

CITY OF ENCINITAS
Marea Village Mixed-Use
(Hotel, Residential, Commercial)
1900 N. Coast Highway 101
June 23, 2021

Draft Local Transportation Analysis

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Job #1924

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Executive Summary

Marea Village Mixed-Use

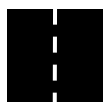
This Local Transportation Analysis (LTA) determines if the proposed project is calculated to create any traffic effects on the study area roadways in the vicinity of the project. The project includes a 30-room hotel, 94 multi-family units, and 18,261 square feet of commercial/retail space on the westside of North Coast Highway 101 approximately 500 feet south of La Costa Avenue located in the City of Encinitas, California. The project will replace an existing commercial/retail center of approximately 7,582 square feet with active businesses.

This analysis is based on the local San Diego Institute of Transportation Engineers (ITE) *Guidelines for Traffic Impact Studies in the San Diego Region*, May 2019 traffic analysis criteria. The project traffic generation was calculated using the SANDAG trip rates from the *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. The project site has active uses creating traffic; therefore, a traffic credit was applied because the existing uses will be replaced by the project. Additionally, the existing and proposed project have pass-by trips already on the study roadways. The project is calculated to generate a net increase of 1,122 ADT, 60 AM peak hour trips, and 102 PM peak hour trips. The project is calculated to have an effect to the following intersections because project traffic exceeds the allowable change in vehicular delays:

- 1) Intersection of N. Coast Highway 101/Bishops Gate under existing + project, and existing + cumulative + project conditions. A roundabout is proposed as part of the City's Streetscape Project; however, the roundabout is forecasted to operate at LOS E in the PM peak hour with project traffic. The AM peak hour is calculated to operate at acceptable LOS. The goal of Streetscape is to reduce the number of southbound vehicle lanes to accommodate a dedicated bike lane, reduce travel speeds, and implement roundabouts to better balanced mobility between motorists, bicyclists, and pedestrians. If the project pulls building permits before Streetscape completes the roundabout, then the project will provide a **fair share contribution of 6.2%** towards this roundabout or other City directed location as the proportional means to reduce the traffic effect.
- 2) Intersection of N. Coast Highway 101/Grandview St under existing + project conditions. A roundabout is proposed as part of the City's Streetscape Project. The roundabout is forecasted to operate at LOS E in the PM peak hour with project traffic; however, the project no longer has an effect with the roundabout because the change in delay is 0.6 seconds, which is less than the allowable 2.0 seconds. The AM peak hour is calculated to operate at acceptable LOS. The goal of Streetscape is to reduce the number of southbound vehicle lanes to accommodate a dedicated bike lane, reduce travel speeds, and implement roundabouts to better balanced mobility between motorists, bicyclists, and pedestrians. If the project pulls building permits before Streetscape completes the roundabout as the proportional means to reduce the traffic effect, then the project will provide a **fair share contribution of 2.9%** towards this roundabout or other City directed location.

- 3) Intersection of La Costa Ave/N. Vulcan Ave under existing + project + cumulative, and horizon year 2035 + project conditions. The traffic effect is reduced to acceptable LOS with an improvement of a traffic signal under existing + project + cumulative conditions. Under Existing + Project + Cumulative conditions, the recommended improvement is a **fair share contribution of 2.7%** towards a future traffic signal. Under horizon year 2035 + project conditions, in addition to a traffic signal an additional westbound left turn lane is required to have a forecasted acceptable LOS. Under Horizon Year 2035 + Project conditions, the recommended improvement is a **fair share contribution of 2.3%** toward a horizon year intersection improvement that may be a westbound left turn lane or other to be determined improvement as the proportional means to reduce the traffic effect.

- 4) Intersection of La Costa Ave/Sheridan Rd under horizon year 2035 + project conditions. The traffic effect is reduced to acceptable LOS with an improvement of a traffic signal. Under Horizon Year 2035 + Project conditions, the recommended improvement is a **fair share contribution of 2.4%** toward a horizon year 2035 traffic signal or other City directed location as the proportional means to reduce the traffic effect.



1.0 Introduction

The purpose of this Local Transportation Analysis is to analyze potential traffic effects from traffic generated by a mixed-use project consisting of 30-room resort hotel, 94 multi-family units, and 18,261 square feet of commercial/retail space on the westside of North Coast Highway 101 approximately 500 feet south of La Costa Avenue in the City of Encinitas, California. The project will replace an existing commercial/retail center of approximately 7,582 square feet with active businesses. The regional location of the project is shown in **Figure 1**. A site plan is shown in **Figure 2**.

This report describes the existing roadway network in the vicinity of the project site and includes a review of the existing and proposed activities for weekday peak AM and PM periods, and daily traffic conditions when the project is completed. The format of this study includes the following chapters:

- 1.0 Introduction
- 2.0 Transportation Analysis Methodology
- 3.0 Existing Conditions
- 4.0 Project Description
- 5.0 Existing + Project Conditions
- 6.0 Cumulative Projects
- 7.0 Existing + Cumulative Conditions
- 8.0 Existing + Cumulative + Project Conditions
- 9.0 Horizon Year 2035 Conditions
- 10.0 Horizon Year 2035 + Project Conditions
- 11.0 Project Traffic Effects
- 12.0 Conclusion
- 13.0 References

Figure 1: Project Location

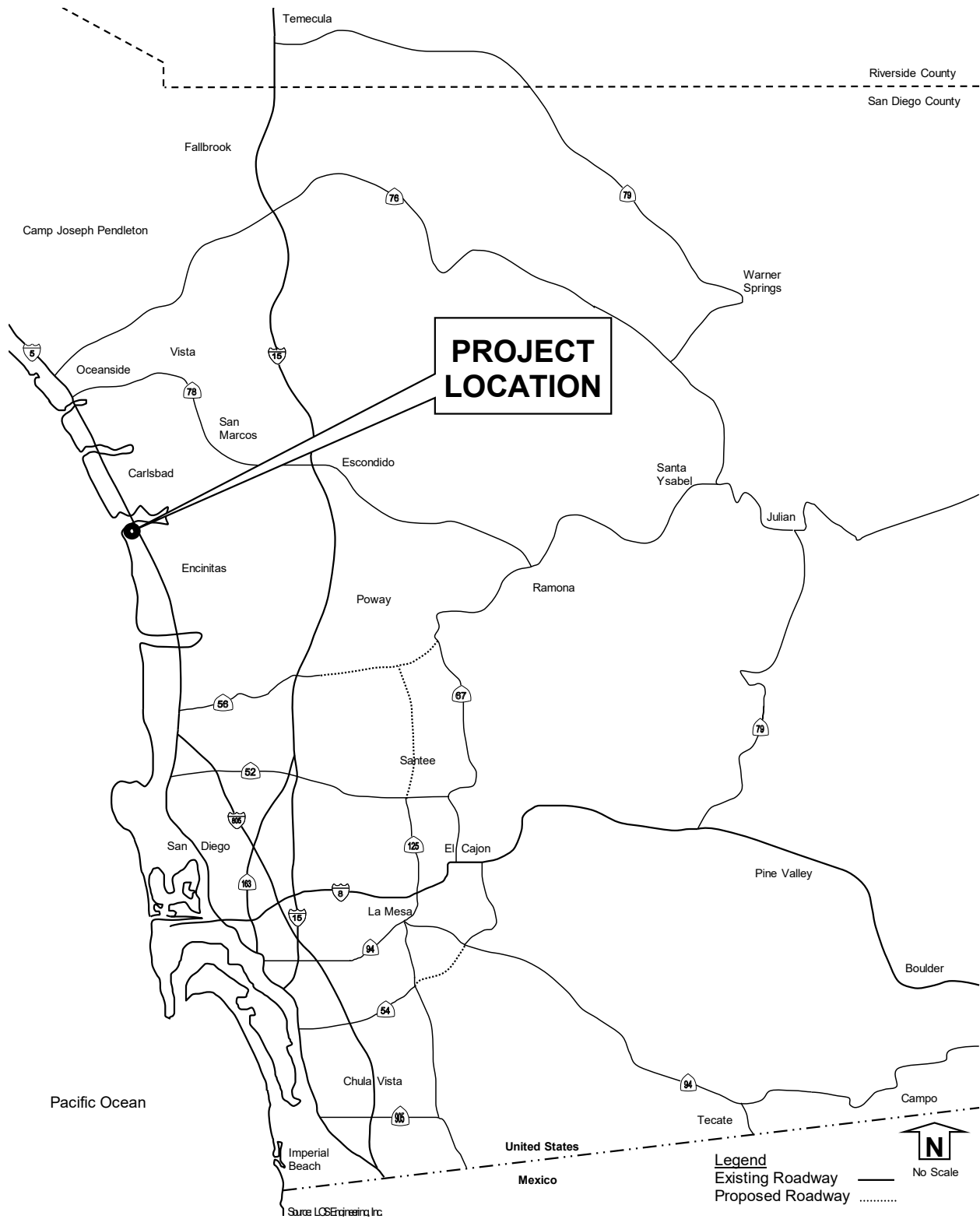
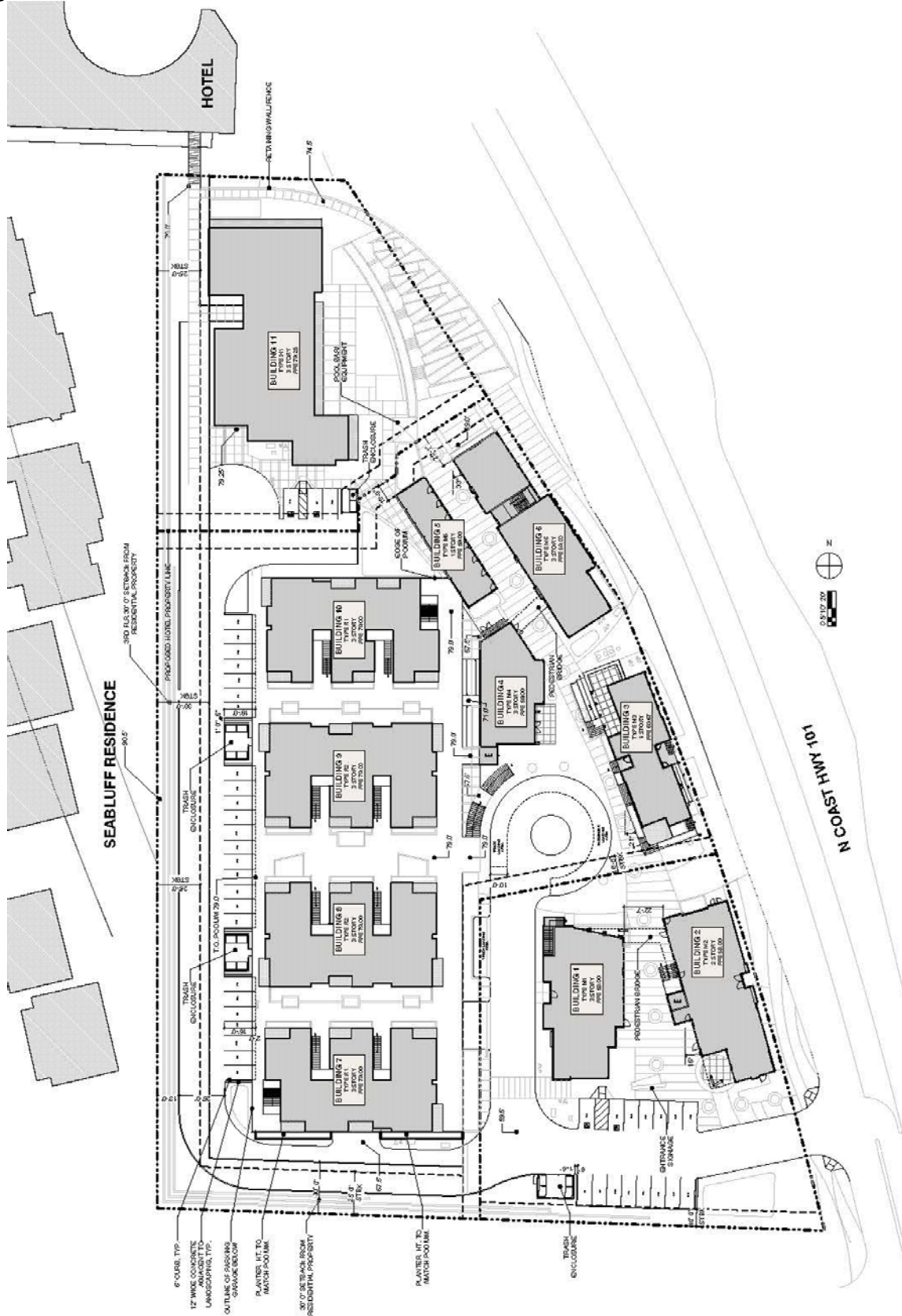


Figure 2: Site Plan



Source: Stephen Dalton Architects

2.0 Transportation Analysis Methodology

A Local Transportation Analysis (LTA) is provided to fulfill the Encinitas Municipal Code 23.08.060 requirement of a traffic analysis for projects with more than 2,000 square feet of building area and/or any residential project with five or more units.

This traffic study was prepared based on direction from City staff on the study intersections and roadway segments; the scenarios to be analyzed; and the methods required for analysis. The criteria for each of these parameters are included herein.

2.1 Study Area

The following intersections were included in this study:

- 1) Carlsbad Blvd SB/Avenida Encinas (signalized)
- 2) Carlsbad Blvd NB/Avenida Encinas (signalized)
- 3) North Coast Highway 101/La Costa Ave (signalized)
- 4) North Coast Highway 101/Project Access (future intersection)
- 5) North Coast Highway 101/Bishops Gate (un-signalized)
- 6) North Coast Highway 101/Grandview St (un-signalized)
- 7) North Coast Highway 101/Sands Mobile Home Park (un-signalized)
- 8) North Coast Highway 101/Jupiter St (un-signalized)
- 9) North Coast Highway 101/Leucadia Ave (signalized)
- 10) La Costa Avenue/N. Vulcan Avenue (un-signalized)
- 11) La Costa Avenue/Sheridan Rd (un-signalized)
- 12) La Costa Avenue/I-5 Southbound Ramps (signalized)
- 13) La Costa Avenue/I-5 Northbound Ramps (signalized)

The following street segments were included in this study:

- 1) Carlsbad Blvd from Avenida Encinas to La Costa Ave
- 2) North Coast Highway 101 from La Costa Ave to 600 ft S. of La Costa Ave
- 3) North Coast Highway 101 from 600 ft S. of La Costa Ave to Bishops Gate
- 4) North Coast Highway 101 from Bishops Gate to Grandview St
- 5) North Coast Highway 101 from Grandview St to Jupiter St
- 6) North Coast Highway 101 from Jupiter St to Leucadia Blvd
- 7) La Costa Avenue from N. Coast Highway 101 to N. Vulcan Ave
- 8) La Costa Avenue from N. Vulcan Ave to Sheridan Rd
- 9) La Costa Avenue from Sheridan Rd to I-5

2.2 Study Scenarios

The number of scenarios to be analyzed is typically based on the size of the project. For this project, the following scenarios were included based on direction from City staff:

- 1) Existing Conditions
- 2) Existing + Project Conditions
- 3) Existing + Cumulative Conditions (cumulative projects and planned roadway changes)
- 4) Existing + Cumulative + Project Conditions
- 5) Horizon Year 2035 Streetscape EIR Conditions
- 6) Horizon Year 2035 Streetscape EIR + Project Conditions

2.3 Traffic Analysis Methodology

The traffic analyses prepared for this study were based on the *Highway Capacity Manual* (HCM) operations analysis using Level of Service (LOS) evaluation criteria. The operating conditions of the study intersections and street segments were measured using the HCM LOS designations, which ranges from A through F. LOS A represents the best operating condition and LOS F denotes the worst operating condition.

2.3.1 Intersections

Two of the study intersections are located within the City of Carlsbad while the remaining intersections are located within the City of Encinitas. The same LOS criteria was applied to all study intersections.

The study intersections were analyzed based on the **operational analysis** outlined in the 6th Edition HCM. This process defines LOS in terms of **average control delay** per vehicle, which is measured in seconds. LOS at the intersections were calculated using the computer software program Synchro 10 (Trafficware Corporation). The 6th Edition HCM LOS for the range of delay by seconds for intersections is shown in **Table 1**.

TABLE 1: INTERSECTION LEVEL OF SERVICE DEFINITIONS (6TH EDITION HCM)

Level of Service	Un-Signalized Control Delay for TWSC, AWSC, and Roundabout (sec/veh where $v/c \leq 1$)	Signalized Control Delay (sec/veh where $v/c \leq 1$)
A	0-10	≤ 10
B	> 10-15	> 10-20
C	> 15-25	> 20-35
D	> 25-35	> 35-55
E	> 35-50	> 55-80
F	> 50	> 80

Source: 6th Edition HCM. TWSC: Two Way Stop Control. AWSC: All Way Stop Control. For unsignalized intersections, the control delay is the worst movement delay in seconds/vehicle.

Please note that the 6th Edition of HCM does not support intersection analyses for clustered intersections, such as Carlsbad Blvd SB & NB at Avenida Encinas. At these two locations, HCM 2000 was used for the analysis. The HCM 2000 LOS for the range of delay by seconds for intersections is shown in **Table 2**.

TABLE 2: INTERSECTION LEVEL OF SERVICE (HCM 2000)

Level of Service	Un-Signalized Control Delay (seconds/vehicle)	Signalized Control Delay (seconds/vehicle)
A	0-10	0-10
B	> 10-15	> 10-20
C	> 15-25	> 20-35
D	> 25-35	> 35-55
E	>35-50	> 55-80
F	> 50	> 80

Source: Highway Capacity Manual 2000.

2.3.2 Street Segments

Street segment capacities were analyzed based on the underlying jurisdiction’s criteria. N. Coast Hwy 101 north of La Costa Ave becomes Carlsbad Blvd. Carlsbad Blvd was analyzed using the City of Carlsbad criteria while the N. Coast Hwy 101 and La Costa Ave were analyzed using City of Encinitas criteria.

The City of Carlsbad uses a one-direction capacity of 1,820 vehicles per lane per hour for LOS capacity calculations for Carlsbad Blvd based on the physical characteristic of 2 travel lanes (per direction) on a divided roadway with a 50 MPH speed limit. The source of the Carlsbad segment capacity is included in **Appendix A**. The segment LOS based on the directional lane capacity is shown in **Table 3**.

TABLE 3: CARLSBAD BLVD STREET SEGMENT LOS BASED ON LANE CAPACITY

Level of Service	Lane Capacity (Vehicles)
C	850
D	1,690
E	1,850
F	Greater 1,850

Source: City of Carlsbad Growth Management Program Year 2018 Traffic Conditions Report.

The street segment daily volumes were analyzed based on the functional classification of the roadway using the City of Encinitas *Public Road Standards* General Plan Circulation Element Roadway Capacity Standards and the peak hour directional segment methodology as outlined in the *North Coast Highway 101 Leucadia Streetscape Improvement Project* Final EIR, dated February 2018 (“Streetscape EIR”). The daily segment volumes provide an initial capacity check to comply with the City’s General Plan while the peak hour directional segment methodology provides a more detailed LOS analysis as used in the Streetscape EIR. The peak hour directional segment analysis was used to determine if the project traffic created a traffic effect for consistency with the Streetscape EIR.

The roadway segment daily capacity based on the General Plan are summarized in **Table 4**. The City of Encinitas General Plan segment capacities are included in **Appendix B**.

TABLE 4: STREET SEGMENT DAILY CAPACITY AND LOS (CITY OF ENCINITAS)

Facility Type	Number of Lanes	LOS C	LOS D	LOS E
Prime Arterial	6	<46,000	<51,200	<57,000
Prime Arterial – Augmented	6	<53,000	<60,000	<66,000
Major Roadway	4	<28,200	<31,600	<35,200
Major Roadway - Augmented	4+	<36,300	<41,000	<45,400
Collector Roadway	4	<26,000	<29,200	<32,400
Modified Major (1)	3	<21,150	<23,700	<26,400
Local Roadway - Augmented	2+	<16,000	<18,000	<20,000
Local Roadway	2	<11,200	<12,600	<14,000

Source: City of Encinitas *Public Road Standards* April 1991. (1) The 3 lane Major capacity taken at 75% of the 4-lane capacity as documented in the City of Encinitas Housing Element Traffic Impact Study, Jan 27, 2016.

Portions of North Coast Highway 101 are reduced to three lanes (two lanes in one direction and one lane in the remaining direction). The capacity for the three-lane section was based on 75% of a 4-lane roadway as documented in the *City of Encinitas Housing Element Traffic Impact Study*, January 27, 2016. Excerpts from the City of Encinitas Housing Element are included in **Appendix C**.

A detailed peak hour directional segment methodology was used for the segment analysis as documented in the *North Coast Highway 101 Leucadia Streetscape Improvement Project* Final EIR, dated February 2018 (“Streetscape EIR”). Excerpts from the Michael Baker International (MBI) traffic study prepared for the Streetscape EIR documenting the directional segment methodology are included in **Appendix D**. The segment LOS thresholds are summarized in **Table 5**.

TABLE 5: CITY OF ENCINITAS STREET SEGMENT LOS BASED ON V/C RATIOS (STREETSCAPE EIR)

LOS	Volume over Capacity Ratio
A	< 0.41
B	0.42 -0.62
C	0.63 – 0.79
D	0.80 – 0.92
E	0.93 – 1.00
F	> 1.00

Source: MBI *Highway 101 Streetscape Project Traffic Impact Analysis Report* November 2016.

2.4 Project's Transportation Effect

If a proposed project's traffic causes the values shown in the **Table 6** to be exceeded, the effects of the project are determined to justify improvements (ITE excerpts included in **Appendix E**).

TABLE 6: CITY OF ENCINITAS DETERMINATION FOR POTENTIAL ROADWAY IMPROVEMENTS

Level of Service with Project*	Allowable Change Due to Project Effect**				
	Freeways	Roadway Segments		Intersections	Ramp Metering
	V/C	V/C	Speed (mph)	Delay (sec.)	Delay (min.)
E & F	0.01	0.02	1	2	2*

Source: San Diego ITE Guidelines for Transportation Impact Studies in the San Diego Region, 2019.

* All level of service measurements are based upon Highway Capacity Manual (HCM) procedures for peak-hour conditions. The target LOS for freeways, roadways, and intersections is generally "D". For metered freeway ramps, LOS does not apply; however, ramp meter delays above 15 minutes are considered excessive.

** If a proposed project's traffic causes the values shown in the table to be exceeded, the effects of the project are determined to justify improvements. These changes may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible improvements within the LTA report that will maintain the traffic facility at the target LOS or restore to pre-project conditions. If the LOS with the proposed project becomes worse than the target (see above * note), or if the project adds a significant amount of peak-hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, roadway improvements should be considered.

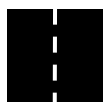
*** See Attachment B for ramp metering analysis.

Key: V/C = Volume to Capacity

Speed = Speed measured in miles per hour

Delay = Average stopped delay per vehicle measures in seconds for intersection, or minutes for ramp meters

LOS = Level of Service



3.0 Existing Conditions

This section describes the study area streets, peak hour volumes, and existing LOS.

3.1 Existing Street System

In the vicinity of the project, the following roadways were analyzed for this report and are described below. The General Plan street classifications are ultimate classifications. The existing roadway conditions are shown in **Figure 3**.

Carlsbad Boulevard from Avenida Encinas to La Costa Ave is mostly constructed as a four (4) lane divided roadway with two travel lanes in each direction. Bike lanes are provided on both sides of the roadway. There are no sidewalks on this segment. The posted speed limit is 50 Miles Per Hour (MPH). This segment of La Costa Avenue is classified as a *Coastal Street* in the *Carlsbad General Plan*, September 2015 (excerpt included in **Appendix F**).

La Costa Avenue from North Coast Highway 101 to I-5 is currently constructed as a two (2) lane roadway with one travel lane in each direction. Bike lanes are provided on both sides of the roadway. There are no sidewalks on this segment. The posted speed limit is 40 Miles Per Hour (MPH). This segment of La Costa Avenue is classified as a 4-lane *Collector Roadway* on the City of Encinitas Circulation Plan (**Appendix G**).

North Coast Highway 101 from the City of Carlsbad limits to La Costa Avenue is constructed as a four (4) lane divided roadway. North Coast Highway 101 from La Costa Avenue to approximately 600 feet south of La Costa Avenue is generally built as a four (4) lane divided roadway with bike lanes in each direction. North Coast Highway 101 from approximately 600 feet south of La Costa Avenue to Leucadia Blvd is generally built as a three (3) lane divided roadway with 1 northbound lane with adjacent Class II bike lane and 2 southbound lanes with the outside lane having intermittent bike “Sharrow” markings (Class III). Parking is generally permitted. The posted speed limit is 35 MPH. This segment is classified as a 4-lane *Major Roadway* on the City of Encinitas Circulation Plan (Appendix G).

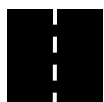
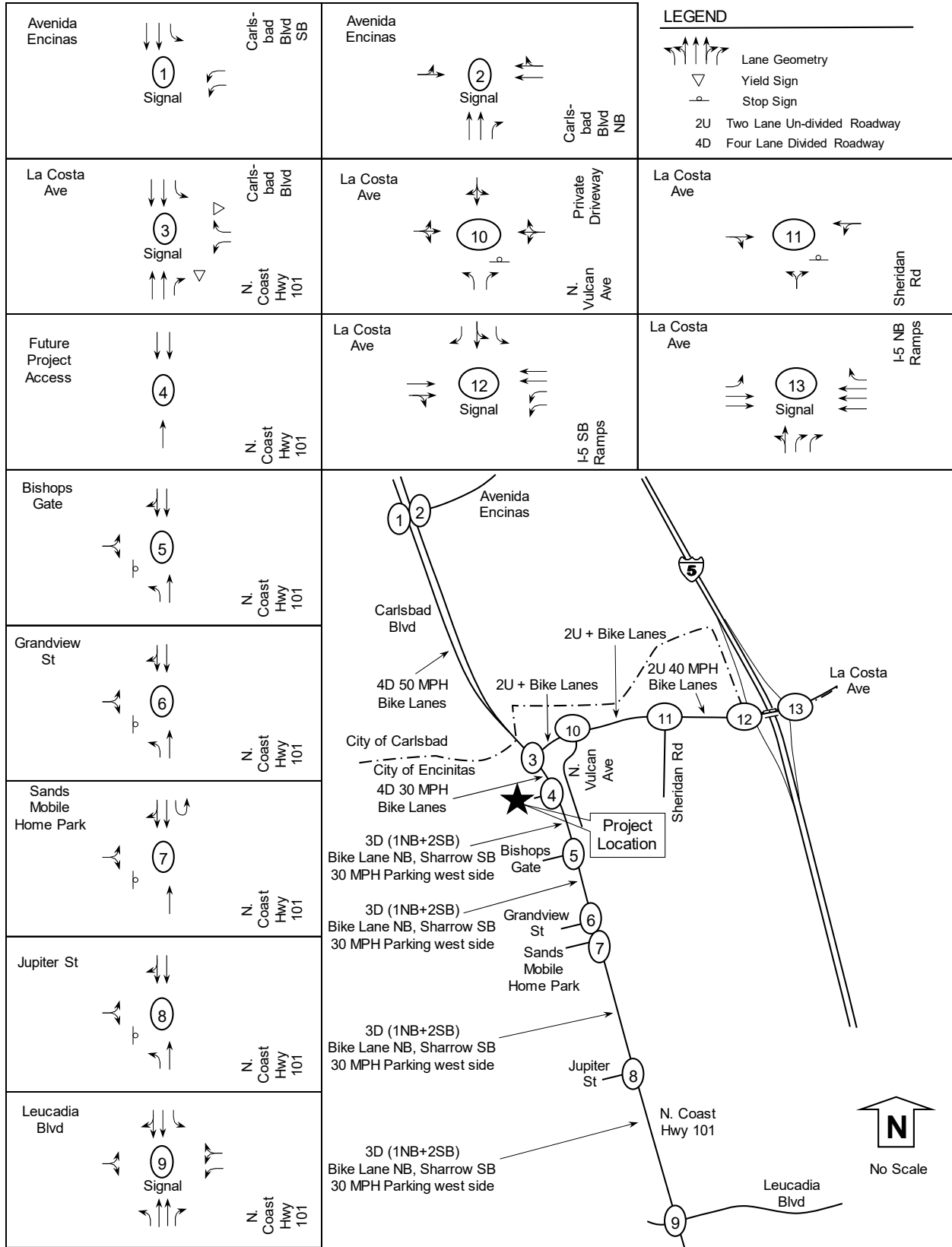


Figure 3: Existing Roadway Conditions



3.2 Existing Traffic Volumes and LOS Analyses

Intersection counts were collected between 7:00 AM to 9:00 AM for the AM commuter period and from 4:00 PM to 6:00 PM for the PM commuter period. The count dates are noted in parentheses for the study intersections below:

- 1) Carlsbad Blvd SB/Avenida Encinas (Thurs, November 7, 2019)
- 2) Carlsbad Blvd NB/Avenida Encinas (Thurs, November 7, 2019)
- 3) North Coast Highway 101/La Costa Ave (Thurs, November 7, 2019)
- 4) North Coast Highway 101/Project Access (through movement vol. from above intersection)
- 5) North Coast Highway 101/Bishops Gate (Wed, November 13, 2019)
- 6) North Coast Highway 101/Grandview St (Wed, November 13, 2019)
- 7) North Coast Highway 101/Sands Mobile Home Park (Thurs, November 7, 2019)
- 8) North Coast Highway 101/Jupiter St (Wed, November 13, 2019)
- 9) North Coast Highway 101/Leucadia Ave (Thurs, November 7, 2019)
- 10) La Costa Avenue/N. Vulcan Avenue (Tue, February 4, 2020)
- 11) La Costa Avenue/Sheridan Rd (Thurs, November 7, 2019)
- 12) La Costa Avenue/I-5 Southbound Ramps (Thurs, November 7, 2019)
- 13) La Costa Avenue/I-5 Northbound Ramps (Thurs, November 7, 2019)

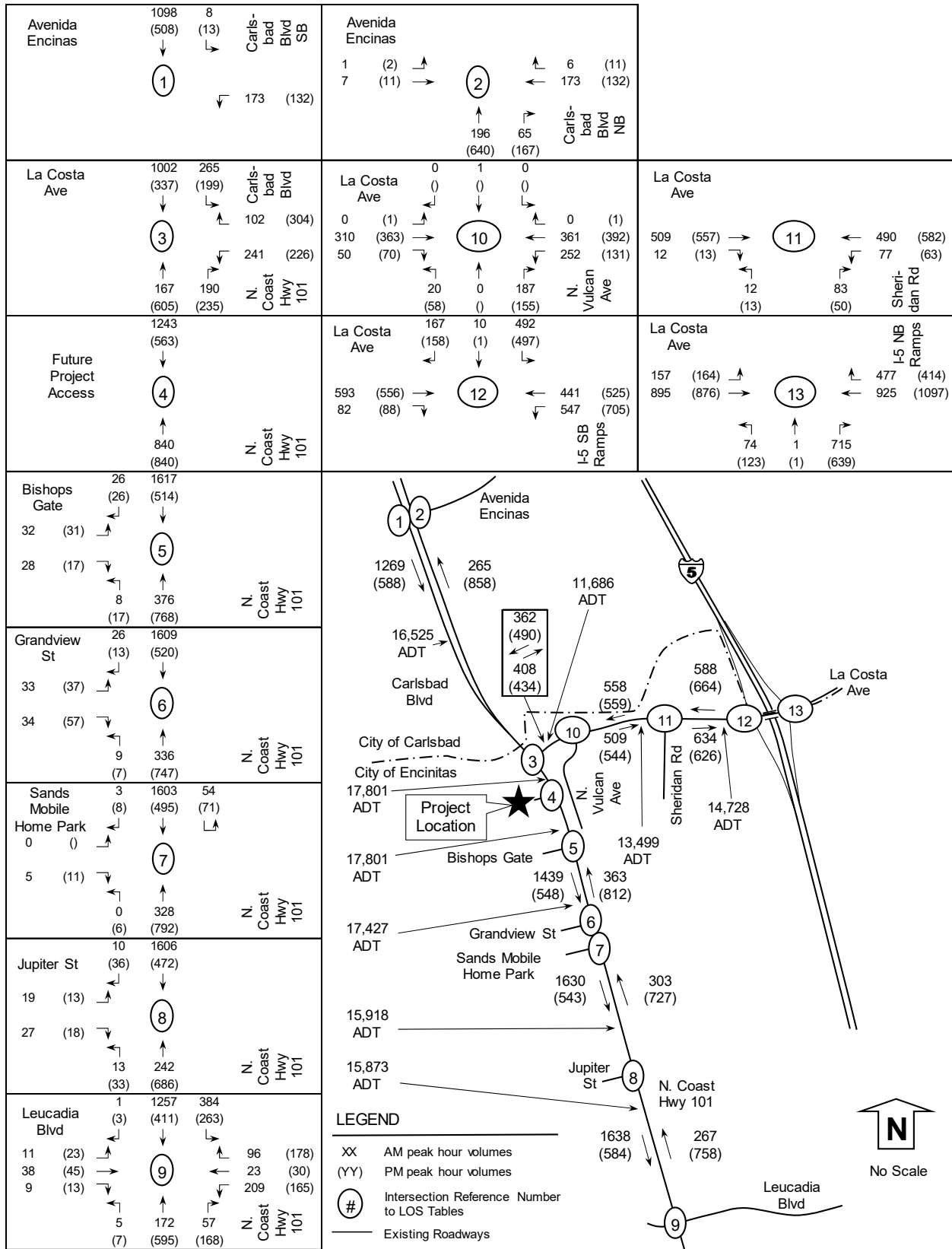
Daily counts (24 hour) were collected for the study segments with count dates noted in parentheses below:

- 1) Carlsbad Blvd from Avenida Encinas to La Costa Ave (Thurs, November 7, 2019)
- 2) North Coast Highway 101 from La Costa Ave to 600 ft S. of La Costa Ave (Wed, November 13, 2019)
- 3) North Coast Highway 101 from 600 ft S. of La Costa Ave to Bishops Gate (Wed, November 13, 2019)
- 4) North Coast Highway 101 from Bishops Gate to Grandview St (Wed, November 13, 2019)
- 5) North Coast Highway 101 from Grandview St to Jupiter St (Wed, November 13, 2019)
- 6) North Coast Highway 101 from Jupiter St to Leucadia Blvd (Wed, November 13, 2019)
- 7) La Costa Avenue from N. Coast Highway 101 to N. Vulcan Ave (Thurs, November 7, 2019)
- 8) La Costa Avenue from N. Vulcan Ave to Sheridan Rd (Thurs, November 7, 2019)
- 9) La Costa Avenue from Sheridan Rd to I-5 (Thurs, November 7, 2019)

The peak hours volumes used for the segment analysis were obtained from adjacent intersection volumes for near-term conditions and from the Streetscape EIR for horizon year conditions. The near-term peak hour segment volumes were averaged from the intersections bracketing the segment.

Existing volumes are shown on **Figure 4**, with count data included in **Appendix H**.

Figure 4: Existing Volumes



The LOS calculated for the intersection is shown in **Table 7**. The daily capacity for the street segments is shown in **Table 8** with the segments hourly LOS shown **Table 9**. For unsignalized intersections, the minor approach delay is shown if the minor leg is a public street and overall delay is shown if the minor approach is a private driveway such as the project driveway. Intersection LOS calculations are included in **Appendix I**.

TABLE 7: EXISTING INTERSECTION OPERATIONS

Intersection and (Analysis) ¹	Approach	Peak Hour	Existing	
			Delay ²	LOS ³
1) Carlsbad Blvd SB at Avenida Encinas (S)	All	AM	7.9	A
	All	PM	16.4	B
2) Carlsbad Blvd NB at Avenida Encinas (S)	All	AM	17.7	B
	All	PM	13.5	B
3) N. Coast Hwy at La Costa Ave (S)	All	AM	9.0	A
	All	PM	10.1	B
4 N. Coast Hwy at Project Access (U)	All	AM	DNE	NA
	All	PM	DNE	NA
5) N. Coast Hwy at Bishops Gate (U)	Minor	AM	41.2	E
	Minor	PM	18.1	C
6) N. Coast Hwy at Grandview St (U)	Minor	AM	61.0	F
	Minor	PM	15.2	C
7) N. Coast Hwy at Sands MHP (U)	Minor	AM	19.5	C
	Minor	PM	10.2	B
8) N. Coast Hwy at Jupiter St (U)	Minor	AM	37.9	E
	Minor	PM	13.8	B
9) N. Coast Hwy at Leucadia Blvd (S)	All	AM	21.4	C
	All	PM	24.1	C
10) La Costa Ave at N Vulcan Ave (U)	Minor	AM	39.6	E
	Minor	PM	21.7	C
11) La Costa Ave at Sheridan Rd (U)	Minor	AM	17.6	C
	Minor	PM	18.6	C
12) La Costa Ave at I-5 SB Ramps (S)	All	AM	23.6	C
	All	PM	25.8	C
13) La Costa Ave at I-5 NB Ramps (S)	All	AM	23.3	C
	All	PM	20.4	C

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. Minor street approach (worst approach delay reported). 2) Delay - HCM Average Control Delay in sec. 3) LOS: Level of Service. DNE: Does Not Exist. NA: Not Applicable.

TABLE 8: EXISTING SEGMENT DAILY VOLUMES AND OPERATIONS

Segment	Functional Classification	LOS E Capacity	Existing	
			Daily Volume	LOS
<u>Carlsbad Boulevard</u>				
Avenida Encinas to La Costa Ave	4 Lane Major	42,200	16,525	C
<u>North Coast Highway 101</u>				
La Costa Ave to 600' S. of La Costa	4 Lane Major	35,200	17,801	C
600' S. of La Costa to Bishops Gate	3 Lane Major	26,400	17,801	C
Bishops Gate to Grandview St	3 Lane Major	26,400	17,427	C
Grandview St to Jupiter St	3 Lane Major	26,400	15,918	C
Jupiter St to Leucadia Blvd	3 Lane Major	26,400	15,873	C
<u>La Costa Avenue</u>				
N. Coast Hwy to N. Vulcan	2 Lane Coll.	14,000	11,686	D
N. Vulcan to Sheridan Rd	2 Lane Coll.	14,000	13,499	E
Sheridan Rd to I-5	2 Ln Aug. Coll.	20,000	14,728	C

Notes: 2 Ln Aug. Coll. = 2 Lane Augmented Collector. Daily volume is a 24 hour volume. LOS: Level of Service. Carlsbad Boulevard capacity and LOS from City of Carlsbad 2018 Growth Management Program.

TABLE 9: EXISTING SEGMENT PEAK HOUR VOLUMES AND OPERATIONS

Segment		Dir	Lanes	Segment Capacity	Existing Pk Hr Vol.	V/C	LOS
Carlsbad Blvd	<i>AM Peak Hour</i>						
	Btw Avenida Encinas and La Costa Ave	NB	2 lanes	3,640	265	0.073	C
		SB	2 lanes	3,640	1,269	0.349	D
	<i>(PM) Peak Hour</i>						
Btw Avenida Encinas and La Costa Ave	NB	2 lanes	3,640	(858)	0.236	D	
	SB	2 lanes	3,640	(588)	0.162	C	
North Coast Highway 101	<i>AM Peak Hour</i>						
	Btw La Costa Ave and Grandview St	NB	1 lane	2,000	363	0.182	A
		SB	2 lanes	2,800	1,439	0.514	B
	Btw Grandview St and Jupiter St	NB	1 lane	1,800	303	0.168	A
		SB	2 lanes	2,800	1,630	0.582	B
	Btw Jupiter St and Leucadia Blvd	NB	1 lane	1,800	267	0.148	A
		SB	2 lanes	2,800	1,638	0.585	B
	<i>(PM) Peak Hour</i>						
	Btw La Costa Ave and Grandview St	NB	1 lane	2,000	(812)	0.406	A
		SB	2 lanes	2,800	(548)	0.196	A
Btw Grandview St and Jupiter St	NB	1 lane	1,800	(727)	0.404	A	
	SB	2 lanes	2,800	(543)	0.194	A	
Btw Jupiter St and Leucadia Blvd	NB	1 lane	1,800	(758)	0.421	B	
	SB	2 lanes	2,800	(584)	0.208	A	
La Costa Avenue	<i>AM Peak Hour</i>						
	Btw Coast Hwy 101 and Vulcan Ave	EB	1 lane	1,800	408	0.226	A
		WB	1 lane	1,800	362	0.201	A
	Btw Vulcan Ave and Sheridan Rd	EB	1 lane	1,800	509	0.283	A
		WB	1 lane	1,800	558	0.310	A
	Btw Sheridan Rd and I-5 SB Ramps	EB	1 lane	1,800	634	0.352	A
		WB	1 lane	1,800	588	0.326	A
	<i>(PM) Peak Hour</i>						
	Btw Coast Hwy 101 and Vulcan Ave	EB	1 lane	1,800	(434)	0.241	A
		WB	1 lane	1,800	(490)	0.272	A
Btw Vulcan Ave and Sheridan Rd	EB	1 lane	1,800	(544)	0.302	A	
	WB	1 lane	1,800	(559)	0.311	A	
Btw Sheridan Rd and I-5 SB Ramps	EB	1 lane	1,800	(626)	0.348	A	
	WB	1 lane	1,800	(664)	0.369	A	

Carlsbad Blvd capacity from Carlsbad 2018 Growth Management Program. Remaining capacities from Streetscape Final EIR.

Under existing conditions, the study elements were calculated to operate at LOS D or better, except for:

- 1) Intersection of N. Coast Highway 101/Bishops Gate (LOS E AM),
- 2) Intersection of N. Coast Highway 101/Grandview St (LOS F AM),
- 3) Intersection of N. Coast Highway 101/Jupiter St (LOS E AM),
- 4) Intersection of La Costa Ave/N. Vulcan Ave (LOS E AM), and
- 5) Segment of La Costa Ave from N. Vulcan to Sheridan (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hours operations).

4.0 Project Description

The mixed-use project includes a 30-room hotel, 96 multi-family units, and 18,261 square feet of commercial/retail space on the westside of North Coast Highway 101 approximately 500 feet south of La Costa Avenue located in the City of Encinitas, California. The project will replace a commercial/retail center with approximately 7,582 square feet of active businesses.

4.1 Project Traffic Generation

Project traffic generation was calculated using the San Diego Association of Governments (SANDAG) trip rates from the *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. The project site has active uses creating traffic; therefore, a traffic credit was applied because the existing uses will be replaced by the project. Additionally, the existing and proposed project have pass-by trips already on the study roadways. The project is calculated to generate a net increase of 1,122 ADT, 60 AM peak hour trips (22 inbound and 38 outbound), and 102 PM peak hour trips (58 inbound and 44 outbound) as shown in **Table 10**.

TABLE 10: PROJECT TRAFFIC GENERATION

Proposed Land Use	Rate	Size & Units	ADT	%	Split	AM			PM							
						IN	OUT	%	Split	IN	OUT					
<u>Proposed project</u>																
Resort Hotel	10 /Room	30 Rooms	300	5%	0.6 0.4	9	6	7%	0.4 0.6	8	13					
Multi-Family (>20 du/acre)	6 /DU	94 DU	564	8%	0.2 0.8	9	36	9%	0.7 0.3	36	15					
Specialty Retail/Strip Commercial	40 /KSF	8,584 SF	343	3%	0.6 0.4	6	4	9%	0.5 0.5	15	15					
Restaurant (sit down high turnover)	160 /KSF	3,905 SF	625	8%	0.5 0.5	24	25	8%	0.6 0.4	30	20					
Restaurant (quality)	100 /KSF	2,134 SF	213	1%	0.6 0.4	1	1	8%	0.7 0.3	12	5					
Office	20 /KSF	3,638 SF	73	14%	0.9 0.1	9	1	13%	0.2 0.8	2	8					
Project Driveway Trips: 2,118						58	73			103	76					
<u>Pass-By Trips per SANDAG rates (Existing trips already on Coast Hwy)</u>																
Specialty Retail (Pass-By=15% ADT & AM; 10% PM):						-52					-2	-2				
Restaurant High Turnover (Pass-By=12% ADT & AM; 20% PM):						-75					-6	-4				
Restaurant Quality (Pass-By=12% ADT & AM; 10% PM):						-26					-1	-1				
Office (Pass-By=4% ADT, AM & PM):						-3					0	0				
Project Primary & Diverted Trips: 1,963										54	69	94	70			
<u>Existing use to be removed</u>																
Restaurant (sit down high turnover)						160 /KSF	5,333 SF	853	8%	0.5 0.5	34	34	8%	0.6 0.4	41	27
Specialty Retail/Strip Commercial						40 /KSF	2,249 SF	90	3%	0.6 0.4	2	1	9%	0.5 0.5	4	4
Credit For Existing Use Driveway Trips: 943											36	35		45	31	
<u>Pass-By Trips per SANDAG rates (Existing trips already on Coast Hwy)</u>																
Restaurant (Pass-By=12% ADT&AM, 20%PM):						-102					-4	-4			-8	-5
Credit For Existing Use Primary & Diverted Trips: 841											32	31		37	26	
Net Change in Primary & Diverted Trips (for analysis): 1,122											22	38		58	44	

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. SF - Square Feet. ADT - Average Daily Traffic. Split-percent inbound and outbound. Spreadsheet rounding may result in ±1 to the above numbers.

4.2 Construction Traffic Generation

Project construction traffic was based on client provided data forecasted for the project site based on experience at similarly sized construction sites. Construction traffic includes soil export, deliveries, and workers based on the different phases of construction activities.

Soil export accounts for the removal of soil and sand to which the sand export may be used for beach replenishment (if implemented). The destination of soil export and potential sand replenishment locations are currently unknown. Therefore, the applicant/operator will be instructed to use truck legal routes as identified in the City of Encinitas and Carlsbad Municipal codes. The truck legal routes include Carlsbad Blvd, Coast Highway, Encinitas Blvd, La Costa Ave, and Palomar Airport Rd. The trucks removing the export may use a variation of the noted truck legal routes to reach I-5 and beach restoration areas. The export is forecasted require up to 60 workdays (this incorporates weather and/or construction sequencing delays) with an anticipated maximum of 85 truck per day from approximately 7 AM to 7 PM. The export operations ADT is calculated by multiplying 85 trucks by 2 for a round trip of 170 ADT that is multiplied by a Passenger Car Equivalent (PCE) of 2.0 to equal 340 ADT. The export operations are anticipated to occur over a 10 to 12-hour day resulting in a range of 28 to 34 peak hour trips. The higher 34 peak hour trips equate to approximately 17 inbound and 17 outbound PCE trips (while the actual number of trucks would be approximately 8 or 9 inbound and 8 or 9 outbound due to the PCE). In addition to the truck trips, the export operations will have up to 35 employees (70 ADT) that typically arrive on site just before 7 AM and leave on or around 7 PM, which are outside the commuter peak periods. Therefore, the employee peak hour trips are forecasted at 5 AM inbound with 0 outbound and 0 PM inbound and 5 outbound. The combination of truck export and employees results in a forecasted daily trip total of 410 ADT, an AM peak hour of 23 trips (14 inbound and 9 outbound) and 23 PM trips (9 inbound and 14 outbound). Construction workers are forecasted to park on-site or along Coast Highway during the soil export phase.

Site construction covers the initial foundation to the final finish work. The highest concentration occurs during the interior and final site work phase (for about 5 months) with up to 200 construction workers (440 ADT). These workers start at 7 AM, thus they will arrive before 7AM and will not add traffic during the 7-9 AM peak hour period. These workers will typically leave around 3:30 PM with approximately 20% staying late on concrete pour days or other prolonged construction elements (but not all days). Thus, the PM peak hour may have up to 40 PM outbound construction worker trips on some days. Delivery of materials and concrete will vary significantly during the overall construction; however, the highest truck concentration is anticipated to be concrete trucks required for vertical pours resulting in approximately 10 trucks per day (20 ADT x 2 PCE = 40 ADT). The concrete deliveries typically are spread throughout the day and are anticipated to have 2 AM and 2 PM peak hour trips (1 inbound and 1 outbound). When converted to a PCE, the peak hour trips are calculated at 4 AM and 4 PM peak hour trips (2 inbound and 2 outbound). The highest parking requirements occurs for about 5 months during the peak of up to 200 construction workers. During this peak period, trade partners are requested to have their workers carpool, which is already observed to occur on the adjacent construction project. Therefore, the anticipated parking needs during this peak period is about 140 spaces. Construction parking is proposed on-site (about 30 spaces) and along east side of Coast Highway south of La Costa Ave (unassigned area that can accommodate the temporary 110 spaces) to accommodate the peak 5-month parking demand of about 140 spaces.

As shown in **Table 11**, the peak construction trip generation of 440 ADT, 23 AM peak hour trips, and 50 PM peak hour trips is less than what was analyzed for the project; therefore, the project trip generation analysis accounts for the analysis of construction traffic.

TABLE 11: PROJECT CONSTRUCTION TRIP GENERATION

Construction Trip Generation by Phase	Approximate Duration by Phase	Construction Workers by Phase	Deliveries/ Trucks by Phase	ADT	AM Pk Hr 1hr btw 7-9		PM Pk Hr 1hr btw 4-6	
					IN	OUT	IN	OUT
Soil Export	2-3 months	up to 35	85	410	14	9	9	14
Site Construction	about 15 months	up to 200	10	440	2	2	2	41
Maximum:				440	14	9	9	41

4.3 Project Access

The project access is proposed with full ingress movements and right-turn only egress movement.

4.4 Project Distribution and Assignment

Project trips were distributed to the adjacent roadway network based on surrounding productions and attractions, access to I-5, and coordination with City staff.

The project traffic that will be added to the study area is based on the net change in primary and diverted trips that accounts for the trip credit of the existing commercial use being replaced by this project. The Project access was analyzed using driveway trips without applying the trip credit whereas the non-driveway intersections were analyzed with the application of the trip credit.

The City’s Streetscape project will affect the project distribution along N. Coast Hwy 101 just south of the project. All of the outbound project traffic initially travels south with 60% making a U-turn to travel north. Before the implementation of Streetscape, the first possible location to make a U-turn from a southbound left turn bay is at the Sands Mobile Park median break (intersection #7). After the implementation of Streetscape, the first U-turn will be possible at Bishops Gate (Intersection #5) because this intersection will become a roundabout. Details regarding the driveway trips, primary and diverted trips before and after Streetscape are included in **Appendix J**.

The project distribution before Streetscape is shown in **Figure 5** with assignment of project volumes shown in **Figure 6**.

The project distribution after Streetscape is shown in **Figure 7** with assignment of project volumes shown in **Figure 8**.

4.5 Project On-Site Parking

The project parking details are located on the Architectural site plan, which include a requirement of 256.5 spaces with 257 proposed spaces. Additionally, 6 bicycle spaces and 9 motorcycle spaces will be provided.

Figure 5: Project Distribution (Before Streetscape)

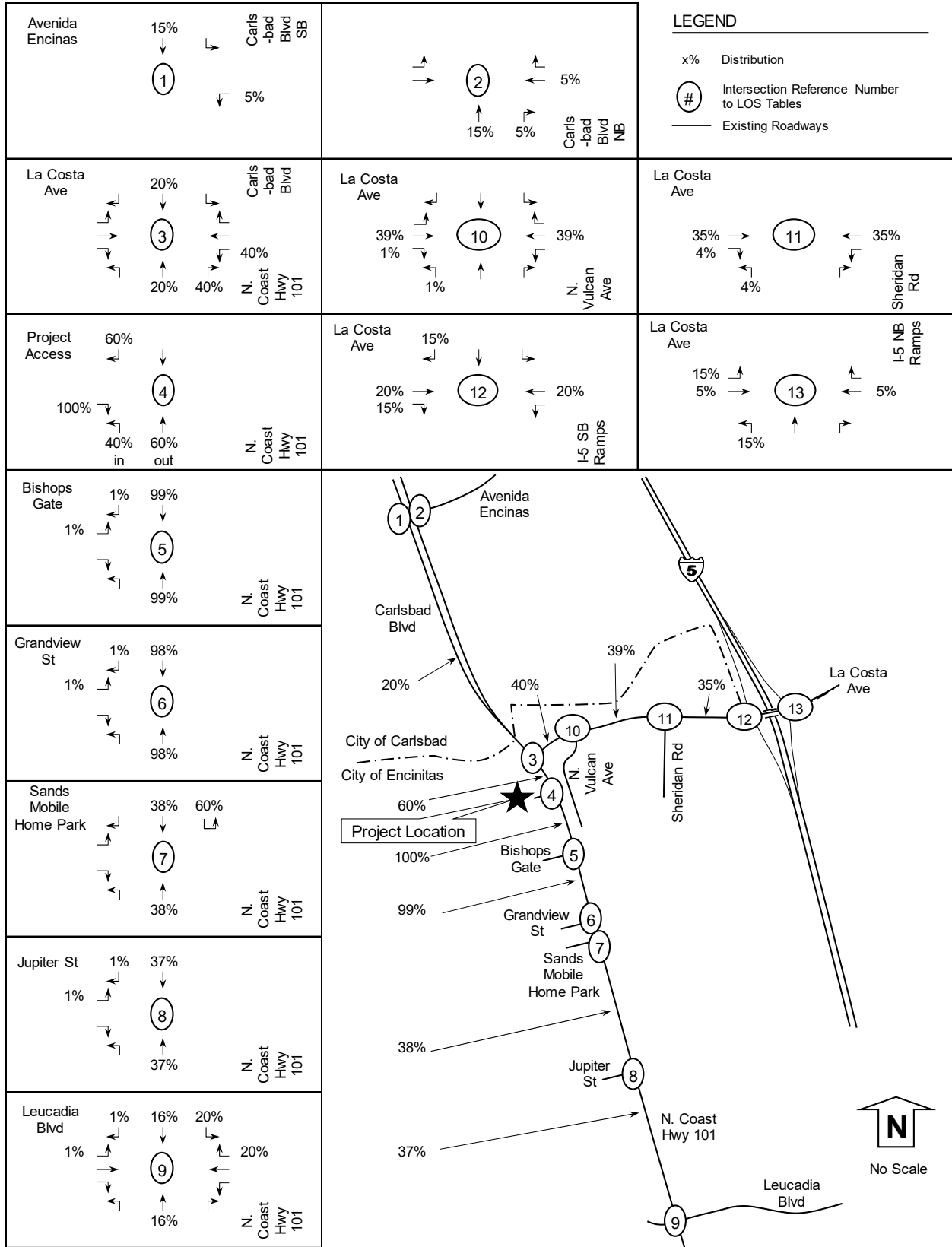


Figure 6: Project Volumes (Before Streetscape)

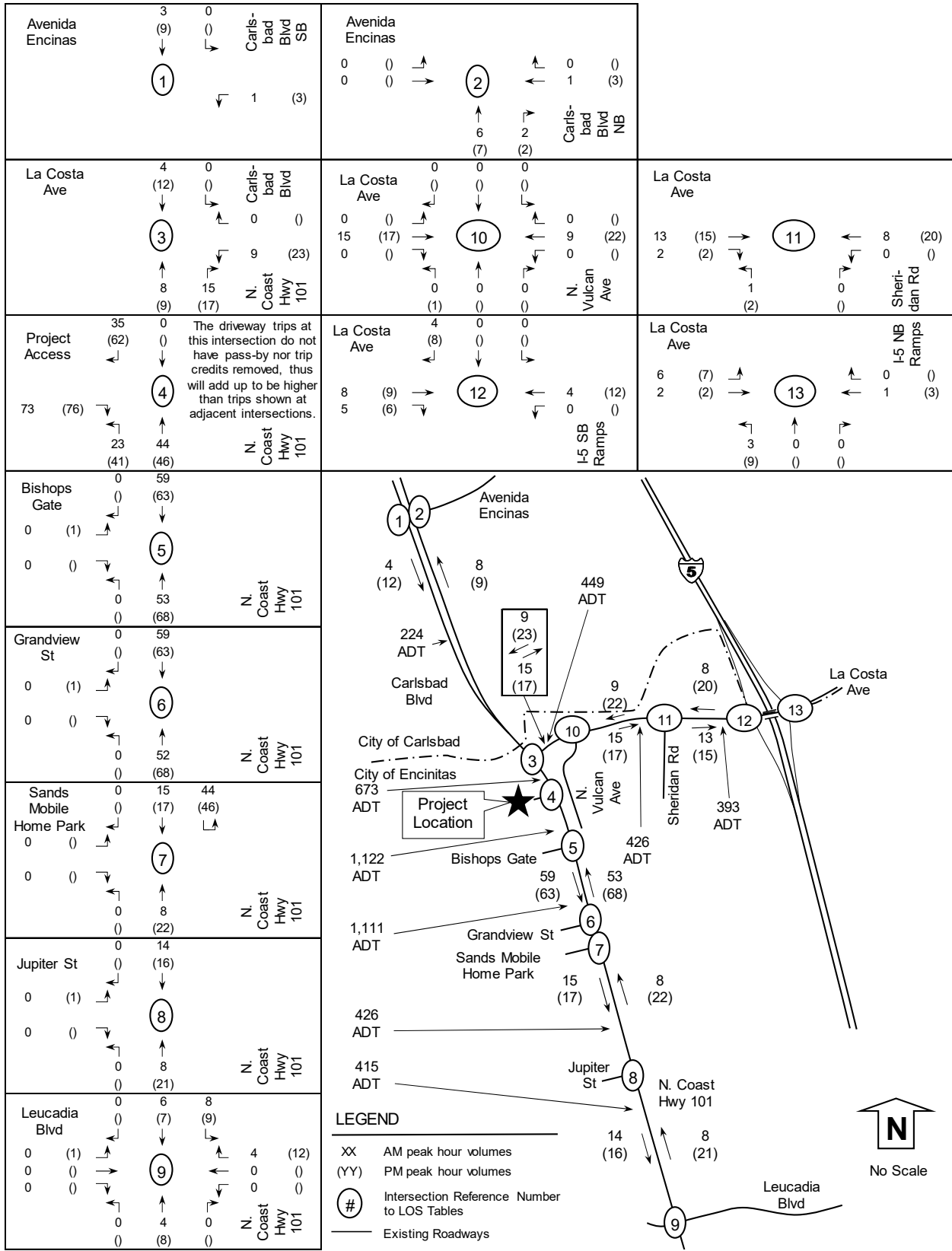


Figure 7: Project Distribution (After Streetscape)

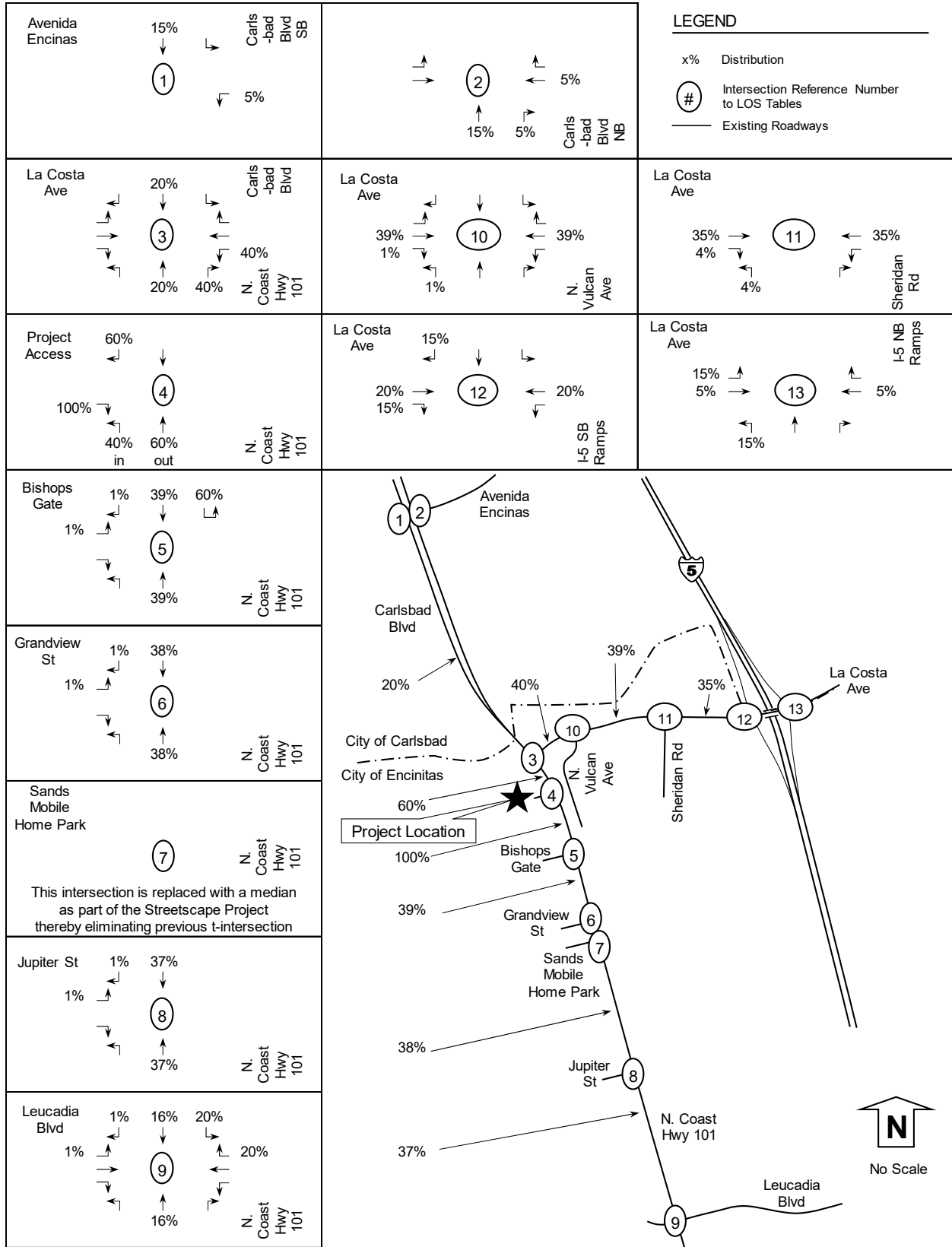
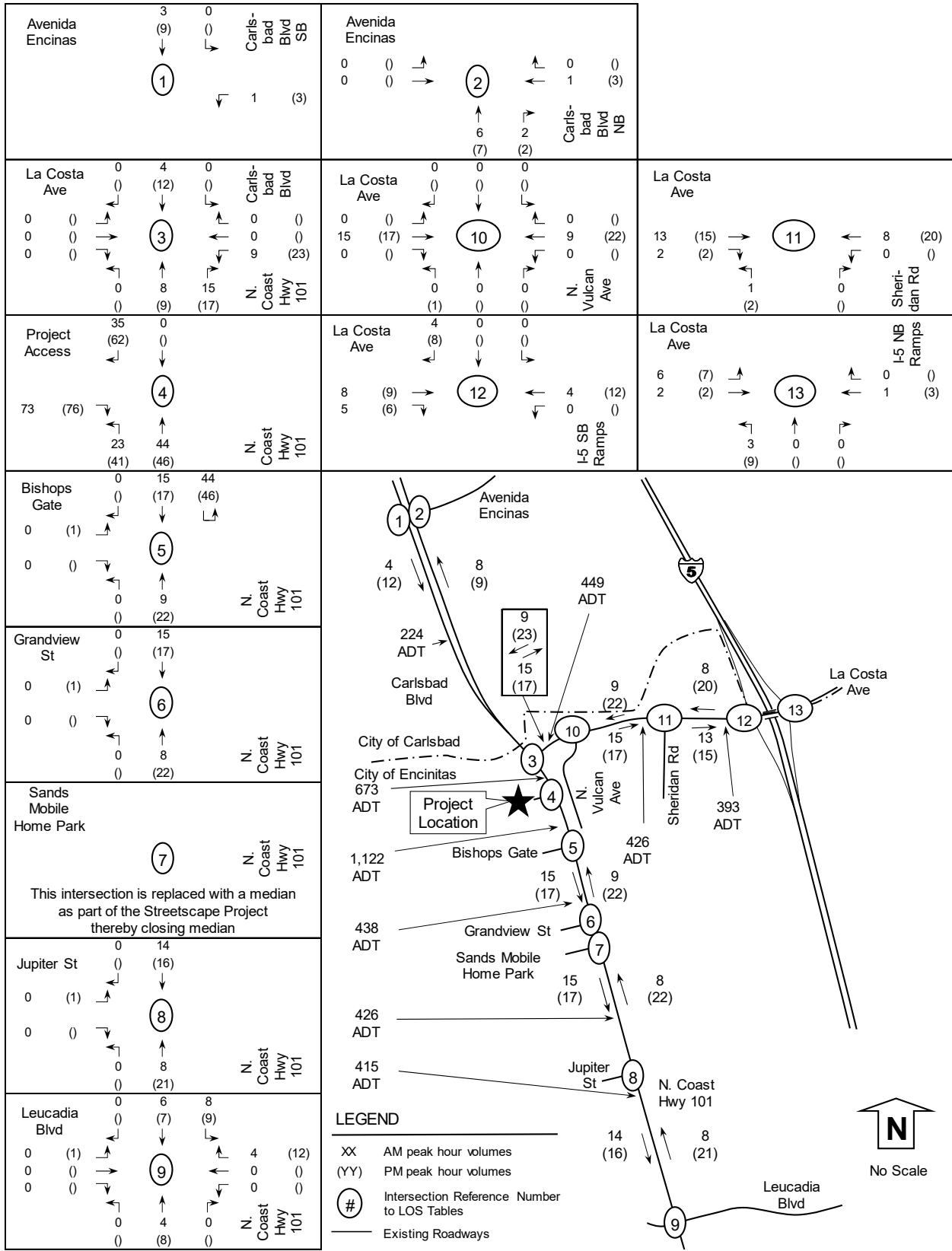


Figure 8: Project Volumes (After Streetscape)



5.0 Existing + Project Conditions

This scenario accounts for the addition of project traffic (using the before Streetscape distribution and assignment) onto existing volumes. The peak hour intersection volumes and daily traffic volumes are shown in **Figure 9**. The LOS calculated for the intersection is shown in **Table 11**. The daily capacity for the street segments is shown in **Table 13** with the segments hourly LOS shown **Tables 14**. Intersection LOS calculations are included in **Appendix K**.

TABLE 12: EXISTING + PROJECT INTERSECTION OPERATIONS

Intersection and (Analysis) ¹	Approach	Peak Hour	Existing		Existing + Project			
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Effect? ⁵
1) Carlsbad Blvd SB at Avenida Encinas (S)	All	AM	7.9	A	8.4	A	0.5	No
	All	PM	16.4	B	16.6	B	0.2	No
2) Carlsbad Blvd NB at Avenida Encinas (S)	All	AM	17.7	B	17.8	B	0.1	No
	All	PM	13.5	B	13.7	B	0.2	No
3) N. Coast Hwy at La Costa Ave (S)	All	AM	9.0	A	9.3	A	0.3	No
	All	PM	10.1	B	11.4	B	1.3	No
4) N. Coast Hwy at Project Access (U)	All	AM	DNE	NA	0.7	A	NA	No
	All	PM	DNE	NA	0.8	A	NA	No
5) N. Coast Hwy at Bishops Gate (U)	Minor	AM	41.2	E	45.9	E	4.7	Yes
	Minor	PM	18.1	C	19.9	C	1.8	No
6) N. Coast Hwy at Grandview St (U)	Minor	AM	61.0	F	70.1	F	9.1	Yes
	Minor	PM	15.2	C	16.4	C	1.2	No
7) N. Coast Hwy at Sands MHP (U)	Minor	AM	19.5	C	19.7	C	0.2	No
	Minor	PM	10.2	B	10.3	B	0.1	No
8) N. Coast Hwy at Jupiter St (U)	Minor	AM	37.9	E	39.1	E	1.2	No
	Minor	PM	13.8	B	14.2	B	0.4	No
9) N. Coast Hwy at Leucadia Blvd (S)	All	AM	21.4	C	21.6	C	0.2	No
	All	PM	24.1	C	24.9	C	0.8	No
10) La Costa Ave at N Vulcan Ave (U)	Minor	AM	39.6	E	41.0	E	1.4	No
	Minor	PM	21.7	C	23.5	C	1.8	No
11) La Costa Ave at Sheridan Rd (U)	Minor	AM	17.6	C	18.4	C	0.8	No
	Minor	PM	18.6	C	20.1	C	1.5	No
12) La Costa Ave at I-5 SB Ramps (S)	All	AM	23.6	C	23.6	C	0.0	No
	All	PM	25.8	C	26.5	C	0.7	No
13) La Costa Ave at I-5 NB Ramps (S)	All	AM	23.3	C	23.5	C	0.2	No
	All	PM	20.4	C	20.6	C	0.2	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. Minor street approach (worst approach delay reported). 2) Delay - HCM Average Control Delay in sec. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Project effect if threshold is exceeded. DNE: Does Not Exist. NA: Not Applicable.

TABLE 13: EXISTING + PROJECT SEGMENT DAILY VOLUMES AND OPERATIONS

Segment	Functional Classification	LOS E Capacity	Existing		Proj. Daily Vol.	Existing + Project		
			Daily Volume	LOS		Daily Volume	LOS	
<u>Carlsbad Boulevard</u>								
Avenida Encinas to La Costa Ave	4 Lane Major	42,200	16,525	C	224	16,749	C	
<u>North Coast Highway 101</u>								
La Costa Ave to 600' S. of La Costa	4 Lane Major	35,200	17,801	C	673	18,474	C	
600' S. of La Costa to Bishops Gate	3 Lane Major	26,400	17,801	C	1,122	18,923	C	
Bishops Gate to Grandview St	3 Lane Major	26,400	17,427	C	1,111	18,538	C	
Grandview St to Jupiter St	3 Lane Major	26,400	15,918	C	426	16,344	C	
Jupiter St to Leucadia Blvd	3 Lane Major	26,400	15,873	C	415	16,288	C	
<u>La Costa Avenue</u>								
N. Coast Hwy to N. Vulcan	2 Lane Coll.	14,000	11,686	D	449	12,135	D	
N. Vulcan to Sheridan Rd	2 Lane Coll.	14,000	13,499	E	426	13,925	E	
Sheridan Rd to I-5	2 Ln Aug. Coll.	20,000	14,728	C	393	15,121	C	

Notes: 2 Ln Aug. Coll. = 2 Lane Augmented Collector. Daily volume is a 24 hour volume. LOS: Level of Service
Carlsbad Boulevard capacity and LOS from City of Carlsbad 2018 Growth Management Program.

TABLE 14: EXISTING + PROJECT SEGMENT PEAK HOUR VOLUMES AND OPERATIONS

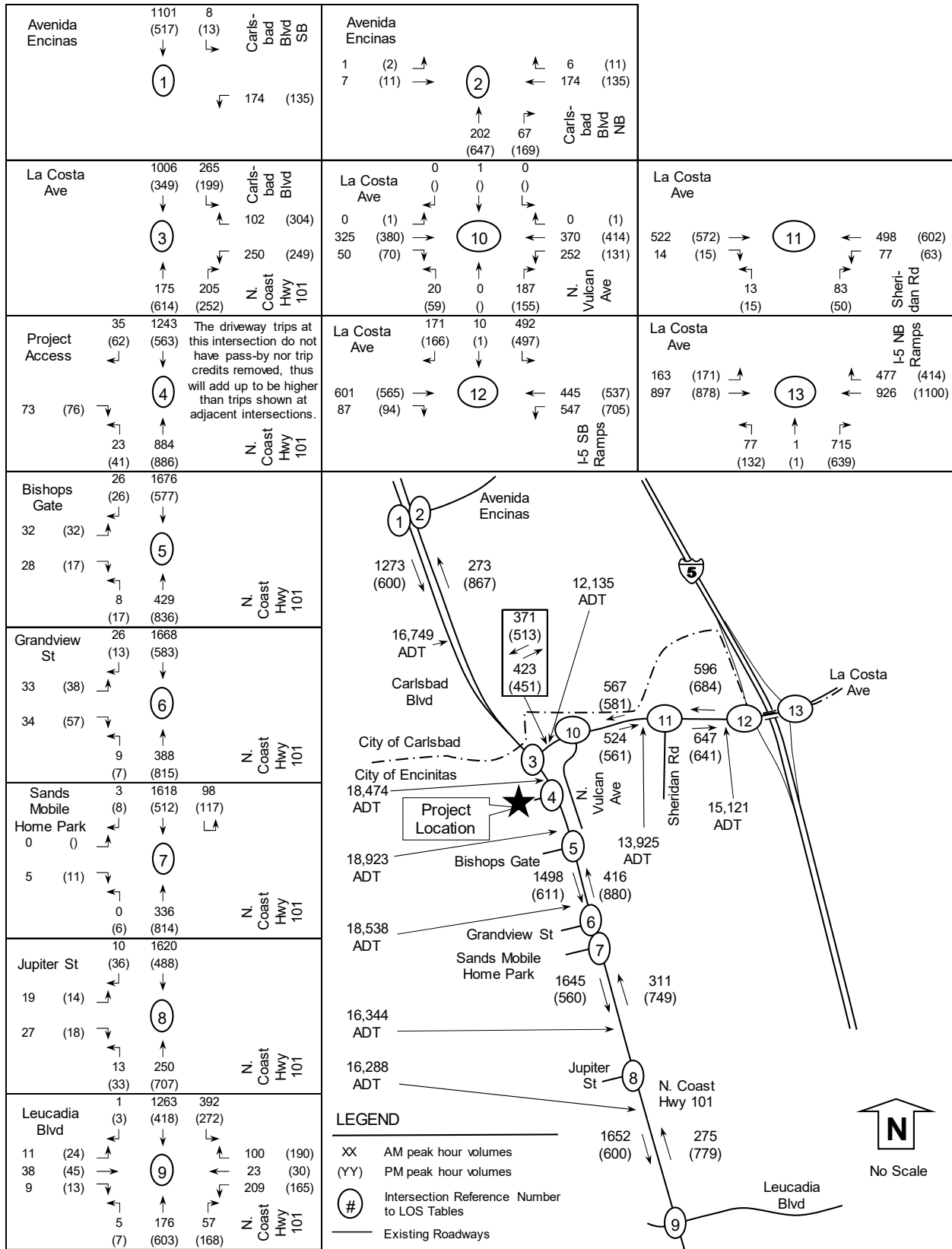
Segment	Existing			Project			Existing + Project			Effect?			
	Dir	Lanes	Segment Capacity	Pk Hr Vol.	V/C	LOS	Pk Hr Vol.	Pk Hr Vol.	V/C		LOS	V/C Δ	
Carlsbad Blvd	<i>AM Peak Hour</i>												
	Btw Avenida Encinas and La Costa Ave	NB	2 lanes	3,640	265	0.073	C	8	273	0.075	C	0.002	No
		SB	2 lanes	3,640	1,269	0.349	D	4	1,273	0.350	D	0.001	No
	<i>(PM) Peak Hour</i>												
	Btw Avenida Encinas and La Costa Ave	NB	2 lanes	3,640	(858)	0.236	D	(9)	(867)	0.238	D	0.002	No
		SB	2 lanes	3,640	(588)	0.162	C	(12)	(600)	0.165	C	0.003	No
North Coast Highway 101	<i>AM Peak Hour</i>												
	Btw La Costa Ave and Grandview St	NB	1 lane	2,000	363	0.182	A	9	372	0.186	A	0.005	No
		SB	2 lanes	2,800	1,439	0.514	B	15	1,454	0.519	B	0.005	No
	Btw Grandview St and Jupiter St	NB	1 lane	1,800	303	0.168	A	8	311	0.173	A	0.004	No
		SB	2 lanes	2,800	1,630	0.582	B	15	1,645	0.587	B	0.005	No
	Btw Jupiter St and Leucadia Blvd	NB	1 lane	1,800	267	0.148	A	8	275	0.153	A	0.004	No
		SB	2 lanes	2,800	1,638	0.585	B	14	1,652	0.590	B	0.005	No
	<i>(PM) Peak Hour</i>												
	Btw La Costa Ave and Grandview St	NB	1 lane	2,000	(812)	0.406	A	(22)	(834)	0.417	B	0.011	No
		SB	2 lanes	2,800	(548)	0.196	A	(17)	(565)	0.202	A	0.006	No
	Btw Grandview St and Jupiter St	NB	1 lane	1,800	(727)	0.404	A	(22)	(749)	0.416	B	0.012	No
		SB	2 lanes	2,800	(543)	0.194	A	(17)	(560)	0.200	A	0.006	No
Btw Jupiter St and Leucadia Blvd	NB	1 lane	1,800	(758)	0.421	B	(21)	(779)	0.433	B	0.012	No	
	SB	2 lanes	2,800	(584)	0.208	A	(16)	(600)	0.214	A	0.006	No	
La Costa Avenue	<i>AM Peak Hour</i>												
	Btw Coast Hwy 101 and Vulcan Ave	EB	1 lane	1,800	408	0.226	A	15	423	0.235	A	0.008	No
		WB	1 lane	1,800	362	0.201	A	9	371	0.206	A	0.005	No
	Btw Vulcan Ave and Sheridan Rd	EB	1 lane	1,800	509	0.283	A	15	524	0.291	A	0.008	No
		WB	1 lane	1,800	558	0.310	A	9	567	0.315	A	0.005	No
	Btw Sheridan Rd and I-5 SB Ramps	EB	1 lane	1,800	634	0.352	A	13	647	0.359	A	0.007	No
		WB	1 lane	1,800	588	0.326	A	8	596	0.331	A	0.004	No
	<i>(PM) Peak Hour</i>												
	Btw Coast Hwy 101 and Vulcan Ave	EB	1 lane	1,800	(434)	0.241	A	(17)	(451)	0.250	A	0.009	No
		WB	1 lane	1,800	(490)	0.272	A	(23)	(513)	0.285	A	0.013	No
	Btw Vulcan Ave and Sheridan Rd	EB	1 lane	1,800	(544)	0.302	A	(17)	(561)	0.312	A	0.009	No
		WB	1 lane	1,800	(559)	0.311	A	(22)	(581)	0.323	A	0.012	No
Btw Sheridan Rd and I-5 SB Ramps	EB	1 lane	1,800	(626)	0.348	A	(15)	(641)	0.356	A	0.008	No	
	WB	1 lane	1,800	(664)	0.369	A	(20)	(684)	0.380	A	0.011	No	

Carlsbad Blvd capacity from Carlsbad 2018 Growth Management Program. Remaining capacities from Streetscape Final EIR.

Under existing plus project conditions, the study elements were calculated to operate at LOS D or better, except for (bold indicates project effect):

- 1) **Intersection of N. Coast Highway 101/Bishops Gate (LOS E AM),**
- 2) **Intersection of N. Coast Highway 101/Grandview St (LOS F AM),**
- 3) Intersection of N. Coast Highway 101/Jupiter St (LOS E AM),
- 4) Intersection of La Costa Ave/N. Vulcan Ave (LOS E AM), and
- 5) Segment of La Costa Ave from N. Vulcan to Sheridan (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations).

Figure 9: Existing + Project Volumes



6.0 Cumulative Projects

Based on a review of City of Encinitas on-line cumulative projects and coordination with Encinitas staff the following cumulative projects were determined to add sufficient traffic to the study area for analysis. Many cumulative projects on the City of Encinitas webpage are either too far away from the study area or their traffic would travel away from the study area; however, the following cumulative projects are anticipated to add traffic to the study area as noted below.

- 1) Encinitas Project Number 04-268 (Encinitas Beach Hotel at 2100 N. Coast Highway 101). A 130-room hotel calculated to generate 1,300 ADT with 78 AM and 104 PM peak hour trips.
- 2) Encinitas Project Number 13-187 (378 Fulvia St). A residential project with 9 dwelling units calculated to generate 78 ADT with 6 AM and 8 PM peak hour trips.
- 3) Encinitas Project Number 15-222 (Weston at 510 La Costa Ave). A residential project with 48 lots calculated to generate (with a credit for two existing homes) 460 ADT with 38 AM and 46 PM peak hour trip.
- 4) Encinitas Project Number 17-152 (1569 Lorraine Dr). A residential project with 1 dwelling unit calculated to generate 10 ADT with 1 AM and 1 PM peak hour trip.
- 5) Encinitas Project Number 17-197 (740 N. Coast Hwy 101). A mixed-use project with a net increase in traffic generation of 116 ADT with 16 AM and 16 PM peak hour trip.
- 6) Encinitas Project Number 17-280 (1251 N. Vulcan). A residential project with 9 dwelling units calculated to generate 90 ADT with 7 AM and 9 PM peak hour trips.
- 7) Encinitas Project Number 18-135 (Skyloft Rd). A senior housing project with 108 beds located across 18 separate structures (homes) calculated to generate 270 ADT with 10 AM and 22 PM peak hour trips.
- 8) Encinitas Project Number 18-188 (Hotel at 516 La Costa Ave). A 17-room hotel and restaurant calculated to generate 170 ADT with 11 AM and 14 PM peak hour trips.
- 9) Encinitas Project Number 18-220 (555 N. Vulcan Ave). A redevelopment project from an existing commercial business to 12 multi-family units resulting in a net reduction of overall trip generation, thus no new trips added to the study area.
- 10) Encinitas Housing Element Candidate Site AD08 (1967 N. Vulcan Ave). A redevelopment project from an existing commercial business to 72 multi-family units resulting in a trip generation increase of 372 ADT with 32 AM and 34 PM peak hour trips.

- 11) Carlsbad Project Number 2016-0002-MS (Ponto Beachfront in the vicinity of Carlsbad Blvd/Avenida Encinas) A mixed use project that includes 136 townhomes and 18,000 sf for retail and restaurants is calculated to have trip generation of 2,912 ADT with 187 AM and 258 PM peak hour trips.
- 12) Carlsbad Project Number GPA 2019-0004 (Newage Luxury Resort on the southeast corner of Avenida Encinas and Carlsbad Blvd). A resort hotel with 322 rooms calculated to have trip generation of 3,220 ADT with 193 AM and 258 PM peak hour trips.
- 13) Unknown and/or distant cumulative projects. Background peak hour volumes (ranging from single digits up to 35 peak hour trips depending on intersection location) were added to the study area to account for unknown and/or distant cumulative projects.

A summary of cumulative traffic generation is included in **Table 15**.

TABLE 15: CUMULATIVE TRAFFIC GENERATION

Cumulative Project	Rate	Size & Units	ADT	%	Split	AM			PM		
						IN	OUT	%	Split	IN	OUT
1) Encinitas 04-268	10 /Room	130 Rooms	1,300	6%	0.6 0.4	47	31	8%	0.6 0.4	62	42
2) Encintas 13-187	10 /DU	9 DU	90	8%	0.3 0.7	2	5	10%	0.7 0.3	6	3
3) Encintas 15-222	10 /DU	46 DU	460	8%	0.3 0.7	11	26	10%	0.7 0.3	32	14
4) Encinitas 17-152	10 /DU	1 DU	10	8%	0.3 0.7	0	1	10%	0.7 0.3	1	0
5) Encinitas 17-197	Mixed use (net increase):			16		8	8			8	8
6) Encinitas 17-280	10 /DU	9 DU	90	8%	0.3 0.7	2	5	10%	0.7 0.3	6	3
7) Encinitas 18-135	2.5 /Bed	108 Beds	270	4%	0.6 0.4	6	4	8%	0.5 0.5	11	11
8) Encinitas 18-188	10 /Room	17 Rooms	170	6%	0.6 0.4	7	4	8%	0.6 0.4	9	5
9) Encinitas 18-220	Redevelopment project resulting in no traffic increase										
10) Encinitas Housing Element AD08	6 /DU	90 DU	540	8%	0.2 0.8	9	35	10%	0.7 0.3	38	16
11a) Carlsbad Ponto Multi-Family	8 /DU	136 DU	1,088	8%	0.2 0.8	17	70	10%	0.7 0.3	76	33
11b) Carlsbad Ponto Retail	40 /KSF	9,200 SF	368	3%	0.6 0.4	7	4	9%	0.5 0.5	17	17
11c) Carlsbad Ponto Rest. High turnover	160 /KSF	6,600 SF	1,056	8%	0.5 0.5	42	42	8%	0.6 0.4	51	34
11d) Carlsbad Ponto Rest. Quality	100 /KSF	4,000 SF	400	1%	0.6 0.4	2	2	8%	0.7 0.3	22	10
12) Carlsbad Newage Resort Hotel	10 /Room	322 Rooms	3,220	6%	0.6 0.4	7	77	8%	0.6 0.4	9	103
13) Unknown/distant			200			35	35			35	35
Totals			9,278			204	349			384	333

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. DU: Dwelling Unit.
ADT-Average Daily Traffic; Split-percent inbound and outbound. Spreadsheet rounding may result in ± 1 to the above numbers.

There are several roadway changes as part of two cumulative projects. The intersection of N. Coast Highway 101 at La Costa Ave is currently being expanded to include a fourth (west leg) as part of cumulative project #04-268 (130-room hotel at 2100 N. Coast Highway 101). The City of Encinitas Streetscape Project includes roundabouts along N. Coast Highway 101 at Bishops Gate, at Grandview St, and at Jupiter St. The proposed changes to existing conditions by the cumulative projects are shown in **Figure 10** with details included in **Appendix L**.

The cumulative project traffic volumes are shown in **Figure 11** and the cumulative project traffic assignments are included in **Appendix M**.

Figure 10: Cumulative Projects Planned Roadway Changes

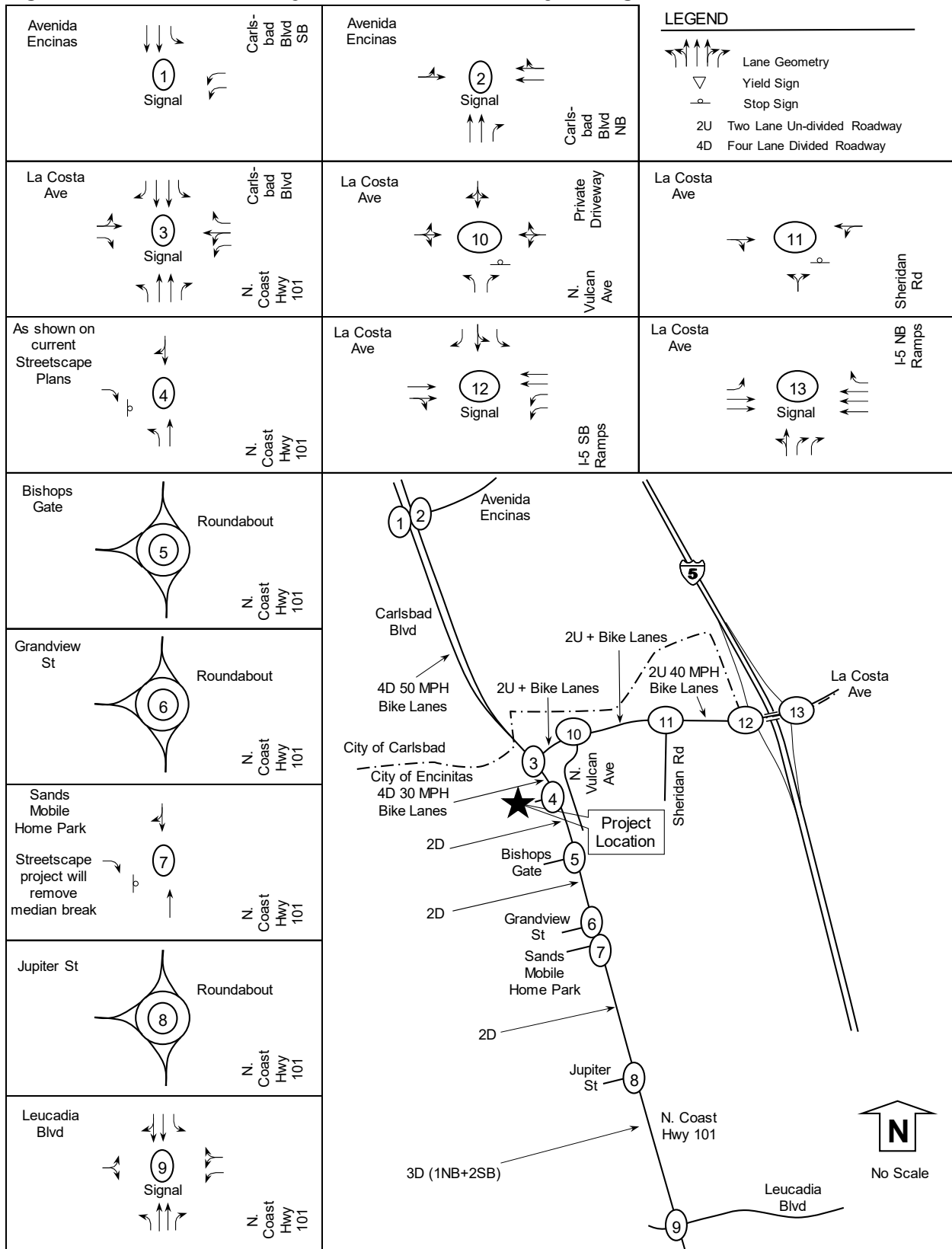
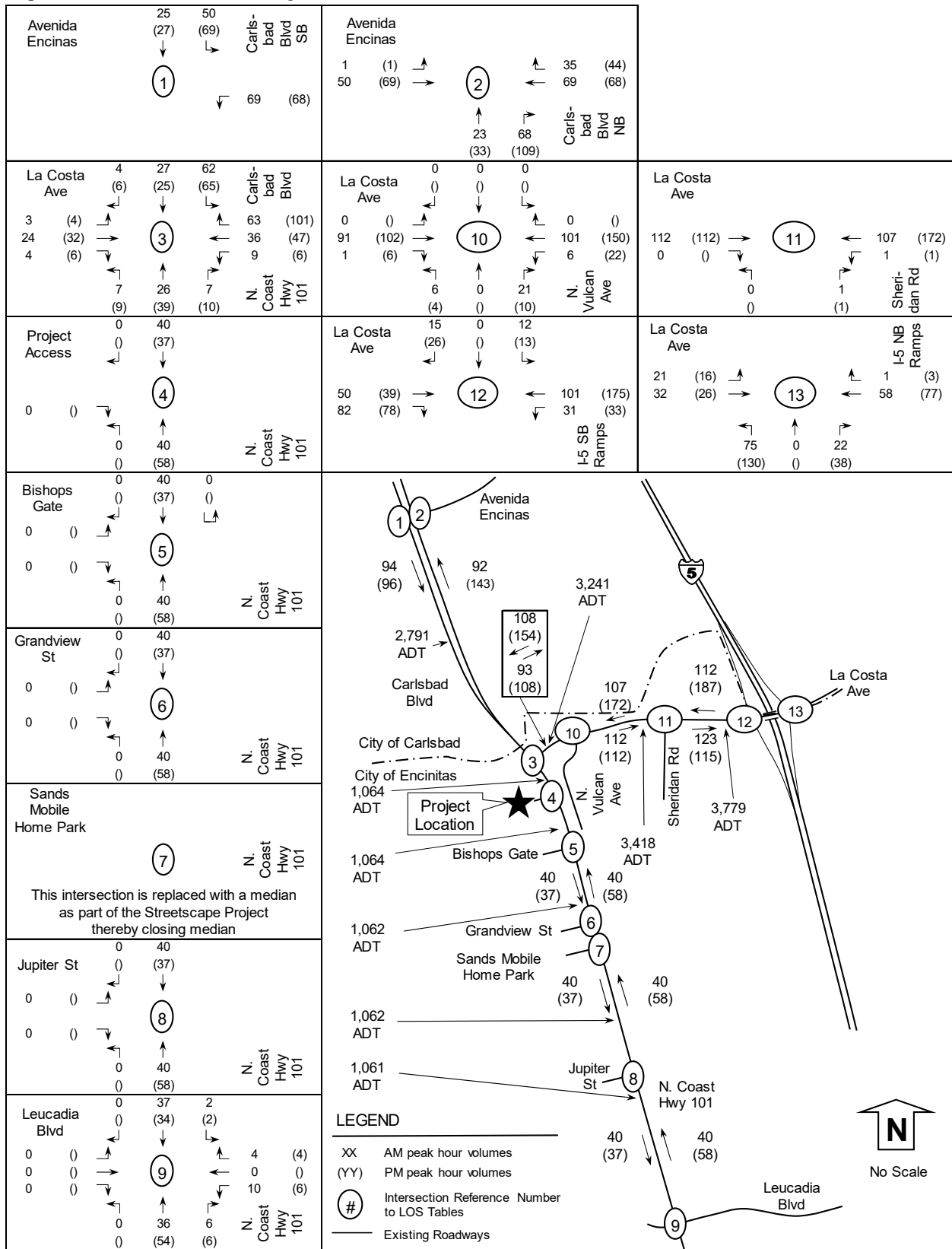


Figure 11: Cumulative Project Volumes



7.0 Existing + Cumulative Conditions

This scenario accounts for the addition of cumulative traffic onto the existing traffic. The peak hour intersection and daily traffic volumes are shown in **Figure 12**. The LOS calculated for the intersection is shown in **Table 16**. The segment daily capacity is shown in **Table 17** with the segment hourly LOS shown **Table 18**. Intersection LOS calculations are included in **Appendix N**.

TABLE 16: EXISTING + CUMULATIVE INTERSECTION OPERATIONS

Intersection and (Analysis) ¹	Approach	Peak Hour	Existing + Cumulative	
			Delay ²	LOS ³
1) Carlsbad Blvd SB at Avenida Encinas (S)	All	AM	10.5	B
	All	PM	10.4	B
2) Carlsbad Blvd NB at Avenida Encinas (S)	All	AM	25.5	C
	All	PM	25.3	B
3) N. Coast Hwy at La Costa Ave (S)	All	AM	21.0	B
	All	PM	47.7	D
4) N. Coast Hwy at Project Access (U)	All	AM	DNE	NA
	All	PM	DNE	NA
5) N. Coast Hwy at Bishops Gate (R)	Minor	AM	47.0	E
	Minor	PM	7.4	A
6) N. Coast Hwy at Grandview St (R)	Minor	AM	36.2	E
	Minor	PM	7.5	A
7) N. Coast Hwy at Sand MPH (median)	NA	AM	New	NA
	NA	PM	Median	NA
8) N. Coast Hwy at Jupiter St (R)	Minor	AM	26.5	D
	Minor	PM	7.1	A
9) N. Coast Hwy at Leucadia Blvd (S)	All	AM	22.8	C
	All	PM	25.6	C
10) La Costa Ave at N Vulcan Ave (U)	Minor	AM	58.4	F
	Minor	PM	50.0	F
11) La Costa Ave at Sheridan Rd (U)	Minor	AM	23.2	C
	Minor	PM	29.9	D
12) La Costa Ave at I-5 SB Ramps (S)	All	AM	24.4	C
	All	PM	27.0	C
13) La Costa Ave at I-5 NB Ramps (S)	All	AM	37.8	D
	All	PM	22.3	C

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized, (R) Roundabout. Minor street approach (worst approach delay reported). 2) Delay - HCM Average Control Delay in sec. 3) LOS: Level of Service. DNE: Does Not Exist. NA: Not Applicable.

TABLE 17: EXISTING + PROJECT SEGMENT DAILY VOLUMES AND OPERATIONS

Segment	Functional Classification	LOS E Capacity	Existing + Cumulative	
			Daily Volume	LOS
Carlsbad Boulevard				
Avenida Encinas to La Costa Ave	4 Lane Major	42,200	19,316	C
North Coast Highway 101				
La Costa Ave to 600' S. of La Costa	2 Ln Aug. Coll.	20,000	18,865	E
600' S. of La Costa to Bishops Gate	2 Ln Aug. Coll.	20,000	18,865	E
Bishops Gate to Grandview St	2 Ln Aug. Coll.	20,000	18,489	E
Grandview St to Jupiter St	2 Ln Aug. Coll.	20,000	16,980	D
Jupiter St to Leucadia Blvd	3 Lane Major	26,400	16,934	C
La Costa Avenue				
N. Coast Hwy to N. Vulcan	2 Lane Coll.	14,000	14,927	F
N. Vulcan to Sheridan Rd	2 Lane Coll.	14,000	16,917	F
Sheridan Rd to I-5	2 Ln Aug. Coll.	20,000	18,507	E

Notes: 2 Ln Aug. Coll. = 2 Lane Augmented Collector. Daily volume is a 24 hour volume. LOS: Level of Service
Carlsbad Boulevard capacity and LOS from City of Carlsbad 2018 Growth Management Program.

Figure 12: Existing + Cumulative Volumes

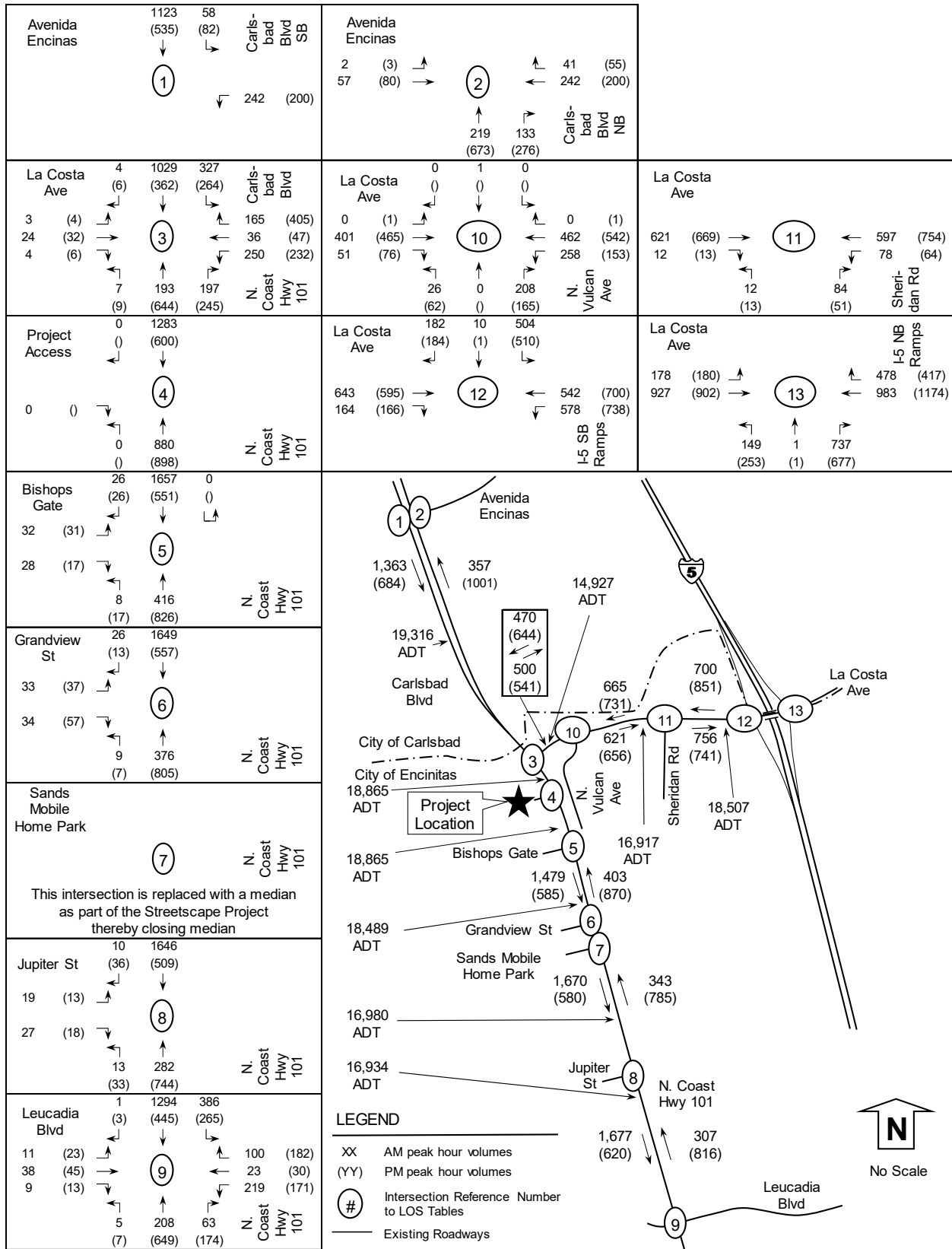


TABLE 18: EXISTING + CUMULATIVE SEGMENT PEAK HOUR VOLUMES AND OPERATIONS

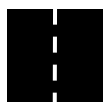
	Segment	Dir	Lanes	Existing + Cumulative		LOS	
				Segment Capacity	Pk Hr Vol.		
Carlsbad Blvd	<i>AM Peak Hour</i>						
	Btw Avenida Encinas and La Costa Ave	NB	2 lanes	3,640	357	0.098	C
		SB	2 lanes	3,640	1,363	0.374	D
	<i>(PM) Peak Hour</i>						
	Btw Avenida Encinas and La Costa Ave	NB	2 lanes	3,640	(1001)	0.275	D
		SB	2 lanes	3,640	(684)	0.188	C
North Coast Highway 101	<i>AM Peak Hour</i>						
	Btw La Costa Ave and Grandview St	NB	1 lane	1,900	403	0.212	A
		SB	1 lane	1,800	1,479	0.822	D
	Btw Grandview St and Jupiter St	NB	1 lane	1,800	343	0.191	A
		SB	1 lane	1,800	1,670	0.928	E
	Btw Jupiter St and Leucadia Blvd	NB	1 lane	1,800	307	0.171	A
		SB	2 lanes	3,400	1,677	0.493	B
	<i>(PM) Peak Hour</i>						
	Btw La Costa Ave and Grandview St	NB	1 lane	1,900	(870)	0.458	B
		SB	1 lane	1,800	(585)	0.325	A
	Btw Grandview St and Jupiter St	NB	1 lane	1,800	(785)	0.436	B
		SB	1 lane	1,800	(580)	0.322	A
Btw Jupiter St and Leucadia Blvd	NB	1 lane	1,800	(816)	0.453	B	
	SB	2 lanes	3,400	(620)	0.182	A	
La Costa Avenue	<i>AM Peak Hour</i>						
	Btw Coast Hwy 101 and Vulcan Ave	EB	1 lane	1,800	500	0.278	A
		WB	1 lane	1,800	470	0.261	A
	Btw Vulcan Ave and Sheridan Rd	EB	1 lane	1,800	621	0.345	A
		WB	1 lane	1,800	665	0.369	A
	Btw Sheridan Rd and I-5 SB Ramps	EB	1 lane	1,800	756	0.420	B
		WB	1 lane	1,800	700	0.389	A
	<i>(PM) Peak Hour</i>						
	Btw Coast Hwy 101 and Vulcan Ave	EB	1 lane	1,800	(541)	0.301	A
		WB	1 lane	1,800	(644)	0.358	A
	Btw Vulcan Ave and Sheridan Rd	EB	1 lane	1,800	(656)	0.364	A
		WB	1 lane	1,800	(731)	0.406	A
Btw Sheridan Rd and I-5 SB Ramps	EB	1 lane	1,800	(741)	0.411	B	
	WB	1 lane	1,800	(851)	0.473	B	

Carlsbad Blvd capacity from Carlsbad 2018 Growth Management Program. Remaining capacities from Streetscape Final EIR.

Under existing plus cumulative conditions, the study elements were calculated to operate at LOS D or better, except for the:

- 1) Intersection of N. Coast Hwy 101/Bishops Gate (LOS E AM),
- 2) Intersection of N. Coast Hwy 101/Grandview St (LOS E AM),
- 3) Intersection of La Costa Ave/N. Vulcan Ave (LOS F AM & PM),
- 4) Segment of N. Coast Hwy 101 from La Costa Ave to 600' S. of La Costa Ave (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 5) Segment of N. Coast Hwy 101 from 600' S. of La Costa Ave to Bishops Gate (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 6) Segment of N. Coast Hwy 101 from Bishops Gate to Grandview St (LOS E daily; however,

- this segment operates at acceptable LOS under AM and PM peak hour operations),
- 7) Segment of N. Coast Hwy 101 from Grandview St. to Jupiter St. (LOS E SB AM),
 - 8) Segment of La Costa Ave from N. Coast Hwy to N. Vulcan Ave (LOS F daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
 - 9) Segment of La Costa Ave from N. Vulcan Ave to Sheridan Rd (LOS F daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations), and
 - 10) Segment of La Costa Ave from Sheridan Rd to I-5 (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations).



8.0 Existing + Cumulative + Project Conditions

This scenario accounts for the addition of project traffic (using the after Streetscape distribution and assignment) onto existing plus cumulative traffic with volumes shown in **Figure 13**. The intersection LOS are shown in **Table 19**. The segment daily capacity is shown in **Table 20** with the segment hourly LOS shown **Table 21**. Intersection LOS calculations are included in **Appendix O**.

TABLE 19: EXISTING + CUMULATIVE + PROJECT INTERSECTION OPERATIONS

Intersection and (Analysis) ¹	Approach	Peak Hour	Existing + Cumulative		Existing + Cumulative + Project			
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Effect? ⁵
1) Carlsbad Blvd SB at Avenida Encinas (S)	All	AM	10.5	B	10.8	B	0.3	No
	All	PM	10.4	B	10.4	A	0.0	No
2) Carlsbad Blvd NB at Avenida Encinas (S)	All	AM	25.5	C	26.4	B	0.9	No
	All	PM	25.3	B	25.5	B	0.2	No
3) N. Coast Hwy at La Costa Ave (S)	All	AM	21.0	B	21.2	C	0.2	No
	All	PM	47.7	D	49.6	D	1.9	No
4 N. Coast Hwy at Project Access (U)	All	AM	DNE	NA	1.7	A	NA	No
	All	PM	DNE	NA	0.9	A	NA	No
5) N. Coast Hwy at Bishops Gate (R)	Minor	AM	47.0	E	49.3	E	2.3	Yes
	Minor	PM	7.4	A	7.6	A	0.2	No
6) N. Coast Hwy at Grandview St (R)	Minor	AM	36.2	E	37.4	E	1.2	No
	Minor	PM	7.5	A	7.7	A	0.2	No
7) N. Coast Hwy at Sand MPH (median)	NA	AM	New	NA	New	NA	NA	No
	NA	PM	Median	NA	Median	NA	NA	No
8) N. Coast Hwy at Jupiter St (R)	Minor	AM	26.5	D	27.6	D	1.1	No
	Minor	PM	7.1	A	7.3	A	0.2	No
9) N. Coast Hwy at Leucadia Blvd (S)	All	AM	22.8	C	23.0	C	0.2	No
	All	PM	25.6	C	26.8	C	1.2	No
10) La Costa Ave at N Vulcan Ave (U)	Minor	AM	58.4	F	60.9	F	2.5	Yes
	Minor	PM	50.0	F	58.5	F	8.5	Yes
11) La Costa Ave at Sheridan Rd (U)	Minor	AM	23.2	C	24.7	C	1.5	No
	Minor	PM	29.9	D	34.3	D	4.4	No
12) La Costa Ave at I-5 SB Ramps (S)	All	AM	24.4	C	24.5	C	0.1	No
	All	PM	27.0	C	27.1	C	0.1	No
13) La Costa Ave at I-5 NB Ramps (S)	All	AM	37.8	D	37.9	D	0.1	No
	All	PM	22.3	C	22.7	C	0.4	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized, (R) Roundabout. Minor street approach (worst approach delay reported). 2) Delay - HCM Average Control Delay in sec. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) DNE: Does Not Exist. NA: Not Applicable. 5) Project effect if threshold is exceeded.

TABLE 20: EXISTING + CUMULATIVE + PROJECT SEGMENT DAILY VOLUMES AND OPERATIONS

Segment	Functional Classification	LOS E Capacity	Existing + Cumulative		Proj. Daily Vol.	E + C + Project		
			Daily Volume	LOS		Daily Volume	LOS	
<u>Carlsbad Boulevard</u>								
Avenida Encinas to La Costa Ave	4 Lane Major	42,200	19,316	C	224	19,540	C	
<u>North Coast Highway 101</u>								
La Costa Ave to 600' S. of La Costa	2 Ln Aug. Coll.	20,000	18,865	E	673	19,538	E	
600' S. of La Costa to Bishops Gate	2 Ln Aug. Coll.	20,000	18,865	E	1,122	19,987	E	
Bishops Gate to Grandview St	2 Ln Aug. Coll.	20,000	18,489	E	438	18,927	E	
Grandview St to Jupiter St	2 Ln Aug. Coll.	20,000	16,980	D	426	17,406	D	
Jupiter St to Leucadia Blvd	3 Lane Major	26,400	16,934	C	415	17,349	C	
<u>La Costa Avenue</u>								
N. Coast Hwy to N. Vulcan	2 Lane Coll.	14,000	14,927	F	449	15,376	F	
N. Vulcan to Sheridan Rd	2 Lane Coll.	14,000	16,917	F	426	17,343	F	
Sheridan Rd to I-5	2 Ln Aug. Coll.	20,000	18,507	E	393	18,900	E	

Notes: 2 Ln Aug. Coll. = 2 Lane Augmented Collector. Daily volume is a 24 hour volume. LOS: Level of Service
Carlsbad Boulevard capacity and LOS from City of Carlsbad 2018 Growth Management Program.

Figure 13: Existing + Cumulative + Project Volumes

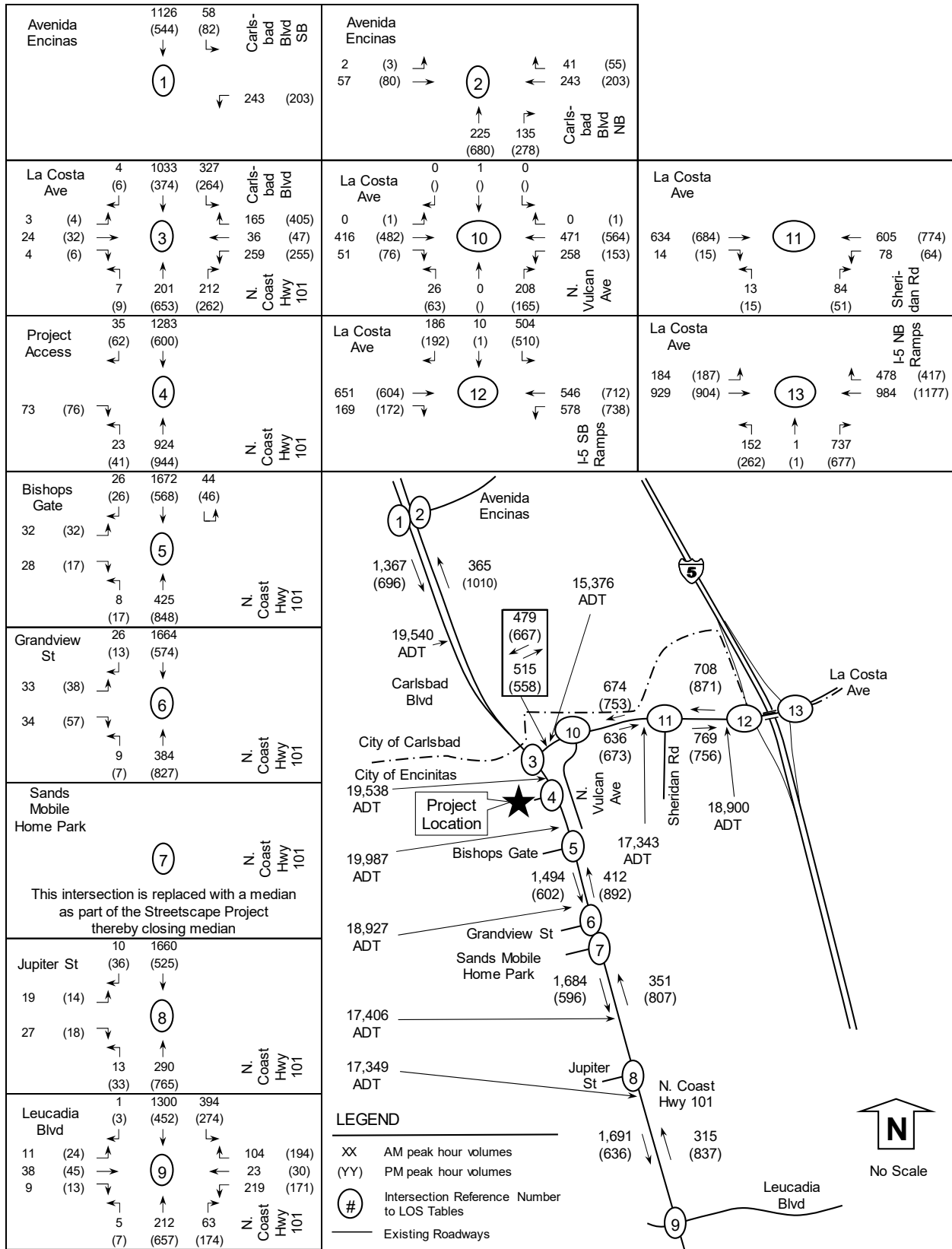


TABLE 21: EXISTING + CUMULATIVE + PROJECT SEGMENT PEAK HOUR VOLUMES AND OPERATIONS

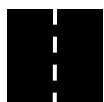
Segment	Existing + Cumulative						Project	Existing + Cumulative + Project					
	Dir Lanes		Segment Capacity	Pk Hr Vol.	V/C	LOS	Pk Hr Vol.	Pk Hr Vol.	V/C	LOS	V/C	Effect?	
											Δ		
Carlsbad Blvd	<i>AM Peak Hour</i>												
	Btw Avenida Encinas and La Costa Ave	NB 2 lanes	3,640	357	0.098	C	8	365	0.100	C	0.002	No	
		SB 2 lanes	3,640	1,363	0.374	D	4	1,367	0.375	D	0.001	No	
	<i>(PM) Peak Hour</i>												
	Btw Avenida Encinas and La Costa Ave	NB 2 lanes	3,640	(1001)	0.275	D	(9)	(1010)	0.277	D	0.002	No	
		SB 2 lanes	3,640	(684)	0.188	C	(12)	(696)	0.191	C	0.003	No	
North Coast Highway 101	<i>AM Peak Hour</i>												
	Btw La Costa Ave and Grandview St	NB 1 lane	1,900	403	0.212	A	9	412	0.217	A	0.005	No	
		SB 1 lane	1,800	1,479	0.822	D	15	1,494	0.830	D	0.008	No	
	Btw Grandview St and Jupiter St	NB 1 lane	1,800	343	0.191	A	8	351	0.195	A	0.004	No	
		SB 1 lane	1,800	1,670	0.928	E	15	1,685	0.936	E	0.008	No	
	Btw Jupiter St and Leucadia Blvd	NB 1 lane	1,800	307	0.171	A	8	315	0.175	A	0.004	No	
		SB 2 lanes	3,400	1,677	0.493	B	14	1,691	0.497	B	0.004	No	
	<i>(PM) Peak Hour</i>												
	Btw La Costa Ave and Grandview St	NB 1 lane	1,900	(870)	0.458	B	(22)	(892)	0.469	B	0.012	No	
		SB 1 lane	1,800	(585)	0.325	A	(17)	(602)	0.334	A	0.009	No	
Btw Grandview St and Jupiter St	NB 1 lane	1,800	(785)	0.436	B	(22)	(807)	0.448	B	0.012	No		
	SB 1 lane	1,800	(580)	0.322	A	(17)	(597)	0.331	A	0.009	No		
Btw Jupiter St and Leucadia Blvd	NB 1 lane	1,800	(816)	0.453	B	(21)	(837)	0.465	B	0.012	No		
	SB 2 lanes	3,400	(620)	0.182	A	(16)	(636)	0.187	A	0.005	No		
La Costa Avenue	<i>AM Peak Hour</i>												
	Btw Coast Hwy 101 and Vulcan Ave	EB 1 lane	1,800	500	0.278	A	15	515	0.286	A	0.008	No	
		WB 1 lane	1,800	470	0.261	A	9	479	0.266	A	0.005	No	
	Btw Vulcan Ave and Sheridan Rd	EB 1 lane	1,800	621	0.345	A	15	636	0.353	A	0.008	No	
		WB 1 lane	1,800	665	0.369	A	9	674	0.374	A	0.005	No	
	Btw Sheridan Rd and I-5 SB Ramps	EB 1 lane	1,800	756	0.420	B	13	769	0.427	B	0.007	No	
		WB 1 lane	1,800	700	0.389	A	8	708	0.393	A	0.004	No	
	<i>(PM) Peak Hour</i>												
	Btw Coast Hwy 101 and Vulcan Ave	EB 1 lane	1,800	(541)	0.301	A	(17)	(558)	0.310	A	0.009	No	
		WB 1 lane	1,800	(644)	0.358	A	(23)	(667)	0.371	A	0.013	No	
Btw Vulcan Ave and Sheridan Rd	EB 1 lane	1,800	(656)	0.364	A	(17)	(673)	0.374	A	0.009	No		
	WB 1 lane	1,800	(731)	0.406	A	(22)	(753)	0.418	B	0.012	No		
Btw Sheridan Rd and I-5 SB Ramps	EB 1 lane	1,800	(741)	0.411	B	(15)	(756)	0.420	B	0.008	No		
	WB 1 lane	1,800	(851)	0.473	B	(20)	(871)	0.484	B	0.011	No		

Carlsbad Blvd capacity from Carlsbad 2018 Growth Management Program. Remaining capacities from Streetscape Final EIR.

Under existing plus cumulative plus project conditions, the study elements were calculated to operate at LOS D or better, except for (bold indicates project effect):

- 1) **Intersection of N. Coast Hwy 101/Bishops Gate (LOS E AM),**
- 2) Intersection of N. Coast Hwy 101/Grandview St (LOS E AM),
- 3) **Intersection of La Costa Ave/N. Vulcan Ave (LOS F AM & PM),**
- 4) Segment of N. Coast Hwy 101 from La Costa Ave to 600' S. of La Costa Ave (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 5) Segment of N. Coast Hwy 101 from 600' S. of La Costa Ave to Bishops Gate (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),

- 6) Segment of N. Coast Hwy 101 from Bishops Gate to Grandview St (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 7) Segment of N. Coast Hwy 101 from Grandview St. to Jupiter St. (LOS E SB AM),
- 8) Segment of La Costa Ave from N. Coast Hwy to N. Vulcan Ave (LOS F daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 9) Segment of La Costa Ave from N. Vulcan Ave to Sheridan Rd (LOS F daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations), and
- 10) Segment of La Costa Ave from Sheridan Rd to I-5 (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations).



9.0 Horizon Year 2035 Conditions

This scenario represents horizon year 2035 conditions. Year 2035 volumes were obtained from the *North Coast Highway 101 Leucadia Streetscape Improvement Project* Final EIR, dated February 2018 (“Streetscape EIR”). Excerpts from the Michael Baker International (MBI) traffic study prepared for the Streetscape EIR documenting the year 2035 volumes are included in Appendix D. Please note some of the Streetscape EIR volumes are lower than existing plus cumulative volumes and as such are calculated to operate better than near-term conditions. The intersections of Carlsbad Blvd/Avenida Encinas SB and Carlsbad Blvd/Avenida Encinas NB are located in Carlsbad and were not included in the Streetscape EIR; therefore, year 2030 volumes were obtained from the Ponto EIR and factored up 1% per year to represent year 2035 volumes. Horizon year volumes from the Ponto and Streetscape EIRs are included in **Appendix P**. The year 2035 network was based on Streetscape EIR as shown previously in Figure 10. The volumes are shown in **Figure 14**.

The intersection LOS are shown in **Table 22**. The segment daily capacity is shown in **Table 23** with the segment hourly LOS shown **Table 24**. For unsignalized intersections, the minor approach delay is shown if the minor leg is a public street and overall delay is shown if the minor approach is a private driveway such as the project driveway. Intersection LOS calculations are included in **Appendix Q**.

TABLE 22: HORIZON YEAR 2035 INTERSECTION OPERATIONS

Intersection and (Analysis) ¹	Approach	Peak Hour	Horizon Year 2035	
			Delay ²	LOS ³
1) Carlsbad Blvd SB at Avenida Encinas (S)	All	AM	17.1	B
	All	PM	19.3	B
2) Carlsbad Blvd NB at Avenida Encinas (S)	All	AM	33.5	C
	All	PM	29.3	C
3) N. Coast Hwy at La Costa Ave (S)	All	AM	37.0	D
	All	PM	53.5	D
4) N. Coast Hwy at Project Access (U)	All	AM	DNE	NA
	All	PM	DNE	NA
5) N. Coast Hwy at Bishops Gate (R)	All	AM	34.1	D
	All	PM	9.7	A
6) N. Coast Hwy at Grandview St (R)	All	AM	26.3	D
	All	PM	9.9	A
7) N. Coast Hwy at Sand MPH (median)	All	AM	New	NA
	All	PM	Median	NA
8) N. Coast Hwy at Jupiter St (R)	All	AM	21.0	D
	All	PM	9.7	A
9) N. Coast Hwy at Leucadia Blvd (S)	All	AM	31.7	C
	All	PM	34.0	C
10) La Costa Ave at N Vulcan Ave (U)	NB	AM	147.7	F
	NB	PM	121.5	F
11) La Costa Ave at Sheridan Rd (U)	NB	AM	61.2	F
	NB	PM	30.7	D
12) La Costa Ave at I-5 SB Ramps (S)	All	AM	31.3	C
	All	PM	28.0	C
13) La Costa Ave at I-5 NB Ramps (S)	All	AM	45.6	D
	All	PM	40.8	D

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized, (R) Roundabout. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service. DNE: Does Not Exist. NA: Not Applicable.

Figure 14: Horizon Year 2035 Volumes

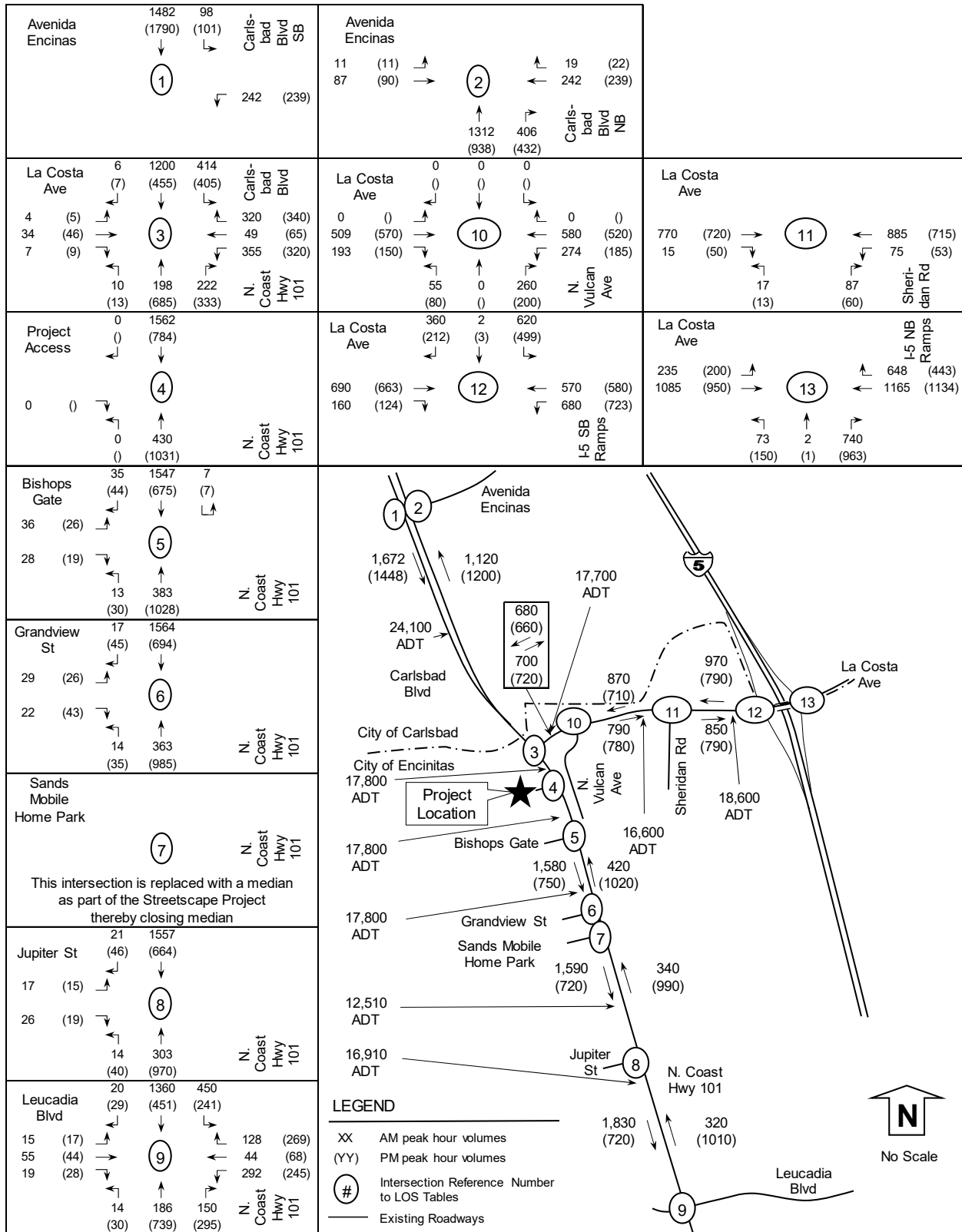


TABLE 23: HORIZON YEAR 2035 SEGMENT DAILY VOLUMES AND OPERATIONS

Segment	Functional Classification	LOS E Capacity	Horizon Year (2035)	
			Daily Volume	LOS
<u>Carlsbad Boulevard</u>				
Avenida Encinas to La Costa Ave	4 Lane Major	42,200	24,100	D
<u>North Coast Highway 101</u>				
La Costa Ave to 600' S. of La Costa	2 Ln Aug. Coll.	20,000	17,800	D
600' S. of La Costa to Bishops Gate	2 Ln Aug. Coll.	20,000	17,800	D
Bishops Gate to Grandview St	2 Ln Aug. Coll.	20,000	17,800	D
Grandview St to Jupiter St	2 Ln Aug. Coll.	20,000	12,510	C
Jupiter St to Leucadia Blvd	3 Lane Major	26,400	16,910	C
<u>La Costa Avenue</u>				
N. Coast Hwy to N. Vulcan	2 Lane Coll.	14,000	17,700	F
N. Vulcan to Sheridan Rd	2 Lane Coll.	14,000	16,600	F
Sheridan Rd to I-5	2 Ln Aug. Coll.	20,000	18,600	E

Notes: 2 Ln Aug. Coll. = 2 Lane Augmented Collector. Daily volume is a 24 hour volume. LOS: Level of Service
 Carlsbad Boulevard capacity and LOS from City of Carlsbad 2018 Growth Management Program.

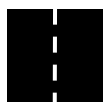
TABLE 24: HORIZON YEAR 2035 SEGMENT PEAK HOUR VOLUMES AND OPERATIONS

Segment	Year 2035 Streetscape					LOS	
	Dir	Lanes	Segment Capacity	Pk Hr Vol.	V/C		
<i>AM Peak Hour</i>							
Carlsbad Blvd	Btw Avenida Encinas	NB	2 lanes	3,640	1,120	0.308	D
	and La Costa Ave	SB	2 lanes	3,640	1,672	0.459	D
<i>(PM) Peak Hour</i>							
Carlsbad Blvd	Btw Avenida Encinas	NB	2 lanes	3,640	(1200)	0.330	D
	and La Costa Ave	SB	2 lanes	3,640	(1448)	0.398	D
<i>AM Peak Hour</i>							
North Coast Highway 101	Btw La Costa Ave	NB	1 lane	1,900	420	0.221	A
	and Grandview St	SB	1 lane	1,800	1,580	0.878	D
	Btw Grandview St	NB	1 lane	1,800	340	0.189	A
	and Jupiter St	SB	1 lane	1,800	1,590	0.883	D
	Btw Jupiter St	NB	1 lane	1,800	320	0.178	A
	and Leucadia Blvd	SB	2 lanes	3,400	1,830	0.538	B
<i>(PM) Peak Hour</i>							
North Coast Highway 101	Btw La Costa Ave	NB	1 lane	1,900	(1020)	0.537	B
	and Grandview St	SB	1 lane	1,800	(750)	0.417	B
	Btw Grandview St	NB	1 lane	1,800	(990)	0.550	B
	and Jupiter St	SB	1 lane	1,800	(720)	0.400	A
	Btw Jupiter St	NB	1 lane	1,800	(1010)	0.561	B
	and Leucadia Blvd	SB	2 lanes	3,400	(720)	0.212	A
<i>AM Peak Hour</i>							
La Costa Avenue	Btw Coast Hwy 101	EB	1 lane	1,800	700	0.389	A
	and Vulcan Ave	WB	1 lane	1,800	680	0.378	A
	Btw Vulcan Ave	EB	1 lane	1,800	790	0.439	B
	and Sheridan Rd	WB	1 lane	1,800	870	0.483	B
	Btw Sheridan Rd	EB	1 lane	1,800	850	0.472	B
	and I-5 SB Ramps	WB	1 lane	1,800	970	0.539	B
	<i>(PM) Peak Hour</i>						
	La Costa Avenue	Btw Coast Hwy 101	EB	1 lane	1,800	(720)	0.400
and Vulcan Ave		WB	1 lane	1,800	(660)	0.367	A
Btw Vulcan Ave		EB	1 lane	1,800	(780)	0.433	B
and Sheridan Rd		WB	1 lane	1,800	(710)	0.394	A
Btw Sheridan Rd		EB	1 lane	1,800	(790)	0.439	B
and I-5 SB Ramps		WB	1 lane	1,800	(790)	0.439	B

Carlsbad Blvd capacity from Carlsbad 2018 Growth Management Program. Remaining capacities from Streetscape Final EIR.

Under horizon year 2035 conditions, the study elements were calculated to operate at LOS D or better, except for:

- 1) Intersection of La Costa Ave/N. Vulcan Ave (LOS F AM & PM),
- 2) Intersection of La Costa Ave/Sheridan Rd (LOS F AM),
- 3) Segment of La Costa Ave from N. Coast Hwy to N. Vulcan Ave (LOS F daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 4) Segment of La Costa Ave from N. Vulcan Ave to Sheridan Rd (LOS F daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations), and
- 5) Segment of La Costa Ave from Sheridan Rd to I-5 (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations).



10.0 Horizon Year 2035 + Project Conditions

This scenario accounts for the addition of project traffic (using the after Streetscape distribution and assignment) onto horizon year 2035 traffic. The peak hour intersection volumes and daily traffic volumes are shown in **Figure 15**.

The intersection LOS are shown in **Table 25**. The segment daily capacity is shown in **Table 26** with the segment hourly LOS shown **Table 27**. For unsignalized intersections, the minor approach delay is shown if the minor leg is a public street and overall delay is shown if the minor approach is a private driveway such as the project driveway. Intersection LOS calculations are included in **Appendix R**.

TABLE 25: HORIZON YEAR 2035 + PROJECT INTERSECTION OPERATIONS

Intersection and (Analysis) ¹	Approach	Peak Hour	Horizon Year 2035		Horizon Year 2035 + Project			
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Effect? ⁵
1) Carlsbad Blvd SB at Avenida Encinas (S)	All	AM	17.1	B	17.3	B	0.2	No
	All	PM	19.3	B	19.7	B	0.4	No
2) Carlsbad Blvd NB at Avenida Encinas (S)	All	AM	33.5	C	34.0	C	0.5	No
	All	PM	29.3	C	29.5	C	0.2	No
3) N. Coast Hwy at La Costa Ave (S)	All	AM	37.0	D	37.3	D	0.3	No
	All	PM	53.5	D	54.2	D	0.7	No
4) N. Coast Hwy at Project Access (U)	All	AM	DNE	NA	3.9	A	NA	No
	All	PM	DNE	NA	1.0	A	NA	No
5) N. Coast Hwy at Bishops Gate (R)	All	AM	34.1	D	35.7	E	1.6	No
	All	PM	9.7	A	10.0	A	0.3	No
6) N. Coast Hwy at Grandview St (R)	All	AM	26.3	D	27.7	D	1.4	No
	All	PM	9.9	A	10.3	B	0.4	No
7) N. Coast Hwy at Sand MPH (median)	All	AM	New	NA	New	NA	NA	No
	All	PM	Median	NA	Median	NA	NA	No
8) N. Coast Hwy at Jupiter St (R)	All	AM	21.0	D	21.8	C	0.8	No
	All	PM	9.7	A	10.0	A	0.3	No
9) N. Coast Hwy at Leucadia Blvd (S)	All	AM	31.7	C	32.2	C	0.5	No
	All	PM	34.0	C	36.1	D	2.1	No
10) La Costa Ave at N Vulcan Ave (U)	NB	AM	147.7	F	161.5	F	13.8	Yes
	NB	PM	121.5	F	142.7	F	21.2	Yes
11) La Costa Ave at Sheridan Rd (U)	NB	AM	61.2	F	69.7	F	8.5	Yes
	NB	PM	30.7	D	35.1	E	4.4	Yes
12) La Costa Ave at I-5 SB Ramps (S)	All	AM	31.3	C	31.6	C	0.3	No
	All	PM	28.0	C	28.1	C	0.1	No
13) La Costa Ave at I-5 NB Ramps (S)	All	AM	45.6	D	46.2	D	0.6	No
	All	PM	40.8	D	41.0	D	0.2	No

Notes: 1) Intersection Analysis-(S) Signalized, (U) Unsignalized. 2) Delay-HCM Average Control Delay in sec. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Project effect if threshold is exceeded.

Figure 15: Horizon Year 2035 + Project Volumes

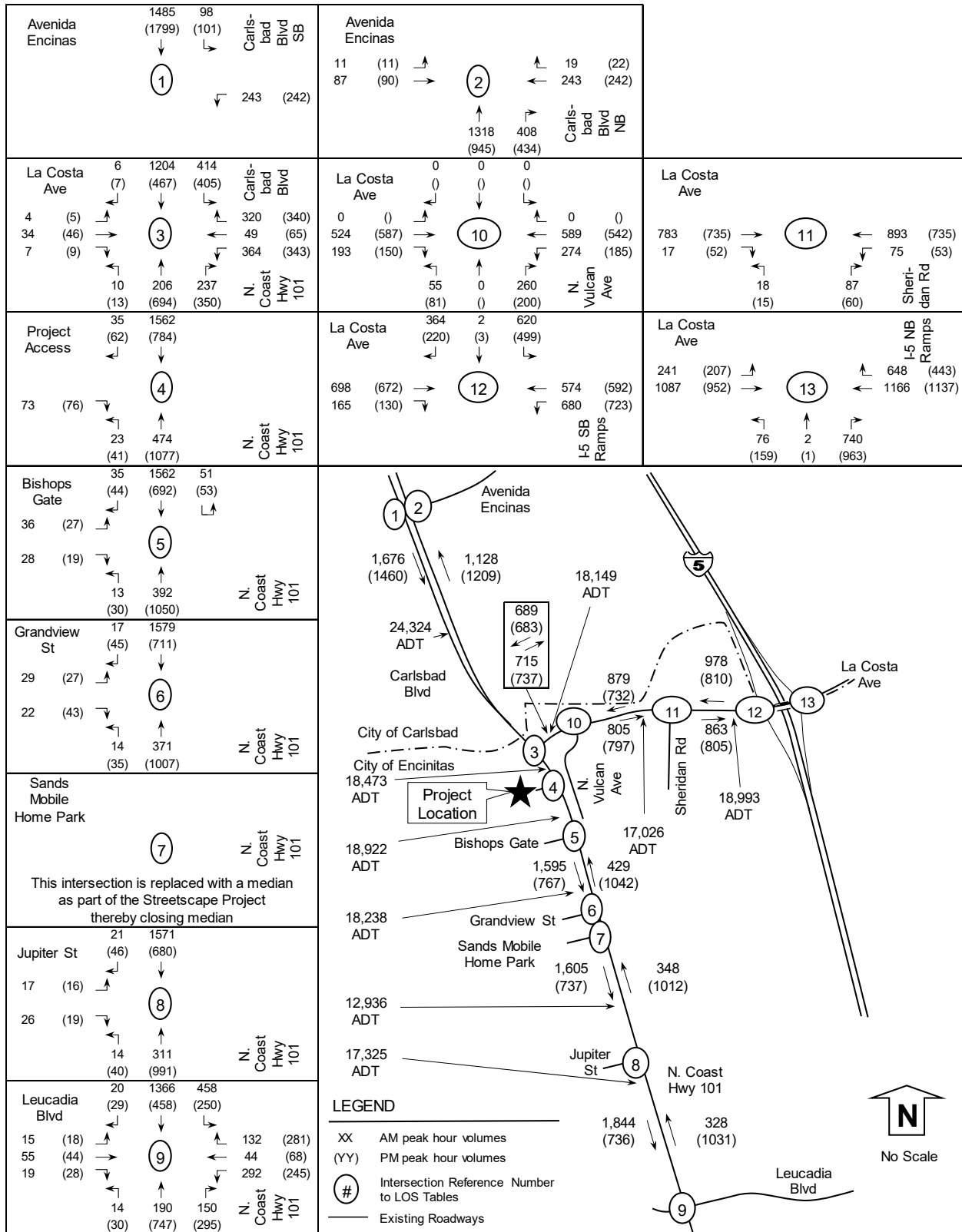


TABLE 26: HORIZON YEAR 2035 + PROJECT SEGMENT DAILY VOLUMES AND OPERATIONS

Segment	Functional Classification	LOS E Capacity	Horizon Year (2035)		Proj. Daily Vol.	Horizon Year + Project	
			Daily Volume	LOS		Daily Volume	LOS
Carlsbad Boulevard							
Avenida Encinas to La Costa Ave	4 Lane Major	42,200	24,100	D	224	24,324	D
North Coast Highway 101							
La Costa Ave to 600' S. of La Costa	2 Ln Aug. Coll.	20,000	17,800	D	673	18,473	E
600' S. of La Costa to Bishops Gate	2 Ln Aug. Coll.	20,000	17,800	D	1,122	18,922	E
Bishops Gate to Grandview St	2 Ln Aug. Coll.	20,000	17,800	D	438	18,238	E
Grandview St to Jupiter St	2 Ln Aug. Coll.	20,000	12,510	C	426	12,936	C
Jupiter St to Leucadia Blvd	3 Lane Major	26,400	16,910	C	415	17,325	C
La Costa Avenue							
N. Coast Hwy to N. Vulcan	2 Lane Coll.	14,000	17,700	F	449	18,149	F
N. Vulcan to Sheridan Rd	2 Lane Coll.	14,000	16,600	F	426	17,026	F
Sheridan Rd to I-5	2 Ln Aug. Coll.	20,000	18,600	E	393	18,993	E

Notes: Aug. Coll. = Augmented Collector. Daily volume is a 24 hour volume. LOS: Level of Service
 Carlsbad Boulevard capacity and LOS from City of Carlsbad 2018 Growth Management Program.

TABLE 27: HORIZON YEAR 2035 + PROJECT SEGMENT PEAK HOUR VOLUMES AND OPERATIONS

Segment	Dir	Lanes	Year 2035 Streetscape				Project		Year 2035 Streetscape + Project			
			Capacity	Vol.	V/C	LOS	Pk Hr Vol.	Pk Hr Vol.	LOS	V/C	Effect	Δ
Carlsbad Blvd												
<i>AM Peak Hour</i>												
Btw Avenida Encinas and La Costa Ave	NB	2 lanes	3,640	1,120	0.308	D	8	1,128	0.310	D	0.002	No
	SB	2 lanes	3,640	1,672	0.459	D	4	1,676	0.460	D	0.001	No
<i>(PM) Peak Hour</i>												
Btw Avenida Encinas and La Costa Ave	NB	2 lanes	3,640	(1200)	0.330	D	(9)	(1209)	0.332	D	0.002	No
	SB	2 lanes	3,640	(1448)	0.398	D	(12)	(1460)	0.401	D	0.003	No
North Coast Highway 101												
<i>AM Peak Hour</i>												
Btw La Costa Ave and Grandview St	NB	1 lane	1,900	420	0.221	A	9	429	0.226	A	0.005	No
	SB	1 lane	1,800	1,580	0.878	D	15	1,595	0.886	D	0.008	No
Btw Grandview St and Jupiter St	NB	1 lane	1,800	340	0.189	A	8	348	0.193	A	0.004	No
	SB	1 lane	1,800	1,590	0.883	D	15	1,605	0.892	D	0.008	No
Btw Jupiter St and Leucadia Blvd	NB	1 lane	1,800	320	0.178	A	8	328	0.182	A	0.004	No
	SB	2 lanes	3,400	1,830	0.538	B	14	1,844	0.542	B	0.004	No
<i>(PM) Peak Hour</i>												
Btw La Costa Ave and Grandview St	NB	1 lane	1,900	(1020)	0.537	B	(22)	(1042)	0.548	B	0.012	No
	SB	1 lane	1,800	(750)	0.417	B	(17)	(767)	0.426	B	0.009	No
Btw Grandview St and Jupiter St	NB	1 lane	1,800	(990)	0.550	B	(22)	(1012)	0.562	B	0.012	No
	SB	1 lane	1,800	(720)	0.400	A	(17)	(737)	0.409	A	0.009	No
Btw Jupiter St and Leucadia Blvd	NB	1 lane	1,800	(1010)	0.561	B	(21)	(1031)	0.573	B	0.012	No
	SB	2 lanes	3,400	(720)	0.212	A	(16)	(736)	0.216	A	0.005	No
La Costa Avenue												
<i>AM Peak Hour</i>												
Btw Coast Hwy 101 and Vulcan Ave	EB	1 lane	1,800	700	0.389	A	15	715	0.397	A	0.008	No
	WB	1 lane	1,800	680	0.378	A	9	689	0.383	A	0.005	No
Btw Vulcan Ave and Sheridan Rd	EB	1 lane	1,800	790	0.439	B	15	805	0.447	B	0.008	No
	WB	1 lane	1,800	870	0.483	B	9	879	0.488	B	0.005	No
Btw Sheridan Rd and I-5 SB Ramps	EB	1 lane	1,800	850	0.472	B	13	863	0.479	B	0.007	No
	WB	1 lane	1,800	970	0.539	B	8	978	0.543	B	0.004	No
<i>(PM) Peak Hour</i>												
Btw Coast Hwy 101 and Vulcan Ave	EB	1 lane	1,800	(720)	0.400	A	(17)	(737)	0.409	A	0.009	No
	WB	1 lane	1,800	(660)	0.367	A	(23)	(683)	0.379	A	0.013	No
Btw Vulcan Ave and Sheridan Rd	EB	1 lane	1,800	(780)	0.433	B	(17)	(797)	0.443	B	0.009	No
	WB	1 lane	1,800	(710)	0.394	A	(22)	(732)	0.407	A	0.012	No
Btw Sheridan Rd and I-5 SB Ramps	EB	1 lane	1,800	(790)	0.439	B	(15)	(805)	0.447	B	0.008	No
	WB	1 lane	1,800	(790)	0.439	B	(20)	(810)	0.450	B	0.011	No

Carlsbad Blvd capacity from Carlsbad 2018 Growth Management Program. Remaining capacities from Streetscape Final EIR.

Under horizon year 2035 plus project conditions, the study elements were calculated to operate at LOS D or better, except for (bold indicates project effect):

- 1) Intersection of N. Coast Hwy 101/Bishops Gate (LOS E AM)
- 2) **Intersection of La Costa Ave/N. Vulcan Ave (LOS F AM & PM),**
- 3) **Intersection of La Costa Ave/Sheridan Rd (LOS F AM & LOS E PM),**
- 4) Segment of N. Coast Hwy 101 from La Costa Ave to 600' S. of La Costa Ave (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 5) Segment of N. Coast Hwy 101 from 600' S. of La Costa Ave to Bishops Gate (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 6) Segment of N. Coast Hwy 101 from Bishops Gate to Grandview St (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 7) Segment of La Costa Ave from N. Coast Hwy to N. Vulcan Ave (LOS F daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 8) Segment of La Costa Ave from N. Vulcan Ave to Sheridan Rd (LOS F daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations), and
- 9) Segment of La Costa Ave from Sheridan Rd to I-5 (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations).

11.0 Project Traffic Effects

The project is calculated to have a traffic effect to the following intersections because project traffic exceeds the allowable change in vehicular delays. The locations include:

- 1) Intersection of N. Coast Highway 101/Bishops Gate under existing + project, and existing + cumulative + project conditions.
- 2) Intersection of N. Coast Highway 101/Grandview St under existing + project conditions.
- 3) Intersection of La Costa Ave/N. Vulcan Ave under existing + project + cumulative, and horizon year 2035 + project conditions.
- 4) Intersection of La Costa Ave/Sheridan Rd under horizon year 2035 + project conditions.

11.1 Intersection of N. Coast Highway 101/Bishops Gate

This intersection is calculated to have a project effect under existing + project, and existing + cumulative + project conditions. A roundabout is proposed as part of the City's Streetscape Project; however, the roundabout is forecasted to operate at LOS E in the PM peak hour with project traffic. The AM peak hour is calculated to operate at acceptable LOS. The goal of Streetscape is to reduce the number of southbound vehicle lanes to accommodate a dedicated bike lane, reduce travel speeds, and implement roundabouts to better balanced mobility between motorists, bicyclists, and pedestrians.

If the project pulls building permits before Streetscape completes the roundabout, then the project will provide a **fair share contribution of 6.2%** towards this roundabout or other City direct location as the proportional means to reduce the traffic effect. The 6.2% is the higher percentage of project traffic between AM & PM peak hours as follows: AM 68 project peak hour trips divided by 2,092 existing peak hour trips = 3.3%; PM 86 project peak hour trips divided by 1,378 existing peak hour trips = 6.2% (controls).

11.2 Intersection of N. Coast Highway 101/Grandview Street

This intersection is calculated to have a project effect under existing + project conditions. A roundabout is proposed as part of the City's Streetscape Project. The roundabout is forecasted to operate at LOS E in the PM peak hour with project traffic; however, the project no longer has an effect because the change in delay is 0.6 seconds, which is less than the allowable 2.0 seconds as shown in **Table 28** (LOS calculations included in **Appendix S**). The AM peak hour is calculated to operate at acceptable LOS. The goal of Streetscape is to reduce the number of southbound vehicle lanes to accommodate a dedicated bike lane, reduce travel speeds, and implement roundabouts to better balanced mobility between motorists, bicyclists, and pedestrians.

If the project pulls building permits before Streetscape completes the roundabout, then the project will provide a **fair share contribution of 2.9%** towards this roundabout or other City directed location as the proportional means to reduce the traffic effect. The 2.9% is the higher percentage of project traffic between AM & PM peak hours as follows: AM 23 project peak hour

trips divided by 2,047 existing peak hour trips = 1.1%; PM 40 project peak hour trips divided by 1,381 existing peak hour trips = 2.9% (controls).

TABLE 28: N. COAST HIGHWAY 101/GRANDVIEW ST OPERATIONS WITH IMPROVEMENTS

Intersection and (Analysis) ¹	Approach	Peak Hour	Existing		Existing + Project			
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Effect ⁵
6) N. Coast Hwy at Grandview St (U)	EB	AM	61.0	F	70.1	F	9.1	Yes
<i>With Streetscape Planned Roundabout</i>								
6) N. Coast Hwy at Grandview St (R)	All	AM	35.0	D	35.6	E	0.6	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in sec. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Project effect if threshold is exceeded.

11.3 Intersection of La Costa Ave/N. Vulcan Avenue

This intersection is calculated to have a traffic effect under existing + project + cumulative, and horizon year 2035 + project conditions. The traffic effect is reduced to acceptable LOS with an improvement of a traffic signal under existing + project + cumulative conditions. Under horizon year 2035 + project conditions, in addition to a traffic signal an additional westbound left turn lane is required to have a forecasted acceptable LOS. Sufficient ROW may not exist for an additional left turn lane (for year 2034), thus City coordination and/or monitoring of traffic volumes may be required to determine if the forecasted volumes materialize to require a separate left turn lane. The California Manual on Traffic Control Devices (MUTCD) 2014 Revision 5 (effective 3/27/20) Warrant 2 (Four-Hour Vehicular Volume) is satisfied based on existing year 2020 volumes. The LOS without and with the traffic signal is shown in **Table 29**. The signal warrant calculations and LOS calculations are included in **Appendix T**.

TABLE 29: LA COSTA AVE/N. VULCAN AVE LOS WITH MITIGATION

Intersection and (Analysis) ¹	Approach	Peak Hour	Existing + Cumulative		Existing + Cumulative + Project			
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Effect ⁵
10) La Costa Ave at N Vulcan Ave (U)	NB	AM	58.4	F	60.9	F	2.5	Yes
	NB	PM	50.0	F	58.5	F	8.5	Yes
<i>With Improvement of a Traffic Signal</i>								
10) La Costa Ave at N Vulcan Ave (S)	All	AM			11.7	B		No
	All	PM			9.7	A		No
Intersection and (Analysis) ¹	Approach	Peak Hour	Horizon Year		Horizon Year 2035 + Project			
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Effect ⁵
10) La Costa Ave at N Vulcan Ave (U)	NB	AM	147.7	F	161.5	F	13.8	Yes
	NB	PM	121.5	F	142.7	F	21.2	Yes
<i>With Improvement of a Traffic Signal and additional WB left turn lane</i>								
10) La Costa Ave at N Vulcan Ave (S)	All				33.4	C		No
	All				20.8	C		No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in sec. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Project effect if threshold is exceeded.

Under Existing + Project + Cumulative conditions, the recommended improvement is a **fair share contribution of 2.7%** towards a future traffic signal as the proportional means to reduce the traffic effect. The 2.7% is the higher percentage of project traffic between AM & PM peak hours as follows: AM 24 project peak hour trips divided by 1,407 existing + cumulative peak hour trips = 1.7%; PM 40 project peak hour trips divided by 1,465 existing + cumulative peak hour trips = 2.7% (controls).

Under Horizon Year 2035 + Project conditions, the recommended improvement is a **fair share contribution of 2.3%** toward a horizon year intersection improvement that may be a westbound left turn lane or other to be determined improvement as the proportional means to reduce the traffic effect. The 2.3% is the higher percentage of project traffic between AM & PM peak hours as follows: AM 24 project peak hour trips divided by 1,871 horizon year peak hour trips = 1.3%; PM 40 project peak hour trips divided by 1,705 horizon year peak hour trips = 2.3% (controls).

11.4 Intersection of La Costa Ave/Sheridan Road

This intersection is calculated to have a traffic effect under horizon year 2035 + project conditions. The traffic effect is reduced to acceptable LOS with an improvement of a traffic signal. The California MUTCD 2014 Revision 5 (effective 3/27/20) Warrant 3 (Peak-Hour Vehicular Volume) is satisfied based on horizon year 2035 volumes. The LOS without and with the traffic signal is shown in **Table 30**. The signal warrant calculations and LOS calculations are included in **Appendix U**. It is recommended that the applicant coordinate with City staff to determine the appropriate proportional means to reduce the traffic effect.

TABLE 30: LA COSTA AVE/SHERIDAN RD LOS WITH MITIGATION

Intersection and (Analysis) ¹	Approach	Peak Hour	Horizon Year		Horizon Year 2035 + Project			
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Effect ⁵
11) La Costa Ave at Sheridan Rd (U)	NB	AM	61.2	F	69.7	F	8.5	Yes
	NB	PM	30.7	D	35.1	E	4.4	Yes
<i>With Improvement of a Traffic Signal</i>								
11) La Costa Ave at Sheridan Rd (S)	All	AM			7.2	A		No
	All	PM			5.8	A		No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in sec. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Project effect if threshold is exceeded.

Under Horizon Year 2035 + Project conditions, the recommended improvement is a **fair share contribution of 2.4%** toward a horizon year 2035 traffic signal or other City directed location as the proportional means to reduce the traffic effect. The 2.4% is the higher percentage of project traffic between AM & PM peak hours as follows: AM 24 project peak hour trips divided by 1,849 horizon year peak hour trips = 1.3%; PM 39 project peak hour trips divided by 1,611 horizon year peak hour trips = 2.4% (controls).

12.0 Conclusion

This analysis determined if there were any potential traffic effects on the study roadways from the addition of project traffic. The project includes a 30-room hotel, 94 multi-family units, and 18,261 square feet of commercial/retail space on the westside of North Coast Highway 101 approximately 500 feet south of La Costa Avenue located in the City of Encinitas, California. The project will replace an existing commercial/retail center of approximately 7,582 square feet with active businesses.

This analysis is based on the local San Diego Institute of Transportation Engineers (ITE) *Guidelines for Traffic Impact Studies in the San Diego Region* traffic analysis criteria. The project traffic generation was calculated using the SANDAG trip rates from the *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. The project site has active uses creating traffic; therefore, a traffic credit was applied because the existing uses will be replaced by the project. Additionally, the existing and proposed project have pass-by trips already on the study roadways. The project is calculated to generate a net increase of 1,122 ADT, 60 AM peak hour trips, and 102 PM peak hour trips.

Under existing conditions, the study elements were calculated to operate at LOS D or better, except for:

- 1) Intersection of N. Coast Highway 101/Bishops Gate (LOS E AM),
- 2) Intersection of N. Coast Highway 101/Grandview St (LOS F AM),
- 3) Intersection of N. Coast Highway 101/Jupiter St (LOS E AM),
- 4) Intersection of La Costa Ave/N. Vulcan Ave (LOS E AM), and
- 5) Segment of La Costa Ave from N. Vulcan to Sheridan (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hours operations).

Under existing plus project conditions, the study elements were calculated to operate at LOS D or better, except for (bold indicates project effect):

- 1) **Intersection of N. Coast Highway 101/Bishops Gate (LOS E AM),**
- 2) **Intersection of N. Coast Highway 101/Grandview St (LOS F AM),**
- 3) Intersection of N. Coast Highway 101/Jupiter St (LOS E AM),
- 4) Intersection of La Costa Ave/N. Vulcan Ave (LOS E AM), and
- 5) Segment of La Costa Ave from N. Vulcan to Sheridan (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations).

Under existing plus cumulative conditions, the study elements were calculated to operate at LOS D or better, except for the:

- 1) Intersection of N. Coast Hwy 101/Bishops Gate (LOS E AM),
- 2) Intersection of N. Coast Hwy 101/Grandview St (LOS E AM),
- 3) Intersection of La Costa Ave/N. Vulcan Ave (LOS F AM & PM),
- 4) Segment of N. Coast Hwy 101 from La Costa Ave to 600' S. of La Costa Ave (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 5) Segment of N. Coast Hwy 101 from 600' S. of La Costa Ave to Bishops Gate (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations).



- operations),
- 6) Segment of N. Coast Hwy 101 from Bishops Gate to Grandview St (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 7) Segment of N. Coast Hwy 101 from Grandview St. to Jupiter St. (LOS E SB AM),
- 8) Segment of La Costa Ave from N. Coast Hwy to N. Vulcan Ave (LOS F daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 9) Segment of La Costa Ave from N. Vulcan Ave to Sheridan Rd (LOS F daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations), and
- 10) Segment of La Costa Ave from Sheridan Rd to I-5 (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations).

Under existing plus cumulative plus project conditions, the study elements were calculated to operate at LOS D or better, except for (bold represents project effect):

- 1) **Intersection of N. Coast Hwy 101/Bishops Gate (LOS E AM),**
- 2) Intersection of N. Coast Hwy 101/Grandview St (LOS E AM),
- 3) **Intersection of La Costa Ave/N. Vulcan Ave (LOS F AM & PM),**
- 4) Segment of N. Coast Hwy 101 from La Costa Ave to 600' S. of La Costa Ave (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 5) Segment of N. Coast Hwy 101 from 600' S. of La Costa Ave to Bishops Gate (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 6) Segment of N. Coast Hwy 101 from Bishops Gate to Grandview St (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 7) Segment of N. Coast Hwy 101 from Grandview St. to Jupiter St. (LOS E SB AM),
- 8) Segment of La Costa Ave from N. Coast Hwy to N. Vulcan Ave (LOS F daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 9) Segment of La Costa Ave from N. Vulcan Ave to Sheridan Rd (LOS F daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations), and
- 10) Segment of La Costa Ave from Sheridan Rd to I-5 (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations).

Under horizon year 2035 conditions, the study elements were calculated to operate at LOS D or better, except for:

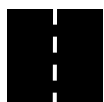
- 1) Intersection of La Costa Ave/N. Vulcan Ave (LOS F AM & PM),
- 2) Intersection of La Costa Ave/Sheridan Rd (LOS F AM),
- 3) Segment of La Costa Ave from N. Coast Hwy to N. Vulcan Ave (LOS F daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 4) Segment of La Costa Ave from N. Vulcan Ave to Sheridan Rd (LOS F daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations), and
- 5) Segment of La Costa Ave from Sheridan Rd to I-5 (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations).

Under horizon year 2035 plus project conditions, the study elements were calculated to operate at LOS D or better, except for (bold indicates project effect):

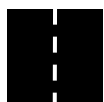
- 1) Intersection of N. Coast Hwy 101/Bishops Gate (LOS E AM)
- 2) **Intersection of La Costa Ave/N. Vulcan Ave (LOS F AM & PM),**
- 3) **Intersection of La Costa Ave/Sheridan Rd (LOS F AM & LOS E PM),**
- 4) Segment of N. Coast Hwy 101 from La Costa Ave to 600' S. of La Costa Ave (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 5) Segment of N. Coast Hwy 101 from 600' S. of La Costa Ave to Bishops Gate (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 6) Segment of N. Coast Hwy 101 from Bishops Gate to Grandview St (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 7) Segment of La Costa Ave from N. Coast Hwy to N. Vulcan Ave (LOS F daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations),
- 8) Segment of La Costa Ave from N. Vulcan Ave to Sheridan Rd (LOS F daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations), and
- 9) Segment of La Costa Ave from Sheridan Rd to I-5 (LOS E daily; however, this segment operates at acceptable LOS under AM and PM peak hour operations).

The project is calculated to have an effect to the following intersections because project traffic exceeds the allowable change in vehicular delays. The locations include:

- 1) Intersection of N. Coast Highway 101/Bishops Gate under existing + project, and existing + cumulative + project conditions. A roundabout is proposed as part of the City's Streetscape Project; however, the roundabout is forecasted to operate at LOS E in the PM peak hour with project traffic. The AM peak hour is calculated to operate at acceptable LOS. The goal of Streetscape is to reduce the number of southbound vehicle lanes to accommodate a dedicated bike lane, reduce travel speeds, and implement roundabouts to better balanced mobility between motorists, bicyclists, and pedestrians. If the project pulls building permits before Streetscape completes the roundabout, then the project will provide a **fair share contribution of 6.2%** towards this roundabout or other City directed location as the proportional means to reduce the traffic effect.
- 2) Intersection of N. Coast Highway 101/Grandview St under existing + project conditions. A roundabout is proposed as part of the City's Streetscape Project. The roundabout is forecasted to operate at LOS E in the PM peak hour with project traffic; however, the project no longer has an effect with the roundabout because the change in delay is 0.6 seconds, which is less than the allowable 2.0 seconds. The AM peak hour is calculated to operate at acceptable LOS. The goal of Streetscape is to reduce the number of southbound vehicle lanes to accommodate a dedicated bike lane, reduce travel speeds, and implement roundabouts to better balanced mobility between motorists, bicyclists, and pedestrians. If the project pulls building permits before Streetscape completes the roundabout as the proportional means to reduce the traffic effect, then the project will provide a **fair share contribution of 2.9%** towards this roundabout or other City directed location.



- 3) Intersection of La Costa Ave/N. Vulcan Ave under existing + project + cumulative, and horizon year 2035 + project conditions. The traffic effect is reduced to acceptable LOS with an improvement of a traffic signal under existing + project + cumulative conditions. Under Existing + Project + Cumulative conditions, the recommended improvement is a **fair share contribution of 2.7%** towards a future traffic signal. Under horizon year 2035 + project conditions, in addition to a traffic signal an additional westbound left turn lane is required to have a forecasted acceptable LOS. Under Horizon Year 2035 + Project conditions, the recommended improvement is a **fair share contribution of 2.3%** toward a horizon year intersection improvement that may be a westbound left turn lane or other to be determined improvement as the proportional means to reduce the traffic effect.
- 4) Intersection of La Costa Ave/Sheridan Rd under horizon year 2035 + project conditions. The traffic effect is reduced to acceptable LOS with an improvement of a traffic signal. Under Horizon Year 2035 + Project conditions, the recommended improvement is a **fair share contribution of 2.4%** toward a horizon year 2035 traffic signal or other City directed location as the proportional means to reduce the traffic effect.



13.0 References

City of Carlsbad *General Plan* September 2015.

City of Encinitas *Circulation Element* May 11, 1995.

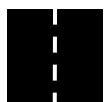
City of Encinitas *2014-2021 Housing Element Update* Traffic Impact Study May, 2018.

Highway Capacity Manual (2000 and 6th Edition).

San Diego Institute of Transportation Engineers (ITE). May 2019. *Guidelines for Transportation Impact Studies in the San Diego Region*.

San Diego Association of Governments (SANDAG). April 2002. *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*.

Trafficware Corporation. Synchro 10.0 computer software.



Appendix A

Excerpts from City of Carlsbad Growth Management Plan

Growth Management Program

Year 2018 Traffic Conditions Report

Prepared for:

City of Carlsbad
1635 Faraday Avenue
Carlsbad, CA 92008



Prepared by:

Jason Stack, TE
Principal Manager



5865 Avenida Encinas, Suite 142-B
Carlsbad, CA 92008

June 19, 2019



Roadway Service Volume Table - Generalized Data

Segment Capacity Threshold for Arterial Streets

Hourly Volume in Peak Direction						
Lanes	Speed Limit	Median	B	C	D	E
1	35	Undivided	**	180	590	740
	35	Divided	**	190	630	780
2	35	Divided	**	520	1390	1540
	45	Divided	**	600	1560	1760
	50	Divided	**	850	1690	1820
	55	Divided	**	1050	1800	1890
3	35	Divided	**	680	2230	2540
	45	Divided	**	2040	2660	2700
	50	Divided	**	2360	2760	2800
4	55	Divided	390	2600	2870	2900
	45	Divided	**	2780	3560	3620

Segment Capacity Threshold for Industrial Streets

Hourly Volume in Peak Direction						
Lanes	Speed Limit	Median	B	C	D	E
1	25	Undivided	**	110	450	560
	25	Divided	**	140	610	720
	35	Undivided	**	180	590	740
	35	Divided	**	190	630	780
	40	Undivided	**	216	708	888
	40	Divided	**	228	756	936

Hourly Volume in Both Direction

Lanes	Speed Limit	Median	B	C	D	E
2	35	Undivided	**	340	1100	1380
	35	Divided	**	360	1170	1450
4	35	Divided	**	970	2580	2860
	45	Divided	**	1120	2890	3260
	50	Divided	**	1580	3130	3380
	55	Divided	**	1950	3340	3500
5	55	Divided	**	3395	4343	4455
6	35	Divided	**	1260	4130	4720
	50	Divided	**	4380	5120	5180
	55	Divided	730	4820	5320	5360
7	45	Divided	**	4483	5785	5878

Hourly Volume in Both Direction

Lanes	Speed Limit	Median	B	C	D	E
2	25	Undivided	**	200	800	990
	25	Divided	**	250	1080	1270
	35	Undivided	**	340	1100	1380
	35	Divided	**	360	1170	1450
	40	Undivided	**	408	1320	1656
	40	Divided	**	432	1404	1740

Annual Average Daily Traffic

Lanes	Speed Limit	Median	B	C	D	E
2	35	Undivided	**	4200	13700	17200
	35	Divided	**	4400	14600	18100
4	35	Divided	**	12100	32200	35800
	45	Divided	**	13900	36200	40800
	50	Divided	**	19700	39200	42200
	55	Divided	**	24400	41700	43800
6	35	Divided	**	15800	51700	59000
	50	Divided	**	54700	63900	64800
	55	Divided	9100	60200	66500	67000

Annual Average Daily Traffic

Lanes	Speed Limit	Median	B	C	D	E
2	25	Undivided	**	2200	8900	11000
	25	Divided	**	2800	12000	14100
	35	Undivided	**	4200	13700	17200
	35	Divided	**	4400	14600	18100
	40	Undivided	**	5040	16440	20640
	40	Divided	**	5280	17520	21720



Roadway Service Volume Table - Specific Corridors

N/S Streets	Limits	Roadway Classification	Peak Direction				
			A	B	C	D	E
El Camino Real	City Limits to Marron Road	6/35/D	**	**	**	**	1400
	Marron Road to Carlsbad Village Drive	6/35/D	**	140	2070	2520	###
	Carlsbad Village Drive to Tamarack Avenue	6/55/D	1930	2850	2900	###	###
	Tamarack Avenue to Cannon Road	6/55/D	**	**	2400	2800	###
	Cannon Road to College Boulevard	2/55/D - NB	**	1060	1860	###	###
		3/55/D - SB	**	2150	2900	###	###
	College Boulevard to Palomar Airport Road	6/55/D	270	2750	2940	###	###
	Palomar Airport Road to Camino Vida Roble	6/55/D	**	**	1330	2510	2580
	Camino Vida Roble to Poinsettia Lane	2/55/D - NB	**	970	2020	2100	###
		3/55/D - SB	**	1470	2820	2900	###
	Poinsettia Lane to Aviara Parkway-Alga Road	6/55/D	**	**	2100	2820	2900
	Aviara Parkway-Alga Road to La Costa Avenue	3/55/D - NB	**	1390	2580	###	###
2/55/D - SB		**	800	1920	###	###	
La Costa Avenue to Leucadia Boulevard	6/55/D	**	**	1880	2820	2880	
College Boulevard	City Limits to Carlsbad Village Drive	4/45/D	**	**	930	1680	1770
	Carlsbad Village Drive to Cannon Road	4/45/D	**	**	1040	1760	1800
	El Camino Real to Aston Avenue	4/50/D	**	**	390	1440	1810
	Aston Avenue to Palomar Airport Road	2/50/D - NB	880	1680	###	###	###
2/50/D - SB		80	970	1040	###	###	
Aviara Parkway	Palomar Airport Road to Poinsettia Lane	4/45/D	**	**	**	1130	1630
Melrose Drive	City Limits to Palomar Airport Road	4/55/D - NB	**	**	1710	2740	2830
		3/55/D - SB	**	**	**	930	1630
	Palomar Airport Road to Poinsettia Lane	6/55/D	**	490	2720	2880	###
	Poinsettia Lane to Rancho Santa Fe Road	6/55/D	**	**	1400	2100	###
Rancho Santa Fe Road	City Limits to Camino Junipero	6/55/D	**	2520	3160	###	###
	Camino Junipero to La Costa Avenue	6/55/D	**	1400	2660	2700	###
	La Costa Avenue to Calle Barcelona	6/50/D	**	460	2410	2480	###
	Calle Barcelona to Olivenhain Road	6/50/D	**	540	2810	3040	###
E/W Streets	Limits	Roadway Classification	Peak Direction				
Cannon Road	Avenida Encinas to Paseo del Norte	4/35/D	**	**	**	730	1320
	Paseo del Norte to Car Country	4/50/D	**	390	1630	1770	1800
	Car Country to Legoland Drive	4/50/D	**	1170	1660	1700	###
	Legoland Drive to Faraday Avenue	4/50/D	**	270	1280	1320	###
	Faraday Avenue to El Camino Real	4/50/D	**	**	1280	1620	###
	El Camino Real to College Boulevard	4/50/D	**	**	280	1310	1690
Faraday Avenue	Van Allen Way to El Camino Real	4/40/D	**	**	220	1400	1680
	El Camino Real to Melrose Drive	4/50/D	**	**	1370	1640	###
Palomar Airport Road	Carlsbad Boulevard to Avenida Encinas	2/35/U	**	520	760	###	###
	Avenida Encinas to Paseo del Norte	3/35/D - EB	**	**	**	**	250
		2/35/D - WB	**	**	**	**	650
	Paseo del Norte to Armada	3/45/D - EB	**	**	1640	2660	2740
		4/45/D - WB	**	**	2250	3570	3680
	Armada to Aviara Parkway	6/55/D	**	650	2760	2940	###
	Aviara Parkway to Camino Vida Roble	6/55/D	440	2720	2900	###	###
	Camino Vida Roble to El Camino Real	6/55/D	**	790	2140	###	###
	El Camino Real to El Fuerte	6/55/D	**	1290	2830	2900	###
El Fuerte to Melrose Drive	6/55/D	**	1230	2860	2940	###	
Melrose Drive to City Limits	6/55/D	**	340	2590	2900	###	
Poinsettia Lane	Avenida Encinas to Paseo del Norte	4/35/D	**	**	**	180	1190
	Paseo del Norte to Aviara Parkway	4/50/D	**	**	1330	1770	1840
La Costa Avenue	Piraeus Street to El Camino Real	4/55/D	**	1450	1700	###	###

** Indicates LOS cannot be achieved during peak hour (e.g., signal spacing is too close to achieve smooth traffic flows even at low volumes).

Indicates the capacity jumps to LOS F because intersection capacities have been reached. (i.e., travel speeds quickly degrade to LOS F).

Appendix B

Excerpts from City of Encinitas General Plan

THE CITY OF ENCINITAS
CALIFORNIA

PUBLIC ROAD STANDARDS

April, 1991

TABLE 2
GENERAL PLAN CIRCULATION ELEMENT
ROADWAY CAPACITY STANDARDS *

Facility Type	# of Lanes	ADT Capacity		
		LOS C	LOS D	LOS E
FREEWAY	6	108,00	120,000	135,000
	8	145,000	160,000	175,000
	10	175,000	195,000	215,000
Prime Arterial	6	46,000	51,200	57,000
Prime Arterial-Augmented	6	53,000	60,000	66,000
Major Roadway	4	28,200	31,600	35,200
Major Roadway-Augmented	4+	36,300	41,000	45,400
Collector Roadway	4	26,000	29,200	32,400
Local Roadway-Augmented	2+	16,000	18,000	20,000
Local Roadway	2	11,200	12,600	14,000

- NOTE:
1. Capacity means the maximum volume for the stated level of service.
 2. The above Standards are not applicable to non-circulation element roadways.

* From City of Encinitas General Plan Circulation Element.

Appendix C

Excerpts from City of Encinitas Housing Element



City of Encinitas Housing Element Traffic Impact Study

Draft Report | January 27, 2016

Prepared By:

CHEN + RYAN

CHEN RYAN ASSOCIATES, INC.
239 Laurel Street, Suite 203
San Diego, CA 92101

Prepared For:



City of Encinitas
505 S. Vulcan Avenue
Encinitas, CA 92024

Table 3.2
Existing Roadway Segment Level of Service

Roadway	Segment	Count Date	Count Source	Functional Classification ¹	ADT	Capacity (LOS E)	V/C	LOS	Jurisdiction
Carlsbad Blvd	Between Poinsettia Lane and Avenida Encinas	June 2015	AVC	4-Lane Major Arterial	12,160	40,000	0.304	A	City of Carlsbad
	Between Avenida Encinas and La Costa Avenue	June 2015	AVC	4-Lane Major Arterial	16,194	40,000	0.405	B	City of Carlsbad
North Coast Highway 101	Between La Costa Avenue and 600 feet south of La Costa Avenue	June 2015	PTD	4-Lane Major Roadway	18,070	35,200	0.513	C or better	City of Encinitas
	Between 600 feet south of La Costa Avenue and Leucadia Blvd	June 2015	PTD	3-Lane Major Roadway ²	17,378	26,400	0.658	C or better	City of Encinitas
	Between Leucadia Blvd and Cadmus Street	June 2015	PTD	4-Lane Major Roadway	19,145	35,200	0.544	C or better	City of Encinitas
	Between Cadmus Street and Marcheta Street	June 2015	PTD	4-Lane Major Roadway	19,145	35,200	0.544	C or better	City of Encinitas
	Between Marcheta Street and 660 feet south of Marcheta Street	June 2015	PTD	4-Lane Major Roadway	19,145	35,200	0.544	C or better	City of Encinitas
	Between 660 feet south of Marcheta Street and Encinitas Blvd	June 2015	PTD	4-Lane Major Roadway	19,145	35,200	0.544	C or better	City of Encinitas
South Coast Highway 101	Between Encinitas Blvd and D Street	June 2015	PTD	4-Lane Major Roadway	18,746	35,200	0.533	C or better	City of Encinitas
	Between D Street and E Street	June 2015	PTD	4-Lane Major Roadway	18,746	35,200	0.533	C or better	City of Encinitas
	Between E Street and F Street	June 2015	PTD	4-Lane Major Roadway	18,746	35,200	0.533	C or better	City of Encinitas
	Between F Street and H Street	June 2015	PTD	4-Lane Major Roadway	18,746	35,200	0.533	C or better	City of Encinitas
	Between H Street and J Street	June 2015	PTD	4-Lane Major Roadway	20,337	35,200	0.578	C or better	City of Encinitas

Table 3.2
Existing Roadway Segment Level of Service

Roadway	Segment	Count Date	Count Source	Functional Classification ¹	ADT	Capacity (LOS E)	V/C	LOS	Jurisdiction
Birmingham Drive	Between San Elijo Avenue and MacKinnon Avenue	June 2015	PTD	2-Lane Local Roadway - Augmented	14,588	20,000	0.729	C or better	City of Encinitas
	Between MacKinnon Avenue and Carol View Drive	June 2015	PTD	2-Lane Local Roadway - Augmented	14,588	20,000	0.729	C or better	City of Encinitas
	Between Carol View Drive and I-5 SB Ramps	June 2015	PTD	2-Lane Local Roadway - Augmented	14,588	20,000	0.729	C or better	City of Encinitas
	Between I-5 SB Ramps and I-5 NB Ramps	June 2015	PTD	2-Lane Local Roadway	16,342	14,000	1.167	F	City of Encinitas
	Between I-5 NB Ramps and Villa Cardiff Drive	June 2015	PTD	2-Lane Local Roadway	8,248	14,000	0.589	C or better	City of Encinitas
	Between Villa Cardiff Drive and Playa Riviera	June 2015	PTD	2-Lane Local Roadway	8,248	14,000	0.589	C or better	City of Encinitas
	Between Playa Riviera and Freda Lane	June 2015	PTD	2-Lane Local Roadway	8,248	14,000	0.589	C or better	City of Encinitas
	Between Freda Lane and Lake Drive	June 2015	PTD	2-Lane Local Roadway	8,248	14,000	0.589	C or better	City of Encinitas

Source: Chen Ryan Associates; January 2016

Notes:

Bold letter indicates substandard LOS E or F.

¹ Functional Classification is representative of existing segment functionality and does not take into consideration the ultimate or final classification.

² 3-Lane Major Roadway is 75% capacity of a 4-Lane Major Roadway.

³ 3-Lane Collector is 75% capacity of a 4-Lane Collector.

⁴ 5-Lane Prime is 84% capacity of 6-Lane Prime Arterial (SANTEC).

⁵ 5-Lane Major is 84% capacity of 6-Lane Major Arterial (SANTEC).

⁶ 3-Lane Collector is 75% capacity of 4-Lane Collector (SANTEC).

Appendix D

Excerpts from Streetscape Traffic Study



VOLUME 1
FINAL ENVIRONMENTAL IMPACT REPORT

North Coast Highway 101 Streetscape Improvement Project
Case No.: 10-035 DR/CDP/EIR and 10-036 GPA/SPA/LCPA
State Clearinghouse (SCH) No. 2015091084

Lead Agency/Project Applicant:

City of Encinitas
Development Services Department
Contact: Stephanie Kellar, Project Manager
505 South Vulcan Avenue
Encinitas, California 92024

Preparer:

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February 2018

Highway 101 Streetscape Project

TRAFFIC IMPACT ANALYSIS REPORT

Prepared for

City of Encinitas

505 S. Vulcan Avenue,
Encinitas, CA 92024

Prepared by



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November 29, 2016

JN 137350

**Table 1
Signalized, Un-signalized and Roundabout Intersections
Level of Service & Delay Ranges**

LOS	Delay (seconds/vehicle)	
	Signalized Intersections	Un-signalized and Roundabout Intersections
A	≤ 10.0	≤ 10.0
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0
F	> 80.0	> 50.0

Source: 2000 Highway Capacity Manual and 2010 Highway Capacity Manual.

Roadway Segment Analysis Methodology

To better evaluate the segment operations, peak hour directional segment analysis was conducted which evaluates the worst case condition. The capacity of the segment was determined by factoring the base saturation flow rate of 2,000 vehicles per hour per lane (VPHPL) to account for friction due to on-street parking and due to turning vehicles at minor side street intersections. For the existing roadway geometry conditions along Highway 101, a composite total of 30% flow rate reduction was assumed, in the southbound direction, with a reduction of 20% due to parking friction and 10% due to turning vehicle friction. In the northbound direction, a reduction of 10% was assumed due to turning vehicle friction at stop-controlled side streets. Along Highway 101, it was assumed that the reduction in roadway capacity for project alternatives will not be the same as that of the existing geometry. With the bike lanes proposed in the project design, a buffer is created between the travelling vehicles and vehicles either parking or turning. Therefore, for the project alternative scenarios in the southbound direction, the reduction in base saturation flow rate was adjusted by 10% for parking friction and 5% due to turning vehicles at stop-controlled side streets, for a combined total of 15%. In the northbound direction, a reduction of 5% was assumed due to turning vehicle friction. For La Costa Avenue a reduction of 10% was assumed due to turning vehicle friction in both directions and for all scenarios.

The peak hour directional volume of the segment was then divided by the adjusted capacity to determine the volume to capacity (v/c) ratio of the segment. This ratio was then compared to the LOS thresholds for segments defined in the SANTEC/ITE traffic study guideline to determine the LOS of the segment. The SANTEC/ITE LOS thresholds for segments is shown in Table 2 below:

**Table 2
Segment Level of Service Thresholds Based on V/C Ratios**

LOS	V/C Ratio
A	< 0.41
B	0.42 – 0.62
C	0.63 – 0.79
D	0.80 – 0.92
E	0.93 – 1.00
F	> 1.00

Appendix E

Excerpts from ITE Guidelines



GUIDELINES FOR TRANSPORTATION IMPACT STUDIES IN THE SAN DIEGO REGION

May 2019

7.0 ROADWAY

It is recommended that consideration be given to preparation of a local transportation analysis (LTA) for all land development and transportation projects. This section describes the recommended methodology for analysis of local roadway conditions.

The purpose of the roadway analysis portion of an LTA is to forecast, describe, and analyze how a development will affect existing and future circulation infrastructure for users of the roadway system, including vehicles, bicycles, pedestrians, and transit. The LTA assists transportation engineers and planners in both the development community and public agencies when making land use, mobility infrastructure, and other development decisions. An LTA quantifies the expected changes in transportation conditions and translates these changes into transportation system effects in the vicinity of a project.

The roadway transportation analysis included in an LTA is separate from the transportation impact analysis conducted as part of the environmental (CEQA) project review process, as described in Part I. The purpose of the roadway transportation analysis is to ensure that all projects provide a fair share of roadway infrastructure improvements in order to accommodate their multimodal transportation demands.

The following guidelines were prepared to assist local agencies throughout the San Diego Region in promoting consistency and uniformity in local transportation studies. These guidelines do not establish a legal standard for these functions but are intended to supplement any individual manuals or level of service objectives for the various jurisdictions. These guidelines attempt to consolidate regional efforts to identify when an LTA is needed, what professional procedures should be followed, and what constitutes a significant traffic effect that should be dealt with.

The instructions outlined in these guidelines are subject to update as future conditions and experience become available. Special situations may call for variation from these guidelines. It is recommended that consultants who prepare an LTA submit a scoping letter (methodology memo) for review by the lead agency to verify the application of these guidelines and to identify any analysis needed to address special circumstances. The scoping letter in this context is used for transportation analysis only and is not related to a formal scoping process that occurs with preparation of a CEQA study. Caltrans and lead agencies should agree on the specific methods used in local transportation analysis studies involving any State Route facilities, including metered and unmetered freeway ramps.

NEED FOR A STUDY

Figure 7-1 shows the flow chart for determination of when a roadway analysis should be conducted. A roadway analysis should be prepared for all projects which generate traffic greater than 1,000 total average daily driveway trips (ADT) or 100 peak-hour trips. If a proposed project is not in conformance with the land use and/or transportation element of the general or community plan, use threshold rates of 500 ADT or 50 peak-hour trips.

Early consultation with any affected jurisdictions is strongly encouraged since a “focused” or “abbreviated” roadway analysis may still be required – even if the above threshold rates are not met. An understanding of the level of detail and the assumptions required for the analysis should be reached. A pre-submittal in-person conference may not be required. However, the applicant should prepare a scoping letter for the agency’s review and approval prior to preparation of the analysis.

Table 7-1

DETERMINATION OF THE NEED FOR ROADWAY IMPROVEMENTS

LEVEL OF SERVICE WITH PROJECT*	ALLOWABLE CHANGE DUE TO PROJECT EFFECT**					
	FREEWAYS		ROADWAY SEGMENTS		INTERSECTIONS	RAMP*** METERING
	V/C	SPEED (MPH)	V/C	SPEED (MPH)	DELAY (SEC.)	DELAY(MIN.)
E, & F (OR RAMP METER DELAYS ABOVE 15 MIN.)	0.01	1	0.02	1	2	2

NOTES:

* All level of service measurements are based upon Highway Capacity Manual (HCM) procedures for peak-hour conditions. However, V/C ratios for Roadway Segments may be estimated on an ADT/24-hour traffic volume basis (using Table 7-2 or a similar LOS chart for each jurisdiction). The target LOS for freeways, roadways, and intersections is generally "D." For metered freeway ramps, LOS does not apply; however, ramp meter delays above 15 minutes are considered excessive.

** If a proposed project's traffic causes the values shown in the table to be exceeded, the effects of the project are determined to justify improvements. These changes may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible improvements within the LTA report that will maintain the traffic facility at the target LOS or restore to pre-project conditions. If the LOS with the proposed project becomes worse than the target (see above * note), or if the project adds a significant amount of peak-hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, roadway improvements should be considered.

*** See Attachment B for ramp metering analysis.

KEY: V/C = Volume to Capacity ratio
 Speed = Speed measured in miles per hour
 Delay = Average stopped delay per vehicle measured in seconds for intersections, or minutes for ramp meters
 LOS = Level of Service

Appendix F

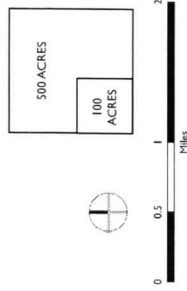
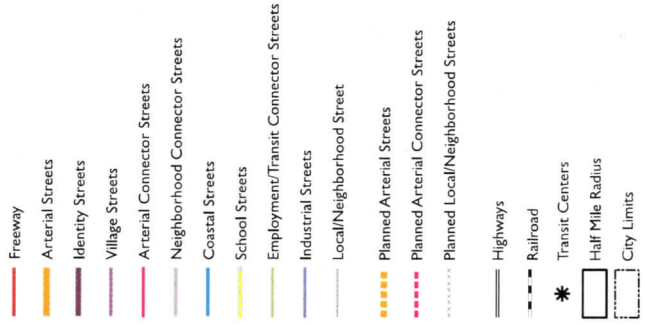
Excerpts from City of Carlsbad General Plan



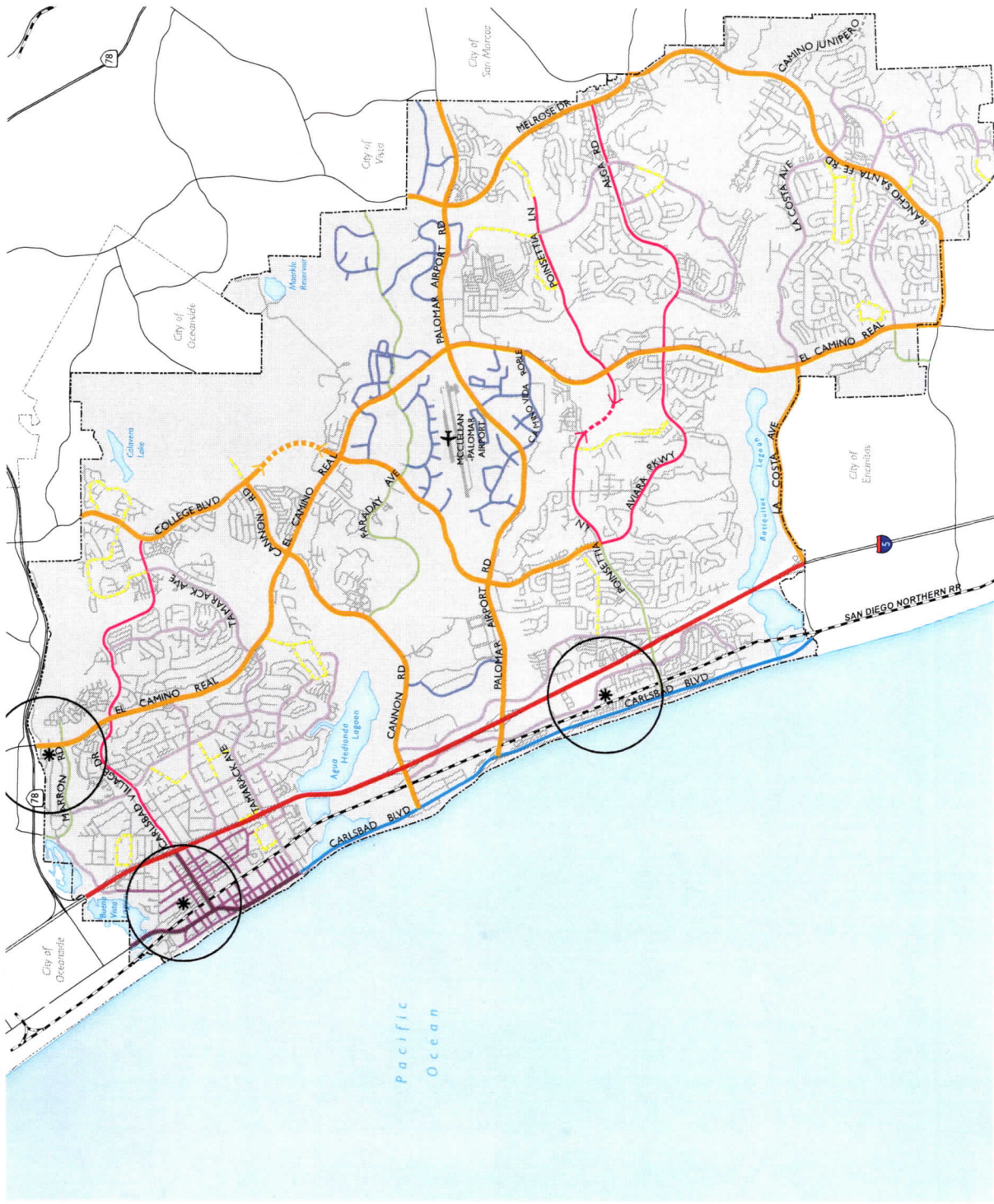
Carlsbad General Plan

September 2015

Figure 3-1: Street System



Source: City of Carlsbad, 2013; SANDAG, 2013; Fair & Peers, 2013; Dyett & Bhatia, 2013.

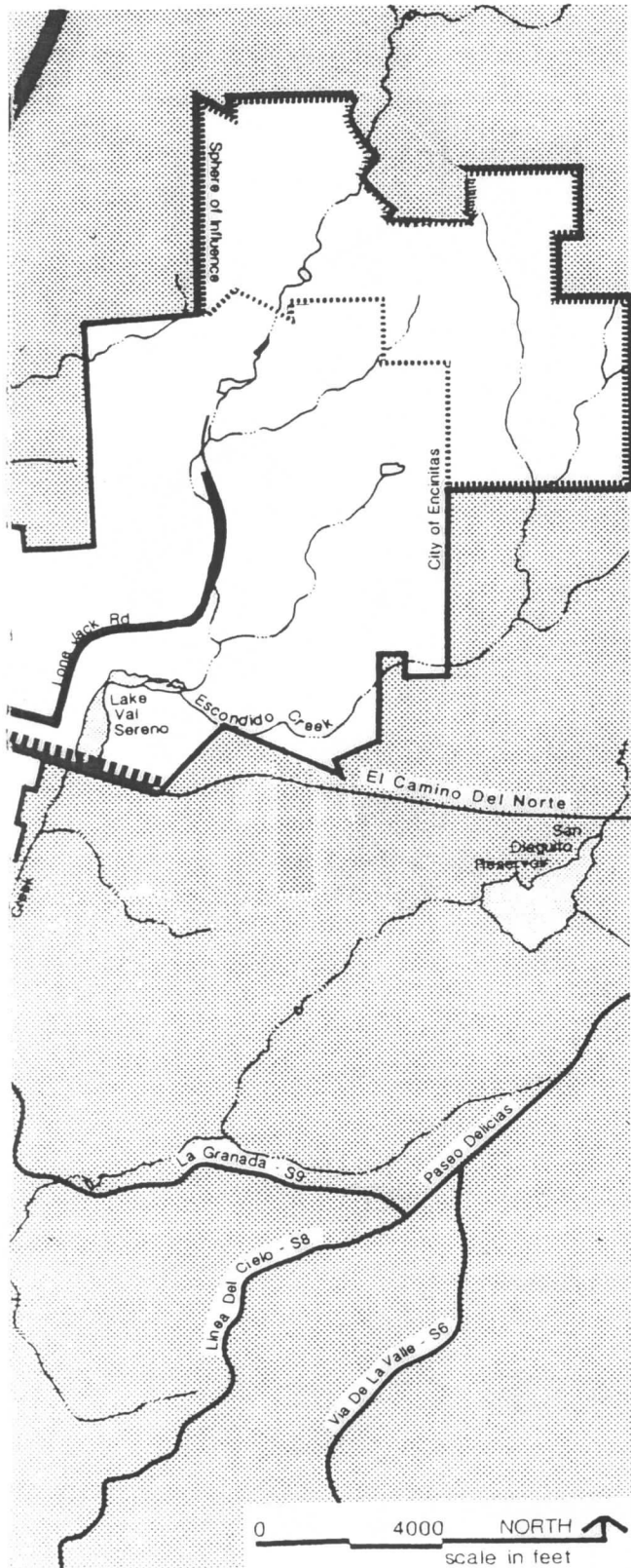



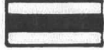


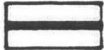
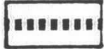


Appendix G

Excerpts from City of Encinitas Circulation Plan



SOURCE: Austin-Foust Associates, Inc.



-  Freeway
-  Prime Arterial (6 Lanes)
-  Major (4 Lanes)
-  Collector (4 Lanes)
-  Local Street (2 Lanes)
-  Augmented Facility
-  Limited Facility
-  Interchange Reconstruction

NOTE: Leucadia Blvd. between Interstate 5 and El Camino Real designated as 'Scenic Roadway' with 85 foot right-of-way (ROW)

Figure 2
Circulation Plan

Encinitas
General Plan
3/29/89

Appendix H

Count Data



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: Coast Highway
E/W: Avenida Encinas

Date: 11/7
Day: THURSDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM

Vehicle Counts

	Coast Highway Northbound			Coast Highway Southbound			Avenida Encinas Eastbound			Avenida Encinas Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	0	36	11	5	224	0	0	0	0	41	0	3	320
7:15 AM	0	27	10	3	321	0	0	0	0	46	0	1	408
7:30 AM	0	53	12	2	247	0	0	0	0	35	0	1	350
7:45 AM	0	59	14	2	293	0	0	0	0	47	0	3	418
8:00 AM	0	57	29	1	237	0	0	0	0	45	0	1	370
8:15 AM	0	62	24	3	201	0	0	0	0	29	0	4	323
8:30 AM	0	42	15	8	167	0	0	0	0	25	0	2	259
8:45 AM	1	61	22	4	127	0	0	0	0	30	0	5	250
TOTAL VOLUMES:	1	397	137	28	1817	0	0	0	0	298	0	20	2698

AM Peak Hr Begins at: 715 AM

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	0	196	65	8	1098	0	0	0	0	173	0	6	1546

PEAK HR FACTOR:	0.759	0.853	0.000	0.895	0.925
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Bicycle Counts

	Coast Highway Northbound			Coast Highway Southbound			Avenida Encinas Eastbound			Avenida Encinas Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	0	6	0	0	0	0	0	0	0	0	1	0	7
7:15 AM	0	2	0	0	0	0	0	2	0	0	1	0	5
7:30 AM	0	16	0	0	0	0	0	0	0	0	0	1	17
7:45 AM	0	4	1	0	0	0	0	0	0	0	0	0	5
8:00 AM	0	5	1	0	0	0	1	0	0	0	0	0	7
8:15 AM	0	5	0	0	0	0	0	1	0	0	0	0	6
8:30 AM	0	6	0	0	0	0	0	0	0	0	2	0	8
8:45 AM	0	10	1	0	0	0	0	0	0	0	0	0	11
TOTAL VOLUMES:	0	54	3	0	0	0	1	3	0	0	4	1	66

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	0	27	2	0	0	0	1	2	0	0	1	1	34

Pedestrian Counts

	Coast Highway North Leg	Coast Highway South Leg	Avenida Encinas East Leg	Avenida Encinas West Leg	TOTAL
7:00 AM	3	1	0	0	4
7:15 AM	1	6	0	0	7
7:30 AM	0	2	0	0	2
7:45 AM	1	2	0	0	3
8:00 AM	7	1	0	0	8
8:15 AM	2	2	0	0	4
8:30 AM	6	3	0	0	9
8:45 AM	1	0	0	0	1
TOTAL VOLUMES:	21	17	0	0	38

	North Leg	South Leg	East Leg	West Leg	TOTAL
PEAK VOLUMES:	9	11	0	0	20



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: Coast Highway
E/W: Avenida Encinas

Date: 11/7
Day: THURSDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM

Vehicle Counts

	Coast Highway Northbound			Coast Highway Southbound			Avenida Encinas Eastbound			Avenida Encinas Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	1	150	29	3	189	0	0	0	0	40	0	2	414
4:15 PM	0	155	43	0	111	0	0	0	0	33	0	3	345
4:30 PM	0	181	49	6	115	0	0	0	0	34	0	3	388
4:45 PM	1	154	46	4	93	0	0	0	0	25	0	3	326
5:00 PM	0	197	36	5	100	0	0	0	0	18	0	3	359
5:15 PM	0	179	34	5	96	0	0	0	0	27	0	5	346
5:30 PM	0	149	33	1	84	0	0	0	0	13	0	2	282
5:45 PM	0	202	31	3	98	0	0	0	0	27	0	2	363
TOTAL VOLUMES:	2	1367	301	27	886	0	0	0	0	217	0	23	2823

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	2	640	167	13	508	0	0	0	0	132	0	11	1473

PEAK HR FACTOR:	0.879			0.678			0.000			0.851			0.889
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Bicycle Counts

	Coast Highway Northbound			Coast Highway Southbound			Avenida Encinas Eastbound			Avenida Encinas Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	2	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	4	1	0	0	0	0	0	0	0	0	0	5
4:45 PM	0	6	0	0	0	0	0	0	0	0	0	0	6
5:00 PM	0	1	0	0	0	0	0	1	0	0	0	0	2
5:15 PM	0	4	0	0	0	1	0	0	0	0	0	0	5
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	16	3	0	0	1	0	1	0	0	0	0	21

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	10	3	0	0	0	0	0	0	0	0	0	13

Pedestrian Counts

	Coast Highway North Leg	Coast Highway South Leg	Avenida Encinas East Leg	Avenida Encinas West Leg	TOTAL
4:00 PM	0	0	0	0	0
4:15 PM	3	0	0	0	3
4:30 PM	3	0	0	1	4
4:45 PM	8	0	0	0	8
5:00 PM	2	4	0	0	6
5:15 PM	1	0	0	0	1
5:30 PM	2	4	0	0	6
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	19	8	0	1	28

PEAK VOLUMES:	North Leg	South Leg	East Leg	West Leg	TOTAL
	14	0	0	1	15



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: Coast Highway
E/W: La Costa Avenue

Date: 11/7/2019
Day: THURSDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM

Vehicle Counts

	Coast Highway Northbound			Coast Highway Southbound			La Costa Avenue Eastbound			La Costa Avenue Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	0	26	39	51	201	0	0	0	0	69	0	20	406
7:15 AM	0	28	38	85	286	0	0	0	0	45	0	23	505
7:30 AM	0	41	38	52	262	0	0	0	0	67	0	18	478
7:45 AM	0	56	58	73	257	0	0	0	0	66	0	26	536
8:00 AM	0	42	56	55	197	0	0	0	0	63	0	35	448
8:15 AM	0	58	54	52	192	0	0	0	0	73	0	32	461
8:30 AM	0	38	45	51	165	0	0	0	0	74	0	19	392
8:45 AM	0	55	34	39	113	0	0	0	0	74	0	36	351
TOTAL VOLUMES:	0	344	362	458	1673	0	0	0	0	531	0	209	3577

AM Peak Hr Begins at: 7:15 AM

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	0	167	190	265	1002	0	0	0	0	241	0	102	1967

PEAK HR FACTOR:	0.783	0.854	0.000	0.875	0.917								
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Bicycle Counts

	Coast Highway Northbound			Coast Highway Southbound			La Costa Avenue Eastbound			La Costa Avenue Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	0	0	0	0	0	0	0	0	0	2	0	4	6
7:15 AM	0	1	0	0	1	0	0	0	0	1	0	0	3
7:30 AM	0	3	1	1	0	0	0	0	0	0	0	19	24
7:45 AM	0	3	0	0	1	0	0	0	0	0	0	1	5
8:00 AM	0	3	0	0	0	0	0	0	0	0	0	2	5
8:15 AM	0	8	0	1	1	0	0	0	0	0	0	0	10
8:30 AM	0	10	0	1	5	0	0	0	0	0	0	1	17
8:45 AM	0	7	2	1	2	0	0	0	0	1	0	0	13
TOTAL VOLUMES:	0	35	3	4	10	0	0	0	0	4	0	27	83

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	0	10	1	1	2	0	0	0	0	1	0	22	37

Pedestrian Counts

	Coast Highway North Leg	Coast Highway South Leg	La Costa Avenue East Leg	La Costa Avenue West Leg	TOTAL
7:00 AM	0	0	0	0	0
7:15 AM	0	6	0	0	6
7:30 AM	0	1	1	0	2
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	7	0	0	7
8:30 AM	0	3	0	0	3
8:45 AM	0	2	0	0	2
TOTAL VOLUMES:	0	19	1	0	20

	North Leg	South Leg	East Leg	West Leg	TOTAL
PEAK VOLUMES:	0	7	1	0	8



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: Coast Highway
E/W: La Costa Avenue

Date: 11/7/2019
Day: THURSDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM

Vehicle Counts

	Coast Highway Northbound			Coast Highway Southbound			La Costa Avenue Eastbound			La Costa Avenue Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	0	147	43	99	157	0	0	0	0	42	0	56	544
4:15 PM	0	132	55	60	93	0	0	0	0	70	0	71	481
4:30 PM	0	170	49	47	80	0	0	0	0	43	0	64	453
4:45 PM	0	138	50	48	58	0	0	0	0	54	0	72	420
5:00 PM	0	171	67	67	99	0	0	0	0	48	0	81	533
5:15 PM	0	146	58	65	77	0	0	0	0	49	0	59	454
5:30 PM	0	132	56	32	79	0	0	0	0	80	0	83	462
5:45 PM	0	156	54	35	82	0	0	0	0	49	0	81	457
TOTAL VOLUMES:	0	1192	432	453	725	0	0	0	0	435	0	567	3804

PM Peak Hr Begins at: 500 PM

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	0	605	235	199	337	0	0	0	0	226	0	304	1906

PEAK HR FACTOR:	0.882	0.807	0.000	0.813	0.894
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Bicycle Counts

	Coast Highway Northbound			Coast Highway Southbound			La Costa Avenue Eastbound			La Costa Avenue Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	0	1	1	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	2	0	0	0	0	0	0	0	0	0	1	3
4:45 PM	0	4	2	1	0	0	0	0	0	0	0	0	7
5:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	1
TOTAL VOLUMES:	0	9	4	2	0	0	0	0	0	0	0	1	16

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	0	2	1	1	0	0	0	0	0	0	0	0	4

Pedestrian Counts

	Coast Highway North Leg	Coast Highway South Leg	La Costa Avenue East Leg	La Costa Avenue West Leg	TOTAL
4:00 PM	0	2	0	0	2
4:15 PM	0	0	0	0	0
4:30 PM	0	2	0	0	2
4:45 PM	0	3	1	0	4
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	1	0	0	1
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	8	1	0	9

	North Leg	South Leg	East Leg	West Leg	TOTAL
PEAK VOLUMES:	0	1	0	0	1



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: Coast Highway
E/W: Bishops Gate

Date: 11/13/19
Day: WEDNESDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM

Vehicle Counts

	Coast Highway Northbound			Coast Highway Southbound			Bishops Gate Eastbound			Bishops Gate Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	2	57	0	4	277	2	11	0	4	0	0	0	357
7:15 AM	2	60	0	1	403	4	5	0	7	0	0	0	482
7:30 AM	2	93	0	8	436	3	8	0	9	0	0	0	559
7:45 AM	0	104	0	3	446	9	10	0	5	0	0	0	577
8:00 AM	4	119	0	0	332	10	9	0	7	0	0	0	481
8:15 AM	3	85	0	1	333	9	6	0	6	0	0	0	443
8:30 AM	1	101	0	1	365	14	8	0	9	0	0	0	499
8:45 AM	3	89	0	0	416	5	5	0	5	0	0	0	523
TOTAL VOLUMES:	17	708	0	18	3008	56	62	0	52	0	0	0	3921

AM Peak Hr Begins at: 7:15 AM

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	8	376	0	12	1617	26	32	0	28	0	0	0	2099

PEAK HR FACTOR:	0.780	0.903	0.882	0.000	0.909
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Bicycle Counts

	Coast Highway Northbound			Coast Highway Southbound			Bishops Gate Eastbound			Bishops Gate Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	0	3	0	0	4	0	0	0	0	0	0	0	7
7:15 AM	0	2	0	0	4	1	0	0	0	0	0	0	7
7:30 AM	0	2	0	0	8	0	0	0	0	0	0	0	10
7:45 AM	0	2	0	0	6	0	0	0	0	0	0	0	8
8:00 AM	0	2	0	0	6	0	0	0	0	0	0	0	8
8:15 AM	0	6	0	0	4	0	0	0	0	0	0	0	10
8:30 AM	0	5	0	0	4	0	0	0	0	0	0	0	9
8:45 AM	0	11	0	0	1	0	0	0	1	0	0	0	13
TOTAL VOLUMES:	0	33	0	0	37	1	0	0	1	0	0	0	72

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	0	8	0	0	24	1	0	0	0	0	0	0	33

Pedestrian Counts

	Coast Highway North Leg	Coast Highway South Leg	Bishops Gate East Leg	Bishops Gate West Leg	TOTAL
7:00 AM	0	0	0	2	2
7:15 AM	0	0	0	2	2
7:30 AM	0	0	0	1	1
7:45 AM	0	0	0	1	1
8:00 AM	0	0	0	5	5
8:15 AM	0	0	0	1	1
8:30 AM	0	0	0	4	4
8:45 AM	0	0	0	1	1
TOTAL VOLUMES:	0	0	0	17	17

	North Leg	South Leg	East Leg	West Leg	TOTAL
PEAK VOLUMES:	0	0	0	9	9



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: Coast Highway
E/W: Bishops Gate

Date: 11/13/19
Day: WEDNESDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM

Vehicle Counts

	Coast Highway Northbound			Coast Highway Southbound			Bishops Gate Eastbound			Bishops Gate Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	4	200	0	3	130	5	5	0	5	0	0	0	352
4:15 PM	4	179	0	1	126	12	12	0	4	0	0	0	338
4:30 PM	4	197	0	1	130	1	6	0	4	0	0	0	343
4:45 PM	5	192	0	0	128	8	8	0	4	0	0	0	345
5:00 PM	6	189	0	2	133	11	4	0	2	0	0	0	347
5:15 PM	2	180	0	1	135	13	2	0	1	0	0	0	334
5:30 PM	4	210	0	0	114	6	1	0	2	0	0	0	337
5:45 PM	3	148	0	3	113	8	3	0	5	0	0	0	283
TOTAL VOLUMES:	32	1495	0	11	1009	64	41	0	27	0	0	0	2679

PM Peak Hr Begins at: 400 PM

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	17	768	0	5	514	26	31	0	17	0	0	0	1378

PEAK HR FACTOR:	0.962	0.980	0.750	0.000	0.979
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Bicycle Counts

	Coast Highway Northbound			Coast Highway Southbound			Bishops Gate Eastbound			Bishops Gate Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	0	9	0	0	6	0	0	0	0	0	0	0	15
4:15 PM	0	7	0	0	9	1	0	0	0	0	0	0	17
4:30 PM	0	0	0	0	7	0	0	0	0	0	0	0	7
4:45 PM	0	3	0	0	3	1	0	0	0	0	0	0	7
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	20	0	0	27	2	0	0	0	0	0	0	49

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	0	19	0	0	25	2	0	0	0	0	0	0	46

Pedestrian Counts

	Coast Highway North Leg	Coast Highway South Leg	Bishops Gate East Leg	Bishops Gate West Leg	TOTAL
4:00 PM	0	1	0	2	3
4:15 PM	0	0	0	1	1
4:30 PM	0	3	0	1	4
4:45 PM	0	3	0	0	3
5:00 PM	0	0	0	4	4
5:15 PM	0	2	0	2	4
5:30 PM	0	2	0	0	2
5:45 PM	0	3	0	1	4
TOTAL VOLUMES:	0	14	0	11	25

	North Leg	South Leg	East Leg	West Leg	TOTAL
PEAK VOLUMES:	0	7	0	4	11



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: Coast Highway
E/W: Grandview Street

Date: 11/13/19
Day: WEDNESDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM

Vehicle Counts

	Coast Highway Northbound			Coast Highway Southbound			Grandview Street Eastbound			Grandview Street Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	3	56	0	1	277	12	3	0	7	0	0	0	359
7:15 AM	3	54	0	1	394	9	5	0	7	0	0	0	473
7:30 AM	2	84	0	1	414	2	10	0	12	0	0	0	525
7:45 AM	2	92	0	1	466	5	6	0	7	0	0	0	579
8:00 AM	2	106	0	4	335	10	12	0	8	0	0	0	477
8:15 AM	2	79	0	1	335	4	13	0	11	0	0	0	445
8:30 AM	0	90	0	0	350	8	7	0	6	0	0	0	461
8:45 AM	3	84	0	2	416	6	7	0	19	0	0	0	537
TOTAL VOLUMES:	17	645	0	11	2987	56	63	0	77	0	0	0	3856

AM Peak Hr Begins at: 7:15 AM

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	9	336	0	7	1609	26	33	0	34	0	0	0	2054

PEAK HR FACTOR:	0.799	0.870	0.761	0.000	0.887
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Bicycle Counts

	Coast Highway Northbound			Coast Highway Southbound			Grandview Street Eastbound			Grandview Street Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	0	2	0	0	6	0	0	0	0	0	0	0	8
7:15 AM	0	2	0	0	6	0	1	0	0	0	0	0	9
7:30 AM	0	1	0	0	6	1	0	0	0	0	0	0	8
7:45 AM	0	1	0	0	5	0	0	0	0	0	0	0	6
8:00 AM	0	3	0	0	4	0	0	0	0	0	0	0	7
8:15 AM	0	2	0	0	4	0	0	0	0	0	0	0	6
8:30 AM	0	3	0	0	5	0	0	0	0	0	0	0	8
8:45 AM	0	6	0	0	0	1	2	0	0	0	0	0	9
TOTAL VOLUMES:	0	20	0	0	36	2	3	0	0	0	0	0	61

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	0	7	0	0	21	1	1	0	0	0	0	0	30

Pedestrian Counts

	Coast Highway North Leg	Coast Highway South Leg	Grandview Street East Leg	Grandview Street West Leg	TOTAL
7:00 AM	3	0	0	1	4
7:15 AM	3	0	0	0	3
7:30 AM	7	0	0	8	15
7:45 AM	4	0	0	3	7
8:00 AM	0	0	0	0	0
8:15 AM	2	0	0	0	2
8:30 AM	0	0	0	1	1
8:45 AM	1	0	0	0	1
TOTAL VOLUMES:	20	0	0	13	33

	North Leg	South Leg	East Leg	West Leg	TOTAL
PEAK VOLUMES:	14	0	0	11	25



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: Coast Highway
E/W: Grandview Street

Date: 11/13/19
Day: WEDNESDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM

Vehicle Counts

	Coast Highway Northbound			Coast Highway Southbound			Grandview Street Eastbound			Grandview Street Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	1	203	0	0	125	9	3	0	18	0	0	0	359
4:15 PM	6	176	0	0	125	4	4	0	7	0	0	0	322
4:30 PM	3	204	0	0	127	3	4	0	9	0	0	0	350
4:45 PM	3	193	0	1	129	2	7	0	17	0	0	0	352
5:00 PM	0	181	0	0	128	4	11	0	11	0	0	0	335
5:15 PM	1	169	0	1	136	4	15	0	20	0	0	0	346
5:30 PM	3	200	0	2	118	2	2	0	9	0	0	0	336
5:45 PM	1	147	0	0	110	6	4	0	11	0	0	0	279
TOTAL VOLUMES:	18	1473	0	4	998	34	50	0	102	0	0	0	2679

PM Peak Hr Begins at: 4:30 PM

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	7	747	0	2	520	13	37	0	57	0	0	0	1383

PEAK HR FACTOR:	0.911			0.949			0.671			0.000			0.982
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Bicycle Counts

	Coast Highway Northbound			Coast Highway Southbound			Grandview Street Eastbound			Grandview Street Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	0	8	0	0	5	1	0	0	0	0	0	0	14
4:15 PM	0	3	0	0	4	0	0	0	0	0	0	0	7
4:30 PM	0	1	0	0	15	0	0	0	0	0	0	0	16
4:45 PM	0	2	0	0	2	0	0	0	1	0	0	0	5
5:00 PM	0	5	0	0	3	0	0	0	0	0	0	0	8
5:15 PM	0	1	0	0	2	0	0	0	0	0	0	0	3
5:30 PM	0	1	0	0	5	0	0	0	0	0	0	0	6
5:45 PM	0	3	0	0	7	0	0	0	0	0	0	0	10
TOTAL VOLUMES:	0	24	0	0	43	1	0	0	1	0	0	0	69

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	9	0	0	22	0	0	0	1	0	0	0	32

Pedestrian Counts

	Coast Highway North Leg	Coast Highway South Leg	Grandview Street East Leg	Grandview Street West Leg	TOTAL
4:00 PM	1	0	0	3	4
4:15 PM	4	0	0	4	8
4:30 PM	2	0	0	6	8
4:45 PM	1	0	0	2	3
5:00 PM	0	0	0	1	1
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	1	1
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	8	0	0	17	25

PEAK VOLUMES:	North Leg	South Leg	East Leg	West Leg	TOTAL
	3	0	0	9	12



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: Coast Highway
E/W: Sand Mobile Home Park

Date: 11/7/19
Day: THURSDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM

Vehicle Counts

	Coast Highway Northbound			Coast Highway Southbound			Sand Mobile Home Park Eastbound			Sand Mobile Home Park Westbound			TOTAL
	NL	NT	NR	S Uturn	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	0	86	0	4	279	0	0	0	2	0	0	0	371
7:15 AM	0	74	0	14	381	2	0	0	2	0	0	0	473
7:30 AM	0	74	0	13	417	1	0	0	2	0	0	0	507
7:45 AM	0	87	0	14	468	0	0	0	1	0	0	0	570
8:00 AM	0	93	0	13	337	0	0	0	0	0	0	0	443
8:15 AM	0	101	0	12	347	1	0	0	1	0	0	0	462
8:30 AM	0	98	0	14	344	0	0	0	1	0	0	0	457
8:45 AM	0	120	0	24	420	1	0	0	2	0	0	0	567
TOTAL VOLUMES:	0	733	0	108	2993	5	0	0	19	0	0	0	3858

AM Peak Hr Begins at: 7:15 AM

	NL	NT	NR	S Uturn	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	0	328	0	54	1603	3	0	0	5	0	0	0	1993

PEAK HR FACTOR:	0.882	0.861	0.625	0.000	0.874
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Bicycle Counts

	Coast Highway Northbound			Coast Highway Southbound			Sand Mobile Home Park Eastbound			Sand Mobile Home Park Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	0	5	0	0	5	0	0	0	0	0	0	0	10
7:15 AM	0	11	0	0	5	0	0	0	0	0	0	0	16
7:30 AM	0	5	0	0	11	0	0	0	0	0	0	0	16
7:45 AM	0	2	0	0	8	0	0	0	0	0	0	0	10
8:00 AM	0	27	0	0	10	0	0	0	0	0	0	0	37
8:15 AM	0	10	0	0	8	0	0	0	0	0	0	0	18
8:30 AM	0	8	0	0	3	0	0	0	0	0	0	0	11
8:45 AM	0	9	0	0	8	0	0	0	0	0	0	0	17
TOTAL VOLUMES:	0	77	0	0	58	0	0	0	0	0	0	0	135

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	0	45	0	0	34	0	0	0	0	0	0	0	79

Pedestrian Counts

	Coast Highway North Leg	Coast Highway South Leg	Sand Mobile Home Park East Leg	Sand Mobile Home Park West Leg	TOTAL
7:00 AM	8	0	0	0	8
7:15 AM	2	0	0	0	2
7:30 AM	4	0	0	0	4
7:45 AM	0	0	0	0	0
8:00 AM	6	0	0	0	6
8:15 AM	5	0	0	0	5
8:30 AM	3	0	0	0	3
8:45 AM	8	0	0	0	8
TOTAL VOLUMES:	36	0	0	0	36

	North Leg	South Leg	East Leg	West Leg	TOTAL
PEAK VOLUMES:	12	0	0	0	12



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: Coast Highway
E/W: Sand Mobile Home Park

Date: 11/7/19
Day: THURSDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM

Vehicle Counts

	Coast Highway Northbound			Coast Highway Southbound			Sand Mobile Home Park Eastbound			Sand Mobile Home Park Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	0	191	0	17	131	2	0	0	5	0	0	0	346
4:15 PM	1	183	0	15	124	3	0	0	1	0	0	0	327
4:30 PM	3	206	0	19	119	2	0	0	4	0	0	0	353
4:45 PM	1	194	0	22	135	1	0	0	3	0	0	0	356
5:00 PM	0	187	0	13	117	4	0	0	3	0	0	0	324
5:15 PM	2	205	0	17	124	1	0	0	1	0	0	0	350
5:30 PM	1	193	0	10	109	1	0	0	2	0	0	0	316
5:45 PM	1	167	0	15	113	1	0	0	1	0	0	0	298
TOTAL VOLUMES:	9	1526	0	128	972	15	0	0	20	0	0	0	2670

PM Peak Hr Begins at: 4:30 PM

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	6	792	0	71	495	8	0	0	11	0	0	0	1383

PEAK HR FACTOR:	0.955			0.908			0.688			0.000			0.971
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Bicycle Counts

	Coast Highway Northbound			Coast Highway Southbound			Sand Mobile Home Park Eastbound			Sand Mobile Home Park Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	0	3	0	0	5	0	0	0	0	0	0	0	8
4:15 PM	0	4	0	0	3	0	0	0	0	0	0	0	7
4:30 PM	0	2	0	0	8	0	0	0	0	0	0	0	10
4:45 PM	0	2	0	0	4	0	0	0	0	0	0	0	6
5:00 PM	0	7	0	0	4	0	0	0	0	0	0	0	11
5:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	2
5:30 PM	0	5	0	0	5	0	0	0	0	0	0	0	10
5:45 PM	0	4	0	0	2	0	0	0	0	0	0	0	6
TOTAL VOLUMES:	0	28	0	0	32	0	0	0	0	0	0	0	60

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	12	0	0	17	0	0	0	0	0	0	0	29

Pedestrian Counts

	Coast Highway North Leg		Coast Highway South Leg		Sand Mobile Home Park East Leg		Sand Mobile Home Park West Leg		TOTAL
	North	South	North	South	East	West	East	West	
4:00 PM	3	0	0	0	0	0	0	0	3
4:15 PM	1	0	0	0	0	0	0	0	1
4:30 PM	5	0	0	0	0	0	0	0	5
4:45 PM	2	0	0	0	0	0	0	0	2
5:00 PM	1	0	0	0	0	0	0	0	1
5:15 PM	1	0	0	0	0	0	0	0	1
5:30 PM	4	0	0	0	0	0	0	0	4
5:45 PM	2	0	0	0	0	0	0	0	2
TOTAL VOLUMES:	19	0	0	0	0	0	0	0	19

PEAK VOLUMES:	North Leg		South Leg		East Leg		West Leg		TOTAL
	9	0	0	0	0	0	0	0	9



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: Coast Highway
E/W: Jupiter Street

Date: 11/13/19
Day: WEDNESDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM

Vehicle Counts

	Coast Highway Northbound			Coast Highway Southbound			Jupiter Street Eastbound			Jupiter Street Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	1	32	0	1	283	1	5	0	6	0	0	0	329
7:15 AM	2	41	0	2	385	0	2	0	2	0	0	0	434
7:30 AM	4	62	0	1	417	2	3	0	8	0	0	0	497
7:45 AM	3	73	0	4	430	2	9	0	10	0	0	0	531
8:00 AM	4	66	0	12	374	6	5	0	7	0	0	0	474
8:15 AM	8	58	0	4	344	4	6	0	2	0	0	0	426
8:30 AM	1	73	0	3	331	7	4	0	5	0	0	0	424
8:45 AM	7	48	0	1	370	7	4	0	9	0	0	0	446
TOTAL VOLUMES:	30	453	0	28	2934	29	38	0	49	0	0	0	3561

AM Peak Hr Begins at: 7:15 AM

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	13	242	0	19	1606	10	19	0	27	0	0	0	1936

PEAK HR FACTOR:	0.839	0.938	0.605	0.000	0.911
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Bicycle Counts

	Coast Highway Northbound			Coast Highway Southbound			Jupiter Street Eastbound			Jupiter Street Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	0	3	0	0	7	0	0	0	0	0	0	0	10
7:15 AM	0	2	0	0	3	0	0	0	0	0	0	0	5
7:30 AM	0	1	0	0	6	0	0	0	0	0	0	0	7
7:45 AM	0	2	0	0	10	0	0	0	0	0	0	0	12
8:00 AM	0	2	0	0	6	1	0	0	0	0	0	0	9
8:15 AM	0	2	0	0	4	0	0	0	0	0	0	0	6
8:30 AM	1	4	0	0	5	0	0	0	0	0	0	0	10
8:45 AM	1	7	0	0	1	0	0	0	0	0	0	0	9
TOTAL VOLUMES:	2	23	0	0	42	1	0	0	0	0	0	0	68

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	0	7	0	0	25	1	0	0	0	0	0	0	33

Pedestrian Counts

	Coast Highway North Leg	Coast Highway South Leg	Jupiter Street East Leg	Jupiter Street West Leg	TOTAL
7:00 AM	1	0	0	6	7
7:15 AM	1	0	0	1	2
7:30 AM	1	0	0	3	4
7:45 AM	0	0	0	1	1
8:00 AM	2	0	0	4	6
8:15 AM	0	0	0	4	4
8:30 AM	1	0	0	0	1
8:45 AM	1	0	0	8	9
TOTAL VOLUMES:	7	0	0	27	34

	North Leg	South Leg	East Leg	West Leg	TOTAL
PEAK VOLUMES:	4	0	0	9	13



PO Box 1178
 Corona, CA 92880
 951-268-6268

Location: Encinitas
 N/S: Coast Highway
 E/W: Jupiter Street

Date: 11/13/19
 Day: WEDNESDAY
 Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 4:00 PM to 6:00 PM
 Peak Hour: 4:45 PM to 5:45 PM

Vehicle Counts

	Coast Highway Northbound			Coast Highway Southbound			Jupiter Street Eastbound			Jupiter Street Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	8	174	0	6	126	5	3	0	2	0	0	0	324
4:15 PM	5	155	0	6	116	7	3	0	2	0	0	0	294
4:30 PM	1	174	0	3	107	5	7	0	6	0	0	0	303
4:45 PM	5	175	0	1	124	8	4	0	4	0	0	0	321
5:00 PM	6	168	0	2	116	8	2	0	6	0	0	0	308
5:15 PM	10	173	0	3	125	11	4	0	2	0	0	0	328
5:30 PM	12	170	0	0	107	9	3	0	6	0	0	0	307
5:45 PM	7	143	0	5	111	8	1	0	1	0	0	0	276
TOTAL VOLUMES:	54	1332	0	26	932	61	27	0	29	0	0	0	2461

PM Peak Hr Begins at: 4:45 PM

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	33	686	0	6	472	36	13	0	18	0	0	0	1264

PEAK HR FACTOR:	0.982			0.924			0.861			0.000			0.963
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Bicycle Counts

	Coast Highway Northbound			Coast Highway Southbound			Jupiter Street Eastbound			Jupiter Street Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	0	9	0	0	5	0	0	0	0	0	0	0	14
4:15 PM	0	6	0	0	7	0	0	0	0	0	0	0	13
4:30 PM	0	2	0	0	14	1	0	0	0	0	0	0	17
4:45 PM	0	0	0	0	3	0	0	0	0	0	0	0	3
5:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	17	0	0	31	1	0	0	0	0	0	0	49

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	0	0	0	5	0	0	0	0	0	0	0	5

Pedestrian Counts

	Coast Highway North Leg	Coast Highway South Leg	Jupiter Street East Leg	Jupiter Street West Leg	TOTAL
4:00 PM	0	0	0	3	3
4:15 PM	0	0	0	3	3
4:30 PM	0	0	0	8	8
4:45 PM	0	0	0	5	5
5:00 PM	0	0	0	3	3
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	2	2
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	24	24

PEAK VOLUMES:	North Leg	South Leg	East Leg	West Leg	TOTAL
	0	0	0	10	10



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: Coast Highway
E/W: Leucadia Boulevard

Date: 11/7
Day: THURSDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM

Vehicle Counts

	Coast Highway Northbound			Coast Highway Southbound			Leucadia Boulevard Eastbound			Leucadia Boulevard Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	1	23	20	44	236	0	1	7	4	32	1	16	385
7:15 AM	0	28	14	59	324	0	4	19	6	39	4	16	513
7:30 AM	0	38	10	96	317	0	7	13	0	34	4	21	540
7:45 AM	1	48	22	110	284	0	3	15	3	51	7	25	569
8:00 AM	2	51	10	88	330	0	1	4	3	72	11	24	596
8:15 AM	2	35	15	90	326	1	0	6	3	52	1	26	557
8:30 AM	1	52	19	87	215	0	5	9	2	45	9	30	474
8:45 AM	0	45	17	127	257	0	1	11	2	37	7	21	525
TOTAL VOLUMES:	7	320	127	701	2289	1	22	84	23	362	44	179	4159

AM Peak Hr Begins at: 730 AM

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	5	172	57	384	1257	1	11	38	9	209	23	96	2262

PEAK HR FACTOR:	0.824	0.982	0.690	0.766	0.949
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Bicycle Counts

	Coast Highway Northbound			Coast Highway Southbound			Leucadia Boulevard Eastbound			Leucadia Boulevard Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	0	2	0	0	6	0	0	2	2	0	0	0	12
7:15 AM	0	2	0	0	1	0	0	1	0	1	0	0	5
7:30 AM	0	0	0	0	1	0	2	0	0	0	0	1	4
7:45 AM	0	0	0	1	5	0	0	4	3	2	1	0	16
8:00 AM	0	1	0	0	3	0	0	0	0	0	0	1	5
8:15 AM	0	4	0	0	5	0	0	0	0	1	0	0	10
8:30 AM	0	3	0	0	2	0	0	0	0	0	0	1	6
8:45 AM	0	14	0	0	2	0	0	0	0	0	0	0	16
TOTAL VOLUMES:	0	26	0	1	25	0	2	7	5	4	1	3	74

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	0	5	0	1	14	0	2	4	3	3	1	2	35

Pedestrian Counts

	Coast Highway North Leg	Coast Highway South Leg	Leucadia Boulevard East Leg	Leucadia Boulevard West Leg	TOTAL
7:00 AM	3	0	0	1	4
7:15 AM	3	0	0	2	5
7:30 AM	9	0	0	1	10
7:45 AM	6	0	0	6	12
8:00 AM	3	0	0	0	3
8:15 AM	6	0	0	3	9
8:30 AM	9	0	0	1	10
8:45 AM	9	0	0	5	14
TOTAL VOLUMES:	48	0	0	19	67

PEAK VOLUMES:	North Leg	South Leg	East Leg	West Leg	TOTAL
	24	0	0	10	34



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: Coast Highway
E/W: Leucadia Boulevard

Date: 11/7
Day: THURSDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM

Vehicle Counts

	Coast Highway Northbound			Coast Highway Southbound			Leucadia Boulevard Eastbound			Leucadia Boulevard Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	2	142	44	70	127	0	9	15	4	46	7	43	509
4:15 PM	2	159	45	73	112	0	2	7	2	37	6	47	492
4:30 PM	0	146	43	53	96	1	6	10	3	38	8	40	444
4:45 PM	3	148	36	67	76	2	6	13	4	44	9	48	456
5:00 PM	2	139	46	63	82	0	6	9	3	45	5	45	445
5:15 PM	0	175	47	70	91	0	7	15	6	44	5	41	501
5:30 PM	3	164	49	52	90	0	5	8	4	42	5	64	486
5:45 PM	4	139	35	50	99	0	8	13	3	44	2	30	427
TOTAL VOLUMES:	16	1212	345	498	773	3	49	90	29	340	47	358	3760

PM Peak Hr Begins at: 400 PM

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	7	595	168	263	411	3	23	45	13	165	30	178	1901

PEAK HR FACTOR:	0.934			0.859			0.723			0.923			0.934
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Bicycle Counts

	Coast Highway Northbound			Coast Highway Southbound			Leucadia Boulevard Eastbound			Leucadia Boulevard Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	0	0	0	0	3	0	0	0	0	0	2	0	5
4:15 PM	0	0	1	0	0	0	0	0	0	1	0	0	2
4:30 PM	0	5	0	0	6	0	0	1	0	0	1	0	13
4:45 PM	0	2	1	0	3	0	0	0	0	0	1	0	7
5:00 PM	1	2	0	0	0	0	0	1	0	1	0	0	5
5:15 PM	0	0	3	0	0	0	0	0	0	0	1	0	4
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
TOTAL VOLUMES:	1	9	5	0	12	0	0	4	0	2	5	0	38

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	7	2	0	12	0	0	1	0	1	4	0	27

Pedestrian Counts

	Coast Highway North Leg		Coast Highway South Leg		Leucadia Boulevard East Leg		Leucadia Boulevard West Leg		TOTAL
	NL	NT	SL	ST	EL	ET	WL	WT	
4:00 PM	7	0	0	0	0	0	0	0	7
4:15 PM	4	0	0	0	0	0	2	0	6
4:30 PM	10	0	0	0	0	0	4	0	14
4:45 PM	6	0	0	0	0	0	3	0	9
5:00 PM	13	0	0	0	0	0	6	0	19
5:15 PM	4	0	0	0	0	0	5	0	9
5:30 PM	1	0	0	0	0	0	8	0	9
5:45 PM	15	0	0	0	0	0	12	0	27
TOTAL VOLUMES:	60		0		0		40		100

PEAK VOLUMES:	North Leg		South Leg		East Leg		West Leg		TOTAL
	27		0		0		9		36

National Data & Surveying Services

Intersection Turning Movement Count

Location: N Vulcan Ave & La Costa Ave
 City: Encinitas
 Control: 1-Way Stop(NB)

Project ID: 20-04032-002
 Date: 2/4/2020

Total

NS/EW Streets:	N Vulcan Ave				N Vulcan Ave				La Costa Ave				La Costa Ave				TOTAL				
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND								
AM	1	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU					
7:00 AM	4	0	39	0	0	0	0	0	0	79	9	0	23	51	0	0					205
7:15 AM	5	0	32	0	0	0	0	0	0	61	8	0	37	54	0	0					197
7:30 AM	4	0	57	0	0	0	0	0	0	78	10	0	67	88	0	0					304
7:45 AM	4	0	48	0	0	1	0	0	0	71	15	0	65	92	0	0					296
8:00 AM	5	0	38	0	0	0	0	0	0	82	9	0	60	100	0	0					294
8:15 AM	7	0	44	0	0	0	0	0	0	79	16	0	60	81	0	0					287
8:30 AM	8	0	39	0	0	0	0	0	0	73	23	0	57	90	1	0					291
8:45 AM	7	0	40	0	0	0	0	0	0	68	12	0	71	85	0	0					283
TOTAL VOLUMES :	44	0	337	0	0	1	0	0	0	591	102	0	440	641	1	0					2157
APPROACH %'s :	11.55%	0.00%	88.45%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	85.28%	14.72%	0.00%	40.67%	59.24%	0.09%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																				TOTAL
PEAK HR VOL :	20	0	187	0	0	1	0	0	0	310	50	0	252	361	0	0					1181
PEAK HR FACTOR :	0.714	0.000	0.820	0.000	0.000	0.250	0.000	0.000	0.000	0.945	0.781	0.000	0.940	0.903	0.000	0.000					0.971
			0.848			0.250				0.947				0.958							
PM	1	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU					
4:00 PM	14	0	44	0	0	0	0	0	0	77	15	0	41	90	0	0					281
4:15 PM	13	0	39	0	0	0	1	0	0	102	18	0	28	85	0	0					286
4:30 PM	14	0	31	0	0	0	0	0	0	78	17	0	43	93	0	1					277
4:45 PM	15	0	38	0	0	0	0	0	0	69	14	0	31	78	0	0					245
5:00 PM	19	0	39	0	0	0	0	0	0	104	11	0	38	100	0	0					311
5:15 PM	9	0	48	1	0	0	0	0	1	55	17	0	24	84	0	0					239
5:30 PM	16	0	32	0	0	0	0	0	0	116	15	0	40	105	0	0					324
5:45 PM	14	0	36	0	0	0	0	0	0	88	27	1	29	103	1	0					299
TOTAL VOLUMES :	114	0	307	1	0	0	1	0	1	689	134	1	274	738	1	1					2262
APPROACH %'s :	27.01%	0.00%	72.75%	0.24%	0.00%	0.00%	100.00%	0.00%	0.12%	83.52%	16.24%	0.12%	27.02%	72.78%	0.10%	0.10%					
PEAK HR :	05:00 PM - 06:00 PM																				TOTAL
PEAK HR VOL :	58	0	155	1	0	0	0	0	1	363	70	1	131	392	1	0					1173
PEAK HR FACTOR :	0.763	0.000	0.807	0.250	0.000	0.000	0.000	0.000	0.250	0.782	0.648	0.250	0.819	0.933	0.250	0.000					0.905
			0.922							0.830				0.903							



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: Sheridan Road
E/W: La Costa Avenue

Date: 11/7
Day: THURSDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM

Vehicle Counts

	Sheridan Road Northbound			Sheridan Road Southbound			La Costa Avenue Eastbound			La Costa Avenue Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	2	0	11	0	0	0	0	109	0	14	106	0	242
7:15 AM	1	0	22	0	0	0	1	129	0	10	106	1	270
7:30 AM	3	0	28	0	0	0	0	117	2	22	112	0	284
7:45 AM	1	0	22	0	0	0	0	151	5	13	119	1	312
8:00 AM	4	0	15	0	0	0	0	128	3	20	139	1	310
8:15 AM	4	0	18	0	0	0	0	113	2	22	120	1	280
8:30 AM	0	0	17	0	0	0	0	101	6	9	127	1	261
8:45 AM	7	0	11	0	0	0	1	94	4	18	141	2	278
TOTAL VOLUMES:	22	0	144	0	0	0	2	942	22	128	970	7	2237

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	12	0	83	0	0	0	0	509	12	77	490	3	1186

PEAK HR FACTOR:													
	0.766		0.000			0.835		0.891		0.950			

Bicycle Counts

	Sheridan Road Northbound			Sheridan Road Southbound			La Costa Avenue Eastbound			La Costa Avenue Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	1	0	0	1	0	1	0	0	0	0	6	0	9
7:15 AM	1	0	0	1	0	0	0	1	0	0	0	0	3
7:30 AM	0	0	0	4	1	0	0	3	0	0	20	0	28
7:45 AM	0	0	0	0	0	1	0	0	0	0	1	0	2
8:00 AM	1	0	0	1	0	0	0	0	0	0	1	0	3
8:15 AM	0	0	0	1	0	1	0	0	1	0	0	0	3
8:30 AM	0	0	0	2	0	0	0	1	0	0	0	0	3
8:45 AM	0	0	1	2	0	1	0	3	0	0	0	0	7
TOTAL VOLUMES:	3	0	1	12	1	4	0	8	1	0	28	0	58

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	0	0	6	1	2	0	3	1	0	22	0	36

Pedestrian Counts

	Sheridan Road North Leg	Sheridan Road South Leg	La Costa Avenue East Leg	La Costa Avenue West Leg	TOTAL
7:00 AM	0	0	0	0	0
7:15 AM	1	0	0	0	1
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	2	0	2	4
8:30 AM	1	0	0	0	1
8:45 AM	0	0	0	2	2
TOTAL VOLUMES:	2	2	0	4	8

PEAK VOLUMES:	North Leg	South Leg	East Leg	West Leg	TOTAL
	0	2	0	2	4



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: Sheridan Road
E/W: La Costa Avenue

Date: 11/7
Day: THURSDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM

Vehicle Counts

	Sheridan Road Northbound			Sheridan Road Southbound			La Costa Avenue Eastbound			La Costa Avenue Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	9	0	18	0	0	0	1	165	6	15	123	1	338
4:15 PM	9	1	22	0	0	0	0	148	5	21	127	2	335
4:30 PM	6	0	21	0	0	0	1	122	3	12	101	0	266
4:45 PM	2	0	6	0	0	0	0	142	1	16	152	0	319
5:00 PM	4	1	13	0	0	0	1	148	3	20	144	1	335
5:15 PM	5	0	18	0	0	0	2	150	4	10	142	2	333
5:30 PM	2	0	13	0	0	0	0	117	5	17	144	1	299
5:45 PM	4	0	13	0	0	0	1	104	0	19	142	1	284
TOTAL VOLUMES:	41	2	124	0	0	0	6	1096	27	130	1075	8	2509

PM Peak Hr Begins at: 4:45 PM

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	13	1	50	0	0	0	3	557	13	63	582	4	1286

PEAK HR FACTOR:	0.696			0.000			0.918			0.966			0.960
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Bicycle Counts

	Sheridan Road Northbound			Sheridan Road Southbound			La Costa Avenue Eastbound			La Costa Avenue Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	0	0	1	1	0	1	0	2	0	0	0	0	5
4:15 PM	0	0	0	0	0	1	0	2	0	0	4	0	7
4:30 PM	0	0	0	0	0	0	0	1	0	1	2	0	4
4:45 PM	0	0	0	1	0	0	0	2	2	0	0	0	5
5:00 PM	0	0	0	0	0	3	0	1	0	0	1	0	5
5:15 PM	0	0	0	2	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	1
TOTAL VOLUMES:	0	0	1	4	0	6	0	8	2	1	7	0	29

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	0	0	3	0	3	0	3	2	0	1	0	12

Pedestrian Counts

	Sheridan Road North Leg	Sheridan Road South Leg	La Costa Avenue East Leg	La Costa Avenue West Leg	TOTAL
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	3	3
4:45 PM	0	0	0	2	2
5:00 PM	0	0	0	3	3
5:15 PM	1	0	0	0	1
5:30 PM	0	0	1	0	1
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	1	0	1	8	10

PEAK VOLUMES:	North Leg	South Leg	East Leg	West Leg	TOTAL
	1	0	1	5	7



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: I-5 SB Ramps
E/W: La Costa Avenue

Date: 11/7
Day: THURSDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM

Vehicle Counts

	I-5 SB Ramps Northbound			I-5 SB Ramps Southbound			La Costa Avenue Eastbound			La Costa Avenue Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	0	0	0	65	0	33	0	106	31	183	99	0	517
7:15 AM	0	0	0	98	0	36	0	124	28	175	89	0	550
7:30 AM	0	0	0	115	3	50	0	152	20	150	98	0	588
7:45 AM	0	0	0	141	1	36	0	168	23	112	109	0	590
8:00 AM	0	0	0	122	2	38	0	148	14	147	127	0	598
8:15 AM	0	0	0	114	4	43	0	125	25	138	107	0	556
8:30 AM	0	0	0	154	3	61	0	123	14	129	86	0	570
8:45 AM	0	0	0	115	1	71	0	100	19	137	97	0	540
TOTAL VOLUMES:	0	0	0	924	14	368	0	1046	174	1171	812	0	4509

AM Peak Hr Begins at: 730 AM

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	0	0	0	492	10	167	0	593	82	547	441	0	2332

PEAK HR FACTOR:	0.000	0.940	0.884	0.901	0.975
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Bicycle Counts

	I-5 SB Ramps Northbound			I-5 SB Ramps Southbound			La Costa Avenue Eastbound			La Costa Avenue Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	4
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	16	0	16
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	1
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	4	0	0	0	0	4
TOTAL VOLUMES:	0	0	0	0	0	0	0	5	0	1	21	0	27

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	0	0	0	0	0	0	0	0	0	1	17	0	18

Pedestrian Counts

	I-5 SB Ramps North Leg	I-5 SB Ramps South Leg	La Costa Avenue East Leg	La Costa Avenue West Leg	TOTAL
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	1	0	0	0	1
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	1	0	0	1
TOTAL VOLUMES:	1	1	0	0	2

	North Leg	South Leg	East Leg	West Leg	TOTAL
PEAK VOLUMES:	1	0	0	0	1



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: I-5 SB Ramps
E/W: La Costa Avenue

Date: 11/7
Day: THURSDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM

Vehicle Counts

	I-5 SB Ramps Northbound			I-5 SB Ramps Southbound			La Costa Avenue Eastbound			La Costa Avenue Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	0	0	0	125	0	42	0	119	71	166	97	0	620
4:15 PM	0	0	0	129	2	48	0	150	45	153	111	0	638
4:30 PM	0	0	0	119	1	31	0	127	25	186	97	0	586
4:45 PM	0	0	0	124	0	36	0	132	24	161	144	0	621
5:00 PM	0	0	0	133	1	40	0	140	20	162	123	0	619
5:15 PM	0	0	0	126	0	43	0	161	24	198	125	0	677
5:30 PM	0	0	0	114	0	39	0	123	20	184	133	0	613
5:45 PM	0	0	0	124	0	48	0	112	28	166	131	0	609
TOTAL VOLUMES:	0	0	0	994	4	327	0	1064	257	1376	961	0	4983

PM Peak Hr Begins at: 4:45 PM

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	0	0	497	1	158	0	556	88	705	525	0	2530

PEAK HR FACTOR:	0.000			0.943			0.870			0.952			0.934
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Bicycle Counts

	I-5 SB Ramps Northbound			I-5 SB Ramps Southbound			La Costa Avenue Eastbound			La Costa Avenue Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	0	0	0	0	0	0	0	3	0	0	0	0	3
4:15 PM	0	0	0	0	0	0	0	2	0	0	3	0	5
4:30 PM	0	0	0	0	1	0	0	1	0	0	2	0	4
4:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	2	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	1	0	0	9	0	0	5	0	15

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	0	0	0	0	0	0	3	0	0	0	0	3

Pedestrian Counts

	I-5 SB Ramps North Leg	I-5 SB Ramps South Leg	La Costa Avenue East Leg	La Costa Avenue West Leg	TOTAL
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

PEAK VOLUMES:	North Leg	South Leg	East Leg	West Leg	TOTAL
	0	0	0	0	0



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: I-5 NB Ramps
E/W: La Costa Avenue

Date: 11/7
Day: THURSDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM

Vehicle Counts

	I-5 NB Ramps Northbound			I-5 NB Ramps Southbound			La Costa Avenue Eastbound			La Costa Avenue Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	15	0	121	0	0	0	29	142	0	0	264	86	657
7:15 AM	17	0	187	0	0	0	32	192	0	0	238	101	767
7:30 AM	20	1	180	0	0	0	38	215	0	0	226	123	803
7:45 AM	16	0	178	0	0	0	45	257	0	0	204	127	827
8:00 AM	21	0	170	0	0	0	42	231	0	0	257	126	847
8:15 AM	17	1	135	0	0	0	51	183	0	0	226	126	739
8:30 AM	19	0	128	0	0	0	51	227	0	0	190	98	713
8:45 AM	14	0	145	0	0	0	46	171	0	0	214	120	710
TOTAL VOLUMES:	139	2	1244	0	0	0	334	1618	0	0	1819	907	6063

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	74	1	715	0	0	0	157	895	0	0	925	477	3244

PEAK HR FACTOR:													
	0.968		0.000		0.871		0.915		0.957				

Bicycle Counts

	I-5 NB Ramps Northbound			I-5 NB Ramps Southbound			La Costa Avenue Eastbound			La Costa Avenue Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
7:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	4
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	1	0	0	16	0	17
7:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	4	0	0	0	0	4
TOTAL VOLUMES:	0	0	0	0	0	0	0	6	0	0	23	0	29

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	0	0	0	0	0	0	1	0	0	19	0	20

Pedestrian Counts

	I-5 NB Ramps North Leg			I-5 NB Ramps South Leg			La Costa Avenue East Leg			La Costa Avenue West Leg			TOTAL
7:00 AM	0			0			0			0			0
7:15 AM	0			0			0			0			0
7:30 AM	1			0			0			0			1
7:45 AM	0			0			0			0			0
8:00 AM	0			0			0			0			0
8:15 AM	1			0			0			0			1
8:30 AM	0			0			0			0			0
8:45 AM	0			0			0			0			0
TOTAL VOLUMES:	2			0			0			0			2

PEAK VOLUMES:	North Leg	South Leg	East Leg	West Leg	TOTAL
	1	0	0	0	1



PO Box 1178
Corona, CA 92880
951-268-6268

Location: Encinitas
N/S: I-5 NB Ramps
E/W: La Costa Avenue

Date: 11/7
Day: THURSDAY
Project # 143-19780

TURNING MOVEMENT COUNT

Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM

Vehicle Counts

	I-5 NB Ramps Northbound			I-5 NB Ramps Southbound			La Costa Avenue Eastbound			La Costa Avenue Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	23	1	163	0	0	0	35	213	0	0	240	118	793
4:15 PM	23	0	155	0	0	0	45	230	0	0	238	102	793
4:30 PM	14	2	166	0	0	0	31	213	0	0	263	112	801
4:45 PM	32	0	155	0	0	0	40	217	0	0	274	99	817
5:00 PM	33	0	156	0	0	0	39	231	0	0	259	110	828
5:15 PM	23	0	164	0	0	0	47	228	0	0	287	118	867
5:30 PM	35	1	164	0	0	0	38	200	0	0	277	87	802
5:45 PM	40	1	196	0	0	0	30	202	0	0	261	79	809
TOTAL VOLUMES:	223	5	1319	0	0	0	305	1734	0	0	2099	825	6510

PM Peak Hr Begins at: 445 PM

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	123	1	639	0	0	0	164	876	0	0	1097	414	3314

PEAK HR FACTOR:	0.954			0.000			0.945			0.933			0.956
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Bicycle Counts

	I-5 NB Ramps Northbound			I-5 NB Ramps Southbound			La Costa Avenue Eastbound			La Costa Avenue Westbound			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
4:00 PM	0	0	0	0	0	0	0	3	0	0	1	0	4
4:15 PM	0	0	0	0	0	0	0	2	0	0	3	0	5
4:30 PM	0	0	0	0	0	0	0	1	0	0	3	0	4
4:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	2	0	0	1	0	3
5:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	10	0	0	8	0	18

PEAK VOLUMES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	0	0	0	0	0	0	4	0	0	1	0	5

Pedestrian Counts

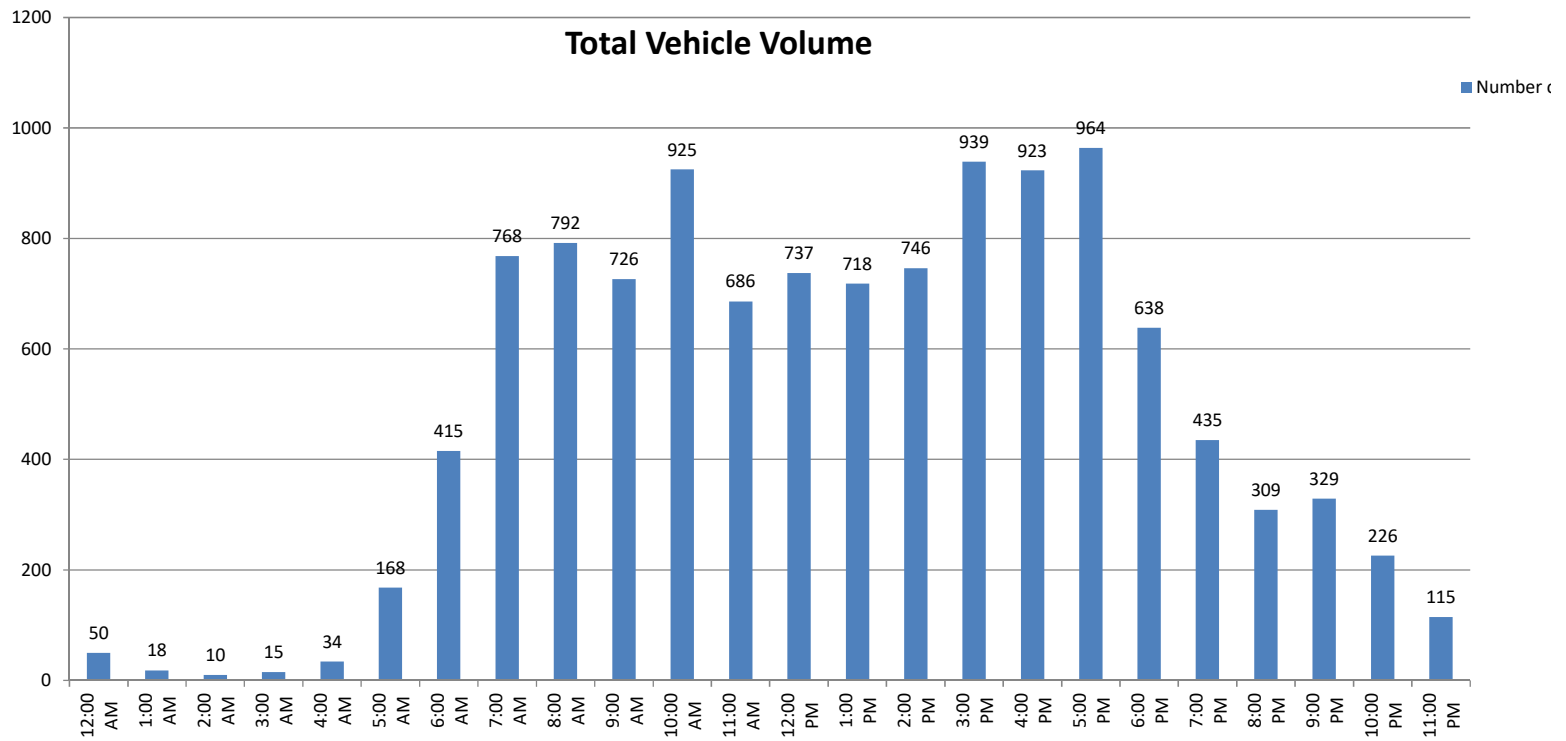
	I-5 NB Ramps North Leg		I-5 NB Ramps South Leg		La Costa Avenue East Leg		La Costa Avenue West Leg		TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	1	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	1	0	0	0	0	0	1

PEAK VOLUMES:	North Leg	South Leg	East Leg	West Leg	TOTAL
	0	0	0	0	0



24 Hour Volume Plot
La Costa Avenue
B/ North Coast Highway 101 - North Vulcan Avenue
 11/7/2019

Start Time	11/7/2019
12:00 AM	50
1:00 AM	18
2:00 AM	10
3:00 AM	15
4:00 AM	34
5:00 AM	168
6:00 AM	415
7:00 AM	768
8:00 AM	792
9:00 AM	726
10:00 AM	925
11:00 AM	686
12:00 PM	737
1:00 PM	718
2:00 PM	746
3:00 PM	939
4:00 PM	923
5:00 PM	964
6:00 PM	638
7:00 PM	435
8:00 PM	309
9:00 PM	329
10:00 PM	226
11:00 PM	115
Total	11686

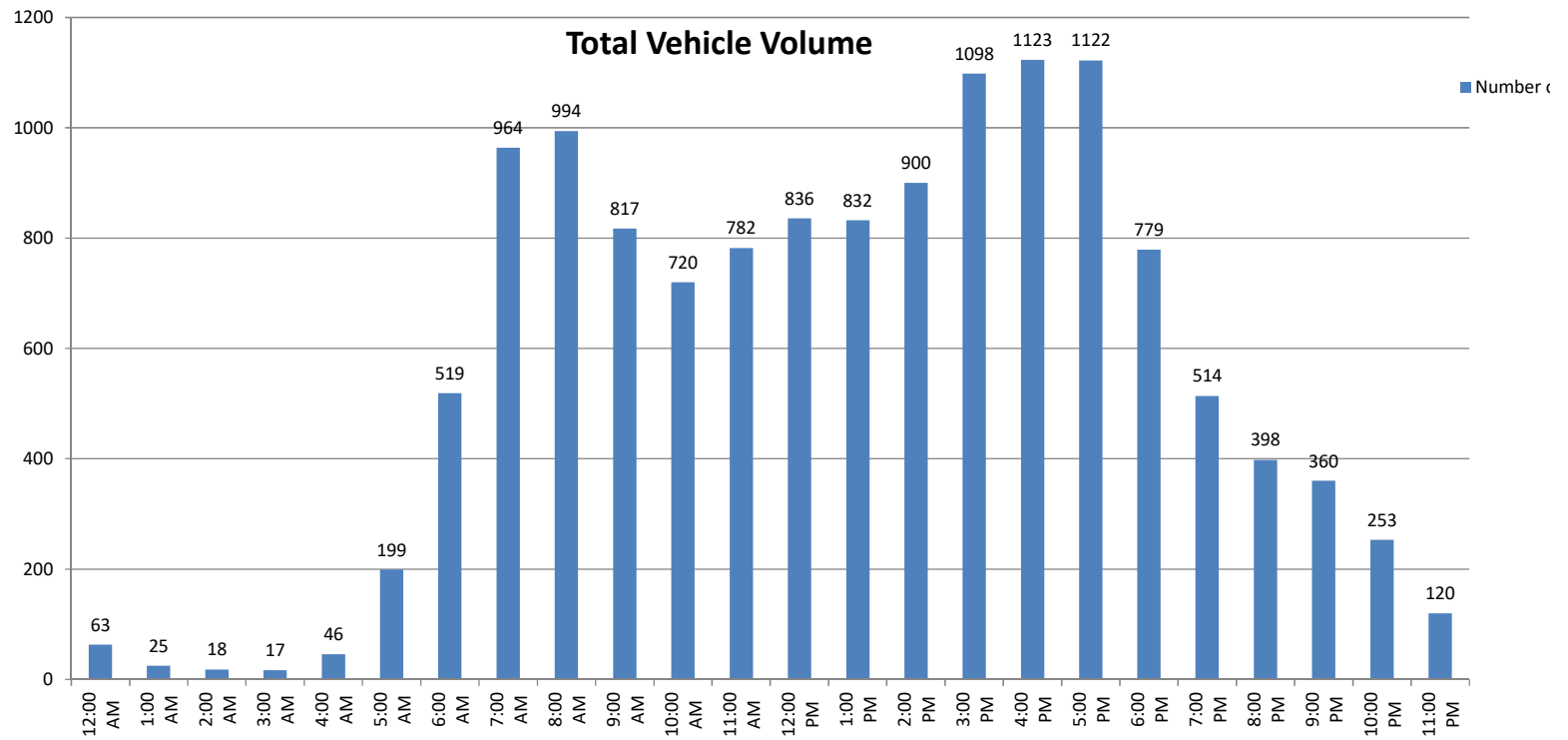


Volumes represent the combined totals for both directions



24 Hour Volume Plot
La Costa Avenue
B/ North Vulcan Avenue - Sheridan Road
 11/7/2019

Start Time	11/7/2019
12:00 AM	63
1:00 AM	25
2:00 AM	18
3:00 AM	17
4:00 AM	46
5:00 AM	199
6:00 AM	519
7:00 AM	964
8:00 AM	994
9:00 AM	817
10:00 AM	720
11:00 AM	782
12:00 PM	836
1:00 PM	832
2:00 PM	900
3:00 PM	1098
4:00 PM	1123
5:00 PM	1122
6:00 PM	779
7:00 PM	514
8:00 PM	398
9:00 PM	360
10:00 PM	253
11:00 PM	120
Total	13499

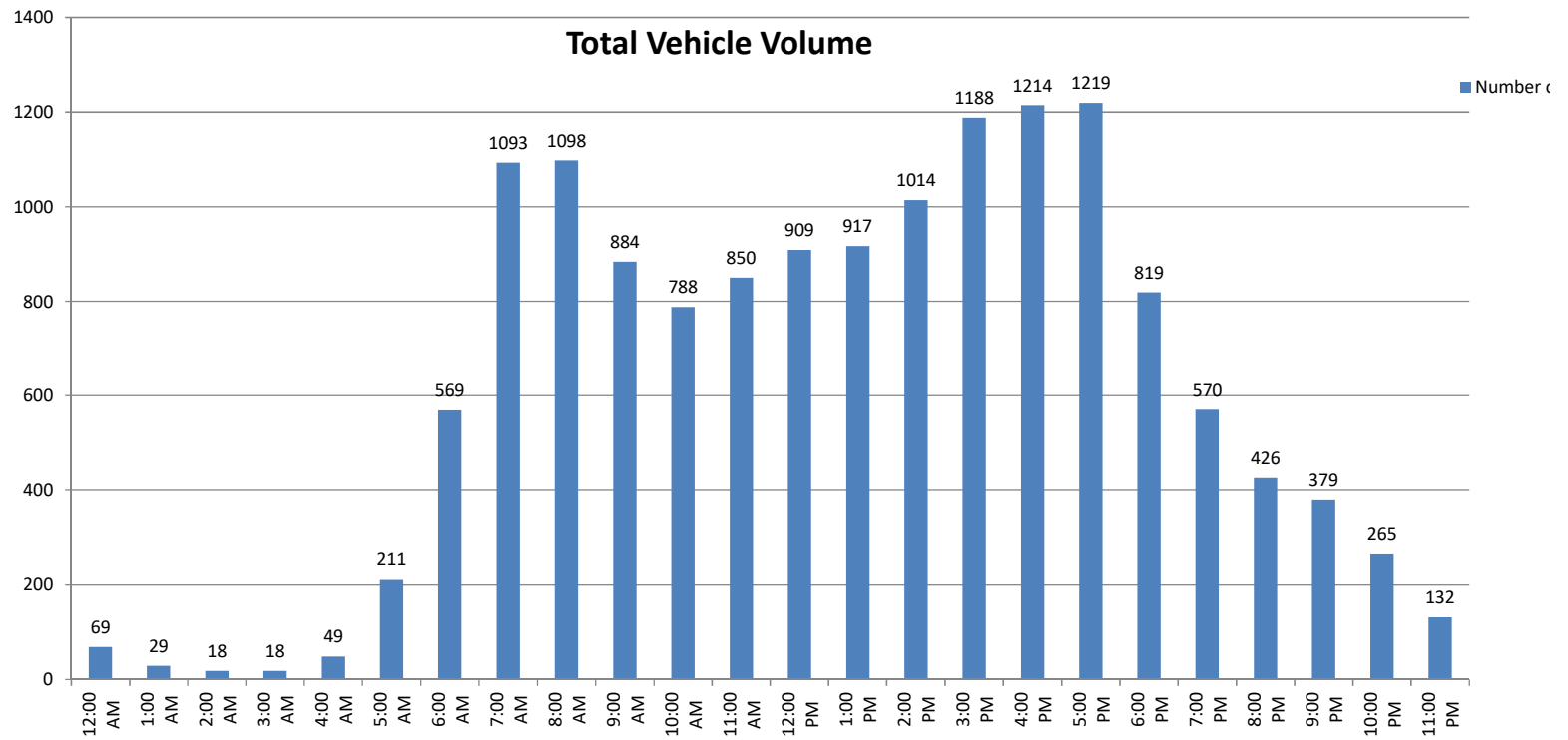


Volumes represent the combined totals for both directions



24 Hour Volume Plot
La Costa Avenue
B/ Sheridan Road - Interstate 5
 11/7/2019

Start Time	11/7/2019
12:00 AM	69
1:00 AM	29
2:00 AM	18
3:00 AM	18
4:00 AM	49
5:00 AM	211
6:00 AM	569
7:00 AM	1093
8:00 AM	1098
9:00 AM	884
10:00 AM	788
11:00 AM	850
12:00 PM	909
1:00 PM	917
2:00 PM	1014
3:00 PM	1188
4:00 PM	1214
5:00 PM	1219
6:00 PM	819
7:00 PM	570
8:00 PM	426
9:00 PM	379
10:00 PM	265
11:00 PM	132
Total	14728

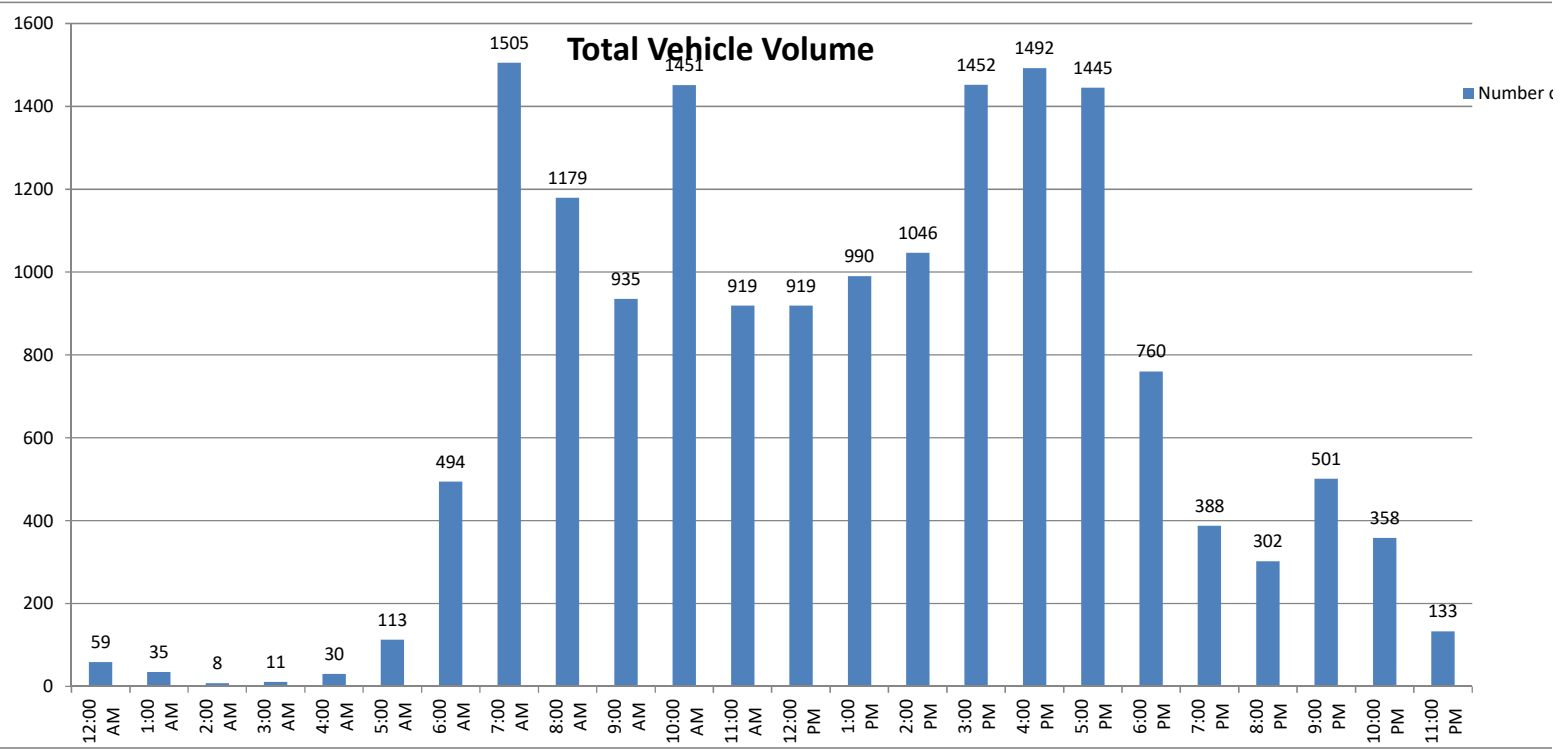


Volumes represent the combined totals for both directions



24 Hour Volume Plot
North Coast Highway 101
B/ Avenida Encinas - La Costa Avenue
 11/7/2019

Start Time	11/7/2019
12:00 AM	59
1:00 AM	35
2:00 AM	8
3:00 AM	11
4:00 AM	30
5:00 AM	113
6:00 AM	494
7:00 AM	1505
8:00 AM	1179
9:00 AM	935
10:00 AM	1451
11:00 AM	919
12:00 PM	919
1:00 PM	990
2:00 PM	1046
3:00 PM	1452
4:00 PM	1492
5:00 PM	1445
6:00 PM	760
7:00 PM	388
8:00 PM	302
9:00 PM	501
10:00 PM	358
11:00 PM	133
Total	16525

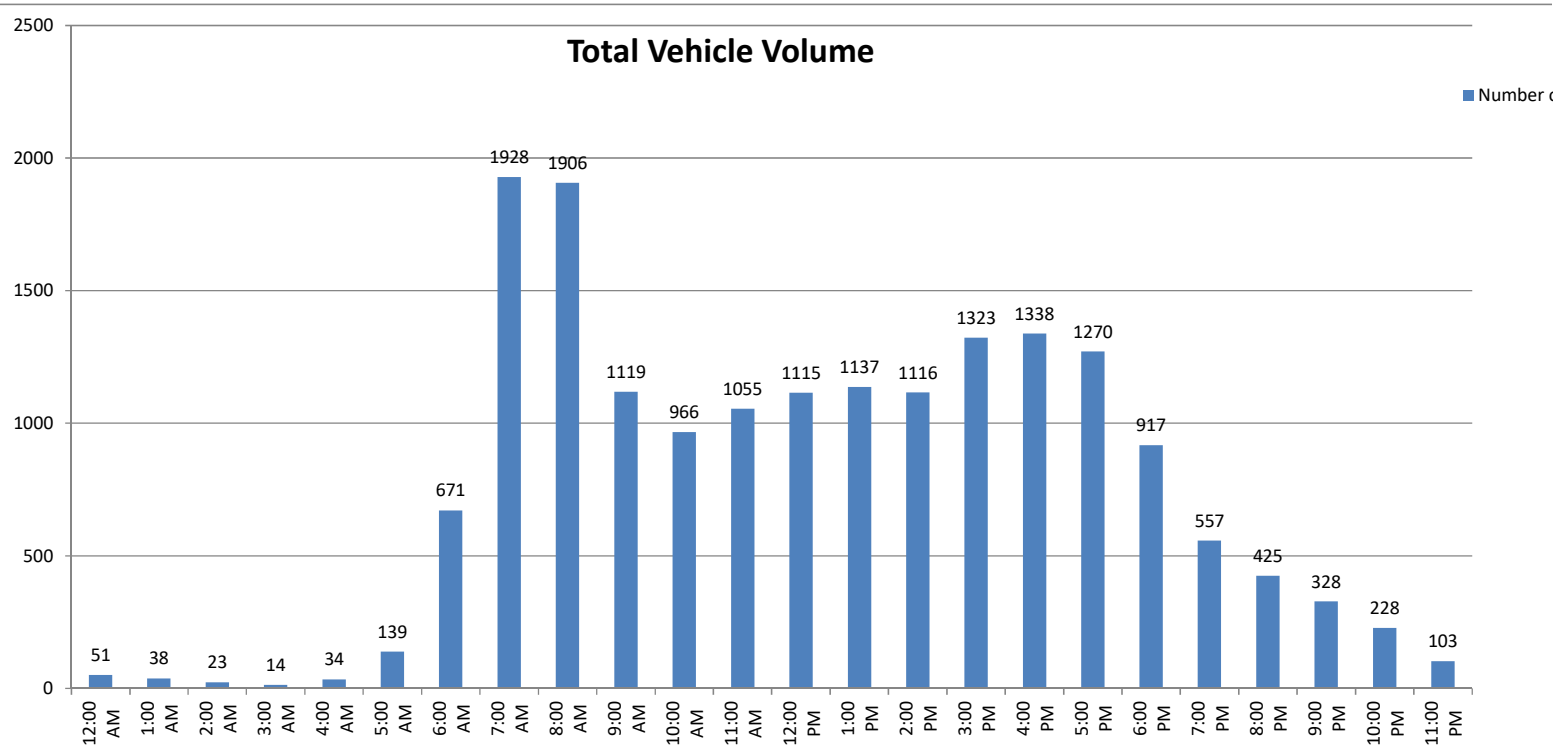


Volumes represent the combined totals for both directions



24 Hour Volume Plot
North Coast Highway 101
B/ La Costa Avenue - Bishops Gate Road
 11/13/2019

Start Time	#####
12:00 AM	51
1:00 AM	38
2:00 AM	23
3:00 AM	14
4:00 AM	34
5:00 AM	139
6:00 AM	671
7:00 AM	1928
8:00 AM	1906
9:00 AM	1119
10:00 AM	966
11:00 AM	1055
12:00 PM	1115
1:00 PM	1137
2:00 PM	1116
3:00 PM	1323
4:00 PM	1338
5:00 PM	1270
6:00 PM	917
7:00 PM	557
8:00 PM	425
9:00 PM	328
10:00 PM	228
11:00 PM	103
Total	17801

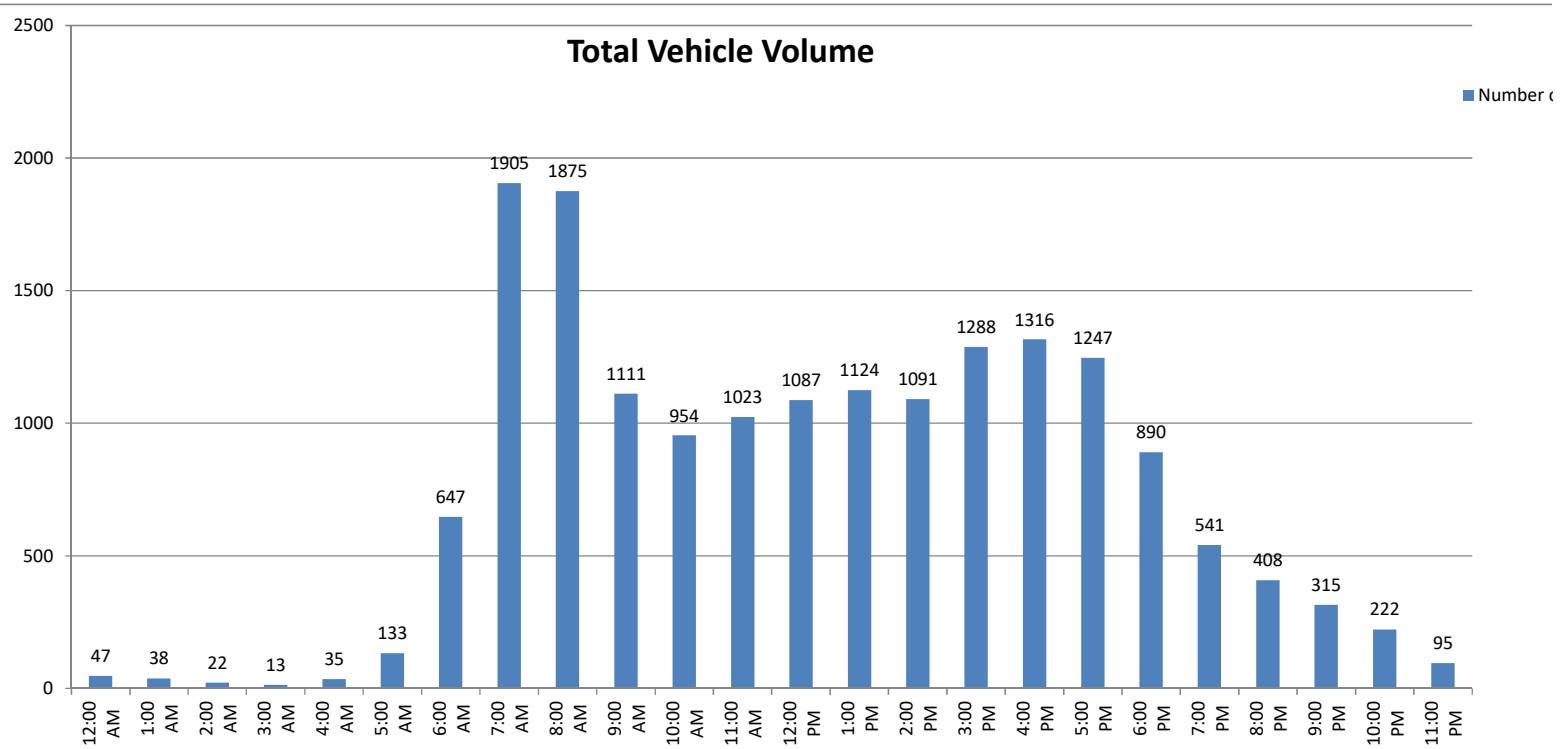


Volumes represent the combined totals for both directions



24 Hour Volume Plot
North Coast Highway 101
B/ Bishops Gate Road - Grandview Street
 11/13/2019

Start Time	#####
12:00 AM	47
1:00 AM	38
2:00 AM	22
3:00 AM	13
4:00 AM	35
5:00 AM	133
6:00 AM	647
7:00 AM	1905
8:00 AM	1875
9:00 AM	1111
10:00 AM	954
11:00 AM	1023
12:00 PM	1087
1:00 PM	1124
2:00 PM	1091
3:00 PM	1288
4:00 PM	1316
5:00 PM	1247
6:00 PM	890
7:00 PM	541
8:00 PM	408
9:00 PM	315
10:00 PM	222
11:00 PM	95
Total	17427

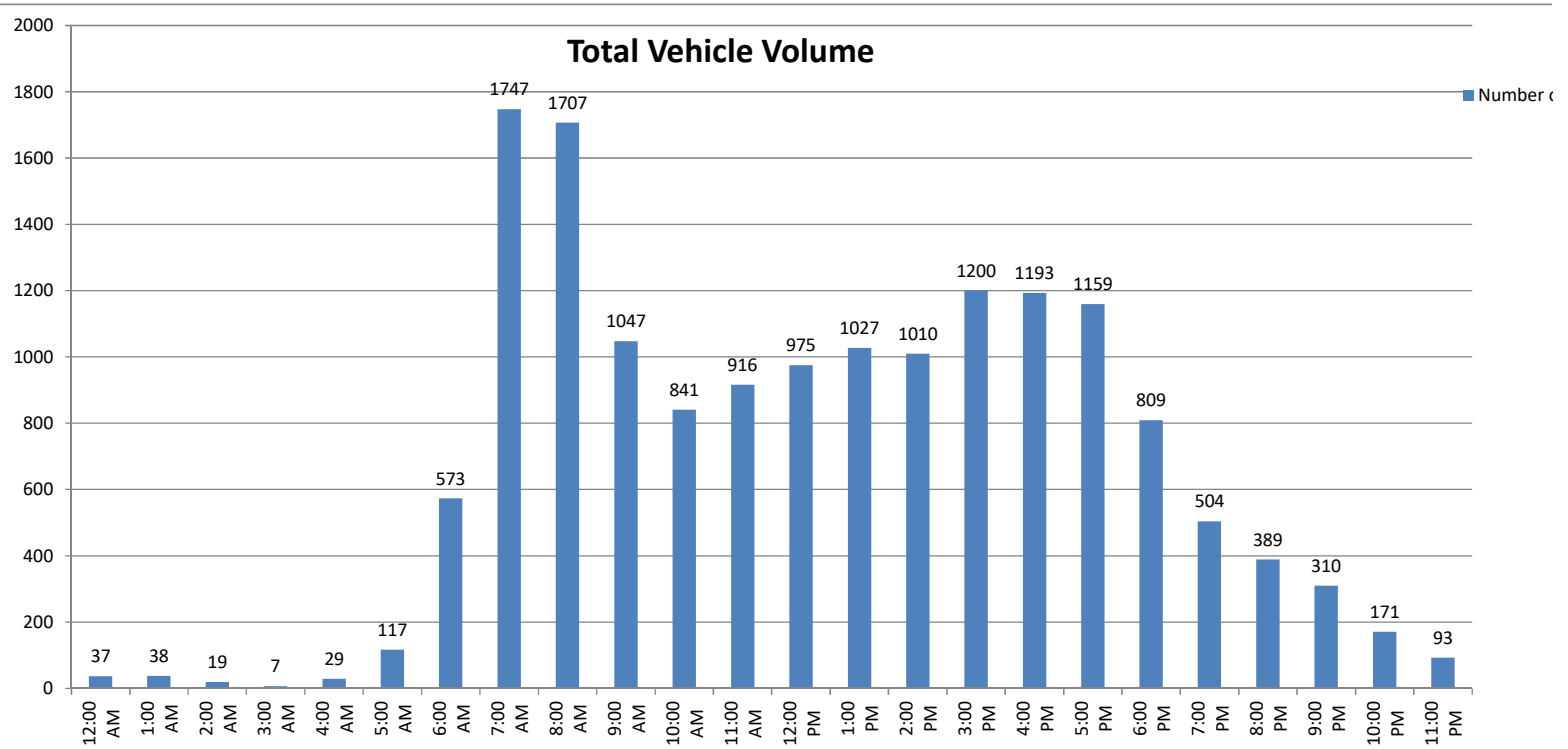


Volumes represent the combined totals for both directions



24 Hour Volume Plot
North Coast Highway 101
B/ Grandview Street - Jupiter Street
 11/13/2019

Start Time	#####
12:00 AM	37
1:00 AM	38
2:00 AM	19
3:00 AM	7
4:00 AM	29
5:00 AM	117
6:00 AM	573
7:00 AM	1747
8:00 AM	1707
9:00 AM	1047
10:00 AM	841
11:00 AM	916
12:00 PM	975
1:00 PM	1027
2:00 PM	1010
3:00 PM	1200
4:00 PM	1193
5:00 PM	1159
6:00 PM	809
7:00 PM	504
8:00 PM	389
9:00 PM	310
10:00 PM	171
11:00 PM	93
Total	15918

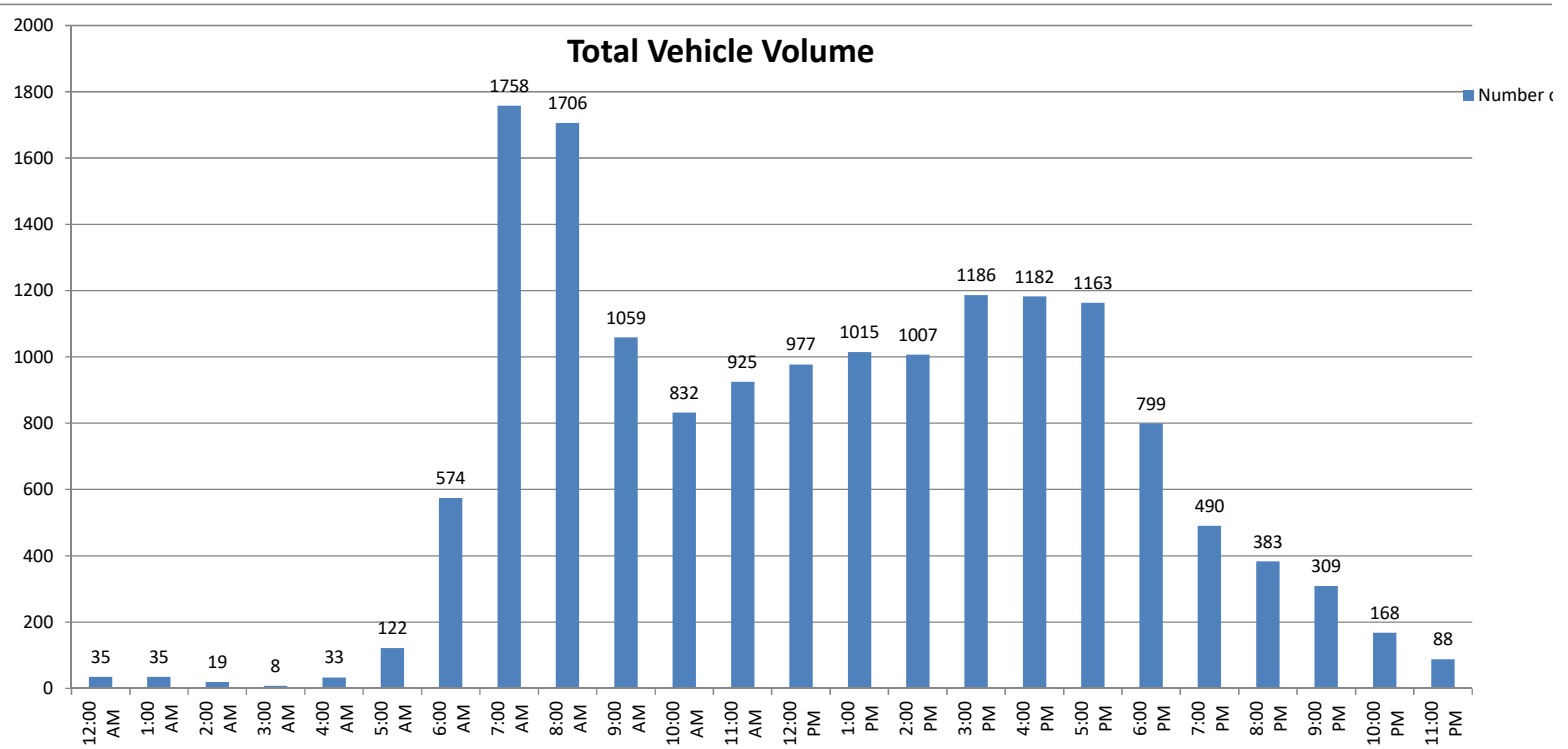


Volumes represent the combined totals for both directions



24 Hour Volume Plot
North Coast Highway 101
B/ Jupiter Street - Leucadia Boulevard
 11/13/2019

Start Time	#####
12:00 AM	35
1:00 AM	35
2:00 AM	19
3:00 AM	8
4:00 AM	33
5:00 AM	122
6:00 AM	574
7:00 AM	1758
8:00 AM	1706
9:00 AM	1059
10:00 AM	832
11:00 AM	925
12:00 PM	977
1:00 PM	1015
2:00 PM	1007
3:00 PM	1186
4:00 PM	1182
5:00 PM	1163
6:00 PM	799
7:00 PM	490
8:00 PM	383
9:00 PM	309
10:00 PM	168
11:00 PM	88
Total	15873















Volumes represent the combined totals for both directions

Appendix I

Existing Intersection LOS Calculations

AM Existing
1: Avenida Encinas & Carlsbad Blvd SB

HCM Signalized Intersection Capacity Analysis

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 				 	 
Traffic Volume (vph)	173	0	0	0	8	1098
Future Volume (vph)	173	0	0	0	8	1098
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0				4.0	4.0
Lane Util. Factor	0.97				1.00	0.95
Frbp, ped/bikes	1.00				1.00	1.00
Flpb, ped/bikes	1.00				0.53	1.00
Frt	1.00				1.00	1.00
Flt Protected	0.95				0.95	1.00
Satd. Flow (prot)	3433				945	3539
Flt Permitted	0.95				0.95	1.00
Satd. Flow (perm)	3433				945	3539
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	186	0	0	0	9	1181
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	186	0	0	0	9	1181
Confl. Peds. (#/hr)		15			15	
Confl. Bikes (#/hr)		30		30		
Turn Type	Prot				Prot	NA
Protected Phases	8				1	6
Permitted Phases						
Actuated Green, G (s)	9.1				0.6	43.5
Effective Green, g (s)	9.1				0.6	43.5
Actuated g/C Ratio	0.14				0.01	0.66
Clearance Time (s)	4.0				4.0	4.0
Vehicle Extension (s)	3.0				3.0	3.0
Lane Grp Cap (vph)	476				8	2346
v/s Ratio Prot	c0.05				0.01	c0.33
v/s Ratio Perm						
v/c Ratio	0.39				1.12	0.50
Uniform Delay, d1	25.7				32.5	5.6
Progression Factor	0.07				1.00	1.00
Incremental Delay, d2	0.5				366.8	0.2
Delay (s)	2.4				399.3	5.8
Level of Service	A				F	A
Approach Delay (s)	2.4		0.0			8.7
Approach LOS	A		A			A
Intersection Summary						
HCM 2000 Control Delay			7.9		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.51			
Actuated Cycle Length (s)			65.6		Sum of lost time (s)	16.0
Intersection Capacity Utilization			45.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

LOS Engineering, Inc.

AM Existing
2: Carsbad Blvd NB & Avenida Encinas

HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕↕			↕↕	↕				
Traffic Volume (vph)	1	7	0	0	173	6	0	196	65	0	0	0	
Future Volume (vph)	1	7	0	0	173	6	0	196	65	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0			4.0			4.0	4.0				
Lane Util. Factor		1.00			0.95			0.95	1.00				
Frbp, ped/bikes		1.00			1.00			1.00	0.87				
Flpb, ped/bikes		1.00			1.00			1.00	1.00				
Frt		1.00			1.00			1.00	0.85				
Flt Protected		0.99			1.00			1.00	1.00				
Satd. Flow (prot)		1852			3514			3539	1381				
Flt Permitted		0.99			1.00			1.00	1.00				
Satd. Flow (perm)		1852			3514			3539	1381				
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	1	8	0	0	186	6	0	211	70	0	0	0	
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	60	0	0	0	
Lane Group Flow (vph)	0	9	0	0	189	0	0	211	10	0	0	0	
Confl. Peds. (#/hr)			15			15			15				
Confl. Bikes (#/hr)			30			30			30				
Turn Type	Split	NA			NA			NA	custom				
Protected Phases	7	7			8			2					
Permitted Phases									8				
Actuated Green, G (s)		1.0			9.1			38.9	9.1				
Effective Green, g (s)		1.0			9.1			38.9	9.1				
Actuated g/C Ratio		0.02			0.14			0.59	0.14				
Clearance Time (s)		4.0			4.0			4.0	4.0				
Vehicle Extension (s)		3.0			3.0			3.0	3.0				
Lane Grp Cap (vph)		28			487			2098	191				
v/s Ratio Prot		c0.00			c0.05			c0.06					
v/s Ratio Perm									0.01				
v/c Ratio		0.32			0.39			0.10	0.05				
Uniform Delay, d1		32.0			25.7			5.8	24.5				
Progression Factor		1.61			1.00			1.00	1.00				
Incremental Delay, d2		6.6			0.5			0.1	0.1				
Delay (s)		58.1			26.2			5.9	24.6				
Level of Service		E			C			A	C				
Approach Delay (s)		58.1			26.2			10.5			0.0		
Approach LOS		E			C			B			A		
Intersection Summary													
HCM 2000 Control Delay			17.7									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.16										
Actuated Cycle Length (s)			65.6									Sum of lost time (s)	16.0
Intersection Capacity Utilization			27.3%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

AM Existing
3: N Coast Hwy & La Costa Ave



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	241	102	167	190	265	1002
Future Volume (veh/h)	241	102	167	190	265	1002
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	0.99	
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	262	0	182	0	288	1089
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	317		2532		928	2532
Arrive On Green	0.18	0.00	0.71	0.00	0.71	0.71
Sat Flow, veh/h	1781	1585	3647	1585	1190	3647
Grp Volume(v), veh/h	262	0	182	0	288	1089
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1585	1190	1777
Q Serve(g_s), s	10.3	0.0	1.1	0.0	7.1	9.3
Cycle Q Clear(g_c), s	10.3	0.0	1.1	0.0	8.2	9.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	317		2532		928	2532
V/C Ratio(X)	0.83		0.07		0.31	0.43
Avail Cap(c_a), veh/h	732		2532		928	2532
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	28.9	0.0	3.2	0.0	4.4	4.3
Incr Delay (d2), s/veh	5.5	0.0	0.1	0.0	0.9	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	0.0	0.3	0.0	1.5	2.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.4	0.0	3.2	0.0	5.3	4.9
LnGrp LOS	C		A		A	A
Approach Vol, veh/h	262	A	182	A		1377
Approach Delay, s/veh	34.4		3.2			5.0
Approach LOS	C		A			A
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		56.0			56.0	17.0
Change Period (Y+Rc), s		4.0			4.0	4.0
Max Green Setting (Gmax), s		52.0			52.0	30.0
Max Q Clear Time (g_c+I1), s		3.1			11.3	12.3
Green Ext Time (p_c), s		1.3			12.2	0.7
Intersection Summary						
HCM 6th Ctrl Delay			9.0			
HCM 6th LOS			A			
Notes						
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.						

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	32	28	8	376	1617	26
Future Vol, veh/h	32	28	8	376	1617	26
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	75	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	29	8	384	1650	27
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2084	859	1687	0	-	0
Stage 1	1674	-	-	-	-	-
Stage 2	410	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	52	300	377	-	-	-
Stage 1	138	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	50	295	374	-	-	-
Mov Cap-2 Maneuver	113	-	-	-	-	-
Stage 1	134	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	41.2	0.3	0			
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	374	-	159	-	-	
HCM Lane V/C Ratio	0.022	-	0.385	-	-	
HCM Control Delay (s)	14.8	-	41.2	-	-	
HCM Lane LOS	B	-	E	-	-	
HCM 95th %tile Q(veh)	0.1	-	1.7	-	-	

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	33	34	9	336	1609	26
Future Vol, veh/h	33	34	9	336	1609	26
Conflicting Peds, #/hr	15	15	15	0	0	15
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	38	10	378	1808	29
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2251	949	1852	0	-	0
Stage 1	1838	-	-	-	-	-
Stage 2	413	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	40	262	325	-	-	-
Stage 1	112	-	-	-	-	-
Stage 2	667	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	38	255	321	-	-	-
Mov Cap-2 Maneuver	91	-	-	-	-	-
Stage 1	107	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	61	0.4		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	321	-	135	-	-	
HCM Lane V/C Ratio	0.032	-	0.558	-	-	
HCM Control Delay (s)	16.6	-	61	-	-	
HCM Lane LOS	C	-	F	-	-	
HCM 95th %tile Q(veh)	0.1	-	2.8	-	-	

Intersection							
Int Delay, s/veh	0						
Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations	↔			↑	↔	↕↔	
Traffic Vol, veh/h	0	5	0	328	54	1603	3
Future Vol, veh/h	0	5	0	328	54	1603	3
Conflicting Peds, #/hr	15	15	15	0	0	0	15
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	-	-	50	-	-
Veh in Median Storage, #	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	0	6	0	377	62	1843	3
Major/Minor	Minor2	Major1	Major2				
Conflicting Flow All	2376	953	-	0	-	-	0
Stage 1	1984	-	-	-	-	-	-
Stage 2	392	-	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	-	-	-
Pot Cap-1 Maneuver	33	260	0	-	-	-	-
Stage 1	93	-	0	-	-	-	-
Stage 2	682	-	0	-	-	-	-
Platoon blocked, %							
Mov Cap-1 Maneuver	32	254	-	-	-	-	-
Mov Cap-2 Maneuver	32	-	-	-	-	-	-
Stage 1	92	-	-	-	-	-	-
Stage 2	674	-	-	-	-	-	-
Approach	EB	NB	SB				
HCM Control Delay, s	19.5	0					
HCM LOS	C						
Minor Lane/Major Mvmt	NBT	EBLn1	SBU	SBT	SBR		
Capacity (veh/h)	-	254	-	-	-		
HCM Lane V/C Ratio	-	0.023	-	-	-		
HCM Control Delay (s)	-	19.5	-	-	-		
HCM Lane LOS	-	C	-	-	-		
HCM 95th %tile Q(veh)	-	0.1	-	-	-		

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑↑	
Traffic Vol, veh/h	19	27	13	242	1606	10
Future Vol, veh/h	19	27	13	242	1606	10
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	1	-	-	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	21	30	14	266	1765	11
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2085	908	1786	0	-	0
Stage 1	1781	-	-	-	-	-
Stage 2	304	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	52	279	345	-	-	-
Stage 1	121	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	49	274	342	-	-	-
Mov Cap-2 Maneuver	100	-	-	-	-	-
Stage 1	115	-	-	-	-	-
Stage 2	742	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	37.9	0.8		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	342	-	159	-	-	
HCM Lane V/C Ratio	0.042	-	0.318	-	-	
HCM Control Delay (s)	16	-	37.9	-	-	
HCM Lane LOS	C	-	E	-	-	
HCM 95th %tile Q(veh)	0.1	-	1.3	-	-	

AM Existing
9: N. Coast Hwy 101 & Leucadia Blvd

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↕		↖	↕	↖	↖	↕	↗
Traffic Volume (veh/h)	11	38	9	209	23	96	5	172	57	384	1257	1
Future Volume (veh/h)	11	38	9	209	23	96	5	172	57	384	1257	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.93	1.00		0.96	1.00		0.95
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	12	40	9	172	90	101	5	181	60	404	1323	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	16	52	12	301	130	146	9	1053	451	461	2002	2
Arrive On Green	0.04	0.04	0.04	0.17	0.17	0.17	0.01	0.30	0.30	0.26	0.55	0.55
Sat Flow, veh/h	351	1169	263	1781	770	864	1781	3554	1524	1781	3644	3
Grp Volume(v), veh/h	61	0	0	172	0	191	5	181	60	404	645	679
Grp Sat Flow(s),veh/h/ln	1782	0	0	1781	0	1634	1781	1777	1524	1781	1777	1870
Q Serve(g_s), s	2.3	0.0	0.0	6.1	0.0	7.6	0.2	2.6	2.0	15.0	17.8	17.8
Cycle Q Clear(g_c), s	2.3	0.0	0.0	6.1	0.0	7.6	0.2	2.6	2.0	15.0	17.8	17.8
Prop In Lane	0.20		0.15	1.00		0.53	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	80	0	0	301	0	276	9	1053	451	461	976	1027
V/C Ratio(X)	0.76	0.00	0.00	0.57	0.00	0.69	0.53	0.17	0.13	0.88	0.66	0.66
Avail Cap(c_a), veh/h	412	0	0	412	0	378	103	1053	451	644	976	1027
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.7	0.0	0.0	26.4	0.0	27.0	34.3	18.0	17.8	24.6	11.0	11.0
Incr Delay (d2), s/veh	13.9	0.0	0.0	1.7	0.0	3.2	39.2	0.4	0.6	9.9	3.5	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	2.6	0.0	3.1	0.2	1.1	0.7	7.2	6.8	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.5	0.0	0.0	28.1	0.0	30.2	73.5	18.4	18.4	34.4	14.5	14.4
LnGrp LOS	D	A	A	C	A	C	E	B	B	C	B	B
Approach Vol, veh/h		61			363			246			1728	
Approach Delay, s/veh		46.5			29.2			19.5			19.1	
Approach LOS		D			C			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.9	24.5		7.1	4.4	42.0		15.7				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	25.0	17.0		16.0	4.0	38.0		16.0				
Max Q Clear Time (g_c+I1), s	17.0	4.6		4.3	2.2	19.8		9.6				
Green Ext Time (p_c), s	0.8	1.0		0.2	0.0	9.0		0.9				

Intersection Summary

HCM 6th Ctrl Delay	21.4
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕		↕		↕	
Traffic Vol, veh/h	0	310	50	252	361	0	20	0	187	0	1	0
Future Vol, veh/h	0	310	50	252	361	0	20	0	187	0	1	0
Conflicting Peds, #/hr	5	0	5	5	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	337	54	274	392	0	22	0	203	0	1	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	397	0	0	396	0	0	1310	-	369	1411	1341	397
Stage 1	-	-	-	-	-	-	369	-	-	945	945	-
Stage 2	-	-	-	-	-	-	941	-	-	466	396	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	-	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	-	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1162	-	-	1163	-	-	136	0	677	116	152	652
Stage 1	-	-	-	-	-	-	651	0	-	314	340	-
Stage 2	-	-	-	-	-	-	316	0	-	577	604	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1157	-	-	1158	-	-	103	-	674	62	105	649
Mov Cap-2 Maneuver	-	-	-	-	-	-	103	-	-	62	105	-
Stage 1	-	-	-	-	-	-	648	-	-	313	236	-
Stage 2	-	-	-	-	-	-	219	-	-	403	602	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			3.7			16.1			39.6		
HCM LOS							C			E		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	103	674	1157	-	-	1158	-	-	105			
HCM Lane V/C Ratio	0.211	0.302	-	-	-	0.237	-	-	0.01			
HCM Control Delay (s)	49.1	12.6	0	-	-	9.1	0	-	39.6			
HCM Lane LOS	E	B	A	-	-	A	A	-	E			
HCM 95th %tile Q(veh)	0.7	1.3	0	-	-	0.9	-	-	0			

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	509	12	77	490	12	83
Future Vol, veh/h	509	12	77	490	12	83
Conflicting Peds, #/hr	0	25	25	0	25	25
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	536	13	81	516	13	87
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	574	0	1271	593
Stage 1	-	-	-	-	568	-
Stage 2	-	-	-	-	703	-
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	-	-	999	-	185	506
Stage 1	-	-	-	-	567	-
Stage 2	-	-	-	-	491	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	978	-	157	485
Mov Cap-2 Maneuver	-	-	-	-	157	-
Stage 1	-	-	-	-	555	-
Stage 2	-	-	-	-	425	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	1.2		17.6		
HCM LOS				C		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	384	-	-	978	-	
HCM Lane V/C Ratio	0.26	-	-	0.083	-	
HCM Control Delay (s)	17.6	-	-	9	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	1	-	-	0.3	-	

AM Existing
12: I-5 SB Ramp & La Costa Ave

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑	↑
Traffic Volume (veh/h)	0	593	82	547	441	0	0	0	0	492	10	167
Future Volume (veh/h)	0	593	82	547	441	0	0	0	0	492	10	167
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00				1.00		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	605	84	558	450	0				509	0	170
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1549	215	648	2589	0				650	0	270
Arrive On Green	0.00	0.50	0.50	0.31	1.00	0.00				0.18	0.00	0.18
Sat Flow, veh/h	0	3214	432	3456	3647	0				3563	0	1478
Grp Volume(v), veh/h	0	344	345	558	450	0				509	0	170
Grp Sat Flow(s),veh/h/ln	0	1777	1775	1728	1777	0				1781	0	1478
Q Serve(g_s), s	0.0	10.9	10.9	13.7	0.0	0.0				12.3	0.0	9.6
Cycle Q Clear(g_c), s	0.0	10.9	10.9	13.7	0.0	0.0				12.3	0.0	9.6
Prop In Lane	0.00		0.24	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	882	882	648	2589	0				650	0	270
V/C Ratio(X)	0.00	0.39	0.39	0.86	0.17	0.00				0.78	0.00	0.63
Avail Cap(c_a), veh/h	0	882	882	845	2589	0				1069	0	444
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.91	0.91	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.1	14.2	29.8	0.0	0.0				35.1	0.0	34.0
Incr Delay (d2), s/veh	0.0	1.3	1.3	6.6	0.1	0.0				2.1	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
%ile BackOfQ(50%),veh/ln	0.0	4.5	4.5	5.4	0.0	0.0				5.4	0.0	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.4	15.5	36.4	0.1	0.0				37.2	0.0	36.4
LnGrp LOS	A	B	B	D	A	A				D	A	D
Approach Vol, veh/h		689			1008						679	
Approach Delay, s/veh		15.5			20.2						37.0	
Approach LOS		B			C						D	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	20.9	48.7		20.4		69.6						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	22.0	29.0		27.0		55.0						
Max Q Clear Time (g_c+I), s	15.7	12.9		14.3		2.0						
Green Ext Time (p_c), s	1.2	3.9		2.2		3.4						

Intersection Summary		
HCM 6th Ctrl Delay		23.6
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.













AM Existing
13: I-5 NB Ramp & La Costa Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	157	895	0	0	925	477	74	1	715	0	0	0
Future Volume (veh/h)	157	895	0	0	925	477	74	1	715	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		0.95	1.00		0.93			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	164	932	0	0	964	497	77	1	745			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	197	2172	0	0	2330	685	528	7	778			
Arrive On Green	0.22	1.00	0.00	0.00	0.46	0.46	0.30	0.30	0.30			
Sat Flow, veh/h	1781	3647	0	0	5274	1500	1760	23	2593			
Grp Volume(v), veh/h	164	932	0	0	964	497	78	0	745			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1702	1500	1782	0	1296			
Q Serve(g_s), s	7.9	0.0	0.0	0.0	11.4	24.2	2.9	0.0	25.4			
Cycle Q Clear(g_c), s	7.9	0.0	0.0	0.0	11.4	24.2	2.9	0.0	25.4			
Prop In Lane	1.00		0.00	0.00		1.00	0.99		1.00			
Lane Grp Cap(c), veh/h	197	2172	0	0	2330	685	535	0	778			
V/C Ratio(X)	0.83	0.43	0.00	0.00	0.41	0.73	0.15	0.00	0.96			
Avail Cap(c_a), veh/h	297	2172	0	0	2330	685	535	0	778			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.84	0.84	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	34.3	0.0	0.0	0.0	16.4	19.9	23.1	0.0	30.9			
Incr Delay (d2), s/veh	10.2	0.5	0.0	0.0	0.5	6.6	0.1	0.0	22.5			
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	3.6	0.2	0.0	0.0	4.4	9.2	1.2	0.0	10.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.5	0.5	0.0	0.0	16.9	26.5	23.2	0.0	53.4			
LnGrp LOS	D	A	A	A	B	C	C	A	D			
Approach Vol, veh/h		1096			1461			823				
Approach Delay, s/veh		7.1			20.2			50.5				
Approach LOS		A			C			D				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		59.0			13.9	45.1		31.0				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		55.0			15.0	36.0		27.0				
Max Q Clear Time (g_c+I1), s		2.0			9.9	26.2		27.4				
Green Ext Time (p_c), s		8.5			0.2	5.8		0.0				
Intersection Summary												
HCM 6th Ctrl Delay					23.3							
HCM 6th LOS					C							

PM Existing
1: Avenida Encinas & Carlsbad Blvd SB

















HCM Signalized Intersection Capacity Analysis

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 				 	 
Traffic Volume (vph)	132	0	0	0	13	508
Future Volume (vph)	132	0	0	0	13	508
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0				4.0	4.0
Lane Util. Factor	0.97				1.00	0.95
Frbp, ped/bikes	1.00				1.00	1.00
Flpb, ped/bikes	1.00				0.56	1.00
Frt	1.00				1.00	1.00
Flt Protected	0.95				0.95	1.00
Satd. Flow (prot)	3433				984	3539
Flt Permitted	0.95				0.95	1.00
Satd. Flow (perm)	3433				984	3539
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	148	0	0	0	15	571
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	148	0	0	0	15	571
Confl. Peds. (#/hr)		15			15	
Confl. Bikes (#/hr)		10		10		
Turn Type	Prot				Prot	NA
Protected Phases	8				1	6
Permitted Phases						
Actuated Green, G (s)	8.9				0.6	40.6
Effective Green, g (s)	8.9				0.6	40.6
Actuated g/C Ratio	0.14				0.01	0.65
Clearance Time (s)	4.0				4.0	4.0
Vehicle Extension (s)	3.0				3.0	3.0
Lane Grp Cap (vph)	488				9	2298
v/s Ratio Prot	c0.04				c0.02	c0.16
v/s Ratio Perm						
v/c Ratio	0.30				1.67	0.25
Uniform Delay, d1	24.0				30.9	4.6
Progression Factor	0.11				1.00	1.00
Incremental Delay, d2	0.4				565.3	0.1
Delay (s)	3.1				596.3	4.6
Level of Service	A				F	A
Approach Delay (s)	3.1		0.0			19.8
Approach LOS	A		A			B
Intersection Summary						
HCM 2000 Control Delay			16.4		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.28			
Actuated Cycle Length (s)			62.5		Sum of lost time (s)	16.0
Intersection Capacity Utilization			28.2%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

LOS Engineering, Inc.

PM Existing
2: Carsbad Blvd NB & Avenida Encinas

HCM Signalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	2	11	0	0	132	11	0	640	167	0	0	0	
Future Volume (vph)	2	11	0	0	132	11	0	640	167	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0			4.0			4.0	4.0				
Lane Util. Factor		1.00			0.95			0.95	1.00				
Frbp, ped/bikes		1.00			1.00			1.00	0.93				
Flpb, ped/bikes		1.00			1.00			1.00	1.00				
Frt		1.00			0.99			1.00	0.85				
Flt Protected		0.99			1.00			1.00	1.00				
Satd. Flow (prot)		1850			3480			3539	1466				
Flt Permitted		0.99			1.00			1.00	1.00				
Satd. Flow (perm)		1850			3480			3539	1466				
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.80	0.89	0.89	0.89	0.89	0.89	0.89	
Adj. Flow (vph)	2	12	0	0	148	14	0	719	188	0	0	0	
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	161	0	0	0	
Lane Group Flow (vph)	0	14	0	0	153	0	0	719	27	0	0	0	
Confl. Peds. (#/hr)			15			15			15				
Confl. Bikes (#/hr)			10			10			10				
Turn Type	Split	NA			NA			NA	custom				
Protected Phases	7	7			8			2					
Permitted Phases									8				
Actuated Green, G (s)		1.0			8.9			36.0	8.9				
Effective Green, g (s)		1.0			8.9			36.0	8.9				
Actuated g/C Ratio		0.02			0.14			0.58	0.14				
Clearance Time (s)		4.0			4.0			4.0	4.0				
Vehicle Extension (s)		3.0			3.0			3.0	3.0				
Lane Grp Cap (vph)		29			495			2038	208				
v/s Ratio Prot		c0.01			c0.04			c0.20					
v/s Ratio Perm									0.02				
v/c Ratio		0.48			0.31			0.35	0.13				
Uniform Delay, d1		30.5			24.0			7.1	23.4				
Progression Factor		1.58			1.00			1.00	1.00				
Incremental Delay, d2		12.1			0.4			0.5	0.3				
Delay (s)		60.2			24.4			7.5	23.7				
Level of Service		E			C			A	C				
Approach Delay (s)		60.2			24.4			10.9			0.0		
Approach LOS		E			C			B			A		
Intersection Summary													
HCM 2000 Control Delay			13.5									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.34										
Actuated Cycle Length (s)			62.5									Sum of lost time (s)	16.0
Intersection Capacity Utilization			32.1%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

PM Existing
3: N Coast Hwy & La Costa Ave



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	226	304	605	235	199	337
Future Volume (veh/h)	226	304	605	235	199	337
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	254	0	680	0	224	379
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	301		2601		597	2601
Arrive On Green	0.17	0.00	0.73	0.00	0.73	0.73
Sat Flow, veh/h	1781	1585	3647	1585	759	3647
Grp Volume(v), veh/h	254	0	680	0	224	379
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1585	759	1777
Q Serve(g_s), s	11.1	0.0	5.1	0.0	11.2	2.6
Cycle Q Clear(g_c), s	11.1	0.0	5.1	0.0	16.3	2.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	301		2601		597	2601
V/C Ratio(X)	0.84		0.26		0.38	0.15
Avail Cap(c_a), veh/h	508		2601		597	2601
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	32.5	0.0	3.6	0.0	6.3	3.2
Incr Delay (d2), s/veh	6.4	0.0	0.2	0.0	1.8	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	5.2	0.0	1.4	0.0	1.7	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	38.9	0.0	3.8	0.0	8.1	3.4
LnGrp LOS	D		A		A	A
Approach Vol, veh/h	254	A	680	A		603
Approach Delay, s/veh	38.9		3.8			5.1
Approach LOS	D		A			A
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		63.0			63.0	17.6
Change Period (Y+Rc), s		4.0			4.0	4.0
Max Green Setting (Gmax), s		59.0			59.0	23.0
Max Q Clear Time (g_c+I1), s		7.1			18.3	13.1
Green Ext Time (p_c), s		5.6			4.9	0.5

Intersection Summary

HCM 6th Ctrl Delay	10.1
HCM 6th LOS	B

Notes

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

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑↑	
Traffic Vol, veh/h	31	17	17	768	514	26
Future Vol, veh/h	31	17	17	768	514	26
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	75	-	-	-
Veh in Median Storage, #	1	-	-	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	34	19	19	844	565	29
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1482	317	604	0	-	0
Stage 1	590	-	-	-	-	-
Stage 2	892	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	126	680	972	-	-	-
Stage 1	518	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	121	669	964	-	-	-
Mov Cap-2 Maneuver	256	-	-	-	-	-
Stage 1	503	-	-	-	-	-
Stage 2	396	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	18.1	0.2	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	964	-	328	-	-	
HCM Lane V/C Ratio	0.019	-	0.161	-	-	
HCM Control Delay (s)	8.8	-	18.1	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-	

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	37	57	7	747	520	13
Future Vol, veh/h	37	57	7	747	520	13
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	58	7	762	531	13
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1334	292	554	0	-	0
Stage 1	548	-	-	-	-	-
Stage 2	786	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	157	705	1014	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	448	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	153	693	1006	-	-	-
Mov Cap-2 Maneuver	291	-	-	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	444	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	15.2	0.1	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1006	-	449	-	-	
HCM Lane V/C Ratio	0.007	-	0.214	-	-	
HCM Control Delay (s)	8.6	-	15.2	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0	-	0.8	-	-	

Intersection							
Int Delay, s/veh	0.1						
Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations	↔			↑	↔	↕↔	
Traffic Vol, veh/h	0	11	6	792	71	495	8
Future Vol, veh/h	0	11	6	792	71	495	8
Conflicting Peds, #/hr	10	10	10	0	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	-	-	50	-	-
Veh in Median Storage, #	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	0	11	6	816	73	510	8

Major/Minor	Minor2	Major1	Major2				
Conflicting Flow All	1508	279	528	0	-	-	0
Stage 1	670	-	-	-	-	-	-
Stage 2	838	-	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-	-
Pot Cap-1 Maneuver	122	719	1037	-	-	-	-
Stage 1	471	-	-	-	-	-	-
Stage 2	423	-	-	-	-	-	-
Platoon blocked, %				-	-	-	-
Mov Cap-1 Maneuver	119	707	1028	-	-	-	-
Mov Cap-2 Maneuver	119	-	-	-	-	-	-
Stage 1	462	-	-	-	-	-	-
Stage 2	420	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0.1	
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBU	SBT	SBR
Capacity (veh/h)	1028	-	707	-	-	-
HCM Lane V/C Ratio	0.006	-	0.016	-	-	-
HCM Control Delay (s)	8.5	-	10.2	-	-	-
HCM Lane LOS	A	-	B	-	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-	-

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑↑	
Traffic Vol, veh/h	13	18	33	686	472	36
Future Vol, veh/h	13	18	33	686	472	36
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	19	34	715	492	38
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1314	285	540	0	-	0
Stage 1	521	-	-	-	-	-
Stage 2	793	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	162	713	1027	-	-	-
Stage 1	562	-	-	-	-	-
Stage 2	445	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	154	701	1018	-	-	-
Mov Cap-2 Maneuver	291	-	-	-	-	-
Stage 1	539	-	-	-	-	-
Stage 2	441	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	13.8	0.4	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1018	-	441	-	-	
HCM Lane V/C Ratio	0.034	-	0.073	-	-	
HCM Control Delay (s)	8.7	-	13.8	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-	

PM Existing
9: N. Coast Hwy 101 & Leucadia Blvd

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↗	↔		↗	↑↑	↗	↗	↕	↔
Traffic Volume (veh/h)	23	45	13	165	30	178	7	595	168	263	411	3
Future Volume (veh/h)	23	45	13	165	30	178	7	595	168	263	411	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.92	1.00		0.96	1.00		0.94
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	25	48	14	177	32	191	8	640	181	283	442	3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	33	64	19	336	41	244	15	1203	517	336	1878	13
Arrive On Green	0.07	0.07	0.07	0.19	0.19	0.19	0.01	0.34	0.34	0.19	0.52	0.52
Sat Flow, veh/h	509	977	285	1781	217	1296	1781	3554	1527	1781	3616	25
Grp Volume(v), veh/h	87	0	0	177	0	223	8	640	181	283	217	228
Grp Sat Flow(s),veh/h/ln	1771	0	0	1781	0	1513	1781	1777	1527	1781	1777	1864
Q Serve(g_s), s	3.5	0.0	0.0	6.6	0.0	10.3	0.3	10.6	6.5	11.2	4.9	4.9
Cycle Q Clear(g_c), s	3.5	0.0	0.0	6.6	0.0	10.3	0.3	10.6	6.5	11.2	4.9	4.9
Prop In Lane	0.29		0.16	1.00		0.86	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	116	0	0	336	0	285	15	1203	517	336	923	968
V/C Ratio(X)	0.75	0.00	0.00	0.53	0.00	0.78	0.55	0.53	0.35	0.84	0.24	0.24
Avail Cap(c_a), veh/h	387	0	0	390	0	331	97	1203	517	609	923	968
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	0.0	0.0	26.8	0.0	28.3	36.2	19.5	18.2	28.6	9.6	9.6
Incr Delay (d2), s/veh	9.3	0.0	0.0	1.3	0.0	10.1	28.3	1.7	1.9	5.7	0.6	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	0.0	0.0	2.8	0.0	4.4	0.3	4.4	2.4	5.1	1.9	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.9	0.0	0.0	28.0	0.0	38.3	64.4	21.2	20.0	34.3	10.2	10.2
LnGrp LOS	D	A	A	C	A	D	E	C	C	C	B	B
Approach Vol, veh/h		87			400			829			728	
Approach Delay, s/veh		42.9			33.8			21.4			19.6	
Approach LOS		D			C			C			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.8	28.8		8.8	4.6	42.0		17.8				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	25.0	17.0		16.0	4.0	38.0		16.0				
Max Q Clear Time (g_c+I1), s	13.2	12.6		5.5	2.3	6.9		12.3				
Green Ext Time (p_c), s	0.7	2.0		0.2	0.0	2.8		0.7				

Intersection Summary

HCM 6th Ctrl Delay	24.1
HCM 6th LOS	C

Notes

- User approved volume balancing among the lanes for turning movement.
- User approved changes to right turn type.

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕		↕		↕	
Traffic Vol, veh/h	1	363	70	131	392	1	58	0	155	0	0	0
Future Vol, veh/h	1	363	70	131	392	1	58	0	155	0	0	0
Conflicting Peds, #/hr	5	0	5	5	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	80	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	395	76	142	426	1	63	0	168	0	0	0
Major/Minor	Major1	Major2			Minor1			Minor2				
Conflicting Flow All	432	0	0	476	0	0	1151	-	438	1235	1194	432
Stage 1	-	-	-	-	-	-	440	-	-	716	716	-
Stage 2	-	-	-	-	-	-	711	-	-	519	478	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	-	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	-	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1128	-	-	1086	-	-	175	0	619	153	187	624
Stage 1	-	-	-	-	-	-	596	0	-	421	434	-
Stage 2	-	-	-	-	-	-	424	0	-	540	556	-
Platoon blocked, %		-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1123	-	-	1081	-	-	151	-	616	96	154	621
Mov Cap-2 Maneuver	-	-	-	-	-	-	151	-	-	96	154	-
Stage 1	-	-	-	-	-	-	593	-	-	419	358	-
Stage 2	-	-	-	-	-	-	351	-	-	392	553	-
Approach	EB	WB			NB			SB				
HCM Control Delay, s	0	2.2			21.7			0				
HCM LOS					C			A				
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	151	616	1123	-	-	1081	-	-	-			
HCM Lane V/C Ratio	0.418	0.274	0.001	-	-	0.132	-	-	-			
HCM Control Delay (s)	44.9	13	8.2	0	-	8.8	0	-	0			
HCM Lane LOS	E	B	A	A	-	A	A	-	A			
HCM 95th %tile Q(veh)	1.8	1.1	0	-	-	0.5	-	-	-			

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	557	13	63	582	13	50
Future Vol, veh/h	557	13	63	582	13	50
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	580	14	66	606	14	52
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	604	0	1345	607
Stage 1	-	-	-	-	597	-
Stage 2	-	-	-	-	748	-
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	-	-	974	-	167	496
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	468	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	966	-	147	488
Mov Cap-2 Maneuver	-	-	-	-	147	-
Stage 1	-	-	-	-	546	-
Stage 2	-	-	-	-	417	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.9		18.6	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	330	-	-	966	-	
HCM Lane V/C Ratio	0.199	-	-	0.068	-	
HCM Control Delay (s)	18.6	-	-	9	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	0.7	-	-	0.2	-	

PM Existing
12: I-5 SB Ramp & La Costa Ave

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑	↑
Traffic Volume (veh/h)	0	556	88	705	525	0	0	0	0	497	1	158
Future Volume (veh/h)	0	556	88	705	525	0	0	0	0	497	1	158
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00				1.00		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	598	95	758	565	0				535	0	170
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	2	2	2	0				2	2	2
Cap, veh/h	0	1345	213	817	2563	0				677	0	281
Arrive On Green	0.00	0.44	0.44	0.39	1.00	0.00				0.19	0.00	0.19
Sat Flow, veh/h	0	3149	484	3456	3647	0				3563	0	1482
Grp Volume(v), veh/h	0	347	346	758	565	0				535	0	170
Grp Sat Flow(s),veh/h/ln	0	1777	1762	1728	1777	0				1781	0	1482
Q Serve(g_s), s	0.0	12.2	12.3	18.9	0.0	0.0				12.9	0.0	9.4
Cycle Q Clear(g_c), s	0.0	12.2	12.3	18.9	0.0	0.0				12.9	0.0	9.4
Prop In Lane	0.00		0.27	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	782	776	817	2563	0				677	0	281
V/C Ratio(X)	0.00	0.44	0.45	0.93	0.22	0.00				0.79	0.00	0.60
Avail Cap(c_a), veh/h	0	782	776	845	2563	0				1069	0	445
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.88	0.88	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	17.5	17.5	26.5	0.0	0.0				34.7	0.0	33.4
Incr Delay (d2), s/veh	0.0	1.8	1.9	14.5	0.2	0.0				2.1	0.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.2	5.2	7.8	0.1	0.0				5.7	0.0	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	19.3	19.4	41.0	0.2	0.0				36.9	0.0	35.4
LnGrp LOS	A	B	B	D	A	A				D	A	D
Approach Vol, veh/h		693			1323						705	
Approach Delay, s/veh		19.4			23.5						36.5	
Approach LOS		B			C						D	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	25.3	43.6		21.1		68.9						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	22.0	29.0		27.0		55.0						
Max Q Clear Time (g_c+I1), s	20.9	14.3		14.9		2.0						
Green Ext Time (p_c), s	0.4	3.8		2.2		4.4						

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

Notes

User approved volume balancing among the lanes for turning movement.

PM Existing
13: I-5 NB Ramp & La Costa Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	876	0	0	1097	414	123	1	639	0	0	0
Future Volume (veh/h)	164	876	0	0	1097	414	123	1	639	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		0.95	1.00		0.93			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	171	912	0	0	1143	431	128	1	666			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	204	2232	0	0	2397	705	500	4	731			
Arrive On Green	0.23	1.00	0.00	0.00	0.47	0.47	0.28	0.28	0.28			
Sat Flow, veh/h	1781	3647	0	0	5274	1502	1768	14	2584			
Grp Volume(v), veh/h	171	912	0	0	1143	431	129	0	666			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1702	1502	1782	0	1292			
Q Serve(g_s), s	8.2	0.0	0.0	0.0	13.8	19.2	5.0	0.0	22.4			
Cycle Q Clear(g_c), s	8.2	0.0	0.0	0.0	13.8	19.2	5.0	0.0	22.4			
Prop In Lane	1.00		0.00	0.00		1.00	0.99		1.00			
Lane Grp Cap(c), veh/h	204	2232	0	0	2397	705	504	0	731			
V/C Ratio(X)	0.84	0.41	0.00	0.00	0.48	0.61	0.26	0.00	0.91			
Avail Cap(c_a), veh/h	297	2232	0	0	2397	705	535	0	775			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.79	0.79	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	33.9	0.0	0.0	0.0	16.3	17.8	24.9	0.0	31.2			
Incr Delay (d2), s/veh	10.7	0.4	0.0	0.0	0.7	3.9	0.3	0.0	14.4			
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	3.7	0.1	0.0	0.0	5.2	7.0	2.1	0.0	8.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.6	0.4	0.0	0.0	17.0	21.7	25.2	0.0	45.5			
LnGrp LOS	D	A	A	A	B	C	C	A	D			
Approach Vol, veh/h		1083			1574			795				
Approach Delay, s/veh		7.4			18.3			42.2				
Approach LOS		A			B			D				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		60.5			14.3	46.2		29.5				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		55.0			15.0	36.0		27.0				
Max Q Clear Time (g_c+I1), s		2.0			10.2	21.2		24.4				
Green Ext Time (p_c), s		8.3			0.2	8.5		1.1				
Intersection Summary												
HCM 6th Ctrl Delay					20.4							
HCM 6th LOS					C							

Appendix J

Project Trip Details

Breakdown of Project Driveway trips making a u-turn combined with primary & diverted trips Before Streetscape

Driveway trips making u-turns to the south at Int #7

Primary & Diverted

Combined Driveway, Primary & Diverted

<p>Project Access</p> <p>35 (62)</p> <p>73 (76)</p> <p>23 (41)</p> <p>44 (46)</p> <p>4</p> <p>N. Coast Hwy 101</p>	<p>Project Access</p> <p>No trip credit was applied at the project driveway, therefore, primary and diverted trips do not show up.</p> <p>4</p> <p>N. Coast Hwy 101</p>	<p>Project Access</p> <p>35 (62)</p> <p>73 (76)</p> <p>23 (41)</p> <p>44 (46)</p> <p>4</p> <p>N. Coast Hwy 101</p>
<p>Bishops Gate</p> <p>44 (46)</p> <p>0 (1)</p> <p>44 (46)</p> <p>5</p> <p>N. Coast Hwy 101</p>	<p>Bishops Gate</p> <p>0 (1)</p> <p>15 (17)</p> <p>9 (22)</p> <p>5</p> <p>N. Coast Hwy 101</p>	<p>Bishops Gate</p> <p>0 (1)</p> <p>59 (63)</p> <p>0 (1)</p> <p>53 (68)</p> <p>5</p> <p>N. Coast Hwy 101</p>
<p>Grandview St</p> <p>44 (46)</p> <p>0 (1)</p> <p>44 (46)</p> <p>6</p> <p>N. Coast Hwy 101</p>	<p>Grandview St</p> <p>0 (1)</p> <p>15 (17)</p> <p>8 (22)</p> <p>6</p> <p>N. Coast Hwy 101</p>	<p>Grandview St</p> <p>0 (1)</p> <p>59 (63)</p> <p>52 (68)</p> <p>6</p> <p>N. Coast Hwy 101</p>
<p>Sands Mobile Home</p> <p>44 (46)</p> <p>8</p> <p>7</p> <p>N. Coast Hwy 101</p>	<p>Sands Mobile Home</p> <p>15 (17)</p> <p>8 (22)</p> <p>7</p> <p>N. Coast Hwy 101</p>	<p>Sands Mobile Home</p> <p>15 (17)</p> <p>44 (46)</p> <p>8 (22)</p> <p>7</p> <p>N. Coast Hwy 101</p>

Breakdown of Project Driveway trips making a u-turn combined with primary & diverted trips After Streetscape

Driveway trips making u-turns to the south at Int #5

Primary & Diverted













Combined Driveway, Primary & Diverted

<p>Project Access</p> <p>35 (62) ↓</p> <p>73 (76) ↘ ↙</p> <p>23 (41) ↘ ↙</p> <p>44 (46) ↑</p> <p>4</p> <p>N. Coast Hwy 101</p>	<p>Project Access</p> <p>35 (62) ↓</p> <p>73 (76) ↘ ↙</p> <p>23 (41) ↘ ↙</p> <p>44 (46) ↑</p> <p>4</p> <p>N. Coast Hwy 101</p> <p>No trip credit was applied at the project driveway, therefore, primary and diverted trips do not show up.</p>	<p>Project Access</p> <p>35 (62) ↓</p> <p>73 (76) ↘ ↙</p> <p>23 (41) ↘ ↙</p> <p>44 (46) ↑</p> <p>4</p> <p>N. Coast Hwy 101</p>
<p>Bishops Gate</p> <p>44 (46) ↘ ↙</p> <p>0 (1) ↘ ↙</p> <p>0 (1) ↘ ↙</p> <p>15 (17) ↓</p> <p>9 (22) ↑</p> <p>5</p> <p>N. Coast Hwy 101</p>	<p>Bishops Gate</p> <p>0 (1) ↘ ↙</p> <p>0 (1) ↘ ↙</p> <p>0 (1) ↘ ↙</p> <p>15 (17) ↓</p> <p>9 (22) ↑</p> <p>5</p> <p>N. Coast Hwy 101</p>	<p>Bishops Gate</p> <p>0 (1) ↘ ↙</p> <p>0 (1) ↘ ↙</p> <p>0 (1) ↘ ↙</p> <p>15 (17) ↓</p> <p>9 (22) ↑</p> <p>5</p> <p>N. Coast Hwy 101</p>
<p>Grandview St</p> <p>0 (1) ↘ ↙</p> <p>0 (1) ↘ ↙</p> <p>15 (17) ↓</p> <p>8 (22) ↑</p> <p>6</p> <p>N. Coast Hwy 101</p>	<p>Grandview St</p> <p>0 (1) ↘ ↙</p> <p>0 (1) ↘ ↙</p> <p>15 (17) ↓</p> <p>8 (22) ↑</p> <p>6</p> <p>N. Coast Hwy 101</p>	<p>Grandview St</p> <p>0 (1) ↘ ↙</p> <p>0 (1) ↘ ↙</p> <p>15 (17) ↓</p> <p>8 (22) ↑</p> <p>6</p> <p>N. Coast Hwy 101</p>
<p>Sands Mobile Home</p> <p>0 (1) ↘ ↙</p> <p>0 (1) ↘ ↙</p> <p>15 (17) ↓</p> <p>8 (22) ↑</p> <p>7</p> <p>N. Coast Hwy 101</p>	<p>Sands Mobile Home</p> <p>0 (1) ↘ ↙</p> <p>0 (1) ↘ ↙</p> <p>15 (17) ↓</p> <p>8 (22) ↑</p> <p>7</p> <p>N. Coast Hwy 101</p>	<p>Sands Mobile Home</p> <p>0 (1) ↘ ↙</p> <p>0 (1) ↘ ↙</p> <p>15 (17) ↓</p> <p>8 (22) ↑</p> <p>7</p> <p>N. Coast Hwy 101</p>

Appendix K

















Existing + Project Intersection LOS Calculations

AM Existing + Project
1: Avenida Encinas & Carlsbad Blvd SB

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 				 	 
Traffic Volume (vph)	174	0	0	0	8	1101
Future Volume (vph)	174	0	0	0	8	1101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0				4.0	4.0
Lane Util. Factor	0.97				1.00	0.95
Frbp, ped/bikes	1.00				1.00	1.00
Flpb, ped/bikes	1.00				0.53	1.00
Frt	1.00				1.00	1.00
Flt Protected	0.95				0.95	1.00
Satd. Flow (prot)	3433				933	3539
Flt Permitted	0.95				0.95	1.00
Satd. Flow (perm)	3433				933	3539
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	187	0	0	0	9	1184
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	187	0	0	0	9	1184
Confl. Peds. (#/hr)		15			15	
Confl. Bikes (#/hr)		30		30		
Turn Type	Prot				Prot	NA
Protected Phases	8				1	6
Permitted Phases						
Actuated Green, G (s)	9.2				0.5	44.3
Effective Green, g (s)	9.2				0.5	44.3
Actuated g/C Ratio	0.14				0.01	0.67
Clearance Time (s)	4.0				4.0	4.0
Vehicle Extension (s)	3.0				3.0	3.0
Lane Grp Cap (vph)	474				7	2357
v/s Ratio Prot	c0.05				0.01	c0.33
v/s Ratio Perm						
v/c Ratio	0.39				1.29	0.50
Uniform Delay, d1	26.1				33.0	5.6
Progression Factor	0.07				1.00	1.00
Incremental Delay, d2	0.5				455.3	0.2
Delay (s)	2.4				488.3	5.7
Level of Service	A				F	A
Approach Delay (s)	2.4		0.0			9.4
Approach LOS	A		A			A
Intersection Summary						
HCM 2000 Control Delay			8.4		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.51			
Actuated Cycle Length (s)			66.5		Sum of lost time (s)	16.0
Intersection Capacity Utilization			45.4%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						







AM Existing + Project
2: Carsbad Blvd NB & Avenida Encinas

HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	7	0	0	174	6	0	202	67	0	0	0
Future Volume (vph)	1	7	0	0	174	6	0	202	67	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0			
Lane Util. Factor		1.00			0.95			0.95	1.00			
Frbp, ped/bikes		1.00			1.00			1.00	0.87			
Flpb, ped/bikes		1.00			1.00			1.00	1.00			
Frt		1.00			1.00			1.00	0.85			
Flt Protected		0.99			1.00			1.00	1.00			
Satd. Flow (prot)		1852			3514			3539	1380			
Flt Permitted		0.99			1.00			1.00	1.00			
Satd. Flow (perm)		1852			3514			3539	1380			
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1	8	0	0	187	6	0	217	72	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	62	0	0	0
Lane Group Flow (vph)	0	9	0	0	190	0	0	217	10	0	0	0
Confl. Peds. (#/hr)			15			15			15			
Confl. Bikes (#/hr)			30			30			30			
Turn Type	Split	NA			NA			NA	custom			
Protected Phases	7	7			8			2				
Permitted Phases									8			
Actuated Green, G (s)		1.0			9.2			39.8	9.2			
Effective Green, g (s)		1.0			9.2			39.8	9.2			
Actuated g/C Ratio		0.02			0.14			0.60	0.14			
Clearance Time (s)		4.0			4.0			4.0	4.0			
Vehicle Extension (s)		3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)		27			486			2118	190			
v/s Ratio Prot		c0.00			c0.05			c0.06				
v/s Ratio Perm									0.01			
v/c Ratio		0.33			0.39			0.10	0.05			
Uniform Delay, d1		32.4			26.1			5.7	24.9			
Progression Factor		1.61			1.00			1.00	1.00			
Incremental Delay, d2		7.2			0.5			0.1	0.1			
Delay (s)		59.4			26.6			5.8	25.0			
Level of Service		E			C			A	C			
Approach Delay (s)		59.4			26.6			10.6			0.0	
Approach LOS		E			C			B			A	
Intersection Summary												
HCM 2000 Control Delay			17.8									B
HCM 2000 Volume to Capacity ratio			0.16									
Actuated Cycle Length (s)			66.5									16.0
Intersection Capacity Utilization			27.3%									A
Analysis Period (min)			15									
c Critical Lane Group												

AM Existing + Project
3: N Coast Hwy & La Costa Ave

HCM 6th Signalized Intersection Summary

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↷	↕	↶	↷	↕
Traffic Volume (veh/h)	250	102	175	205	265	1006
Future Volume (veh/h)	250	102	175	205	265	1006
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	0.99	
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	272	0	190	0	288	1093
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	327		2515		915	2515
Arrive On Green	0.18	0.00	0.71	0.00	0.71	0.71
Sat Flow, veh/h	1781	1585	3647	1585	1181	3647
Grp Volume(v), veh/h	272	0	190	0	288	1093
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1585	1181	1777
Q Serve(g_s), s	10.8	0.0	1.2	0.0	7.3	9.5
Cycle Q Clear(g_c), s	10.8	0.0	1.2	0.0	8.5	9.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	327		2515		915	2515
V/C Ratio(X)	0.83		0.08		0.31	0.43
Avail Cap(c_a), veh/h	727		2515		915	2515
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	28.9	0.0	3.3	0.0	4.6	4.5
Incr Delay (d2), s/veh	5.5	0.0	0.1	0.0	0.9	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	0.0	0.3	0.0	1.5	2.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.4	0.0	3.4	0.0	5.5	5.1
LnGrp LOS	C		A		A	A
Approach Vol, veh/h	272	A	190	A		1381
Approach Delay, s/veh	34.4		3.4			5.2
Approach LOS	C		A			A
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		56.0			56.0	17.5
Change Period (Y+Rc), s		4.0			4.0	4.0
Max Green Setting (Gmax), s		52.0			52.0	30.0
Max Q Clear Time (g_c+I1), s		3.2			11.5	12.8
Green Ext Time (p_c), s		1.3			12.3	0.7
Intersection Summary						
HCM 6th Ctrl Delay			9.3			
HCM 6th LOS			A			
Notes						
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.						

LOS Engineering, Inc.

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↖	↑	↗↖	
Traffic Vol, veh/h	0	73	23	884	1243	35
Future Vol, veh/h	0	73	23	884	1243	35
Conflicting Peds, #/hr	20	20	20	0	0	20
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	79	25	961	1351	38
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	735	1409	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.93	4.13	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	0	363	482	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	351	474	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	18.2	0.3	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	474	-	351	-	-	
HCM Lane V/C Ratio	0.053	-	0.226	-	-	
HCM Control Delay (s)	13	-	18.2	-	-	
HCM Lane LOS	B	-	C	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-	

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	32	28	8	429	1676	26
Future Vol, veh/h	32	28	8	429	1676	26
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	75	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	29	8	438	1710	27
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2198	889	1747	0	-	0
Stage 1	1734	-	-	-	-	-
Stage 2	464	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	43	287	357	-	-	-
Stage 1	128	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	41	282	354	-	-	-
Mov Cap-2 Maneuver	104	-	-	-	-	-
Stage 1	124	-	-	-	-	-
Stage 2	627	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	45.9	0.3	0			
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	354	-	147	-	-	
HCM Lane V/C Ratio	0.023	-	0.416	-	-	
HCM Control Delay (s)	15.4	-	45.9	-	-	
HCM Lane LOS	C	-	E	-	-	
HCM 95th %tile Q(veh)	0.1	-	1.8	-	-	

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑	↑↑	
Traffic Vol, veh/h	33	34	9	388	1668	26
Future Vol, veh/h	33	34	9	388	1668	26
Conflicting Peds, #/hr	15	15	15	0	0	15
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	38	10	436	1874	29

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2375	982	1918	0	-	0
Stage 1	1904	-	-	-	-	-
Stage 2	471	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	~ 33	249	306	-	-	-
Stage 1	103	-	-	-	-	-
Stage 2	627	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 31	243	302	-	-	-
Mov Cap-2 Maneuver	83	-	-	-	-	-
Stage 1	98	-	-	-	-	-
Stage 2	619	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	70.1	0.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	302	-	125	-	-
HCM Lane V/C Ratio	0.033	-	0.602	-	-
HCM Control Delay (s)	17.3	-	70.1	-	-
HCM Lane LOS	C	-	F	-	-
HCM 95th %tile Q(veh)	0.1	-	3	-	-

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

Intersection							
Int Delay, s/veh	0						
Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations	↔			↑	↓	↕	
Traffic Vol, veh/h	0	5	0	336	98	1618	3
Future Vol, veh/h	0	5	0	336	98	1618	3
Conflicting Peds, #/hr	15	15	15	0	0	0	15
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	-	-	50	-	-
Veh in Median Storage, #	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	0	6	0	386	113	1860	3

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2504	962	-	0	-	0
Stage 1	2103	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	-	-
Pot Cap-1 Maneuver	27	257	0	-	-	-
Stage 1	80	-	0	-	-	-
Stage 2	675	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	26	251	-	-	-	-
Mov Cap-2 Maneuver	26	-	-	-	-	-
Stage 1	79	-	-	-	-	-
Stage 2	667	-	-	-	-	-






















Approach	EB	NB	SB
HCM Control Delay, s	19.7	0	
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBU	SBT	SBR
Capacity (veh/h)	-	251	-	-	-
HCM Lane V/C Ratio	-	0.023	-	-	-
HCM Control Delay (s)	-	19.7	-	-	-
HCM Lane LOS	-	C	-	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-	-

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	27	13	250	1620	10
Future Vol, veh/h	19	27	13	250	1620	10
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	1	-	-	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	21	30	14	275	1780	11
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2109	916	1801	0	-	0
Stage 1	1796	-	-	-	-	-
Stage 2	313	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	50	275	340	-	-	-
Stage 1	118	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	47	270	337	-	-	-
Mov Cap-2 Maneuver	97	-	-	-	-	-
Stage 1	112	-	-	-	-	-
Stage 2	735	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	39.1	0.8	0			
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	337	-	155	-	-	
HCM Lane V/C Ratio	0.042	-	0.326	-	-	
HCM Control Delay (s)	16.2	-	39.1	-	-	
HCM Lane LOS	C	-	E	-	-	
HCM 95th %tile Q(veh)	0.1	-	1.3	-	-	

AM Existing + Project
9: N. Coast Hwy 101 & Leucadia Blvd

HCM 6th Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	38	9	209	23	100	5	176	57	392	1263	1
Future Volume (veh/h)	11	38	9	209	23	100	5	176	57	392	1263	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.93	1.00		0.96	1.00		0.95
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	12	40	9	174	88	105	5	185	60	413	1329	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	16	52	12	303	126	151	9	1033	443	469	1999	2
Arrive On Green	0.04	0.04	0.04	0.17	0.17	0.17	0.01	0.29	0.29	0.26	0.55	0.55
Sat Flow, veh/h	351	1169	263	1781	742	886	1781	3554	1523	1781	3644	3
Grp Volume(v), veh/h	61	0	0	174	0	193	5	185	60	413	648	682
Grp Sat Flow(s),veh/h/ln	1782	0	0	1781	0	1628	1781	1777	1523	1781	1777	1870
Q Serve(g_s), s	2.3	0.0	0.0	6.2	0.0	7.7	0.2	2.7	2.0	15.4	18.0	18.0
Cycle Q Clear(g_c), s	2.3	0.0	0.0	6.2	0.0	7.7	0.2	2.7	2.0	15.4	18.0	18.0
Prop In Lane	0.20		0.15	1.00		0.54	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	80	0	0	303	0	277	9	1033	443	469	975	1026
V/C Ratio(X)	0.76	0.00	0.00	0.57	0.00	0.70	0.53	0.18	0.14	0.88	0.66	0.66
Avail Cap(c_a), veh/h	412	0	0	411	0	376	103	1033	443	643	975	1026
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.7	0.0	0.0	26.4	0.0	27.1	34.4	18.4	18.1	24.5	11.1	11.1
Incr Delay (d2), s/veh	13.9	0.0	0.0	1.7	0.0	3.4	39.2	0.4	0.6	10.4	3.6	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	2.7	0.0	3.1	0.2	1.1	0.7	7.4	6.9	7.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.6	0.0	0.0	28.1	0.0	30.5	73.6	18.8	18.8	34.9	14.7	14.5
LnGrp LOS	D	A	A	C	A	C	E	B	B	C	B	B
Approach Vol, veh/h		61			367			250			1743	
Approach Delay, s/veh		46.6			29.4			19.9			19.4	
Approach LOS		D			C			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.2	24.1		7.1	4.4	42.0		15.8				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	25.0	17.0		16.0	4.0	38.0		16.0				
Max Q Clear Time (g_c+I1), s	17.4	4.7		4.3	2.2	20.0		9.7				
Green Ext Time (p_c), s	0.8	1.0		0.2	0.0	9.0		0.9				

Intersection Summary												
HCM 6th Ctrl Delay	21.6											
HCM 6th LOS	C											

Notes

User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕		↕		↕	
Traffic Vol, veh/h	0	325	50	252	370	0	20	0	187	0	1	0
Future Vol, veh/h	0	325	50	252	370	0	20	0	187	0	1	0
Conflicting Peds, #/hr	5	0	5	5	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	353	54	274	402	0	22	0	203	0	1	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	407	0	0	412	0	0	1336	-	385	1437	1367	407
Stage 1	-	-	-	-	-	-	385	-	-	955	955	-
Stage 2	-	-	-	-	-	-	951	-	-	482	412	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	-	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	-	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1152	-	-	1147	-	-	130	0	663	111	147	644
Stage 1	-	-	-	-	-	-	638	0	-	310	337	-
Stage 2	-	-	-	-	-	-	312	0	-	565	594	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1147	-	-	1142	-	-	98	-	660	58	101	641
Mov Cap-2 Maneuver	-	-	-	-	-	-	98	-	-	58	101	-
Stage 1	-	-	-	-	-	-	635	-	-	309	232	-
Stage 2	-	-	-	-	-	-	215	-	-	391	592	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			3.7			16.7			41		
HCM LOS							C			E		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	98	660	1147	-	-	1142	-	-	101			
HCM Lane V/C Ratio	0.222	0.308	-	-	-	0.24	-	-	0.011			
HCM Control Delay (s)	51.9	12.9	0	-	-	9.1	0	-	41			
HCM Lane LOS	F	B	A	-	-	A	A	-	E			
HCM 95th %tile Q(veh)	0.8	1.3	0	-	-	0.9	-	-	0			

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	522	14	77	498	13	83
Future Vol, veh/h	522	14	77	498	13	83
Conflicting Peds, #/hr	0	25	25	0	25	25
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	549	15	81	524	14	87
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	589	0	1293	607
Stage 1	-	-	-	-	582	-
Stage 2	-	-	-	-	711	-
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	-	-	986	-	180	496
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	487	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	965	-	152	476
Mov Cap-2 Maneuver	-	-	-	-	152	-
Stage 1	-	-	-	-	547	-
Stage 2	-	-	-	-	421	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	1.2		18.4		
HCM LOS				C		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	369	-	-	965	-	
HCM Lane V/C Ratio	0.274	-	-	0.084	-	
HCM Control Delay (s)	18.4	-	-	9.1	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	1.1	-	-	0.3	-	

AM Existing + Project
12: I-5 SB Ramp & La Costa Ave

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑	↑
Traffic Volume (veh/h)	0	601	87	547	445	0	0	0	0	492	10	171
Future Volume (veh/h)	0	601	87	547	445	0	0	0	0	492	10	171
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00				1.00		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	613	89	558	454	0				509	0	174
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1539	223	648	2589	0				651	0	270
Arrive On Green	0.00	0.50	0.50	0.31	1.00	0.00				0.18	0.00	0.18
Sat Flow, veh/h	0	3193	449	3456	3647	0				3563	0	1479
Grp Volume(v), veh/h	0	351	351	558	454	0				509	0	174
Grp Sat Flow(s),veh/h/ln	0	1777	1772	1728	1777	0				1781	0	1479
Q Serve(g_s), s	0.0	11.1	11.2	13.7	0.0	0.0				12.3	0.0	9.8
Cycle Q Clear(g_c), s	0.0	11.1	11.2	13.7	0.0	0.0				12.3	0.0	9.8
Prop In Lane	0.00		0.25	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	882	880	648	2589	0				651	0	270
V/C Ratio(X)	0.00	0.40	0.40	0.86	0.18	0.00				0.78	0.00	0.64
Avail Cap(c_a), veh/h	0	882	880	845	2589	0				1069	0	444
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.91	0.91	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.2	14.2	29.8	0.0	0.0				35.1	0.0	34.1
Incr Delay (d2), s/veh	0.0	1.3	1.4	6.6	0.1	0.0				2.1	0.0	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.6	4.6	5.4	0.0	0.0				5.4	0.0	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.6	15.6	36.4	0.1	0.0				37.2	0.0	36.6
LnGrp LOS	A	B	B	D	A	A				D	A	D
Approach Vol, veh/h		702			1012						683	
Approach Delay, s/veh		15.6			20.1						37.0	
Approach LOS		B			C						D	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	20.9	48.7		20.4		69.6						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	22.0	29.0		27.0		55.0						
Max Q Clear Time (g_c+I1), s	15.7	13.2		14.3		2.0						
Green Ext Time (p_c), s	1.2	4.0		2.2		3.4						



















Intersection Summary		
HCM 6th Ctrl Delay		23.6
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

AM Existing + Project
13: I-5 NB Ramp & La Costa Ave

HCM 6th Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	163	897	0	0	926	477	77	1	715	0	0	0
Future Volume (veh/h)	163	897	0	0	926	477	77	1	715	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		0.95	1.00		0.93			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	170	934	0	0	965	497	80	1	745			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	203	2172	0	0	2313	679	528	7	778			
Arrive On Green	0.23	1.00	0.00	0.00	0.45	0.45	0.30	0.30	0.30			
Sat Flow, veh/h	1781	3647	0	0	5274	1500	1760	22	2593			
Grp Volume(v), veh/h	170	934	0	0	965	497	81	0	745			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1702	1500	1782	0	1296			
Q Serve(g_s), s	8.2	0.0	0.0	0.0	11.5	24.4	3.0	0.0	25.4			
Cycle Q Clear(g_c), s	8.2	0.0	0.0	0.0	11.5	24.4	3.0	0.0	25.4			
Prop In Lane	1.00		0.00	0.00		1.00	0.99		1.00			
Lane Grp Cap(c), veh/h	203	2172	0	0	2313	679	535	0	778			
V/C Ratio(X)	0.84	0.43	0.00	0.00	0.42	0.73	0.15	0.00	0.96			
Avail Cap(c_a), veh/h	297	2172	0	0	2313	679	535	0	778			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.83	0.83	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	34.0	0.0	0.0	0.0	16.6	20.1	23.1	0.0	30.9			
Incr Delay (d2), s/veh	11.0	0.5	0.0	0.0	0.6	6.8	0.1	0.0	22.5			
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	3.7	0.2	0.0	0.0	4.4	9.3	1.3	0.0	10.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.0	0.5	0.0	0.0	17.2	27.0	23.2	0.0	53.4			
LnGrp LOS	D	A	A	A	B	C	C	A	D			
Approach Vol, veh/h		1104			1462			826				
Approach Delay, s/veh		7.4			20.5			50.4				
Approach LOS		A			C			D				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		59.0			14.2	44.8		31.0				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		55.0			15.0	36.0		27.0				
Max Q Clear Time (g_c+I1), s		2.0			10.2	26.4		27.4				
Green Ext Time (p_c), s		8.5			0.2	5.8		0.0				
Intersection Summary												
HCM 6th Ctrl Delay					23.5							
HCM 6th LOS					C							

PM Existing + Project
1: Avenida Encinas & Carlsbad Blvd SB



















Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↘				↙	↕↕
Traffic Volume (vph)	135	0	0	0	13	517
Future Volume (vph)	135	0	0	0	13	517
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0				4.0	4.0
Lane Util. Factor	0.97				1.00	0.95
Frbp, ped/bikes	1.00				1.00	1.00
Flpb, ped/bikes	1.00				0.55	1.00
Frt	1.00				1.00	1.00
Flt Protected	0.95				0.95	1.00
Satd. Flow (prot)	3433				976	3539
Flt Permitted	0.95				0.95	1.00
Satd. Flow (perm)	3433				976	3539
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor (vph)	115%	100%	100%	100%	100%	100%
Adj. Flow (vph)	174	0	0	0	15	581
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	174	0	0	0	15	581
Confl. Peds. (#/hr)		15			15	
Confl. Bikes (#/hr)		10		10		
Turn Type	Prot				Prot	NA
Protected Phases	8				1	6
Permitted Phases						
Actuated Green, G (s)	9.4				0.6	40.6
Effective Green, g (s)	9.4				0.6	40.6
Actuated g/C Ratio	0.15				0.01	0.64
Clearance Time (s)	4.0				4.0	4.0
Vehicle Extension (s)	3.0				3.0	3.0
Lane Grp Cap (vph)	511				9	2277
v/s Ratio Prot	c0.05				c0.02	c0.16
v/s Ratio Perm						
v/c Ratio	0.34				1.67	0.26
Uniform Delay, d1	24.1				31.2	4.8
Progression Factor	0.23				1.00	1.00
Incremental Delay, d2	0.4				565.3	0.1
Delay (s)	5.8				596.6	4.9
Level of Service	A				F	A
Approach Delay (s)	5.8		0.0			19.8
Approach LOS	A		A			B
Intersection Summary						
HCM 2000 Control Delay			16.6		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.30			
Actuated Cycle Length (s)			63.1		Sum of lost time (s)	16.0
Intersection Capacity Utilization			28.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						















LOS Engineering, Inc.

PM Existing + Project
2: Carsbad Blvd NB & Avenida Encinas

HCM Signalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	2	11	0	0	135	11	0	647	169	0	0	0	
Future Volume (vph)	2	11	0	0	135	11	0	647	169	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0			4.0			4.0	4.0				
Lane Util. Factor		1.00			0.95			0.95	1.00				
Frbp, ped/bikes		1.00			1.00			1.00	0.93				
Flpb, ped/bikes		1.00			1.00			1.00	1.00				
Frt		1.00			0.99			1.00	0.85				
Flt Protected		0.99			1.00			1.00	1.00				
Satd. Flow (prot)		1850			3482			3539	1468				
Flt Permitted		0.99			1.00			1.00	1.00				
Satd. Flow (perm)		1850			3482			3539	1468				
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.80	0.89	0.89	0.89	0.89	0.89	0.89	
Adj. Flow (vph)	2	12	0	0	152	14	0	727	190	0	0	0	
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	162	0	0	0	
Lane Group Flow (vph)	0	14	0	0	157	0	0	727	28	0	0	0	
Confl. Peds. (#/hr)			15			15			15				
Confl. Bikes (#/hr)			10			10			10				
Turn Type	Split	NA			NA			NA	custom				
Protected Phases	7	7			8			2					
Permitted Phases									8				
Actuated Green, G (s)		1.1			9.4			36.0	9.4				
Effective Green, g (s)		1.1			9.4			36.0	9.4				
Actuated g/C Ratio		0.02			0.15			0.57	0.15				
Clearance Time (s)		4.0			4.0			4.0	4.0				
Vehicle Extension (s)		3.0			3.0			3.0	3.0				
Lane Grp Cap (vph)		32			518			2019	218				
v/s Ratio Prot		c0.01			c0.05			c0.21					
v/s Ratio Perm									0.02				
v/c Ratio		0.44			0.30			0.36	0.13				
Uniform Delay, d1		30.7			23.9			7.3	23.3				
Progression Factor		1.56			1.00			1.00	1.00				
Incremental Delay, d2		9.3			0.3			0.5	0.3				
Delay (s)		57.3			24.3			7.8	23.6				
Level of Service		E			C			A	C				
Approach Delay (s)		57.3			24.3			11.1			0.0		
Approach LOS		E			C			B			A		
Intersection Summary													
HCM 2000 Control Delay			13.7									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.35										
Actuated Cycle Length (s)			63.1									Sum of lost time (s)	16.0
Intersection Capacity Utilization			32.3%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

PM Existing + Project
3: N Coast Hwy & La Costa Ave

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (veh/h)	249	304	614	252	199	349
Future Volume (veh/h)	249	304	614	252	199	349
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	280	0	690	0	224	392
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	326		2557		578	2557
Arrive On Green	0.18	0.00	0.72	0.00	0.72	0.72
Sat Flow, veh/h	1781	1585	3647	1585	752	3647
Grp Volume(v), veh/h	280	0	690	0	224	392
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1585	752	1777
Q Serve(g_s), s	12.5	0.0	5.5	0.0	12.1	2.9
Cycle Q Clear(g_c), s	12.5	0.0	5.5	0.0	17.7	2.9
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	326		2557		578	2557
V/C Ratio(X)	0.86		0.27		0.39	0.15
Avail Cap(c_a), veh/h	500		2557		578	2557
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	32.5	0.0	4.0	0.0	7.1	3.6
Incr Delay (d2), s/veh	9.1	0.0	0.3	0.0	2.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	0.0	1.6	0.0	1.9	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	41.6	0.0	4.3	0.0	9.0	3.8
LnGrp LOS	D		A		A	A
Approach Vol, veh/h	280	A	690	A		616
Approach Delay, s/veh	41.6		4.3			5.7
Approach LOS	D		A			A
Timer - Assigned Phs		2			6	8
Phs Duration (G + Y + Rc), s		63.0			63.0	19.0
Change Period (Y + Rc), s		4.0			4.0	4.0
Max Green Setting (Gmax), s		59.0			59.0	23.0
Max Q Clear Time (g_c + I1), s		7.5			19.7	14.5
Green Ext Time (p_c), s		5.7			5.0	0.5
Intersection Summary						
HCM 6th Ctrl Delay			11.4			
HCM 6th LOS			B			
Notes						
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.						

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↖	↑	↗↖	
Traffic Vol, veh/h	0	76	41	886	563	62
Future Vol, veh/h	0	76	41	886	563	62
Conflicting Peds, #/hr	20	20	20	0	0	20
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	83	45	963	612	67
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	380	699	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.93	4.13	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	0	619	896	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	599	881	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	12	0.4	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	881	-	599	-	-	
HCM Lane V/C Ratio	0.051	-	0.138	-	-	
HCM Control Delay (s)	9.3	-	12	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-	

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑↑	
Traffic Vol, veh/h	32	17	17	836	577	26
Future Vol, veh/h	32	17	17	836	577	26
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	75	-	-	-
Veh in Median Storage, #	1	-	-	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	35	19	19	919	634	29
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1626	352	673	0	-	0
Stage 1	659	-	-	-	-	-
Stage 2	967	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	102	645	916	-	-	-
Stage 1	477	-	-	-	-	-
Stage 2	368	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	98	634	908	-	-	-
Mov Cap-2 Maneuver	230	-	-	-	-	-
Stage 1	463	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	19.9	0.2	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	908	-	295	-	-	
HCM Lane V/C Ratio	0.021	-	0.183	-	-	
HCM Control Delay (s)	9	-	19.9	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-	






















Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑	↑↑	
Traffic Vol, veh/h	38	57	7	815	583	13
Future Vol, veh/h	38	57	7	815	583	13
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	58	7	832	595	13
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1468	324	618	0	-	0
Stage 1	612	-	-	-	-	-
Stage 2	856	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	129	672	960	-	-	-
Stage 1	505	-	-	-	-	-
Stage 2	415	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	126	661	952	-	-	-
Mov Cap-2 Maneuver	262	-	-	-	-	-
Stage 1	497	-	-	-	-	-
Stage 2	412	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	16.4	0.1	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	952	-	411	-	-	
HCM Lane V/C Ratio	0.008	-	0.236	-	-	
HCM Control Delay (s)	8.8	-	16.4	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0	-	0.9	-	-	

Intersection							
Int Delay, s/veh	0.1						
Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations	↔			↑	↔	↕↔	
Traffic Vol, veh/h	0	11	6	814	117	512	8
Future Vol, veh/h	0	11	6	814	117	512	8
Conflicting Peds, #/hr	10	10	10	0	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	-	-	50	-	-
Veh in Median Storage, #	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	0	11	6	839	121	528	8
Major/Minor	Minor2	Major1	Major2				
Conflicting Flow All	1645	288	546	0	-	-	0
Stage 1	784	-	-	-	-	-	-
Stage 2	861	-	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-	-
Pot Cap-1 Maneuver	99	709	1021	-	-	-	-
Stage 1	411	-	-	-	-	-	-
Stage 2	413	-	-	-	-	-	-
Platoon blocked, %				-	-	-	-
Mov Cap-1 Maneuver	96	697	1012	-	-	-	-
Mov Cap-2 Maneuver	96	-	-	-	-	-	-
Stage 1	403	-	-	-	-	-	-
Stage 2	410	-	-	-	-	-	-
Approach	EB	NB	SB				
HCM Control Delay, s	10.3	0.1					
HCM LOS	B						
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBU	SBT	SBR	
Capacity (veh/h)	1012	-	697	-	-	-	
HCM Lane V/C Ratio	0.006	-	0.016	-	-	-	
HCM Control Delay (s)	8.6	-	10.3	-	-	-	
HCM Lane LOS	A	-	B	-	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	-	

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	18	33	707	488	36
Future Vol, veh/h	14	18	33	707	488	36
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	19	34	736	508	38
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1351	293	556	0	-	0
Stage 1	537	-	-	-	-	-
Stage 2	814	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	153	704	1013	-	-	-
Stage 1	551	-	-	-	-	-
Stage 2	435	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	146	692	1005	-	-	-
Mov Cap-2 Maneuver	283	-	-	-	-	-
Stage 1	528	-	-	-	-	-
Stage 2	432	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	14.2	0.4	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1005	-	424	-	-	
HCM Lane V/C Ratio	0.034	-	0.079	-	-	
HCM Control Delay (s)	8.7	-	14.2	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-	

PM Existing + Project
9: N. Coast Hwy 101 & Leucadia Blvd

HCM 6th Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	45	13	165	30	190	7	603	168	272	418	3
Future Volume (veh/h)	24	45	13	165	30	190	7	603	168	272	418	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.93	1.00		0.96	1.00		0.94
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	26	48	14	177	32	204	8	648	181	292	449	3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	35	64	19	344	40	253	15	1172	503	345	1864	12
Arrive On Green	0.07	0.07	0.07	0.19	0.19	0.19	0.01	0.33	0.33	0.19	0.52	0.52
Sat Flow, veh/h	523	966	282	1781	205	1307	1781	3554	1527	1781	3617	24
Grp Volume(v), veh/h	88	0	0	177	0	236	8	648	181	292	220	232
Grp Sat Flow(s),veh/h/ln	1771	0	0	1781	0	1513	1781	1777	1527	1781	1777	1864
Q Serve(g_s), s	3.6	0.0	0.0	6.6	0.0	11.0	0.3	11.0	6.6	11.7	5.1	5.1
Cycle Q Clear(g_c), s	3.6	0.0	0.0	6.6	0.0	11.0	0.3	11.0	6.6	11.7	5.1	5.1
Prop In Lane	0.30		0.16	1.00		0.86	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	117	0	0	344	0	292	15	1172	503	345	916	961
V/C Ratio(X)	0.75	0.00	0.00	0.51	0.00	0.81	0.55	0.55	0.36	0.85	0.24	0.24
Avail Cap(c_a), veh/h	384	0	0	386	0	328	97	1172	503	604	916	961
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.8	0.0	0.0	26.6	0.0	28.4	36.4	20.3	18.8	28.7	9.9	9.9
Incr Delay (d2), s/veh	9.2	0.0	0.0	1.2	0.0	12.6	28.3	1.9	2.0	5.7	0.6	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	0.0	0.0	2.8	0.0	4.8	0.3	4.6	2.5	5.3	1.9	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.1	0.0	0.0	27.8	0.0	41.0	64.7	22.1	20.8	34.4	10.5	10.5
LnGrp LOS	D	A	A	C	A	D	E	C	C	C	B	B
Approach Vol, veh/h		88			413			837			744	
Approach Delay, s/veh		43.1			35.4			22.3			19.9	
Approach LOS		D			D			C			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	18.3	28.3		8.9	4.6	42.0		18.3				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	25.0	17.0		16.0	4.0	38.0		16.0				
Max Q Clear Time (g_c+I1), s	13.7	13.0		5.6	2.3	7.1		13.0				
Green Ext Time (p_c), s	0.7	1.8		0.2	0.0	2.9		0.6				

Intersection Summary

HCM 6th Ctrl Delay	24.9
HCM 6th LOS	C

Notes

- User approved volume balancing among the lanes for turning movement.
- User approved changes to right turn type.

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕		↕		↕	
Traffic Vol, veh/h	1	380	70	131	414	1	59	0	155	0	0	0
Future Vol, veh/h	1	380	70	131	414	1	59	0	155	0	0	0
Conflicting Peds, #/hr	5	0	5	5	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	413	76	142	450	1	64	0	168	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	456	0	0	494	0	0	1193	-	456	1277	1236	456
Stage 1	-	-	-	-	-	-	458	-	-	740	740	-
Stage 2	-	-	-	-	-	-	735	-	-	537	496	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	-	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	-	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1105	-	-	1070	-	-	164	0	604	143	176	604
Stage 1	-	-	-	-	-	-	583	0	-	409	423	-
Stage 2	-	-	-	-	-	-	411	0	-	528	545	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1100	-	-	1066	-	-	141	-	601	88	143	601
Mov Cap-2 Maneuver	-	-	-	-	-	-	141	-	-	88	143	-
Stage 1	-	-	-	-	-	-	580	-	-	407	346	-
Stage 2	-	-	-	-	-	-	338	-	-	380	542	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			2.1			23.5			0		
HCM LOS							C			A		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	141	601	1100	-	-	1066	-	-	-
HCM Lane V/C Ratio	0.455	0.28	0.001	-	-	0.134	-	-	-
HCM Control Delay (s)	50.2	13.3	8.3	0	-	8.9	0	-	0
HCM Lane LOS	F	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	2.1	1.1	0	-	-	0.5	-	-	-

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶			↷	↶	↷
Traffic Vol, veh/h	572	15	63	602	15	50
Future Vol, veh/h	572	15	63	602	15	50
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	596	16	66	627	16	52
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	622	0	1383	624
Stage 1	-	-	-	-	614	-
Stage 2	-	-	-	-	769	-
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	-	-	959	-	158	485
Stage 1	-	-	-	-	540	-
Stage 2	-	-	-	-	457	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	951	-	139	477
Mov Cap-2 Maneuver	-	-	-	-	139	-
Stage 1	-	-	-	-	536	-
Stage 2	-	-	-	-	405	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0.9	20.1			
HCM LOS			C			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	306	-	-	951	-	
HCM Lane V/C Ratio	0.221	-	-	0.069	-	
HCM Control Delay (s)	20.1	-	-	9.1	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	0.8	-	-	0.2	-	

PM Existing + Project
12: I-5 SB Ramp & La Costa Ave

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑	↑
Traffic Volume (veh/h)	0	565	94	705	537	0	0	0	0	497	1	166
Future Volume (veh/h)	0	565	94	705	537	0	0	0	0	497	1	166
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00				1.00		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	608	101	758	577	0				535	0	178
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	2	2	2	0				2	2	2
Cap, veh/h	0	1344	223	806	2562	0				678	0	282
Arrive On Green	0.00	0.44	0.44	0.39	1.00	0.00				0.19	0.00	0.19
Sat Flow, veh/h	0	3126	502	3456	3647	0				3563	0	1482
Grp Volume(v), veh/h	0	356	353	758	577	0				535	0	178
Grp Sat Flow(s),veh/h/ln	0	1777	1758	1728	1777	0				1781	0	1482
Q Serve(g_s), s	0.0	12.5	12.6	19.0	0.0	0.0				12.9	0.0	9.9
Cycle Q Clear(g_c), s	0.0	12.5	12.6	19.0	0.0	0.0				12.9	0.0	9.9
Prop In Lane	0.00		0.29	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	787	779	806	2562	0				678	0	282
V/C Ratio(X)	0.00	0.45	0.45	0.94	0.23	0.00				0.79	0.00	0.63
Avail Cap(c_a), veh/h	0	787	779	806	2562	0				1069	0	445
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.87	0.87	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	17.4	17.5	26.9	0.0	0.0				34.7	0.0	33.5
Incr Delay (d2), s/veh	0.0	1.9	1.9	16.9	0.2	0.0				2.1	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.3	5.3	8.1	0.1	0.0				5.7	0.0	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	19.3	19.4	43.8	0.2	0.0				36.8	0.0	35.9
LnGrp LOS	A	B	B	D	A	A				D	A	D
Approach Vol, veh/h		709			1335						713	
Approach Delay, s/veh		19.3			24.9						36.6	
Approach LOS		B			C						D	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	25.0	43.9		21.1		68.9						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	21.0	30.0		27.0		55.0						
Max Q Clear Time (g_c+I), s	21.0	14.6		14.9		2.0						
Green Ext Time (p_c), s	0.0	4.0		2.2		4.6						



















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

Notes

User approved volume balancing among the lanes for turning movement.

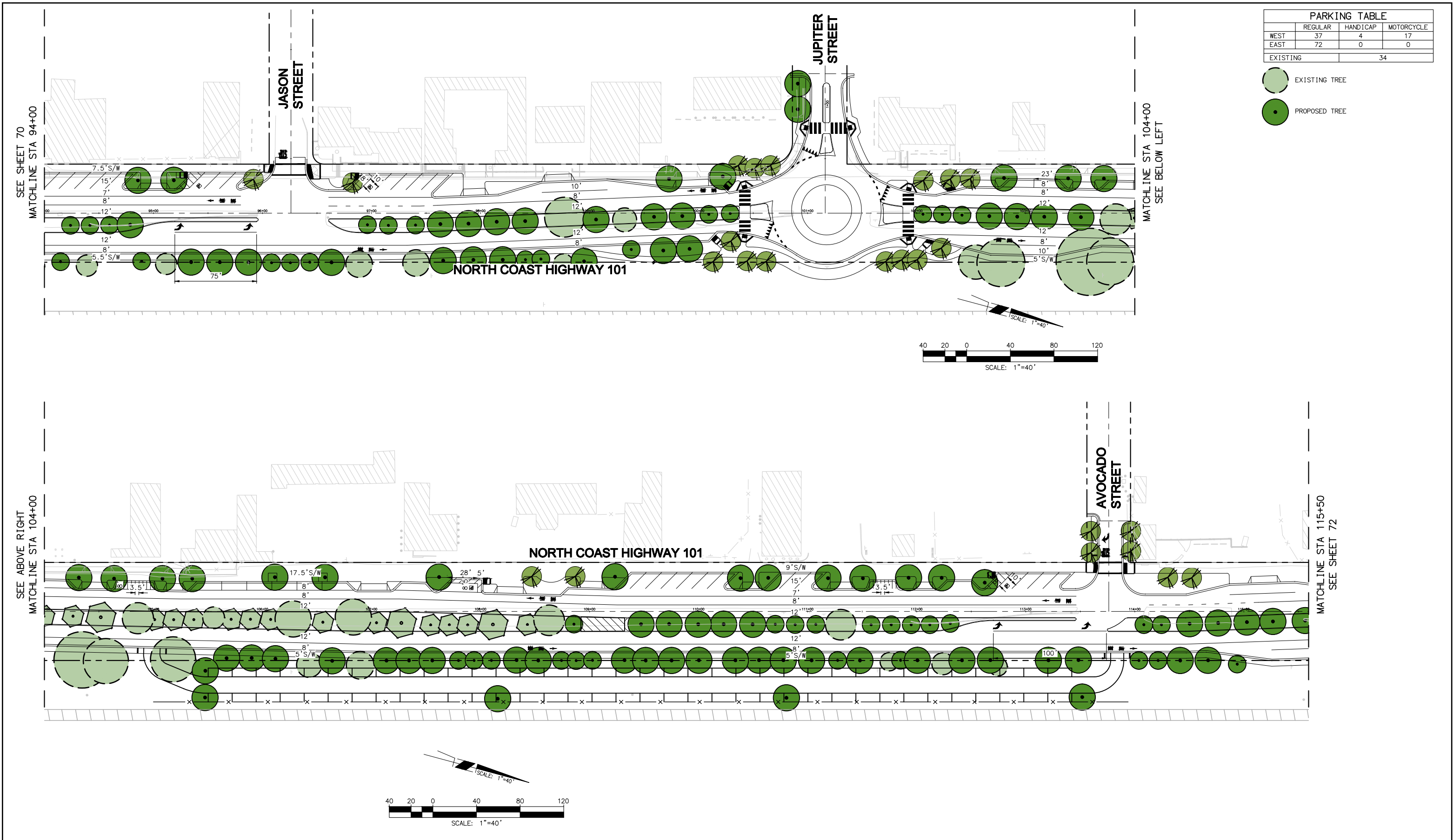
PM Existing + Project
13: I-5 NB Ramp & La Costa Ave

HCM 6th Signalized Intersection Summary



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	878	0	0	1100	414	132	1	639	0	0	0
Future Volume (veh/h)	171	878	0	0	1100	414	132	1	639	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		0.95	1.00		0.93			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	178	915	0	0	1146	431	138	1	666			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	211	2232	0	0	2376	699	501	4	732			
Arrive On Green	0.24	1.00	0.00	0.00	0.47	0.47	0.28	0.28	0.28			
Sat Flow, veh/h	1781	3647	0	0	5274	1501	1769	13	2585			
Grp Volume(v), veh/h	178	915	0	0	1146	431	139	0	666			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1702	1501	1782	0	1292			
Q Serve(g_s), s	8.6	0.0	0.0	0.0	13.9	19.4	5.5	0.0	22.4			
Cycle Q Clear(g_c), s	8.6	0.0	0.0	0.0	13.9	19.4	5.5	0.0	22.4			
Prop In Lane	1.00		0.00	0.00		1.00	0.99		1.00			
Lane Grp Cap(c), veh/h	211	2232	0	0	2376	699	505	0	732			
V/C Ratio(X)	0.85	0.41	0.00	0.00	0.48	0.62	0.28	0.00	0.91			
Avail Cap(c_a), veh/h	297	2232	0	0	2376	699	535	0	775			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.78	0.78	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	33.6	0.0	0.0	0.0	16.6	18.0	25.1	0.0	31.2			
Incr Delay (d2), s/veh	11.6	0.4	0.0	0.0	0.7	4.1	0.3	0.0	14.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	3.9	0.1	0.0	0.0	5.3	7.1	2.3	0.0	8.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.2	0.4	0.0	0.0	17.3	22.1	25.4	0.0	45.5			
LnGrp LOS	D	A	A	A	B	C	C	A	D			
Approach Vol, veh/h		1093			1577			805				
Approach Delay, s/veh		7.7			18.6			42.0				
Approach LOS		A			B			D				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		60.5			14.6	45.9		29.5				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		55.0			15.0	36.0		27.0				
Max Q Clear Time (g_c+I1), s		2.0			10.6	21.4		24.4				
Green Ext Time (p_c), s		8.3			0.2	8.5		1.1				
Intersection Summary												
HCM 6th Ctrl Delay					20.6							
HCM 6th LOS					C							

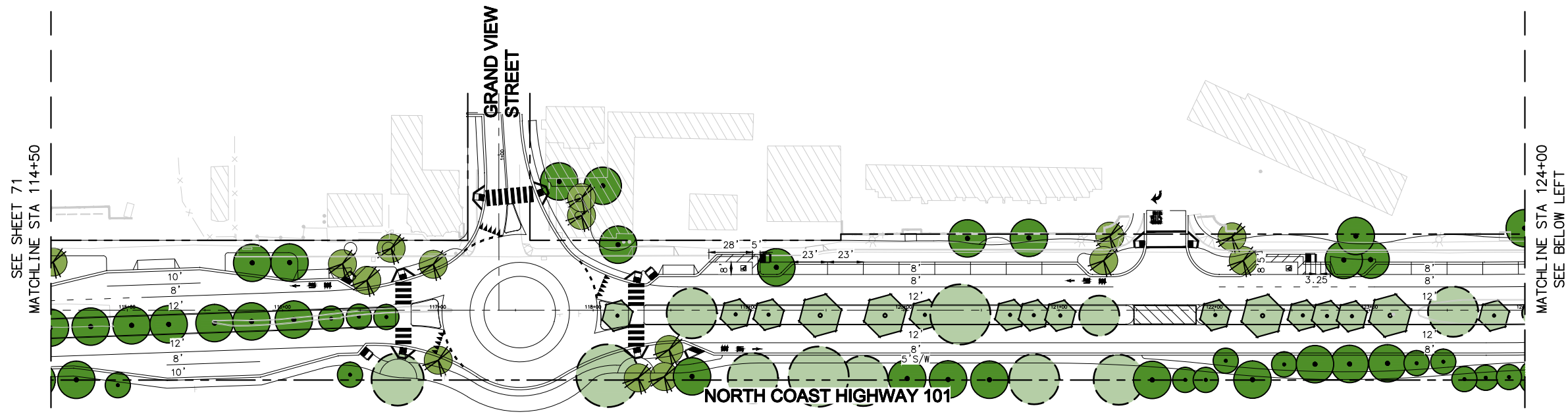
Appendix L

Cumulative Project Roadway Changes



PARKING TABLE			
	REGULAR	HANDICAP	MOTORCYCLE
WEST	24	3	5
EAST	0	0	0
EXISTING	24		

-  EXISTING TREE
-  PROPOSED TREE



SEE SHEET 71
MATCHLINE STA 114+50

MATCHLINE STA 124+00
SEE BELOW LEFT

NORTH COAST HIGHWAY 101

GRAND VIEW STREET

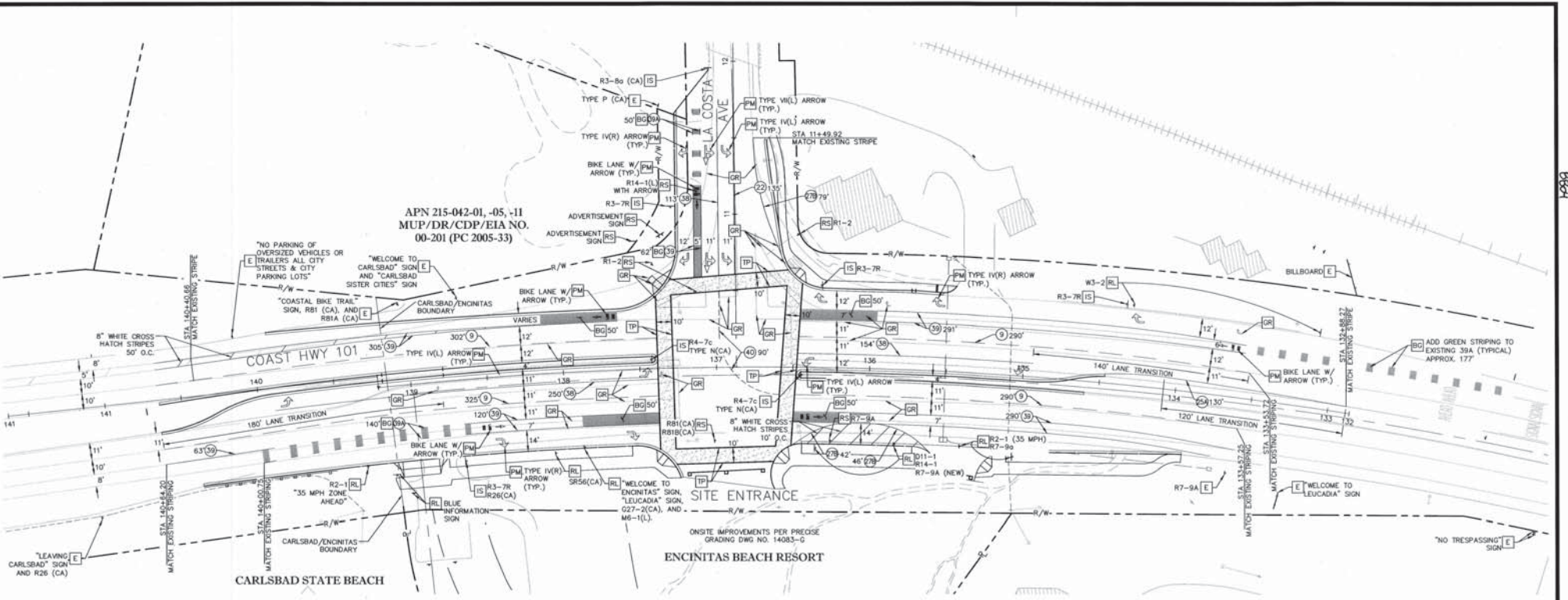
BISHOPS GATE ROAD

SEE ABOVE RIGHT
MATCHLINE STA 124+00

MATCHLINE STA 134+00
SEE SHEET 73

NORTH COAST HIGHWAY 101

APN 215-042-01, -05, -11
MUP/DR/CDP/EIA NO.
00-201 (PC 2005-33)

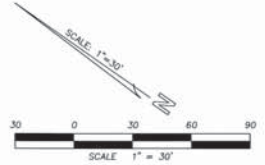


PLAN VIEW
SCALE 1" = 30'

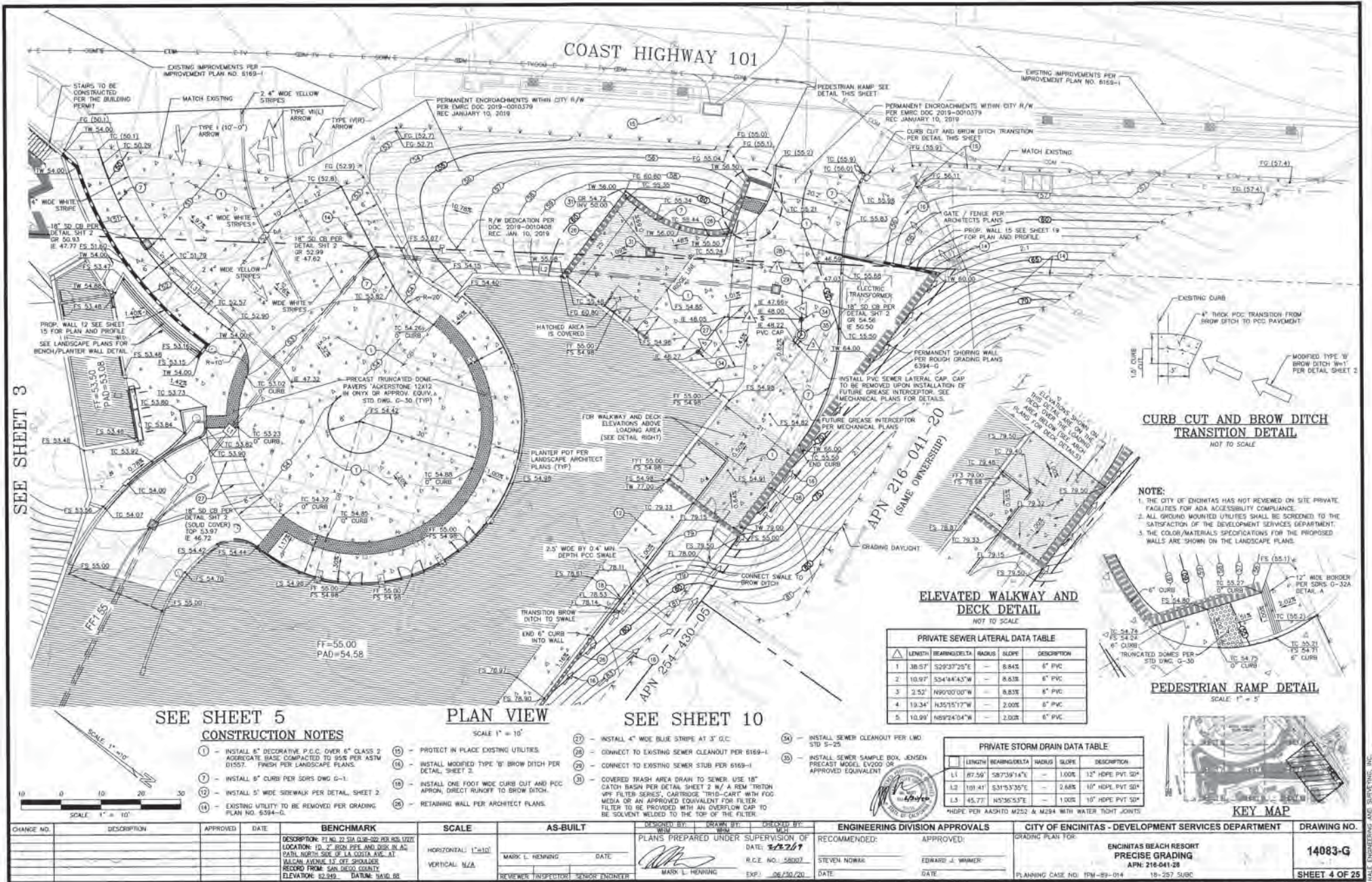
LEGEND

- EXISTING CURB
- EXISTING STRIPING
- PROPOSED STRIPING
- PROPOSED GREEN BIKE LANE TREATMENT (DIMS-FLINT GREEN FAST DRY TRAFFIC PAINT OR APPROV. EQUIV. AND SIVARCO REFLEX GLASS BEADS OR APPROV. EQUIV.)
- EXISTING STRIPING TO REMAIN
- EXISTING SIGN TO REMAIN
- INSTALL SIGN - TYPE AS NOTED ON PLAN
- INSTALL STRIPING PER CALTRANS STANDARD PLANS. NUMBER REFERS TO DETAIL
- PAVEMENT MARKING - TYPE AS NOTED ON PLAN
- RELOCATE SIGN BEHIND NEW CURB UNLESS OTHERWISE SPECIFIED
- REMOVE EXISTING STRIPING BY GRINDING. ALL DEBRIS TO BE REMOVED AT THE END OF EACH WORK DAY.
- REMOVE AND SALVAGE
- 12" THERMOPLASTIC CROSSWALK LINES (TYPICAL FOR INTERSECTION)

SIGN LEGEND



CHANGE NO.	DESCRIPTION	APPROVED	DATE	BENCHMARK	SCALE	AS-BUILT	DESIGNED BY	DRAWN BY	CHECKED BY	ENGINEERING DIVISION APPROVALS	CITY OF ENCINITAS - DEVELOPMENT SERVICES DEPARTMENT	DRAWING NO.	
	DESCRIPTION: ET NO. 22 STA. 038+02.2 PER 802.1727. LOCATION: 2" BORN PIPE AND DISK IN AC DASH, NORTH SIDE OF LA COSTA AVE. AT VALCAN AVENUE 12' OFF SHOULDER RECORD FROM: SAN DIEGO COUNTY ELEVATION: 62.342 DATUM: MGS00.BB				HORIZONTAL: N/A VERTICAL: N/A	MARK L. HENNING	DATE	MARK L. HENNING	DATE: 2/8/12 R.C.E. NO.: 58007	RECOMMENDED: STEVEN NOWAK DATE: 2/1/12	APPROVED: [Signature] DATE: 3/1/2012	ENCINITAS BEACH HOTEL COAST HIGHWAY 101 WIDENING PLANNING CASE NO: TFM-89-014 APN: 216-041-26	6169-1
						REVIEWER	INSPECTOR	SENIOR ENGINEER	EXP: 06/30/20			SHEET 13 OF 20	



COAST HIGHWAY 101

SEE SHEET 5

PLAN VIEW

SEE SHEET 10

CONSTRUCTION NOTES

- 1 - INSTALL 6" DECORATIVE P.C.C. OVER 6" CLASS 2 AGGREGATE BASE COMPACTED TO 95% PER ASTM D1557. FINISH PER LANDSCAPE PLANS.
- 2 - INSTALL 6" CURB PER SORS DWG G-1.
- 3 - INSTALL 5" WIDE SIDEWALK PER DETAIL, SHEET 2.
- 4 - EXISTING UTILITY TO BE REMOVED PER GRADING PLAN NO. 5394-G.
- 5 - PROTECT IN PLACE EXISTING UTILITIES.
- 6 - INSTALL MODIFIED TYPE 'B' BROW DITCH PER DETAIL, SHEET 2.
- 7 - INSTALL ONE FOOT WIDE CURB CUT AND PCC APRON, DIRECT RUNOFF TO BROW DITCH.
- 8 - RETAINING WALL PER ARCHITECT PLANS.

- 9 - INSTALL 4" WIDE BLUE STRIPE AT 3' O.C.
- 10 - CONNECT TO EXISTING SEWER CLEANOUT PER 6169-I.
- 11 - CONNECT TO EXISTING SEWER STUB PER 6169-I.
- 12 - COVERED TRASH AREA DRAIN TO SEWER. USE 18" CATCH BASIN PER DETAIL SHEET 2 W/ A REM. TRITON VPI FILTER SERIES, CARTRIDGE TRID-CART WITH FOG MEDIA OR AN APPROVED EQUIVALENT FOR FILTER. FILTER TO BE PROVIDED WITH AN OVERFLOW CAP TO BE SOLVENT WELDED TO THE TOP OF THE FILTER.
- 13 - INSTALL SEWER CLEANOUT PER LMO STD 5-25.
- 14 - INSTALL SEWER SAMPLE BOX, JENSEN PRECAST MODEL EV000 OR APPROVED EQUIVALENT.

PRIVATE SEWER LATERAL DATA TABLE

NO.	LENGTH	BEARING/DELTA	RADIUS	SLOPE	DESCRIPTION
1	38.57'	S29°37'20"E	-	0.84%	6" PVC
2	10.97'	S24°14'43"W	-	0.83%	6" PVC
3	2.52'	N90°00'00"W	-	0.83%	6" PVC
4	19.34'	N35°15'17"W	-	2.00%	6" PVC
5	10.99'	N69°24'04"W	-	2.00%	6" PVC

PRIVATE STORM DRAIN DATA TABLE

NO.	LENGTH	BEARING/DELTA	RADIUS	SLOPE	DESCRIPTION
L1	87.50'	S87°39'14"E	-	1.00%	12" HDPE PVT 50"
L2	101.41'	S31°53'35"E	-	2.48%	10" HDPE PVT 50"
L3	45.77'	N53°05'57"E	-	1.00%	10" HDPE PVT 50"

*HDPE PER AASHTO M252 & M254 WITH WATER TIGHT JOINTS

CURB CUT AND BROW DITCH TRANSITION DETAIL

NOT TO SCALE

- NOTE:**
1. THE CITY OF ENCINITAS HAS NOT REVIEWED ON SITE PRIVATE FACILITIES FOR ADA ACCESSIBILITY COMPLIANCE.
 2. ALL GROUND MOUNTED UTILITIES SHALL BE SCREENED TO THE SATISFACTION OF THE DEVELOPMENT SERVICES DEPARTMENT.
 3. THE COLOR/MATERIALS SPECIFICATIONS FOR THE PROPOSED WALLS ARE SHOWN ON THE LANDSCAPE PLANS.

ELEVATED WALKWAY AND DECK DETAIL

NOT TO SCALE

PEDESTRIAN RAMP DETAIL

SCALE: 1" = 5'



CHANGE NO.	DESCRIPTION	APPROVED	DATE	BENCHMARK	SCALE	AS-BUILT	DESIGNED BY	DRAWN BY	PREPARED BY	ENGINEERING DIVISION APPROVALS	CITY OF ENCINITAS - DEVELOPMENT SERVICES DEPARTMENT	DRAWING NO.
					HORIZONTAL: 1"=30' VERTICAL: 1/2"		MARK L. HENNING			RECOMMENDED: STEVEN NOWAK APPROVED: EDWARD J. WIMMER	ENCINITAS BEACH RESORT PRECISE GRADING APN 216-041-28 19-257 SUBC	14083-G
<p>DESCRIPTION: PT. NO. 22 STA. 0+82.00 PER 803.12(2) LOCATION: 10' 2" IRON PIPE AND DECK IN A/C EAST, NORTH SIDE OF LA COSTA AVE. AT WALTON AVENUE 1/2' OFF SHOULDER RECORD FROM: SAN DIEGO COUNTY ELEVATION: 62.89. DATE: 04/10/19</p> <p>PLANS PREPARED UNDER SUPERVISION OF DATE: 3/27/19 R.C.E. NO.: 58267 MARK L. HENNING SENIOR ENGINEER EXP.: 06/30/20</p> <p>PLANNING CASE NO. FPM-89-014 19-257 SUBC</p>												
SHEET 4 OF 25												

Appendix M

Cumulative Project Volumes

1) Carlsbad Blvd SB/Avenida Encinas												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM Cumulative Total	0	0	0	50	25	0	0	0	0	69	0	0
Enc 04-268 Hotel 130r	x	x	x		4	x	x	x	x		x	x
Enc multiple (1)	x	x	x		1	x	x	x	x		x	x
Enc 15-222 48du	x	x	x		1	x	x	x	x		x	x
Enc 18-188 Hotel 17r	x	x	x			1	x	x	x		x	x
Enc 18-135 108beds	x	x	x			1	x	x	x		x	x
	x	x	x				x	x	x		x	x
	x	x	x				x	x	x		x	x
	x	x	x				x	x	x		x	x
	x	x	x				x	x	x		x	x
	x	x	x				x	x	x		x	x
Housing AD08 72 du	x	x	x			1	x	x	x		x	x
	x	x	x				x	x	x		x	x
Carlsbad Newage Hotel	x	x	x	46			x	x	x	31	x	x
Carlsbad Ponto	x	x	x	3	12		x	x	x	37	x	x
Unknown/Distant	x	x	x	1	4		x	x	x	1	x	x
	x	x	x				x	x	x		x	x
	x	x	x				x	x	x		x	x
	x	x	x				x	x	x		x	x
	x	x	x				x	x	x		x	x
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												
PM Cumulative Total	()	()	()	(69)	(27)	()	()	()	()	(68)	()	()
Enc 04-268 Hotel 130r	x	x	x		(6)	x	x	x	x		x	x
Enc multiple (1)	x	x	x		(2)	x	x	x	x		x	x
Enc 15-222 48du	x	x	x		(3)	x	x	x	x		x	x
Enc 18-188 Hotel 17r	x	x	x			(1)	x	x	x		x	x
Enc 18-135 108beds					(1)							
()												
()												
()												
()												
()	x	x	x				x	x	x		x	x
()	x	x	x				x	x	x		x	x
Housing AD08 72 du	x	x	x		(2)		x	x	x		x	x
()	x	x	x				x	x	x		x	x
Carlsbad Newage Hotel	x	x	x	(62)			x	x	x	(41)	x	x
Carlsbad Ponto	x	x	x	(6)	(8)		x	x	x	(26)	x	x
Unknown/Distant	x	x	x	(1)	(4)		x	x	x	(1)	x	x
()	x	x	x				x	x	x		x	x
()	x	x	x				x	x	x		x	x
()	x	x	x				x	x	x		x	x
()	x	x	x				x	x	x		x	x
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												

2) Caliente/SR905 WB Ramp												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM Cumulative Total	0	23	68	0	0	0	1	50	0	0	69	35
Enc 04-268 Hotel 130r	x	3		x	x	x			x	x		
Enc multiple (1)	x	2		x	x	x			x	x		
Enc 15-222 48du	x	2		x	x	x			x	x		
Enc 18-188 Hotel 17r	x	1		x	x	x			x	x		
Enc 18-135 108beds	x			x	x	x			x	x		
0	x			x	x	x			x	x		
0	x			x	x	x			x	x		
0	x			x	x	x			x	x		
0	x			x	x	x			x	x		
0	x			x	x	x			x	x		
0	x			x	x	x			x	x		
0	x			x	x	x			x	x		
Housing AD08 72 du	x	3		x	x	x			x	x		
0	x			x	x	x			x	x		
Carlsbad Newage Hotel	x		47	x	x	x		46	x	x	31	31
Carlsbad Ponto	x	8	20	x	x	x		3	x	x	37	3
Unknown/Distant	x	4	1	x	x	x	1	1	x	x	1	1
0	x			x	x	x			x	x		
0	x			x	x	x			x	x		
0	x			x	x	x			x	x		
0	x			x	x	x			x	x		
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												
PM Cumulative Total	()	(33)	(109)	()	()	()	(1)	(69)	()	()	(68)	(44)
Enc 04-268 Hotel 130r	x	(4)		x	x	x			x	x		
Enc multiple (1)	x	(1)		x	x	x			x	x		
Enc 15-222 48du	x	(1)		x	x	x			x	x		
Enc 18-188 Hotel 17r	x	(1)		x	x	x			x	x		
Enc 18-135 108beds		(1)										
()												
()												
()												
()												
()	x			x	x	x			x	x		
()	x			x	x	x			x	x		
Housing AD08 72 du	x	(1)		x	x	x			x	x		
()	x			x	x	x			x	x		
Carlsbad Newage Hotel	x		(61)	x	x	x		(62)	x	x	(41)	(41)
Carlsbad Ponto	x	(20)	(47)	x	x	x		(6)	x	x	(26)	(2)
Unknown/Distant	x	(4)	(1)	x	x	x	(1)	(1)	x	x	(1)	(1)
()	x			x	x	x			x	x		
()	x			x	x	x			x	x		
()	x			x	x	x			x	x		
()	x			x	x	x			x	x		
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												

3) N. Coast Hwy/La Costa

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM Cumulative Total	7	26	7	62	27	4	3	24	4	9	36	63
Enc 04-268 Hotel 130r	7					4	3	24	4		36	
Enc multiple (1)		1			1							1
Enc 15-222 48du			1	1						2		2
Enc 18-188 Hotel 17r			1	1						1		
Enc 18-135 108beds				1								
0												
0												
0												
0												
0												
0												
Housing AD08 72 du			1	1						3		3
0												
Carlsbad Newage Hotel		12		23	8							35
Carlsbad Ponto		8		34	14							20
Unknown/Distant		5	4	1	4					3		2
0												
0												
0												
0												
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												

PM Cumulative Total	(9)	(39)	(10)	(65)	(25)	(6)	(4)	(32)	(6)	(6)	(47)	(101)
Enc 04-268 Hotel 130r	(9)					(6)	(4)	(32)	(6)		(47)	
Enc multiple (1)		(1)		(1)	(1)							(1)
Enc 15-222 48du			(3)	(3)						(1)		(1)
Enc 18-188 Hotel 17r			(1)	(1)						(1)		
Enc 18-135 108beds				(1)								(1)
()												
()												
()												
()												
()												
Housing AD08 72 du			(2)	(2)						(1)		(1)
()												
Carlsbad Newage Hotel		(15)		(31)	(10)							(46)
Carlsbad Ponto		(18)		(25)	(10)							(49)
Unknown/Distant		(5)	(4)	(1)	(4)					(3)		(2)
()												
()												
()												
()												
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												

4) N. Coast Hwy/Project Access												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM Cumulative Total	0	40	0	0	40	0	0	0	0	0	0	0
Enc 04-268 Hotel 130r		7			4							
Enc multiple (1)		1			1							
Enc 15-222 48du		1			2							
Enc 18-188 Hotel 17r			1			1						
Enc 18-135 108beds												
0												
0												
0												
0												
0												
0												
Housing AD08 72 du			1			3						
0												
Carlsbad Newage Hotel			12			8						
Carlsbad Ponto			8			14						
Unknown/Distant			9			7						
0												
0												
0												
0												
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												
PM Cumulative Total	(0)	(58)	(0)	(0)	(37)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Enc 04-268 Hotel 130r		(9)			(6)							
Enc multiple (1)		(1)			(1)							
Enc 15-222 48du		(3)			(1)							
Enc 18-188 Hotel 17r		(1)			(1)							
Enc 18-135 108beds												
(0)												
(0)												
(0)												
(0)												
(0)												
(0)												
Housing AD08 72 du			(2)			(1)						
(0)												
Carlsbad Newage Hotel			(15)			(10)						
Carlsbad Ponto			(18)			(10)						
Unknown/Distant			(9)			(7)						
(0)												
(0)												
(0)												
(0)												
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												

5) N. Coast Hwy/Bishops Gate													
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM Cumulative Total	0	40	0	0	40	0	0	0	0	0	0	0	0
Enc 04-268 Hotel 130r		7			4								
Enc multiple (1)		1			1								
Enc 15-222 48du		1			2								
Enc 18-188 Hotel 17r			1			1							
Enc 18-135 108beds													
0													
0													
0													
0													
0													
0													
Housing AD08 72 du			1			3							
0													
Carlsbad Newage Hotel			12			8							
Carlsbad Ponto			8			14							
Unknown/Distant			9			7							
0													
0													
0													
0													
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.													
PM Cumulative Total	(0)	(58)	(0)	(0)	(37)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Enc 04-268 Hotel 130r		(9)			(6)								
Enc multiple (1)		(1)			(1)								
Enc 15-222 48du		(3)			(1)								
Enc 18-188 Hotel 17r			(1)			(1)							
Enc 18-135 108beds													
(0)													
(0)													
(0)													
(0)													
(0)													
(0)													
Housing AD08 72 du			(2)			(1)							
(0)													
Carlsbad Newage Hotel			(15)			(10)							
Carlsbad Ponto			(18)			(10)							
Unknown/Distant			(9)			(7)							
(0)													
(0)													
(0)													
(0)													
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.													

6) N. Coast Hwy/Grandview												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM Cumulative Total	0	40	0	0	40	0	0	0	0	0	0	0
Enc 04-268 Hotel 130r		7			4							
Enc multiple (1)		1			1							
Enc 15-222 48du		1			2							
Enc 18-188 Hotel 17r			1			1						
Enc 18-135 108beds												
0												
0												
0												
0												
0												
0												
Housing AD08 72 du			1			3						
0												
Carlsbad Newage Hotel			12			8						
Carlsbad Ponto			8			14						
Unknown/Distant			9			7						
0												
0												
0												
0												
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												
PM Cumulative Total	(0)	(58)	(0)	(0)	(37)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Enc 04-268 Hotel 130r		(9)			(6)							
Enc multiple (1)		(1)			(1)							
Enc 15-222 48du		(3)			(1)							
Enc 18-188 Hotel 17r			(1)			(1)						
Enc 18-135 108beds												
(0)												
(0)												
(0)												
(0)												
(0)												
(0)												
Housing AD08 72 du			(2)			(1)						
(0)												
Carlsbad Newage Hotel			(15)			(10)						
Carlsbad Ponto			(18)			(10)						
Unknown/Distant			(9)			(7)						
(0)												
(0)												
(0)												
(0)												
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												

7) N. Coast Hwy/Sands MHP												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM Cumulative Total	0	40	0	0	40	0	0	0	0	0	0	0
Enc 04-268 Hotel 130r		7			4							
Enc multiple (1)		1			1							
Enc 15-222 48du		1			2							
Enc 18-188 Hotel 17r			1			1						
Enc 18-135 108beds												
0												
0												
0												
0												
0												
0												
Housing AD08 72 du			1			3						
0												
Carlsbad Newage Hotel			12			8						
Carlsbad Ponto			8			14						
Unknown/Distant			9			7						
0												
0												
0												
0												
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												
PM Cumulative Total	(0)	(58)	(0)	(0)	(37)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Enc 04-268 Hotel 130r		(9)			(6)							
Enc multiple (1)		(1)			(1)							
Enc 15-222 48du		(3)			(1)							
Enc 18-188 Hotel 17r			(1)			(1)						
Enc 18-135 108beds												
(0)												
(0)												
(0)												
(0)												
(0)												
(0)												
Housing AD08 72 du			(2)			(1)						
(0)												
Carlsbad Newage Hotel			(15)			(10)						
Carlsbad Ponto			(18)			(10)						
Unknown/Distant			(9)			(7)						
(0)												
(0)												
(0)												
(0)												
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												

8) N. Coast Hwy/Jupiter St												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM Cumulative Total	0	40	0	0	40	0	0	0	0	0	0	0
Enc 04-268 Hotel 130r		7			4							
Enc multiple (1)		1			1							
Enc 15-222 48du		1			2							
Enc 18-188 Hotel 17r			1			1						
Enc 18-135 108beds												
0												
0												
0												
0												
0												
0												
Housing AD08 72 du			1			3						
0												
Carlsbad Newage Hotel			12			8						
Carlsbad Ponto			8			14						
Unknown/Distant			9			7						
0												
0												
0												
0												
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												
PM Cumulative Total	(0)	(58)	(0)	(0)	(37)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Enc 04-268 Hotel 130r		(9)			(6)							
Enc multiple (1)		(1)			(1)							
Enc 15-222 48du		(3)			(1)							
Enc 18-188 Hotel 17r			(1)			(1)						
Enc 18-135 108beds												
(0)												
(0)												
(0)												
(0)												
(0)												
(0)												
Housing AD08 72 du			(2)			(1)						
(0)												
Carlsbad Newage Hotel			(15)			(10)						
Carlsbad Ponto			(18)			(10)						
Unknown/Distant			(9)			(7)						
(0)												
(0)												
(0)												
(0)												
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												

9) N. Coast Hwy/Leucadia Blvd

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM Cumulative Total	0	36	6	2	37	0	0	0	0	10	0	4
Enc 04-268 Hotel 130r		7			4							
Enc multiple (1)		1	1							5		
Enc 15-222 48du		1			2							
Enc 18-188 Hotel 17r			1			1						
Enc 18-135 108beds												
0												
0												
0												
0												
0												
0												
Housing AD08 72 du			1			3						
0												
Carlsbad Newage Hotel			12			8						
Carlsbad Ponto			8			14						
Unknown/Distant			5	5	2	5				5		4
0												
0												
0												
0												
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												
PM Cumulative Total	(0)	(54)	(6)	(2)	(34)	(0)	(0)	(0)	(0)	(6)	(0)	(4)
Enc 04-268 Hotel 130r		(9)			(6)							
Enc multiple (1)		(1)	(1)							(1)		
Enc 15-222 48du		(3)			(1)							
Enc 18-188 Hotel 17r		(1)			(1)							
Enc 18-135 108beds												
(0)												
(0)												
(0)												
(0)												
(0)												
(0)												
Housing AD08 72 du			(2)			(1)						
(0)												
Carlsbad Newage Hotel			(15)			(10)						
Carlsbad Ponto			(18)			(10)						
Unknown/Distant			(5)	(5)	(2)	(5)				(5)		(4)
(0)												
(0)												
(0)												
(0)												
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												

10) La Costa Ave/N. Vulcan												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM Cumulative Total	6	0	21	0	0	0	0	91	1	6	101	0
Enc 04-268 Hotel 130r								24			36	
Enc multiple (1)	1		3							1		
Enc 15-222 48du			0					2		1	4	
Enc 18-188 Hotel 17r								2			1	
Enc 18-135 108beds								1				
0												
0												
0												
0												
0												
0												
Housing AD08 72 du	5		18						1	4		
0												
Carlsbad Newage Hotel								23			35	
Carlsbad Ponto								34			20	
Unknown/Distant								5			5	
0												
0												
0												
0												
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												
PM Cumulative Total	(4)	()	(10)	()	()	()	()	(102)	(6)	(22)	(150)	()
Enc 04-268 Hotel 130r	(1)							(32)			(46)	
Enc multiple (1)	(1)		(2)						(1)	(4)		
Enc 15-222 48du			(1)					(6)		(1)	(2)	
Enc 18-188 Hotel 17r								(2)			(1)	
Enc 18-135 108beds								(1)			(1)	
()												
()												
()												
()												
()												
()												
Housing AD08 72 du	(2)		(7)						(5)	(17)		
()												
Carlsbad Newage Hotel								(31)			(46)	
Carlsbad Ponto								(25)			(49)	
Unknown/Distant								(5)			(5)	
()												
()												
()												
()												
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												

11) La Costa/Sheridan Rd

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM Cumulative Total	0	0	1	0	0	0	0	112	0	1	107	0
Enc 04-268 Hotel 130r								24			36	
Enc multiple (1)								3			1	
Enc 15-222 48du								2			5	
Enc 18-188 Hotel 17r								2			1	
Enc 18-135 108beds								1				
0												
0												
0												
0												
0												
0												
Housing AD08 72 du								18			4	
0												
Carlsbad Newage Hotel								23			35	
Carlsbad Ponto								34			20	
Unknown/Distant			1					5		1	5	
0												
0												
0												
0												
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												
PM Cumulative Total	(0)	(0)	(1)	(0)	(0)	(0)	(0)	(112)	(0)	(1)	(172)	(0)
Enc 04-268 Hotel 130r								(32)			(46)	
Enc multiple (1)								(2)			(4)	
Enc 15-222 48du								(7)			(3)	
Enc 18-188 Hotel 17r								(2)			(1)	
Enc 18-135 108beds								(1)			(1)	
()												
()												
()												
()												
()												
()												
Housing AD08 72 du								(7)			(17)	
()												
Carlsbad Newage Hotel								(31)			(46)	
Carlsbad Ponto								(25)			(49)	
Unknown/Distant			(1)					(5)		(1)	(5)	
()												
()												
()												
()												
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												

12) La Costa/I-5 SB Ramps												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM Cumulative Total	0	0	0	12	0	15	0	50	82	31	101	0
Enc 04-268 Hotel 130r	x	x	x			10	x	12	12		26	x
Enc multiple (1)	x	x	x			1	x	2	1			x
Enc 15-222 48du	x	x	x			1	x	11	10		9	x
Enc 18-188 Hotel 17r	x	x	x			1	x	2	1		4	x
Enc 18-135 108beds	x	x	x	2			x	1		1		x
0	x	x	x				x					x
0	x	x	x				x					x
0	x	x	x				x					x
0	x	x	x				x					x
0	x	x	x				x					x
0	x	x	x				x					x
Housing AD08 72 du	x	x	x			2	x	10	8		2	x
0	x	x	x				x					x
Carlsbad Newage Hotel	x	x	x				x		23		35	x
Carlsbad Ponto	x	x	x				x	9	25		20	x
Unknown/Distant	x	x	x	10			x	3	2	30	5	x
0	x	x	x				x					x
0	x	x	x				x					x
0	x	x	x				x					x
0	x	x	x				x					x
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												
PM Cumulative Total	()	()	()	(13)	()	(26)	()	(39)	(78)	(33)	(175)	()
Enc 04-268 Hotel 130r	x	x	x			(12)	x	(16)	(16)		(34)	x
Enc multiple (1)	x	x	x			(2)	x	(1)	(1)		(2)	x
Enc 15-222 48du	x	x	x			(3)	x	(5)	(5)		(23)	x
Enc 18-188 Hotel 17r	x	x	x			(2)	x	(2)	(2)		(5)	x
Enc 18-135 108beds				(3)				(1)		(3)	(1)	
()												
()												
()												
()												
()	x	x	x				x					x
()	x	x	x				x					x
Housing AD08 72 du	x	x	x			(7)	x	(4)	(3)		(10)	x
()	x	x	x				x					x
Carlsbad Newage Hotel	x	x	x				x		(31)		(46)	x
Carlsbad Ponto	x	x	x				x	(7)	(18)		(49)	x
Unknown/Distant	x	x	x	(10)			x	(3)	(2)	(30)	(5)	x
()	x	x	x				x					x
()	x	x	x				x					x
()	x	x	x				x					x
()	x	x	x				x					x
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												

13) La Costa/I-5 NB Ramps												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM Cumulative Total	75	0	22	0	0	0	21	32	0	0	58	1
Enc 04-268 Hotel 130r	16			x	x	x	6	6	x	x	10	
Enc multiple (1)				x	x	x	1	1	x	x		
Enc 15-222 48du	5			x	x	x	3	8	x	x	4	
Enc 18-188 Hotel 17r	2			x	x	x	1	1	x	x	2	
Enc 18-135 108beds			2	x	x	x		3	x	x	1	1
0				x	x	x			x	x		
0				x	x	x			x	x		
0				x	x	x			x	x		
0				x	x	x			x	x		
0				x	x	x			x	x		
0				x	x	x			x	x		
0				x	x	x			x	x		
Housing AD08 72 du	2			x	x	x	8	3	x	x	1	
0				x	x	x			x	x		
Carlsbad Newage Hotel	35			x	x	x			x	x		
Carlsbad Ponto	15			x	x	x		9	x	x	5	
Unknown/Distant			20	x	x	x	2	1	x	x	35	
0				x	x	x			x	x		
0				x	x	x			x	x		
0				x	x	x			x	x		
0				x	x	x			x	x		
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												
PM Cumulative Total	(130)	()	(38)	()	()	()	(16)	(26)	()	()	(77)	(3)
Enc 04-268 Hotel 130r	(22)			x	x	x	(8)	(8)	x	x	(12)	
Enc multiple (1)	(2)			x	x	x	(1)		x	x		
Enc 15-222 48du	(13)			x	x	x	(1)	(4)	x	x	(10)	
Enc 18-188 Hotel 17r	(3)			x	x	x	(1)	(1)	x	x	(2)	
Enc 18-135 108beds			(3)					(4)			(4)	(3)
()												
()												
()												
()												
()				x	x	x			x	x		
()				x	x	x			x	x		
Housing AD08 72 du	(7)			x	x	x	(3)	(1)	x	x	(2)	
()				x	x	x			x	x		
Carlsbad Newage Hotel	(46)			x	x	x			x	x		
Carlsbad Ponto	(37)			x	x	x		(7)	x	x	(12)	
Unknown/Distant			(35)	x	x	x	(2)	(1)	x	x	(35)	
()				x	x	x			x	x		
()				x	x	x			x	x		
()				x	x	x			x	x		
()				x	x	x			x	x		
(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.												












		04-268	Encinitas	15-222	18-135	18-188	AD08	Carlsbad	Carlsbad	Distant/
Study	Cumulative	130 Rm	Multiple(1)	Weston	108 beds	516 LaCosta	1967 Vulcan	Ponto	Newage Hotel	Unknown
Segment	TOTAL	hotel		48 lots	care home	hotel	Redev.	Beach	322 rm	
<u>Carlsbad Blvd</u>										
Avenida Encinas to La Costa Ave	2,791	117	10	41	20	20	37	1,158	1,288	100
<u>Coast Highway</u>										
La Costa Ave to 600' S. of La Costa	1,064	195	20	37	7	23	37	323	322	100
600' S. of La Costa to Bishops Gate	1,064	195	20	37	7	23	37	323	322	100
Bishops Gate to Grandview St	1,062	195	20	37	7	21	37	323	322	100
Grandview St to Jupiter St	1,062	195	20	37	7	21	37	323	322	100
Jupiter St to Leucadia Blvd	1,061	195	20	37	7	20	37	323	322	100
<u>La Costa Avenue</u>										
Coast Hwy to N. Vulcan	3,241	988	30	78	27	43	74	835	966	200
N. Vulcan to Sheridan Rd	3,418	975	20	92	27	43	260	835	966	200
Sheridan Rd to I-5	3,779	975	20	368	27	128	260	835	966	200

(1) includes 13-187, 17-152, 17-197, 17-280, 18-220.

Appendix N



















Existing + Cumulative Intersection LOS Calculations

AM Existing + Cumulative
1: Avenida Encinas & Carlsbad Blvd SB

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 					 
Traffic Volume (vph)	242	0	0	0	58	1123
Future Volume (vph)	242	0	0	0	58	1123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0				4.0	4.0
Lane Util. Factor	0.97				1.00	0.95
Frbp, ped/bikes	1.00				1.00	1.00
Flpb, ped/bikes	1.00				1.00	1.00
Frt	1.00				1.00	1.00
Flt Protected	0.95				0.95	1.00
Satd. Flow (prot)	3433				1770	3539
Flt Permitted	0.95				0.95	1.00
Satd. Flow (perm)	3433				1770	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	263	0	0	0	63	1221
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	263	0	0	0	63	1221
Confl. Peds. (#/hr)		30			30	
Confl. Bikes (#/hr)		30		30		
Turn Type	Prot				Prot	NA
Protected Phases	8				1	6
Permitted Phases						
Actuated Green, G (s)	12.8				4.5	45.8
Effective Green, g (s)	12.8				4.5	45.8
Actuated g/C Ratio	0.17				0.06	0.59
Clearance Time (s)	4.0				4.0	4.0
Vehicle Extension (s)	3.0				3.0	3.0
Lane Grp Cap (vph)	569				103	2099
v/s Ratio Prot	c0.08				0.04	c0.34
v/s Ratio Perm						
v/c Ratio	0.46				0.61	0.58
Uniform Delay, d1	29.1				35.5	9.8
Progression Factor	0.10				1.00	1.00
Incremental Delay, d2	0.6				10.3	0.4
Delay (s)	3.4				45.8	10.2
Level of Service	A				D	B
Approach Delay (s)	3.4		0.0			11.9
Approach LOS	A		A			B
Intersection Summary						
HCM 2000 Control Delay			10.5		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.53			
Actuated Cycle Length (s)			77.2		Sum of lost time (s)	16.0
Intersection Capacity Utilization			48.7%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

AM Existing + Cumulative
2: Carsbad Blvd NB & Avenida Encinas

HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 			 				
Traffic Volume (vph)	2	57	0	0	242	41	0	219	133	0	0	0
Future Volume (vph)	2	57	0	0	242	41	0	219	133	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0			
Lane Util. Factor		1.00			0.95			0.95	1.00			
Frbp, ped/bikes		1.00			0.99			1.00	0.87			
Flpb, ped/bikes		1.00			1.00			1.00	1.00			
Frt		1.00			0.98			1.00	0.85			
Flt Protected		1.00			1.00			1.00	1.00			
Satd. Flow (prot)		1860			3422			3539	1376			
Flt Permitted		1.00			1.00			1.00	1.00			
Satd. Flow (perm)		1860			3422			3539	1376			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	62	0	0	263	45	0	238	145	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	91	0	0	0
Lane Group Flow (vph)	0	64	0	0	292	0	0	238	54	0	0	0
Confl. Peds. (#/hr)			20			20			20			
Confl. Bikes (#/hr)			30			30			30			
Turn Type	Split	NA			NA			NA	custom			
Protected Phases	7	7			8			2				
Permitted Phases									8			
Actuated Green, G (s)		6.6			12.8			37.3	12.8			
Effective Green, g (s)		6.6			12.8			37.3	12.8			
Actuated g/C Ratio		0.09			0.17			0.48	0.17			
Clearance Time (s)		4.0			4.0			4.0	4.0			
Vehicle Extension (s)		3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)		159			567			1709	228			
v/s Ratio Prot		c0.03			c0.09			c0.07				
v/s Ratio Perm									0.04			
v/c Ratio		0.40			0.52			0.14	0.24			
Uniform Delay, d1		33.4			29.4			11.1	28.0			
Progression Factor		1.42			1.00			1.00	1.00			
Incremental Delay, d2		1.5			0.8			0.2	0.5			
Delay (s)		49.1			30.2			11.2	28.5			
Level of Service		D			C			B	C			
Approach Delay (s)		49.1			30.2			17.8			0.0	
Approach LOS		D			C			B			A	
Intersection Summary												
HCM 2000 Control Delay			25.5									C
HCM 2000 Volume to Capacity ratio			0.24									
Actuated Cycle Length (s)			77.2									16.0
Intersection Capacity Utilization			30.7%									A
Analysis Period (min)			15									
c Critical Lane Group												

AM Existing + Cumulative
3: N Coast Hwy & Hotel Access/La Costa Ave

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	3	24	4	250	36	165	7	193	197	327	1029	4
Future Volume (veh/h)	3	24	4	250	36	165	7	193	197	327	1029	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.68	1.00		0.92	1.00		0.91	1.00		0.94
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	3	26	4	300	0	179	8	210	214	355	1118	4
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	12	105	68	606	0	247	15	1107	451	410	1897	796
Arrive On Green	0.06	0.06	0.06	0.17	0.00	0.17	0.01	0.31	0.31	0.23	0.53	0.53
Sat Flow, veh/h	192	1668	1072	3563	0	1453	1781	3554	1449	1781	3554	1492
Grp Volume(v), veh/h	29	0	4	300	0	179	8	210	214	355	1118	4
Grp Sat Flow(s),veh/h/ln	1861	0	1072	1781	0	1453	1781	1777	1449	1781	1777	1492
Q Serve(g_s), s	1.1	0.0	0.2	5.4	0.0	8.3	0.3	3.1	8.5	13.6	15.2	0.1
Cycle Q Clear(g_c), s	1.1	0.0	0.2	5.4	0.0	8.3	0.3	3.1	8.5	13.6	15.2	0.1
Prop In Lane	0.10		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	117	0	68	606	0	247	15	1107	451	410	1897	796
V/C Ratio(X)	0.25	0.00	0.06	0.49	0.00	0.72	0.55	0.19	0.47	0.86	0.59	0.01
Avail Cap(c_a), veh/h	418	0	241	801	0	327	100	1107	451	626	1897	796
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	0.0	31.4	26.8	0.0	28.0	35.2	17.9	19.8	26.3	11.3	7.8
Incr Delay (d2), s/veh	1.1	0.0	0.4	0.6	0.0	5.3	28.1	0.4	3.5	8.0	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.1	2.3	0.0	3.1	0.2	1.3	3.1	6.4	5.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.8	0.0	31.7	27.4	0.0	33.3	63.3	18.3	23.3	34.3	12.6	7.8
LnGrp LOS	C	A	C	C	A	C	E	B	C	C	B	A
Approach Vol, veh/h		33			479			432			1477	
Approach Delay, s/veh		32.7			29.6			21.6			17.8	
Approach LOS		C			C			C			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.4	26.2		8.5	4.6	42.0		16.1				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	25.0	17.0		16.0	4.0	38.0		16.0				
Max Q Clear Time (g_c + I1), s	15.6	10.5		3.1	2.3	17.2		10.3				
Green Ext Time (p_c), s	0.8	1.2		0.1	0.0	8.5		0.9				

Intersection Summary

HCM 6th Ctrl Delay	21.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Intersection			
Intersection Delay, s/veh	47.0		
Intersection LOS	E		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	51	357	1417
Demand Flow Rate, veh/h	52	364	1445
Vehicles Circulating, veh/h	1423	28	7
Vehicles Exiting, veh/h	29	1447	385
Ped Vol Crossing Leg, #/h	20	20	20
Ped Cap Adj	1.000	0.997	0.997
Approach Delay, s/veh	14.3	5.1	58.7
Approach LOS	B	A	F
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	52	364	1445
Cap Entry Lane, veh/h	323	1341	1370
Entry HV Adj Factor	0.981	0.981	0.981
Flow Entry, veh/h	51	357	1417
Cap Entry, veh/h	317	1312	1340
V/C Ratio	0.161	0.272	1.058
Control Delay, s/veh	14.3	5.1	58.7
LOS	B	A	F
95th %tile Queue, veh	1	1	28

Intersection			
Intersection Delay, s/veh	36.2		
Intersection LOS	E		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	57	309	1393
Demand Flow Rate, veh/h	59	315	1420
Vehicles Circulating, veh/h	1396	29	8
Vehicles Exiting, veh/h	32	1426	336
Ped Vol Crossing Leg, #/h	20	20	20
Ped Cap Adj	1.000	0.997	0.997
Approach Delay, s/veh	10.6	4.6	44.2
Approach LOS	B	A	E
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	59	315	1420
Cap Entry Lane, veh/h	433	1386	1410
Entry HV Adj Factor	0.966	0.981	0.981
Flow Entry, veh/h	57	309	1393
Cap Entry, veh/h	419	1355	1380
V/C Ratio	0.136	0.228	1.010
Control Delay, s/veh	10.6	4.6	44.2
LOS	B	A	F
95th %tile Queue, veh	0	1	24

Intersection			
Intersection Delay, s/veh	26.5		
Intersection LOS	D		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	36	232	1305
Demand Flow Rate, veh/h	36	236	1331
Vehicles Circulating, veh/h	1323	15	10
Vehicles Exiting, veh/h	18	1344	241
Ped Vol Crossing Leg, #/h	20	20	20
Ped Cap Adj	1.000	0.997	0.997
Approach Delay, s/veh	8.9	4.0	31.0
Approach LOS	A	A	D
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	36	236	1331
Cap Entry Lane, veh/h	461	1402	1408
Entry HV Adj Factor	1.000	0.981	0.981
Flow Entry, veh/h	36	232	1305
Cap Entry, veh/h	461	1372	1377
V/C Ratio	0.078	0.169	0.948
Control Delay, s/veh	8.9	4.0	31.0
LOS	A	A	D
95th %tile Queue, veh	0	1	18

AM Existing + Cumulative
9: N. Coast Hwy 101 & Leucadia Blvd

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕		↕	↕↕		↕	↕↕	↕	↕	↕↕	
Traffic Volume (veh/h)	11	38	9	219	23	100	5	208	63	386	1294	1
Future Volume (veh/h)	11	38	9	219	23	100	5	208	63	386	1294	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.91	1.00		0.92	1.00		0.95	1.00		0.94
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	12	41	10	186	98	109	5	226	68	420	1407	1
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	16	55	13	311	135	150	9	1017	433	475	1996	1
Arrive On Green	0.05	0.05	0.05	0.17	0.17	0.17	0.01	0.29	0.29	0.27	0.55	0.55
Sat Flow, veh/h	337	1152	281	1781	772	859	1781	3554	1512	1781	3644	3
Grp Volume(v), veh/h	63	0	0	186	0	207	5	226	68	420	686	722
Grp Sat Flow(s),veh/h/ln	1770	0	0	1781	0	1631	1781	1777	1512	1781	1777	1870
Q Serve(g_s), s	2.5	0.0	0.0	6.9	0.0	8.5	0.2	3.5	2.4	16.1	20.3	20.3
Cycle Q Clear(g_c), s	2.5	0.0	0.0	6.9	0.0	8.5	0.2	3.5	2.4	16.1	20.3	20.3
Prop In Lane	0.19		0.16	1.00		0.53	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	84	0	0	311	0	285	9	1017	433	475	973	1024
V/C Ratio(X)	0.75	0.00	0.00	0.60	0.00	0.73	0.53	0.22	0.16	0.88	0.70	0.70
Avail Cap(c_a), veh/h	621	0	0	400	0	366	100	1017	433	650	973	1024
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.5	0.0	0.0	27.1	0.0	27.8	35.3	19.4	19.0	25.0	11.9	11.9
Incr Delay (d2), s/veh	12.5	0.0	0.0	1.8	0.0	5.1	39.3	0.5	0.8	10.7	4.3	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	2.9	0.0	3.6	0.2	1.4	0.9	7.8	7.9	8.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.0	0.0	0.0	28.9	0.0	32.9	74.7	19.9	19.8	35.7	16.1	15.9
LnGrp LOS	D	A	A	C	A	C	E	B	B	D	B	B
Approach Vol, veh/h		63			393			299			1828	
Approach Delay, s/veh		46.0			31.0			20.8			20.6	
Approach LOS		D			C			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	23.0	24.4		7.4	4.4	43.0		16.4				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	26.0	17.0		25.0	4.0	39.0		16.0				
Max Q Clear Time (g_c+I1), s	18.1	5.5		4.5	2.2	22.3		10.5				
Green Ext Time (p_c), s	0.9	1.2		0.2	0.0	9.2		0.9				

Intersection Summary		
HCM 6th Ctrl Delay		22.8
HCM 6th LOS		C

Notes
 User approved volume balancing among the lanes for turning movement.
 User approved changes to right turn type.

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕		↕		↕	
Traffic Vol, veh/h	0	401	51	258	462	0	26	0	208	0	1	0
Future Vol, veh/h	0	401	51	258	462	0	26	0	208	0	1	0
Conflicting Peds, #/hr	10	0	10	10	0	10	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	436	55	280	502	0	28	0	226	0	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	512	0	0	501	0	0	1537	-	474	1649	1573	512
Stage 1	-	-	-	-	-	-	474	-	-	1072	1072	-
Stage 2	-	-	-	-	-	-	1063	-	-	577	501	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	-	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	-	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1053	-	-	1063	-	-	95	0	590	79	110	562
Stage 1	-	-	-	-	-	-	571	0	-	267	297	-
Stage 2	-	-	-	-	-	-	270	0	-	502	543	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1044	-	-	1054	-	-	67	-	585	34	68	557
Mov Cap-2 Maneuver	-	-	-	-	-	-	67	-	-	34	68	-
Stage 1	-	-	-	-	-	-	566	-	-	265	186	-
Stage 2	-	-	-	-	-	-	170	-	-	308	539	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			3.5			23.7			58.4		
HCM LOS							C			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	67	585	1044	-	-	1054	-	-	68
HCM Lane V/C Ratio	0.422	0.386	-	-	-	0.266	-	-	0.008
HCM Control Delay (s)	93.3	15	0	-	-	9.6	0	-	58.4
HCM Lane LOS	F	C	A	-	-	A	A	-	F
HCM 95th %tile Q(veh)	1.6	1.8	0	-	-	1.1	-	-	0

Intersection						
Int Delay, s/veh	2.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	621	12	78	597	12	84
Future Vol, veh/h	621	12	78	597	12	84
Conflicting Peds, #/hr	0	20	20	0	20	20
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	675	13	85	649	13	91

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	708	0	1541
Stage 1	-	-	-	-	702
Stage 2	-	-	-	-	839
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	-	-	891	-	127
Stage 1	-	-	-	-	491
Stage 2	-	-	-	-	424
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	876	-	104
Mov Cap-2 Maneuver	-	-	-	-	104
Stage 1	-	-	-	-	483
Stage 2	-	-	-	-	354

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	23.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	301	-	-	876	-
HCM Lane V/C Ratio	0.347	-	-	0.097	-
HCM Control Delay (s)	23.2	-	-	9.5	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.5	-	-	0.3	-

AM Existing + Cumulative
12: I-5 SB Ramp & La Costa Ave

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑	↑
Traffic Volume (veh/h)	0	643	164	578	542	0	0	0	0	504	10	182
Future Volume (veh/h)	0	643	164	578	542	0	0	0	0	504	10	182
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00				1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	699	178	628	589	0				556	0	198
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	2	2	2	0				2	2	2
Cap, veh/h	0	1301	331	706	2545	0				694	0	291
Arrive On Green	0.00	0.47	0.47	0.34	1.00	0.00				0.19	0.00	0.19
Sat Flow, veh/h	0	2877	709	3456	3647	0				3563	0	1492
Grp Volume(v), veh/h	0	446	431	628	589	0				556	0	198
Grp Sat Flow(s),veh/h/ln	0	1777	1716	1728	1777	0				1781	0	1492
Q Serve(g_s), s	0.0	16.1	16.1	15.5	0.0	0.0				13.4	0.0	11.1
Cycle Q Clear(g_c), s	0.0	16.1	16.1	15.5	0.0	0.0				13.4	0.0	11.1
Prop In Lane	0.00		0.41	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	831	802	706	2545	0				694	0	291
V/C Ratio(X)	0.00	0.54	0.54	0.89	0.23	0.00				0.80	0.00	0.68
Avail Cap(c_a), veh/h	0	831	802	806	2545	0				990	0	415
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.87	0.87	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	17.0	17.0	28.7	0.0	0.0				34.6	0.0	33.6
Incr Delay (d2), s/veh	0.0	2.5	2.6	9.8	0.2	0.0				3.2	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
%ile BackOfQ(50%),veh/ln	0.0	6.8	6.6	6.2	0.1	0.0				6.0	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	19.5	19.6	38.4	0.2	0.0				37.7	0.0	36.4
LnGrp LOS	A	B	B	D	A	A				D	A	D
Approach Vol, veh/h		877			1217						754	
Approach Delay, s/veh		19.6			19.9						37.4	
Approach LOS		B			B						D	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	22.4	46.1		21.5		68.5						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	21.0	32.0		25.0		57.0						
Max Q Clear Time (g_c+I1), s	17.5	18.1		15.4		2.0						
Green Ext Time (p_c), s	0.9	4.9		2.1		4.7						

Intersection Summary												
HCM 6th Ctrl Delay				24.4								
HCM 6th LOS				C								

Notes

User approved volume balancing among the lanes for turning movement.













AM Existing + Cumulative
13: I-5 NB Ramp & La Costa Ave

HCM 6th Signalized Intersection Summary






















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	178	927	0	0	983	478	149	1	737	0	0	0
Future Volume (veh/h)	178	927	0	0	983	478	149	1	737	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		0.95	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	193	1008	0	0	1068	520	162	1	801			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	228	2290	0	0	2410	709	472	3	687			
Arrive On Green	0.26	1.00	0.00	0.00	0.47	0.47	0.27	0.27	0.27			
Sat Flow, veh/h	1781	3647	0	0	5274	1502	1771	11	2575			
Grp Volume(v), veh/h	193	1008	0	0	1068	520	163	0	801			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1702	1502	1782	0	1288			
Q Serve(g_s), s	9.3	0.0	0.0	0.0	12.6	25.2	6.6	0.0	24.0			
Cycle Q Clear(g_c), s	9.3	0.0	0.0	0.0	12.6	25.2	6.6	0.0	24.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.99		1.00			
Lane Grp Cap(c), veh/h	228	2290	0	0	2410	709	475	0	687			
V/C Ratio(X)	0.85	0.44	0.00	0.00	0.44	0.73	0.34	0.00	1.17			
Avail Cap(c_a), veh/h	416	2290	0	0	2410	709	475	0	687			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.72	0.72	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	32.6	0.0	0.0	0.0	15.9	19.2	26.6	0.0	33.0			
Incr Delay (d2), s/veh	6.2	0.4	0.0	0.0	0.6	6.6	0.4	0.0	90.1			
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	3.8	0.1	0.0	0.0	4.8	9.5	2.8	0.0	15.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.8	0.4	0.0	0.0	16.5	25.8	27.1	0.0	123.1			
LnGrp LOS	D	A	A	A	B	C	C	A	F			
Approach Vol, veh/h		1201			1588			964				
Approach Delay, s/veh		6.6			19.5			106.9				
Approach LOS		A			B			F				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		62.0			15.5	46.5		28.0				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		58.0			21.0	33.0		24.0				
Max Q Clear Time (g_c+I1), s		2.0			11.3	27.2		26.0				
Green Ext Time (p_c), s		9.6			0.4	4.1		0.0				
Intersection Summary												
HCM 6th Ctrl Delay					37.8							
HCM 6th LOS					D							

PM Existing + Cumulative
1: Avenida Encinas & Carlsbad Blvd SB

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 				 	 
Traffic Volume (vph)	200	0	0	0	82	541
Future Volume (vph)	200	0	0	0	82	541
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0				4.0	4.0
Lane Util. Factor	0.97				1.00	0.95
Frbp, ped/bikes	1.00				1.00	1.00
Flpb, ped/bikes	1.00				1.00	1.00
Frt	1.00				1.00	1.00
Flt Protected	0.95				0.95	1.00
Satd. Flow (prot)	3433				1770	3539
Flt Permitted	0.95				0.95	1.00
Satd. Flow (perm)	3433				1770	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	0	0	0	89	588
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	217	0	0	0	89	588
Confl. Peds. (#/hr)		15			15	
Confl. Bikes (#/hr)		10		10		
Turn Type	Prot				Prot	NA
Protected Phases	8				1	6
Permitted Phases						
Actuated Green, G (s)	13.0				7.6	52.4
Effective Green, g (s)	13.0				7.6	52.4
Actuated g/C Ratio	0.15				0.09	0.62
Clearance Time (s)	4.0				4.0	4.0
Vehicle Extension (s)	3.0				3.0	3.0
Lane Grp Cap (vph)	523				157	2176
v/s Ratio Prot	c0.06				c0.05	c0.17
v/s Ratio Perm						
v/c Ratio	0.41				0.57	0.27
Uniform Delay, d1	32.7				37.2	7.6
Progression Factor	0.13				1.00	1.00
Incremental Delay, d2	0.5				4.6	0.1
Delay (s)	4.8				41.9	7.6
Level of Service	A				D	A
Approach Delay (s)	4.8		0.0			12.1
Approach LOS	A		A			B
Intersection Summary						
HCM 2000 Control Delay			10.4		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.31			
Actuated Cycle Length (s)			85.2		Sum of lost time (s)	16.0
Intersection Capacity Utilization			30.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

PM Existing + Cumulative
2: Carsbad Blvd NB & Avenida Encinas

HCM Signalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					 			 					
Traffic Volume (vph)	3	80	0	0	200	55	0	679	276	0	0	0	
Future Volume (vph)	3	80	0	0	200	55	0	679	276	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0			4.0			4.0	4.0				
Lane Util. Factor		1.00			0.95			0.95	1.00				
Frbp, ped/bikes		1.00			0.99			1.00	0.92				
Flpb, ped/bikes		1.00			1.00			1.00	1.00				
Frt		1.00			0.97			1.00	0.85				
Flt Protected		1.00			1.00			1.00	1.00				
Satd. Flow (prot)		1860			3388			3539	1453				
Flt Permitted		1.00			1.00			1.00	1.00				
Satd. Flow (perm)		1860			3388			3539	1453				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	3	87	0	0	217	60	0	738	300	0	0	0	
RTOR Reduction (vph)	0	0	0	0	25	0	0	0	254	0	0	0	
Lane Group Flow (vph)	0	90	0	0	252	0	0	738	46	0	0	0	
Confl. Peds. (#/hr)			15			15			15				
Confl. Bikes (#/hr)			10			10			10				
Turn Type	Split	NA			NA			NA	custom				
Protected Phases	7	7			8			2					
Permitted Phases									8				
Actuated Green, G (s)		7.8			13.0			40.8	13.0				
Effective Green, g (s)		7.8			13.0			40.8	13.0				
Actuated g/C Ratio		0.09			0.15			0.48	0.15				
Clearance Time (s)		4.0			4.0			4.0	4.0				
Vehicle Extension (s)		3.0			3.0			3.0	3.0				
Lane Grp Cap (vph)		170			516			1694	221				
v/s Ratio Prot		c0.05			c0.07			c0.21					
v/s Ratio Perm									0.03				
v/c Ratio		0.53			0.49			0.44	0.21				
Uniform Delay, d1		36.9			33.1			14.6	31.6				
Progression Factor		1.47			1.00			1.00	1.00				
Incremental Delay, d2		2.8			0.7			0.8	0.5				
Delay (s)		57.2			33.8			15.4	32.1				
Level of Service		E			C			B	C				
Approach Delay (s)		57.2			33.8			20.2			0.0		
Approach LOS		E			C			C			A		
Intersection Summary													
HCM 2000 Control Delay			25.3				HCM 2000 Level of Service		C				
HCM 2000 Volume to Capacity ratio			0.41										
Actuated Cycle Length (s)			85.2				Sum of lost time (s)		16.0				
Intersection Capacity Utilization			35.3%				ICU Level of Service		A				
Analysis Period (min)			15										
c Critical Lane Group													

PM Existing + Cumulative
3: N Coast Hwy & Hotel Access/La Costa Ave

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	4	32	6	232	47	411	9	646	245	269	363	6
Future Volume (veh/h)	4	32	6	232	47	411	9	646	245	269	363	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.77	1.00		0.95	1.00		0.92	1.00		0.94
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	4	35	7	288	0	447	10	702	266	292	395	7
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	14	118	87	898	0	380	18	896	367	309	1475	621
Arrive On Green	0.07	0.07	0.07	0.25	0.00	0.25	0.01	0.25	0.25	0.17	0.42	0.42
Sat Flow, veh/h	191	1670	1227	3563	0	1509	1781	3554	1458	1781	3554	1495
Grp Volume(v), veh/h	39	0	7	288	0	447	10	702	266	292	395	7
Grp Sat Flow(s),veh/h/ln	1861	0	1227	1781	0	1509	1781	1777	1458	1781	1777	1495
Q Serve(g_s), s	1.3	0.0	0.3	4.2	0.0	16.0	0.4	11.7	10.6	10.3	4.6	0.2
Cycle Q Clear(g_c), s	1.3	0.0	0.3	4.2	0.0	16.0	0.4	11.7	10.6	10.3	4.6	0.2
Prop In Lane	0.10		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	132	0	87	898	0	380	18	896	367	309	1475	621
V/C Ratio(X)	0.30	0.00	0.08	0.32	0.00	1.18	0.55	0.78	0.72	0.95	0.27	0.01
Avail Cap(c_a), veh/h	469	0	309	898	0	380	112	896	367	309	1475	621
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.0	0.0	27.6	19.3	0.0	23.7	31.3	22.1	21.7	26.0	12.2	10.9
Incr Delay (d2), s/veh	1.2	0.0	0.4	0.2	0.0	103.2	23.6	6.8	11.7	37.1	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.1	1.6	0.0	16.1	0.3	5.4	4.5	7.3	1.7	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.2	0.0	28.0	19.5	0.0	127.0	54.8	28.9	33.5	63.0	12.7	10.9
LnGrp LOS	C	A	C	B	A	F	D	C	C	E	B	B
Approach Vol, veh/h		46			735			978			694	
Approach Delay, s/veh		29.0			84.9			30.4			33.8	
Approach LOS		C			F			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	20.0		8.5	4.6	30.4		20.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	11.0	16.0		16.0	4.0	23.0		16.0				
Max Q Clear Time (g_c + I1), s	12.3	13.7		3.3	2.4	6.6		18.0				
Green Ext Time (p_c), s	0.0	1.3		0.1	0.0	2.3		0.0				

Intersection Summary

HCM 6th Ctrl Delay	47.7
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Intersection			
Intersection Delay, s/veh	7.4		
Intersection LOS	A		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	42	744	509
Demand Flow Rate, veh/h	43	759	519
Vehicles Circulating, veh/h	496	28	15
Vehicles Exiting, veh/h	38	511	772
Ped Vol Crossing Leg, #/h	10	10	10
Ped Cap Adj	0.999	0.999	0.999
Approach Delay, s/veh	4.4	8.6	6.0
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	43	759	519
Cap Entry Lane, veh/h	932	1387	1402
Entry HV Adj Factor	0.977	0.981	0.981
Flow Entry, veh/h	42	744	509
Cap Entry, veh/h	909	1358	1374
V/C Ratio	0.046	0.548	0.371
Control Delay, s/veh	4.4	8.6	6.0
LOS	A	A	A
95th %tile Queue, veh	0	3	2

Intersection			
Intersection Delay, s/veh	7.5		
Intersection LOS	A		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	86	748	525
Demand Flow Rate, veh/h	88	763	535
Vehicles Circulating, veh/h	523	35	6
Vehicles Exiting, veh/h	18	576	792
Ped Vol Crossing Leg, #/h	10	10	10
Ped Cap Adj	0.999	0.999	0.999
Approach Delay, s/veh	5.0	8.7	6.1
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	88	763	535
Cap Entry Lane, veh/h	910	1378	1413
Entry HV Adj Factor	0.977	0.981	0.981
Flow Entry, veh/h	86	748	525
Cap Entry, veh/h	888	1350	1384
V/C Ratio	0.097	0.554	0.379
Control Delay, s/veh	5.0	8.7	6.1
LOS	A	A	A
95th %tile Queue, veh	0	4	2

Intersection			
Intersection Delay, s/veh	7.1		
Intersection LOS	A		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	29	716	502
Demand Flow Rate, veh/h	29	731	512
Vehicles Circulating, veh/h	478	12	31
Vehicles Exiting, veh/h	65	495	712
Ped Vol Crossing Leg, #/h	10	10	10
Ped Cap Adj	0.999	0.999	0.999
Approach Delay, s/veh	4.1	8.0	6.1
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	29	731	512
Cap Entry Lane, veh/h	946	1406	1383
Entry HV Adj Factor	1.000	0.980	0.980
Flow Entry, veh/h	29	716	502
Cap Entry, veh/h	945	1376	1353
V/C Ratio	0.031	0.521	0.371
Control Delay, s/veh	4.1	8.0	6.1
LOS	A	A	A
95th %tile Queue, veh	0	3	2

PM Existing + Cumulative
9: N. Coast Hwy 101 & Leucadia Blvd

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕		↗	↕↕		↗	↕↕	↗	↗	↕↕	
Traffic Volume (veh/h)	23	45	13	171	30	182	7	651	174	265	446	3
Future Volume (veh/h)	23	45	13	171	30	182	7	651	174	265	446	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.93	1.00		0.96	1.00		0.94
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	25	49	14	186	33	198	8	708	189	288	485	3
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	34	66	19	349	42	255	15	1193	513	332	1859	11
Arrive On Green	0.07	0.07	0.07	0.20	0.20	0.20	0.01	0.34	0.34	0.19	0.51	0.51
Sat Flow, veh/h	504	987	282	1781	217	1300	1781	3554	1527	1781	3619	22
Grp Volume(v), veh/h	88	0	0	186	0	231	8	708	189	288	238	250
Grp Sat Flow(s),veh/h/ln	1773	0	0	1781	0	1516	1781	1777	1527	1781	1777	1865
Q Serve(g_s), s	3.6	0.0	0.0	7.0	0.0	10.8	0.3	12.3	7.0	11.7	5.6	5.6
Cycle Q Clear(g_c), s	3.6	0.0	0.0	7.0	0.0	10.8	0.3	12.3	7.0	11.7	5.6	5.6
Prop In Lane	0.28		0.16	1.00		0.86	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	119	0	0	349	0	297	15	1193	513	332	913	958
V/C Ratio(X)	0.74	0.00	0.00	0.53	0.00	0.78	0.55	0.59	0.37	0.87	0.26	0.26
Avail Cap(c_a), veh/h	524	0	0	502	0	428	144	1193	513	383	913	958
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	0.0	0.0	26.9	0.0	28.4	36.8	20.5	18.7	29.4	10.2	10.2
Incr Delay (d2), s/veh	8.7	0.0	0.0	1.3	0.0	5.6	28.4	2.2	2.0	17.0	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.0	3.0	0.0	4.2	0.3	5.2	2.6	6.4	2.2	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.8	0.0	0.0	28.1	0.0	33.9	65.2	22.7	20.8	46.4	10.9	10.8
LnGrp LOS	D	A	A	C	A	C	E	C	C	D	B	B
Approach Vol, veh/h		88			417			905			776	
Approach Delay, s/veh		42.8			31.4			22.7			24.1	
Approach LOS		D			C			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.9	29.0		9.0	4.6	42.3		18.6				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	16.0	25.0		22.0	6.0	35.0		21.0				
Max Q Clear Time (g_c+I1), s	13.7	14.3		5.6	2.3	7.6		12.8				
Green Ext Time (p_c), s	0.2	4.1		0.3	0.0	3.1		1.3				

Intersection Summary

HCM 6th Ctrl Delay	25.6
HCM 6th LOS	C

Notes

- User approved volume balancing among the lanes for turning movement.
- User approved changes to right turn type.

Intersection												
Int Delay, s/veh	8.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕		↕		↕	
Traffic Vol, veh/h	1	465	76	153	542	1	62	0	165	0	0	0
Future Vol, veh/h	1	465	76	153	542	1	62	0	165	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	505	83	166	589	1	67	0	179	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	600	0	0	598	0	0	1481	-	557	1570	1532	600
Stage 1	-	-	-	-	-	-	559	-	-	932	932	-
Stage 2	-	-	-	-	-	-	922	-	-	638	600	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	-	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	-	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	977	-	-	979	-	-	103	0	530	90	117	501
Stage 1	-	-	-	-	-	-	513	0	-	320	345	-
Stage 2	-	-	-	-	-	-	324	0	-	465	490	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	969	-	-	971	-	-	82	-	526	47	86	497
Mov Cap-2 Maneuver	-	-	-	-	-	-	82	-	-	47	86	-
Stage 1	-	-	-	-	-	-	508	-	-	317	255	-
Stage 2	-	-	-	-	-	-	242	-	-	306	485	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			2.1			50			0		
HCM LOS							F			A		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	82	526	969	-	-	971	-	-	-
HCM Lane V/C Ratio	0.822	0.341	0.001	-	-	0.171	-	-	-
HCM Control Delay (s)	142.4	15.3	8.7	0	-	9.5	0	-	0
HCM Lane LOS	F	C	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	4.2	1.5	0	-	-	0.6	-	-	-

Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	674	13	64	760	13	51
Future Vol, veh/h	674	13	64	760	13	51
Conflicting Peds, #/hr	0	20	20	0	20	20
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	733	14	70	826	14	55

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	767	0	1746 780
Stage 1	-	-	-	-	760 -
Stage 2	-	-	-	-	986 -
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	-	-	847	-	95 395
Stage 1	-	-	-	-	462 -
Stage 2	-	-	-	-	361 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	833	-	78 382
Mov Cap-2 Maneuver	-	-	-	-	78 -
Stage 1	-	-	-	-	454 -
Stage 2	-	-	-	-	300 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	29.9
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	213	-	-	833	-
HCM Lane V/C Ratio	0.327	-	-	0.084	-
HCM Control Delay (s)	29.9	-	-	9.7	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.4	-	-	0.3	-

PM Existing + Cumulative
12: I-5 SB Ramp & La Costa Ave

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑	↑
Traffic Volume (veh/h)	0	598	168	738	703	0	0	0	0	510	1	187
Future Volume (veh/h)	0	598	168	738	703	0	0	0	0	510	1	187
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00				1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	650	183	802	764	0				555	0	203
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	2	2	2	0				2	2	2
Cap, veh/h	0	1139	320	899	2573	0				667	0	279
Arrive On Green	0.00	0.42	0.42	0.26	0.72	0.00				0.19	0.00	0.19
Sat Flow, veh/h	0	2808	763	3456	3647	0				3563	0	1489
Grp Volume(v), veh/h	0	425	408	802	764	0				555	0	203
Grp Sat Flow(s),veh/h/ln	0	1777	1701	1728	1777	0				1781	0	1489
Q Serve(g_s), s	0.0	16.4	16.5	20.1	6.8	0.0				13.5	0.0	11.5
Cycle Q Clear(g_c), s	0.0	16.4	16.5	20.1	6.8	0.0				13.5	0.0	11.5
Prop In Lane	0.00		0.45	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	745	714	899	2573	0				667	0	279
V/C Ratio(X)	0.00	0.57	0.57	0.89	0.30	0.00				0.83	0.00	0.73
Avail Cap(c_a), veh/h	0	745	714	998	2573	0				792	0	331
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.63	0.63	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	19.9	20.0	32.1	4.4	0.0				35.2	0.0	34.4
Incr Delay (d2), s/veh	0.0	3.2	3.3	6.4	0.2	0.0				6.6	0.0	6.5
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	7.1	6.9	8.9	2.0	0.0				6.3	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	23.1	23.3	38.4	4.6	0.0				41.8	0.0	40.9
LnGrp LOS	A	C	C	D	A	A				D	A	D
Approach Vol, veh/h		833			1566						758	
Approach Delay, s/veh		23.2			21.9						41.6	
Approach LOS		C			C						D	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	27.4	41.7		20.8		69.2						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	26.0	32.0		20.0		62.0						
Max Q Clear Time (g_c+I), s	22.1	18.5		15.5		8.8						
Green Ext Time (p_c), s	1.3	4.6		1.3		6.5						

Intersection Summary

HCM 6th Ctrl Delay	27.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

PM Existing + Cumulative
13: I-5 NB Ramp & La Costa Ave

HCM 6th Signalized Intersection Summary












Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	183	902	0	0	1174	417	256	1	677	0	0	0
Future Volume (veh/h)	183	902	0	0	1174	417	256	1	677	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		0.94	1.00		0.93			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	199	980	0	0	1276	453	278	1	736			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	240	1978	0	0	1862	542	584	2	857			
Arrive On Green	0.13	0.56	0.00	0.00	0.36	0.36	0.33	0.33	0.33			
Sat Flow, veh/h	1781	3647	0	0	5274	1487	1775	6	2605			
Grp Volume(v), veh/h	199	980	0	0	1276	453	279	0	736			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1702	1487	1782	0	1303			
Q Serve(g_s), s	7.6	11.8	0.0	0.0	14.8	19.5	8.7	0.0	18.5			
Cycle Q Clear(g_c), s	7.6	11.8	0.0	0.0	14.8	19.5	8.7	0.0	18.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	240	1978	0	0	1862	542	586	0	857			
V/C Ratio(X)	0.83	0.50	0.00	0.00	0.69	0.84	0.48	0.00	0.86			
Avail Cap(c_a), veh/h	254	1978	0	0	1862	542	662	0	968			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.69	0.69	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	29.5	9.5	0.0	0.0	18.8	20.3	18.7	0.0	22.0			
Incr Delay (d2), s/veh	13.9	0.6	0.0	0.0	2.1	14.1	0.6	0.0	7.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.1	4.0	0.0	0.0	5.7	8.3	3.5	0.0	6.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.4	10.1	0.0	0.0	20.9	34.4	19.3	0.0	29.1			
LnGrp LOS	D	B	A	A	C	C	B	A	C			
Approach Vol, veh/h		1179			1729			1015				
Approach Delay, s/veh		15.7			24.5			26.4				
Approach LOS		B			C			C				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		43.0			13.4	29.5		27.0				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		36.0			10.0	22.0		26.0				
Max Q Clear Time (g_c+I1), s		13.8			9.6	21.5		20.5				
Green Ext Time (p_c), s		7.5			0.0	0.4		2.5				
Intersection Summary												
HCM 6th Ctrl Delay					22.3							
HCM 6th LOS					C							

Appendix O




















Existing + Cumulative + Project Intersection LOS Calculations

AM Existing + Cumulative + Project
1: Avenida Encinas & Carlsbad Blvd SB

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	243	0	0	0	58	1126
Future Volume (vph)	243	0	0	0	58	1126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0				4.0	4.0
Lane Util. Factor	0.97				1.00	0.95
Frbp, ped/bikes	1.00				1.00	1.00
Flpb, ped/bikes	1.00				1.00	1.00
Frt	1.00				1.00	1.00
Flt Protected	0.95				0.95	1.00
Satd. Flow (prot)	3433				1770	3539
Flt Permitted	0.95				0.95	1.00
Satd. Flow (perm)	3433				1770	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	264	0	0	0	63	1224
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	264	0	0	0	63	1224
Confl. Peds. (#/hr)		30			30	
Confl. Bikes (#/hr)		30		30		
Turn Type	Prot				Prot	NA
Protected Phases	8				1	6
Permitted Phases						
Actuated Green, G (s)	13.5				4.5	45.7
Effective Green, g (s)	13.5				4.5	45.7
Actuated g/C Ratio	0.17				0.06	0.59
Clearance Time (s)	4.0				4.0	4.0
Vehicle Extension (s)	3.0				3.0	3.0
Lane Grp Cap (vph)	594				102	2073
v/s Ratio Prot	c0.08				0.04	c0.35
v/s Ratio Perm						
v/c Ratio	0.44				0.62	0.59
Uniform Delay, d1	28.9				35.9	10.2
Progression Factor	0.08				1.00	1.00
Incremental Delay, d2	0.5				10.6	0.5
Delay (s)	2.8				46.5	10.7
Level of Service	A				D	B
Approach Delay (s)	2.8		0.0			12.4
Approach LOS	A		A			B
Intersection Summary						
HCM 2000 Control Delay			10.8		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.53			
Actuated Cycle Length (s)			78.0		Sum of lost time (s)	16.0
Intersection Capacity Utilization			48.8%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

AM Existing + Cumulative + Project
2: Carsbad Blvd NB & Avenida Encinas

HCM Signalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					 			 					
Traffic Volume (vph)	2	57	0	0	243	41	0	225	135	0	0	0	
Future Volume (vph)	2	57	0	0	243	41	0	225	135	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0			4.0			4.0	4.0				
Lane Util. Factor		1.00			0.95			0.95	1.00				
Frbp, ped/bikes		1.00			0.99			1.00	0.87				
Flpb, ped/bikes		1.00			1.00			1.00	1.00				
Frt		1.00			0.98			1.00	0.85				
Flt Protected		1.00			1.00			1.00	1.00				
Satd. Flow (prot)		1860			3423			3539	1380				
Flt Permitted		1.00			1.00			1.00	1.00				
Satd. Flow (perm)		1860			3423			3539	1380				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	2	62	0	0	264	45	0	245	147	0	0	0	
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	64	0	0	293	0	0	245	147	0	0	0	
Confl. Peds. (#/hr)			20			20			20				
Confl. Bikes (#/hr)			30			30			30				
Turn Type	Split	NA			NA			NA	custom				
Protected Phases	7	7			8			2					
Permitted Phases									8				
Actuated Green, G (s)		6.5			13.3			35.4	13.3				
Effective Green, g (s)		6.5			13.3			35.4	13.3				
Actuated g/C Ratio		0.08			0.17			0.46	0.17				
Clearance Time (s)		4.0			4.0			4.0	4.0				
Vehicle Extension (s)		3.0			3.0			3.0	3.0				
Lane Grp Cap (vph)		157			592			1629	238				
v/s Ratio Prot		c0.03			0.09			c0.07					
v/s Ratio Perm									c0.11				
v/c Ratio		0.41			0.50			0.15	0.62				
Uniform Delay, d1		33.4			28.8			12.0	29.4				
Progression Factor		1.41			1.00			1.00	1.00				
Incremental Delay, d2		1.7			0.7			0.2	4.7				
Delay (s)		48.7			29.4			12.2	34.2				
Level of Service		D			C			B	C				
Approach Delay (s)		48.7			29.4			20.4			0.0		
Approach LOS		D			C			C			A		
Intersection Summary													
HCM 2000 Control Delay			26.4									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.27										
Actuated Cycle Length (s)			76.9									Sum of lost time (s)	16.0
Intersection Capacity Utilization			30.8%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

LOS Engineering, Inc.

AM Existing + Cumulative + Project
 3: N Coast Hwy & Hotel Access/La Costa Ave

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	3	24	4	259	36	165	7	201	212	327	1033	4
Future Volume (veh/h)	3	24	4	259	36	165	7	201	212	327	1033	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.68	1.00		0.92	1.00		0.91	1.00		0.94
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	3	26	4	310	0	179	8	218	230	355	1123	4
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	12	105	68	607	0	248	15	1107	451	410	1896	796
Arrive On Green	0.06	0.06	0.06	0.17	0.00	0.17	0.01	0.31	0.31	0.23	0.53	0.53
Sat Flow, veh/h	192	1668	1072	3563	0	1453	1781	3554	1449	1781	3554	1492
Grp Volume(v), veh/h	29	0	4	310	0	179	8	218	230	355	1123	4
Grp Sat Flow(s),veh/h/ln	1861	0	1072	1781	0	1453	1781	1777	1449	1781	1777	1492
Q Serve(g_s), s	1.1	0.0	0.2	5.6	0.0	8.3	0.3	3.2	9.3	13.6	15.3	0.1
Cycle Q Clear(g_c), s	1.1	0.0	0.2	5.6	0.0	8.3	0.3	3.2	9.3	13.6	15.3	0.1
Prop In Lane	0.10		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	117	0	68	607	0	248	15	1107	451	410	1896	796
V/C Ratio(X)	0.25	0.00	0.06	0.51	0.00	0.72	0.55	0.20	0.51	0.86	0.59	0.01
Avail Cap(c_a), veh/h	418	0	241	801	0	326	100	1107	451	625	1896	796
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	0.0	31.4	26.8	0.0	27.9	35.2	18.0	20.1	26.3	11.3	7.8
Incr Delay (d2), s/veh	1.1	0.0	0.4	0.7	0.0	5.3	28.1	0.4	4.1	8.0	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.1	2.4	0.0	3.1	0.2	1.3	3.4	6.4	5.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.8	0.0	31.7	27.5	0.0	33.3	63.3	18.4	24.1	34.3	12.7	7.8
LnGrp LOS	C	A	C	C	A	C	E	B	C	C	B	A
Approach Vol, veh/h		33			489			456			1482	
Approach Delay, s/veh		32.7			29.6			22.1			17.9	
Approach LOS		C			C			C			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.4	26.2		8.5	4.6	42.0		16.1				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	25.0	17.0		16.0	4.0	38.0		16.0				
Max Q Clear Time (g_c+I1), s	15.6	11.3		3.1	2.3	17.3		10.3				
Green Ext Time (p_c), s	0.8	1.1		0.1	0.0	8.5		1.0				

Intersection Summary

HCM 6th Ctrl Delay	21.2
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

AM Existing + Cumulative + Project
4: N. Coast Hwy 101/N Coast Hwy & Project Access

HCM 6th TWSC

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↖	↑	↘	
Traffic Vol, veh/h	0	73	23	924	1283	35
Future Vol, veh/h	0	73	23	924	1283	35
Conflicting Peds, #/hr	0	20	20	0	0	20
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	2	2	2
Mvmt Flow	0	79	25	1004	1395	38
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	1454	1453	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	0	161	466	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	156	458	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	49.8	0.3	0			
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	458	-	156	-	-	
HCM Lane V/C Ratio	0.055	-	0.509	-	-	
HCM Control Delay (s)	13.3	-	49.8	-	-	
HCM Lane LOS	B	-	E	-	-	
HCM 95th %tile Q(veh)	0.2	-	2.5	-	-	

LOS Engineering, Inc.

Intersection			
Intersection Delay, s/veh	49.3		
Intersection LOS	E		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	51	365	1430
Demand Flow Rate, veh/h	52	372	1458
Vehicles Circulating, veh/h	1436	28	7
Vehicles Exiting, veh/h	29	1460	393
Ped Vol Crossing Leg, #/h	20	20	20
Ped Cap Adj	1.000	0.997	0.997
Approach Delay, s/veh	14.5	5.2	61.8
Approach LOS	B	A	F
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	52	372	1458
Cap Entry Lane, veh/h	319	1341	1370
Entry HV Adj Factor	0.981	0.981	0.981
Flow Entry, veh/h	51	365	1430
Cap Entry, veh/h	313	1312	1340
V/C Ratio	0.163	0.278	1.067
Control Delay, s/veh	14.5	5.2	61.8
LOS	B	A	F
95th %tile Queue, veh	1	1	29

Intersection			
Intersection Delay, s/veh	37.4		
Intersection LOS	E		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	57	334	1403
Demand Flow Rate, veh/h	59	341	1431
Vehicles Circulating, veh/h	1409	29	8
Vehicles Exiting, veh/h	30	1439	362
Ped Vol Crossing Leg, #/h	20	20	20
Ped Cap Adj	1.000	0.997	0.997
Approach Delay, s/veh	10.8	4.8	46.3
Approach LOS	B	A	E
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	59	341	1431
Cap Entry Lane, veh/h	429	1386	1410
Entry HV Adj Factor	0.966	0.981	0.981
Flow Entry, veh/h	57	334	1403
Cap Entry, veh/h	414	1355	1379
V/C Ratio	0.138	0.247	1.017
Control Delay, s/veh	10.8	4.8	46.3
LOS	B	A	F
95th %tile Queue, veh	0	1	24

Intersection			
Intersection Delay, s/veh	27.6		
Intersection LOS	D		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	36	238	1316
Demand Flow Rate, veh/h	36	243	1342
Vehicles Circulating, veh/h	1334	15	10
Vehicles Exiting, veh/h	18	1355	248
Ped Vol Crossing Leg, #/h	20	20	20
Ped Cap Adj	1.000	0.997	0.997
Approach Delay, s/veh	8.9	4.0	32.4
Approach LOS	A	A	D
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	36	243	1342
Cap Entry Lane, veh/h	457	1402	1408
Entry HV Adj Factor	1.000	0.981	0.981
Flow Entry, veh/h	36	238	1316
Cap Entry, veh/h	457	1372	1377
V/C Ratio	0.079	0.174	0.956
Control Delay, s/veh	8.9	4.0	32.4
LOS	A	A	D
95th %tile Queue, veh	0	1	19

AM Existing + Cumulative + Project
9: N. Coast Hwy 101 & Leucadia Blvd

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕		↕	↕↕		↕	↕↕	↕	↕	↕↕	
Traffic Volume (veh/h)	11	38	9	219	23	104	5	212	63	394	1300	1
Future Volume (veh/h)	11	38	9	219	23	104	5	212	63	394	1300	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.91	1.00		0.92	1.00		0.95	1.00		0.94
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	12	41	10	188	95	113	5	230	68	428	1413	1
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	16	55	13	313	130	155	9	1000	426	483	1994	1
Arrive On Green	0.05	0.05	0.05	0.18	0.18	0.18	0.01	0.28	0.28	0.27	0.55	0.55
Sat Flow, veh/h	337	1152	281	1781	742	882	1781	3554	1512	1781	3644	3
Grp Volume(v), veh/h	63	0	0	188	0	208	5	230	68	428	689	725
Grp Sat Flow(s),veh/h/ln	1770	0	0	1781	0	1624	1781	1777	1512	1781	1777	1870
Q Serve(g_s), s	2.5	0.0	0.0	6.9	0.0	8.6	0.2	3.5	2.4	16.4	20.4	20.4
Cycle Q Clear(g_c), s	2.5	0.0	0.0	6.9	0.0	8.6	0.2	3.5	2.4	16.4	20.4	20.4
Prop In Lane	0.19		0.16	1.00		0.54	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	84	0	0	313	0	285	9	1000	426	483	972	1023
V/C Ratio(X)	0.75	0.00	0.00	0.60	0.00	0.73	0.53	0.23	0.16	0.89	0.71	0.71
Avail Cap(c_a), veh/h	621	0	0	400	0	365	100	1000	426	650	972	1023
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.5	0.0	0.0	27.1	0.0	27.8	35.4	19.7	19.3	24.9	11.9	11.9
Incr Delay (d2), s/veh	12.5	0.0	0.0	1.9	0.0	5.3	39.3	0.5	0.8	11.1	4.4	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	3.0	0.0	3.6	0.2	1.5	0.9	8.0	8.0	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.0	0.0	0.0	28.9	0.0	33.1	74.7	20.2	20.1	36.1	16.3	16.1
LnGrp LOS	D	A	A	C	A	C	E	C	C	D	B	B
Approach Vol, veh/h		63			396			303			1842	
Approach Delay, s/veh		46.0			31.1			21.1			20.8	
Approach LOS		D			C			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	23.3	24.1		7.4	4.4	43.0		16.5				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	26.0	17.0		25.0	4.0	39.0		16.0				
Max Q Clear Time (g_c+l), s	18.4	5.5		4.5	2.2	22.4		10.6				
Green Ext Time (p_c), s	0.9	1.2		0.2	0.0	9.2		0.9				

Intersection Summary												
HCM 6th Ctrl Delay				23.0								
HCM 6th LOS				C								

Notes
 User approved volume balancing among the lanes for turning movement.
 User approved changes to right turn type.

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕		↕		↕	
Traffic Vol, veh/h	0	416	51	258	471	0	26	0	208	0	1	0
Future Vol, veh/h	0	416	51	258	471	0	26	0	208	0	1	0
Conflicting Peds, #/hr	10	0	10	10	0	10	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	452	55	280	512	0	28	0	226	0	1	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	522	0	0	517	0	0	1563	-	490	1675	1599	522
Stage 1	-	-	-	-	-	-	490	-	-	1082	1082	-
Stage 2	-	-	-	-	-	-	1073	-	-	593	517	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	-	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	-	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1044	-	-	1049	-	-	91	0	578	76	106	555
Stage 1	-	-	-	-	-	-	560	0	-	263	294	-
Stage 2	-	-	-	-	-	-	267	0	-	492	534	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1035	-	-	1040	-	-	63	-	573	32	65	550
Mov Cap-2 Maneuver	-	-	-	-	-	-	63	-	-	32	65	-
Stage 1	-	-	-	-	-	-	556	-	-	261	182	-
Stage 2	-	-	-	-	-	-	166	-	-	298	530	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			3.4			25			60.9		
HCM LOS							D			F		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	63	573	1035	-	-	1040	-	-	65			
HCM Lane V/C Ratio	0.449	0.395	-	-	-	0.27	-	-	0.008			
HCM Control Delay (s)	102.2	15.3	0	-	-	9.7	0	-	60.9			
HCM Lane LOS	F	C	A	-	-	A	A	-	F			
HCM 95th %tile Q(veh)	1.7	1.9	0	-	-	1.1	-	-	0			

Intersection						
Int Delay, s/veh	2.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	634	14	78	605	13	84
Future Vol, veh/h	634	14	78	605	13	84
Conflicting Peds, #/hr	0	20	20	0	20	20
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	689	15	85	658	14	91

Major/Minor	Major1	Major2	Minor1	Minor2	
Conflicting Flow All	0	0	724	1565	737
Stage 1	-	-	-	717	-
Stage 2	-	-	-	848	-
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	-	-	879	123	418
Stage 1	-	-	-	484	-
Stage 2	-	-	-	420	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	864	100	404
Mov Cap-2 Maneuver	-	-	-	100	-
Stage 1	-	-	-	476	-
Stage 2	-	-	-	349	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	24.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	287	-	-	864	-
HCM Lane V/C Ratio	0.367	-	-	0.098	-
HCM Control Delay (s)	24.7	-	-	9.6	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.6	-	-	0.3	-

AM Existing + Cumulative + Project
12: I-5 SB Ramp & La Costa Ave

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑	↑
Traffic Volume (veh/h)	0	651	169	578	546	0	0	0	0	504	10	186
Future Volume (veh/h)	0	651	169	578	546	0	0	0	0	504	10	186
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00				1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	708	184	628	593	0				556	0	202
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	2	2	2	0				2	2	2
Cap, veh/h	0	1295	336	706	2545	0				695	0	291
Arrive On Green	0.00	0.47	0.47	0.34	1.00	0.00				0.20	0.00	0.20
Sat Flow, veh/h	0	2864	720	3456	3647	0				3563	0	1493
Grp Volume(v), veh/h	0	454	438	628	593	0				556	0	202
Grp Sat Flow(s),veh/h/ln	0	1777	1713	1728	1777	0				1781	0	1493
Q Serve(g_s), s	0.0	16.5	16.5	15.5	0.0	0.0				13.4	0.0	11.3
Cycle Q Clear(g_c), s	0.0	16.5	16.5	15.5	0.0	0.0				13.4	0.0	11.3
Prop In Lane	0.00		0.42	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	830	801	706	2545	0				695	0	291
V/C Ratio(X)	0.00	0.55	0.55	0.89	0.23	0.00				0.80	0.00	0.69
Avail Cap(c_a), veh/h	0	830	801	806	2545	0				990	0	415
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.87	0.87	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	17.1	17.2	28.7	0.0	0.0				34.6	0.0	33.7
Incr Delay (d2), s/veh	0.0	2.6	2.7	9.8	0.2	0.0				3.1	0.0	3.0
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	7.0	6.7	6.2	0.1	0.0				6.0	0.0	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	19.7	19.8	38.4	0.2	0.0				37.7	0.0	36.7
LnGrp LOS	A	B	B	D	A	A				D	A	D
Approach Vol, veh/h		892			1221						758	
Approach Delay, s/veh		19.8			19.9						37.4	
Approach LOS		B			B						D	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	22.4	46.1		21.6		68.4						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	21.0	32.0		25.0		57.0						
Max Q Clear Time (g_c+I), s	17.5	18.5		15.4		2.0						
Green Ext Time (p_c), s	0.9	4.9		2.2		4.7						

Intersection Summary

HCM 6th Ctrl Delay	24.5
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.










AM Existing + Cumulative + Project
13: I-5 NB Ramp & La Costa Ave

HCM 6th Signalized Intersection Summary





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	929	0	0	984	478	152	1	737	0	0	0
Future Volume (veh/h)	184	929	0	0	984	478	152	1	737	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		0.95	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	200	1010	0	0	1070	520	165	1	801			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	235	2290	0	0	2390	703	472	3	687			
Arrive On Green	0.26	1.00	0.00	0.00	0.47	0.47	0.27	0.27	0.27			
Sat Flow, veh/h	1781	3647	0	0	5274	1502	1771	11	2575			
Grp Volume(v), veh/h	200	1010	0	0	1070	520	166	0	801			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1702	1502	1782	0	1288			
Q Serve(g_s), s	9.6	0.0	0.0	0.0	12.7	25.4	6.8	0.0	24.0			
Cycle Q Clear(g_c), s	9.6	0.0	0.0	0.0	12.7	25.4	6.8	0.0	24.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.99		1.00			
Lane Grp Cap(c), veh/h	235	2290	0	0	2390	703	475	0	687			
V/C Ratio(X)	0.85	0.44	0.00	0.00	0.45	0.74	0.35	0.00	1.17			
Avail Cap(c_a), veh/h	416	2290	0	0	2390	703	475	0	687			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.71	0.71	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	32.3	0.0	0.0	0.0	16.1	19.5	26.7	0.0	33.0			
Incr Delay (d2), s/veh	6.1	0.4	0.0	0.0	0.6	6.9	0.4	0.0	90.1			
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	3.9	0.1	0.0	0.0	4.8	9.6	2.9	0.0	15.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.4	0.4	0.0	0.0	16.7	26.4	27.1	0.0	123.1			
LnGrp LOS	D	A	A	A	B	C	C	A	F			
Approach Vol, veh/h		1210			1590			967				
Approach Delay, s/veh		6.7			19.9			106.6				
Approach LOS		A			B			F				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		62.0			15.9	46.1		28.0				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		58.0			21.0	33.0		24.0				
Max Q Clear Time (g_c+I1), s		2.0			11.6	27.4		26.0				
Green Ext Time (p_c), s		9.6			0.4	4.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay					37.9							
HCM 6th LOS					D							

PM Existing + Cumulative + Project
1: Avenida Encinas & Carlsbad Blvd SB

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	203	0	0	0	82	550
Future Volume (vph)	203	0	0	0	82	550
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0				4.0	4.0
Lane Util. Factor	0.97				1.00	0.95
Frbp, ped/bikes	1.00				1.00	1.00
Flpb, ped/bikes	1.00				1.00	1.00
Frt	1.00				1.00	1.00
Flt Protected	0.95				0.95	1.00
Satd. Flow (prot)	3433				1770	3539
Flt Permitted	0.95				0.95	1.00
Satd. Flow (perm)	3433				1770	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	221	0	0	0	89	598
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	221	0	0	0	89	598
Confl. Peds. (#/hr)		15			15	
Confl. Bikes (#/hr)		10		10		
Turn Type	Prot				Prot	NA
Protected Phases	8				1	6
Permitted Phases						
Actuated Green, G (s)	13.1				7.6	53.4
Effective Green, g (s)	13.1				7.6	53.4
Actuated g/C Ratio	0.15				0.09	0.62
Clearance Time (s)	4.0				4.0	4.0
Vehicle Extension (s)	3.0				3.0	3.0
Lane Grp Cap (vph)	520				155	2187
v/s Ratio Prot	c0.06				c0.05	c0.17
v/s Ratio Perm						
v/c Ratio	0.42				0.57	0.27
Uniform Delay, d1	33.2				37.8	7.6
Progression Factor	0.13				1.00	1.00
Incremental Delay, d2	0.5				5.1	0.1
Delay (s)	4.8				42.9	7.7
Level of Service	A				D	A
Approach Delay (s)	4.8		0.0			12.2
Approach LOS	A		A			B
Intersection Summary						
HCM 2000 Control Delay			10.4		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.31			
Actuated Cycle Length (s)			86.4		Sum of lost time (s)	16.0
Intersection Capacity Utilization			30.6%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

PM Existing + Cumulative + Project
2: Carsbad Blvd NB & Avenida Encinas

HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 			 				
Traffic Volume (vph)	3	80	0	0	203	55	0	686	278	0	0	0
Future Volume (vph)	3	80	0	0	203	55	0	686	278	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0			
Lane Util. Factor		1.00			0.95			0.95	1.00			
Frbp, ped/bikes		1.00			0.99			1.00	0.92			
Flpb, ped/bikes		1.00			1.00			1.00	1.00			
Frt		1.00			0.97			1.00	0.85			
Flt Protected		1.00			1.00			1.00	1.00			
Satd. Flow (prot)		1860			3389			3539	1452			
Flt Permitted		1.00			1.00			1.00	1.00			
Satd. Flow (perm)		1860			3389			3539	1452			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	87	0	0	221	60	0	746	302	0	0	0
RTOR Reduction (vph)	0	0	0	0	25	0	0	0	256	0	0	0
Lane Group Flow (vph)	0	90	0	0	256	0	0	746	46	0	0	0
Confl. Peds. (#/hr)			15			15			15			
Confl. Bikes (#/hr)			10			10			10			
Turn Type	Split	NA			NA			NA	custom			
Protected Phases	7	7			8			2				
Permitted Phases									8			
Actuated Green, G (s)		7.9			13.1			41.8	13.1			
Effective Green, g (s)		7.9			13.1			41.8	13.1			
Actuated g/C Ratio		0.09			0.15			0.48	0.15			
Clearance Time (s)		4.0			4.0			4.0	4.0			
Vehicle Extension (s)		3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)		170			513			1712	220			
v/s Ratio Prot		c0.05			c0.08			c0.21				
v/s Ratio Perm									0.03			
v/c Ratio		0.53			0.50			0.44	0.21			
Uniform Delay, d1		37.5			33.6			14.6	32.1			
Progression Factor		1.48			1.00			1.00	1.00			
Incremental Delay, d2		2.8			0.8			0.8	0.5			
Delay (s)		58.4			34.4			15.4	32.6			
Level of Service		E			C			B	C			
Approach Delay (s)		58.4			34.4			20.3			0.0	
Approach LOS		E			C			C			A	
Intersection Summary												
HCM 2000 Control Delay			25.5									C
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			86.4									16.0
Intersection Capacity Utilization			35.5%									A
Analysis Period (min)			15									
c Critical Lane Group												

LOS Engineering, Inc.

PM Existing + Cumulative + Project
 3: N Coast Hwy & Hotel Access/La Costa Ave

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	4	32	6	255	47	411	9	655	262	269	375	6
Future Volume (veh/h)	4	32	6	255	47	411	9	655	262	269	375	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.77	1.00		0.95	1.00		0.92	1.00		0.94
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	4	35	7	313	0	447	10	712	285	292	408	7
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	14	118	87	898	0	380	18	952	392	281	1475	621
Arrive On Green	0.07	0.07	0.07	0.25	0.00	0.25	0.01	0.27	0.27	0.16	0.42	0.42
Sat Flow, veh/h	191	1670	1227	3563	0	1509	1781	3554	1464	1781	3554	1495
Grp Volume(v), veh/h	39	0	7	313	0	447	10	712	285	292	408	7
Grp Sat Flow(s),veh/h/ln	1861	0	1227	1781	0	1509	1781	1777	1464	1781	1777	1495
Q Serve(g_s), s	1.3	0.0	0.3	4.6	0.0	16.0	0.4	11.6	11.2	10.0	4.8	0.2
Cycle Q Clear(g_c), s	1.3	0.0	0.3	4.6	0.0	16.0	0.4	11.6	11.2	10.0	4.8	0.2
Prop In Lane	0.10		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	132	0	87	898	0	380	18	952	392	281	1475	621
V/C Ratio(X)	0.30	0.00	0.08	0.35	0.00	1.18	0.55	0.75	0.73	1.04	0.28	0.01
Avail Cap(c_a), veh/h	469	0	309	898	0	380	140	952	392	281	1475	621
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.0	0.0	27.6	19.5	0.0	23.7	31.3	21.3	21.1	26.7	12.3	10.9
Incr Delay (d2), s/veh	1.2	0.0	0.4	0.2	0.0	103.2	23.6	5.4	11.2	64.8	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.1	1.8	0.0	16.1	0.3	5.2	4.8	9.0	1.8	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.2	0.0	28.0	19.7	0.0	127.0	54.8	26.7	32.4	91.5	12.7	10.9
LnGrp LOS	C	A	C	B	A	F	D	C	C	F	B	B
Approach Vol, veh/h		46			760			1007			707	
Approach Delay, s/veh		29.0			82.8			28.5			45.2	
Approach LOS		C			F			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.0	21.0		8.5	4.6	30.4		20.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	10.0	17.0		16.0	5.0	22.0		16.0				
Max Q Clear Time (g_c + I1), s	12.0	13.6		3.3	2.4	6.8		18.0				
Green Ext Time (p_c), s	0.0	1.8		0.1	0.0	2.3		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		49.6
HCM 6th LOS		D

Notes

User approved volume balancing among the lanes for turning movement.

PM Existing + Cumulative + Project
4: N. Coast Hwy 101/N Coast Hwy & Project Access

HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↖	↑	↘	
Traffic Vol, veh/h	0	76	41	946	601	62
Future Vol, veh/h	0	76	41	946	601	62
Conflicting Peds, #/hr	20	20	0	0	0	20
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	83	45	1028	653	67
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	727	740	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	424	867	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	410	853	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	16	0.4		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	853	-	410	-	-	
HCM Lane V/C Ratio	0.052	-	0.201	-	-	
HCM Control Delay (s)	9.5	-	16	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.7	-	-	

LOS Engineering, Inc.

Intersection			
Intersection Delay, s/veh	7.6		
Intersection LOS	A		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	43	763	524
Demand Flow Rate, veh/h	44	778	534
Vehicles Circulating, veh/h	511	29	15
Vehicles Exiting, veh/h	38	526	792
Ped Vol Crossing Leg, #/h	10	10	10
Ped Cap Adj	0.999	0.999	0.999
Approach Delay, s/veh	4.5	8.8	6.1
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	44	778	534
Cap Entry Lane, veh/h	920	1386	1402
Entry HV Adj Factor	0.977	0.981	0.981
Flow Entry, veh/h	43	763	524
Cap Entry, veh/h	898	1357	1374
V/C Ratio	0.048	0.562	0.381
Control Delay, s/veh	4.5	8.8	6.1
LOS	A	A	A
95th %tile Queue, veh	0	4	2

Intersection			
Intersection Delay, s/veh	7.7		
Intersection LOS	A		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	87	769	541
Demand Flow Rate, veh/h	89	784	552
Vehicles Circulating, veh/h	540	36	6
Vehicles Exiting, veh/h	18	593	814
Ped Vol Crossing Leg, #/h	10	10	10
Ped Cap Adj	0.999	0.999	0.999
Approach Delay, s/veh	5.1	9.0	6.2
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	89	784	552
Cap Entry Lane, veh/h	897	1377	1413
Entry HV Adj Factor	0.978	0.981	0.981
Flow Entry, veh/h	87	769	541
Cap Entry, veh/h	876	1349	1384
V/C Ratio	0.099	0.570	0.391
Control Delay, s/veh	5.1	9.0	6.2
LOS	A	A	A
95th %tile Queue, veh	0	4	2

Intersection			
Intersection Delay, s/veh	7.3		
Intersection LOS	A		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	30	736	517
Demand Flow Rate, veh/h	30	751	528
Vehicles Circulating, veh/h	494	13	31
Vehicles Exiting, veh/h	65	511	733
Ped Vol Crossing Leg, #/h	10	10	10
Ped Cap Adj	0.999	0.999	0.999
Approach Delay, s/veh	4.2	8.3	6.2
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	30	751	528
Cap Entry Lane, veh/h	933	1405	1383
Entry HV Adj Factor	1.000	0.980	0.980
Flow Entry, veh/h	30	736	517
Cap Entry, veh/h	932	1374	1353
V/C Ratio	0.032	0.535	0.382
Control Delay, s/veh	4.2	8.3	6.2
LOS	A	A	A
95th %tile Queue, veh	0	3	2

PM Existing + Cumulative + Project
 9: N. Coast Hwy 101 & Leucadia Blvd

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕		↗	↕↕		↗	↕↕	↗	↗	↕↕	
Traffic Volume (veh/h)	24	45	13	171	30	194	7	659	174	274	453	3
Future Volume (veh/h)	24	45	13	171	30	194	7	659	174	274	453	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.93	1.00		0.96	1.00		0.94
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	26	49	14	186	33	211	8	716	189	298	492	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	35	66	19	358	41	263	15	1172	503	340	1854	11
Arrive On Green	0.07	0.07	0.07	0.20	0.20	0.20	0.01	0.33	0.33	0.19	0.51	0.51
Sat Flow, veh/h	518	976	279	1781	205	1311	1781	3554	1527	1781	3620	22
Grp Volume(v), veh/h	89	0	0	186	0	244	8	716	189	298	241	254
Grp Sat Flow(s),veh/h/ln	1773	0	0	1781	0	1516	1781	1777	1527	1781	1777	1865
Q Serve(g_s), s	3.7	0.0	0.0	7.1	0.0	11.6	0.3	12.8	7.2	12.3	5.8	5.8
Cycle Q Clear(g_c), s	3.7	0.0	0.0	7.1	0.0	11.6	0.3	12.8	7.2	12.3	5.8	5.8
Prop In Lane	0.29		0.16	1.00		0.86	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	120	0	0	358	0	304	15	1172	503	340	910	955
V/C Ratio(X)	0.74	0.00	0.00	0.52	0.00	0.80	0.55	0.61	0.38	0.88	0.27	0.27
Avail Cap(c_a), veh/h	514	0	0	493	0	420	141	1172	503	376	910	955
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.7	0.0	0.0	27.0	0.0	28.9	37.5	21.3	19.4	29.8	10.4	10.4
Incr Delay (d2), s/veh	8.6	0.0	0.0	1.2	0.0	7.6	28.5	2.4	2.1	19.0	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.0	3.0	0.0	4.7	0.3	5.4	2.7	6.9	2.2	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.3	0.0	0.0	28.2	0.0	36.5	66.0	23.7	21.6	48.8	11.1	11.1
LnGrp LOS	D	A	A	C	A	D	E	C	C	D	B	B
Approach Vol, veh/h		89			430			913			793	
Approach Delay, s/veh		43.3			32.9			23.6			25.3	
Approach LOS		D			C			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	18.5	29.0		9.1	4.6	42.8		19.2				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	16.0	25.0		22.0	6.0	35.0		21.0				
Max Q Clear Time (g_c+l1), s	14.3	14.8		5.7	2.3	7.8		13.6				
Green Ext Time (p_c), s	0.2	4.0		0.3	0.0	3.1		1.3				

Intersection Summary												
HCM 6th Ctrl Delay											26.8	
HCM 6th LOS											C	



















Notes
 User approved volume balancing among the lanes for turning movement.
 User approved changes to right turn type.

Intersection												
Int Delay, s/veh	9.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕		↕		↕	
Traffic Vol, veh/h	1	482	76	153	564	1	63	0	165	0	0	0
Future Vol, veh/h	1	482	76	153	564	1	63	0	165	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	524	83	166	613	1	68	0	179	0	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	624	0	0	617	0	0	1524	-	576	1613	1575	624
Stage 1	-	-	-	-	-	-	578	-	-	956	956	-
Stage 2	-	-	-	-	-	-	946	-	-	657	619	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	-	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	-	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	957	-	-	963	-	-	97	0	517	84	110	485
Stage 1	-	-	-	-	-	-	501	0	-	310	336	-
Stage 2	-	-	-	-	-	-	314	0	-	454	480	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	949	-	-	955	-	-	76	-	513	43	80	481
Mov Cap-2 Maneuver	-	-	-	-	-	-	76	-	-	43	80	-
Stage 1	-	-	-	-	-	-	496	-	-	307	245	-
Stage 2	-	-	-	-	-	-	231	-	-	295	475	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			2			58.5			0		
HCM LOS							F			A		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	76	513	949	-	-	955	-	-	-			
HCM Lane V/C Ratio	0.901	0.35	0.001	-	-	0.174	-	-	-			
HCM Control Delay (s)	170.5	15.7	8.8	0	-	9.6	0	-	0			
HCM Lane LOS	F	C	A	A	-	A	A	-	A			
HCM 95th %tile Q(veh)	4.6	1.6	0	-	-	0.6	-	-	-			

Intersection						
Int Delay, s/veh	1.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	689	15	64	780	15	51
Future Vol, veh/h	689	15	64	780	15	51
Conflicting Peds, #/hr	0	20	20	0	20	20
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	749	16	70	848	16	55
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	785	0	1785	797
Stage 1	-	-	-	-	777	-
Stage 2	-	-	-	-	1008	-
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	-	-	834	-	90	387
Stage 1	-	-	-	-	453	-
Stage 2	-	-	-	-	353	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	820	-	73	374
Mov Cap-2 Maneuver	-	-	-	-	73	-
Stage 1	-	-	-	-	445	-
Stage 2	-	-	-	-	291	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.7		34.3		
HCM LOS	D					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	193	-	-	820	-	
HCM Lane V/C Ratio	0.372	-	-	0.085	-	
HCM Control Delay (s)	34.3	-	-	9.8	0	
HCM Lane LOS	D	-	-	A	A	
HCM 95th %tile Q(veh)	1.6	-	-	0.3	-	

PM Existing + Cumulative + Project
12: I-5 SB Ramp & La Costa Ave

HCM 6th Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	607	174	738	715	0	0	0	0	510	1	195
Future Volume (veh/h)	0	607	174	738	715	0	0	0	0	510	1	195
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00				1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	660	189	802	777	0				555	0	212
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	2	2	2	0				2	2	2
Cap, veh/h	0	1133	324	899	2572	0				667	0	279
Arrive On Green	0.00	0.42	0.42	0.26	0.72	0.00				0.19	0.00	0.19
Sat Flow, veh/h	0	2796	773	3456	3647	0				3563	0	1490
Grp Volume(v), veh/h	0	434	415	802	777	0				555	0	212
Grp Sat Flow(s),veh/h/ln	0	1777	1699	1728	1777	0				1781	0	1490
Q Serve(g_s), s	0.0	16.9	16.9	20.1	7.0	0.0				13.5	0.0	12.1
Cycle Q Clear(g_c), s	0.0	16.9	16.9	20.1	7.0	0.0				13.5	0.0	12.1
Prop In Lane	0.00		0.46	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	745	712	899	2572	0				667	0	279
V/C Ratio(X)	0.00	0.58	0.58	0.89	0.30	0.00				0.83	0.00	0.76
Avail Cap(c_a), veh/h	0	745	712	998	2572	0				792	0	331
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.62	0.62	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	20.1	20.1	32.1	4.4	0.0				35.2	0.0	34.7
Incr Delay (d2), s/veh	0.0	3.3	3.5	6.3	0.2	0.0				6.5	0.0	8.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.4	7.1	8.9	2.1	0.0				6.3	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	23.4	23.6	38.3	4.6	0.0				41.7	0.0	42.9
LnGrp LOS	A	C	C	D	A	A				D	A	D
Approach Vol, veh/h		849			1579						767	
Approach Delay, s/veh		23.5			21.7						42.1	
Approach LOS		C			C						D	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	27.4	41.7		20.9		69.1						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	26.0	32.0		20.0		62.0						
Max Q Clear Time (g_c+I1), s	22.1	18.9		15.5		9.0						
Green Ext Time (p_c), s	1.3	4.6		1.4		6.6						
Intersection Summary												
HCM 6th Ctrl Delay				27.1								
HCM 6th LOS				C								
Notes												
User approved volume balancing among the lanes for turning movement.												

PM Existing + Cumulative + Project
 13: I-5 NB Ramp & La Costa Ave

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	904	0	0	1177	417	265	1	677	0	0	0
Future Volume (veh/h)	190	904	0	0	1177	417	265	1	677	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		0.94	1.00		0.93			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	207	983	0	0	1279	453	288	1	736			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	248	1977	0	0	1838	535	585	2	858			
Arrive On Green	0.14	0.56	0.00	0.00	0.36	0.36	0.33	0.33	0.33			
Sat Flow, veh/h	1781	3647	0	0	5274	1486	1775	6	2605			
Grp Volume(v), veh/h	207	983	0	0	1279	453	289	0	736			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1702	1486	1782	0	1303			
Q Serve(g_s), s	7.9	11.9	0.0	0.0	15.0	19.6	9.1	0.0	18.5			
Cycle Q Clear(g_c), s	7.9	11.9	0.0	0.0	15.0	19.6	9.1	0.0	18.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	248	1977	0	0	1838	535	587	0	858			
V/C Ratio(X)	0.83	0.50	0.00	0.00	0.70	0.85	0.49	0.00	0.86			
Avail Cap(c_a), veh/h	254	1977	0	0	1838	535	662	0	968			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.67	0.67	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	29.3	9.5	0.0	0.0	19.1	20.6	18.8	0.0	21.9			
Incr Delay (d2), s/veh	14.5	0.6	0.0	0.0	2.2	15.2	0.6	0.0	7.1			
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	4.2	4.1	0.0	0.0	5.8	8.5	3.6	0.0	6.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.8	10.1	0.0	0.0	21.3	35.9	19.4	0.0	29.0			
LnGrp LOS	D	B	A	A	C	D	B	A	C			
Approach Vol, veh/h		1190			1732			1025				
Approach Delay, s/veh		16.0			25.1			26.3				
Approach LOS		B			C			C				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		42.9			13.7	29.2		27.1				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		36.0			10.0	22.0		26.0				
Max Q Clear Time (g_c+I1), s		13.9			9.9	21.6		20.5				
Green Ext Time (p_c), s		7.5			0.0	0.3		2.6				
Intersection Summary												
HCM 6th Ctrl Delay					22.7							
HCM 6th LOS					C							

Appendix P

Excerpts from Ponto and Streetscape EIRs for Horizon Year Volumes

**PONTO BEACHFRONT VILLAGE VISION PLAN
FINAL
ENVIRONMENTAL IMPACT REPORT**

**SCH#2007031141
EIR 05-05/GPA 05-04/LCPA 05-01/DI 05-01**

**APPENDIX VOLUME V
(APPENDIX G-1 OF 2 WITH TRAFFIC
APPENDICES A-G)**

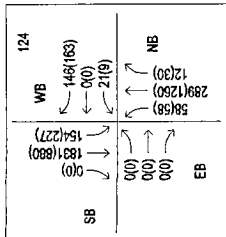
Prepared For:

City of Carlsbad
Planning Department
1635 Faraday Avenue
Carlsbad, California 92008
Contact: Christer Westman, Project Manager
(760) 602-4614

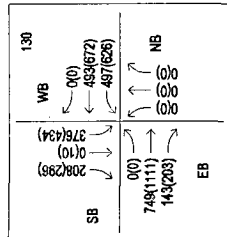
Prepared By:

RBF Consulting
9755 Clairemont Mesa Boulevard, Suite 100
San Diego, California 92124
(858) 614-5000
FAX (858) 614-5001
RBF JN 25-101951.001

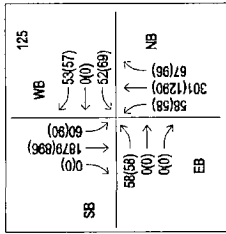
August 2007



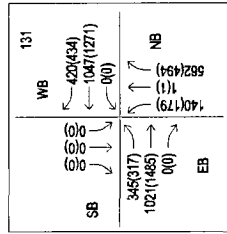
#24 Ponto Drive/ Carlsbad Blvd.



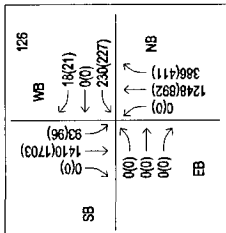
#30 La Costa Ave./ I-5 SB Ramps



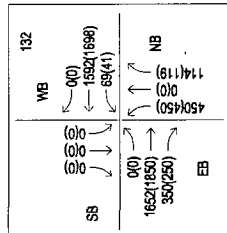
#25 Beach Way/ Carlsbad Blvd.



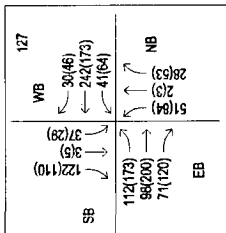
#31 La Costa Ave./ I-5 NB Ramps



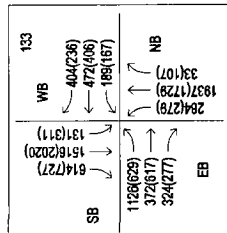
#26 Avenida Encinas/ Carlsbad Blvd.



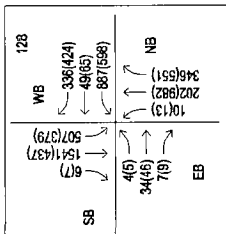
#32 La Costa Ave./ Pireaus St.



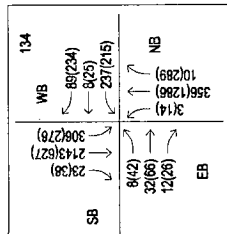
#27 Ponto Drive/ Avenida Encinas



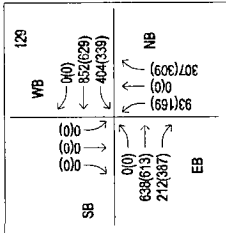
#33 La Costa Ave./ El Camino Real



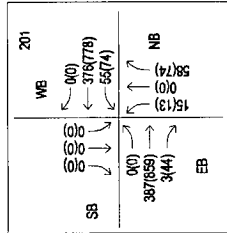
#28 La Costa Ave./ N. Coast Highway 101



#34 Leucadia Blvd./ N. Coast Highway 101



#29 La Costa Ave./ Vulcan Ave.



#35 La Costa Ave./ Sheridan Rd.



Horizon Year 2030 With Vision Plan Peak Hour Volumes

25101951.001

EXHIBIT 20



VOLUME 1
FINAL ENVIRONMENTAL IMPACT REPORT

North Coast Highway 101 Streetscape Improvement Project
Case No.: 10-035 DR/CDP/EIR and 10-036 GPA/SPA/LCPA
State Clearinghouse (SCH) No. 2015091084

Lead Agency/Project Applicant:

City of Encinitas
Development Services Department
Contact: Stephanie Kellar, Project Manager
505 South Vulcan Avenue
Encinitas, California 92024

Preparer:

Michael Baker International
9755 Clairemont Mesa Boulevard, Suite 100
San Diego, California 92124

February 2018

Highway 101 Streetscape Project

TRAFFIC IMPACT ANALYSIS REPORT

Prepared for

City of Encinitas

505 S. Vulcan Avenue,
Encinitas, CA 92024

Prepared by



5050 Avenida Encinas, Suite 260, Carlsbad, CA 92008
CONTACT: Robert Davis 760.603.6244 ROBERTDAVIS@mbakerintl.com

November 29, 2016

JN 137350

Table 11
Year 2035 Intersection Conditions - AM Peak Hour

ID	Intersection	Year 2035 No Build			Control (With Project)	Year 2035 Alternative 1				Year 2035 Alternative 2				Year 2035 Alternative 1 With SMUP			
		Control	Delay	LOS		Delay	LOS	Δ Delay (sec)	Significant?	Delay	LOS	Δ Delay (sec)	Significant?	Delay	LOS	Δ Delay (sec)	Significant?
1	Hwy 101 / La Costa Ave.	Signal	25.8	C	R	5.3	A	-20.5	No	2.8	A	-23.0	No	5.6	A	-20.2	No
2	Hwy 101 / New Road	SSS	6.3	A	Signal ¹	24.5	C	-1.3	No	24.4	C	-1.4	No	24.8	C	-1.0	No
3	Hwy 101 / Bishops Gate Rd.	SSS	6.1	A	R	34.8	D	28.5	No	28.3	D	22.0	No	34.9	D	28.6	No
4	Hwy 101 / Grandview St	SSS	5.8	A	R	33.8	D	27.7	No	27.5	D	21.4	No	34.2	D	28.1	No
5	Hwy 101 / Jupiter St	SSS	1.7	A	R	18.0	C	16.3	No	11.5	B	9.8	No	20.7	C	19.0	No
6	Hwy 101 / Leucadia Blvd.	Signal	69.5	E	Signal	70.8	E	1.3	No	68.3	E	-1.2	No	71.3	E	1.8	No
7	Hwy 101 / El Portal St	SSS	1.6	A	R	18.9	C	17.3	No	14.7	B	13.1	No	26.2	D	24.6	No
8	Hwy 101 / Marcheta St	AWS	158.5	F	SSS	17.9	C	-140.6	No	16.6	C	-141.9	No	23.1	C	-135.4	No
9	Hwy 101 / Encinitas Blvd.	Signal	35.6	D	Signal	35.4	D	-0.2	No	35.3	D	-0.3	No	36.2	D	0.6	No
10	Neptune Ave. / Grandview St	SSS	3.9	A	SSS	3.9	A	0.0	No	3.9	A	0.0	No	3.9	A	0.0	No
11	Neptune Ave. / Jupiter St	SSS	1.6	A	SSS	1.6	A	0.0	No	1.6	A	0.0	No	1.6	A	0.0	No
12	Neptune Ave. / Leucadia Blvd.	SSS	5.1	A	SSS	5.1	A	0.0	No	5.1	A	0.0	No	5.3	A	0.2	No
13	Neptune Ave. / N El Portal St	SSS	2.7	A	SSS	2.7	A	0.0	No	2.7	A	0.0	No	2.7	A	0.0	No
14	La Costa Ave. / Vulcan Ave.	SSS	6.7	A	SSS	8.0	A	1.3	No	7.5	A	0.8	No	15.5	C	8.8	No
15	La Costa Ave. / Sheridan Rd.	SSS	2.0	A	SSS	2.1	A	0.1	No	2.1	A	0.1	No	2.2	A	0.2	No
16	La Costa Ave. / I-5 SB Ramps	Signal	52.3	D	Signal	54.4	D	2.1	No	54.3	D	2.0	No	54.7	D	2.4	No
17	La Costa Ave. / I-5 NB Ramps	Signal	29.1	C	Signal	30.1	C	1.0	No	30.7	C	1.6	No	30.7	C	1.6	No
18	Leucadia Blvd. / Vulcan Ave.	Signal	68.8	E	Signal	70.5	E	1.7	No	70.6	E	1.8	No	70.7	E	1.9	No
19	Leucadia Blvd. / Hygeia Ave.	AWS	24.4	C	AWS	25.0	C	0.6	No	25.0	C	0.6	No	25.7	D	1.3	No
20	Leucadia Blvd. / Hymettus Ave.	R	11.7	B	R	11.7	B	0.0	No	11.7	B	0.0	No	11.5	B	-0.2	No
21	Leucadia Blvd. / Orpheus Ave.	Signal	27.3	C	Signal	28.0	C	0.7	No	28.0	C	0.7	No	28.8	C	1.5	No
22	Leucadia Blvd. / I-5 SB Ramps	Signal	48.6	D	Signal	47.9	D	-0.7	No	49.0	D	0.4	No	42.6	D	-6.0	No
23	Leucadia Blvd. / I-5 NB Ramps	Signal	20.7	C	Signal	20.7	C	0.0	No	20.8	C	0.1	No	20.6	C	-0.1	No
24	Encinitas Blvd. / Vulcan Ave.	Signal	33.4	C	Signal	35.8	D	2.4	No	36.0	D	2.6	No	38.0	D	4.6	No
25	Encinitas Blvd. / I-5 SB Ramps	Signal	17.0	B	Signal	17.6	B	0.6	No	17.5	B	0.5	No	17.6	B	0.6	No
26	Encinitas Blvd. / I-5 NB Ramps	Signal	34.5	C	Signal	38.6	D	4.1	No	39.6	D	5.1	No	38.0	D	3.5	No
27	Vulcan Ave. / Orpheus Ave.	SSS	10.9	B	SSS	18.5	C	7.6	No	18.5	C	7.6	No	18.5	C	7.6	No

Note: Alternative 1 is 4-Lanes on Carlsbad Blvd north of La Costa Ave. Alternative 2 is 2-Lanes on Carlsbad Blvd north of La Costa Ave.

¹ - 4 Leg Intersection with Signal instead of roundabout (see Exhibit 35)

SSS - Side Street Stop

AWS - All-Way Stop

R - Roundabout

SMUP - Sustainable Mixed Use Places

Table 12
Year 2035 Intersection Conditions - PM Peak Hour

ID	Intersection	Year 2035 No Build			Control (With Project)	Year 2035 Alternative 1				Year 2035 Alternative 2				Year 2035 Alternative 1 With SMUP			
		Control	Delay	LOS		Delay	LOS	Δ Delay (sec)	Significant?	Delay	LOS	Δ Delay (sec)	Significant?	Delay	LOS	Δ Delay (sec)	Significant?
1	Hwy 101 / La Costa Ave.	Signal	28.4	C	R	10.4	B	-18.0	No	3.9	A	-24.5	No	12.1	B	-16.3	No
2	Hwy 101 / New Road	SSS	46.8	E	Signal ¹	40.3	D	11.9	No	37.8	D	9.4	No	43.0	D	14.6	No
3	Hwy 101 / Bishops Gate Rd.	SSS	2.1	A	R	3.6	A	-43.2	No	3.6	A	-43.2	No	3.8	A	-43.0	No
4	Hwy 101 / Grandview St	SSS	3.4	A	R	2.8	A	0.7	No	2.8	A	0.7	No	2.9	A	0.8	No
5	Hwy 101 / Jupiter St	SSS	1.1	A	R	2.7	A	-0.7	No	2.7	A	-0.7	No	2.8	A	-0.6	No
6	Hwy 101 / Leucadia Blvd.	Signal	36.8	D	Signal	40.0	D	3.2	No	39.7	D	2.9	No	41.7	D	4.9	No
7	Hwy 101 / El Portal St	SSS	1.1	A	R	3.1	A	2.0	No	3.1	A	2.0	No	3.1	A	2.0	No
8	Hwy 101 / Marcheta St	AWS	46.4	E	SSS	22.8	C	-23.6	No	21.4	C	-25.0	No	22.0	C	-24.4	No
9	Hwy 101 / Encinitas Blvd.	Signal	38.4	D	Signal	38.1	D	-0.3	No	38.1	D	-0.3	No	38.6	D	0.2	No
10	Neptune Ave. / Grandview St	SSS	4.9	A	SSS	4.9	A	0.0	No	4.9	A	0.0	No	4.7	A	-0.2	No
11	Neptune Ave. / Jupiter St	SSS	1.7	A	SSS	1.7	A	0.0	No	1.7	A	0.0	No	1.9	A	0.2	No
12	Neptune Ave. / Leucadia Blvd.	SSS	4.0	A	SSS	4.0	A	0.0	No	4.0	A	0.0	No	4.6	A	0.6	No
13	Neptune Ave. / N El Portal St	SSS	2.8	A	SSS	2.8	A	0.0	No	2.8	A	0.0	No	2.8	A	0.0	No
14	La Costa Ave. / Vulcan Ave.	SSS	5.6	A	SSS	6.5	A	0.9	No	6.4	A	0.8	No	3.9	A	-1.7	No
15	La Costa Ave. / Sheridan Rd.	SSS	1.3	A	SSS	1.4	A	0.1	No	1.4	A	0.1	No	0.9	A	-0.4	No
16	La Costa Ave. / I-5 SB Ramps	Signal	35.9	D	Signal	39.6	D	3.7	No	42.3	D	6.4	No	29.6	C	-6.3	No
17	La Costa Ave. / I-5 NB Ramps	Signal	43.7	D	Signal	52.4	D	8.7	No	53.7	D	10.0	No	22.1	C	-21.6	No
18	Leucadia Blvd. / Vulcan Ave.	Signal	47.9	D	Signal	54.1	D	6.2	No	54.0	D	6.1	No	54.6	D	6.7	No
19	Leucadia Blvd. / Hygeia Ave.	AWS	32.2	D	AWS	31.6	D	-0.6	No	31.6	D	-0.6	No	32.7	D	0.5	No
20	Leucadia Blvd. / Hymettus Ave.	R	12.9	B	R	14.7	B	1.8	No	14.7	B	1.8	No	14.0	B	1.1	No
21	Leucadia Blvd. / Orpheus Ave.	Signal	27.6	C	Signal	28.1	C	0.5	No	28.1	C	0.5	No	29.3	C	1.7	No
22	Leucadia Blvd. / I-5 SB Ramps	Signal	38.3	D	Signal	42.7	D	4.4	No	43.8	D	5.5	No	37.8	D	-0.5	No
23	Leucadia Blvd. / I-5 NB Ramps	Signal	30.9	C	Signal	30.6	C	-0.3	No	30.9	C	0.0	No	31.1	C	0.2	No
24	Encinitas Blvd. / Vulcan Ave.	Signal	37.1	D	Signal	39.6	D	2.5	No	39.6	D	2.5	No	40.0	D	2.9	No
25	Encinitas Blvd. / I-5 SB Ramps	Signal	38.5	D	Signal	39.2	D	0.7	No	39.2	D	0.7	No	30.0	C	-8.5	No
26	Encinitas Blvd. / I-5 NB Ramps	Signal	38.7	D	Signal	44.2	D	5.5	No	43.1	D	4.4	No	47.8	D	9.1	No
27	Vulcan Ave. / Orpheus Ave.	SSS	1.3	A	SSS	1.3	A	0.0	No	1.3	A	0.0	No	1.3	A	0.0	No

Note: Alternative 1 is 4-Lanes on Carlsbad Blvd north of La Costa Ave. Alternative 2 is 2-Lanes on Carlsbad Blvd north of La Costa Ave.

1. - 4 Leg Intersection with Signal instead of roundabout (see Exhibit 35)

SSS - Side Street Stop

AWS - All-Way Stop

R - Roundabout

SMUP - Sustainable Mixed Use Places

**Table 4
Existing Peak Hour Directional Roadway Segment Conditions**

Roadway Segment	Direction	Lanes	Segment Capacity ¹	AM Peak Hour			PM Peak Hour		
				Peak Hour Volume	V/C	LOS	Peak Hour Volume	V/C	LOS
Highway 101									
Between La Costa Ave. and Grandview St	Northbound	1-Lane	2,000	398	0.199	A	828	0.414	B
	Southbound	2-Lane	2,800	1,311	0.468	B	629	0.225	A
Between Grandview St and Jupiter St	Northbound	1-Lane	1,800	340	0.189	A	848	0.471	B
	Southbound	2-Lane	2,800	1,465	0.523	B	680	0.243	A
Between Jupiter St and Leucadia Blvd.	Northbound	1-Lane	1,800	354	0.197	A	853	0.474	B
	Southbound	2-Lane	2,800	1,406	0.502	B	645	0.230	A
Between Leucadia Blvd. and El Portal St	Northbound	2-Lane	3,600	296	0.082	A	864	0.240	A
	Southbound	2-Lane	2,800	1,392	0.497	B	630	0.225	A
Between El Portal St and Marcheta St	Northbound	2-Lane	3,600	274	0.076	A	925	0.257	A
	Southbound	2-Lane	2,800	1,266	0.452	B	614	0.219	A
Between Marcheta St and Encinitas Blvd.	Northbound	2-Lane	3,600	371	0.103	A	978	0.272	A
	Southbound	2-Lane	2,800	1,286	0.459	B	667	0.238	A
La Costa Avenue									
Between Hwy 101 and Vulcan Ave.	Eastbound	1-Lane	1,800	496	0.276	A	459	0.255	A
	Westbound	1-Lane	1,800	512	0.284	A	521	0.289	A
Between Vulcan Ave. and Sheridan Rd.	Eastbound	1-Lane	1,800	600	0.333	A	603	0.335	A
	Westbound	1-Lane	1,800	733	0.407	A	600	0.333	A
Between Sheridan Rd. and I-5 Southbound Ramps	Eastbound	1-Lane	1,800	688	0.382	A	588	0.327	A
	Westbound	1-Lane	1,800	738	0.410	A	655	0.364	A

¹ - For Highway 101 Northbound; Base Saturation Flow= 2,000 v/h/l; 10% Turning Vehicle Friction Reduction
 - For Highway 101 Southbound; Base Saturation Flow= 2,000 v/h/l; 20% Parking Friction Reduction; 10% Turning Vehicle Friction Reduction
 - For La Costa Ave.; Base Saturation Flow= 2,000 v/h/l; 10% Turning Vehicle Friction Reduction

**Table 5
Existing Ramp Meter Conditions**

Location	Peak Hour	Meter Rate (veh/hr/ln)	Demand (veh/hr/ln)	Excess Demand (veh/hr/ln)	Delay (min/ln)	Queue (ft/ln)
La Costa Avenue / I-5 Ramp						
La Costa Ave. / I-5 NB On-Ramp	PM	744	481	0	0.0	0
La Costa Ave. / I-5 SB On-Ramp	AM	455	294	0	0.0	0
La Costa Ave. / I-5 SB On-Ramp	PM	455	318	0	0.0	0
Leucadia Boulevard / I-5 Ramp						
Leucadia Blvd. / I-5 NB On-Ramp	PM	453	595	142	19	3,550
Leucadia Blvd. / I-5 SB On-Ramp	AM	255	317	62	14.6	1,550
Leucadia Blvd. / I-5 SB On-Ramp	PM	257	252	0	0.0	0
Encinitas Boulevard / I-5 Ramp						
Encinitas Blvd. / I-5 NB On-Ramp	PM	414	574	160	23.2	4,000
Encinitas Blvd. / I-5 SB On-Ramp	AM	744	617	0	0.0	0
Encinitas Blvd. / I-5 SB On-Ramp	PM	744	495	0	0.0	0

Ramp meter delay greater than 15 minutes/lane is considered unacceptable

Table 13
Year 2035 Peak Hour Directional Roadway Segment Conditions - AM Peak Hour

Roadway Segment	Direction	Year 2035 No Build				Lanes (With Project)	Segment Capacity ² (With Project)	Year 2035 Alternative 1			Year 2035 Alternative 2			Year 2035 Alternative 1 With SMUP			
		Lanes		Peak Hour Volume	V/C			LOS	Peak Hour Volume	V/C	LOS	Peak Hour Volume	V/C	LOS	Peak Hour Volume	V/C	LOS
		Segment Capacity ¹	Peak Hour Volume	V/C	LOS			Peak Hour Volume	V/C	LOS	Peak Hour Volume	V/C	LOS	Peak Hour Volume	V/C	LOS	
Highway 101																	
Between La Costa Ave. and Grandview St	Northbound	1-Lane	2,000	440	0.220	A	1,900	390	0.205	A	380	0.200	A	420	0.221	A	
	Southbound	2-Lane	2,800	1,700	0.607	B	1,800	1,580	0.878	D	1,550	0.861	D	1,580	0.878	D	
Between Grandview St and Jupiter St	Northbound	1-Lane	1,800	400	0.222	A	1,800	340	0.189	A	330	0.183	A	320	0.178	A	
	Southbound	2-Lane	2,800	1,710	0.611	B	1,800	1,590	0.883	D	1,550	0.861	D	1,590	0.883	D	
Between Jupiter St and Leucadia Blvd.	Northbound	1-Lane	1,800	330	0.183	A	1,800	320	0.178	A	310	0.172	A	320	0.178	A	
	Southbound	2-Lane	2,800	1,830	0.654	C	3,400	1,700	0.500	B	1,680	0.494	B	1,830	0.538	B	
Between Leucadia Blvd. and El Portal St	Northbound	2-Lane	3,600	360	0.100	A	1,800	340	0.189	A	340	0.189	A	350	0.194	A	
	Southbound	2-Lane	2,800	1,700	0.607	B	1,700	1,560	0.918	D	1,540	0.906	D	1,640	0.965	E	
Between El Portal St and Marcheta St	Northbound	2-Lane	3,600	350	0.097	A	1,900	320	0.168	A	320	0.168	A	340	0.179	A	
	Southbound	2-Lane	2,800	1,560	0.557	B	1,800	1,510	0.839	D	1,490	0.828	D	1,640	0.911	D	
Between Marcheta St and Encinitas Blvd.	Northbound	2-Lane	3,600	410	0.114	A	3,800	440	0.116	A	440	0.116	A	360	0.095	A	
	Southbound	2-Lane	2,800	1,550	0.554	B	1,700	1,490	0.876	D	1,470	0.865	D	1,400	0.824	D	
La Costa Avenue																	
Between Hwy 101 and Vulcan Ave.	Eastbound	2-Lane	3,600	590	0.164	A	3,600	660	0.183	A	650	0.181	A	700	0.194	A	
	Westbound	2-Lane	3,600	590	0.164	A	3,600	650	0.181	A	650	0.181	A	680	0.189	A	
Between Vulcan Ave. and Sheridan Rd.	Eastbound	2-Lane	3,600	700	0.194	A	3,600	770	0.214	A	760	0.211	A	790	0.219	A	
	Westbound	2-Lane	3,600	820	0.228	A	3,600	870	0.242	A	860	0.239	A	850	0.236	A	
Between Sheridan Rd. and I-5 Southbound Ramps	Eastbound	2-Lane	3,600	770	0.214	A	3,600	840	0.233	A	830	0.231	A	850	0.236	A	
	Westbound	2-Lane	3,600	920	0.256	A	3,600	940	0.261	A	930	0.258	A	970	0.269	A	

Note: Alternative 1 is 4-Lanes on Carlsbad Blvd north of La Costa Ave. Alternative 2 is 2-Lanes on Carlsbad Blvd north of La Costa Ave.

1 - For Highway 101 Northbound; Base Saturation Flow = 2,000 v/h; 10% Turning Vehicle Friction Reduction

- For Highway 101 Southbound; Base Saturation Flow = 2,000 v/h; 20% Parking Friction Reduction; 0% Turning Vehicle Friction Reduction

- For La Costa Ave.; Base Saturation Flow = 2,000 v/h; 10% Turning Vehicle Friction Reduction

2 - For Highway 101 Northbound; Base Saturation Flow = 2,000 v/h; 5% Turning Vehicle Friction Reduction; Additional 5% Turning Vehicle Friction Reduction at Proposed Parking Areas

- For Highway 101 Southbound; Base Saturation Flow = 2,000 v/h; 10% Parking Friction Reduction; 5% Turning Vehicle Friction Reduction

- For La Costa Ave.; Base Saturation Flow = 2,000 v/h; 10% Turning Vehicle Friction Reduction

Table 14
Year 2035 Peak Hour Directional Roadway Segment Conditions - PM Peak Hour

Roadway Segment	Direction	Year 2035 No Build				Lanes (With Project)	Segment Capacity ² (With Project)	Year 2035 Alternative 1			Year 2035 Alternative 2			Year 2035 Alternative 1 With SMUP			
		Lanes	Segment Capacity ¹	Peak Hour Volume	V/C			LOS	Peak Hour Volume	V/C	LOS	Peak Hour Volume	V/C	LOS	Peak Hour Volume	V/C	LOS
Highway 101																	
Between La Costa Ave. and Grandview St	Northbound	1-Lane	2,000	1,100	0.550	B	1,900	980	0.516	B	970	0.511	B	1,020	0.537	B	
	Southbound	2-Lane	2,800	900	0.321	A	1,800	750	0.417	B	740	0.411	B	740	0.411	B	
Between Grandview St and Jupiter St	Northbound	1-Lane	1,800	1,090	0.606	B	1,800	950	0.528	B	940	0.522	B	990	0.550	B	
	Southbound	2-Lane	2,800	810	0.289	A	1,800	720	0.400	A	700	0.389	A	720	0.400	A	
Between Jupiter St and Leucadia Blvd.	Northbound	1-Lane	1,800	1,020	0.567	B	1,800	1,000	0.556	B	990	0.550	B	1,010	0.561	B	
	Southbound	2-Lane	2,800	770	0.275	A	3,400	670	0.197	A	650	0.191	A	720	0.212	A	
Between Leucadia Blvd. and El Portal St	Northbound	2-Lane	3,600	1,030	0.286	A	1,800	1,010	0.561	B	1,000	0.556	B	1,060	0.589	B	
	Southbound	2-Lane	2,800	730	0.261	A	1,700	680	0.400	A	660	0.388	A	600	0.353	A	
Between El Portal St and Marcheta St	Northbound	2-Lane	3,600	1,040	0.289	A	1,900	1,020	0.537	B	1,000	0.526	B	1,050	0.553	B	
	Southbound	2-Lane	2,800	640	0.229	A	1,800	580	0.322	A	570	0.317	A	600	0.333	A	
Between Marcheta St and Encinitas Blvd.	Northbound	2-Lane	3,600	1,080	0.300	A	3,800	1,060	0.279	A	1,050	0.276	A	980	0.258	A	
	Southbound	2-Lane	2,800	660	0.236	A	1,700	630	0.371	A	630	0.371	A	590	0.347	A	
La Costa Avenue																	
Between Hwy 101 and Vulcan Ave.	Eastbound	2-Lane	3,600	650	0.181	A	3,600	690	0.192	A	680	0.189	A	720	0.200	A	
	Westbound	2-Lane	3,600	590	0.164	A	3,600	630	0.175	A	620	0.172	A	660	0.183	A	
Between Vulcan Ave. and Sheridan Rd.	Eastbound	2-Lane	3,600	730	0.203	A	3,600	760	0.211	A	760	0.211	A	780	0.217	A	
	Westbound	2-Lane	3,600	700	0.194	A	3,600	700	0.194	A	690	0.192	A	710	0.197	A	
Between Sheridan Rd. and I-5 Southbound Ramps	Eastbound	2-Lane	3,600	740	0.206	A	3,600	770	0.214	A	770	0.214	A	790	0.219	A	
	Westbound	2-Lane	3,600	780	0.217	A	3,600	780	0.217	A	790	0.219	A	780	0.217	A	

Note: Alternative 1 is 4-Lanes on Carlsbad Blvd north of La Costa Ave. Alternative 2 is 2-Lanes on Carlsbad Blvd north of La Costa Ave.

1 - For Highway 101 Northbound; Base Saturation Flow = 2,000 v/h/l; 10% Turning Vehicle Friction Reduction

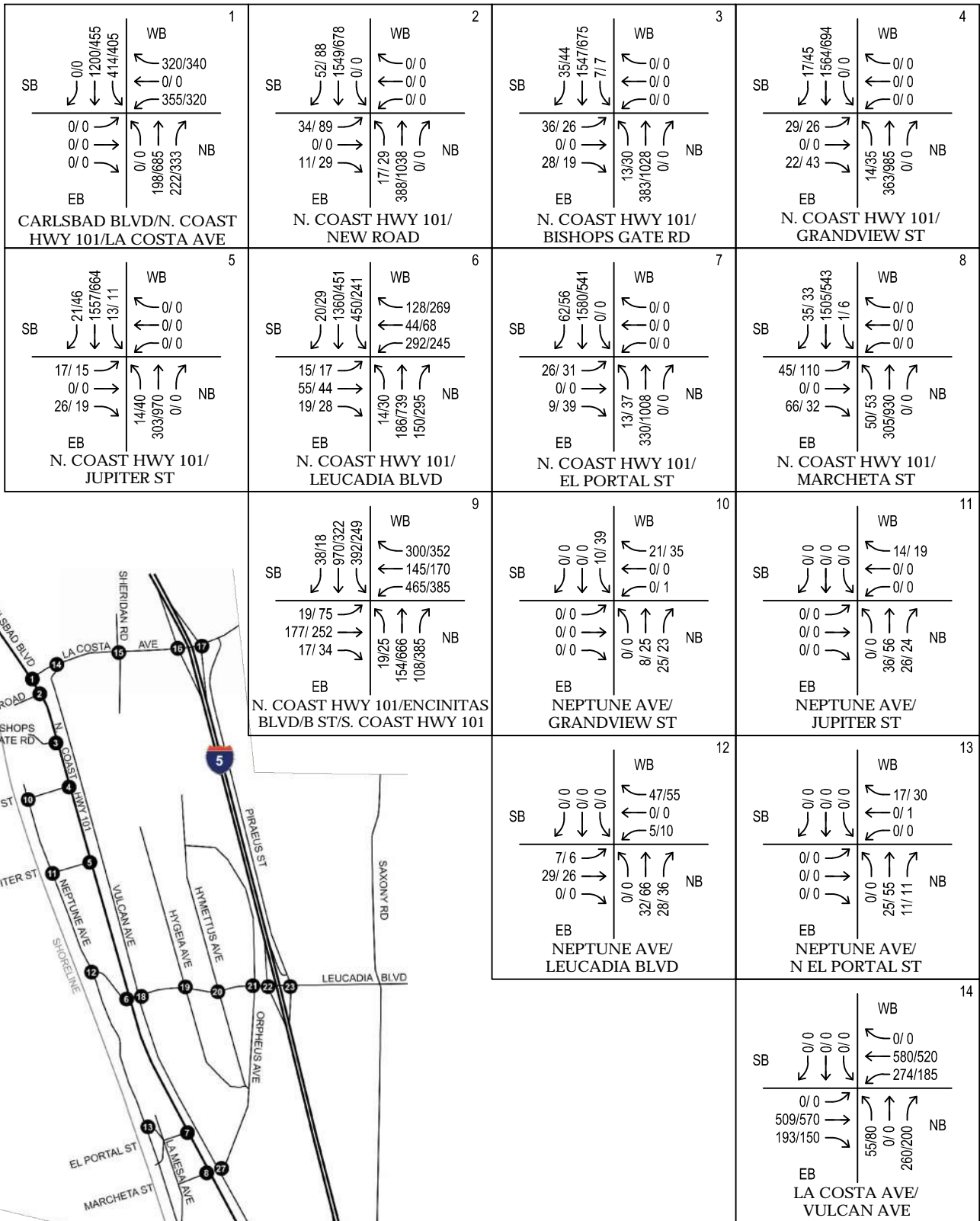
- For Highway 101 Southbound; Base Saturation Flow = 2,000 v/h/l; 20% Parking Friction Reduction; 10% Turning Vehicle Friction Reduction

- For La Costa Ave.; Base Saturation Flow = 2,000 v/h/l; 10% Turning Vehicle Friction Reduction

- For Highway 101 Northbound; Base Saturation Flow = 2,000 v/h/l; 5% Turning Vehicle Friction Reduction; Additional 5% Turning Vehicle Friction Reduction at Proposed Parking Areas

- For Highway 101 Southbound; Base Saturation Flow = 2,000 v/h/l; 10% Parking Friction Reduction; 5% Turning Vehicle Friction Reduction

- For La Costa Ave.; Base Saturation Flow = 2,000 v/h/l; 10% Turning Vehicle Friction Reduction





<p>15</p> <table border="1"> <tr> <td>SB</td> <td>WB</td> </tr> <tr> <td>4/7 3/0 3/2</td> <td>12/11 885/715 75/53</td> </tr> <tr> <td>2/7 770/720 15/50</td> <td>17/13 0/1 87/60</td> </tr> <tr> <td>EB</td> <td>NB</td> </tr> </table> <p>LA COSTA AVE/ SHERIDAN RD</p>	SB	WB	4/7 3/0 3/2	12/11 885/715 75/53	2/7 770/720 15/50	17/13 0/1 87/60	EB	NB	<p>16</p> <table border="1"> <tr> <td>SB</td> <td>WB</td> </tr> <tr> <td>360/212 2/3 620/499</td> <td>0/0 570/580 680/723</td> </tr> <tr> <td>0/0 690/663 160/124</td> <td>0/0 0/0 0/0</td> </tr> <tr> <td>EB</td> <td>NB</td> </tr> </table> <p>LA COSTA AVE/ I-5 SB RAMPS</p>	SB	WB	360/212 2/3 620/499	0/0 570/580 680/723	0/0 690/663 160/124	0/0 0/0 0/0	EB	NB	<p>17</p> <table border="1"> <tr> <td>SB</td> <td>WB</td> </tr> <tr> <td>0/0 0/0 0/0</td> <td>648/443 1165/1134 0/0</td> </tr> <tr> <td>235/200 1085/950 0/0</td> <td>73/150 2/1 740/963</td> </tr> <tr> <td>EB</td> <td>NB</td> </tr> </table> <p>LA COSTA AVE/ I-5 NB RAMPS</p>	SB	WB	0/0 0/0 0/0	648/443 1165/1134 0/0	235/200 1085/950 0/0	73/150 2/1 740/963	EB	NB	<p>18</p> <table border="1"> <tr> <td>SB</td> <td>WB</td> </tr> <tr> <td>67/75 360/99 37/42</td> <td>25/57 330/385 140/76</td> </tr> <tr> <td>68/121 320/420 310/87</td> <td>50/106 75/218 125/176</td> </tr> <tr> <td>EB</td> <td>NB</td> </tr> </table> <p>LEUCADIA BLVD/ VULCAN AVE</p>	SB	WB	67/75 360/99 37/42	25/57 330/385 140/76	68/121 320/420 310/87	50/106 75/218 125/176	EB	NB
SB	WB																																		
4/7 3/0 3/2	12/11 885/715 75/53																																		
2/7 770/720 15/50	17/13 0/1 87/60																																		
EB	NB																																		
SB	WB																																		
360/212 2/3 620/499	0/0 570/580 680/723																																		
0/0 690/663 160/124	0/0 0/0 0/0																																		
EB	NB																																		
SB	WB																																		
0/0 0/0 0/0	648/443 1165/1134 0/0																																		
235/200 1085/950 0/0	73/150 2/1 740/963																																		
EB	NB																																		
SB	WB																																		
67/75 360/99 37/42	25/57 330/385 140/76																																		
68/121 320/420 310/87	50/106 75/218 125/176																																		
EB	NB																																		
<p>19</p> <table border="1"> <tr> <td>SB</td> <td>WB</td> </tr> <tr> <td>18/15 77/13 109/79</td> <td>50/84 400/480 73/55</td> </tr> <tr> <td>20/24 385/530 30/15</td> <td>50/15 35/15 117/53</td> </tr> <tr> <td>EB</td> <td>NB</td> </tr> </table> <p>LEUCADIA BLVD/ HYGEIA AVE</p>	SB	WB	18/15 77/13 109/79	50/84 400/480 73/55	20/24 385/530 30/15	50/15 35/15 117/53	EB	NB	<p>20</p> <table border="1"> <tr> <td>SB</td> <td>WB</td> </tr> <tr> <td>41/10 39/18 90/60</td> <td>19/50 442/550 26/40</td> </tr> <tr> <td>8/25 582/620 6/10</td> <td>3/9 14/38 9/23</td> </tr> <tr> <td>EB</td> <td>NB</td> </tr> </table> <p>LEUCADIA BLVD/ HYMETTUS AVE</p>	SB	WB	41/10 39/18 90/60	19/50 442/550 26/40	8/25 582/620 6/10	3/9 14/38 9/23	EB	NB	<p>21</p> <table border="1"> <tr> <td>SB</td> <td>WB</td> </tr> <tr> <td>30/22 20/14 194/175</td> <td>121/115 467/600 90/90</td> </tr> <tr> <td>36/25 610/640 25/35</td> <td>3/10 8/12 124/205</td> </tr> <tr> <td>EB</td> <td>NB</td> </tr> </table> <p>LEUCADIA BLVD/ ORPHEUS AVE</p>	SB	WB	30/22 20/14 194/175	121/115 467/600 90/90	36/25 610/640 25/35	3/10 8/12 124/205	EB	NB	<p>22</p> <table border="1"> <tr> <td>SB</td> <td>WB</td> </tr> <tr> <td>161/175 1/2 209/425</td> <td>0/0 680/800 620/500</td> </tr> <tr> <td>0/0 650/740 188/161</td> <td>0/0 0/0 0/0</td> </tr> <tr> <td>EB</td> <td>NB</td> </tr> </table> <p>LEUCADIA BLVD/ I-5 SB RAMPS</p>	SB	WB	161/175 1/2 209/425	0/0 680/800 620/500	0/0 650/740 188/161	0/0 0/0 0/0	EB	NB
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LEGEND

-  Study Intersections
-  Roadway Segment Daily Traffic



Not to Scale










Michael Baker

















INTERNATIONAL

Year 2035 Alternative 1
With SMUP Roadway Segment Daily Traffic

Appendix Q

Horizon Year 2035 Intersection LOS Calculations

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	242	0	0	0	98	1482
Future Volume (vph)	242	0	0	0	98	1482
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0				4.0	4.0
Lane Util. Factor	0.97				1.00	0.95
Frbp, ped/bikes	1.00				1.00	1.00
Flpb, ped/bikes	1.00				1.00	1.00
Frt	1.00				1.00	1.00
Flt Protected	0.95				0.95	1.00
Satd. Flow (prot)	3433				1770	3539
Flt Permitted	0.95				0.95	1.00
Satd. Flow (perm)	3433				1770	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	263	0	0	0	107	1611
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	263	0	0	0	107	1611
Confl. Peds. (#/hr)		30			30	
Confl. Bikes (#/hr)		30		30		
Turn Type	Prot				Prot	NA
Protected Phases	8				1	6
Permitted Phases						
Actuated Green, G (s)	14.6				6.1	46.6
Effective Green, g (s)	14.6				6.1	46.6
Actuated g/C Ratio	0.18				0.07	0.57
Clearance Time (s)	4.0				4.0	4.0
Vehicle Extension (s)	3.0				3.0	3.0
Lane Grp Cap (vph)	613				132	2018
v/s Ratio Prot	c0.08				0.06	c0.46
v/s Ratio Perm						
v/c Ratio	0.43				0.81	0.80
Uniform Delay, d1	29.8				37.2	13.8
Progression Factor	0.07				1.00	1.00
Incremental Delay, d2	0.5				30.0	2.3
Delay (s)	2.4				67.3	16.1
Level of Service	A				E	B
Approach Delay (s)	2.4		0.0			19.3
Approach LOS	A		A			B
Intersection Summary						
HCM 2000 Control Delay			17.1		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.66			
Actuated Cycle Length (s)			81.7		Sum of lost time (s)	16.0
Intersection Capacity Utilization			58.6%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	11	87	0	0	242	19	0	1312	406	0	0	0	
Future Volume (vph)	11	87	0	0	242	19	0	1312	406	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0			4.0			4.0	4.0				
Lane Util. Factor		1.00			0.95			0.95	1.00				
Frbp, ped/bikes		1.00			0.99			1.00	0.87				
Flpb, ped/bikes		1.00			1.00			1.00	1.00				
Frt		1.00			0.99			1.00	0.85				
Flt Protected		0.99			1.00			1.00	1.00				
Satd. Flow (prot)		1852			3480			3539	1379				
Flt Permitted		0.99			1.00			1.00	1.00				
Satd. Flow (perm)		1852			3480			3539	1379				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	12	95	0	0	263	21	0	1426	441	0	0	0	
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	258	0	0	0	
Lane Group Flow (vph)	0	107	0	0	277	0	0	1426	183	0	0	0	
Confl. Peds. (#/hr)			20			20			20				
Confl. Bikes (#/hr)			30			30			30				
Turn Type	Split	NA			NA			NA	custom				
Protected Phases	7	7			8			2					
Permitted Phases									8				
Actuated Green, G (s)		8.5			14.6			36.5	14.6				
Effective Green, g (s)		8.5			14.6			36.5	14.6				
Actuated g/C Ratio		0.10			0.18			0.45	0.18				
Clearance Time (s)		4.0			4.0			4.0	4.0				
Vehicle Extension (s)		3.0			3.0			3.0	3.0				
Lane Grp Cap (vph)		192			621			1581	246				
v/s Ratio Prot		c0.06			0.08			c0.40					
v/s Ratio Perm									c0.13				
v/c Ratio		0.56			0.45			0.90	0.74				
Uniform Delay, d1		34.8			29.9			20.9	31.8				
Progression Factor		1.43			1.00			1.00	1.00				
Incremental Delay, d2		1.9			0.5			8.7	11.5				
Delay (s)		51.8			30.5			29.7	43.3				
Level of Service		D			C			C	D				
Approach Delay (s)		51.8			30.5			32.9			0.0		
Approach LOS		D			C			C			A		
Intersection Summary													
HCM 2000 Control Delay			33.5									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.74										
Actuated Cycle Length (s)			81.7									Sum of lost time (s)	16.0
Intersection Capacity Utilization			56.7%									ICU Level of Service	B
Analysis Period (min)			15										
c Critical Lane Group													



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	4	34	7	355	49	320	10	198	222	414	1200	6
Future Volume (veh/h)	4	34	7	355	49	320	10	198	222	414	1200	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.82	1.00		0.93	1.00		0.89	1.00		0.94
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	4	37	8	424	0	348	11	215	241	450	1304	7
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	12	114	88	750	0	310	19	825	328	497	1777	744
Arrive On Green	0.07	0.07	0.07	0.21	0.00	0.21	0.01	0.23	0.23	0.28	0.50	0.50
Sat Flow, veh/h	182	1680	1297	3563	0	1474	1781	3554	1414	1781	3554	1488
Grp Volume(v), veh/h	41	0	8	424	0	348	11	215	241	450	1304	7
Grp Sat Flow(s),veh/h/ln	1861	0	1297	1781	0	1474	1781	1777	1414	1781	1777	1488
Q Serve(g_s), s	1.6	0.0	0.4	8.1	0.0	16.0	0.5	3.8	12.0	18.5	22.0	0.2
Cycle Q Clear(g_c), s	1.6	0.0	0.4	8.1	0.0	16.0	0.5	3.8	12.0	18.5	22.0	0.2
Prop In Lane	0.10		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	127	0	88	750	0	310	19	825	328	497	1777	744
V/C Ratio(X)	0.32	0.00	0.09	0.57	0.00	1.12	0.57	0.26	0.73	0.91	0.73	0.01
Avail Cap(c_a), veh/h	392	0	273	750	0	310	94	825	328	586	1777	744
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.7	0.0	33.2	26.9	0.0	30.0	37.4	23.9	27.0	26.4	15.0	9.5
Incr Delay (d2), s/veh	1.5	0.0	0.4	1.0	0.0	88.0	23.3	0.8	13.6	16.1	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.1	3.4	0.0	13.0	0.3	1.6	5.1	9.7	8.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.2	0.0	33.6	27.9	0.0	118.0	60.7	24.6	40.7	42.5	17.7	9.6
LnGrp LOS	D	A	C	C	A	F	E	C	D	D	B	A
Approach Vol, veh/h		49			772			467			1761	
Approach Delay, s/veh		34.9			68.5			33.8			24.0	
Approach LOS		C			E			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.2	21.6		9.2	4.8	42.0		20.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	25.0	17.0		16.0	4.0	38.0		16.0				
Max Q Clear Time (g_c + I1), s ≤ 20.5	14.0			3.6	2.5	24.0		18.0				
Green Ext Time (p_c), s	0.7	0.7		0.1	0.0	8.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay	37.0
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Intersection			
Intersection Delay, s/veh	34.1		
Intersection LOS	D		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	54	334	1332
Demand Flow Rate, veh/h	55	340	1359
Vehicles Circulating, veh/h	1329	31	11
Vehicles Exiting, veh/h	41	1353	360
Ped Vol Crossing Leg, #/h	20	20	20
Ped Cap Adj	1.000	0.997	0.997
Approach Delay, s/veh	13.0	5.0	42.2
Approach LOS	B	A	E
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	55	340	1359
Cap Entry Lane, veh/h	356	1337	1364
Entry HV Adj Factor	0.982	0.981	0.980
Flow Entry, veh/h	54	334	1332
Cap Entry, veh/h	349	1308	1334
V/C Ratio	0.155	0.255	0.999
Control Delay, s/veh	13.0	5.0	42.2
LOS	B	A	E
95th %tile Queue, veh	1	1	22

Intersection			
Intersection Delay, s/veh	26.3		
Intersection LOS	D		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	44	321	1312
Demand Flow Rate, veh/h	45	327	1338
Vehicles Circulating, veh/h	1324	25	12
Vehicles Exiting, veh/h	26	1343	340
Ped Vol Crossing Leg, #/h	20	20	20
Ped Cap Adj	1.000	0.997	0.997
Approach Delay, s/veh	9.3	4.6	32.2
Approach LOS	A	A	D
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	45	327	1338
Cap Entry Lane, veh/h	461	1390	1406
Entry HV Adj Factor	0.978	0.981	0.981
Flow Entry, veh/h	44	321	1312
Cap Entry, veh/h	451	1360	1375
V/C Ratio	0.098	0.236	0.954
Control Delay, s/veh	9.3	4.6	32.2
LOS	A	A	D
95th %tile Queue, veh	0	1	19

Intersection			
Intersection Delay, s/veh	21.0		
Intersection LOS	C		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	33	250	1244
Demand Flow Rate, veh/h	33	255	1269
Vehicles Circulating, veh/h	1252	13	11
Vehicles Exiting, veh/h	28	1272	257
Ped Vol Crossing Leg, #/h	20	20	20
Ped Cap Adj	1.000	0.997	0.997
Approach Delay, s/veh	8.2	4.1	24.7
Approach LOS	A	A	C
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	33	255	1269
Cap Entry Lane, veh/h	490	1405	1407
Entry HV Adj Factor	1.000	0.981	0.981
Flow Entry, veh/h	33	250	1244
Cap Entry, veh/h	490	1374	1376
V/C Ratio	0.067	0.182	0.904
Control Delay, s/veh	8.2	4.1	24.7
LOS	A	A	C
95th %tile Queue, veh	0	1	15



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕		↕	↕↕		↕	↕↕	↕	↕	↕↕	
Traffic Volume (veh/h)	15	55	19	292	44	128	14	186	150	450	1360	20
Future Volume (veh/h)	15	55	19	292	44	128	14	186	150	450	1360	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.93	1.00		0.95	1.00		0.94
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	16	60	21	252	139	139	15	202	163	489	1478	22
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	22	81	28	352	163	163	25	785	332	533	1812	27
Arrive On Green	0.07	0.07	0.07	0.20	0.20	0.20	0.01	0.22	0.22	0.30	0.51	0.51
Sat Flow, veh/h	289	1084	380	1781	824	824	1781	3554	1500	1781	3580	53
Grp Volume(v), veh/h	97	0	0	252	0	278	15	202	163	489	733	767
Grp Sat Flow(s),veh/h/ln	1753	0	0	1781	0	1648	1781	1777	1500	1781	1777	1857
Q Serve(g_s), s	4.2	0.0	0.0	10.2	0.0	12.5	0.6	3.6	7.3	20.4	26.7	26.8
Cycle Q Clear(g_c), s	4.2	0.0	0.0	10.2	0.0	12.5	0.6	3.6	7.3	20.4	26.7	26.8
Prop In Lane	0.16		0.22	1.00		0.50	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	131	0	0	352	0	325	25	785	332	533	899	940
V/C Ratio(X)	0.74	0.00	0.00	0.72	0.00	0.85	0.59	0.26	0.49	0.92	0.81	0.82
Avail Cap(c_a), veh/h	569	0	0	370	0	342	92	785	332	601	899	940
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.9	0.0	0.0	28.9	0.0	29.9	37.8	24.8	26.2	26.1	16.0	16.0
Incr Delay (d2), s/veh	7.9	0.0	0.0	6.2	0.0	18.0	19.9	0.8	5.1	17.9	8.0	7.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.0	4.8	0.0	6.4	0.4	1.6	3.0	10.8	11.6	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.8	0.0	0.0	35.1	0.0	47.9	57.7	25.6	31.4	44.0	24.0	23.8
LnGrp LOS	D	A	A	D	A	D	E	C	C	D	C	C
Approach Vol, veh/h		97			530			380			1989	
Approach Delay, s/veh		42.8			41.8			29.3			28.9	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	27.1	21.0		9.8	5.1	43.0		19.2				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	26.0	17.0		25.0	4.0	39.0		16.0				
Max Q Clear Time (g_c + I1), s	22.4	9.3		6.2	2.6	28.8		14.5				
Green Ext Time (p_c), s	0.6	1.1		0.4	0.0	6.9		0.4				

Intersection Summary

HCM 6th Ctrl Delay	31.7
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
 User approved changes to right turn type.

Intersection						
Int Delay, s/veh	26.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	509	193	274	580	55	260
Future Vol, veh/h	509	193	274	580	55	260
Conflicting Peds, #/hr	0	20	20	0	20	20
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	80
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	553	210	298	630	60	283

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	783	0	1924
Stage 1	-	-	-	-	678
Stage 2	-	-	-	-	1246
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	-	-	835	-	73
Stage 1	-	-	-	-	504
Stage 2	-	-	-	-	271
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	821	-	~ 31
Mov Cap-2 Maneuver	-	-	-	-	~ 31
Stage 1	-	-	-	-	495
Stage 2	-	-	-	-	118

Approach	EB	WB	NB
HCM Control Delay, s	0	3.8	147.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	31	425	-	-	821	-
HCM Lane V/C Ratio	1.928	0.665	-	-	0.363	-
HCM Control Delay (s)	\$ 710.1	28.7	-	-	11.9	0
HCM Lane LOS	F	D	-	-	B	A
HCM 95th %tile Q(veh)	6.9	4.7	-	-	1.7	-

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

Intersection						
Int Delay, s/veh	3.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	770	15	75	885	17	87
Future Vol, veh/h	770	15	75	885	17	87
Conflicting Peds, #/hr	0	20	20	0	20	20
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	837	16	82	962	18	95

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	873	0	2011
Stage 1	-	-	-	-	865
Stage 2	-	-	-	-	1146
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	-	-	773	-	65
Stage 1	-	-	-	-	412
Stage 2	-	-	-	-	303
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	760	-	48
Mov Cap-2 Maneuver	-	-	-	-	48
Stage 1	-	-	-	-	405
Stage 2	-	-	-	-	229

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	61.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	169	-	-	760	-
HCM Lane V/C Ratio	0.669	-	-	0.107	-
HCM Control Delay (s)	61.2	-	-	10.3	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	3.9	-	-	0.4	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑	↑
Traffic Volume (veh/h)	0	690	160	680	570	0	0	0	0	620	2	360
Future Volume (veh/h)	0	690	160	680	570	0	0	0	0	620	2	360
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00				1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	750	174	739	620	0				675	0	391
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	2	2	2	0				2	2	2
Cap, veh/h	0	1025	238	793	2256	0				984	0	418
Arrive On Green	0.00	0.36	0.36	0.38	1.00	0.00				0.28	0.00	0.28
Sat Flow, veh/h	0	2933	659	3456	3647	0				3563	0	1514
Grp Volume(v), veh/h	0	469	455	739	620	0				675	0	391
Grp Sat Flow(s),veh/h/ln	0	1777	1722	1728	1777	0				1781	0	1514
Q Serve(g_s), s	0.0	20.6	20.6	18.5	0.0	0.0				15.2	0.0	22.7
Cycle Q Clear(g_c), s	0.0	20.6	20.6	18.5	0.0	0.0				15.2	0.0	22.7
Prop In Lane	0.00		0.38	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	641	621	793	2256	0				984	0	418
V/C Ratio(X)	0.00	0.73	0.73	0.93	0.27	0.00				0.69	0.00	0.94
Avail Cap(c_a), veh/h	0	641	621	806	2256	0				990	0	421
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.76	0.76	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	25.0	25.0	27.1	0.0	0.0				29.1	0.0	31.8
Incr Delay (d2), s/veh	0.0	7.2	7.4	14.0	0.2	0.0				2.0	0.0	28.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	9.6	9.4	7.6	0.1	0.0				6.6	0.0	11.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	32.2	32.4	41.1	0.2	0.0				31.1	0.0	59.9
LnGrp LOS	A	C	C	D	A	A				C	A	E
Approach Vol, veh/h		924			1359						1066	
Approach Delay, s/veh		32.3			22.4						41.7	
Approach LOS		C			C						D	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	24.7	36.5		28.9		61.1						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	21.0	32.0		25.0		57.0						
Max Q Clear Time (g_c+I1), s	20.5	22.6		24.7		2.0						
Green Ext Time (p_c), s	0.2	4.1		0.2		5.0						

Intersection Summary










HCM 6th Ctrl Delay	31.3
HCM 6th LOS	C


















Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	1085	0	0	1165	648	73	2	740	0	0	0
Future Volume (veh/h)	235	1085	0	0	1165	648	73	2	740	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		0.95	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	255	1179	0	0	1266	704	79	2	804			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	289	2290	0	0	2236	656	464	12	687			
Arrive On Green	0.32	1.00	0.00	0.00	0.44	0.44	0.27	0.27	0.27			
Sat Flow, veh/h	1781	3647	0	0	5274	1498	1739	44	2575			
Grp Volume(v), veh/h	255	1179	0	0	1266	704	81	0	804			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1702	1498	1783	0	1288			
Q Serve(g_s), s	12.2	0.0	0.0	0.0	16.7	39.4	3.1	0.0	24.0			
Cycle Q Clear(g_c), s	12.2	0.0	0.0	0.0	16.7	39.4	3.1	0.0	24.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.98		1.00			
Lane Grp Cap(c), veh/h	289	2290	0	0	2236	656	476	0	687			
V/C Ratio(X)	0.88	0.51	0.00	0.00	0.57	1.07	0.17	0.00	1.17			
Avail Cap(c_a), veh/h	416	2290	0	0	2236	656	476	0	687			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.60	0.60	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	29.6	0.0	0.0	0.0	18.9	25.3	25.4	0.0	33.0			
Incr Delay (d2), s/veh	9.4	0.5	0.0	0.0	1.0	56.4	0.2	0.0	91.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	5.0	0.2	0.0	0.0	6.5	23.3	1.3	0.0	16.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.0	0.5	0.0	0.0	20.0	81.7	25.5	0.0	124.8			
LnGrp LOS	D	A	A	A	B	F	C	A	F			
Approach Vol, veh/h		1434			1970			885				
Approach Delay, s/veh		7.4			42.0			115.7				
Approach LOS		A			D			F				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		62.0			18.6	43.4		28.0				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		58.0			21.0	33.0		24.0				
Max Q Clear Time (g_c+l), s		2.0			14.2	41.4		26.0				
Green Ext Time (p_c), s		12.3			0.4	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay					45.6							
HCM 6th LOS					D							

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	239	0	0	0	101	1790
Future Volume (vph)	239	0	0	0	101	1790
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0				4.0	4.0
Lane Util. Factor	0.97				1.00	0.95
Frbp, ped/bikes	1.00				1.00	1.00
Flpb, ped/bikes	1.00				1.00	1.00
Frt	1.00				1.00	1.00
Flt Protected	0.95				0.95	1.00
Satd. Flow (prot)	3433				1770	3539
Flt Permitted	0.95				0.95	1.00
Satd. Flow (perm)	3433				1770	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	260	0	0	0	110	1946
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	260	0	0	0	110	1946
Confl. Peds. (#/hr)		15			15	
Confl. Bikes (#/hr)		10		10		
Turn Type	Prot				Prot	NA
Protected Phases	8				1	6
Permitted Phases						
Actuated Green, G (s)	14.2				8.5	57.6
Effective Green, g (s)	14.2				8.5	57.6
Actuated g/C Ratio	0.15				0.09	0.62
Clearance Time (s)	4.0				4.0	4.0
Vehicle Extension (s)	3.0				3.0	3.0
Lane Grp Cap (vph)	524				161	2194
v/s Ratio Prot	c0.08				0.06	c0.55
v/s Ratio Perm						
v/c Ratio	0.50				0.68	0.89
Uniform Delay, d1	36.1				40.9	14.9
Progression Factor	0.06				1.00	1.00
Incremental Delay, d2	0.7				11.3	4.8
Delay (s)	2.9				52.2	19.7
Level of Service	A				D	B
Approach Delay (s)	2.9		0.0			21.4
Approach LOS	A		A			C
Intersection Summary						
HCM 2000 Control Delay			19.3		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.76			
Actuated Cycle Length (s)			92.9		Sum of lost time (s)	16.0
Intersection Capacity Utilization			65.5%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	11	90	0	0	239	22	0	938	432	0	0	0	
Future Volume (vph)	11	90	0	0	239	22	0	938	432	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0			4.0			4.0	4.0				
Lane Util. Factor		1.00			0.95			0.95	1.00				
Frbp, ped/bikes		1.00			1.00			1.00	0.91				
Flpb, ped/bikes		1.00			1.00			1.00	1.00				
Frt		1.00			0.99			1.00	0.85				
Flt Protected		0.99			1.00			1.00	1.00				
Satd. Flow (prot)		1853			3479			3539	1447				
Flt Permitted		0.99			1.00			1.00	1.00				
Satd. Flow (perm)		1853			3479			3539	1447				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	12	98	0	0	260	24	0	1020	470	0	0	0	
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	350	0	0	0	
Lane Group Flow (vph)	0	110	0	0	277	0	0	1020	120	0	0	0	
Confl. Peds. (#/hr)			15			15			15				
Confl. Bikes (#/hr)			10			10			10				
Turn Type	Split	NA			NA			NA	custom				
Protected Phases	7	7			8			2					
Permitted Phases									8				
Actuated Green, G (s)		9.1			14.2			45.1	14.2				
Effective Green, g (s)		9.1			14.2			45.1	14.2				
Actuated g/C Ratio		0.10			0.15			0.49	0.15				
Clearance Time (s)		4.0			4.0			4.0	4.0				
Vehicle Extension (s)		3.0			3.0			3.0	3.0				
Lane Grp Cap (vph)		181			531			1718	221				
v/s Ratio Prot		c0.06			0.08			c0.29					
v/s Ratio Perm									c0.08				
v/c Ratio		0.61			0.52			0.59	0.54				
Uniform Delay, d1		40.2			36.2			17.3	36.4				
Progression Factor		1.50			1.00			1.00	1.00				
Incremental Delay, d2		5.1			0.9			1.5	2.7				
Delay (s)		65.2			37.2			18.8	39.1				
Level of Service		E			D			B	D				
Approach Delay (s)		65.2			37.2			25.2			0.0		
Approach LOS		E			D			C			A		
Intersection Summary													
HCM 2000 Control Delay			29.3									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.52										
Actuated Cycle Length (s)			92.9									Sum of lost time (s)	16.0
Intersection Capacity Utilization			46.5%									ICU Level of Service	A
Analysis Period (min)			15										

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	5	46	9	320	65	340	13	685	333	405	455	7
Future Volume (veh/h)	5	46	9	320	65	340	13	685	333	405	455	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.78	1.00		0.94	1.00		0.92	1.00		0.95
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	5	50	10	399	0	370	14	745	362	440	495	8
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	13	126	93	732	0	308	24	868	355	481	1780	754
Arrive On Green	0.07	0.07	0.07	0.21	0.00	0.21	0.01	0.24	0.24	0.27	0.50	0.50
Sat Flow, veh/h	169	1693	1243	3563	0	1496	1781	3554	1455	1781	3554	1505
Grp Volume(v), veh/h	55	0	10	399	0	370	14	745	362	440	495	8
Grp Sat Flow(s),veh/h/ln	1862	0	1243	1781	0	1496	1781	1777	1455	1781	1777	1505
Q Serve(g_s), s	2.2	0.0	0.6	7.8	0.0	16.0	0.6	15.6	19.0	18.6	6.3	0.2
Cycle Q Clear(g_c), s	2.2	0.0	0.6	7.8	0.0	16.0	0.6	15.6	19.0	18.6	6.3	0.2
Prop In Lane	0.09		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	139	0	93	732	0	308	24	868	355	481	1780	754
V/C Ratio(X)	0.40	0.00	0.11	0.54	0.00	1.20	0.59	0.86	1.02	0.91	0.28	0.01
Avail Cap(c_a), veh/h	383	0	255	732	0	308	92	868	355	526	1780	754
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	0.0	33.6	27.7	0.0	30.9	38.2	28.1	29.4	27.5	11.3	9.7
Incr Delay (d2), s/veh	1.8	0.0	0.5	0.8	0.0	118.1	20.7	10.8	52.6	19.7	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.2	3.3	0.0	15.6	0.4	7.6	11.5	10.2	2.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.2	0.0	34.1	28.5	0.0	149.0	58.9	38.9	82.1	47.2	11.7	9.8
LnGrp LOS	D	A	C	C	A	F	E	D	F	D	B	A
Approach Vol, veh/h		65			769			1121			943	
Approach Delay, s/veh		35.9			86.5			53.1			28.2	
Approach LOS		D			F			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.0	23.0		9.8	5.0	43.0		20.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	23.0	19.0		16.0	4.0	38.0		16.0				
Max Q Clear Time (g_c + I1), s	20.6	21.0		4.2	2.6	8.3		18.0				
Green Ext Time (p_c), s	0.4	0.0		0.2	0.0	3.6		0.0				

Intersection Summary

HCM 6th Ctrl Delay	53.5
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Intersection			
Intersection Delay, s/veh	9.7		
Intersection LOS	A		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	40	931	633
Demand Flow Rate, veh/h	40	950	646
Vehicles Circulating, veh/h	606	23	27
Vehicles Exiting, veh/h	67	623	946
Ped Vol Crossing Leg, #/h	10	10	10
Ped Cap Adj	0.999	0.999	0.999
Approach Delay, s/veh	4.7	11.5	7.3
Approach LOS	A	B	A
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	40	950	646
Cap Entry Lane, veh/h	848	1393	1388
Entry HV Adj Factor	1.000	0.980	0.980
Flow Entry, veh/h	40	931	633
Cap Entry, veh/h	847	1363	1358
V/C Ratio	0.047	0.683	0.466
Control Delay, s/veh	4.7	11.5	7.3
LOS	A	B	A
95th %tile Queue, veh	0	6	3

Intersection			
Intersection Delay, s/veh	9.9		
Intersection LOS	A		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	64	938	679
Demand Flow Rate, veh/h	65	957	693
Vehicles Circulating, veh/h	651	24	33
Vehicles Exiting, veh/h	75	692	948
Ped Vol Crossing Leg, #/h	10	10	10
Ped Cap Adj	0.999	0.999	0.999
Approach Delay, s/veh	5.3	11.7	7.8
Approach LOS	A	B	A
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	65	957	693
Cap Entry Lane, veh/h	817	1391	1381
Entry HV Adj Factor	0.985	0.980	0.980
Flow Entry, veh/h	64	938	679
Cap Entry, veh/h	803	1362	1352
V/C Ratio	0.080	0.689	0.503
Control Delay, s/veh	5.3	11.7	7.8
LOS	A	B	A
95th %tile Queue, veh	0	6	3

Intersection			
Intersection Delay, s/veh	9.7		
Intersection LOS	A		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	31	929	653
Demand Flow Rate, veh/h	31	948	666
Vehicles Circulating, veh/h	623	14	38
Vehicles Exiting, veh/h	81	640	924
Ped Vol Crossing Leg, #/h	10	10	10
Ped Cap Adj	0.999	0.999	0.999
Approach Delay, s/veh	4.7	11.3	7.6
Approach LOS	A	B	A
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	31	948	666
Cap Entry Lane, veh/h	836	1403	1375
Entry HV Adj Factor	1.000	0.980	0.980
Flow Entry, veh/h	31	929	653
Cap Entry, veh/h	835	1374	1346
V/C Ratio	0.037	0.676	0.485
Control Delay, s/veh	4.7	11.3	7.6
LOS	A	B	A
95th %tile Queue, veh	0	6	3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕		↗	↕↕		↗	↕↕	↗	↗	↕↕	
Traffic Volume (veh/h)	17	44	28	245	68	269	30	739	295	241	451	29
Future Volume (veh/h)	17	44	28	245	68	269	30	739	295	241	451	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.94	1.00		0.96	1.00		0.94
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	18	48	30	266	74	292	33	803	321	262	490	32
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	24	64	40	454	80	316	46	1086	466	302	1515	99
Arrive On Green	0.07	0.07	0.07	0.25	0.25	0.25	0.03	0.31	0.31	0.17	0.45	0.45
Sat Flow, veh/h	322	860	537	1781	314	1241	1781	3554	1525	1781	3370	219
Grp Volume(v), veh/h	96	0	0	266	0	366	33	803	321	262	258	264
Grp Sat Flow(s),veh/h/ln	1719	0	0	1781	0	1555	1781	1777	1525	1781	1777	1813
Q Serve(g_s), s	4.5	0.0	0.0	10.7	0.0	18.8	1.5	16.6	15.1	11.7	7.6	7.7
Cycle Q Clear(g_c), s	4.5	0.0	0.0	10.7	0.0	18.8	1.5	16.6	15.1	11.7	7.6	7.7
Prop In Lane	0.19		0.31	1.00		0.80	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	128	0	0	454	0	397	46	1086	466	302	798	815
V/C Ratio(X)	0.75	0.00	0.00	0.59	0.00	0.92	0.72	0.74	0.69	0.87	0.32	0.32
Avail Cap(c_a), veh/h	463	0	0	457	0	399	131	1086	466	349	798	815
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	0.0	0.0	26.7	0.0	29.7	39.5	25.5	25.0	33.1	14.5	14.5
Incr Delay (d2), s/veh	8.6	0.0	0.0	1.9	0.0	26.7	18.8	4.5	8.1	18.3	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.0	4.6	0.0	9.7	0.9	7.4	6.3	6.4	3.1	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.7	0.0	0.0	28.6	0.0	56.4	58.3	30.0	33.1	51.4	15.6	15.6
LnGrp LOS	D	A	A	C	A	E	E	C	C	D	B	B
Approach Vol, veh/h		96			632			1157			784	
Approach Delay, s/veh		45.7			44.7			31.6			27.5	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.9	29.0		10.1	6.1	40.7		24.8				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	16.0	25.0		22.0	6.0	35.0		21.0				
Max Q Clear Time (g_c+l), s	13.7	18.6		6.5	3.5	9.7		20.8				
Green Ext Time (p_c), s	0.2	3.5		0.4	0.0	3.3		0.1				

Intersection Summary												
HCM 6th Ctrl Delay	34.0											
HCM 6th LOS	C											

Notes
 User approved volume balancing among the lanes for turning movement.
 User approved changes to right turn type.

Intersection						
Int Delay, s/veh	21.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	570	150	185	520	80	200
Future Vol, veh/h	570	150	185	520	80	200
Conflicting Peds, #/hr	0	20	20	0	20	20
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	80
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	620	163	201	565	87	217
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	803	0	1709	742
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	987	-
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	-	-	821	-	100	416
Stage 1	-	-	-	-	481	-
Stage 2	-	-	-	-	361	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	807	-	~ 62	402
Mov Cap-2 Maneuver	-	-	-	-	~ 62	-
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	226	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	2.9	121.5			
HCM LOS						F
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	62	402	-	-	807	-
HCM Lane V/C Ratio	1.403	0.541	-	-	0.249	-
HCM Control Delay (s)	\$ 365.4	24	-	-	10.9	0
HCM Lane LOS	F	C	-	-	B	A
HCM 95th %tile Q(veh)	7.5	3.1	-	-	1	-
Notes						
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon			

Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	720	50	53	715	13	60
Future Vol, veh/h	720	50	53	715	13	60
Conflicting Peds, #/hr	0	20	20	0	20	20
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	783	54	58	777	14	65
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	857	0	1743	850
Stage 1	-	-	-	-	830	-
Stage 2	-	-	-	-	913	-
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	-	-	783	-	95	360
Stage 1	-	-	-	-	428	-
Stage 2	-	-	-	-	391	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	770	-	80	348
Mov Cap-2 Maneuver	-	-	-	-	80	-
Stage 1	-	-	-	-	421	-
Stage 2	-	-	-	-	334	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.7		30.7		
HCM LOS	D					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	218	-	-	770	-	
HCM Lane V/C Ratio	0.364	-	-	0.075	-	
HCM Control Delay (s)	30.7	-	-	10.1	0	
HCM Lane LOS	D	-	-	B	A	
HCM 95th %tile Q(veh)	1.6	-	-	0.2	-	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑	↑
Traffic Volume (veh/h)	0	663	124	723	580	0	0	0	0	499	3	212
Future Volume (veh/h)	0	663	124	723	580	0	0	0	0	499	3	212
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00				1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	721	135	786	630	0				544	0	230
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	2	2	2	0				2	2	2
Cap, veh/h	0	1259	236	886	2576	0				664	0	278
Arrive On Green	0.00	0.42	0.42	0.26	0.72	0.00				0.19	0.00	0.19
Sat Flow, veh/h	0	3062	556	3456	3647	0				3563	0	1489
Grp Volume(v), veh/h	0	431	425	786	630	0				544	0	230
Grp Sat Flow(s),veh/h/ln	0	1777	1748	1728	1777	0				1781	0	1489
Q Serve(g_s), s	0.0	16.6	16.6	19.7	5.3	0.0				13.2	0.0	13.4
Cycle Q Clear(g_c), s	0.0	16.6	16.6	19.7	5.3	0.0				13.2	0.0	13.4
Prop In Lane	0.00		0.32	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	753	741	886	2576	0				664	0	278
V/C Ratio(X)	0.00	0.57	0.57	0.89	0.24	0.00				0.82	0.00	0.83
Avail Cap(c_a), veh/h	0	753	741	998	2576	0				792	0	331
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.55	0.55	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	19.7	19.7	32.2	4.1	0.0				35.2	0.0	35.2
Incr Delay (d2), s/veh	0.0	3.2	3.2	5.3	0.1	0.0				5.8	0.0	13.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.2	7.1	8.6	1.6	0.0				6.1	0.0	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	22.9	22.9	37.5	4.3	0.0				41.0	0.0	49.1
LnGrp LOS	A	C	C	D	A	A				D	A	D
Approach Vol, veh/h		856			1416						774	
Approach Delay, s/veh		22.9			22.7						43.4	
Approach LOS		C			C						D	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	27.1	42.2		20.8		69.2						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	26.0	32.0		20.0		62.0						
Max Q Clear Time (g_c+I), s	21.7	18.6		15.4		7.3						
Green Ext Time (p_c), s	1.4	4.7		1.4		5.1						

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

Notes

User approved volume balancing among the lanes for turning movement.












Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	950	0	0	1134	443	150	1	963	0	0	0
Future Volume (veh/h)	200	950	0	0	1134	443	150	1	963	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		0.93	1.00		0.94			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	217	1033	0	0	1233	482	163	1	1047			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	254	1828	0	0	1605	464	658	4	973			
Arrive On Green	0.14	0.51	0.00	0.00	0.31	0.31	0.37	0.37	0.37			
Sat Flow, veh/h	1781	3647	0	0	5274	1477	1771	11	2620			
Grp Volume(v), veh/h	217	1033	0	0	1233	482	164	0	1047			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1702	1477	1782	0	1310			
Q Serve(g_s), s	8.3	13.9	0.0	0.0	15.3	22.0	4.5	0.0	26.0			
Cycle Q Clear(g_c), s	8.3	13.9	0.0	0.0	15.3	22.0	4.5	0.0	26.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.99		1.00			
Lane Grp Cap(c), veh/h	254	1828	0	0	1605	464	662	0	973			
V/C Ratio(X)	0.85	0.57	0.00	0.00	0.77	1.04	0.25	0.00	1.08			
Avail Cap(c_a), veh/h	254	1828	0	0	1605	464	662	0	973			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.68	0.68	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	29.3	11.6	0.0	0.0	21.7	24.0	15.2	0.0	22.0			
Incr Delay (d2), s/veh	17.0	0.9	0.0	0.0	3.6	52.1	0.2	0.0	51.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.6	5.0	0.0	0.0	6.2	13.8	1.7	0.0	14.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	12.5	0.0	0.0	25.3	76.1	15.4	0.0	73.6			
LnGrp LOS	D	B	A	A	C	F	B	A	F			
Approach Vol, veh/h		1250			1715			1211				
Approach Delay, s/veh		18.4			39.6			65.7				
Approach LOS		B			D			E				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		40.0			14.0	26.0		30.0				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		36.0			10.0	22.0		26.0				
Max Q Clear Time (g_c+I1), s		15.9			10.3	24.0		28.0				
Green Ext Time (p_c), s		7.6			0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay					40.8							
HCM 6th LOS					D							

Appendix R

Horizon Year 2035 + Project Intersection LOS Calculations

AM 2035 + Project
1: Avenida Encinas & Carlsbad Blvd SB

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	243	0	0	0	98	1485
Future Volume (vph)	243	0	0	0	98	1485
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0				4.0	4.0
Lane Util. Factor	0.97				1.00	0.95
Frbp, ped/bikes	1.00				1.00	1.00
Flpb, ped/bikes	1.00				1.00	1.00
Frt	1.00				1.00	1.00
Flt Protected	0.95				0.95	1.00
Satd. Flow (prot)	3433				1770	3539
Flt Permitted	0.95				0.95	1.00
Satd. Flow (perm)	3433				1770	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	264	0	0	0	107	1614
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	264	0	0	0	107	1614
Confl. Peds. (#/hr)		30			30	
Confl. Bikes (#/hr)		30		30		
Turn Type	Prot				Prot	NA
Protected Phases	8				1	6
Permitted Phases						
Actuated Green, G (s)	14.7				6.1	46.6
Effective Green, g (s)	14.7				6.1	46.6
Actuated g/C Ratio	0.18				0.07	0.57
Clearance Time (s)	4.0				4.0	4.0
Vehicle Extension (s)	3.0				3.0	3.0
Lane Grp Cap (vph)	616				131	2016
v/s Ratio Prot	c0.08				0.06	c0.46
v/s Ratio Perm						
v/c Ratio	0.43				0.82	0.80
Uniform Delay, d1	29.8				37.3	13.9
Progression Factor	0.07				1.00	1.00
Incremental Delay, d2	0.4				31.0	2.4
Delay (s)	2.4				68.3	16.3
Level of Service	A				E	B
Approach Delay (s)	2.4		0.0			19.5
Approach LOS	A		A			B
Intersection Summary						
HCM 2000 Control Delay			17.3		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.66			
Actuated Cycle Length (s)			81.8		Sum of lost time (s)	16.0
Intersection Capacity Utilization			58.7%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

AM 2035 + Project
2: Carsbad Blvd NB & Avenida Encinas

HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕↕			↕↕	↕				
Traffic Volume (vph)	11	87	0	0	243	19	0	1318	408	0	0	0	
Future Volume (vph)	11	87	0	0	243	19	0	1318	408	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0			4.0			4.0	4.0				
Lane Util. Factor		1.00			0.95			0.95	1.00				
Frbp, ped/bikes		1.00			0.99			1.00	0.87				
Flpb, ped/bikes		1.00			1.00			1.00	1.00				
Frt		1.00			0.99			1.00	0.85				
Flt Protected		0.99			1.00			1.00	1.00				
Satd. Flow (prot)		1852			3480			3539	1379				
Flt Permitted		0.99			1.00			1.00	1.00				
Satd. Flow (perm)		1852			3480			3539	1379				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	12	95	0	0	264	21	0	1433	443	0	0	0	
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	258	0	0	0	
Lane Group Flow (vph)	0	107	0	0	278	0	0	1433	185	0	0	0	
Confl. Peds. (#/hr)			20			20			20				
Confl. Bikes (#/hr)			30			30			30				
Turn Type	Split	NA			NA			NA	custom				
Protected Phases	7	7			8			2					
Permitted Phases									8				
Actuated Green, G (s)		8.5			14.7			36.5	14.7				
Effective Green, g (s)		8.5			14.7			36.5	14.7				
Actuated g/C Ratio		0.10			0.18			0.45	0.18				
Clearance Time (s)		4.0			4.0			4.0	4.0				
Vehicle Extension (s)		3.0			3.0			3.0	3.0				
Lane Grp Cap (vph)		192			625			1579	247				
v/s Ratio Prot		c0.06			0.08			c0.40					
v/s Ratio Perm									c0.13				
v/c Ratio		0.56			0.45			0.91	0.75				
Uniform Delay, d1		34.9			29.9			21.1	31.8				
Progression Factor		1.43			1.00			1.00	1.00				
Incremental Delay, d2		1.9			0.5			9.2	12.1				
Delay (s)		51.9			30.4			30.2	43.9				
Level of Service		D			C			C	D				
Approach Delay (s)		51.9			30.4			33.5			0.0		
Approach LOS		D			C			C			A		
Intersection Summary													
HCM 2000 Control Delay			34.0									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.74										
Actuated Cycle Length (s)			81.8									Sum of lost time (s)	16.0
Intersection Capacity Utilization			56.9%									ICU Level of Service	B
Analysis Period (min)			15										
c Critical Lane Group													

AM 2035 + Project
3: N Coast Hwy & Hotel Access/La Costa Ave

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗	↖	↖	↗	↖	↑↑	↗	↖	↑↑	↗
Traffic Volume (veh/h)	4	34	7	364	49	320	10	206	237	414	1204	6
Future Volume (veh/h)	4	34	7	364	49	320	10	206	237	414	1204	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.70	1.00		0.93	1.00		0.89	1.00		0.94
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	4	37	8	434	0	348	11	224	258	450	1309	7
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	12	114	75	750	0	310	19	825	328	497	1777	744
Arrive On Green	0.07	0.07	0.07	0.21	0.00	0.21	0.01	0.23	0.23	0.28	0.50	0.50
Sat Flow, veh/h	182	1680	1105	3563	0	1474	1781	3554	1414	1781	3554	1488
Grp Volume(v), veh/h	41	0	8	434	0	348	11	224	258	450	1309	7
Grp Sat Flow(s),veh/h/ln	1861	0	1105	1781	0	1474	1781	1777	1414	1781	1777	1488
Q Serve(g_s), s	1.6	0.0	0.5	8.3	0.0	16.0	0.5	3.9	13.0	18.5	22.2	0.2
Cycle Q Clear(g_c), s	1.6	0.0	0.5	8.3	0.0	16.0	0.5	3.9	13.0	18.5	22.2	0.2
Prop In Lane	0.10		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	127	0	75	750	0	310	19	825	328	497	1777	744
V/C Ratio(X)	0.32	0.00	0.11	0.58	0.00	1.12	0.57	0.27	0.79	0.91	0.74	0.01
Avail Cap(c_a), veh/h	392	0	233	750	0	310	94	825	328	586	1777	744
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.7	0.0	33.2	27.0	0.0	30.0	37.4	23.9	27.4	26.4	15.0	9.5
Incr Delay (d2), s/veh	1.5	0.0	0.6	1.1	0.0	88.0	23.3	0.8	17.2	16.1	2.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.1	3.5	0.0	13.0	0.3	1.7	5.8	9.7	8.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.2	0.0	33.9	28.1	0.0	118.0	60.7	24.7	44.6	42.5	17.8	9.6
LnGrp LOS	D	A	C	C	A	F	E	C	D	D	B	A
Approach Vol, veh/h		49			782			493			1766	
Approach Delay, s/veh		35.0			68.1			35.9			24.1	
Approach LOS		C			E			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.2	21.6		9.2	4.8	42.0		20.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	25.0	17.0		16.0	4.0	38.0		16.0				
Max Q Clear Time (g_c+I1), s	20.5	15.0		3.6	2.5	24.2		18.0				
Green Ext Time (p_c), s	0.7	0.5		0.1	0.0	8.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay	37.3											
HCM 6th LOS	D											

Notes

User approved volume balancing among the lanes for turning movement.

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↖	↑	↘	
Traffic Vol, veh/h	0	73	23	474	1562	35
Future Vol, veh/h	0	73	23	474	1562	35
Conflicting Peds, #/hr	20	20	20	0	0	20
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	79	25	515	1698	38
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	1757	1756	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	105	356	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	102	350	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	112.2	0.7	0			
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	350	-	102	-	-	
HCM Lane V/C Ratio	0.071	-	0.778	-	-	
HCM Control Delay (s)	16.1	-	112.2	-	-	
HCM Lane LOS	C	-	F	-	-	
HCM 95th %tile Q(veh)	0.2	-	4.2	-	-	

Intersection			
Intersection Delay, s/veh	35.7		
Intersection LOS	E		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	54	341	1344
Demand Flow Rate, veh/h	55	348	1371
Vehicles Circulating, veh/h	1341	31	11
Vehicles Exiting, veh/h	41	1365	368
Ped Vol Crossing Leg, #/h	20	20	20
Ped Cap Adj	1.000	0.997	0.997
Approach Delay, s/veh	13.1	5.0	44.4
Approach LOS	B	A	E
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	55	348	1371
Cap Entry Lane, veh/h	351	1337	1364
Entry HV Adj Factor	0.982	0.981	0.980
Flow Entry, veh/h	54	341	1344
Cap Entry, veh/h	345	1308	1334
V/C Ratio	0.156	0.261	1.008
Control Delay, s/veh	13.1	5.0	44.4
LOS	B	A	F
95th %tile Queue, veh	1	1	23

Intersection			
Intersection Delay, s/veh	27.7		
Intersection LOS	D		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	44	327	1325
Demand Flow Rate, veh/h	45	333	1351
Vehicles Circulating, veh/h	1337	25	12
Vehicles Exiting, veh/h	26	1356	346
Ped Vol Crossing Leg, #/h	20	20	20
Ped Cap Adj	1.000	0.997	0.997
Approach Delay, s/veh	9.5	4.7	34.0
Approach LOS	A	A	D
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	45	333	1351
Cap Entry Lane, veh/h	456	1390	1406
Entry HV Adj Factor	0.978	0.981	0.981
Flow Entry, veh/h	44	327	1325
Cap Entry, veh/h	446	1360	1375
V/C Ratio	0.099	0.240	0.964
Control Delay, s/veh	9.5	4.7	34.0
LOS	A	A	D
95th %tile Queue, veh	0	1	19

Intersection			
Intersection Delay, s/veh	21.8		
Intersection LOS	C		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	33	256	1255
Demand Flow Rate, veh/h	33	261	1280
Vehicles Circulating, veh/h	1263	13	11
Vehicles Exiting, veh/h	28	1283	263
Ped Vol Crossing Leg, #/h	20	20	20
Ped Cap Adj	1.000	0.997	0.997
Approach Delay, s/veh	8.3	4.2	25.7
Approach LOS	A	A	D
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	33	261	1280
Cap Entry Lane, veh/h	485	1405	1407
Entry HV Adj Factor	1.000	0.981	0.981
Flow Entry, veh/h	33	256	1255
Cap Entry, veh/h	485	1374	1376
V/C Ratio	0.068	0.186	0.912
Control Delay, s/veh	8.3	4.2	25.7
LOS	A	A	D
95th %tile Queue, veh	0	1	15



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↕		↗	↕	↗	↗	↕	↕
Traffic Volume (veh/h)	15	55	19	292	44	132	14	190	150	458	1366	20
Future Volume (veh/h)	15	55	19	292	44	132	14	190	150	458	1366	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.93	1.00		0.95	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	60	21	254	136	143	15	207	163	498	1485	22
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	22	81	28	351	158	166	25	777	328	540	1818	27
Arrive On Green	0.07	0.07	0.07	0.20	0.20	0.20	0.01	0.22	0.22	0.30	0.51	0.51
Sat Flow, veh/h	289	1084	380	1781	801	842	1781	3554	1500	1781	3581	53
Grp Volume(v), veh/h	97	0	0	254	0	279	15	207	163	498	736	771
Grp Sat Flow(s),veh/h/ln	1753	0	0	1781	0	1644	1781	1777	1500	1781	1777	1857
Q Serve(g_s), s	4.2	0.0	0.0	10.4	0.0	12.8	0.7	3.8	7.4	21.0	27.0	27.1
Cycle Q Clear(g_c), s	4.2	0.0	0.0	10.4	0.0	12.8	0.7	3.8	7.4	21.0	27.0	27.1
Prop In Lane	0.16		0.22	1.00		0.51	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	131	0	0	351	0	324	25	777	328	540	902	943
V/C Ratio(X)	0.74	0.00	0.00	0.72	0.00	0.86	0.59	0.27	0.50	0.92	0.82	0.82
Avail Cap(c_a), veh/h	564	0	0	367	0	338	92	777	328	596	902	943
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.2	0.0	0.0	29.2	0.0	30.2	38.1	25.2	26.6	26.2	16.1	16.1
Incr Delay (d2), s/veh	7.9	0.0	0.0	6.6	0.0	19.0	20.0	0.8	5.3	18.9	8.0	7.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.0	4.9	0.0	6.6	0.4	1.6	3.0	11.2	11.8	12.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.1	0.0	0.0	35.8	0.0	49.2	58.1	26.0	31.9	45.1	24.1	23.9
LnGrp LOS	D	A	A	D	A	D	E	C	C	D	C	C
Approach Vol, veh/h		97			533			385			2005	
Approach Delay, s/veh		43.1			42.8			29.8			29.3	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	27.6	21.0		9.8	5.1	43.5		19.3				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	26.0	17.0		25.0	4.0	39.0		16.0				
Max Q Clear Time (g_c+I1), s	23.0	9.4		6.2	2.7	29.1		14.8				
Green Ext Time (p_c), s	0.6	1.1		0.4	0.0	6.7		0.4				

Intersection Summary												
HCM 6th Ctrl Delay	32.2											
HCM 6th LOS	C											

Notes
 User approved volume balancing among the lanes for turning movement.
 User approved changes to right turn type.

Intersection						
Int Delay, s/veh	28.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	524	193	274	589	55	260
Future Vol, veh/h	524	193	274	589	55	260
Conflicting Peds, #/hr	0	20	20	0	20	20
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	80
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	570	210	298	640	60	283
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	800	0	1951	715
Stage 1	-	-	-	-	695	-
Stage 2	-	-	-	-	1256	-
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	-	-	823	-	71	431
Stage 1	-	-	-	-	495	-
Stage 2	-	-	-	-	268	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	809	-	~ 29	417
Mov Cap-2 Maneuver	-	-	-	-	~ 29	-
Stage 1	-	-	-	-	487	-
Stage 2	-	-	-	-	113	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	3.8	161.5			
HCM LOS						F
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	29	417	-	-	809	-
HCM Lane V/C Ratio	2.061	0.678	-	-	0.368	-
HCM Control Delay (s)	\$ 782.9	30	-	-	12	0
HCM Lane LOS	F	D	-	-	B	A
HCM 95th %tile Q(veh)	7	4.9	-	-	1.7	-
Notes						
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon			

Intersection						
Int Delay, s/veh	4.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	783	17	75	893	18	87
Future Vol, veh/h	783	17	75	893	18	87
Conflicting Peds, #/hr	0	20	20	0	20	20
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	851	18	82	971	20	95
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	889	0	2035	900
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	1155	-
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	-	-	762	-	63	337
Stage 1	-	-	-	-	406	-
Stage 2	-	-	-	-	300	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	749	-	46	326
Mov Cap-2 Maneuver	-	-	-	-	46	-
Stage 1	-	-	-	-	399	-
Stage 2	-	-	-	-	225	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0.8	69.7			
HCM LOS				F		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	160	-	-	749	-	
HCM Lane V/C Ratio	0.713	-	-	0.109	-	
HCM Control Delay (s)	69.7	-	-	10.4	0	
HCM Lane LOS	F	-	-	B	A	
HCM 95th %tile Q(veh)	4.3	-	-	0.4	-	

AM 2035 + Project
12: I-5 SB Ramp & La Costa Ave

HCM 6th Signalized Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑	↑
Traffic Volume (veh/h)	0	698	165	680	574	0	0	0	0	620	2	364
Future Volume (veh/h)	0	698	165	680	574	0	0	0	0	620	2	364
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00				1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	759	179	739	624	0				675	0	396
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	2	2	2	0				2	2	2
Cap, veh/h	0	1017	240	793	2251	0				990	0	421
Arrive On Green	0.00	0.36	0.36	0.38	1.00	0.00				0.28	0.00	0.28
Sat Flow, veh/h	0	2923	667	3456	3647	0				3563	0	1514
Grp Volume(v), veh/h	0	477	461	739	624	0				675	0	396
Grp Sat Flow(s),veh/h/ln	0	1777	1720	1728	1777	0				1781	0	1514
Q Serve(g_s), s	0.0	21.1	21.1	18.5	0.0	0.0				15.2	0.0	23.0
Cycle Q Clear(g_c), s	0.0	21.1	21.1	18.5	0.0	0.0				15.2	0.0	23.0
Prop In Lane	0.00		0.39	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	638	618	793	2251	0				990	0	421
V/C Ratio(X)	0.00	0.75	0.75	0.93	0.28	0.00				0.68	0.00	0.94
Avail Cap(c_a), veh/h	0	638	618	806	2251	0				990	0	421
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.75	0.75	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	25.2	25.2	27.1	0.0	0.0				29.0	0.0	31.8
Incr Delay (d2), s/veh	0.0	7.8	8.0	13.9	0.2	0.0				1.9	0.0	29.5
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	9.9	9.7	7.6	0.1	0.0				6.6	0.0	11.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	33.0	33.3	40.9	0.2	0.0				30.9	0.0	61.3
LnGrp LOS	A	C	C	D	A	A				C	A	E
Approach Vol, veh/h		938			1363						1071	
Approach Delay, s/veh		33.1			22.3						42.1	
Approach LOS		C			C						D	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	24.7	36.3		29.0		61.0						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	21.0	32.0		25.0		57.0						
Max Q Clear Time (g_c+I), s	20.5	23.1		25.0		2.0						
Green Ext Time (p_c), s	0.2	4.0		0.0		5.0						

Intersection Summary



















HCM 6th Ctrl Delay	31.6
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.










AM 2035 + Project
13: I-5 NB Ramp & La Costa Ave

HCM 6th Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	241	1087	0	0	1166	648	76	2	740	0	0	0
Future Volume (veh/h)	241	1087	0	0	1166	648	76	2	740	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		0.94	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	262	1182	0	0	1267	704	83	2	804			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	295	2290	0	0	2217	650	464	11	687			
Arrive On Green	0.33	1.00	0.00	0.00	0.43	0.43	0.27	0.27	0.27			
Sat Flow, veh/h	1781	3647	0	0	5274	1498	1741	42	2575			
Grp Volume(v), veh/h	262	1182	0	0	1267	704	85	0	804			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1702	1498	1783	0	1288			
Q Serve(g_s), s	12.5	0.0	0.0	0.0	16.8	39.1	3.3	0.0	24.0			
Cycle Q Clear(g_c), s	12.5	0.0	0.0	0.0	16.8	39.1	3.3	0.0	24.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.98		1.00			
Lane Grp Cap(c), veh/h	295	2290	0	0	2217	650	476	0	687			
V/C Ratio(X)	0.89	0.52	0.00	0.00	0.57	1.08	0.18	0.00	1.17			
Avail Cap(c_a), veh/h	416	2290	0	0	2217	650	476	0	687			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.58	0.58	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	29.3	0.0	0.0	0.0	19.2	25.5	25.4	0.0	33.0			
Incr Delay (d2), s/veh	9.8	0.5	0.0	0.0	1.1	59.8	0.2	0.0	91.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	5.1	0.2	0.0	0.0	6.5	23.7	1.4	0.0	16.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.0	0.5	0.0	0.0	20.2	85.2	25.6	0.0	124.8			
LnGrp LOS	D	A	A	A	C	F	C	A	F			
Approach Vol, veh/h		1444			1971			889				
Approach Delay, s/veh		7.5			43.5			115.3				
Approach LOS		A			D			F				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		62.0			18.9	43.1		28.0				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		58.0			21.0	33.0		24.0				
Max Q Clear Time (g_c+l), s		2.0			14.5	41.1		26.0				
Green Ext Time (p_c), s		12.3			0.4	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay					46.2							
HCM 6th LOS					D							

PM 2035 + Project
1: Avenida Encinas & Carlsbad Blvd SB

















HCM Signalized Intersection Capacity Analysis

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	242	0	0	0	101	1799
Future Volume (vph)	242	0	0	0	101	1799
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0				4.0	4.0
Lane Util. Factor	0.97				1.00	0.95
Frbp, ped/bikes	1.00				1.00	1.00
Flpb, ped/bikes	1.00				1.00	1.00
Frt	1.00				1.00	1.00
Flt Protected	0.95				0.95	1.00
Satd. Flow (prot)	3433				1770	3539
Flt Permitted	0.95				0.95	1.00
Satd. Flow (perm)	3433				1770	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	263	0	0	0	110	1955
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	263	0	0	0	110	1955
Confl. Peds. (#/hr)		15			15	
Confl. Bikes (#/hr)		10		10		
Turn Type	Prot				Prot	NA
Protected Phases	8				1	6
Permitted Phases						
Actuated Green, G (s)	14.3				8.5	57.6
Effective Green, g (s)	14.3				8.5	57.6
Actuated g/C Ratio	0.15				0.09	0.62
Clearance Time (s)	4.0				4.0	4.0
Vehicle Extension (s)	3.0				3.0	3.0
Lane Grp Cap (vph)	527				161	2191
v/s Ratio Prot	c0.08				0.06	c0.55
v/s Ratio Perm						
v/c Ratio	0.50				0.68	0.89
Uniform Delay, d1	36.1				40.9	15.1
Progression Factor	0.06				1.00	1.00
Incremental Delay, d2	0.7				11.3	5.1
Delay (s)	2.8				52.3	20.1
Level of Service	A				D	C
Approach Delay (s)	2.8		0.0			21.8
Approach LOS	A		A			C
Intersection Summary						
HCM 2000 Control Delay			19.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.76			
Actuated Cycle Length (s)			93.0		Sum of lost time (s)	16.0
Intersection Capacity Utilization			65.8%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

LOS Engineering, Inc.

























PM 2035 + Project
2: Carsbad Blvd NB & Avenida Encinas

HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	90	0	0	242	22	0	945	434	0	0	0
Future Volume (vph)	11	90	0	0	242	22	0	945	434	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0			
Lane Util. Factor		1.00			0.95			0.95	1.00			
Frbp, ped/bikes		1.00			1.00			1.00	0.91			
Flpb, ped/bikes		1.00			1.00			1.00	1.00			
Frt		1.00			0.99			1.00	0.85			
Flt Protected		0.99			1.00			1.00	1.00			
Satd. Flow (prot)		1853			3480			3539	1448			
Flt Permitted		0.99			1.00			1.00	1.00			
Satd. Flow (perm)		1853			3480			3539	1448			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	98	0	0	263	24	0	1027	472	0	0	0
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	348	0	0	0
Lane Group Flow (vph)	0	110	0	0	280	0	0	1027	124	0	0	0
Confl. Peds. (#/hr)			15			15			15			
Confl. Bikes (#/hr)			10			10			10			
Turn Type	Split	NA			NA			NA	custom			
Protected Phases	7	7			8			2				
Permitted Phases									8			
Actuated Green, G (s)		9.1			14.3			45.1	14.3			
Effective Green, g (s)		9.1			14.3			45.1	14.3			
Actuated g/C Ratio		0.10			0.15			0.48	0.15			
Clearance Time (s)		4.0			4.0			4.0	4.0			
Vehicle Extension (s)		3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)		181			535			1716	222			
v/s Ratio Prot		c0.06			0.08			c0.29				
v/s Ratio Perm									c0.09			
v/c Ratio		0.61			0.52			0.60	0.56			
Uniform Delay, d1		40.2			36.2			17.4	36.4			
Progression Factor		1.50			1.00			1.00	1.00			
Incremental Delay, d2		5.1			0.9			1.6	3.0			
Delay (s)		65.3			37.1			18.9	39.5			
Level of Service		E			D			B	D			
Approach Delay (s)		65.3			37.1			25.4			0.0	
Approach LOS		E			D			C			A	
Intersection Summary												
HCM 2000 Control Delay			29.5									C
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			93.0									16.0
Intersection Capacity Utilization			46.7%									A
Analysis Period (min)			15									
c Critical Lane Group												

PM 2035 + Project
3: N Coast Hwy & Hotel Access/La Costa Ave

HCM 6th Signalized Intersection Summary

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	5	46	9	343	65	340	13	694	350	405	467	7	
Future Volume (veh/h)	5	46	9	343	65	340	13	694	350	405	467	7	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		0.78	1.00		0.94	1.00		0.92	1.00		0.95	
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	5	50	10	424	0	370	14	754	380	440	508	8	
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	13	126	92	713	0	299	24	978	404	446	1820	771	
Arrive On Green	0.07	0.07	0.07	0.20	0.00	0.20	0.01	0.28	0.28	0.25	0.51	0.51	
Sat Flow, veh/h	169	1693	1241	3563	0	1494	1781	3554	1466	1781	3554	1506	
Grp Volume(v), veh/h	55	0	10	424	0	370	14	754	380	440	508	8	
Grp Sat Flow(s),veh/h/ln	1862	0	1241	1781	0	1494	1781	1777	1466	1781	1777	1506	
Q Serve(g_s), s	2.3	0.0	0.6	8.6	0.0	16.0	0.6	15.6	20.3	19.7	6.5	0.2	
Cycle Q Clear(g_c), s	2.3	0.0	0.6	8.6	0.0	16.0	0.6	15.6	20.3	19.7	6.5	0.2	
Prop In Lane	0.09		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Lane Grp Cap(c), veh/h	138	0	92	713	0	299	24	978	404	446	1820	771	
V/C Ratio(X)	0.40	0.00	0.11	0.59	0.00	1.24	0.59	0.77	0.94	0.99	0.28	0.01	
Avail Cap(c_a), veh/h	373	0	248	713	0	299	89	978	404	446	1820	771	
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	35.3	0.0	34.5	29.0	0.0	32.0	39.2	26.6	28.3	29.8	11.1	9.6	
Incr Delay (d2), s/veh	1.9	0.0	0.5	1.3	0.0	132.0	20.9	5.9	32.3	39.1	0.4	0.0	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.2	3.7	0.0	16.5	0.4	7.1	10.4	12.9	2.4	0.1	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	37.1	0.0	35.0	30.4	0.0	163.9	60.1	32.5	60.6	69.0	11.5	9.6	
LnGrp LOS	D	A	D	C	A	F	E	C	E	E	B	A	
Approach Vol, veh/h		65			794			1148			956		
Approach Delay, s/veh		36.8			92.6			42.2			37.9		
Approach LOS		D			F			D			D		
Timer - Assigned Phs	1	2		4	5	6		8					
Phs Duration (G+Y+Rc), s	24.0	26.0		9.9	5.1	44.9		20.0					
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0					
Max Green Setting (Gmax), s	20.0	22.0		16.0	4.0	38.0		16.0					
Max Q Clear Time (g_c+I1), s	21.7	22.3		4.3	2.6	8.5		18.0					
Green Ext Time (p_c), s	0.0	0.0		0.2	0.0	3.7		0.0					
Intersection Summary													
HCM 6th Ctrl Delay			54.2										
HCM 6th LOS			D										
Notes													
User approved volume balancing among the lanes for turning movement.													

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↖	↑	↘	
Traffic Vol, veh/h	0	76	41	1077	784	62
Future Vol, veh/h	0	76	41	1077	784	62
Conflicting Peds, #/hr	20	20	0	0	0	20
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	83	45	1171	852	67
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	926	939	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	326	730	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	315	718	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	20.4	0.4	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	718	-	315	-	-	
HCM Lane V/C Ratio	0.062	-	0.262	-	-	
HCM Control Delay (s)	10.3	-	20.4	-	-	
HCM Lane LOS	B	-	C	-	-	
HCM 95th %tile Q(veh)	0.2	-	1	-	-	






















Intersection			
Intersection Delay, s/veh	10.0		
Intersection LOS	A		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	41	950	648
Demand Flow Rate, veh/h	41	969	661
Vehicles Circulating, veh/h	621	24	27
Vehicles Exiting, veh/h	67	638	966
Ped Vol Crossing Leg, #/h	10	10	10
Ped Cap Adj	0.999	0.999	0.999
Approach Delay, s/veh	4.8	12.0	7.4
Approach LOS	A	B	A
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	41	969	661
Cap Entry Lane, veh/h	838	1391	1388
Entry HV Adj Factor	1.000	0.980	0.980
Flow Entry, veh/h	41	950	648
Cap Entry, veh/h	836	1362	1358
V/C Ratio	0.049	0.697	0.477
Control Delay, s/veh	4.8	12.0	7.4
LOS	A	B	A
95th %tile Queue, veh	0	6	3

Intersection			
Intersection Delay, s/veh	10.3		
Intersection LOS	B		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	65	958	695
Demand Flow Rate, veh/h	67	978	709
Vehicles Circulating, veh/h	667	25	33
Vehicles Exiting, veh/h	75	708	970
Ped Vol Crossing Leg, #/h	10	10	10
Ped Cap Adj	0.999	0.999	0.999
Approach Delay, s/veh	5.4	12.2	8.0
Approach LOS	A	B	A
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	67	978	709
Cap Entry Lane, veh/h	805	1390	1381
Entry HV Adj Factor	0.970	0.980	0.980
Flow Entry, veh/h	65	958	695
Cap Entry, veh/h	780	1361	1352
V/C Ratio	0.083	0.704	0.514
Control Delay, s/veh	5.4	12.2	8.0
LOS	A	B	A
95th %tile Queue, veh	0	6	3

Intersection			
Intersection Delay, s/veh	10.0		
Intersection LOS	A		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	32	949	668
Demand Flow Rate, veh/h	32	968	682
Vehicles Circulating, veh/h	639	15	38
Vehicles Exiting, veh/h	81	656	945
Ped Vol Crossing Leg, #/h	10	10	10
Ped Cap Adj	0.999	0.999	0.999
Approach Delay, s/veh	4.7	11.7	7.8
Approach LOS	A	B	A
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	32	968	682
Cap Entry Lane, veh/h	825	1402	1375
Entry HV Adj Factor	1.000	0.980	0.980
Flow Entry, veh/h	32	949	668
Cap Entry, veh/h	824	1372	1346
V/C Ratio	0.039	0.691	0.497
Control Delay, s/veh	4.7	11.7	7.8
LOS	A	B	A
95th %tile Queue, veh	0	6	3

PM 2035 + Project
9: N. Coast Hwy 101 & Leucadia Blvd

HCM 6th Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	44	28	245	68	281	30	747	295	250	458	29
Future Volume (veh/h)	18	44	28	245	68	281	30	747	295	250	458	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.94	1.00		0.96	1.00		0.94
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	20	48	30	266	74	305	33	812	321	272	498	32
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	27	64	40	452	77	317	46	1075	461	311	1522	97
Arrive On Green	0.08	0.08	0.08	0.25	0.25	0.25	0.03	0.30	0.30	0.17	0.45	0.45
Sat Flow, veh/h	351	843	527	1781	303	1250	1781	3554	1524	1781	3375	216
Grp Volume(v), veh/h	98	0	0	266	0	379	33	812	321	272	261	269
Grp Sat Flow(s),veh/h/ln	1721	0	0	1781	0	1553	1781	1777	1524	1781	1777	1814
Q Serve(g_s), s	4.6	0.0	0.0	10.8	0.0	19.9	1.5	17.1	15.4	12.3	7.8	7.9
Cycle Q Clear(g_c), s	4.6	0.0	0.0	10.8	0.0	19.9	1.5	17.1	15.4	12.3	7.8	7.9
Prop In Lane	0.20		0.31	1.00		0.80	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	130	0	0	452	0	394	46	1075	461	311	802	818
V/C Ratio(X)	0.75	0.00	0.00	0.59	0.00	0.96	0.72	0.76	0.70	0.88	0.33	0.33
Avail Cap(c_a), veh/h	458	0	0	452	0	394	129	1075	461	345	802	818
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.5	0.0	0.0	27.0	0.0	30.4	40.0	26.1	25.5	33.3	14.6	14.6
Incr Delay (d2), s/veh	8.4	0.0	0.0	2.0	0.0	35.1	19.0	5.0	8.4	20.1	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	0.0	4.7	0.0	11.0	0.9	7.7	6.4	6.9	3.2	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.9	0.0	0.0	29.0	0.0	65.6	59.0	31.0	33.9	53.3	15.7	15.7
LnGrp LOS	D	A	A	C	A	E	E	C	C	D	B	B
Approach Vol, veh/h		98			645			1166			802	
Approach Delay, s/veh		45.9			50.5			32.6			28.5	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	18.4	29.0		10.3	6.1	41.3		25.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	16.0	25.0		22.0	6.0	35.0		21.0				
Max Q Clear Time (g_c+I1), s	14.3	19.1		6.6	3.5	9.9		21.9				
Green Ext Time (p_c), s	0.1	3.3		0.4	0.0	3.3		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	36.1											
HCM 6th LOS	D											
Notes												
User approved volume balancing among the lanes for turning movement.												
User approved changes to right turn type.												

Intersection						
Int Delay, s/veh	24.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	587	150	185	542	81	200
Future Vol, veh/h	587	150	185	542	81	200
Conflicting Peds, #/hr	0	20	20	0	20	20
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	80
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	638	163	201	589	88	217
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	821	0	1751	760
Stage 1	-	-	-	-	740	-
Stage 2	-	-	-	-	1011	-
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	-	-	808	-	94	406
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	352	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	795	-	~ 57	393
Mov Cap-2 Maneuver	-	-	-	-	~ 57	-
Stage 1	-	-	-	-	464	-
Stage 2	-	-	-	-	216	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	2.8	142.7			
HCM LOS						F
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	57	393	-	-	795	-
HCM Lane V/C Ratio	1.545	0.553	-	-	0.253	-
HCM Control Delay (s)	\$ 433.4	24.9	-	-	11.1	0
HCM Lane LOS	F	C	-	-	B	A
HCM 95th %tile Q(veh)	8	3.2	-	-	1	-
Notes						
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon			

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	735	52	53	735	15	60
Future Vol, veh/h	735	52	53	735	15	60
Conflicting Peds, #/hr	0	20	20	0	20	20
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	799	57	58	799	16	65
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	876	0	1783	868
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	935	-
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	-	-	771	-	90	352
Stage 1	-	-	-	-	420	-
Stage 2	-	-	-	-	382	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	758	-	75	340
Mov Cap-2 Maneuver	-	-	-	-	75	-
Stage 1	-	-	-	-	413	-
Stage 2	-	-	-	-	324	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.7		35.1		
HCM LOS				E		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	199	-	-	758	-	
HCM Lane V/C Ratio	0.41	-	-	0.076	-	
HCM Control Delay (s)	35.1	-	-	10.1	0	
HCM Lane LOS	E	-	-	B	A	
HCM 95th %tile Q(veh)	1.8	-	-	0.2	-	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑	↑
Traffic Volume (veh/h)	0	672	130	723	592	0	0	0	0	499	3	220
Future Volume (veh/h)	0	672	130	723	592	0	0	0	0	499	3	220
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00				1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	730	141	786	643	0				544	0	239
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	2	2	2	0				2	2	2
Cap, veh/h	0	1237	239	886	2559	0				680	0	285
Arrive On Green	0.00	0.42	0.42	0.26	0.72	0.00				0.19	0.00	0.19
Sat Flow, veh/h	0	3045	570	3456	3647	0				3563	0	1491
Grp Volume(v), veh/h	0	439	432	786	643	0				544	0	239
Grp Sat Flow(s),veh/h/ln	0	1777	1744	1728	1777	0				1781	0	1491
Q Serve(g_s), s	0.0	17.2	17.2	19.7	5.6	0.0				13.1	0.0	13.9
Cycle Q Clear(g_c), s	0.0	17.2	17.2	19.7	5.6	0.0				13.1	0.0	13.9
Prop In Lane	0.00		0.33	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	745	731	886	2559	0				680	0	285
V/C Ratio(X)	0.00	0.59	0.59	0.89	0.25	0.00				0.80	0.00	0.84
Avail Cap(c_a), veh/h	0	745	731	998	2559	0				792	0	331
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.54	0.54	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	20.2	20.2	32.2	4.3	0.0				34.8	0.0	35.1
Incr Delay (d2), s/veh	0.0	3.4	3.5	5.2	0.1	0.0				5.1	0.0	15.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.5	7.4	8.6	1.7	0.0				6.0	0.0	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	23.6	23.6	37.4	4.4	0.0				39.8	0.0	50.4
LnGrp LOS	A	C	C	D	A	A				D	A	D
Approach Vol, veh/h		871			1429						783	
Approach Delay, s/veh		23.6			22.6						43.1	
Approach LOS		C			C						D	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	27.1	41.7		21.2		68.8						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	26.0	32.0		20.0		62.0						
Max Q Clear Time (g_c+I1), s	21.7	19.2		15.9		7.6						
Green Ext Time (p_c), s	1.4	4.6		1.3		5.2						



















Intersection Summary		
HCM 6th Ctrl Delay		28.1
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

PM 2035 + Project
13: I-5 NB Ramp & La Costa Ave

HCM 6th Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	207	952	0	0	1137	443	159	1	963	0	0	0
Future Volume (veh/h)	207	952	0	0	1137	443	159	1	963	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		0.93	1.00		0.94			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	225	1035	0	0	1236	482	173	1	1047			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	254	1828	0	0	1605	464	658	4	973			
Arrive On Green	0.14	0.51	0.00	0.00	0.31	0.31	0.37	0.37	0.37			
Sat Flow, veh/h	1781	3647	0	0	5274	1477	1772	10	2620			
Grp Volume(v), veh/h	225	1035	0	0	1236	482	174	0	1047			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1702	1477	1782	0	1310			
Q Serve(g_s), s	8.7	14.0	0.0	0.0	15.3	22.0	4.8	0.0	26.0			
Cycle Q Clear(g_c), s	8.7	14.0	0.0	0.0	15.3	22.0	4.8	0.0	26.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.99		1.00			
Lane Grp Cap(c), veh/h	254	1828	0	0	1605	464	662	0	973			
V/C Ratio(X)	0.88	0.57	0.00	0.00	0.77	1.04	0.26	0.00	1.08			
Avail Cap(c_a), veh/h	254	1828	0	0	1605	464	662	0	973			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.67	0.67	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	29.4	11.7	0.0	0.0	21.7	24.0	15.3	0.0	22.0			
Incr Delay (d2), s/veh	21.1	0.9	0.0	0.0	3.6	52.1	0.2	0.0	51.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	5.0	5.0	0.0	0.0	6.2	13.8	1.8	0.0	14.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.5	12.5	0.0	0.0	25.3	76.1	15.5	0.0	73.6			
LnGrp LOS	D	B	A	A	C	F	B	A	F			
Approach Vol, veh/h		1260			1718			1221				
Approach Delay, s/veh		19.3			39.6			65.3				
Approach LOS		B			D			E				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G + Y + Rc), s		40.0			14.0	26.0		30.0				
Change Period (Y + Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		36.0			10.0	22.0		26.0				
Max Q Clear Time (g_c + I1), s		16.0			10.7	24.0		28.0				
Green Ext Time (p_c), s		7.6			0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay					41.0							
HCM 6th LOS					D							

Appendix S

N. Coast Hwy/Grandview Int. LOS Calculations with Mitigation

Intersection			
Intersection Delay, s/veh	35.0		
Intersection LOS	D		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	57	330	1387
Demand Flow Rate, veh/h	59	336	1414
Vehicles Circulating, veh/h	1392	29	8
Vehicles Exiting, veh/h	30	1422	357
Ped Vol Crossing Leg, #/h	20	20	20
Ped Cap Adj	1.000	0.997	0.997
Approach Delay, s/veh	10.6	4.7	43.2
Approach LOS	B	A	E
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	59	336	1414
Cap Entry Lane, veh/h	435	1386	1410
Entry HV Adj Factor	0.966	0.981	0.981
Flow Entry, veh/h	57	330	1387
Cap Entry, veh/h	420	1355	1379
V/C Ratio	0.136	0.243	1.005
Control Delay, s/veh	10.6	4.7	43.2
LOS	B	A	F
95th %tile Queue, veh	0	1	23


















Intersection			
Intersection Delay, s/veh	35.6		
Intersection LOS	E		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	57	318	1390
Demand Flow Rate, veh/h	59	324	1417
Vehicles Circulating, veh/h	1395	29	8
Vehicles Exiting, veh/h	30	1425	345
Ped Vol Crossing Leg, #/h	20	20	20
Ped Cap Adj	1.000	0.997	0.997
Approach Delay, s/veh	10.6	4.6	43.7
Approach LOS	B	A	E
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	59	324	1417
Cap Entry Lane, veh/h	434	1386	1410
Entry HV Adj Factor	0.966	0.981	0.981
Flow Entry, veh/h	57	318	1390
Cap Entry, veh/h	419	1355	1379
V/C Ratio	0.136	0.234	1.007
Control Delay, s/veh	10.6	4.6	43.7
LOS	B	A	F
95th %tile Queue, veh	0	1	23

Appendix T

La Costa /N. Vulcan Int. LOS Calculations with Mitigation and Signal Warrant

AM Existing + Cumulative + Project
10: N Vulcan Ave & La Costa Ave


















With Improvement
HCM Signalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	0	416	51	258	471	0	26	0	208	0	1	0	
Future Volume (vph)	0	416	51	258	471	0	26	0	208	0	1	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0			4.0		4.0		4.0		4.0		
Lane Util. Factor		1.00			1.00		1.00		1.00		1.00		
Frbp, ped/bikes		0.99			1.00		1.00		0.89		1.00		
Flpb, ped/bikes		1.00			0.99		0.96		1.00		1.00		
Fr t		0.99			1.00		1.00		0.85		1.00		
Fl t Protected		1.00			0.98		0.95		1.00		1.00		
Satd. Flow (prot)		1821			1817		1691		1410		1863		
Fl t Permitted		1.00			0.66		0.76		1.00		1.00		
Satd. Flow (perm)		1821			1222		1348		1410		1863		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor (vph)	50%	100%	100%	100%	100%	50%	100%	50%	100%	50%	50%	50%	
Adj. Flow (vph)	0	452	55	280	512	0	28	0	226	0	1	0	
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	200	0	0	0	
Lane Group Flow (vph)	0	503	0	0	792	0	28	0	26	0	1	0	
Confl. Peds. (#/hr)			20	20			20		20				
Confl. Bikes (#/hr)			15						15				
Turn Type		NA		Perm	NA		Perm		Perm		NA		
Protected Phases		2			6						4		
Permitted Phases	2			6			8		8	4			
Actuated Green, G (s)		54.8			54.8		8.2		8.2		8.2		
Effective Green, g (s)		54.8			54.8		8.2		8.2		8.2		
Actuated g/C Ratio		0.77			0.77		0.12		0.12		0.12		
Clearance Time (s)		4.0			4.0		4.0		4.0		4.0		
Vehicle Extension (s)		3.0			3.0		3.0		3.0		3.0		
Lane Grp Cap (vph)		1405			943		155		162		215		
v/s Ratio Prot		0.28									0.00		
v/s Ratio Perm					c0.65		c0.02		0.02				
v/c Ratio		0.36			0.84		0.18		0.16		0.00		
Uniform Delay, d1		2.6			5.3		28.4		28.3		27.8		
Progression Factor		1.00			1.00		1.00		1.00		1.00		
Incremental Delay, d2		0.2			6.7		0.6		0.5		0.0		
Delay (s)		2.7			11.9		28.9		28.8		27.8		
Level of Service		A			B		C		C		C		
Approach Delay (s)		2.7			11.9			28.8			27.8		
Approach LOS		A			B			C			C		
Intersection Summary													
HCM 2000 Control Delay			11.7		HCM 2000 Level of Service					B			
HCM 2000 Volume to Capacity ratio			0.75										
Actuated Cycle Length (s)			71.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			84.9%		ICU Level of Service					E			
Analysis Period (min)			15										
c Critical Lane Group													

LOS Engineering, Inc.

PM Existing + Cumulative + Project
10: N Vulcan Ave & La Costa Ave

With Improvement
HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	482	76	153	564	1	63	0	165	0	0	0
Future Volume (vph)	1	482	76	153	564	1	63	0	165	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0		4.0			
Lane Util. Factor		1.00			1.00		1.00		1.00			
Frbp, ped/bikes		0.99			1.00		1.00		0.92			
Flpb, ped/bikes		1.00			1.00		0.97		1.00			
Frt		0.98			1.00		1.00		0.85			
Flt Protected		1.00			0.99		0.95		1.00			
Satd. Flow (prot)		1814			1838		1718		1457			
Flt Permitted		1.00			0.78		0.76		1.00			
Satd. Flow (perm)		1813			1451		1369		1457			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	524	83	166	613	1	68	0	179	0	0	0
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	148	0	0	0
Lane Group Flow (vph)	0	600	0	0	780	0	68	0	31	0	0	0
Confl. Peds. (#/hr)			20	20			20		20			
Confl. Bikes (#/hr)			15						15			
Turn Type	Perm	NA		Perm	NA		Perm		Perm			
Protected Phases		4			8						6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		30.7			30.7		8.0		8.0			
Effective Green, g (s)		30.7			30.7		8.0		8.0			
Actuated g/C Ratio		0.66			0.66		0.17		0.17			
Clearance Time (s)		4.0			4.0		4.0		4.0			
Vehicle Extension (s)		3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)		1191			953		234		249			
v/s Ratio Prot												
v/s Ratio Perm		0.33			0.54		0.05		0.02			
v/c Ratio		0.50			0.82		0.29		0.12			
Uniform Delay, d1		4.1			5.9		16.9		16.4			
Progression Factor		1.00			1.00		1.00		1.00			
Incremental Delay, d2		0.3			5.5		0.7		0.2			
Delay (s)		4.4			11.5		17.6		16.6			
Level of Service		A			B		B		B			
Approach Delay (s)		4.4			11.5		16.9				0.0	
Approach LOS		A			B		B				A	
Intersection Summary												
HCM 2000 Control Delay			9.7				HCM 2000 Level of Service				A	
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			46.7				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			86.8%				ICU Level of Service				E	
Analysis Period (min)			15									
c Critical Lane Group												



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	↔
Traffic Volume (veh/h)	524	193	274	589	55	260
Future Volume (veh/h)	524	193	274	589	55	260
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.95	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	570	210	298	640	60	283
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	607	223	334	1323	355	316
Arrive On Green	0.47	0.47	0.19	0.71	0.20	0.20
Sat Flow, veh/h	1282	472	1781	1870	1781	1585
Grp Volume(v), veh/h	0	780	298	640	60	283
Grp Sat Flow(s),veh/h/ln	0	1755	1781	1870	1781	1585
Q Serve(g_s), s	0.0	36.1	14.0	13.0	2.4	14.9
Cycle Q Clear(g_c), s	0.0	36.1	14.0	13.0	2.4	14.9
Prop In Lane		0.27	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	830	334	1323	355	316
V/C Ratio(X)	0.00	0.94	0.89	0.48	0.17	0.90
Avail Cap(c_a), veh/h	0	881	354	1397	374	333
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	21.4	33.9	5.6	28.4	33.4
Incr Delay (d2), s/veh	0.0	17.1	22.7	0.3	0.2	24.7
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	17.5	8.0	4.1	1.0	7.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	38.5	56.6	5.8	28.7	58.1
LnGrp LOS	A	D	E	A	C	E
Approach Vol, veh/h	780			938	343	
Approach Delay, s/veh	38.5			22.0	53.0	
Approach LOS	D			C	D	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		21.1	20.1	44.5		64.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		18.0	17.0	43.0		64.0
Max Q Clear Time (g_c + I1), s		16.9	16.0	38.1		15.0
Green Ext Time (p_c), s		0.1	0.1	2.4		5.2
Intersection Summary						
HCM 6th Ctrl Delay			33.4			
HCM 6th LOS			C			

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗		↖	↗	↖	↗
Traffic Volume (veh/h)	587	150	185	542	81	200
Future Volume (veh/h)	587	150	185	542	81	200
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.95	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	638	163	201	589	88	217
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	705	180	246	1307	308	274
Arrive On Green	0.50	0.50	0.14	0.70	0.17	0.17
Sat Flow, veh/h	1420	363	1781	1870	1781	1585
Grp Volume(v), veh/h	0	801	201	589	88	217
Grp Sat Flow(s),veh/h/ln	0	1782	1781	1870	1781	1585
Q Serve(g_s), s	0.0	25.7	6.9	8.6	2.7	8.2
Cycle Q Clear(g_c), s	0.0	25.7	6.9	8.6	2.7	8.2
Prop In Lane		0.20	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	885	246	1307	308	274
V/C Ratio(X)	0.00	0.90	0.82	0.45	0.29	0.79
Avail Cap(c_a), veh/h	0	998	285	1466	513	456
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	14.4	26.2	4.1	22.5	24.8
Incr Delay (d2), s/veh	0.0	10.7	14.8	0.2	0.5	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.1	3.7	2.1	1.1	3.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	25.1	40.9	4.4	23.0	29.9
LnGrp LOS	A	C	D	A	C	C
Approach Vol, veh/h	801			790	305	
Approach Delay, s/veh	25.1			13.7	27.9	
Approach LOS	C			B	C	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		14.8	12.6	35.1		47.7
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		18.0	10.0	35.0		49.0
Max Q Clear Time (g_c + I1), s		10.2	8.9	27.7		10.6
Green Ext Time (p_c), s		0.6	0.1	3.4		4.5
Intersection Summary						
HCM 6th Ctrl Delay			20.8			
HCM 6th LOS			C			

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume

SATISFIED* YES NO

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES			Hour			
	One	2 or More	7AM	8AM	3PM	5PM
Both Approaches - Major Street	<input checked="" type="checkbox"/>	<input type="checkbox"/>	934	1052	1067	1025
Higher Approach - Minor Street	<input type="checkbox"/>	<input checked="" type="checkbox"/>	195	192	200	208

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<u>OR</u> , All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes <input type="checkbox"/>	No <input type="checkbox"/>

WARRANT 3 - Peak Hour
(Part A or Part B must be satisfied)

SATISFIED YES NO

PART A

SATISFIED YES NO

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; <u>AND</u>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; <u>AND</u>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes <input type="checkbox"/>	No <input type="checkbox"/>

PART B

SATISFIED YES NO

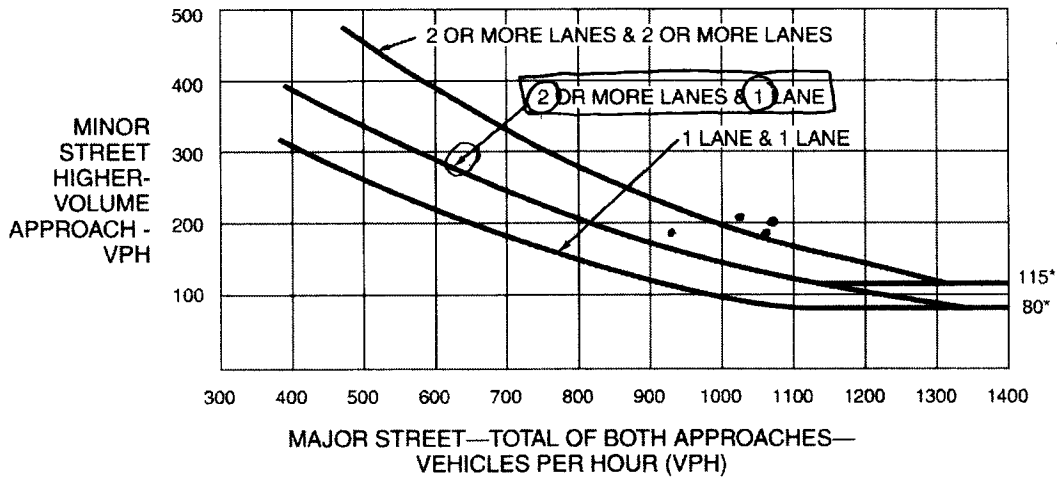
APPROACH LANES			Hour
	One	2 or More	
Both Approaches - Major Street	<input type="checkbox"/>	<input type="checkbox"/>	
Higher Approach - Minor Street	<input type="checkbox"/>	<input type="checkbox"/>	

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<u>OR</u> , The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes <input type="checkbox"/>	No <input type="checkbox"/>

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

LA COSTA AVE / N. VULCAN AVE

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

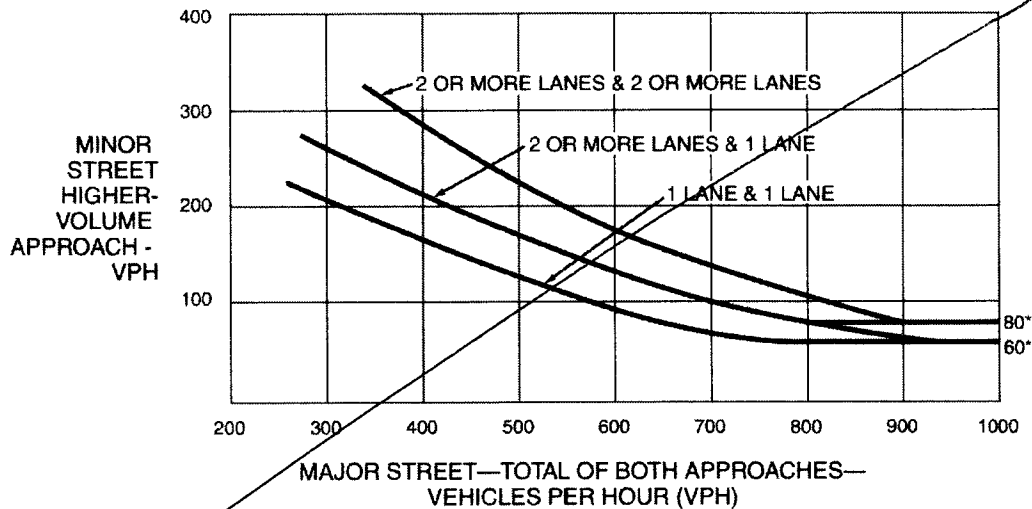


X Y
7AM 934, 195
8AM 1052, 192
3PM 1067, 200
5PM 1025, 208

*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

VOLUME

N Vulcan Ave Bet. La Costa Ave & Andrew Ave

Day: Tuesday
Date: 2/4/2020

City: Encinitas
Project #: CA20_4031_001

DAILY TOTALS					NB	SB	EB	WB	Total		
					2,463	2,613	0	0	5,076		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
0:00	4	3			7	12:00	37	27			64
0:15	3	4			7	12:15	37	46			83
0:30	3	2			5	12:30	37	27			64
0:45	1	11	0	9	20	12:45	33	144	35	135	279
1:00	2	1			3	13:00	40	33			73
1:15	0	2			2	13:15	32	23			55
1:30	1	0			1	13:30	31	33			64
1:45	3	6	0	3	9	13:45	43	146	43	132	278
2:00	2	1			3	14:00	56	31			87
2:15	0	0			0	14:15	47	30			77
2:30	1	0			1	14:30	51	27			78
2:45	0	3	1	2	5	14:45	42	196	38	126	322
3:00	0	0			0	15:00	54	40			94
3:15	1	0			1	15:15	43	52			95
3:30	1	0			1	15:30	52	45			97
3:45	3	5	2	2	7	15:45	51	200	47	184	384
4:00	3	1			4	16:00	60	55			115
4:15	1	0			1	16:15	53	44			97
4:30	4	1			5	16:30	41	60			101
4:45	6	14	0	2	16	16:45	57	211	46	205	416
5:00	3	0			3	17:00	61	51			112
5:15	13	2			15	17:15	50	43			93
5:30	14	1			15	17:30	46	52			98
5:45	10	40	4	7	47	17:45	51	208	58	204	412
6:00	15	7			22	18:00	27	44			71
6:15	23	11			34	18:15	37	47			84
6:30	26	20			46	18:30	42	43			85
6:45	35	99	32	70	169	18:45	27	133	34	168	301
7:00	43	29			72	19:00	32	38			70
7:15	39	45			84	19:15	26	32			58
7:30	65	78			143	19:30	15	40			55
7:45	48	195	85	237	432	19:45	11	84	26	136	220
8:00	42	66			108	20:00	16	27			43
8:15	53	77			130	20:15	17	17			34
8:30	52	85			137	20:30	11	24			35
8:45	45	192	82	310	502	20:45	8	52	20	88	140
9:00	32	45			77	21:00	16	22			38
9:15	27	58			85	21:15	8	19			27
9:30	36	44			80	21:30	14	15			29
9:45	38	133	48	195	328	21:45	7	45	19	75	120
10:00	38	26			64	22:00	11	16			27
10:15	40	43			83	22:15	11	12			23
10:30	25	27			52	22:30	8	10			18
10:45	39	142	31	127	269	22:45	6	36	8	46	82
11:00	37	28			65	23:00	8	5			13
11:15	36	41			77	23:15	3	7			10
11:30	36	25			61	23:30	3	7			10
11:45	40	149	34	128	277	23:45	5	19	3	22	41
TOTALS	989	1092			2081	TOTALS	1474	1521			2995
SPLIT %	47.5%	52.5%			41.0%	SPLIT %	49.2%	50.8%			59.0%

DAILY TOTALS					NB	SB	EB	WB	Total
					2,463	2,613	0	0	5,076

AM Peak Hour	7:30	7:45			7:30	PM Peak Hour	15:30	15:45			16:00
AM Pk Volume	208	313			514	PM Pk Volume	216	206			416
Pk Hr Factor	0.800	0.921			0.899	Pk Hr Factor	0.900	0.858			0.904
7 - 9 Volume	387	547	0	0	934	4 - 6 Volume	419	409	0	0	828
7 - 9 Peak Hour	7:30	7:45			7:30	4 - 6 Peak Hour	16:45	16:00			16:00
7 - 9 Pk Volume	208	313	0	0	514	4 - 6 Pk Volume	214	205	0	0	416
Pk Hr Factor	0.800	0.921	0.000	0.000	0.899	Pk Hr Factor	0.877	0.854	0.000	0.000	0.904

VOLUME

La Costa Ave Bet. N Coast Hwy 101 & N Vulcan Ave

Day: Tuesday
Date: 2/4/2020

City: Encinitas
Project #: CA20_4031_002

DAILY TOTALS					NB	SB						Total	
					0	0						10,659	
					5,202		5,457						
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
0:00			8	4	12		12:00			71	96	167	
0:15			1	3	4		12:15			90	101	191	
0:30			0	4	4		12:30			90	88	178	
0:45			4	13	2	13	12:45			82	333	77	362
1:00			4	4	8		13:00			96	93	189	
1:15			2	0	2		13:15			81	90	171	
1:30			1	0	1		13:30			97	79	176	
1:45			1	8	2	6	13:45			93	367	100	362
2:00			3	1	4		14:00			86	102	188	
2:15			3	3	6		14:15			86	82	168	
2:30			1	1	2		14:30			96	99	195	
2:45			1	8	1	6	14:45			80	348	78	361
3:00			0	1	1		15:00			131	107	238	
3:15			1	2	3		15:15			97	117	214	
3:30			2	1	3		15:30			128	93	221	
3:45			0	3	3	7	15:45			108	464	120	437
4:00			4	2	6		16:00			97	106	203	
4:15			1	1	2		16:15			122	102	224	
4:30			9	3	12		16:30			87	112	199	
4:45			4	18	12	18	16:45			87	393	93	413
5:00			4	8	12		17:00			99	110	209	
5:15			14	9	23		17:15			78	101	179	
5:30			15	13	28		17:30			130	115	245	
5:45			25	58	31	61	17:45			122	429	117	443
6:00			38	48	86		18:00			79	91	170	
6:15			32	48	80		18:15			56	99	155	
6:30			57	64	121		18:30			62	74	136	
6:45			66	193	63	223	18:45			74	271	69	333
7:00			85	57	142		19:00			61	76	137	
7:15			73	66	139		19:15			43	49	92	
7:30			84	84	168		19:30			51	55	106	
7:45			87	329	106	313	19:45			43	198	50	230
8:00			88	96	184		20:00			46	44	90	
8:15			97	90	187		20:15			33	46	79	
8:30			92	93	185		20:30			32	31	63	
8:45			89	366	90	369	20:45			44	155	38	159
9:00			71	117	188		21:00			42	42	84	
9:15			81	94	175		21:15			39	32	71	
9:30			90	113	203		21:30			27	31	58	
9:45			114	356	86	410	21:45			28	136	26	131
10:00			92	92	184		22:00			15	29	44	
10:15			73	68	141		22:15			22	24	46	
10:30			71	76	147		22:30			17	12	29	
10:45			67	303	93	329	22:45			8	62	10	75
11:00			107	84	191		23:00			12	6	18	
11:15			91	88	179		23:15			5	8	13	
11:30			86	99	185		23:30			13	5	18	
11:45			69	353	102	373	23:45			8	38	4	23
TOTALS			2008	2128	4136		TOTALS			3194	3329	6523	
SPLIT %			48.5%	51.5%	38.8%		SPLIT %			49.0%	51.0%	61.2%	

DAILY TOTALS					NB	SB						Total
					0	0						10,659
					5,202		5,457					
AM Peak Hour			9:15	8:45	9:00	PM Peak Hour			15:00	17:00	15:00	
AM Pk Volume			377	414	766	PM Pk Volume			464	443	901	
Pk Hr Factor			0.827	0.885	0.943	Pk Hr Factor			0.885	0.947	0.946	
7 - 9 Volume	0	0	695	682	1377	4 - 6 Volume	0	0	822	856	1678	
7 - 9 Peak Hour			8:00	7:45	7:45	4 - 6 Peak Hour			17:00	17:00	17:00	
7 - 9 Pk Volume	0	0	366	385	749	4 - 6 Pk Volume	0	0	429	443	872	
Pk Hr Factor	0.000	0.000	0.943	0.908	0.970	Pk Hr Factor	0.000	0.000	0.825	0.947	0.890	

VOLUME

La Costa Ave Bet. N Vulcan Ave & I-5 SB Ramps

Day: Tuesday
Date: 2/4/2020

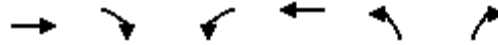
City: Encinitas
Project #: CA20_4031_003

DAILY TOTALS					NB	SB						Total			
					0	0						14,880			
							7,273			7,607					
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL			
0:00			14	7	21		12:00			102	125	227			
0:15			2	7	9		12:15			111	123	234			
0:30			3	5	8		12:30			109	105	214			
0:45			4	23	1	20	12:45			131	453	105	458	236	911
1:00			4	5	9		13:00			126	119	245			
1:15			3	3	6		13:15			110	105	215			
1:30			2	0	2		13:30			109	97	206			
1:45			3	12	2	10	13:45			123	468	133	454	256	922
2:00			4	0	4		14:00			149	115	264			
2:15			3	3	6		14:15			121	100	221			
2:30			2	2	4		14:30			145	123	268			
2:45			0	9	0	5	14:45			113	528	110	448	223	976
3:00			0	1	1		15:00			169	134	303			
3:15			1	1	2		15:15			134	154	288			
3:30			3	1	4		15:30			183	167	350			
3:45			2	6	5	8	15:45			147	633	148	603	295	1236
4:00			8	3	11		16:00			138	117	255			
4:15			4	1	5		16:15			158	138	296			
4:30			15	6	21		16:30			132	143	275			
4:45			9	36	12	22	16:45			121	549	124	522	245	1071
5:00			10	8	18		17:00			153	179	332			
5:15			28	11	39		17:15			133	142	275			
5:30			31	11	42		17:30			162	128	290			
5:45			35	104	30	60	17:45			135	583	147	596	282	1179
6:00			43	51	94		18:00			106	135	241			
6:15			62	53	115		18:15			84	139	223			
6:30			80	86	166		18:30			88	110	198			
6:45			97	282	94	284	18:45			95	373	103	487	198	860
7:00			126	87	213		19:00			84	117	201			
7:15			129	128	257		19:15			56	75	131			
7:30			158	199	357		19:30			56	81	137			
7:45			152	565	191	605	19:45			47	243	69	342	116	585
8:00			147	200	347		20:00			62	64	126			
8:15			145	160	305		20:15			47	64	111			
8:30			133	172	305		20:30			30	48	78			
8:45			145	570	154	686	20:45			48	187	59	235	107	422
9:00			104	158	262		21:00			47	62	109			
9:15			94	137	231		21:15			45	53	98			
9:30			114	145	259		21:30			37	46	83			
9:45			137	449	132	572	21:45			28	157	47	208	75	365
10:00			123	97	220		22:00			16	34	50			
10:15			122	110	232		22:15			27	31	58			
10:30			100	104	204		22:30			19	20	39			
10:45			99	444	114	425	22:45			14	76	14	99	28	175
11:00			134	96	230		23:00			15	10	25			
11:15			126	110	236		23:15			13	16	29			
11:30			105	100	205		23:30			10	7	17			
11:45			109	474	111	417	23:45			11	49	8	41	19	90
TOTALS			2974	3114	6088		TOTALS			4299	4493	8792			
SPLIT %			48.9%	51.1%	40.9%		SPLIT %			48.9%	51.1%	59.1%			

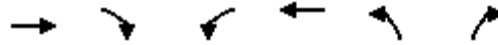
DAILY TOTALS					NB	SB						Total
					0	0						14,880
							7,273			7,607		
AM Peak Hour			7:30	7:30	7:30		PM Peak Hour			15:00	15:00	15:00
AM Pk Volume			602	750	1352		PM Pk Volume			633	603	1236
Pk Hr Factor			0.953	0.938	0.947		Pk Hr Factor			0.865	0.903	0.883
7 - 9 Volume	0	0	1135	1291	2426		4 - 6 Volume	0	0	1132	1118	2250
7 - 9 Peak Hour			7:30	7:30	7:30		4 - 6 Peak Hour			17:00	17:00	17:00
7 - 9 Pk Volume	0	0	602	750	1352		4 - 6 Pk Volume	0	0	583	596	1179
Pk Hr Factor	0.000	0.000	0.953	0.938	0.947		Pk Hr Factor	0.000	0.000	0.900	0.832	0.888

Appendix U

La Costa /Sheridan Int. LOS Calculations with Mitigation and Signal Warrant



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Traffic Volume (veh/h)	783	17	75	893	18	87
Future Volume (veh/h)	783	17	75	893	18	87
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	0.88
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	851	18	82	971	20	95
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1318	28	128	1143	35	165
Arrive On Green	0.72	0.72	0.72	0.72	0.14	0.14
Sat Flow, veh/h	1823	39	84	1581	251	1194
Grp Volume(v), veh/h	0	869	1053	0	116	0
Grp Sat Flow(s),veh/h/ln	0	1862	1665	0	1458	0
Q Serve(g_s), s	0.0	14.0	12.5	0.0	4.3	0.0
Cycle Q Clear(g_c), s	0.0	14.0	26.4	0.0	4.3	0.0
Prop In Lane		0.02	0.08		0.17	0.82
Lane Grp Cap(c), veh/h	0	1346	1271	0	201	0
V/C Ratio(X)	0.00	0.65	0.83	0.00	0.58	0.00
Avail Cap(c_a), veh/h	0	2135	1961	0	405	0
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	0.00
Uniform Delay (d), s/veh	0.0	4.1	5.5	0.0	23.2	0.0
Incr Delay (d2), s/veh	0.0	0.5	1.8	0.0	2.6	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	0.0	2.7	4.4	0.0	1.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	4.7	7.3	0.0	25.8	0.0
LnGrp LOS	A	A	A	A	C	A
Approach Vol, veh/h	869			1053	116	
Approach Delay, s/veh	4.7			7.3	25.8	
Approach LOS	A			A	C	
Timer - Assigned Phs		2		4		8
Phs Duration (G+Y+Rc), s		11.9		45.6		45.6
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		66.0		66.0
Max Q Clear Time (g_c + I1), s		6.3		16.0		28.4
Green Ext Time (p_c), s		0.2		8.7		13.2
Intersection Summary						
HCM 6th Ctrl Delay			7.2			
HCM 6th LOS			A			
Notes						
User approved volume balancing among the lanes for turning movement.						



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Traffic Volume (veh/h)	735	52	53	735	15	60
Future Volume (veh/h)	735	52	53	735	15	60
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	1.00		1.00	0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	799	57	58	799	16	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1095	78	142	1039	41	166
Arrive On Green	0.64	0.64	0.64	0.64	0.14	0.14
Sat Flow, veh/h	1719	123	57	1631	287	1166
Grp Volume(v), veh/h	0	856	857	0	82	0
Grp Sat Flow(s),veh/h/ln	0	1842	1688	0	1471	0
Q Serve(g_s), s	0.0	11.4	1.8	0.0	1.8	0.0
Cycle Q Clear(g_c), s	0.0	11.4	13.2	0.0	1.8	0.0
Prop In Lane		0.07	0.07		0.20	0.79
Lane Grp Cap(c), veh/h	0	1173	1181	0	210	0
V/C Ratio(X)	0.00	0.73	0.73	0.00	0.39	0.00
Avail Cap(c_a), veh/h	0	2081	1998	0	649	0
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	0.00
Uniform Delay (d), s/veh	0.0	4.5	4.5	0.0	14.1	0.0
Incr Delay (d2), s/veh	0.0	0.9	0.9	0.0	1.2	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	0.0	1.5	1.5	0.0	0.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	5.4	5.3	0.0	15.3	0.0
LnGrp LOS	A	A	A	A	B	A
Approach Vol, veh/h	856			857	82	
Approach Delay, s/veh	5.4			5.3	15.3	
Approach LOS	A			A	B	
Timer - Assigned Phs		2		4		8
Phs Duration (G+Y+Rc), s		9.2		27.1		27.1
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		41.0		41.0
Max Q Clear Time (g_c + I1), s		3.8		13.4		15.2
Green Ext Time (p_c), s		0.2		7.5		7.9

Intersection Summary

HCM 6th Ctrl Delay	5.8
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume

SATISFIED* YES NO

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	Hour			
	One	2 or More		
Both Approaches - Major Street				
Higher Approach - Minor Street				

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes <input type="checkbox"/>	No <input type="checkbox"/>

WARRANT 3 - Peak Hour
(Part A or Part B must be satisfied)

SATISFIED YES NO

PART A

SATISFIED YES NO

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; <u>AND</u>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; <u>AND</u>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes <input type="checkbox"/>	No <input type="checkbox"/>

PART B

SATISFIED YES NO

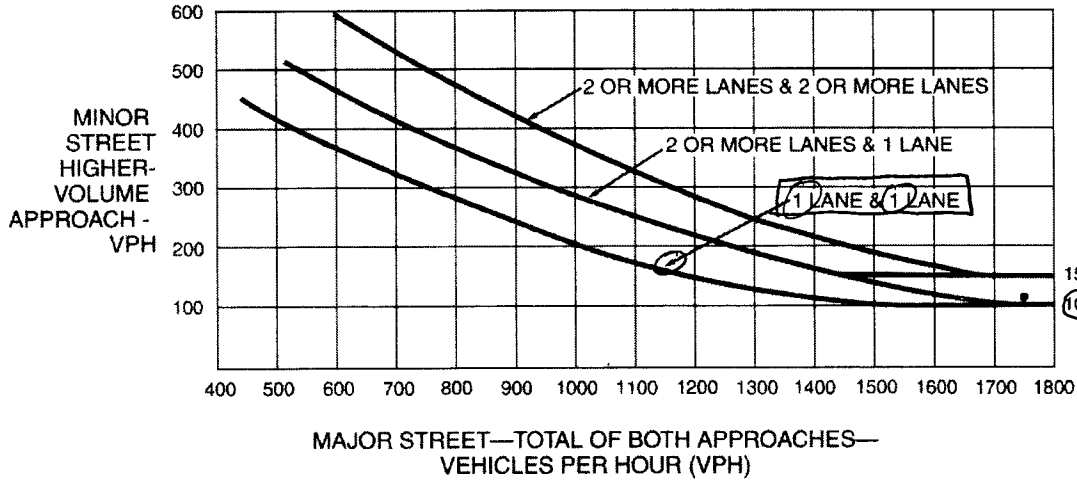
APPROACH LANES	Hour	
	One	2 or More
Both Approaches - Major Street	✓	1745
Higher Approach - Minor Street	✓	104

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
OR, The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes <input type="checkbox"/>	No <input type="checkbox"/>

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

California MUTCD 2014 Edition
(FHWA's MUTCD 2009 Edition, including Revisions 1 & 2, as amended for use in California)

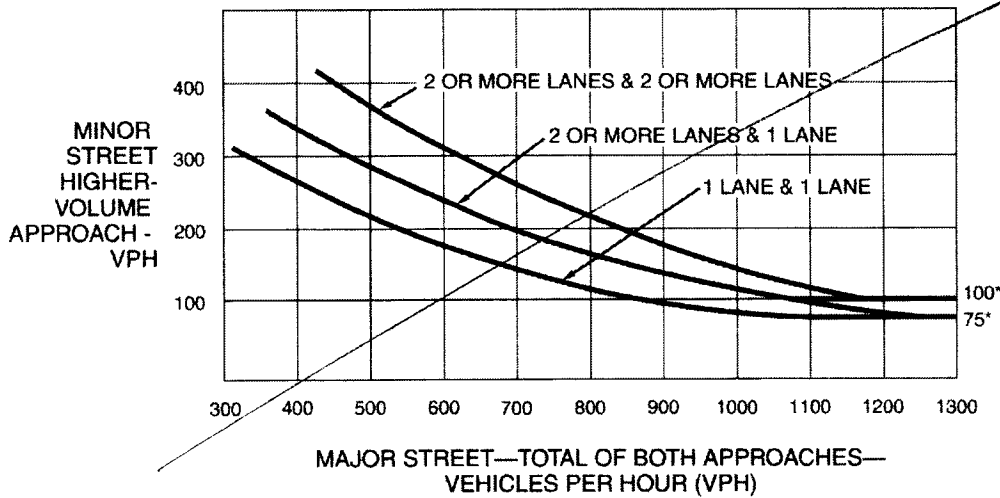
Figure 4C-3. Warrant 3, Peak Hour



X = 1,745
Y = 104

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



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