5)</p>	<p>Main St</p> <p>0 (0) → (2)</p> <p>0 (0) → (5)</p>	<p>Broadway</p> <p>0 (0) → (10)</p> <p>0 (0) → (22)</p>	<p>Main St</p> <p>0 (0) → (7)</p> <p>0 (0) → (15)</p>
<p>I-5 NB Ramps</p> <p>0 (0) → (2)</p> <p>2 (3) → (3)</p>	<p>Main St</p> <p>1 (2) → (1)</p> <p>1 (2) → (3)</p>	<p>Hollister St</p> <p>0 (0) → (3)</p> <p>0 (0) → (5)</p>	<p>Main St</p> <p>0 (0) → (2)</p> <p>0 (0) → (5)</p>	<p>3rd Ave</p> <p>0 (0) → (5)</p> <p>0 (0) → (0)</p>	<p>Main St</p> <p>0 (0) → (3)</p> <p>0 (0) → (5)</p>
<p>7th Ave</p> <p>17 (36) → (27)</p> <p>13 (27) → (27)</p>	<p>Main St</p> <p>12 (36) → (0)</p> <p>0 (0) → (0)</p>	<p>4th Ave</p> <p>6 (18) → (18)</p> <p>6 (18) → (18)</p>	<p>Main St</p> <p>0 (0) → (9)</p> <p>9 (18) → (18)</p>	<p>3rd Ave</p> <p>2 (5) → (5)</p> <p>0 (0) → (0)</p>	<p>Main St</p> <p>0 (0) → (8)</p> <p>0 (0) → (16)</p>
<p>I-805 SB Ramps</p> <p>1 (2) → (1)</p> <p>0 (1) → (0)</p>	<p>Main St</p> <p>0 (0) → (2)</p> <p>0 (0) → (0)</p>	<p>I-805 NB Ramps</p> <p>1 (1) → (1)</p> <p>0 (1) → (0)</p>	<p>Main St</p> <p>0 (0) → (1)</p> <p>1 (1) → (0)</p>	<p>Broadway</p> <p>0 (0) → (5)</p> <p>0 (0) → (0)</p>	<p>Project Street A</p> <p>0 (0) → (1)</p> <p>1 (2) → (18)</p>
<p>Beyer Way</p> <p>0 (1) → (1)</p> <p>5 (16) → (11)</p>	<p>Main St</p> <p>0 (0) → (8)</p> <p>0 (0) → (16)</p>	<p>Beyer Blvd</p> <p>3 (5) → (5)</p> <p>0 (0) → (5)</p>	<p>Palm Ave</p> <p>3 (5) → (3)</p> <p>0 (0) → (0)</p>	<p>Beyer Way</p> <p>3 (5) → (5)</p> <p>0 (0) → (5)</p>	<p>Palm Ave</p> <p>3 (5) → (3)</p> <p>0 (0) → (0)</p>
<p>Project Dwy</p> <p>8 (18) → (12)</p> <p>9 (18) → (6)</p>	<p>Main St</p> <p>0 (0) → (17)</p> <p>0 (0) → (36)</p>	<p>Project Dwy</p> <p>17 (36) → (27)</p> <p>0 (0) → (6)</p>	<p>Project Street A</p> <p>0 (0) → (12)</p> <p>0 (0) → (13)</p>	<p>Commercial Driveway</p> <p>0 (0) → (0)</p> <p>0 (0) → (0)</p>	<p>Main St</p> <p>6 (18) → (17)</p> <p>8 (18) → (6)</p>

Figure 7: Project Distribution – Industrial/Business Park



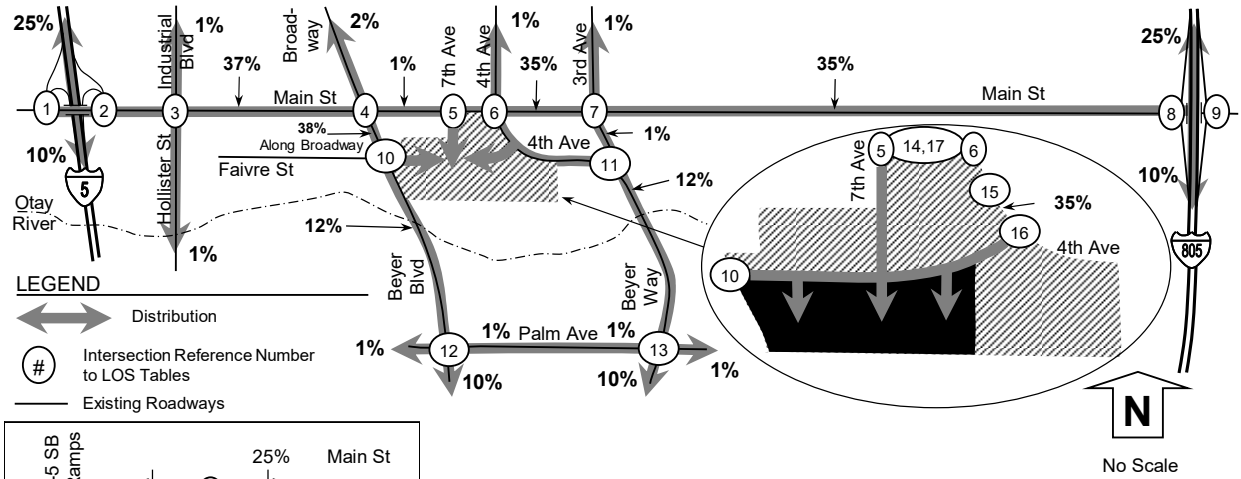
<p>I-5 SB Ramps</p> <p>15% →</p> <p>↙ ↘</p> <p>↖ ↗</p> <p>↔ (1) ↔</p> <p>↖ ↗</p> <p>↙ ↘</p> <p>5% ←</p> <p>Main St</p>	<p>Industrial Blvd</p> <p>3% ↓</p> <p>↙ ↘</p> <p>↖ ↗</p> <p>↔ (3) ↔</p> <p>↖ ↗</p> <p>↙ ↘</p> <p>20% →</p> <p>Hollister St</p>	<p>Broadway</p> <p>5% ↓</p> <p>↙ ↘</p> <p>↖ ↗</p> <p>↔ (4) ↔</p> <p>↖ ↗</p> <p>↙ ↘</p> <p>2% →</p> <p>23% ↓</p> <p>25% ←</p> <p>5% ↑</p> <p>Main St</p>
<p>I-5 NB Ramps</p> <p>5% →</p> <p>↙ ↘</p> <p>↖ ↗</p> <p>↔ (2) ↔</p> <p>↖ ↗</p> <p>↙ ↘</p> <p>15% ←</p> <p>5% ↓</p> <p>Main St</p>	<p>4th Ave</p> <p>5% ↓</p> <p>↙ ↘</p> <p>↖ ↗</p> <p>↔ (6) ↔</p> <p>↖ ↗</p> <p>↙ ↘</p> <p>2% →</p> <p>5% ↓</p> <p>23% ↑</p> <p>Main St</p>	<p>3rd Ave</p> <p>5% ↓</p> <p>↙ ↘</p> <p>↖ ↗</p> <p>↔ (7) ↔</p> <p>↖ ↗</p> <p>↙ ↘</p> <p>5% →</p> <p>20% ↓</p> <p>20% ↑</p> <p>Main St</p>
<p>7th Ave</p> <p>2% →</p> <p>↙ ↘</p> <p>↖ ↗</p> <p>↔ (5) ↔</p> <p>↖ ↗</p> <p>↙ ↘</p> <p>2% ←</p> <p>2% ↓</p> <p>Main St</p> <p><small>*Outbound 2% routed through Int #10 to #4</small></p>	<p>I-805 NB Ramps</p> <p>15% →</p> <p>↙ ↘</p> <p>↖ ↗</p> <p>↔ (9) ↔</p> <p>↖ ↗</p> <p>↙ ↘</p> <p>5% ↓</p> <p>Main St</p>	<p>Broadway</p> <p>28% ↓</p> <p>↙ ↘</p> <p>↖ ↗</p> <p>↔ (10) ↔</p> <p>↖ ↗</p> <p>↙ ↘</p> <p>20% →</p> <p>20% ↓</p> <p>20% ↑</p> <p>Street A</p> <p>Beyer Blvd</p>
<p>I-805 SB Ramps</p> <p>15% →</p> <p>↙ ↘</p> <p>↖ ↗</p> <p>↔ (8) ↔</p> <p>↖ ↗</p> <p>↙ ↘</p> <p>5% ↓</p> <p>5% ↑</p> <p>Main St</p>	<p>Beyer Blvd</p> <p>5% ↓</p> <p>↙ ↘</p> <p>↖ ↗</p> <p>↔ (12) ↔</p> <p>↖ ↗</p> <p>↙ ↘</p> <p>5% →</p> <p>10% ↓</p> <p>5% ↑</p> <p>Palm Ave</p>	<p>Beyer Way</p> <p>5% ↓</p> <p>↙ ↘</p> <p>↖ ↗</p> <p>↔ (13) ↔</p> <p>↖ ↗</p> <p>↙ ↘</p> <p>5% →</p> <p>10% ↓</p> <p>5% ↑</p> <p>Palm Ave</p>
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<p>Project Dwy</p> <p>2% →</p> <p>↙ ↘</p> <p>↖ ↗</p> <p>↔ (14) ↔</p> <p>↖ ↗</p> <p>↙ ↘</p> <p>2% ←</p> <p>Main St</p>	<p>Project Dwy</p> <p>2% →</p> <p>↙ ↘</p> <p>↖ ↗</p> <p>↔ (17) ↔</p> <p>↖ ↗</p> <p>↙ ↘</p> <p>2% ←</p> <p>Main St</p>	

Figure 8: Project Assignment – Industrial/Business Park



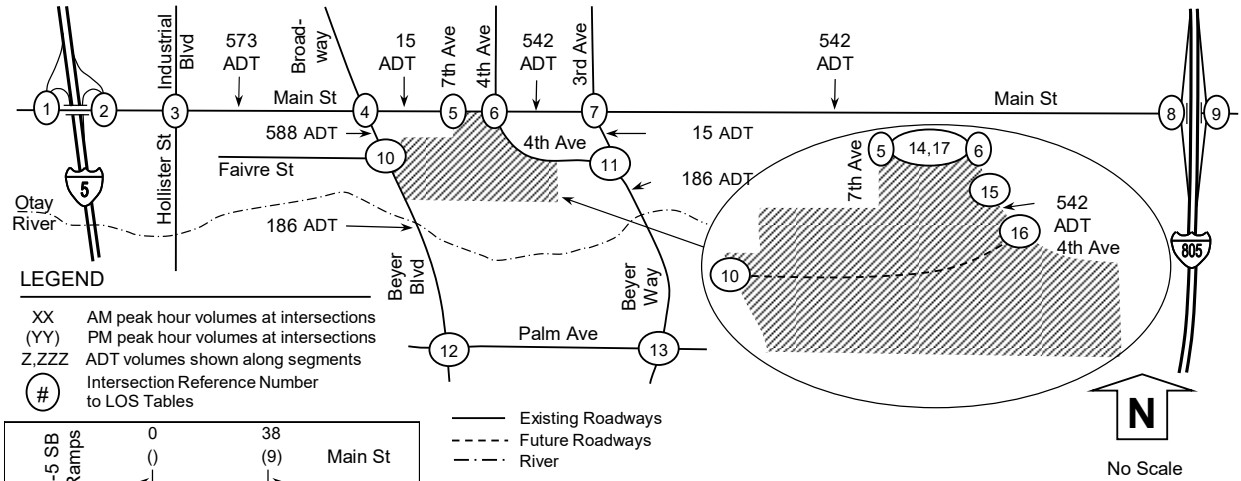
Legend		Existing Roadways		Future Roadways		River																																																																																									
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<table border="1"> <tr> <td>I-5 SB Ramps</td> <td>0</td> <td>35</td> <td>Main St</td> </tr> <tr> <td></td> <td>(9)</td> <td></td> <td></td> </tr> <tr> <td></td> <td>1</td> <td>3</td> <td>(12)</td> </tr> <tr> <td></td> <td></td> <td>0</td> <td>(0)</td> </tr> </table>		I-5 SB Ramps	0	35	Main St		(9)				1	3	(12)			0	(0)	<table border="1"> <tr> <td>Industrial Blvd</td> <td>0</td> <td>0</td> <td>7</td> <td>Main St</td> </tr> <tr> <td></td> <td>(0)</td> <td>(0)</td> <td>(1)</td> <td></td> </tr> <tr> <td></td> <td>3</td> <td>1</td> <td>(7)</td> <td></td> </tr> <tr> <td></td> <td></td> <td>12</td> <td>(46)</td> <td></td> </tr> <tr> <td></td> <td></td> <td>1</td> <td>(5)</td> <td></td> </tr> </table>		Industrial Blvd	0	0	7	Main St		(0)	(0)	(1)			3	1	(7)				12	(46)				1	(5)		<table border="1"> <tr> <td>Broadway</td> <td>0</td> <td>12</td> <td>0</td> <td>Main St</td> </tr> <tr> <td></td> <td>(0)</td> <td>(3)</td> <td>(0)</td> <td></td> </tr> <tr> <td></td> <td>0</td> <td></td> <td>0</td> <td></td> </tr> <tr> <td></td> <td>5</td> <td>3</td> <td>0</td> <td>(0)</td> </tr> <tr> <td></td> <td></td> <td>14</td> <td>0</td> <td>(0)</td> </tr> <tr> <td></td> <td></td> <td>(58)</td> <td>(11)</td> <td>(0)</td> </tr> </table>		Broadway	0	12	0	Main St		(0)	(3)	(0)			0		0			5	3	0	(0)			14	0	(0)			(58)	(11)	(0)																			
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Figure 9: Project Distribution – Industrial Park



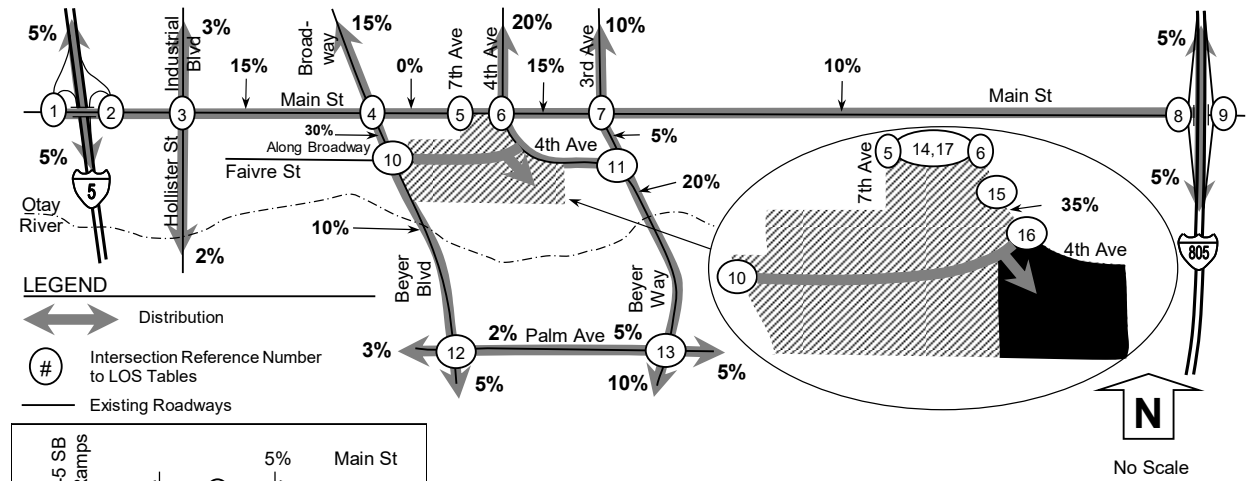
<p>I-5 SB Ramps</p> <p>25% Main St</p> <p>10%</p> <p>1</p>	<p>Industrial Blvd</p> <p>1% Main St</p> <p>35% Hollister St</p> <p>1% Main St</p> <p>3</p>	<p>Broadway</p> <p>2% Main St</p> <p>2% Broadway</p> <p>35% Hollister St</p> <p>37% Broadway</p> <p>2% Main St</p> <p>4</p>
<p>I-5 NB Ramps</p> <p>10% Main St</p> <p>25%</p> <p>10%</p> <p>2</p>	<p>4th Ave</p> <p>1% Main St</p> <p>1% 4th Ave</p> <p>1% 34%</p> <p>6</p>	<p>3rd Ave</p> <p>1% Main St</p> <p>35%</p> <p>1%</p> <p>7</p>
<p>7th Ave</p> <p>2%</p> <p>1%</p> <p>1%</p> <p>5</p> <p>*Outbound 2% routed through Int #10 to #4</p>	<p>I-805 NB Ramps</p> <p>25% Main St</p> <p>10%</p> <p>9</p>	<p>Broadway</p> <p>37% Street A</p> <p>37%</p> <p>12%</p> <p>10%</p> <p>2%</p> <p>10%</p> <p>Beyer Blvd</p> <p>10</p>
<p>I-805 SB Ramps</p> <p>25%</p> <p>10%</p> <p>8</p>	<p>Beyer Blvd</p> <p>1% Palm Ave</p> <p>10% 1%</p> <p>1%</p> <p>12%</p> <p>1%</p> <p>10%</p> <p>12</p>	<p>Beyer Way</p> <p>1% Palm Ave</p> <p>10% 1%</p> <p>1%</p> <p>1%</p> <p>10%</p> <p>13</p>
<p>Beyer Way</p> <p>1%</p> <p>1%</p> <p>12%</p> <p>11</p> <p>4th Ave</p> <p>Beyer Way</p>	<p>Project Dwy</p> <p>35%</p> <p>35%</p> <p>4th Ave</p> <p>35%</p> <p>15</p>	<p>Street A</p> <p>35%</p> <p>35%</p> <p>13%</p> <p>13%</p> <p>16</p>
<p>Main St</p> <p>1%</p> <p>1%</p> <p>14</p>	<p>Main St</p> <p>1%</p> <p>1%</p> <p>17</p>	<p>Main St</p>

Figure 10: Project Assignment – Industrial Park



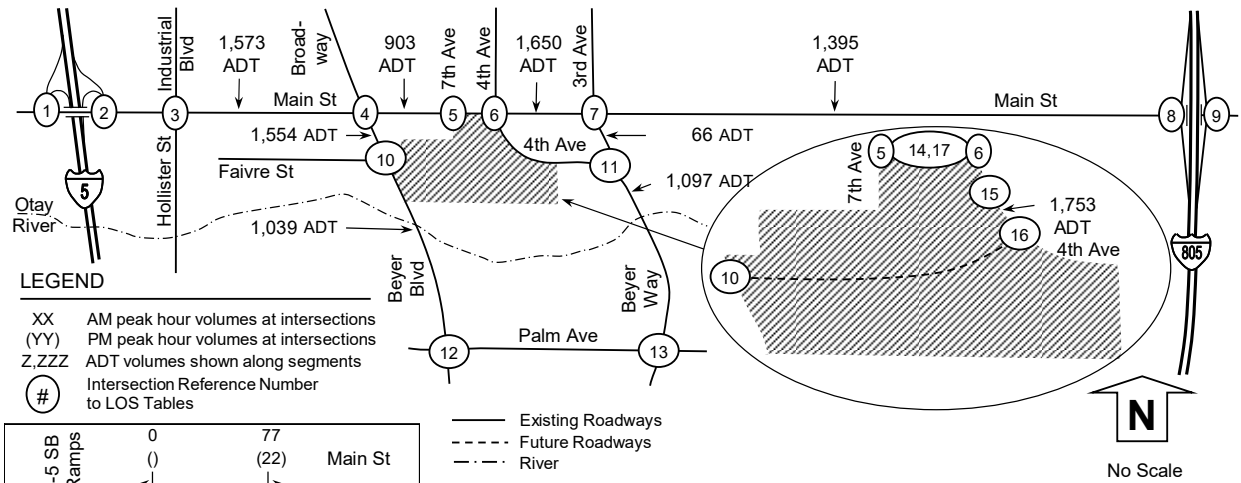
<p>I-5 SB Ramps</p> <p>0 (0) → (1) ← 0 (0)</p> <p>38 (9) Main St</p> <p>2 (16) (1)</p>	<p>Industrial Blvd</p> <p>0 (0) → (2) ← 0 (0)</p> <p>0 (1) (3)</p> <p>0 (1)</p>	<p>Broadway</p> <p>0 (0) → (3) ← 0 (0)</p> <p>0 (1) (1)</p> <p>0 (0)</p>	<p>Main St</p> <p>0 (0) → (0) ← 0 (0)</p> <p>0 (0)</p>
<p>I-5 NB Ramps</p> <p>0 (0) → (2) ← 0 (0)</p> <p>15 (4) Main St</p> <p>4 (37) (2)</p> <p>38 (9) (16)</p>	<p>Hollister St</p> <p>0 (0) → (2) ← 0 (0)</p> <p>0 (0)</p>	<p>4th Ave</p> <p>0 (0) → (1) ← 0 (0)</p> <p>0 (0)</p>	<p>3rd Ave</p> <p>0 (0) → (0) ← 0 (0)</p> <p>0 (0)</p>
<p>I-805 SB Ramps</p> <p>4 (37) → (8) ← 2 (15)</p> <p>38 (9) Main St</p> <p>15 (4) (4)</p> <p>0 (0)</p>	<p>I-805 NB Ramps</p> <p>4 (37) → (9) ← 0 (0)</p> <p>0 (0)</p>	<p>Beyer Blvd</p> <p>0 (0) → (1) ← 0 (0)</p> <p>0 (16) (1)</p> <p>0 (0)</p>	<p>Broadway</p> <p>0 (0) → (0) ← 0 (0)</p> <p>0 (0)</p>
<p>Beyer Way</p> <p>0 (1) → (11) ← 2 (19)</p> <p>0 (0) (5)</p> <p>4th Ave</p> <p>0 (0) → (11) ← 0 (0)</p>	<p>Beyer Blvd</p> <p>2 (0) → (12) ← 0 (0)</p> <p>0 (0)</p>	<p>Beyer Way</p> <p>2 (0) → (13) ← 0 (0)</p> <p>0 (0)</p>	<p>Palm Ave</p> <p>2 (0) → (13) ← 0 (0)</p> <p>0 (0)</p>
<p>Project Dwy</p> <p>0 (1) → (14) ← 0 (0)</p> <p>0 (0)</p>	<p>Project Dwy</p> <p>0 (0) → (15) ← 0 (0)</p> <p>0 (52)</p>	<p>Project Street A</p> <p>6 (52) → (16) ← 0 (0)</p> <p>2 (20) (5)</p>	<p>Commercial Driveway</p> <p>0 (0) → (17) ← 0 (0)</p> <p>0 (0)</p>

Figure 11: Project Distribution – City Park



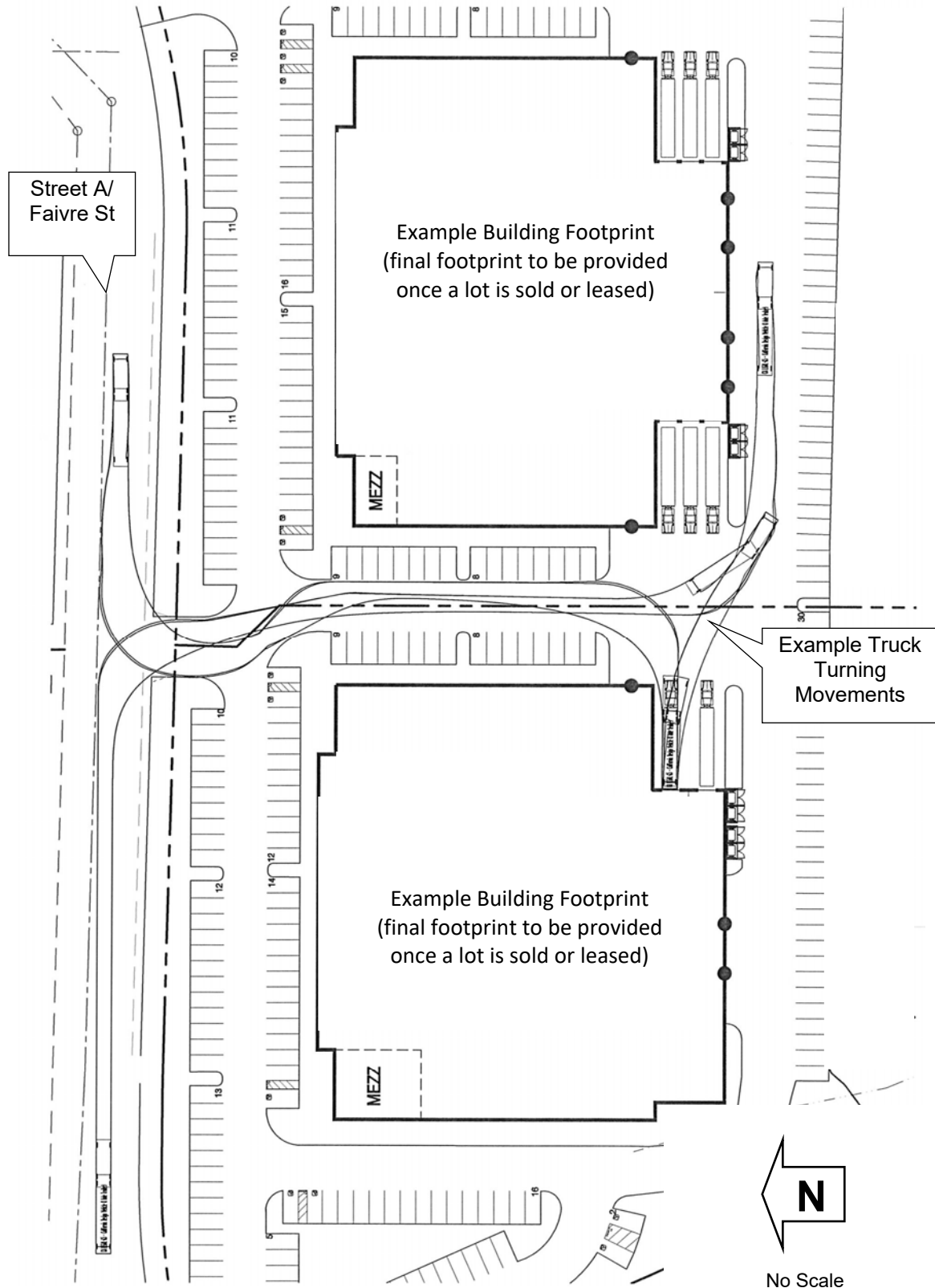
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<p>I-5 NB Ramps</p> <p>5%</p> <p>2</p> <p>5%</p> <p>Main St</p>	<p>Hollister St</p> <p>10%</p> <p>3</p> <p>2%</p> <p>Main St</p>	<p>Broadway</p> <p>15%</p> <p>4</p> <p>15%</p> <p>Main St</p>
<p>7th Ave</p> <p>5%</p> <p>5</p> <p>5%</p> <p>Main St</p>	<p>4th Ave</p> <p>20%</p> <p>6</p> <p>15%</p> <p>Main St</p>	<p>3rd Ave</p> <p>5%</p> <p>7</p> <p>10%</p> <p>Main St</p>
<p>I-805 SB Ramps</p> <p>5%</p> <p>8</p> <p>5%</p> <p>Main St</p>	<p>I-805 NB Ramps</p> <p>5%</p> <p>9</p> <p>5%</p> <p>Main St</p>	<p>Broadway</p> <p>30%</p> <p>10</p> <p>10%</p> <p>Street A</p> <p>Faivre St</p> <p>10%</p> <p>Beyer Blvd</p>
<p>Beyer Way</p> <p>5%</p> <p>11</p> <p>20%</p> <p>4th Ave</p> <p>Beyer Way</p>	<p>Beyer Blvd</p> <p>3%</p> <p>12</p> <p>2%</p> <p>Palm Ave</p> <p>2%</p> <p>5%</p>	<p>Beyer Way</p> <p>5%</p> <p>13</p> <p>5%</p> <p>Palm Ave</p> <p>5%</p> <p>10%</p>
<p>Project Dwy</p> <p>5%</p> <p>14</p> <p>Main St</p>	<p>Project Dwy</p> <p>35%</p> <p>15</p> <p>35%</p> <p>4th Ave</p>	<p>Street A</p> <p>35%</p> <p>16</p> <p>25%</p> <p>25%</p> <p>4th Ave</p> <p>Main St</p>

Figure 13: Total Project Assignment

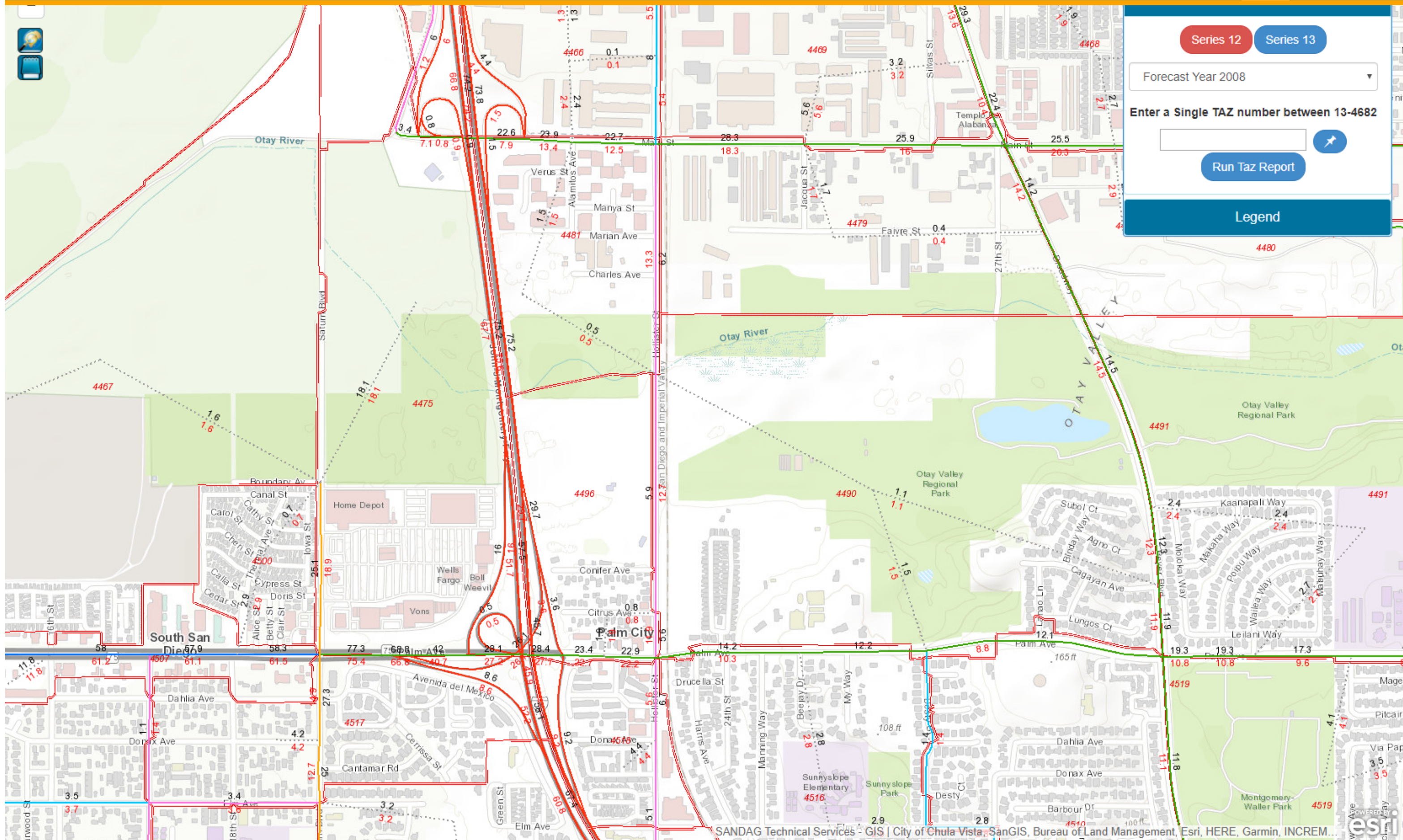


<table border="1"> <tr> <td>I-5 SB Ramps</td> <td>0</td> <td>77</td> <td>Main St</td> </tr> <tr> <td></td> <td>(0)</td> <td>(22)</td> <td></td> </tr> <tr> <td></td> <td>→</td> <td>↙</td> <td></td> </tr> <tr> <td></td> <td>(1)</td> <td>8</td> <td>(31)</td> </tr> <tr> <td></td> <td>←</td> <td>↘</td> <td></td> </tr> <tr> <td></td> <td>(0)</td> <td>0</td> <td>(0)</td> </tr> </table>	I-5 SB Ramps	0	77	Main St		(0)	(22)			→	↙			(1)	8	(31)		←	↘			(0)	0	(0)	<table border="1"> <tr> <td>I-5 NB Ramps</td> <td>0</td> <td>30</td> <td>Main St</td> </tr> <tr> <td></td> <td>(0)</td> <td>(10)</td> <td></td> </tr> <tr> <td></td> <td>→</td> <td>↙</td> <td></td> </tr> <tr> <td></td> <td>(2)</td> <td>16</td> <td>(75)</td> </tr> <tr> <td></td> <td>←</td> <td>↘</td> <td></td> </tr> <tr> <td></td> <td>(76)</td> <td>8</td> <td>(31)</td> </tr> </table>	I-5 NB Ramps	0	30	Main St		(0)	(10)			→	↙			(2)	16	(75)		←	↘			(76)	8	(31)	<table border="1"> <tr> <td>Industrial Blvd</td> <td>0</td> <td>0</td> <td>13</td> <td>Main St</td> </tr> <tr> <td></td> <td>(0)</td> <td>(0)</td> <td>(7)</td> <td></td> </tr> <tr> <td></td> <td>→</td> <td>↙</td> <td>↘</td> <td></td> </tr> <tr> <td></td> <td>(106)</td> <td>(32)</td> <td>4</td> <td>(13)</td> </tr> <tr> <td></td> <td>←</td> <td>↘</td> <td>↙</td> <td></td> </tr> <tr> <td></td> <td>(0)</td> <td>0</td> <td>24</td> <td>(108)</td> </tr> <tr> <td></td> <td></td> <td></td> <td>4</td> <td>(11)</td> </tr> </table>	Industrial Blvd	0	0	13	Main St		(0)	(0)	(7)			→	↙	↘			(106)	(32)	4	(13)		←	↘	↙			(0)	0	24	(108)				4	(11)	<table border="1"> <tr> <td>Broadway</td> <td>0</td> <td>20</td> <td>10</td> <td>Main St</td> </tr> <tr> <td></td> <td>(0)</td> <td>(7)</td> <td>(22)</td> <td></td> </tr> <tr> <td></td> <td>→</td> <td>↙</td> <td>↘</td> <td></td> </tr> <tr> <td></td> <td>(17)</td> <td>(17)</td> <td>7</td> <td>(22)</td> </tr> <tr> <td></td> <td>←</td> <td>↘</td> <td>↙</td> <td></td> </tr> <tr> <td></td> <td>(113)</td> <td>(29)</td> <td>6</td> <td>(15)</td> </tr> <tr> <td></td> <td></td> <td></td> <td>2</td> <td>(5)</td> </tr> </table>	Broadway	0	20	10	Main St		(0)	(7)	(22)			→	↙	↘			(17)	(17)	7	(22)		←	↘	↙			(113)	(29)	6	(15)				2	(5)																																																																																																																																																																		
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Figure 14: Example Truck Access, Loading, and Circulation



Source: Smith Consulting Architects



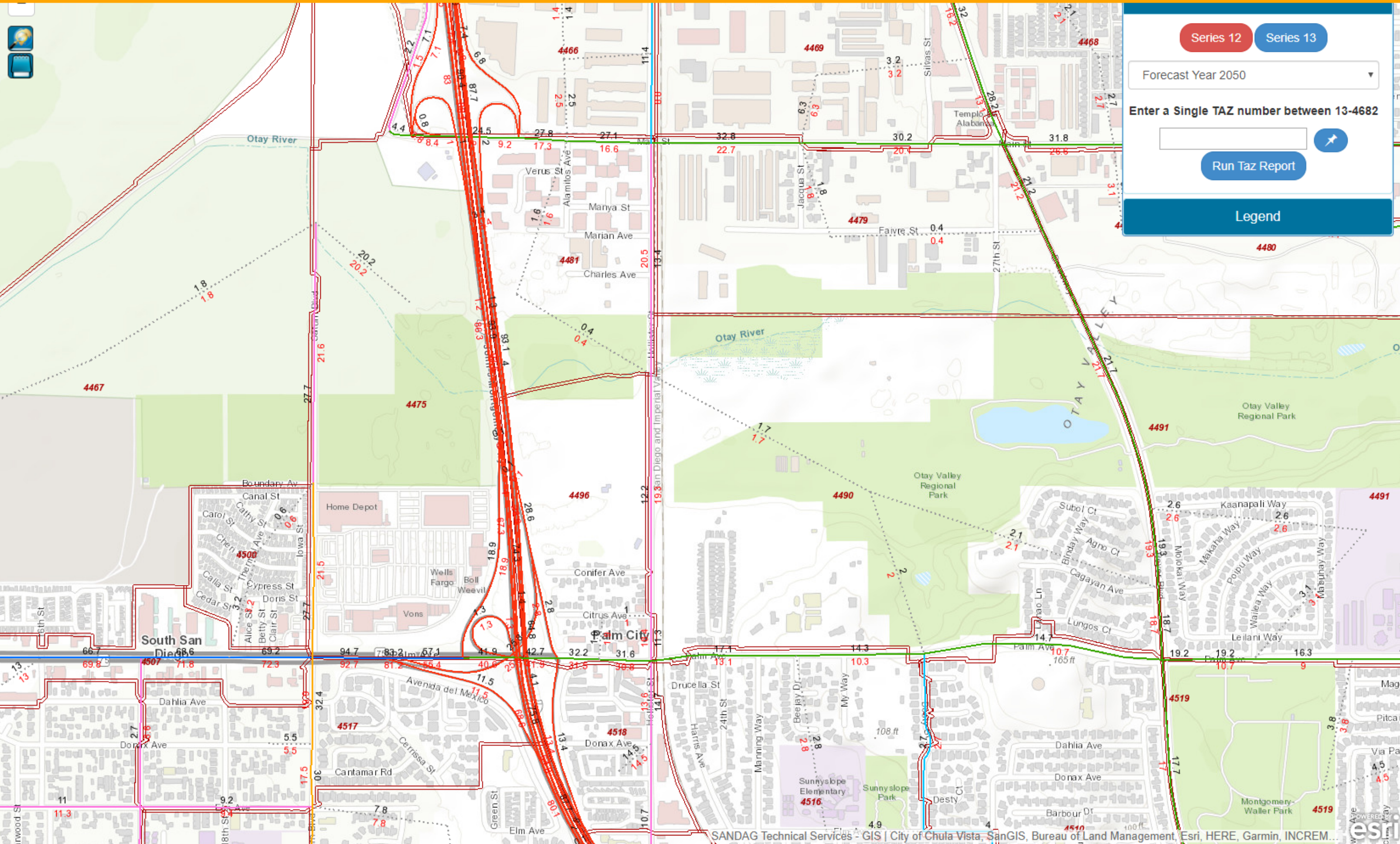
Series 12 Series 13

Forecast Year 2008

Enter a Single TAZ number between 13-4682

Run Taz Report

Legend



Series 12 Series 13

Forecast Year 2050

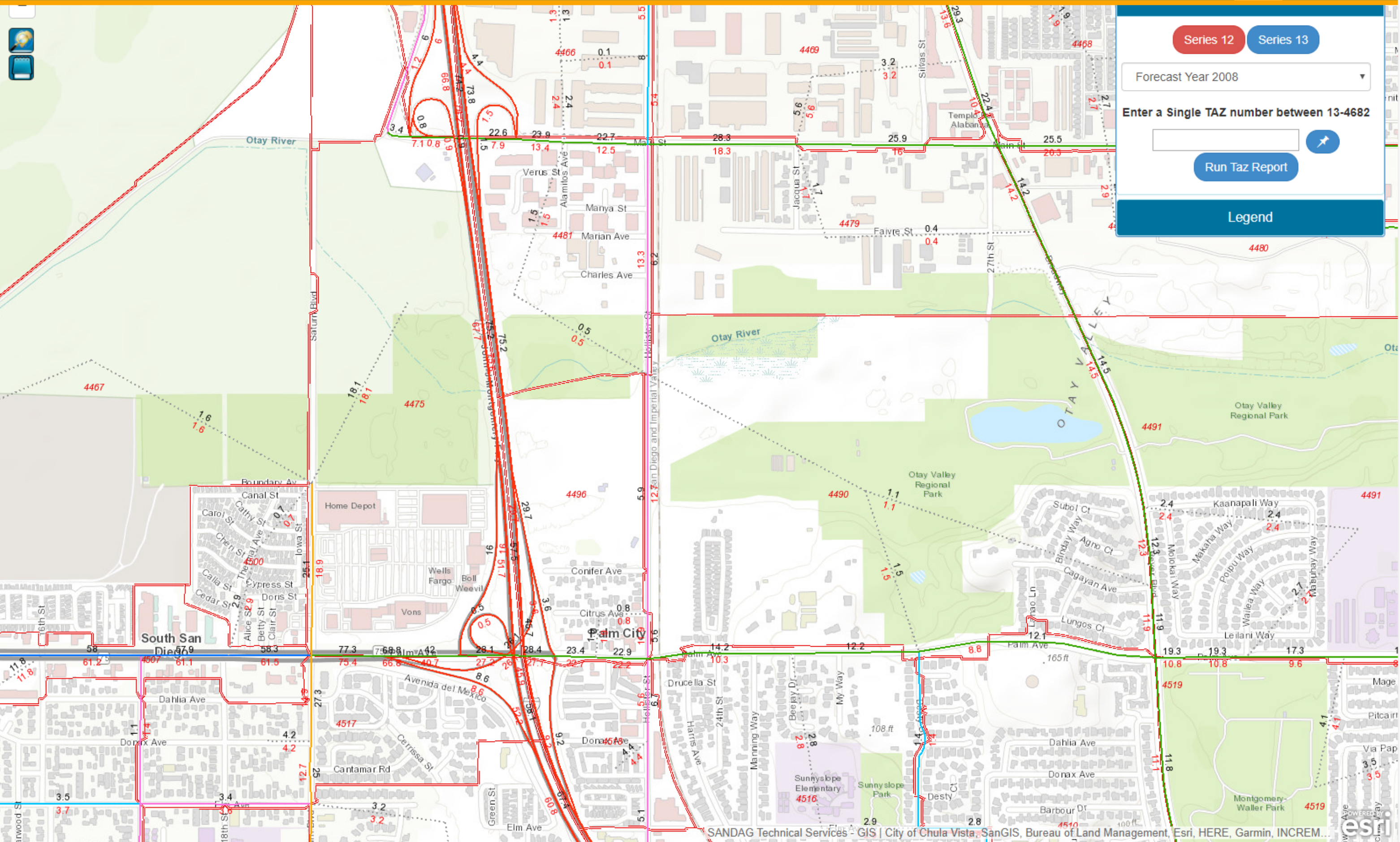
Enter a Single TAZ number between 13-4682

Run Taz Report

Legend

APPENDIX H

SANDAG TRAVEL FORECAST INFORMATION CENTER DATA



Series 12

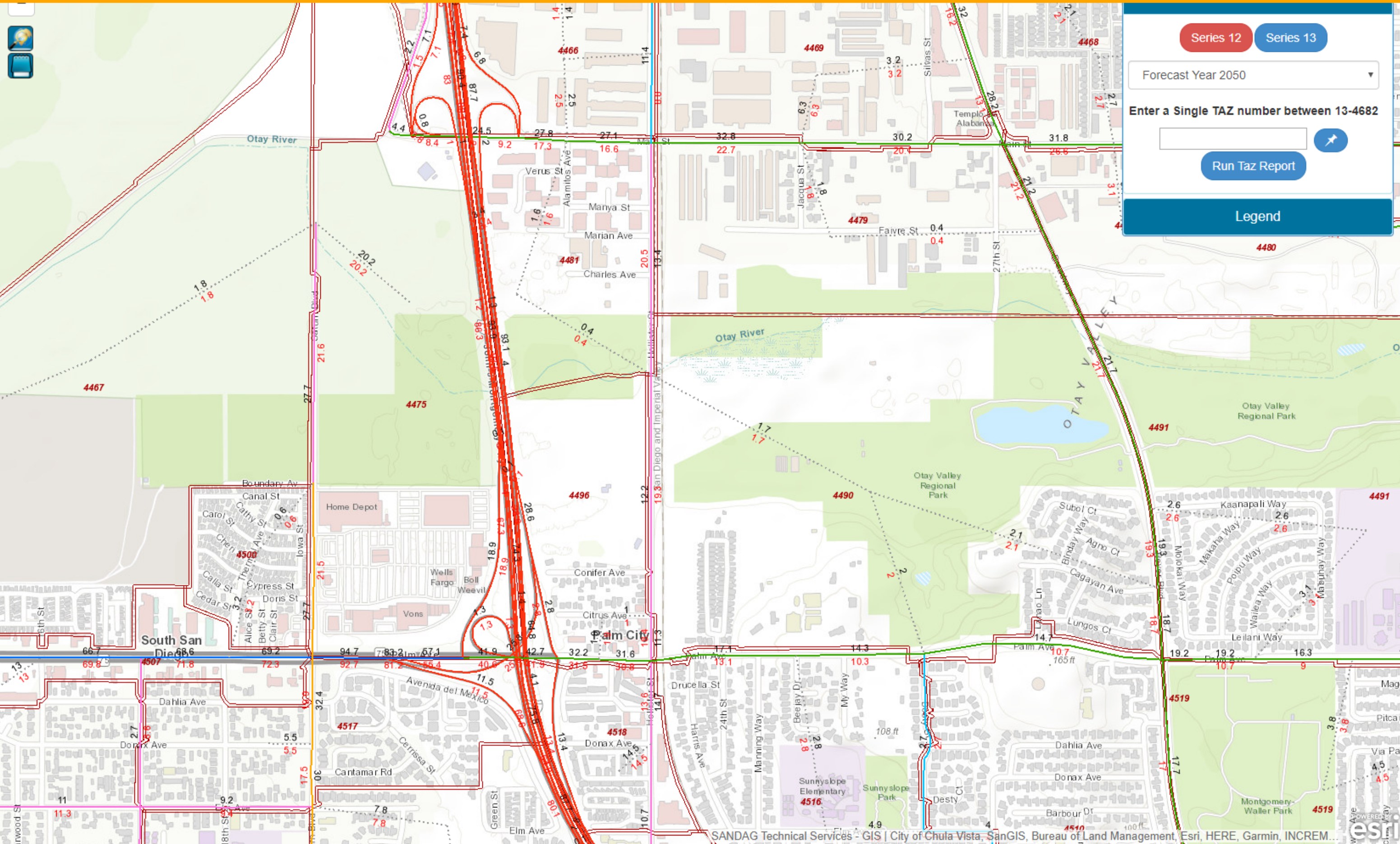
Series 13

Forecast Year 2008

Enter a Single TAZ number between 13-4682

Run Taz Report

Legend



Series 12 Series 13

Forecast Year 2050

Enter a Single TAZ number between 13-4682

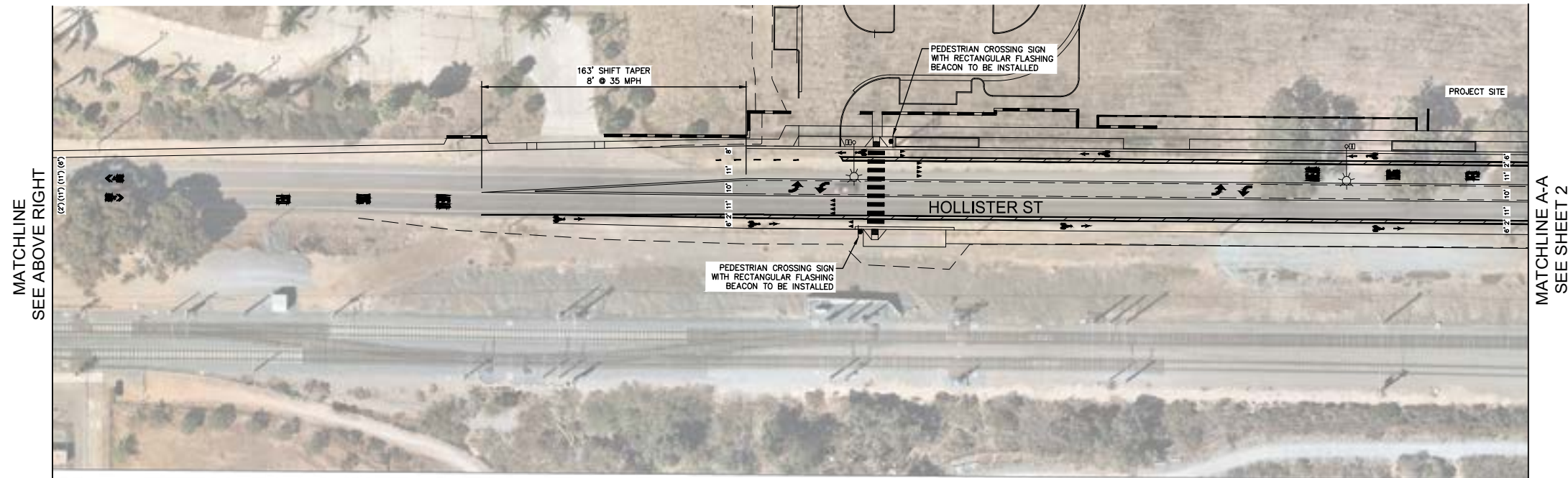
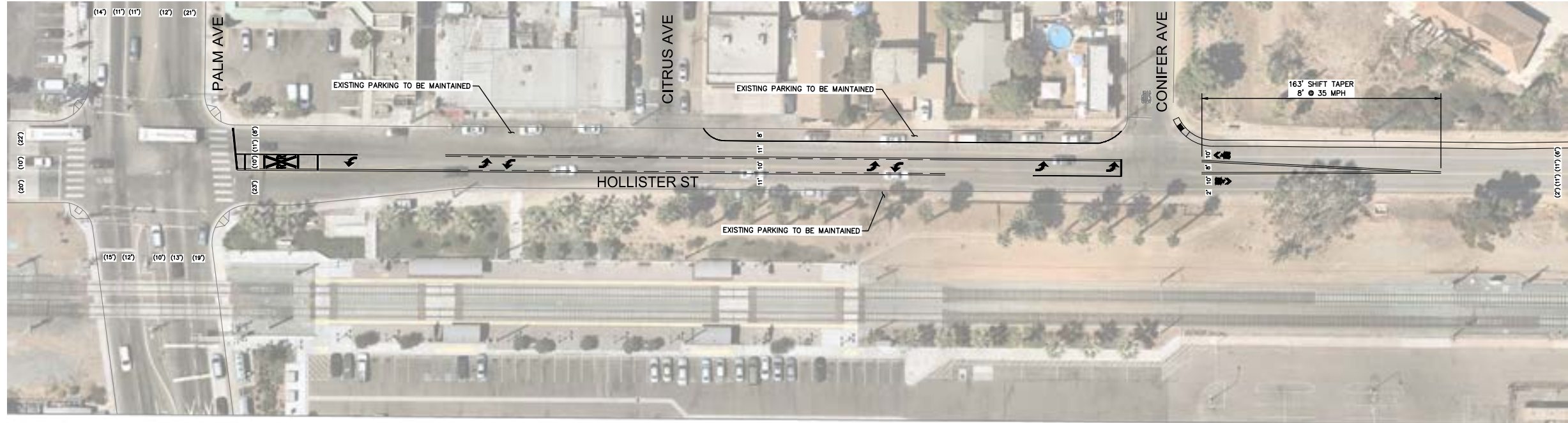
Run Taz Report

Legend

APPENDIX I

STRIPING CONCEPT FOR HOLLISTER STREET

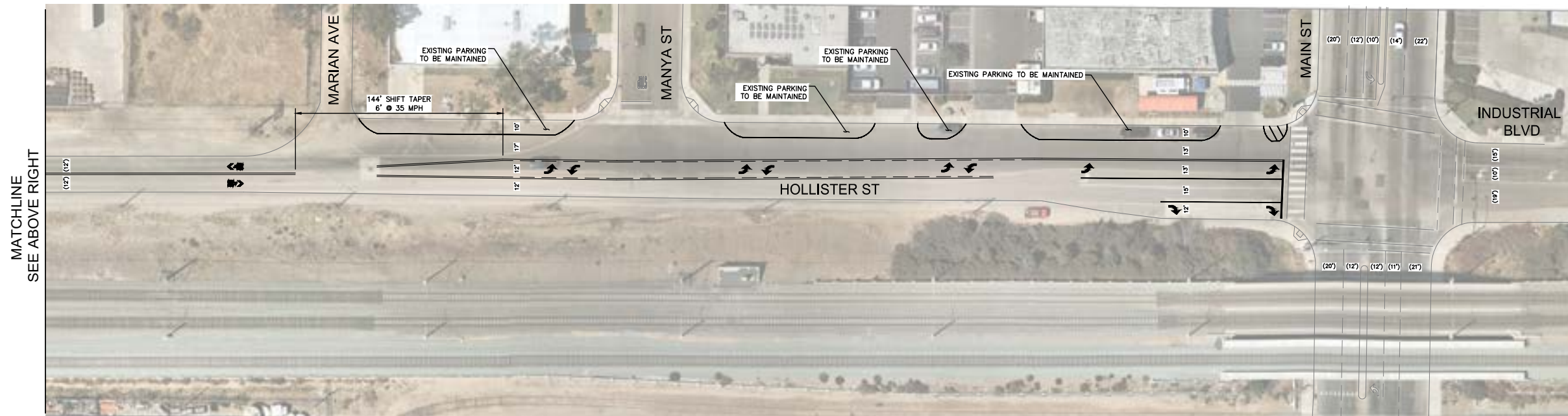
OFF-SITE IMPROVEMENT STRIPING PLAN (SHEET 1 OF 2)



LEGEND

- (xx') EXISTING LANE WIDTH
- xx' PROPOSED LANE WIDTH

OFF-SITE IMPROVEMENT STRIPING PLAN (SHEET 2 OF 2)



LEGEND

(xx')	EXISTING LANE WIDTH
xx'	PROPOSED LANE WIDTH

APPENDIX J

HORIZON YEAR (2050) INTERSECTION VOLUME INFORMATION

ROADWAY SEGMENT	2008 Model ADT	2050 Model ADT	Annual Growth Rate
Main Street			
I-5 NB Ramps to Hollister Street	22,700	27,100	0.423%
Hollister Street			
Main Street to Charles Avenue	6,200	13,400	1.852%
Charles Avenue to Conifer Street	5,900	12,200	1.745%
Conifer Street to Palm Avenue	5,600	11,300	1.686%
Palm Avenue			
I-5 NB Ramps to Hollister Street	22,900	31,600	0.770%

2,166

ROADWAY SEGMENT	DISTRIBUTION	PROJECT VOLUME
Main Street		
I-5 NB Ramps to Hollister Street	40%	866
Hollister Street		
Main Street to Charles Avenue	50%	1,083
Charles Avenue to Conifer Avenue	50%	1,083
Conifer Avenue to Palm Avenue	50%	1,083
Palm Avenue		
I-5 NB Ramps to Hollister Street	40%	866

Int 1 AM Peak Volumes

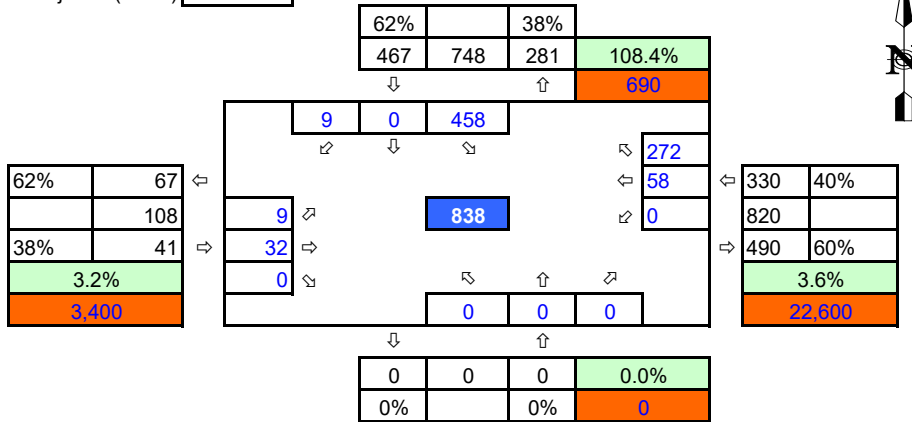
Scenario: **Existing Conditions**

N/S Street: **I-5 SB Ramps**

E/W Street: **Main Street**

Intersection #: **1**

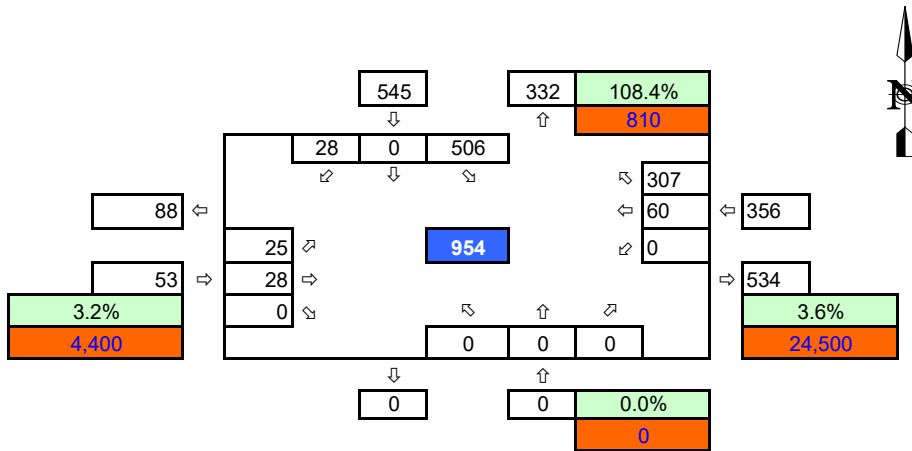
Project # (last 6):



Scenario: **Horizon Year Conditions**

N/S Street: **I-5 SB Ramps**

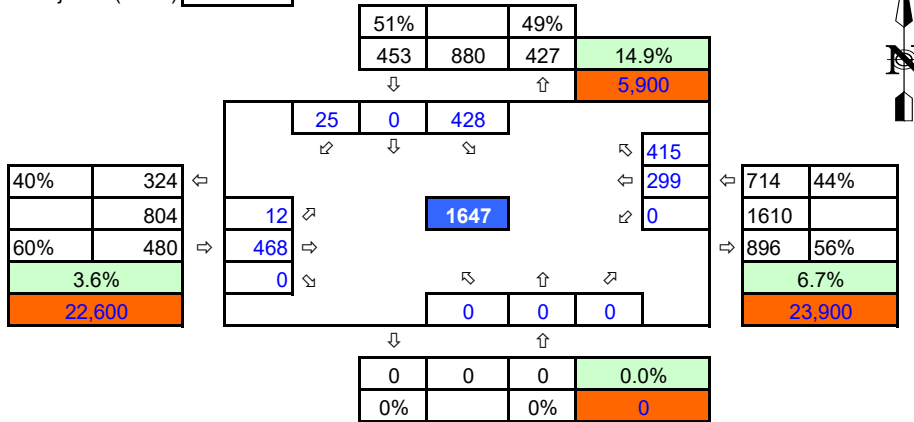
E/W Street: **Main Street**



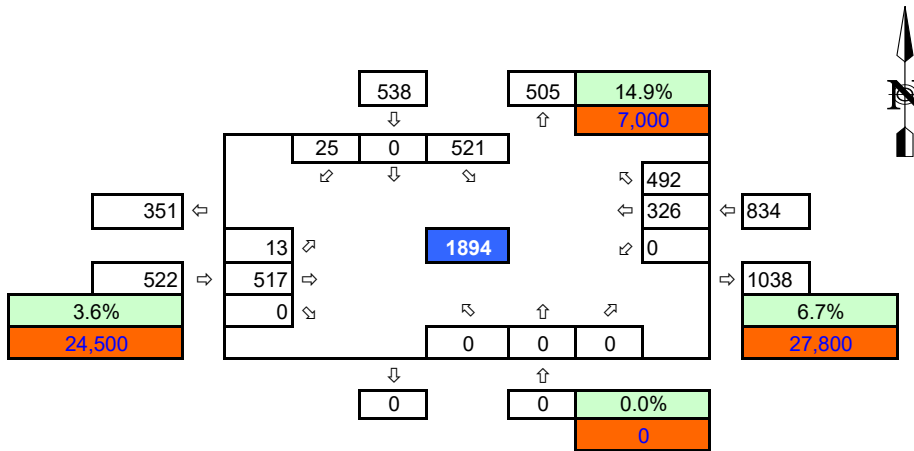
LEGEND	
Existing K-Factor	xx%
ADT Volume	xx

Int 2 AM Peak Volumes

Scenario:	Existing Conditions
N/S Street:	I-5 NB Ramps
E/W Street:	Main Street
Intersection #:	2
Project # (last 6)	0



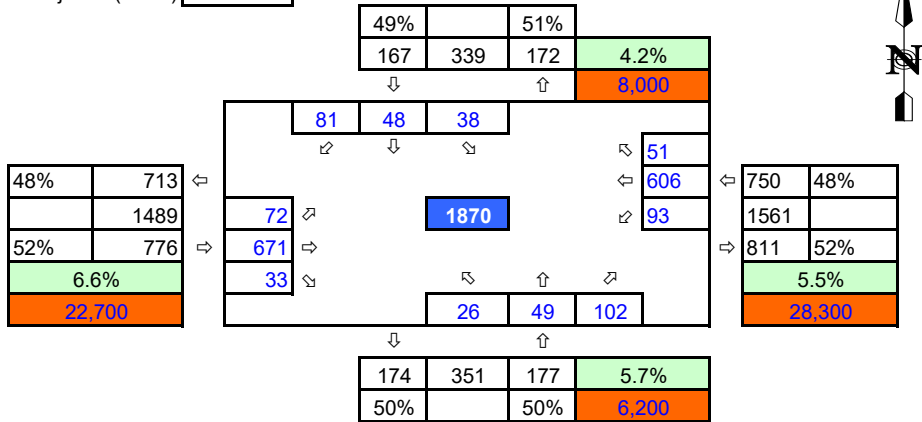
Scenario:	Horizon Year Conditions
N/S Street:	I-5 NB Ramps
E/W Street:	Main Street



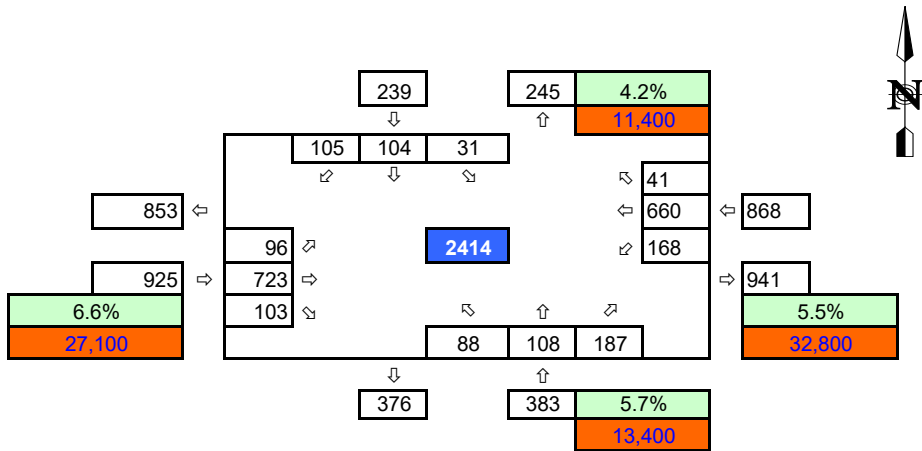
LEGEND	
Existing K-Factor	xx%
ADT Volume	xx

Int 3 AM Peak Volumes

Scenario:	Existing Conditions
N/S Street:	Hollister Street
E/W Street:	Main Street
Intersection #:	3
Project # (last 6)	0

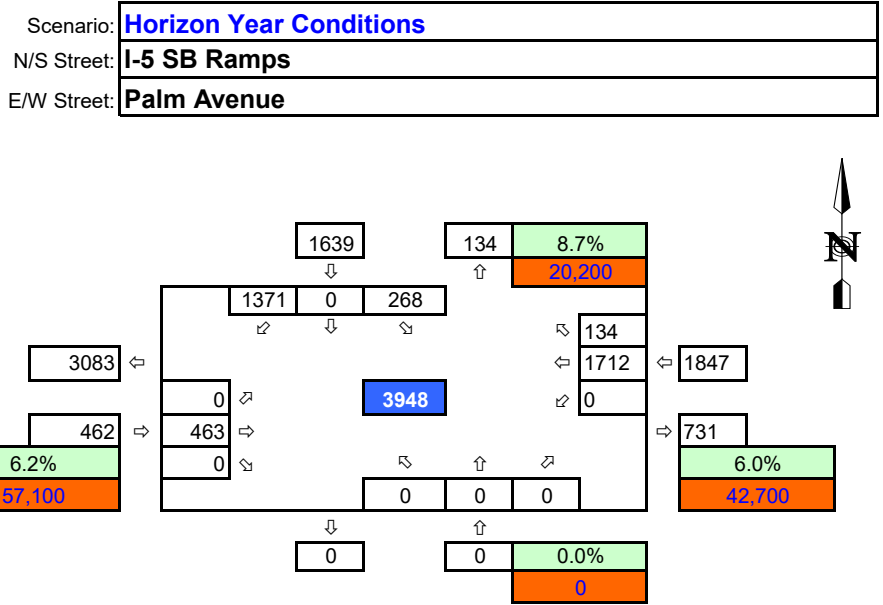
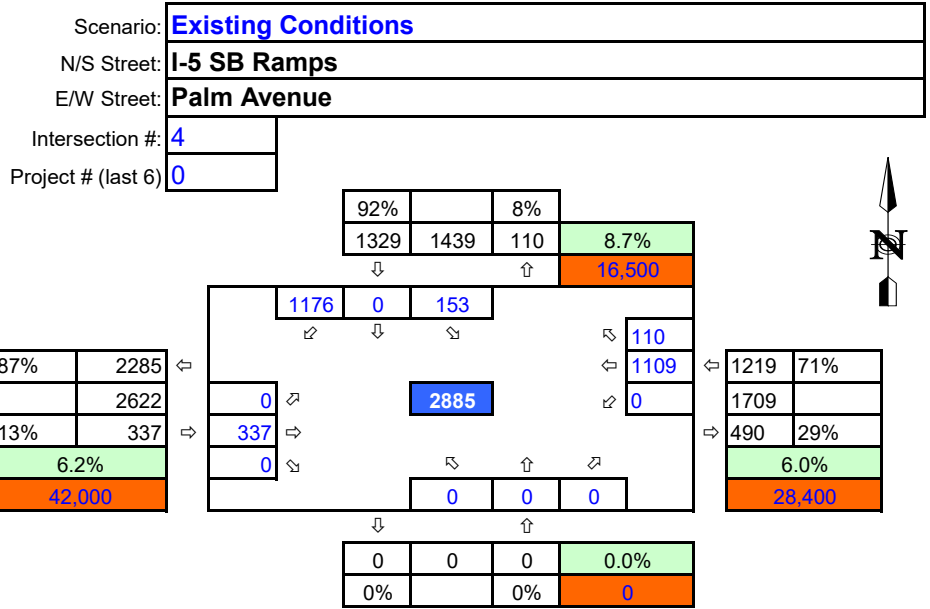


Scenario:	Horizon Year Conditions
N/S Street:	Hollister Street
E/W Street:	Main Street



LEGEND	
Existing K-Factor	xx%
ADT Volume	xx

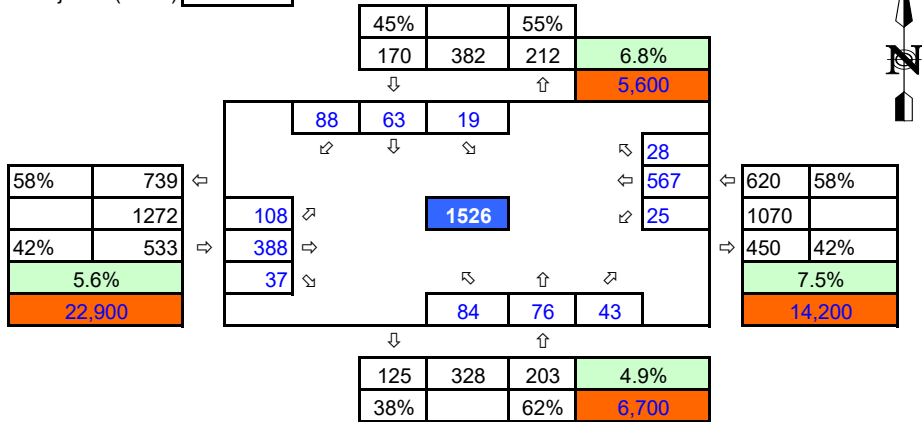
Int 4 AM Peak Volumes



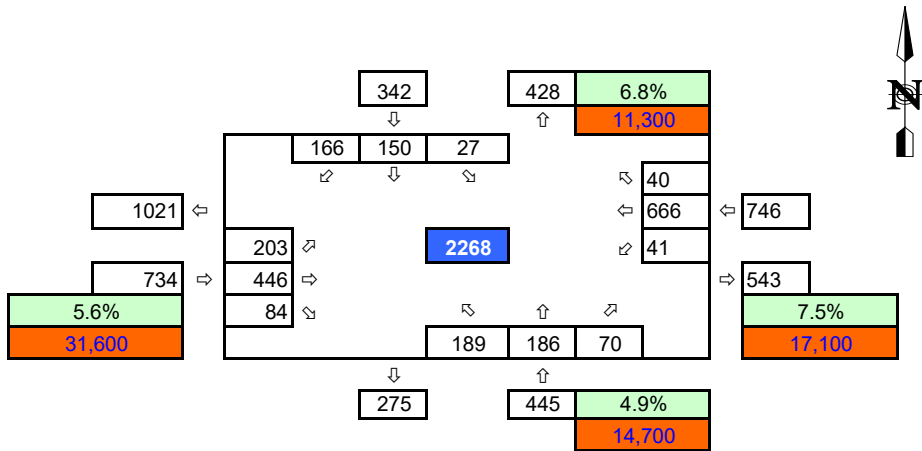
LEGEND	
Existing K-Factor	xx%
ADT Volume	xx

Int 6 AM Peak Volumes

Scenario:	Existing Conditions
N/S Street:	Hollister Street
E/W Street:	Palm Avenue
Intersection #:	6
Project # (last 6)	0



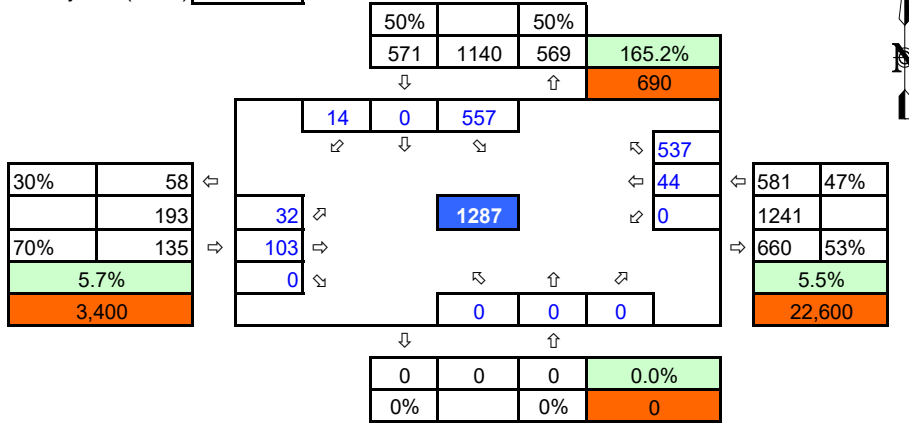
Scenario:	Horizon Year Conditions
N/S Street:	Hollister Street
E/W Street:	Palm Avenue



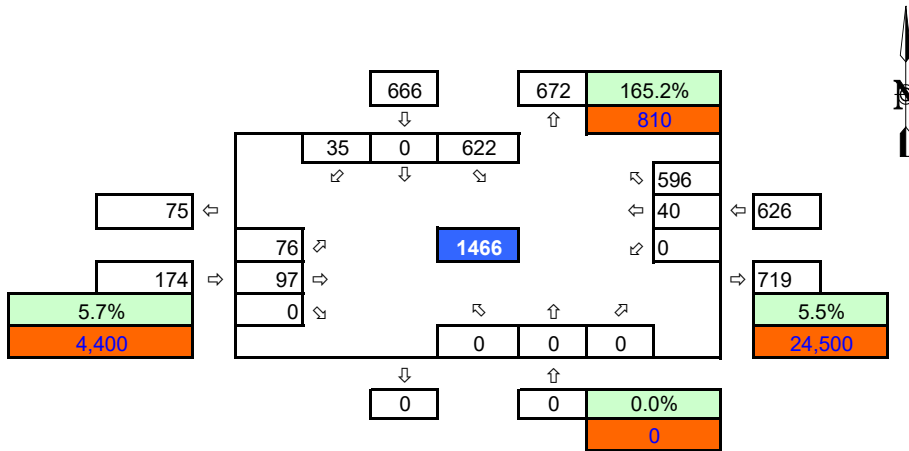
LEGEND	
Existing K-Factor	xx%
ADT Volume	xx

Int 1 PM Peak Volumes

Scenario:	Existing Conditions
N/S Street:	I-5 SB Ramps
E/W Street:	Main Street
Intersection #:	1
Project # (last 6):	0



Scenario:	Horizon Year Conditions
N/S Street:	I-5 SB Ramps
E/W Street:	Main Street



LEGEND	
Existing K-Factor	xx%
ADT Volume	xx

Int 2 PM Peak Volumes

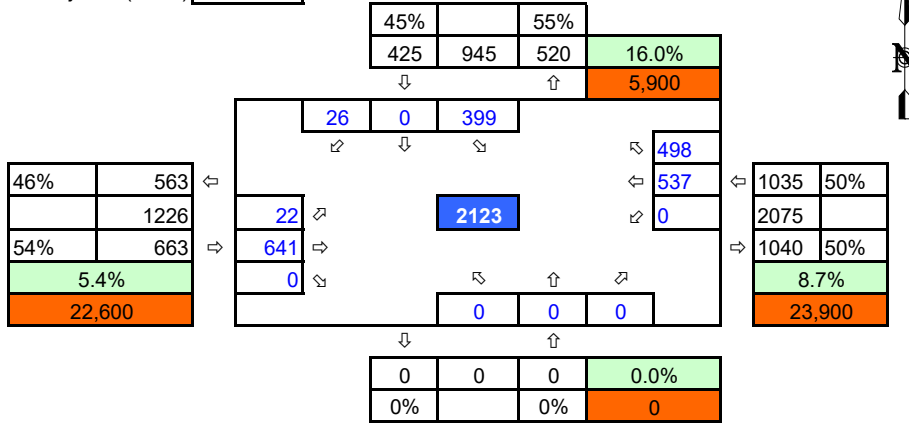
Scenario: **Existing Conditions**

N/S Street: **I-5 NB Ramps**

E/W Street: **Main Street**

Intersection #: **2**

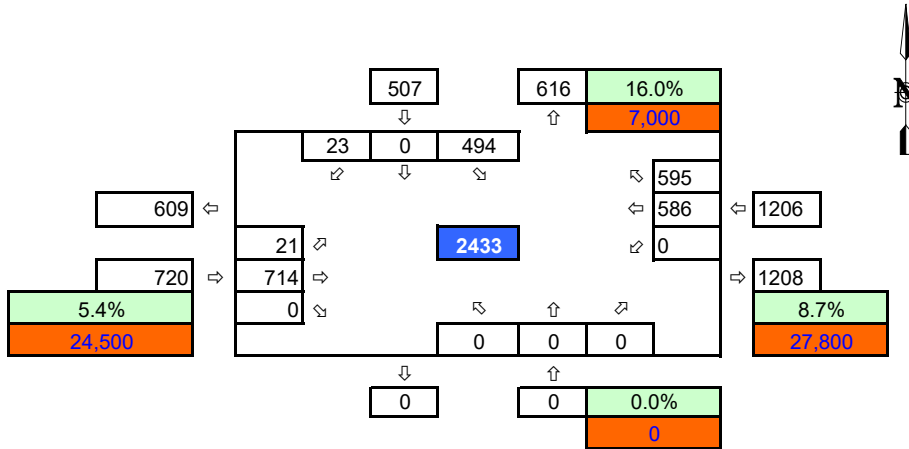
Project # (last 6): **0**



Scenario: **Horizon Year Conditions**

N/S Street: **I-5 NB Ramps**

E/W Street: **Main Street**



LEGEND	
Existing K-Factor	xx%
ADT Volume	xx

Int 3 PM Peak Volumes

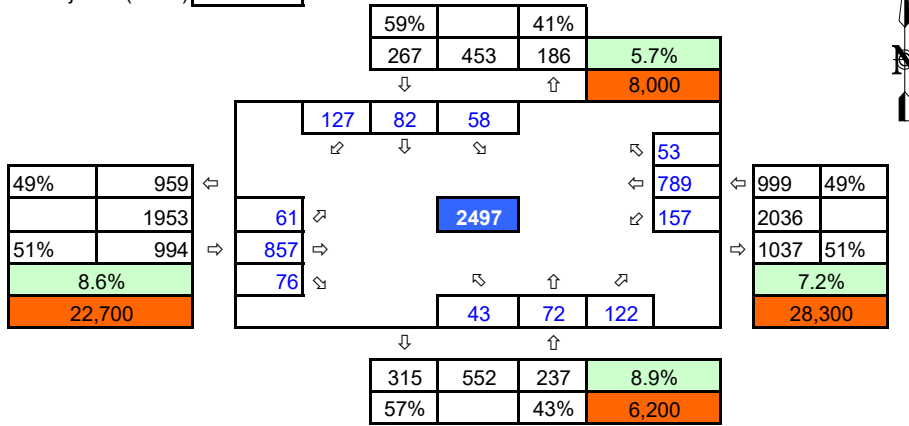
Scenario: **Existing Conditions**

N/S Street: **Hollister Street**

E/W Street: **Main Street**

Intersection #: **3**

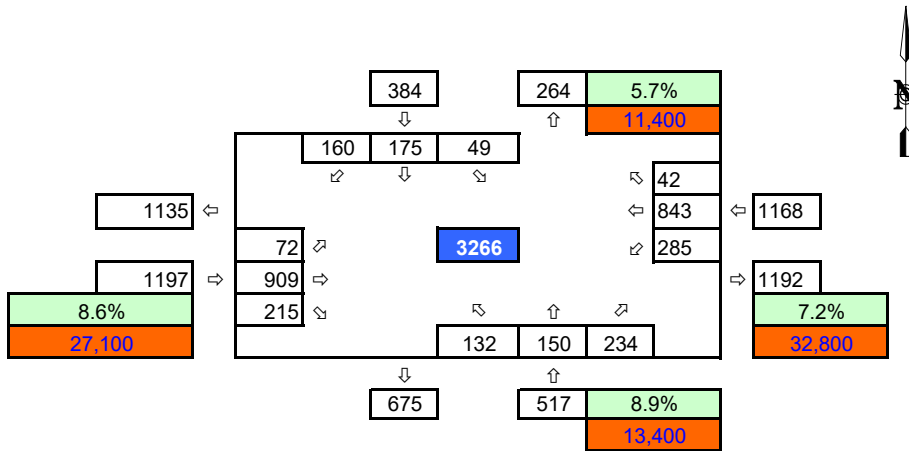
Project # (last 6): **0**



Scenario: **Horizon Year Conditions**

N/S Street: **Hollister Street**

E/W Street: **Main Street**



LEGEND	
Existing K-Factor	xx%
ADT Volume	xx

Int 4 PM Peak Volumes

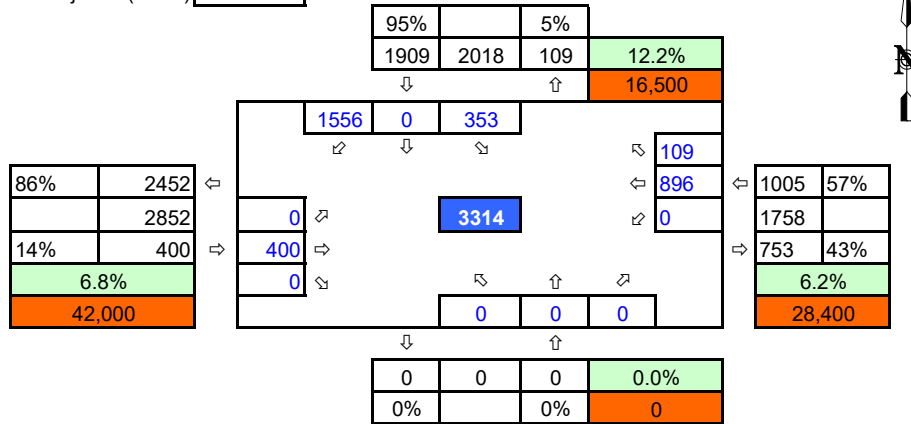
Scenario: **Existing Conditions**

N/S Street: **I-5 SB Ramps**

E/W Street: **Palm Avenue**

Intersection #: **4**

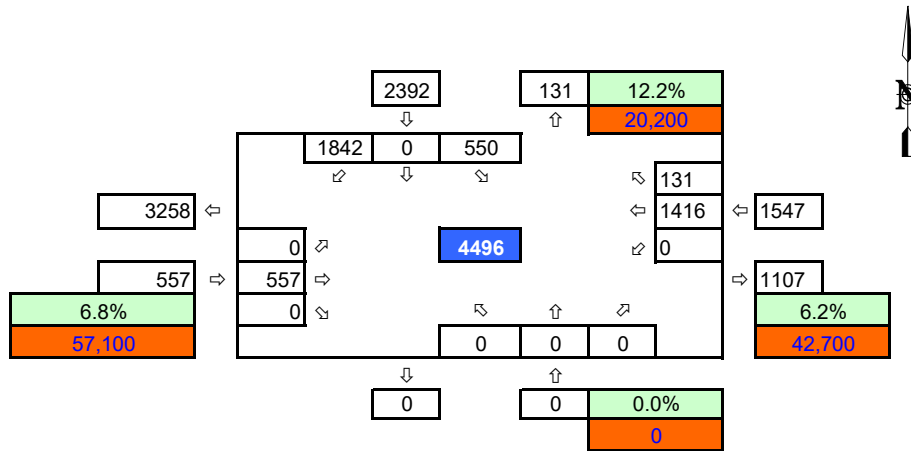
Project # (last 6): **0**



Scenario: **Horizon Year Conditions**

N/S Street: **I-5 SB Ramps**

E/W Street: **Palm Avenue**



LEGEND	
Existing K-Factor	xx%
ADT Volume	xx

Int 5 PM Peak Volumes

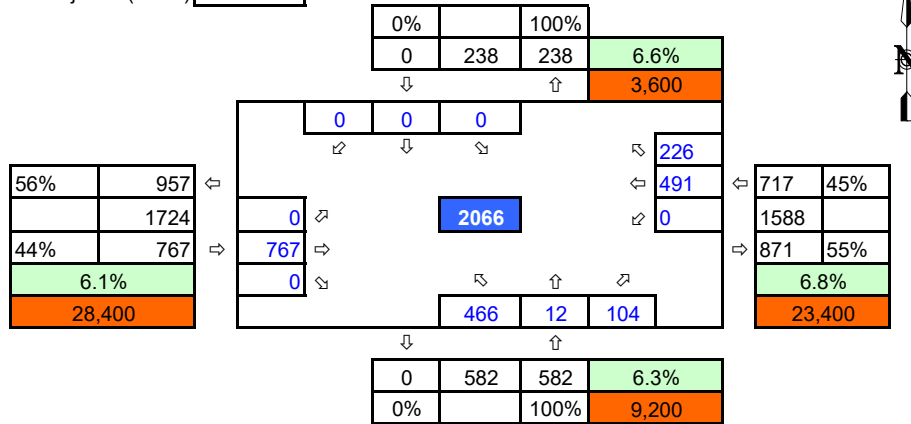
Scenario: **Existing Conditions**

N/S Street: **I-5 NB Ramps**

E/W Street: **Palm Avenue**

Intersection #: **5**

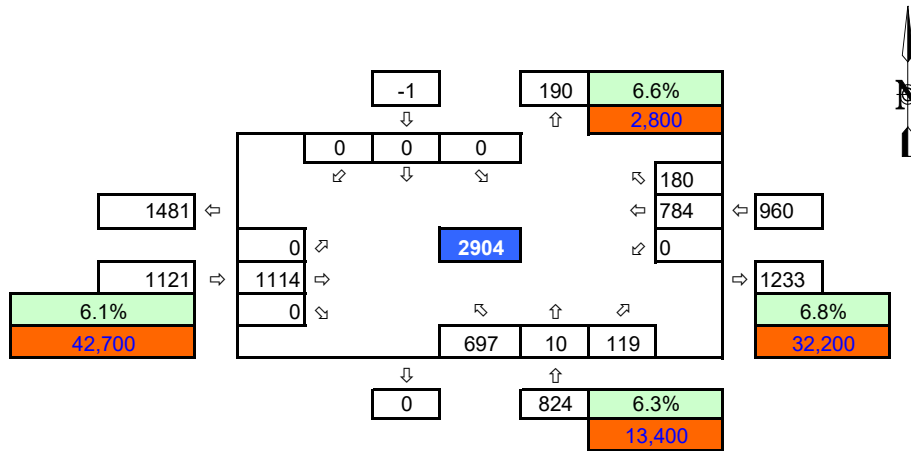
Project # (last 6): **0**



Scenario: **Horizon Year Conditions**

N/S Street: **I-5 NB Ramps**

E/W Street: **Palm Avenue**



LEGEND	
Existing K-Factor	xx%
ADT Volume	xx

APPENDIX K

CUMULATIVE PROJECT (SALT BAY DESIGN DISTRICT) INFORMATION

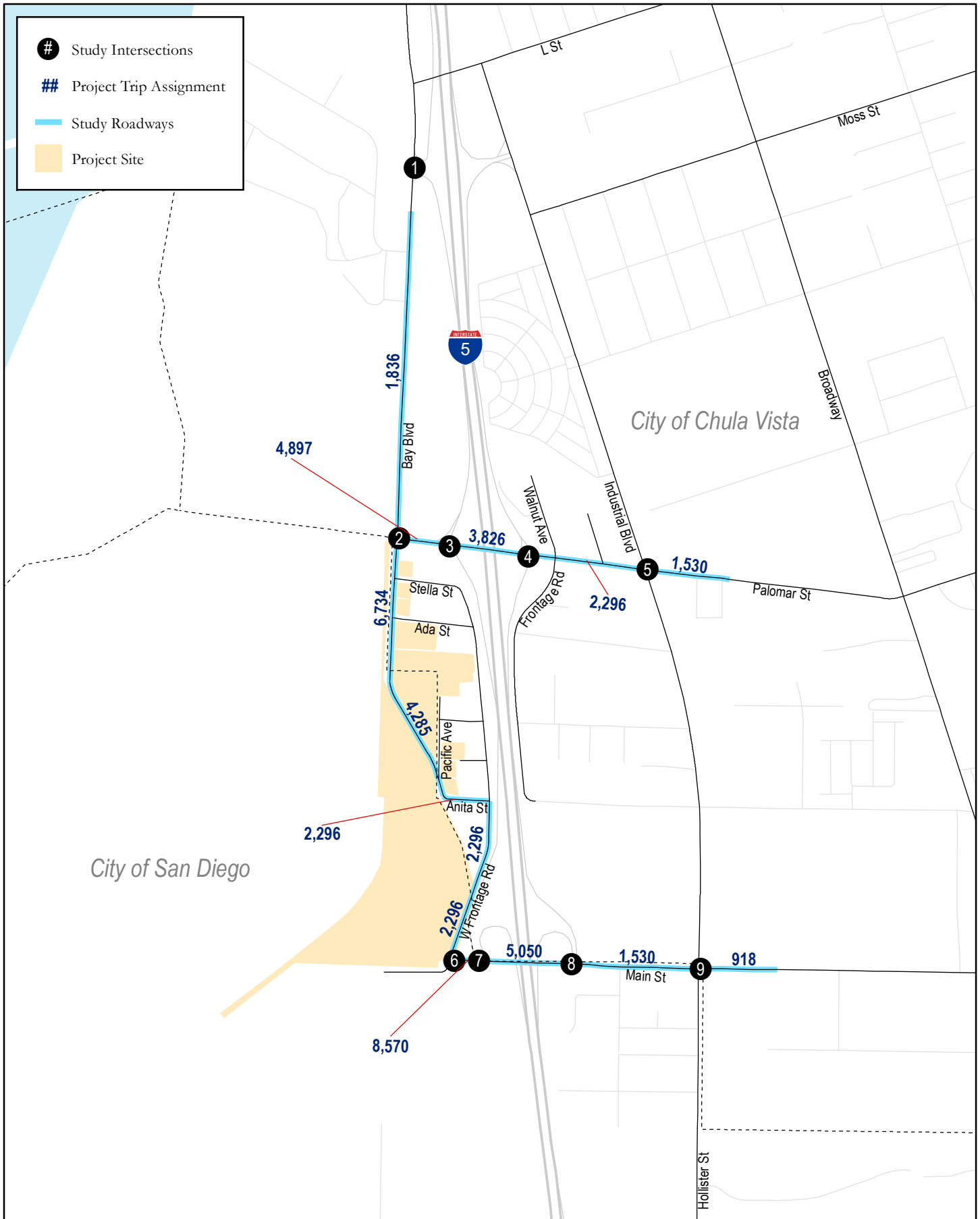


Figure 3.3
 Project Trip Assignment (Roadway)

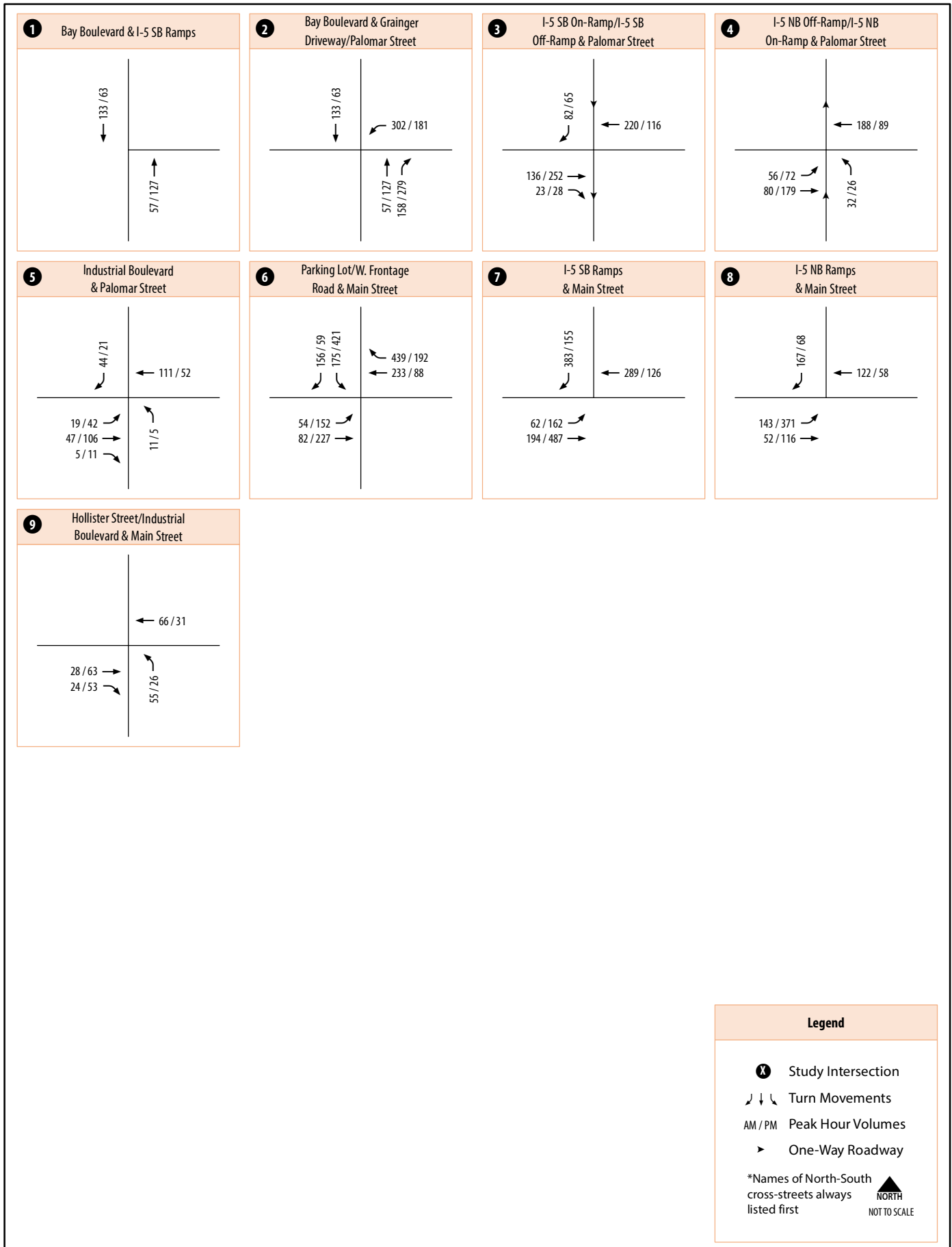


Figure 3.4
Project Trip Assignment (Intersections)

APPENDIX L

BUS ROUTE INFORMATION

CASH FARES / Tarifas en efectivo

Exact fare, please / Favor de pagar la cantidad exacta	
Day Pass (Regional) / Pase diario (Regional) Compass Card required (\$2) / Se requiere un Compass Card (\$2)	\$5.00
One-Way Fare / Tarifa de una dirección	\$2.25
Senior (60+)/Disabled/Medicare Mayores de 60 años/Discapacitados/Medicare	\$1.10*
Children 5 & under / Niños de 5 años o menos Up to two children ride free per paying adult / Máximo dos niños viajan gratis por cada adulto	FREE / GRATIS
MONTHLY PASSES / Pases mensual	
Adult / Adulto	\$72.00
Senior (60+)/Disabled/Medicare Mayores de 60 años/Discapacitados/Medicare	\$18.00*
Youths (18 and under) Jóvenes (18 años o menos)	\$36.00*

*I.D. required for discount fare or pass.
*Se requiere identificación para tarifas o pases de descuento.

DAY PASS (REGIONAL) / Pase diario (Regional)

All passes are sold on Compass Card, which can be reloaded and reused for up to five years. Compass Cards are available for \$2 at select outlets. A \$5 Day Pass requires a Compass Card. A paper Day Pass can be purchased on board buses for an additional \$2 fee.

Todos los pases se venden en el Compass Card, el cual puede ser recargado y reutilizado por hasta cinco años. Compass Cards están disponibles por \$2 en selectas sucursales. Un pase de un día de papel se puede obtener a bordo los autobuses por un costo adicional de \$2.

DIRECTORY / Directorio

Regional Transit Information Información de transporte público regional	511 or/6 (619) 233-3004
TTY/TDD (teletype for hearing impaired) Teletipo para sordos	(619) 234-5005 or/6 (888) 722-4889
InfoExpress (24-hour info via Touch-Tone phone) Información las 24 horas (via teléfono de teclas)	(619) 685-4900
Customer Service / Suggestions Servicio al cliente / Sugerencias	(619) 557-4555
SafeWatch	(619) 557-4500
Lost & Found Objetos extraviados	(619) 557-4555
Transit Store	(619) 234-1060 12th & Imperial Transit Center M-F 8am-5pm

For MTS online trip planning
Planificación de viajes por Internet sdmts.com

For more information on riding MTS services, pick up a Rider's Guide on a bus or at the Transit Store, or visit sdmts.com.
Para obtener más información sobre el uso de los servicios de MTS, recoja un 'Rider's Guide' en un autobús o en la Transit Store, o visita a sdmts.com.

Thank you for riding MTS! ¡Gracias por viajar con MTS!

932

**8th St. Transit Center –
Iris Av. Transit Center**
via National City Bl. / Broadway

DESTINATIONS

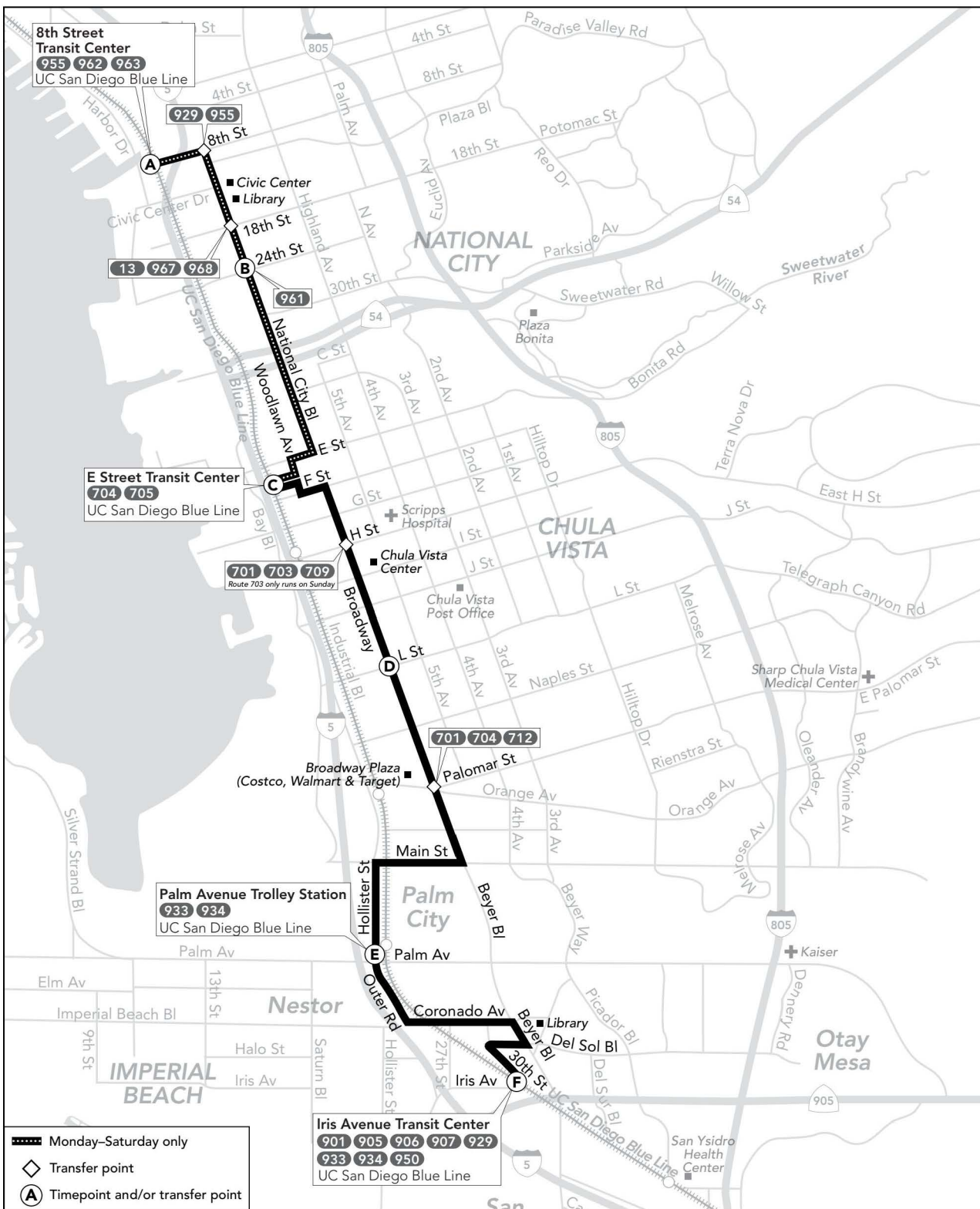
- Broadway Plaza
- Chula Vista Center
- National City Civic Center



8th St.
E St.
Iris Av.
Palm Av.



06/17



Alternative formats available upon request.
Please call: (619) 557-4555
Formato alternativo disponible al preguntar.
Favor de llamar: (619) 557-4555

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Anytime.
Anywhere.**

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- Multiple Riders per Phone
- Fast. Easy. Convenient.

sdmts.com/compass-cloud



CHANGING THE WAY
SAN DIEGO MOVES

compass card

S/D/M and Youth Compass Card

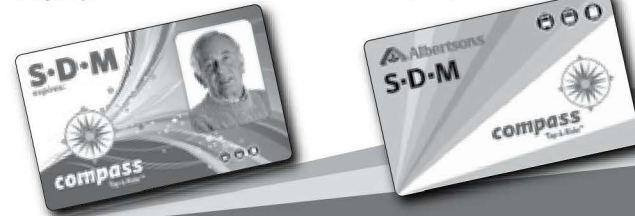
All riders using reduced fares must comply with one of the following options:

Option 1 (Recommended by MTS)

MTS offers a picture ID on a Compass Card to eliminate the need to carry multiple identifications for proof of eligibility.

Option 2

Riders using a standard S/D/M or Youth Compass Card or a one-way ticket must carry supporting identification to prove eligibility.



For additional benefits of Option 1 and/or list of valid forms of ID for Option 2 go to: www.sdmts.com/reduced-fares



The schedules and other information shown in this timetable are subject to change. MTS does not assume responsibility for errors in timetables nor for any inconvenience caused by delayed buses. Los horarios e información que se indican en este itinerario están sujetos a cambios. MTS no asume responsabilidad por errores en los itinerarios, ni por ningún perjuicio que se origine por los autobuses demorados.

Route 932 – Sunday / domingo

Otay/Nestor ➔ Chula Vista

(F)	(E)	(D)	(C)	(B)	(A)
Iris Avenue Transit Center DEPART	Palm Avenue Trolley Station	Broadway & L St.	E Street Transit Center	National City Bl. & 24th St.	8th Street Transit Center ARRIVE
5:47a	5:54a	6:04a	6:13a	—	—
6:42	6:50	7:01	7:11	—	—
7:40	7:48	8:00	8:11	—	—
8:38	8:46	9:00	9:11	—	—
9:38	9:46	10:00	10:11	—	—
10:37	10:46	11:01	11:13	—	—
11:07	11:16	11:31	11:43	—	—
11:37	11:46	12:01p	12:13p	—	—
12:07p	12:16p	12:31	12:43	—	—
12:36	12:45	1:01	1:13	—	—
1:06	1:15	1:31	1:43	—	—
1:36	1:45	2:01	2:13	—	—
2:06	2:15	2:31	2:43	—	—
2:36	2:45	3:01	3:13	—	—
3:06	3:15	3:31	3:43	—	—
3:36	3:45	4:01	4:13	—	—
4:06	4:15	4:31	4:43	—	—
4:37	4:46	5:00	5:12	—	—
5:07	5:16	5:30	5:42	—	—
6:10	6:18	6:31	6:41	—	—
7:11	7:19	7:31	7:41	—	—

Chula Vista ➔ Otay/Nestor

(A)	(B)	(C)	(D)	(E)	(F)
8th Street Transit Center DEPART	National City Bl. & 24th St.	E Street Transit Center	Broadway & L St.	Palm Avenue Trolley Station	Iris Avenue Transit Center ARRIVE
—	—	6:21a	6:29a	6:39a	6:47a
—	—	7:21	7:30	7:41	7:49
—	—	8:19	8:29	8:41	8:49
—	—	9:19	9:29	9:41	9:49
—	—	10:19	10:30	10:43	10:52
—	—	10:52	11:04	11:18	11:27
—	—	11:22	11:34	11:48	11:57
—	—	11:52	12:04p	12:18p	12:27p
—	—	12:22p	12:34	12:49	12:58
—	—	12:52	1:04	1:19	1:28
—	—	1:22	1:34	1:49	1:58
—	—	1:52	2:04	2:19	2:28
—	—	2:22	2:34	2:49	2:58
—	—	2:52	3:04	3:19	3:28
—	—	3:22	3:34	3:49	3:58
—	—	3:52	4:04	4:19	4:28
—	—	4:22	4:34	4:49	4:58
—	—	4:52	5:04	5:17	5:26
—	—	5:49	6:00	6:13	6:21
—	—	6:49	6:59	7:11	7:19
—	—	7:49	7:59	8:11	8:19

Route 932 – Monday through Friday / lunes a viernes

Otay/Nestor ➔ Chula Vista ➔ National City

(F) Iris Avenue Transit Center DEPART	(E) Palm Avenue Trolley Station	(D) Broadway & L St.	(C) E Street Transit Center	(B) National City Bl. & 24th St.	(A) 8th Street Transit Center ARRIVE
4:22a	4:30a	4:41a	4:50a	4:57a	5:04a
4:52	5:00	5:11	5:20	5:27	5:34
5:17	5:25	5:36	5:45	5:52	5:59
5:47	5:55	6:06	6:16	6:24	6:32
6:02	6:10	6:22	6:32	6:41	6:50
6:17	6:25	6:37	6:47	6:56	7:05
6:32	6:41	6:54	7:04	7:13	7:22
6:47	6:56	7:09	7:19	7:28	7:37
7:02	7:11	7:24	7:34	7:43	7:52
7:17	7:26	7:39	7:49	7:58	8:07
7:32	7:41	7:55	8:06	8:15	8:24
7:47	7:56	8:10	8:21	8:30	8:39
8:02	8:11	8:25	8:36	8:45	8:54
8:17	8:26	8:40	8:51	9:00	9:09
8:32	8:41	8:55	9:06	9:15	9:24
8:47	8:56	9:10	9:21	9:30	9:39
9:02	9:11	9:25	9:36	9:45	9:54
9:17	9:26	9:40	9:51	10:00	10:09
9:31	9:40	9:54	10:06	10:15	10:24
9:45	9:55	10:10	10:22	10:31	10:40
10:00	10:10	10:25	10:37	10:46	10:55
10:15	10:25	10:40	10:52	11:01	11:10
10:30	10:40	10:55	11:07	11:16	11:25
10:45	10:55	11:10	11:22	11:31	11:40
10:59	11:09	11:24	11:36	11:45	11:54
11:14	11:24	11:39	11:51	12:00p	12:09p
11:29	11:39	11:54	12:06p	12:15	12:24p
11:44	11:54	12:09p	12:21	12:30	12:39
11:59	12:09p	12:24	12:36	12:45	12:54
12:13p	12:23	12:38	12:51	1:01	1:10
12:28	12:38	12:54	1:07	1:17	1:26
12:43	12:53	1:09	1:22	1:32	1:41
12:58	1:08	1:24	1:37	1:47	1:56
1:13	1:23	1:39	1:52	2:02	2:11
1:28	1:38	1:54	2:07	2:17	2:26
1:43	1:53	2:09	2:22	2:32	2:41
1:58	2:08	2:24	2:37	2:47	2:56
2:13	2:23	2:39	2:52	3:02	3:11
2:28	2:38	2:54	3:07	3:17	3:26
2:43	2:53	3:09	3:22	3:32	3:41
2:58	3:08	3:24	3:37	3:47	3:56
3:13	3:23	3:39	3:52	4:02	4:11
3:28	3:38	3:54	4:07	4:17	4:26
3:43	3:53	4:09	4:22	4:32	4:41
3:58	4:08	4:24	4:37	4:47	4:56
4:13	4:23	4:39	4:52	5:02	5:11
4:28	4:38	4:54	5:07	5:17	5:26
4:43	4:53	5:09	5:22	5:32	5:41
4:58	5:08	5:24	5:37	5:47	5:56
5:13	5:23	5:39	5:52	6:02	6:11
5:28	5:38	5:54	6:07	6:17	6:26
5:43	5:53	6:08	6:20	6:30	6:39
5:58	6:08	6:23	6:35	6:45	6:54
6:16	6:25	6:39	6:51	7:00	7:09
6:31	6:40	6:54	7:06	7:15	7:24
6:46	6:55	7:09	7:21	7:30	7:39
7:09	7:18	7:31	7:42	7:50	7:59
7:39	7:48	8:00	8:11	8:19	8:27
8:09	8:18	8:30	8:41	8:49	8:57
8:41	8:49	8:59	9:09	9:17	9:24
9:41	9:49	9:59	10:09	10:17	10:24
10:40	10:47	10:56	11:05	11:12	11:19
11:40	11:47	11:56	12:05a	12:12a	12:19a

National City ➔ Chula Vista ➔ Otay/Nestor

(A) 8th Street Transit Center DEPART	(B) National City Bl. & 24th St.	(C) E Street Transit Center	(D) Broadway & L St.	(E) Palm Avenue Trolley Station	(F) Iris Avenue Transit Center ARRIVE
5:11a	5:17a	5:27a	5:35a	5:45a	5:53a
5:41	5:47	5:57	6:05	6:15	6:23
6:06	6:13	6:24	6:33	6:43	6:51
6:21	6:28	6:39	6:48	6:58	7:06
6:36	6:43	6:54	7:03	7:13	7:21
6:51	6:58	7:09	7:19	7:30	7:39
7:06	7:13	7:24	7:34	7:45	7:54
7:21	7:28	7:40	7:50	8:02	8:11
7:36	7:43	7:55	8:05	8:17	8:26
7:51	7:58	8:10	8:20	8:32	8:41
8:06	8:13	8:25	8:35	8:47	8:56
8:21	8:28	8:40	8:50	9:02	9:11
8:36	8:43	8:55	9:05	9:17	9:26
8:51	8:58	9:10	9:20	9:32	9:41
9:05	9:12	9:24	9:35	9:49	9:58
9:20	9:27	9:39	9:50	10:04	10:13
9:35	9:42	9:54	10:05	10:19	10:28
9:50	9:57	10:09	10:20	10:34	10:43
10:05	10:12	10:24	10:35	10:49	10:58
10:20	10:27	10:39	10:50	11:04	11:13
10:35	10:42	10:54	11:05	11:19	11:28
10:50	10:57	11:09	11:22	11:36	11:45
11:05	11:12	11:24	11:37	11:51	12:00p
11:20	11:27	11:39	11:52	12:06p	12:15
11:35	11:42	11:54	12:07p	12:21	12:30
11:50	11:57	12:09p	12:22	12:36	12:45
12:04p	12:12p	12:24	12:37	12:52	1:01
12:19	12:27	12:39	12:52	1:07	1:16
12:34	12:42	12:54	1:07	1:22	1:31
12:49	12:57	1:09	1:22	1:37	1:46
1:04	1:12	1:24	1:37	1:52	2:01
1:20	1:28	1:40	1:53	2:08	2:17
1:36	1:44	1:56	2:09	2:24	2:33
1:51	1:59	2:11	2:24	2:39	2:48
2:06	2:14	2:26	2:39	2:54	3:03
2:21	2:29	2:41	2:54	3:09	3:18
2:36	2:44	2:56	3:09	3:24	3:33
2:51	2:59	3:11	3:24	3:39	3:48
3:06	3:14	3:26	3:39	3:54	4:03
3:21	3:29	3:41	3:54	4:09	4:18
3:36	3:44	3:56	4:09	4:24	4:33
3:51	3:59	4:11	4:24	4:39	4:48
4:06	4:14	4:26	4:39	4:54	5:03
4:21	4:29	4:41	4:54	5:09	5:18
4:36	4:44	4:56	5:09	5:24	5:33
4:51	4:59	5:11	5:24	5:39	5:48
5:06	5:14	5:26	5:39	5:54	6:03
5:21	5:29	5:41	5:54	6:09	6:18
5:36	5:43	5:55	6:07	6:22	6:31
5:51	5:58	6:10	6:22	6:37	6:46
6:06	6:13	6:25	6:37	6:52	7:01
6:21	6:28	6:40	6:52	7:07	7:16
6:36	6:43	6:54	7:05	7:19	7:28
7:01	7:08	7:18	7:29	7:42	7:51
7:32	7:39	7:49	7:59	8:11	8:19
8:02	8:09	8:19	8:29	8:41	8:49
8:35	8:41	8:51	9:00	9:11	9:19
9:05	9:11	9:21	9:30	9:41	9:49
9:35	9:41	9:51	10:00	10:11	10:19
10:40	10:46	10:55	11:03	11:13	11:21
11:40	11:46	11:55	12:03a	12:13a	12:21a

Route 932 – Saturday / sábado

Otay/Nestor ➔ Chula Vista ➔ National City

(F) Iris Avenue Transit Center DEPART	(E) Palm Avenue Trolley Station	(D) Broadway & L St.	(C) E Street Transit Center	(B) National City Bl. & 24th St.	(A) 8th Street Transit Center ARRIVE
4:42a	4:49a	4:59a	5:08a	5:15a	5:22a
5:12	5:19	5:29	5:38	—	—
5:42	5:49	5:59	6:08	6:15	6:22
6:02	6:09	6:19	6:28	—	—
6:22	6:29	6:39	6:48	6:55	7:02
6:42	6:50	7:01	7:11	—	—
7:02	7:10	7:21	7:31	7:39	7:46
7:22	7:30	7:41	7:51	—	—
7:42	7:50	8:02	8:13	8:22	8:29
8:02	8:10	8:22	8:33	—	—
8:22	8:30	8:42	8:53	9:02	9:09
8:42	8:50	9:04	9:15	—	—
9:02	9:10	9:24	9:35	9:44	9:51
9:22	9:30	9:44	9:55	—	—
9:42	9:50	10:04	10:15	10:24	10:31
10:02	10:11	10:26	10:38	—	—
10:23	10:32	10:47	10:59	11:08	11:16
10:43	10:52	11:07	11:19	—	—
11:03	11:12	11:27	11:39	11:48	11:56
11:23	11:32	11:47	11:59	—	—
11:43	11:52	12:07p	12:19p	12:28p	12:36p
12:03p	12:12p	12:27	12:39	—	—
12:22	12:31	12:47	12:59	1:09	1:18
12:42	12:51	1:07	1:19	—	—
1:02	1:11	1:27	1:39	1:49	1:58
1:22	1:31	1:47	1:59	—	—
1:42	1:51	2:07	2:19	2:29	2:38
2:02	2:11	2:27	2:39	—	—
2:22	2:31	2:47	2:59	3:09	3:18
2:42	2:51	3:07	3:19	—	—
3:02	3:11	3:27	3:39	3:49	3:58
3:22	3:31	3:47	3:59	—	—
3:42	3:51	4:07	4:19	4:29	4:38
4:02	4:11	4:27	4:39	—	—
4:22	4:31	4:47	4:59	5:09	5:18
4:42	4:51	5:05	5:17	—	—
5:02	5:11	5:25	5:37	5:47	5:55
5:22	5:31	5:45	5:57	—	—
5:42	5:50	6:04	6:15	6:24	6:32
6:02	6:10	6:23	6:33	—	—
6:22	6:30	6:43	6:53	—	—
6:42	6:50	7:03	7:13	7:22	7:30
7:11	7:19	7:31	7:41	—	—
7:41	7:49	8:01	8:11	8:19	8:27
8:41	8:49	8:59	9:09	9:17	9:24
9:41	9:49	9:59	10:09	10:17	10:24
10:40	10:47	10:56	11:05	11:12	11:19
11:40	11:47	11:56	12:05a	12:12a	12:19a

National City ➔ Chula Vista ➔ Otay/Nestor

(A) 8th Street Transit Center DEPART	(B) National City Bl. & 24th St.	(C) E Street Transit Center	(D) Broadway & L St.	(E) Palm Avenue Trolley Station	(F) Iris Avenue Transit Center ARRIVE
—	—	5:47a	5:55a	6:05a	6:13a
6:02a	6:07a	6:17	6:25	6:35	6:43
—	—	6:39	6:48	6:59	7:07
6:45	6:51	7:01	7:10	7:21	7:29
—	—	7:21	7:30	7:41	7:49
7:25	7:31	7:41	7:50	8:01	8:09
—	—	8:01	8:11	8:23	8:31
8:04	8:10	8:21	8:31	8:43	8:51
—	—	8:41	8:51	9:03	9:11
8:44	8:50	9:01	9:11	9:23	9:31
—	—	9:21	9:31	9:43	9:51
9:29	9:35	9:46	9:56	10:08	10:16
—	—	10:11	10:22	10:35	10:44
10:13	10:20	10:31	10:42	10:55	11:04
—	—	10:51	11:03	11:17	11:26
10:52	10:59	11:11	11:23	11:37	11:46
—	—	11:31	11:43	11:57	12:06p
11:32	11:39	11:51	12:03p	12:17p	

CASH FARES / Tarifas en efectivo

Exact fare, please / Favor de pagar la cantidad exacta	
Day Pass (Regional) / Pase diario (Regional) Compass Card required (\$2) / Se requiere un Compass Card (\$2)	\$5.00
One-Way Fare / Tarifa de una dirección	\$2.25
Senior (60+)/Disabled/Medicare Mayores de 60 años/Discapacitados/Medicare	\$1.10*
Children 5 & under / Niños de 5 años o menos Up to two children ride free per paying adult / Máximo dos niños viajan gratis por cada adulto	FREE / GRATIS
MONTHLY PASSES / Pases mensual	
Adult / Adulto	\$72.00
Senior (60+)/Disabled/Medicare Mayores de 60 años/Discapacitados/Medicare	\$18.00*
Youths (18 and under) Jóvenes (18 años o menos)	\$36.00*

*I.D. required for discount fare or pass.
*Se requiere identificación para tarifas o pases de descuento.

DAY PASS (REGIONAL) / Pase diario (Regional)

All passes are sold on Compass Card, which can be reloaded and reused for up to five years. Compass Cards are available for \$2 at select outlets. A \$5 Day Pass requires a Compass Card. A paper Day Pass can be purchased on board buses for an additional \$2 fee.

Todos los pases se venden en el Compass Card, el cual puede ser recargado y reutilizado por hasta cinco años. Compass Cards están disponibles por \$2 en selectas sucursales. Un pase de un día por \$5 requiere un Compass Card. Un pase de un día de papel se puede obtener a bordo los autobuses por un costo adicional de \$2.

DIRECTORY / Directorio

Regional Transit Information Información de transporte público regional	511 or/6 (619) 233-3004
TTY/TDD (teletype for hearing impaired) Teletipo para sordos	(619) 234-5005 or/6 (888) 722-4889
InfoExpress (24-hour info via Touch-Tone phone) Información las 24 horas (via teléfono de teclas)	(619) 685-4900
Customer Service / Suggestions Servicio al cliente / Sugerencias	(619) 557-4555
SafeWatch	(619) 557-4500
Lost & Found Objetos extraviados	(619) 557-4555
Transit Store	(619) 234-1060 12th & Imperial Transit Center M-F 8am-5pm
For MTS online trip planning Planificación de viajes por Internet	sdmts.com

For more information on riding MTS services, pick up a Rider's Guide on a bus or at the Transit Store, or visit sdmts.com.
Para obtener más información sobre el uso de los servicios de MTS, recoja un 'Rider's Guide' en un autobús o en la Transit Store, o visita a sdmts.com.

Thank you for riding MTS! ¡Gracias por viajar con MTS!

933/934

Iris Transit Center – Seacoast
via Imperial Beach Bl. or Palm Av.

DESTINATIONS

- Imperial Beach Pier
- Kaiser Permanente
- Mar Vista High School
- Montgomery High School
- Naval Auxiliary Field
- Palm Promenade (Walmart)
- Southwest High School

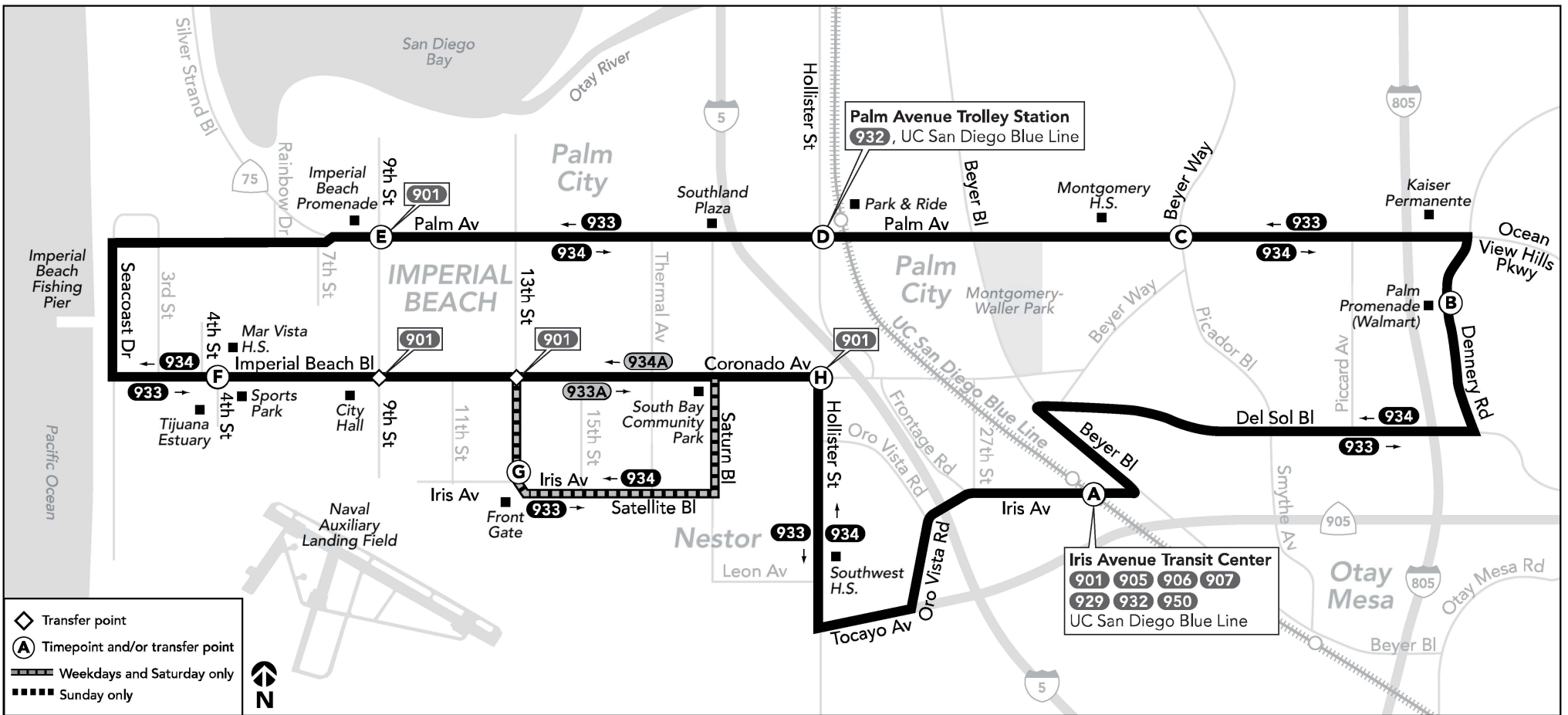


Iris Ave.
Palm Ave.



01/17

Alternative formats available upon request. Please call: (619) 557-4555 / Formato alternativo disponible al preguntar. Favor de llamar: (619) 557-4555



The schedules and other information shown in this timetable are subject to change. MTS does not assume responsibility for errors in timetables nor for any inconvenience caused by delayed buses.
Los horarios e información que se indican en este itinerario están sujetos a cambios. MTS no asume responsabilidad por errores en los itinerarios, ni por ningún perjuicio que se origine por los autobuses demorados.

A Saturday or Sunday schedule will be operated on the following holidays and observed holidays >>> New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas
Se operará con horario de sábado o domingo durante los siguientes días festivos y feriados observados

Route 933A – Sunday / domingo

Otay Mesa ➔ Palm City ➔ Imperial Beach ➔ Nestor ➔ Otay Mesa

(A) Iris Ave. Transit Center	(B) Dennery Rd. @ Walmart	(C) Palm Av. & Beyer Way	(D) Palm Av. Trolley Station	(E) Palm Av. & 9th St.	(F) Imperial Beach Bl. & 4th St.	(G) 13th St. & Iris Av.	(H) Coronado Av. & Hollister St.	(A) Iris Ave. Transit Center
DEPART	DEPART	DEPART	DEPART	DEPART	DEPART	DEPART	DEPART	ARRIVE
5:07a	5:16a	5:22a	5:28a	5:34a	5:41a	—	5:51a	6:00a
6:07	6:16	6:23	6:29	6:35	6:42	—	6:52	7:02
7:07	7:16	7:23	7:29	7:35	7:42	—	7:52	8:02
8:02	8:12	8:20	8:26	8:33	8:41	—	8:51	9:01
8:47	8:57	9:05	9:11	9:19	9:27	—	9:37	9:47
9:32	9:42	9:50	9:56	10:04	10:12	—	10:22	10:32
10:17	10:27	10:35	10:41	10:49	10:57	—	11:07	11:17
10:47	10:57	11:05	11:11	11:19	11:27	—	11:37	11:47
11:17	11:27	11:35	11:41	11:49	11:57	—	12:08p	12:18p
11:47	11:57	12:05p	12:11p	12:19p	12:27p	—	12:38	12:48
12:18p	12:29p	12:37	12:43	12:52	1:01	—	1:12	1:22
12:48	12:59	1:07	1:13	1:22	1:31	—	1:42	1:52
1:18	1:29	1:37	1:43	1:52	2:01	—	2:12	2:22
1:48	1:59	2:07	2:13	2:22	2:31	—	2:42	2:52
2:18	2:29	2:37	2:43	2:52	3:01	—	3:12	3:22
2:48	2:59	3:07	3:13	3:22	3:31	—	3:42	3:52
3:15	3:26	3:34	3:40	3:49	3:58	—	4:08	4:18
3:45	3:56	4:04	4:10	4:19	4:28	—	4:38	4:48
4:15	4:26	4:34	4:40	4:49	4:58	—	5:08	5:18
5:15	5:26	5:34	5:40	5:49	5:58	—	6:08	6:18
6:18	6:28	6:35	6:41	6:49	6:57 D	—	—	—
—	—	—	—	C 7:17	Route 901	—	7:26	7:35
7:18	7:28	7:35	7:40	7:47	7:55 D	—	—	—
—	—	—	—	C 8:14	Route 901	—	8:23	8:32
—	—	—	—	C 9:12	Route 901	—	9:21	9:30
—	—	—	—	C 10:11	Route 901	—	10:19	10:28
—	—	—	—	C 11:40	Route 901	—	11:48	11:57

B = Route 901 to 12th & Imperial via Coronado. Travels over 934A routing from Iris Transit Center to Coronado Av. and Hollister St.
Ruta 901 hacia 12th & Imperial a través de Coronado. Recorre el segmento de la ruta 934A entre Iris Transit Center y Coronado Av. / Hollister St.

C = Route 901 to Iris Transit Center via 9th St. and Imperial Beach Bl. Travels over Route 933A routing between Coronado Av. / Hollister St. and Iris Transit Center.
Ruta 901 hacia Iris Transit Center a través de 9th St. e Imperial Beach Bl. Recorre el segmento de la ruta 933A entre Coronado Av. / Hollister St. e Iris Transit Center.

D = Arrives at Imperial Beach Bl. and 9th St. 2 minutes later than time shown. / El viaje llega a Imperial Beach Bl. y 9th St. 2 minutos después del horario indicado.

Route 934A – Sunday / domingo

Otay Mesa ➔ Nestor ➔ Imperial Beach ➔ Palm City ➔ Otay Mesa

(A) Iris Ave. Transit Center	(H) Coronado Av. & Hollister St.	(G) 13th St. & Iris Av.	(F) Imperial Beach Bl. & 4th St.	(E) Palm Av. & 9th St.	(D) Palm Av. Trolley Station	(C) Palm Av. & Beyer Way	(B) Dennery Rd. @ Walmart	(A) Iris Ave. Transit Center
DEPART	DEPART	DEPART	DEPART	DEPART	DEPART	DEPART	DEPART	ARRIVE
B 5:12a	5:19a	Route 901	—	5:29a	—	—	—	—
B 6:12	6:19	Route 901	—	6:29	—	—	—	—
—	—	—	—	6:53	7:02a	7:06a	7:12a	7:22a
B 7:12	7:19	Route 901	—	7:30	—	—	—	—
—	—	—	—	7:53	8:02	8:06	8:12	8:22
8:31	8:39	—	8:50a	8:59	9:10	9:14	9:21	9:32
9:31	9:39	—	9:50	9:59	10:10	10:14	10:21	10:32
10:31	10:39	—	10:50	10:59	11:10	11:14	11:21	11:32
11:27	11:35	—	11:46	11:57	12:10p	12:14p	12:22p	12:33p
11:57	12:06p	—	12:17p	12:27p	12:40	12:44	12:52	1:03
12:27p	12:36	—	12:47	12:57	1:10	1:14	1:22	1:33
1:01	1:10	—	1:21	1:31	1:44	1:48	1:56	2:07
1:31	1:40	—	1:51	2:01	2:14	2:18	2:26	2:37
2:01	2:10	—	2:21	2:31	2:44	2:48	2:56	3:07
2:31	2:40	—	2:51	3:01	3:14	3:18	3:26	3:37
3:01	3:10	—	3:21	3:31	3:44	3:48	3:56	4:07
3:31	3:40	—	3:51	4:01	4:14	4:18	4:26	4:37
4:03	4:12	—	4:23	4:32	4:44	4:48	4:56	5:07
4:59	5:08	—	5:19	5:28	5:40	5:44	5:52	6:03
5:56	6:04	—	6:15	6:23	6:34	6:38	6:45	6:56
6:56	7:04	—	7:15	7:23	7:34	7:38	7:45	7:56
7:56	8:04	—	8:14	8:22	8:33	8:37	8:44	8:55

Route 933 – Monday through Friday / lunes a viernes

Otay Mesa ➔ Palm City ➔ Imperial Beach ➔ Nestor ➔ Otay Mesa

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(A)
Iris Ave. Transit Center DEPART	Dennery Rd. @ Walmart	Palm Av. & Beyer Way	Palm Av. Trolley Station	Palm Av. & 9th St.	Imperial Beach Bl. & 4th St.	13th St. & Iris Av.	Coronado Av. & Hollister St.	Iris Ave. Transit Center ARRIVE
4:41a	4:50a	4:56a	5:02a	5:08a	5:15a	5:21a	5:27a	5:36a
4:56	5:05	5:11	5:17	5:23	5:30	5:36	5:42	5:51
5:11	5:20	5:26	5:32	5:38	5:45	5:51	5:57	6:06
5:23	5:32	5:38	5:44	5:50	5:57	6:03	6:09	6:18
5:35	5:44	5:50	5:57	6:04	6:11	6:17	6:24	6:33
5:50	5:59	6:05	6:12	6:19	6:26	6:32	6:39	6:48
6:02	6:11	6:18	6:25	6:33	6:41	6:47	6:54	7:04
6:14	6:24	6:32	6:39	6:47	6:55	7:01	7:08	7:18
6:26	6:36	6:44	6:51	6:59	7:07	7:13	7:20	7:30
6:38	6:48	6:56	7:03	7:11	7:20	7:26	7:34	7:45
6:50	7:00	7:08	7:15	7:24	7:33	7:39	7:47	7:59
7:02	7:12	7:20	7:27	7:36	7:45	7:51	7:59	8:11
7:14	7:24	7:32	7:39	7:48	7:57	8:03	8:11	8:23
7:26	7:36	7:44	7:51	8:00	8:09	8:15	8:23	8:35
7:41	7:51	7:59	8:06	8:15	8:24	8:30	8:38	8:50
7:56	8:06	8:14	8:21	8:30	8:39	8:45	8:53	9:05
8:11	8:21	8:29	8:35	8:44	8:53	8:59	9:07	9:18
8:26	8:36	8:44	8:50	8:59	9:07	9:13	9:21	9:31
8:41	8:51	8:59	9:05	9:14	9:22	9:28	9:36	9:46
8:56	9:06	9:14	9:20	9:29	9:37	9:43	9:51	10:01
9:11	9:21	9:29	9:35	9:44	9:52	9:58	10:06	10:16
9:26	9:36	9:44	9:50	9:59	10:07	10:13	10:21	10:31
9:41	9:51	9:59	10:05	10:14	10:22	10:28	10:36	10:46
9:56	10:06	10:14	10:20	10:29	10:37	10:43	10:51	11:01
10:11	10:21	10:29	10:35	10:44	10:52	10:58	11:06	11:16
10:26	10:36	10:44	10:50	10:59	11:07	11:13	11:21	11:31
10:41	10:51	10:59	11:05	11:14	11:22	11:28	11:36	11:46
10:56	11:06	11:14	11:20	11:29	11:37	11:43	11:51	12:01p
11:11	11:21	11:29	11:35	11:44	11:52	11:58	12:06p	12:16
11:26	11:36	11:44	11:50	11:59	12:07p	12:13p	12:21	12:31
11:38	11:48	11:56	12:02p	12:11p	12:19	12:25	12:33	12:43
11:50	12:00p	12:08p	12:14	12:23	12:31	12:37	12:45	12:55
12:02p	12:12	12:20	12:26	12:35	12:43	12:50	12:58	1:09
12:14	12:24	12:32	12:38	12:47	12:55	1:02	1:10	1:21
12:26	12:36	12:44	12:50	12:59	1:07	1:14	1:22	1:33
12:38	12:48	12:56	1:02	1:11	1:19	1:26	1:34	1:45
12:50	1:00	1:08	1:14	1:23	1:31	1:38	1:46	1:57
1:02	1:12	1:20	1:26	1:35	1:43	1:50	1:58	2:09
1:14	1:24	1:32	1:38	1:47	1:55	2:02	2:10	2:21
1:25	1:35	1:43	1:49	1:58	2:06	2:13	2:21	2:32
1:36	1:46	1:55	2:02	2:11	2:19	2:26	2:34	2:45
1:48	1:59	2:08	2:15	2:25	2:33	2:40	2:48	2:59
2:00	2:11	2:20	2:27	2:37	2:45	2:52	3:00	3:11
2:12	2:23	2:32	2:39	2:49	2:57	3:04	3:12	3:23
2:24	2:35	2:44	2:51	3:01	3:09	3:16	3:24	3:35
2:36	2:47	2:56	3:03	3:13	3:22	3:29	3:38	3:50
2:48	2:59	3:08	3:15	3:25	3:34	3:41	3:50	4:02
3:00	3:11	3:20	3:27	3:37	3:46	3:53	4:02	4:14
3:12	3:23	3:32	3:39	3:49	3:58	4:05	4:14	4:26
3:24	3:35	3:44	3:51	4:01	4:10	4:17	4:26	4:38
3:36	3:47	3:56	4:03	4:13	4:22	4:29	4:38	4:50
3:48	3:59	4:08	4:15	4:25	4:34	4:41	4:50	5:02
4:00	4:11	4:20	4:26	4:36	4:45	4:52	5:00	5:11
4:15	4:26	4:35	4:41	4:51	5:00	5:07	5:15	5:26
4:30	4:41	4:50	4:56	5:06	5:15	5:22	5:30	5:41
4:45	4:56	5:05	5:11	5:21	5:30	5:37	5:45	5:56
5:00	5:11	5:20	5:26	5:36	5:45	5:52	6:00	6:11
5:15	5:26	5:35	5:41	5:51	6:00	6:07	6:15	6:26
5:31	5:42	5:50	5:56	6:06	6:15	6:22	6:29	6:40
5:47	5:58	6:06	6:12	6:21	6:30	6:37	6:44	6:54
6:02	6:13	6:21	6:27	6:36	6:45	6:52	6:59	7:09
6:17	6:28	6:36	6:42	6:51	7:00	7:07	7:14	7:24
6:32	6:42	6:50	6:56	7:05	7:14	7:20	7:27	7:37
6:47	6:57	7:05	7:11	7:19	7:27	7:33	7:40	7:49
7:07	7:17	7:25	7:31	7:39	7:47	7:53	8:00	8:09
7:37	7:47	7:55	8:01	8:09	8:17	8:23	8:30	8:39
8:07	8:17	8:24	8:29	8:36	8:44	8:50	8:56	9:05
8:37	8:47	8:54	8:59	9:06	9:14	9:20	9:26	9:35
9:38	9:48	9:55	10:00	10:07	10:15	10:21	10:27	10:36
10:38	10:48	10:54	10:59	11:05	11:12	11:18	11:24	11:33
11:39	11:49	11:55	12:00a	12:06a	12:13a	12:19a	12:25a	12:34a
12:40a	12:50a	12:56a	1:01	—	—	—	—	—

Route 934 – Monday through Friday / lunes a viernes

Otay Mesa ➔ Nestor ➔ Imperial Beach ➔ Palm City ➔ Otay Mesa

(A)	(H)	(G)	(F)	(E)	(D)	(C)	(B)	(A)
Iris Ave. Transit Center DEPART	Coronado Av. & Hollister St.	13th St. & Iris Av.	Imperial Beach Bl. & 4th St.	Palm Av. & 9th St.	Palm Av. Trolley Station	Palm Av. & Beyer Way	Dennery Rd. @ Walmart	Iris Ave. Transit Center ARRIVE
4:41a	4:48a	4:55a	5:02a	5:09a	5:18a	5:22a	5:28a	5:38a
4:56	5:03	5:10	5:17	5:24	5:33	5:37	5:43	5:53
5:11	5:18	5:25	5:32	5:39	5:48	5:52	5:58	6:08
5:26	5:33	5:40	5:47	5:54	6:03	6:07	6:13	6:23
5:41	5:48	5:55	6:02	6:09	6:18	6:22	6:28	6:38
5:56	6:04	6:11	6:18	6:25	6:34	6:38	6:44	6:55
6:11	6:19	6:26	6:33	6:40	6:49	6:53	6:59	7:10
6:25	6:34	6:41	6:48	6:56	7:06	7:10	7:16	7:27
6:37	6:46	6:53	7:00	7:08	7:18	7:22	7:28	7:39
6:49	6:59	7:06	7:13	7:21	7:32	7:37	7:43	7:54
6:59	7:09	7:17	7:24	7:32	7:43	7:48	7:55	8:06
7:09	7:19	7:27	7:34	7:42	7:53	7:58	8:05	8:16
7:19	7:29	7:37	7:44	7:52	8:03	8:08	8:15	8:26
7:29	7:39	7:47	7:54	8:02	8:13	8:18	8:25	8:36
7:39	7:49	7:57	8:04	8:12	8:23	8:28	8:35	8:46
7:49	7:59	8:07	8:14	8:22	8:33	8:38	8:45	8:56
7:59	8:09	8:17	8:24	8:32	8:43	8:48	8:55	9:06
8:11	8:21	8:29	8:36	8:44	8:55	9:00	9:07	9:18
8:23	8:32	8:39	8:46	8:54	9:05	9:09	9:16	9:27
8:38	8:47	8:54	9:01	9:09	9:20	9:24	9:31	9:42
8:53	9:02	9:09	9:16	9:24	9:35	9:39	9:46	9:57
9:08	9:17	9:24	9:31	9:39	9:50	9:54	10:01	10:12
9:23	9:32	9:39	9:46	9:54	10:05	10:09	10:16	10:27
9:38	9:47	9:54	10:01	10:09	10:20	10:24	10:31	10:42
9:53	10:01	10:08	10:15	10:24	10:36	10:40	10:47	10:58
10:08	10:16	10:23	10:30	10:39	10:51	10:55	11:02	11:13
10:23	10:31	10:38	10:45	10:54	11:06	11:10	11:17	11:28
10:38	10:46	10:53	11:00	11:09	11:21	11:25	11:32	11:43
10:53	11:01	11:08	11:15	11:24	11:36	11:40	11:47	11:58
11:08	11:16	11:23	11:30	11:39	11:51	11:55	12:02p	12:13p
11:23	11:31	11:38	11:45	11:54	12:06p	12:10p	12:17	12:28
11:38	11:46	11:53	12:00p	12:09p	12:21	12:25	12:32	12:43
11:53	12:01p	12:08p	12:15	12:24	12:36	12:40	12:47	12:58
12:08p	12:16	12:23	12:30	12:39	12:51	12:55	1:02	1:13
12:20	12:28	12:35	12:42	12:51	1:03	1:07	1:14	1:25
12:32	12:41	12:48	12:55	1:04	1:17	1:22	1:30	1:41
12:44	12:53	1:00	1:07	1:16	1:29	1:34	1:42	1:53
12:56	1:05	1:12	1:19	1:28	1:41	1:46	1:54	2:05
1:08	1:17	1:24	1:31	1:40	1:53	1:58	2:06	2:17
1:20	1:29	1:36	1:43	1:52	2:05	2:10	2:18	2:29
1:32	1:41	1:48	1:55	2:04	2:17	2:22	2:30	2:41
1:44	1:53	2:00	2:07	2:16	2:29	2:34	2:42	2:53
1:56	2:05	2:12	2:19	2:28	2:41	2:46	2:54	3:05
2:08	2:18	2:26	2:34	2:43	2:57	3:02	3:10	3:21
2:20	2:30	2:38	2:46	2:55	3:09	3:14	3:22	3:33
2:32	2:42	2:50	2:58	3:07	3:21	3:26	3:34	3:45
2:44	2:54	3:02	3:10	3:19	3:33	3:38	3:46	3:57
2:56	3:06	3:14	3:22	3:31	3:45	3:50	3:58	4:09
3:08	3:18	3:26	3:34	3:43	3:59	4:04	4:12	4:23
3:20	3:30	3:38	3:46	3:55	4:11	4:16	4:24	4:35
3:32	3:42	3:50	3:58	4:07	4:23	4:28	4:36	4:47
3:44	3:54	4:02	4:10	4:19	4:35	4:40	4:48	4:59
3:56	4:06	4:14	4:22	4:31	4:47	4:52	5:00	5:11
4:08	4:18	4:26	4:34	4:43	4:59	5:04	5:12	5:23
4:20	4:30	4:38	4:46	4:55	5:11	5:16	5:24	5:35
4:32	4:42	4:50	4:58	5:07	5:23	5:28	5:36	5:47
4:44	4:54	5:02	5:10	5:19	5:35	5:40	5:48	5:59
4:59	5:09	5:17	5:24	5:33	5:48	5:53	6:01	6:12
5:14	5:24	5:32	5:39	5:48	6:03	6:08	6:16	6:27
5:30	5:40	5:47	5:54	6:03	6:17	6:22	6:30	6:41
5:45	5:55							

FARES / Tarifas

ONE-WAY FARE / Tarifa de una dirección

Adult / Adulto	\$2.50
Senior (60+)/Disabled/Medicare* Mayores de 60 años/Discapacitados/Medicare*	\$1.25
Child (5 and under) Niño (5 años o menos)	FREE GRATIS

One-way fares are valid for two hours from the time of purchase and in one direction only. Trolley one-way fares allow transfer between Trolley lines. Trolley one-way fares are not valid on buses.

Pasajes de ida son válidos por dos horas a partir del momento de compra y solo válido en una sola dirección. Boletos de ida del Trolley permiten traslado entre las líneas del Trolley. Boletos de ida del Trolley no son válidos en el autobús.

You may purchase monthly passes at all Albertsons stores in San Diego County, as well as select Vons and community outlet locations. Visit sdmts.com for store locations and more information.

Puede adquirir pases mensuales en todas las tiendas Albertsons en el condado de San Diego, así como en sedes seleccionadas de Vons y outlets comunitarios. Visite sdmts.com para consultar las ubicaciones de las tiendas y obtener más información.



COMPASS CARD / Tarjeta Compass

Passengers who have a Compass Card can load any day pass or monthly pass at Ticket Vending Machines. If you do not have a Compass Card, you can purchase only Adult fares at Ticket Vending Machines. There is a \$2 fee in addition to the price of your pass. For discounted fares on new Compass Cards, please purchase your pass at the Transit Store or any Compass Card outlet. Proof of eligibility is required to purchase and ride with a discounted fare.

Pasajeros que tienen una tarjeta Compass pueden cargar cualquier pase diario o mensual en las máquinas dispensadoras de boletos. Si no tiene una tarjeta Compass, solo puede comprar pasajes de adultos en las máquinas dispensadoras de boletos. Hay un cargo adicional de \$2 además del precio del pase. Para pasajes descontados en nuevas tarjetas Compass, favor de comprar su pase en los Transit Store o ubicación de los outlets de la tarjeta Compass. Se requiere identificación válida para comprar y viajar con una tarifa descontada.



ACCESSIBLE SERVICE

Accesibilidad de los servicios

All Trolleys are equipped with ramps. Seats closest to the doors are reserved for senior and disabled riders.

Todos los Trolleys cuentan con rampas para sillas de ruedas. Los asientos más cercanos a las puertas están reservados por gentileza para pasajeros mayores o discapacitados.

ANIMALS / Animales

A trained service animal may accompany a rider with disabilities. Non-service animals must be in enclosed carriers and transported by passengers without the assistance of drivers or operators.

Se permite que un animal de servicio entrenado acompañe a un pasajero discapacitado. Los pasajeros deben transportar los animales que no sean de servicio en una jaula cerrada, sin ayuda de los conductores ni de los choferes.

BIKES / Bicicletas

- On Trolleys with stairs, board at rear doors of each car. Board low-floor cars at any door.
- Stay with bike to keep it secure.
- One bike is allowed per car during weekday rush hours, two bikes per car at all other times.
- MTS is not responsible for loss or damage to bicycles.
- En los Trolleys con escaleras, aborde en las puertas traseras. Abrace los Trolleys de piso bajo en cualquiera puerta.
- Por seguridad, manténgase junto a la bicicleta.
- En las horas pico durante la semana, sólo se admite una bicicleta por unidad. En otros tiempos, se admiten dos bicicletas.
- MTS no es responsable por el extravío o daño de bicicletas.

DAY PASSES / Pases diarios

Regional	Not valid on MTS Rapid Express or COASTER No son válidos en MTS Rapid Express o COASTER
1-Day / 1 día	\$5.00
2-Day / 2 días	\$9.00
3-Day / 3 días	\$12.00
4-Day / 4 días	\$15.00
14-Day / 14 días	\$43.00

RegionPlus	Valid on MTS Rapid Express and COASTER Es válido en MTS Rapid Express y COASTER
1-Day / 1 día	\$12.00

MONTHLY AND 30-DAY PASSES / Pases mensuales y pases de 30 días

Adult / Adulto	\$72.00
Youth (18 and under)* Jóvenes (18 años o menos)*	\$36.00
Senior (60+)/Disabled/Medicare* Mayores de 60 años/Discapacitados/Medicare*	\$18.00
Child (5 and under) Niño (5 años o menos)	FREE GRATIS

*I.D. required for discount fare or pass.
*Se requiere identificación para tarifas o pases de descuento.

PROMOTIONS & DISCOUNTS / Promociones y descuentos

Family Weekends / Fines de semana para la familia

Two children (12 and under) ride free Saturdays and Sundays with a fare-paying adult (18 or older).

Dos menores (de hasta 12 años) viajan gratis los sábados y domingos con sólo abonar la tarifa de un adulto (de 18 años o más).

Holiday Friends Ride Free / Los días festivos, los amigos viajan gratis

On New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day, two people may ride any MTS bus or Trolley with one fare or pass.

En New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, y día de Navidad, dos personas pueden viajar en cualquier ruta de autobús o Trolley de MTS con un pase o pasaje.

Classroom Day Pass Program / Programa pase diario para escolares y jóvenes

Special discounted Day Passes are available for school and youth group field trips for youths ages 6 to 18. Call (619) 233-9558 for information.

Se realizan descuentos especiales en pases diarios para viajes escolares y de jóvenes desde 6 a 18 años. Llame al (619) 233-9558 para más información.

DIRECTORY / Directorio

MTS Information & Trip Planning MTS Información y planeo de viaje	511 or/ó (619) 233-3004
TTY/TDD (teletype for hearing impaired) Teletipo para sordos	(619) 234-5005 or/ó (888) 722-4889
InfoExpress (24-hour info via Touch-Tone phone) Información las 24 horas (vía teléfono de teclas)	(619) 685-4900
Customer Service / Servicio al cliente	(619) 557-4555
MTS Security / Seguridad de MTS	(619) 595-4960
Compass Card / Tarjeta Compass	(619) 595-5636
Lost & Found Objetos extraviados	(619) 557-4555
Transit Store	(619) 234-1060 12th & Imperial Transit Center M-F 8am-5pm
For MTS online trip planning Planificación de viajes por Internet	sdmts.com

For more information on riding MTS services, pick up a Rider's Guide on a bus or at the Transit Store, or visit sdmts.com.

Para obtener más información sobre el uso de los servicios de MTS, recoja un 'Rider's Guide' en un autobús o en los Transit Store, o visita a sdmts.com.

Thank you for riding MTS! ¡Gracias por viajar con MTS!

FARE INSPECTION / Inspección de boletos

Random fare inspections will be made. Passengers without a valid ticket or pass will be removed from the train and/or fined. You must have a valid fare or be in the process of purchasing one while at the station.

Se efectuarán inspecciones aleatorias de boletos. Los pasajeros que no posean un boleto o pase válido deberán abandonar el tren y/o serán multados. Mientras se encuentre en la estación, debe poseer un boleto válido o estar comprándolo.

THINGS TO REMEMBER / Cosas que recordar

YES / Sí	NO / No
Wear headphones Use audifonos	Smoking/Vaping Fume/Vapiar
Cover drinks Cubra las bebidas	Eating or open drinks Coma ni bebidas destapadas
Stay with bike Manténgase junto a su bicicleta	Feet on seats Ponga los pies en los asientos
Hold belongings Sujete sus pertenencias	Climbing or jumping between Trolleys Colgar o brincar entre los Trolleys

RIDE ASSURED / Viaje Tranquilo.

If you notice any suspicious or dangerous activity, let MTS Security know by calling (619) 595-4960 or text (619) 318-1338. Si nota cualquier actividad que sea sospechosa o peligrosa, notifique a MTS Security por teléfono a (619) 595-4960 o texto (619) 318-1338.

UC San Diego Blue Line
San Ysidro ↔ America Plaza

Orange Line
Arnele Ave. ↔ Courthouse

Sycuan Green Line
Santee ↔ 12th & Imperial

SDG&E Silver Line
Downtown San Diego Loop

Your Transit Fare... Anytime. Anywhere.
Su Tarifa de Tránsito. Cuando Sea. Donde Sea.

COMPASS CLOUD
The new mobile ticketing app. La nueva aplicación de boleto móvil.

- One-Day & 30-Day Passes, Special Events
- Good on Buses, Trolley, SPRINTER & COASTER
- Multiple Riders per Phone
- Fast. Easy. Convenient.

sdmts.com/compass-cloud

compass card

Senior/Disabled/Medicare (S/D/M) / Mayores de 60 años Incapacitados/con Medicare (S/D/M)

For benefits of Option 1 and/or a list of valid forms of ID for Option 2, go to: www.sdmts.com/fares_discounted.asp.

Para consultar beneficios de la opción 1 y/o una lista de las formas válidas de identificación para la opción 2, acceda a: www.sdmts.com/fares_discounted.asp.

CART POLICY / Política de carritos

YES / Sí	NO / No
Smaller than 30" high, 18" wide, 18" deep Menos de 30" de alto, 18" de ancho, 18" de grueso	Larger than 30" high, 18" wide, 18" deep Mayor de 30" de alto, 18" de ancho, 18" de grueso
Load does not exceed capacity Carga no sobrepasa de capacidad	Load exceeds capacity Carga sobrepasa de capacidad
Can be loaded in a single trip Se puede cargar en un solo viaje	Cannot be loaded in a single trip No se puede cargar en un solo viaje
Does not block aisle No obstruye el pasillo	Blocks aisle Obstruye el pasillo
No more than two carry-on items No más que dos piezas de equipaje de mano	More than two carry-on items Más que dos piezas de equipaje de mano
More details on sdmts.com	Bags of cans/Leaking items Bolsa de latas/objetos goteando

DOWNTOWN DETAIL / Detalle del centro



TROLLEY SYSTEM MAP / Mapa del sistema de Trolley



LEGEND

- Connecting Bus Routes
- Connecting Rapid Routes
- Amtrak and COASTER
- Transfer to Airport
- Parking (Free)
- Pay Parking
- PETCO Park



Monday through Friday / lunes a viernes

SANTEE ⇨ DOWNTOWN schedule table with columns for Santee, El Cajon, Grossmont, SDSU, Qualcomm Stadium, Fashion Valley, Old Town, Santa Fe Depot, 12th & Imperial.

DOWNTOWN ⇨ SANTEE schedule table with columns for 12th & Imperial, Santa Fe Depot, Old Town, Fashion Valley, Qualcomm Stadium, SDSU, Grossmont, El Cajon, Santee.

Saturday / sábado

SANTEE ⇨ DOWNTOWN Saturday schedule table.

DOWNTOWN ⇨ SANTEE Saturday schedule table.

Sunday / domingo

SANTEE ⇨ DOWNTOWN Sunday schedule table.

DOWNTOWN ⇨ SANTEE Sunday schedule table.

E = Trip begins at Gaslamp Quarter Station five minutes earlier than time shown. / Este viaje comienza cinco minutos antes del tiempo indicado en la estación de Gaslamp Quarter.



Monday through Friday / lunes a viernes

ARNELE AVE. ⇨ DOWNTOWN schedule table with columns for Arnele Ave., El Cajon, Grossmont, Spring Street, Euclid Avenue, 12th & Imperial, City College, Courthouse.

DOWNTOWN ⇨ ARNELE AVE. schedule table with columns for Courthouse, City College, 12th & Imperial, Euclid Avenue, Spring Street, Grossmont, El Cajon, Arnele Ave.

Saturday / sábado

ARNELE AVE. ⇨ DOWNTOWN Saturday schedule table.

DOWNTOWN ⇨ ARNELE AVE. Saturday schedule table.

B = Trip begins at 25th & Commercial Station ten minutes earlier than time shown. / Este viaje comienza diez minutos antes del tiempo indicado en la estación de 25th & Commercial. C = Trip begins at Civic Center Station four minutes earlier than time shown. / Este viaje comienza cuatro minutos antes del tiempo indicado en la estación de Civic Center. D = Trip begins at Encanto/62nd Street Station three minutes earlier than time shown. / Este viaje comienza tres minutos antes del tiempo indicado en la estación de Encanto/62nd Street.



Monday through Friday / lunes a viernes

SAN YSIDRO ⇨ DOWNTOWN schedule table with columns for San Ysidro, Iris Avenue, H Street, 8th Street, 12th & Imperial, City College, America Plaza.

DOWNTOWN ⇨ SAN YSIDRO schedule table with columns for America Plaza, City College, 12th & Imperial, 8th Street, H Street, Iris Avenue, San Ysidro.

Saturday / sábado

SAN YSIDRO ⇨ DOWNTOWN Saturday schedule table.

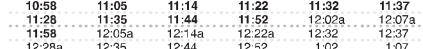
DOWNTOWN ⇨ SAN YSIDRO Saturday schedule table.

Sunday / domingo

SAN YSIDRO ⇨ DOWNTOWN Sunday schedule table.

DOWNTOWN ⇨ SAN YSIDRO Sunday schedule table.

A = Trip begins at Barrio Logan Station six minutes earlier than time shown. / Viaje comienza seis minutos antes del tiempo indicado en la estación de Barrio Logan.



Monday through Friday / lunes a viernes

ARNELE AVE. ⇨ DOWNTOWN schedule table with columns for Arnele Ave., El Cajon, Grossmont, Spring Street, Euclid Avenue, 12th & Imperial, City College, Courthouse.

DOWNTOWN ⇨ ARNELE AVE. schedule table with columns for Courthouse, City College, 12th & Imperial, Euclid Avenue, Spring Street, Grossmont, El Cajon, Arnele Ave.



Every Half Hour

First Trip and Last Trip schedule table for Downtown Loop.

Holiday Service / Servicio de los días festivos. A Saturday or Sunday schedule will be operated on the following holidays and observed holidays: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day and Thanksgiving. Christmas schedule: Trolleys operate every 30 minutes throughout the day on all lines. No SDG&E Silver Line on Holidays. Call 511 for more information. Se operará con horario de sábado o domingo durante los siguientes días festivos y feriados observados: New Year's Day, Presidents' Day, Memorial Day, Independence Day (EE.UU.), Labor Day y Thanksgiving. Servicio durante Navidad: Los carros operarán cada 30 minutos durante todo el día en todas las líneas. No habrá SDG&E Silver Line en días festivos. Llame al 511 para más información.

From: Jackson, Amy
Sent: Thursday, January 30, 2020 9:31 AM
To: Ascencio, Yari
Subject: FW: Bella Mar - MTS

From: Beverly Neff <beverly.neff@sdmts.com>
Sent: Friday, September 13, 2019 8:30 AM
To: Jackson, Amy <Amy.Jackson@kimley-horn.com>
Cc: Monica Coria <Monica.Coria@sdmts.com>; Denis Desmond <Denis.Desmond@sdmts.com>; Loomis, Mychal <mychal.loomis@kimley-horn.com>
Subject: RE: Bella Mar - MTS

Amy,

Reponses to your questions below:

1. Yes, we will remove the SB stop at Conifer and can plan to install a new SB bus stop in front of the development. It would be our preference to also have a NB bus stop if there was a crosswalk and small patch of sidewalk. We like to install bus stops in pairs, because wherever people are taking the bus, they also have to come back and have a place to get off (and vice versa). I imagine residents will be quick to complain if there was only a bus stop in one direction.
2. Yes, MTS can install the MTS sign and street furniture. As discussed, the bus stop must have an 8' deep landing pad for ADA. A bench can be placed on sidewalks as narrow as 5-6'; a shelter would require a 10-11' sidewalk. We would select the furniture type primarily based on ridership. MTS would install and maintain the furniture.
3. Yes, thank you. It is very important to MTS that the development provide a safe, ADA compliant path to the trolley station. Also, the typical section shown below looks wide enough for a car to easily pass by the bus.

Thanks,
Beverly

From: Jackson, Amy [<mailto:Amy.Jackson@kimley-horn.com>]
Sent: Thursday, September 12, 2019 5:37 PM
To: Beverly Neff
Cc: Monica Coria; Denis Desmond; Loomis, Mychal
Subject: Bella Mar - MTS

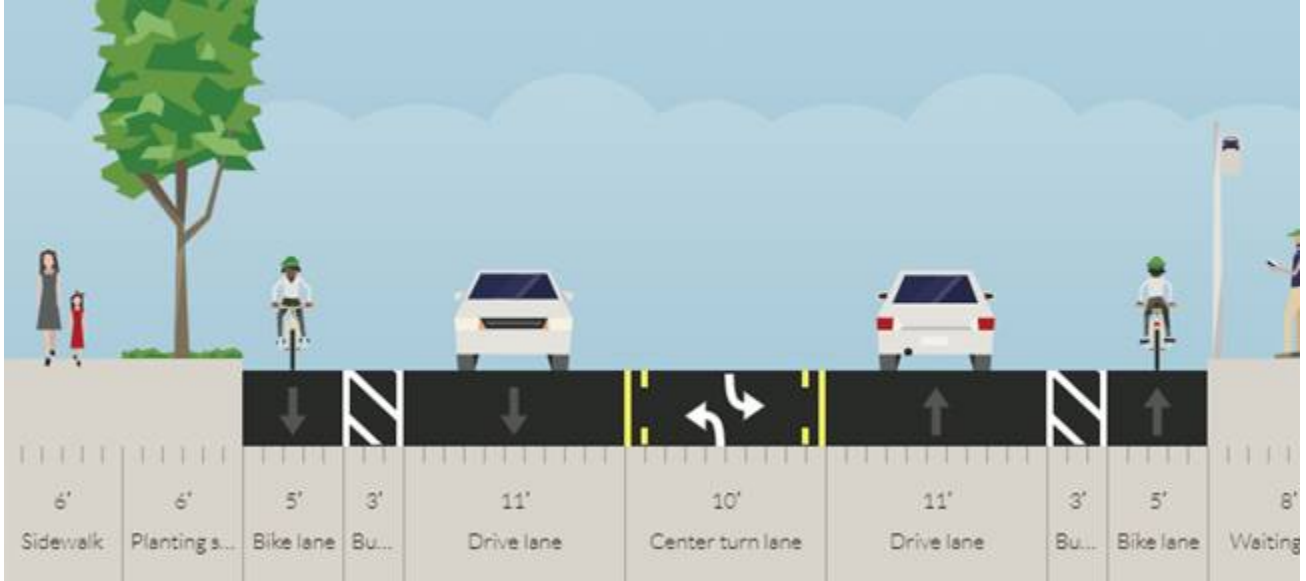
Beverly,

Thanks again for taking the time to meet with us in the field yesterday morning to discuss our options for the typical section on Hollister Street for the Bella Mar development at 408 Hollister Street.

We have a meeting with the City next Wednesday to discuss their comments on the TIA. The City has asked us to provide documentation from MTS on the following:

1. We can relocate the southbound bus stop to be in front of the project site on Hollister Street from the existing location at the northwest corner of Conifer Avenue.

2. MTS will provide the necessary amenities for the bus stops depending on the ridership (in accordance with Table 4.1 of the Designing for Transit Manual) if the project provides the appropriate landing pad space.
3. The proposed typical section for Hollister Street
 - a. As you saw, we are working with Monica on the feasibility of providing an ADA accessible path from the project site to the Palm Avenue Trolley Station including a crosswalk at Conifer Avenue and an accessible path to the station platform.
 - b. In the meantime, we are wondering if the following alternative typical section conflicts with MTS guidelines or if there are any concerns from your end



Thank you!
Amy

Amy Jackson, PE (MD), PTOE

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APPENDIX M

CEQA VMT MEMORANDUM (INCLUDING SANDAG VMT SCREENING MAP)

MEMORANDUM

To: Ann French Gonsalves, RTE, DCE, Senior Traffic Engineer
Felipe Avila-Zepeda, Associate Engineer - Traffic
City of San Diego – Development Services Department

From: Mychal Loomis, P.E., T.E., PTOE, RSP
Kimley-Horn and Associates, Inc.

Date: December 18, 2020

Subject: Bella Mar Development, PTS #631240, CPA/RZ/SDP/CDP
Transportation VMT CEQA Analysis

Executive Summary

Senate Bill (SB) 743 was approved by the California legislature in September 2013, requiring changes to the California Environmental Quality Act (CEQA) methodology, specifically directing the Governor's Office of Planning and Research (OPR) to develop alternative metrics to the use of vehicular "level of service" (LOS) for evaluating transportation projects. OPR published the Technical Advisory on Evaluating Transportation Impacts in CEQA (Technical Advisory) in December 2018 providing recommendations for the preparation of transportation impact analysis under SB 743, suggesting Vehicle Miles Traveled (VMT) to replace LOS as the primary measure of transportation impacts. The Technical Advisory requires updated transportation procedures by July 1, 2020.

The City of San Diego's (City's) Transportation Study Manual (TSM) provides guidance on preparing transportation studies for projects within the City, pursuant to SB 743. The manual addresses the shift from LOS analysis to VMT analysis for CEQA, and updates the LOS methodology that will still be required as part of the Local Mobility Analysis (LMA) for the City.

This memorandum summarizes the VMT CEQA analysis and results for the proposed Bella Mar development located at 408 Hollister Street in the City of San Diego, California, in accordance with the City's TSM. The LMA for this development is provided in a separate document.

Project Information

The proposed project is located at 408 Hollister Street in the Otay Mesa-Nestor Community in the City of San Diego, east of Imperial Beach and south of the City of Chula Vista. The approximately 14-acre site is bounded by Interstate 5 (I-5) to the west and Hollister Street to the east, between Palm Avenue to the south and Main Street to the north, as shown in **Figure 1**. The project site is currently vacant. The site is directly south of the Otay River Valley and north of two vacant adjacent sites. The east side of Hollister Street has an elevated railroad track for the MTS Trolley Blue Line, and a major transit station, the Palm Avenue Trolley Station is located less than ¼ mile south of the Project site on Hollister Street.

The Bella Mar project is proposing to construct 380 multi-family residential units, including 100 affordable units. **Figure 2** shows the proposed project site plan. Access to the site will be established through construction of two unsignalized full-access driveways on Hollister Street.

Methodology

The City's TSM establishes VMT as the performance metric for measuring transportation environmental impacts according to CEQA. The manual provides VMT screening criteria, significance thresholds, analysis methodologies, and mitigation measures for land development and transportation projects under CEQA. This memorandum focuses on the land development project requirements of the TSM.

Initial Screening

Projects are compared against initial screening criteria to determine if the project can be considered less than significant for VMT impact based on project features regarding location, size, and use. The City's screening criteria for determining land development projects as less than significant for VMT include the following:

- **VMT Efficient Location** – Projects located in a VMT Efficient Location per the SANDAG Screening Map
 - Residential or commercial employment – 15% or more below the base year average resident VMT/capita or employee VMT/employee
 - Industrial employment – average or below average base year employee VMT/employee
- **Small Project (Trip-based)** – less than 300 daily unadjusted driveway trips
- **Locally Serving Retail** – 100,000 square feet gross floor area or less and serves a population of roughly 25,000 people or less based on a market area study
- **Locally Serving Public Facilities** – serves the surrounding community such as transit centers, public schools, libraries, post offices, park-and-ride lots, police and fire facilities, and government offices, or a public facility that is a passive use such as utility buildings, water sanitation, and waste management
- **Affordable Housing Project** – provides access to transit and meets one of the following criteria: affordable to persons with a household income equal to or less than 50% of the area median, housing for senior citizens, or housing for transitional foster youth, disabled veterans, or homeless persons
- **Mixed Use Project** – can use screening criteria above for each land use
- **Redevelopment Project** - results in a net decrease in total project VMT

If the project does not meet the screening criteria listed above, a detailed VMT analysis is required.

VMT Analysis and Significance Thresholds

If a project is determined to require further VMT analysis after the initial screening, the appropriate VMT analysis methodology is applied per land use type as summarized in **Table 1**. The results of the VMT analysis are compared to the significance thresholds identified for each type of land use also provided in Table 1. If the project is found to have potential significant impacts, mitigation is required.

Mitigation

If the project has a potential significant transportation impact as a result of exceeding the thresholds shown in Table 1, the impacts must be mitigated by reducing the project’s resident VMT/capita or employee VMT/employee. Mitigation strategies are intended to reduce the number of automobile trips generated by the project or reduce the average vehicle trip length.

The California Air Pollution Control Officers Association (CAPCOA) *Quantifying Greenhouse Gas Mitigation Measures* document or the San Diego Association of Governments (SANDAG) *Mobility Management VMT Reduction Calculator Tool* may be used to quantify percent VMT reductions associated with proposed mitigation strategies.

Bella Mar Project VMT Analysis

The initial screening evaluation for potential VMT impact for the Bella Mar project is summarized in **Table 1**.

Table 1. Bella Mar VMT Analysis: Initial Screening

Screening Criterion	Project Analysis	Pass?
VMT Efficient Location	A screenshot of the screening map at the Project site is provided in Figure 3 . Based on the screening map, the census tract that contains the Project site (Census Tract 10107) is a VMT efficient area, with 50 to 85 percent of the regional mean VMT per capita. Specifically, the resident VMT per capita for the census tract is 13.7, which is 77.9% of the regional mean.	YES
Small Project	The project generates greater than 300 daily unadjusted driveway trips	No
Locally Serving Retail	Not Applicable	No
Locally Serving Public Facilities	Not Applicable	No
Affordable Housing Project	Provides 100 affordable housing units and provides access to transit via sidewalk connection and new bus stops. The 100 affordable units may be excluded from VMT analysis.	YES
Mixed Use Project	Not Applicable	No
Redevelopment Project	Not Applicable	No

As described in the screening evaluation, the project is located within a VMT Efficient Location per the SANDAG screening map provided in **Figure 3**. The project also provides affordable housing near transit, which would exclude the affordable housing portion of the project from further VMT analysis. As a result, the project is not considered to have significant transportation impacts, and therefore does not require further transportation VMT CEQA analysis.

Conclusion

The City of San Diego's Transportation Study Manual provides a list of screening criteria for land use and transportation projects to determine whether detailed VMT analysis is required. A project would have less than significant transportation impacts per CEQA if the project meets any of the screening criteria.

One of the characteristics in the screening criteria is a residential or commercial project located in a VMT Efficient Location, meaning the area is 15% or more below the base year average household VMT/capita or VMT/employee. Per the manual, the SANDAG screening map was used to determine the VMT/capita for the census tract where the project is located. Based on the SANDAG VMT Screening Tool, the census tract resident VMT per capita is 13.71 which is 77.9% of the regional mean. **As a result, the project is screened out from further VMT analysis, and is presumed to have less than significant transportation impacts per CEQA.**

Figure 1. Project Study Area

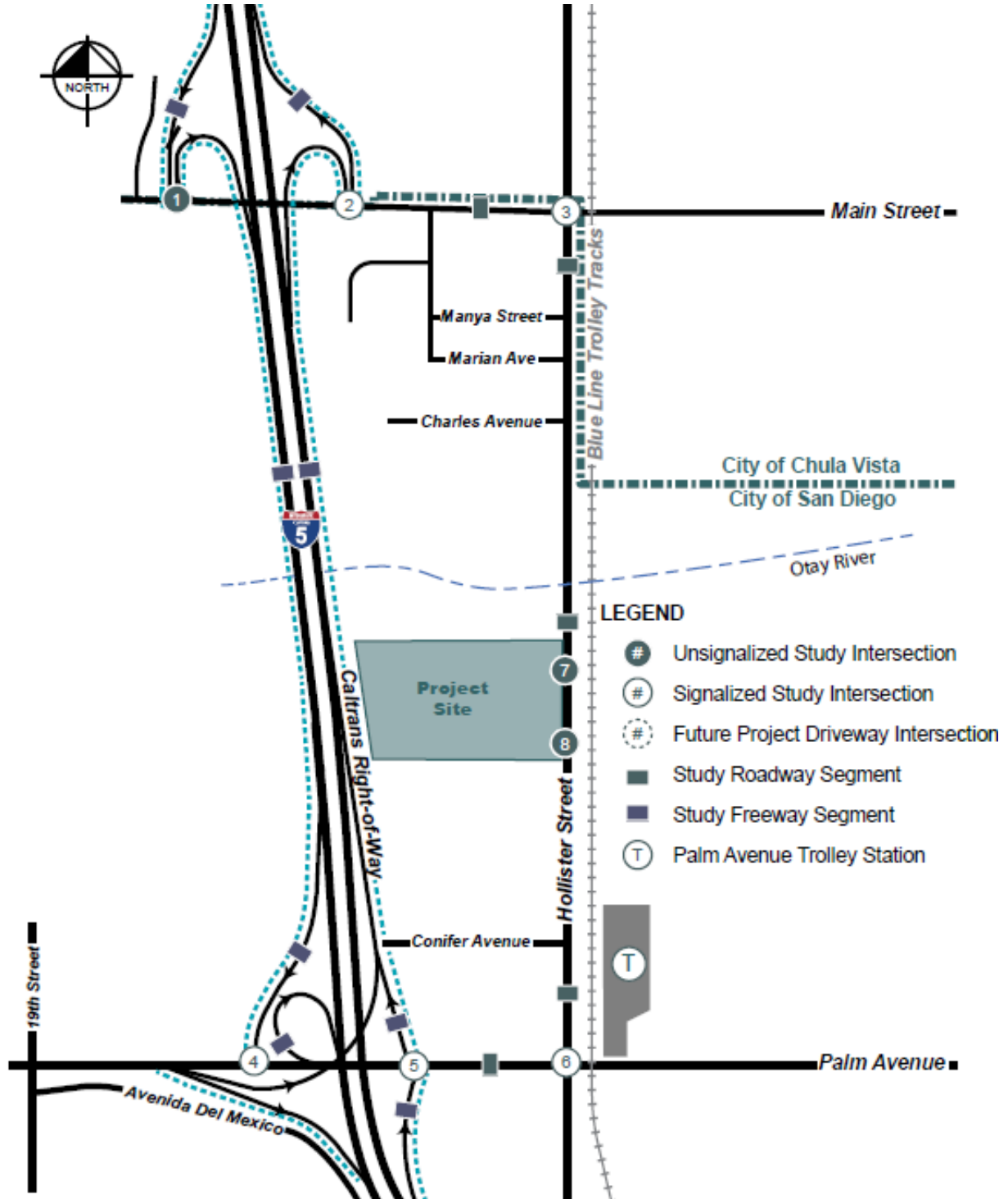
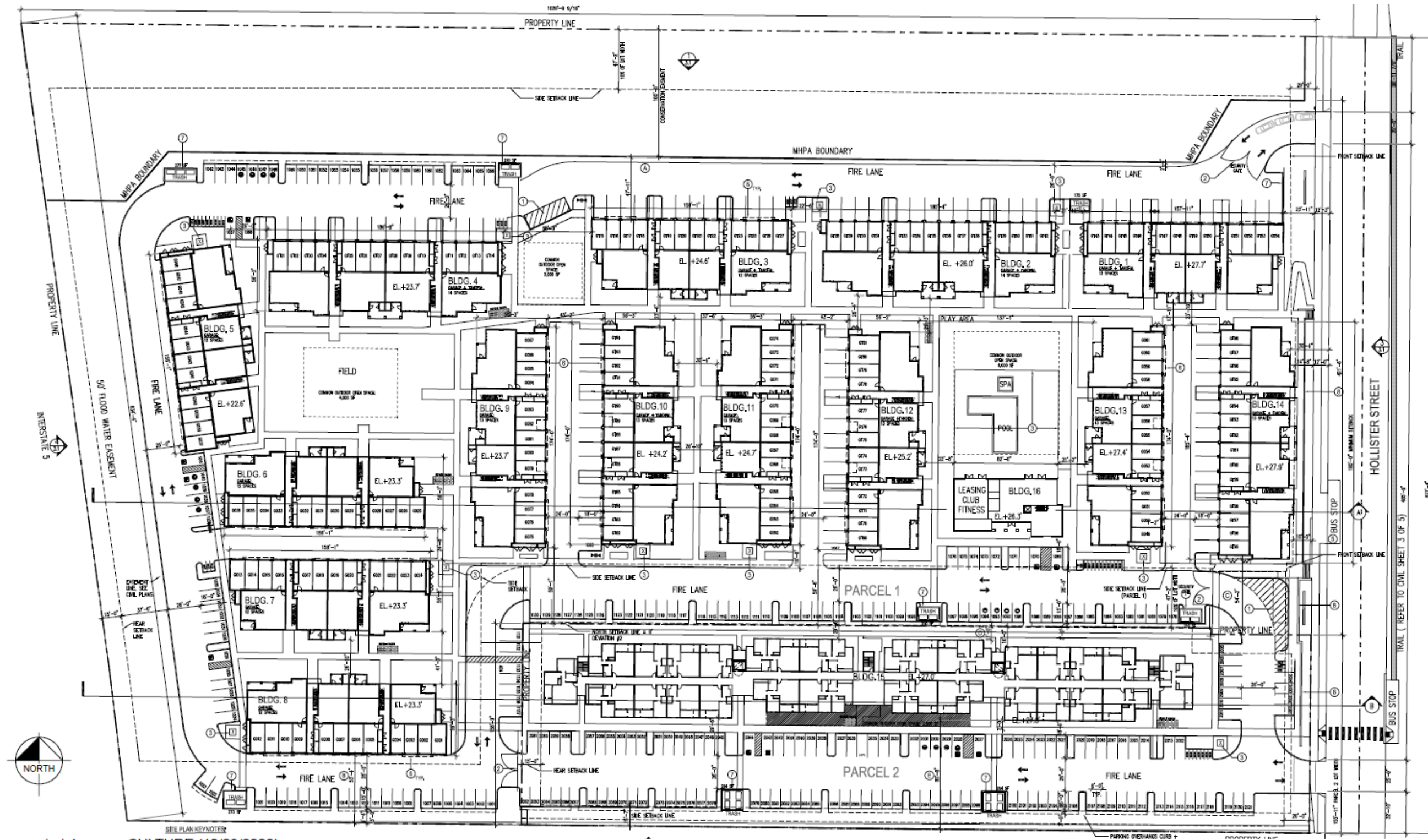
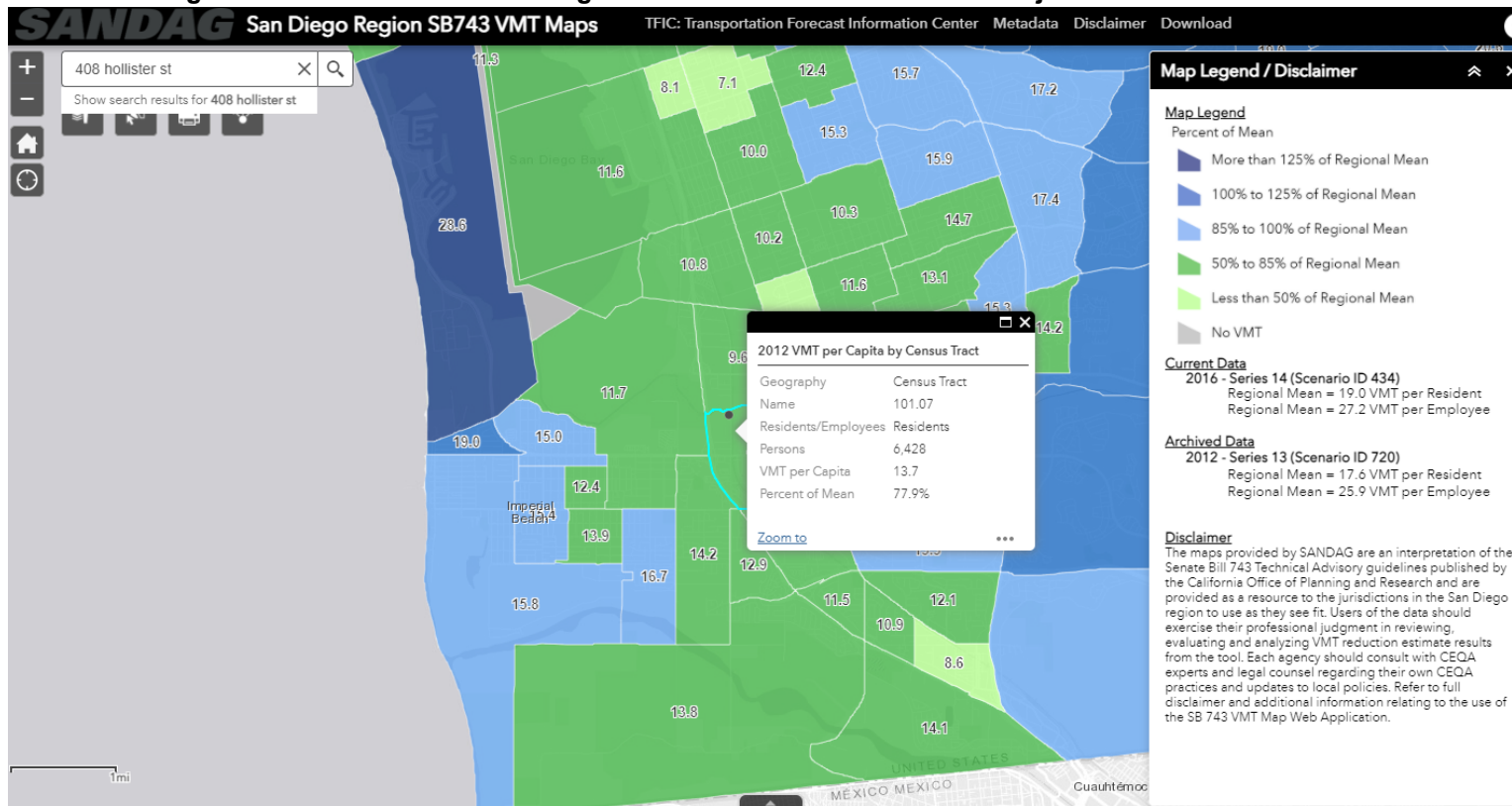


Figure 2. Project Site Plan



Source: carrierjohnson + CULTURE (10/23/2020)

Figure 3. SANDAG VMT Screening Tool – Screenshot of Bella Mar Project Census Tract Location



Attachment A. Significant VMT Thresholds and Analysis Methodologies per Land Use Type

LAND USE TYPE	THRESHOLD FOR DETERMINATION OF A SIGNIFICANT TRANSPORTATION VMT IMPACT **	ANALYSIS METHODOLOGY
Residential	15% below regional average* resident VMT/Capita	<p>For projects that generate less than 2,400 daily unadjusted driveway trips: Identify the location of the project on the SANDAG Resident VMT/Capita map. The project's Resident VMT/Capita will be considered the same as the Resident VMT/Capita of the census tract it is located in. Compare the project's Resident VMT/Capita to the threshold to determine if the impact is significant OR input the project into the SANDAG Regional Travel Demand Model to determine the project's Resident VMT/Capita.</p> <p>For projects that generate greater than 2,400 daily unadjusted driveway trips: Input the project into the SANDAG Regional Travel Demand Model for SANDAG to provide the project's Resident VMT/Capita. To perform the analysis, all project land uses should be inputted, and the VMT/Capita should be determined using the same method/scripts that SANDAG utilizes to develop the SANDAG Resident VMT/Capita maps.</p>
Commercial Employment, Hotel	15% below regional average* employee VMT/Employee	<p>For projects that generate less than 2,400 daily unadjusted driveway trips: Identify the location of the project on the SANDAG Employee VMT/Employee map. The project's Employee VMT/Employee will be considered the same as the Employee VMT/Employee of the census tract it is located in. Compare the project's Employee VMT/Employee to the threshold to determine if the impact is significant OR input the project into the SANDAG Regional Travel Demand Model to determine the project's Employee VMT/Employee.</p> <p>For projects that generate greater than 2,400 daily unadjusted driveway trips: Input the project into the SANDAG Regional Travel Demand Model for SANDAG to provide the project's Employee VMT/Employee. To perform the analysis, all project land uses should be inputted, and the VMT/Capita should be determined using the same method/scripts that SANDAG utilizes to develop the SANDAG Employee VMT/Employee maps.</p>
Industrial Employment	Regional average* employee VMT/Employee	<p>For projects that generate less than 2,400 daily unadjusted driveway trips: Identify the location of the project on the SANDAG Employee VMT/Employee map. The project's Employee VMT/Employee will be considered the same as the Employee VMT/Employee of the census tract it is located in. Compare the project's Employee VMT/Employee to the threshold to determine if the impact is significant OR input the project into the SANDAG Regional Travel Demand Model to determine the project's Employee VMT/Employee.</p> <p>For projects that generate greater than 2,400 daily unadjusted driveway trips: Input the project into the SANDAG Regional Travel Demand Model to determine the project's Employee VMT/Employee. To perform the analysis, all project land uses should be inputted, and the VMT/Capita should be determined using the same method/scripts that SANDAG utilizes to develop the SANDAG Employee VMT/Employee maps.</p>
Regional Retail, Regional Recreational, Regional Public Facilities, Transportation Projects	Zero net increase in total regional VMT*	Calculate the change to regional VMT using the SANDAG Travel Demand Model. To calculate the change in regional VMT, the regional retail component of the project should be inputted into the travel demand model (year that is used to determine the VMT thresholds). The "with project regional retail" regional VMT produced by the model run is compared to the "no project" regional VMT.
<p>* The regional average and total regional VMT are determined using the SANDAG Regional Travel Demand Model. The specific model version and model year will be identified by the Development Services Department's Transportation Development Section.</p> <p>** Projects that exceed these thresholds would have a significant impact.</p>		

Source: City of San Diego *Transportation Study Manual Tables 3 and 4 (June 2020)*.