3.5 Transportation/Circulation

This section of the EIR discusses the proposed Project relative to the existing regional and local transportation conditions of the Project corridor and its surroundings; potential Project traffic impacts; and mitigation measures to reduce significant impacts. The analysis in this section is based on the Traffic Impact Analysis (TIA) for the Project, prepared by Michael Baker International (Appendix H).

3.5.1 Existing Conditions

3.5.1.1 Existing Transportation/Circulation Environment

Existing Street Network

The Project study area includes 27 intersections, 9 roadway segments, and 6 ramp meter locations. The study intersections consist of 12 signal control, 11 two-way stop control, 2 all-way stop control, and 1 roundabout/ yield controlled intersection. In order to evaluate a potential change in the planned future lane geometry, the segment of La Costa Avenue between North Highway 101 and the I-5 SB ramps was included in the segment analysis.

Existing Traffic Volumes and Operations

The operating conditions of intersections and roadway segments in the Project study area are based on the SANTEC/ITE traffic study guidelines and are described in terms of level of service (LOS), which denotes the different operating conditions that occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis taking into account factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. LOS provides an index to the operational qualities of a roadway segment or an intersection. LOS designations range from A through F, with LOS A representing the best operating (free-flow) conditions and LOS F representing the worst operating (severely congested) conditions.

Intersection Methodology

The Highway Capacity Manual (HCM) 2000 methodology was used to analyze signalized and unsignalized intersections, and the HCM 2010 methodology was used to analyze intersections with roundabouts. The peak-hour intersection LOS is based on the average delay per vehicle for all movements at signalized, all-way stop-controlled, and roundabout intersections. For one-way or two-way stop-controlled and roundabout intersections, LOS is based on the approach with the worst delay. Table 3.5-1 shows the LOS criteria for signalized, unsignalized and roundabout intersections.

Roadway Segment Methodology

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 to account for friction due to on-street parking and turning vehicles at minor side-street intersections. For the existing roadway geometry conditions, a composite total of 30% flow rate reduction was assumed with a reduction of 20% due to parking friction and 10% due to turning vehicles friction. 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 following LOS thresholds for segments defined in the SANTEC/ITE traffic study guideline to determine the LOS of the segment: A (<0.41 v/c ratio); B (0.42 – 0.62 v/c ratio); C (0.63 – 0.79 v/c ratio); D (0.80 – 0.92 v/c ratio); E (0.93 – 1.00 v/c ratio); and F (> 1.00 v/c ratio).

TABLE 3.5-1: SIGNALIZED, UNSIGNALIZED, AND ROUNDABOUT INTERSECTIONS LEVEL OF SERVICE & DELAY RANGES

LOS	Delay (seconds/vehicle)	
	Signalized Intersections	Unsignalized 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 and 2010 HCMs.

Ramp Meter Methodology

The purpose of freeway ramp meters is to regulate the flow of traffic from the ramps to maximize capacity and reduce congestion on the freeway mainlines. Ramp meter rates are adjusted based on the conditions on the freeway mainlines. The measure of effectiveness for ramp meter analysis is delay in minutes. Ramp meter rates were obtained from Caltrans. The demand on the ramp was obtained by adding the corresponding turn movements entering the ramp from the adjacent intersection. A 15% reduction in the demand was made to account for traffic using the ramp HOV lane. Traffic conditions at ramp meters are considered to be unacceptable if the delay exceeds 15 minutes.

Existing Baseline Operating Conditions

Both intersection and segment counts were conducted in April 2015. Intersection turn movement counts for the weekday morning peak period were conducted between 7:00 AM and 9:00 AM, and for the weekday evening peak period between 4:00 PM and 6:00 PM. The existing baseline AM and PM peak-hour intersection turn movement volumes are shown in Exhibits 12-13 of Appendix H. Roadway segment ADTs were obtained through machine data collection as shown in Exhibit 14 of Appendix H. The North Highway 101/Marcheta Street intersection operates at an unacceptable LOS F during the AM peak hour, and the Encinitas Boulevard intersection at the I-5 NB ramps currently operates at an unacceptable LOS E during the PM peak hour (Table 3.5-2); all segments operate at an acceptable LOS during both the AM and PM peak hour (Table 3.5-3); and the ramp meters at the I-5 NB onramps from Leucadia Boulevard and from Encinitas Boulevard both operate at unacceptable conditions (Table 3.5-4), consistent with the Existing without Project scenario.

3.5.1.2 Regulatory Framework

State

Caltrans has jurisdiction over State highways and sets maximum load limits for trucks and safety requirements for oversized vehicles that operate on highways.

Local

The relevant City General Plan Circulation Element Policy 1.19 is addressed in Section 2.3 of this EIR.

3.5.2 Analysis of Project Effects and Determination as to Significance

This subsection describes the thresholds of significance for traffic and transportation impacts; the methodology used in conducting the CEQA impact analysis for traffic and transportation; and the assessment of traffic and transportation impacts, including relevant mitigation measures for significant impacts. The impact analysis scenarios are described below. The Year 2035 traffic volumes are based on a Series 12 model forecast conducted by SANDAG that includes land use, roadway network configuration and geometry that is specific to the City's General Plan. The Year 2035 scenarios assume a 4-lane Collector for La Costa Avenue as designated in the General Plan Circulation Element; planned improvements at the Encinitas Boulevard/I-5 interchange; and completion of the I-5 North Coast Corridor Managed Lanes Project.

- **Existing Baseline** – 2015 traffic counts, intersection geometry and control, roadway segment geometry and roadway network.
- **Existing Plus Project Conditions** – Analysis of 2015 traffic volumes with the proposed intersection geometry and control, roadway segment geometry and roadway network.

TABLE 3.5-2: EXISTING BASELINE PEAK-HOUR INTERSECTION OPERATIONS

Intersection	Control	AM Peak Hour		PM Peak Hour	
		Delay (sec/vehicle)	LOS	Delay (sec/vehicle)	LOS
Hwy 101 / La Costa Ave.	Signal	21.8	C	32.2	C
Hwy 101 / New Road	N/A	--	--	--	--
Hwy 101 / Bishops Gate Rd.	SSS	2.5	A	1.1	A
Hwy 101 / Grandview St.	SSS	2.1	A	1.5	A
Hwy 101 / Jupiter St.	SSS	1.0	A	0.7	A
Hwy 101 / Leucadia Blvd.	Signal	52.0	D	33.3	C
Hwy 101 / El Portal St.	SSS	1.0	A	0.9	A
Hwy 101 / Marcheta St.	AWS	93.6	F	25.4	D
Hwy 101 / Encinitas Blvd.	Signal	29.4	C	31	C
Neptune Ave. / Grandview St.	SSS	3.9	A	4.8	A
Neptune Ave. / Jupiter St.	SSS	1.6	A	1.6	A
Neptune Ave. / Leucadia Blvd.	SSS	5.1	A	4	A
Neptune Ave. / N El Portal St.	SSS	2.7	A	2.8	A
La Costa Ave. / Vulcan Ave.	SSS	6.1	A	5.2	A
La Costa Ave. / Sheridan Rd.	SSS	2.9	A	1.9	A
La Costa Ave. / I-5 SB Ramps	Signal	49.4	D	32.1	C
La Costa Ave. / I-5 NB Ramps	Signal	23.6	C	33.8	C
Leucadia Blvd. / Vulcan Ave.	Signal	52.2	D	44.2	D
Leucadia Blvd. / Hygeia Ave.	AWS	17.3	C	17	C
Leucadia Blvd. / Hymettus Ave.	R	9.4	A	10.7	B
Leucadia Blvd. / Orpheus Ave.	Signal	24.8	C	24.6	C
Leucadia Blvd. / I-5 SB Ramps	Signal	44.5	D	30.9	C
Leucadia Blvd. / I-5 NB Ramps	Signal	19.0	B	24.6	C
Encinitas Blvd. / Vulcan Ave.	Signal	25.0	C	33.5	C
Encinitas Blvd. / I-5 SB Ramps	Signal	33.8	C	40.2	D
Encinitas Blvd. / I-5 NB Ramps	Signal	23.3	C	68.8	E
Vulcan Ave. / Orpheus Ave.	SSS	6.6	A	1.2	A

SSS - Side Street Stop; AWS - All-Way Stop

TABLE 3.5-3: EXISTING BASELINE PEAK-HOUR ROADWAY SEGMENT OPERATIONS

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

1. For Highway 101; Base Saturation Flow = 2000 v/h/l; 20% Parking Friction Reduction; 10% Turning Vehicle Friction Reduction. For La Costa Ave.; Base Saturation Flow = 2000v/h/l; 10% Turning Vehicle Friction Reduction.

TABLE 3.5-4: EXISTING BASELINE AND EXISTING PLUS PROJECT RAMP METER CONDITIONS

Location	Peak Hour[1]	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 Onramp	PM	744	481	0	0.0	0
La Costa Ave. / I-5 SB Onramp	AM	455	294	0	0.0	0
La Costa Ave. / I-5 SB Onramp	PM	455	318	0	0.0	0
Leucadia Boulevard / I-5 Ramp						
Leucadia Blvd. / I-5 NB Onramp	PM	453	595	142	19	3,550
Leucadia Blvd. / I-5 SB Onramp	AM	255	317	62	14.6	1,550
Leucadia Blvd. / I-5 SB Onramp	PM	257	252	0	0.0	0
Encinitas Boulevard / I-5 Ramp						
Encinitas Blvd. / I-5 NB Onramp	PM	414	574	160	23.2	4,000
Encinitas Blvd. / I-5 SB Onramp	AM	744	617	0	0.0	0
Encinitas Blvd. / I-5 SB Onramp	PM	744	495	0	0.0	0

Ramp meter delay greater than 15 minutes/lane is considered unacceptable.
Existing with Project ramp meter analysis is the exact same as within Project conditions.

- **Year 2035 Baseline Conditions** – Year 2035 traffic conditions with existing intersection geometry and control, roadway segment geometry and roadway network.
- **Year 2035 Alternative 1 Conditions (Four-Lane Carlsbad Boulevard)** – Year 2035 traffic conditions with four lanes on Carlsbad Boulevard north of La Costa Avenue and two lanes on North Highway 101 between La Costa Avenue and Encinitas Boulevard, assuming proposed roundabouts at six intersections and a side-street stop at Marcheta.
- **Year 2035 with Alternative 2 Conditions (Two-Lane Carlsbad Boulevard)** – Year 2035 traffic conditions with two lanes on Carlsbad Boulevard north of La Costa Avenue and two lanes on North Highway 101 between La Costa Avenue and Encinitas Boulevard, assuming proposed roundabouts at five intersections and a side-street stop at one intersection along the Project corridor.
- **Year 2035 with Alternative 1 and Sustainable Mixed-Use Places (SMUP) Conditions** – Year 2035 traffic conditions with the roadway network assumed in Alternative 1 Scenario plus the potential traffic volumes associated with the SMUP Housing Strategy Alternative in the City Housing Element Update.

Guidelines for the Determination of Significance

A project would result in a significant impact if it would:

1. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections).
2. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways.

3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.
4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
5. Result in inadequate emergency access.
6. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

According to SANTEC/ITE traffic impact study guidelines, a project is considered to have significant impact if it causes a roadway to deteriorate by a certain defined threshold. In the City, the acceptable LOS for roadway segments and intersections is LOS D or better. When a project causes the LOS to deteriorate from LOS D or better to LOS E or F, the project is considered to cause a significant impact. For roadway segments and intersections currently operating, or planned to operate, at LOS E or F, if a project increases the v/c for segments by 0.02 or greater, or if it increases delay at intersections by 2 seconds or greater, then the project is considered to cause a significant impact.

SANTEC/ITE traffic impact study guideline defines a ramp meter to be significantly impacted if project trips cause the vehicle delay at the ramp meter to exceed 15 minutes. For ramp meters currently operating, or planned to operate, at an unacceptable condition, a project is considered to cause a significant impact if it increases delay by 2 minutes or more.

3.5.2.1 Analysis Approach and Methodology

Street Segments

Along North Highway 101, it was assumed that the reduction in roadway capacity for impact analysis scenarios described above would not be the same as that of the existing geometry. With proposed bike and park assist lanes, a buffer is created between the travelling vehicles and vehicles either parking or turning.

Existing Plus Project Conditions

Existing Plus Project traffic volumes were calculated based on the existing AM and PM peak-hour volumes and the proposed roadway geometry and intersection control. Please refer to Appendix H for AM and PM peak-hour intersection turn movement volumes (Tables 6-7) and directional roadway segment volumes (Tables 8-9); and for ramp meter turn movement volumes (Table 10). In addition, the proposed roundabout at the North Highway 101/La Costa Avenue intersection, which is currently signalized at the north/south/west approaches, would include a SB by-pass lane to ease traffic flows at this location. However, an approved condominium hotel development is planned adjacent to this intersection. If that development moves into construction prior to installation of a roundabout for the proposed Project, then the private developer is responsible for installing a signal for the east approach (i.e., west side of the intersection). If the City is unable to reach agreement with the private property owners to allow the grading on private property necessary to construct a roundabout, then the City will likewise construct a signal at the intersection within the existing right of way for the northbound, southbound, and westbound approaches, as exists today. If the private development does not move into construction prior to the proposed improvements at the La Costa intersection, and the City is able to secure permission on the private property,

then the roundabout alternative will be constructed. Therefore, analysis of a roundabout and a 4-leg signalized intersection are both addressed in the Existing Plus Project conditions.

Year 2035 Conditions

Year 2035 traffic volumes for both Alternatives 1 and 2 scenarios were calculated based on a SANDAG Series 12 forecast that includes land use, roadway network configuration and geometry specific to the City's General Plan. Both model runs assumed La Costa Avenue as a 4-lane Collector; two lanes on North Highway 101 between La Costa Avenue and Encinitas Boulevard and changes in intersection control at six intersections along North Highway 101; completion of planned improvements at the Encinitas Boulevard/ I-5 interchange; and completion of the I-5 North Coast Corridor Managed Lanes Project. The model run for Alternative 1 Scenario assumed four lanes on Carlsbad Boulevard north of La Costa Avenue, and the model run for Alternative 2 Scenario assumed two lanes on Carlsbad Boulevard north of La Costa Avenue. The intersection locations that had a change in the type of control are as follows:

- La Costa Avenue from signal (currently NB/SB/WB approaches) to roundabout or to full signalized (including EB approach)
- Bishops Gate Road from side street stop to roundabout
- Grandview Street from side street stop to roundabout
- Jupiter Street from side street stop to roundabout
- El Portal Street from side street stop to roundabout
- Marcheta Street from all-way stop to side street stop

In addition, a new intersection controlled by a roundabout is proposed at New Road to provide future access to the proposed condominium hotel development if the roundabout at the North Highway 101/La Costa Avenue intersection is constructed. In the event that these two roundabouts are not constructed, analysis of the potential 4-leg signalization scenario for the North Highway 101/La Costa Avenue intersection, as described under "Existing Plus Project Conditions" above, is also addressed in the Year 2035 conditions.

Year 2035 baseline daily traffic volumes for both Alternatives 1 and 2 scenarios were used to generate the intersection peak-hour turning movement volumes based on current peak-hour directional distribution characteristics, assuming reasonable growth. The intersection lane geometry and peak-hour turning movement volumes are shown in Exhibits 17-35 in Appendix H.

Analysis

Issue 1: 1. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections).

Intersection and Road Segment Analysis

Existing Plus Project Conditions

As shown in Table 3.5-5, unacceptable LOS E conditions are projected to occur at the Encinitas Boulevard intersection at the I-5 NB onramps in the PM peak hour. However, the Project would not exacerbate the delay at this intersection and LOS would be the same as under existing baseline conditions. As shown in Tables 6, 8, and 9 of Appendix H, all other study area intersections and street segments would operate at acceptable LOS in the AM and PM peak hours. Therefore, the Project would not result in a significant traffic impact under Existing Plus Project conditions.

Year 2035 with Alternative 1 and Alternative 2 Conditions

When compared to Year 2015 baseline daily trips, both model runs for the Year 2035 baseline conditions, with the reduction in travel lanes along Highway 101, show a decrease in the forecast daily trips on Highway 101, south of La Costa Avenue; an increase in forecast daily trips on La Costa Avenue and Vulcan Avenue; and a change in traffic pattern due to the proposed Project with a relatively small amount of traffic diverted to La Costa Avenue, Vulcan Avenue, and I-5. Comparing forecast daily trips along Highway 101 between the two alternatives for Carlsbad Boulevard, the Alternative 1 Scenario model run shows slightly higher daily trips compared to the Alternative 2 Scenario model run.

TABLE 3.5-5: EXISTING PLUS PROJECT INTERSECTION CONDITIONS - PM PEAK HOUR

Intersection	Existing Conditions			Existing With Project Conditions			Delay	Significant
	Control	Delay	LOS	Control	Delay	LOS		
Hwy 101 / La Costa Ave.	Signal	32.2	C	R	7.3	A	-24.9	No
Hwy 101 / New Road	--	--	--	--	--	--	--	--
Hwy 101 / Bishops Gate Rd.	SSS	1.1	A	R	2.7	A	1.6	No
Hwy 101 / Grandview St.	SSS	1.5	A	R	2.6	A	1.1	No
Hwy 101 / Jupiter St.	SSS	0.7	A	R	2.6	A	1.9	No
Hwy 101 / Leucadia Blvd.	Signal	33.3	C	Signal	33.3	C	0.0	No
Hwy 101 / El Portal St.	SSS	0.9	A	R	3.1	A	2.2	No
Hwy 101 / Marcheta St.	AWS	25.4	D	SSS	10.7	B	-14.7	No
Hwy 101 / Encinitas Blvd.	Signal	31.00	C	Signal	31.0	C	0.0	No
Neptune Ave. / Grandview St.	SSS	4.8	A	SSS	4.8	A	0.0	No
Neptune Ave. / Jupiter St.	SSS	1.6	A	SSS	1.6	A	0.0	No
Neptune Ave. / Leucadia Blvd.	SSS	4.0	A	SSS	4.0	A	0.0	No
Neptune Ave. / N El Portal St.	SSS	2.8	A	SSS	2.8	A	0.0	No
La Costa Ave. / Vulcan Ave.	SSS	5.2	A	SSS	5.2	A	0.0	No
La Costa Ave. / Sheridan Rd.	SSS	1.9	A	SSS	1.9	A	0.0	No
La Costa Ave. / I-5 SB Ramps	Signal	32.1	C	Signal	32.1	C	0.0	No
La Costa Ave. / I-5 NB Ramps	Signal	33.8	C	Signal	33.8	C	0.0	No
Leucadia Blvd. / Vulcan Ave.	Signal	44.2	D	Signal	44.2	D	0.0	No
Leucadia Blvd. / Hygeia Ave.	AWS	17.0	C	AWS	17.0	C	0.0	No
Leucadia Blvd. / Hymettus Ave.	R	10.7	B	R	10.7	B	0.0	No

Intersection	Existing Conditions			Existing With Project Conditions			Delay	Significant
	Control	Delay	LOS	Control	Delay	LOS		
Leucadia Blvd. / Orpheus Ave.	Signal	24.6	C	Signal	24.6	C	0.0	No
Leucadia Blvd. / I-5 SB Ramps	Signal	30.9	C	Signal	30.9	C	0.0	No
Leucadia Blvd. / I-5 NB Ramps	Signal	24.6	C	Signal	24.6	C	0.0	No
Encinitas Blvd. / Vulcan Ave.	Signal	33.5	C	Signal	33.5	C	0.0	No
Encinitas Blvd. / I-5 SB Ramps	Signal	40.2	D	Signal	40.2	D	0.0	No
Encinitas Blvd. / I-5 NB Ramps	Signal	68.8	E	Signal	68.8	E	0.0	No
Vulcan Ave. / Orpheus Ave.	SSS	1.2	A	SSS	1.2	A	0.0	No

SSS - Side Street Stop; AWS - All-Way Stop; R- Roundabout

TABLE 3.5-6: YEAR 2035
INTERSECTION OPERATIONS - 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	△ Delay (sec)	Significant?	Delay	LOS	△ Delay (sec)	Significant?	Delay	LOS	△ 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
					Signal [1]	24.5	C	-1.3	No	24.4	C	-1.4	No	24.8	C	-1.0	No
2	Hwy 101 / New Road	SSS	6.3	A	R	34.8	D	28.5	No	28.3	D	22.0	No	34.9	D	28.6	No
3	Hwy 101 / Bishops Gate Rd.	SSS	6.1	A	R	33.8	D	27.7	No	27.5	D	21.4	No	34.2	D	28.1	No
4	Hwy 101 / Grandview St.	SSS	5.8	A	R	21.4	C	15.6	No	15.6	C	9.8	No	26.4	D	20.6	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 1is 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

In the Year 2035 baseline conditions for the AM peak hour, the North Highway 101/Leucadia Boulevard and Leucadia Boulevard/Vulcan Avenue intersections would both operate at an unacceptable LOS E, and the North Highway 101/Marcheta Street intersection would operate at LOS F (Table 3.5-6).

With the proposed Project, operations at both the North Highway 101/Leucadia Boulevard and Leucadia Boulevard/Vulcan Avenue intersections would remain at LOS E under both Alternatives 1 and 2 scenarios (Table 3.5-6). Future conditions during the AM peak hour would improve to LOS C at the North Highway 101/Marcheta Street intersection with the Project under both Alternatives 1 and 2 scenarios because the proposed side-street stop control would reduce the overall intersection average delay. In addition, with the proposed southbound by-pass lane at the North Highway 101/La Costa Avenue intersection, the Project would not result in a significant impact at this intersection during the Year 2035 AM peak hour. Therefore, the Project would not result in significant traffic impacts on these or any other intersections during the AM peak hour under Year 2035 Plus Project conditions (under both Alternative 1 and Alternative 2 scenarios).

During the PM peak hour under Year 2035 baseline conditions, the intersection at North Coast Highway 101/New Road and at North Coast Highway 101/Marcheta Street would operate at an unacceptable LOS E. For Alternative 1 and Alternative 2, all of the intersections would operate at an acceptable LOS during the PM peak hour. Future conditions during the PM peak hour would improve at the two intersections with the Project and with both the four-lane and two-lane alternatives on Carlsbad Boulevard. This is due to the proposed roundabout improving side street access to Highway 101 at the New Road intersection. Further, at the Highway 101/Marcheta Street intersection, the proposed side street stop control would improve the overall intersection average delay. Therefore, the proposed Project would not result in significant traffic impacts on these or any other intersections during the PM peak hour under Year 2035 Plus Project conditions (under Alternative 1 and Alternative 2 scenarios).

Under Year 2035 with either Alternative 1 and Alternative 2 conditions, all study area street segments would operate at acceptable LOS in the AM and PM peak hours (Tables 18 and 19 of Appendix H). A supplemental Year 2035 Plus Project analysis was also performed on La Costa Avenue, between North Highway 101 and I-5 SB ramps, with one lane in each direction instead of two. The purpose of this analysis is to assess if a two-lane Collector can accommodate the future traffic demand. As shown in Tables 18 and 19 of Appendix H, intersections along La Costa Avenue (and the La Costa Avenue segments between Highway 101 and I-5 SB ramps would operate at acceptable LOS for all alternative scenarios during both peak hours.

TABLE 3.5-7. 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	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-Lane	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-Lane	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-Lane	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-Lane	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-Lane	1,800	320	0.178	A	310	0.172	A	320	0.178	A
	Southbound	2-Lane	2,800	1,830	0.654	C	2-Lane	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-Lane	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-Lane	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-Lane	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-Lane	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	2-Lane	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-Lane	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	2-Lane	3,600	660	0.183	A	650	0.181	A	700	0.194	A
	Westbound	2-Lane	3,600	590	0.164	A	2-Lane	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	2-Lane	3,600	770	0.214	A	760	0.211	A	790	0.219	A
	Westbound	2-Lane	3,600	820	0.228	A	2-Lane	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	2-Lane	3,600	840	0.233	A	830	0.231	A	850	0.236	A
	Westbound	2-Lane	3,600	920	0.256	A	2-Lane	3,600	940	0.261	A	930	0.258	A	970	0.269	A

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

[2] - For Highway 101Northbound; 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 101Southbound; 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

TABLE 3.5-8. 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-Lane	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-Lane	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-Lane	1,800	950	0.528	B	940	0.522	B	990	0.550	B
	Southbound	2-Lane	2,800	810	0.289	A	1-Lane	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-Lane	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	2-Lane	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-Lane	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-Lane	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-Lane	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-Lane	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	2-Lane	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-Lane	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	2-Lane	3,600	690	0.192	A	680	0.189	A	720	0.200	A
	Westbound	2-Lane	3,600	590	0.164	A	2-Lane	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	2-Lane	3,600	760	0.211	A	760	0.211	A	780	0.217	A
	Westbound	2-Lane	3,600	700	0.194	A	2-Lane	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	2-Lane	3,600	770	0.214	A	770	0.214	A	790	0.219	A
	Westbound	2-Lane	3,600	780	0.217	A	2-Lane	3,600	780	0.217	A	790	0.219	A	780	0.217	A

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

[2] - For Highway 101Northbound; 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 101Southbound; 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

Year 2035 with Alternative 1 and Sustainable Mixed-Use Places (SMUP) Conditions

As stated above, under Year 2035 baseline conditions, the North Highway 101/Leucadia Boulevard and Leucadia Boulevard/Vulcan Avenue intersections would both operate at an unacceptable LOS E and the North Highway 101/Marcheta Street intersection would operate at LOS F during the AM peak (Table 3.5-6). With Alternative 1 and SMUP conditions, AM Peak hour operations at both the North Highway 101/Leucadia Boulevard and Leucadia Boulevard/Vulcan Avenue intersections would remain at LOS E with the Project, and operations at the North Highway 101/Marcheta Street intersection would improve to LOS C because the proposed side-street stop control would reduce the overall average delay at this intersection (Table 3.5-6). In addition, all study area intersections would operate at acceptable LOS in the PM peak hour. Therefore, the Project would not result in significant traffic impacts on these or any other intersections during the AM and PM peak hours under Year 2035 Alternative 1 and SMUP conditions.

As shown in Table 3.5-7, unacceptable LOS E conditions are projected to occur along the southbound segment of North Highway 101 between Leucadia Boulevard and El Portal Street in the AM peak hour. All other study area street segments would operate at acceptable LOS in the AM and PM peak hours. Therefore, the Project would result in a significant traffic impact on SB North Highway 101 between Leucadia Boulevard and El Portal Street in the AM peak hour under Year 2035 Alternative 1 and SMUP conditions (**Impact TC-1**).

TABLE 3.5-9. EXISTING PLUS PROJECT INTERSECTION CONDITIONS – PM PEAK HOUR

ID	Intersection	Existing Conditions			Existing With Project Conditions			Δ Delay	Significant
		Control	Delay	LOS	Control	Delay	LOS		
1	Hwy 101 / La Costa Ave.	Signal	32.2	C	R	7.3	A	-24.9	No
2	Hwy 101 / New Road	--	--	--	--	--	--	--	--
3	Hwy 101 / Bishops Gate Rd.	SSS	1.1	A	R	2.7	A	1.6	No
4	Hwy 101 / Grandview St.	SSS	1.5	A	R	2.6	A	1.1	No
5	Hwy 101 / Jupiter St.	SSS	0.7	A	R	2.6	A	1.9	No
6	Hwy 101 / Leucadia Blvd.	Signal	33.3	C	Signal	33.3	C	0.0	No
7	Hwy 101 / El Portal St.	SSS	0.9	A	R	3.1	A	2.2	No
8	Hwy 101 / Marcheta St.	AWS	25.4	D	SSS	10.7	B	-14.7	No
9	Hwy 101 / Encinitas Blvd.	Signal	31.0	C	Signal	31.0	C	0.0	No
10	Neptune Ave. / Grandview St.	SSS	4.8	A	SSS	4.8	A	0.0	No
11	Neptune Ave. / Jupiter St.	SSS	1.6	A	SSS	1.6	A	0.0	No
12	Neptune Ave. / Leucadia Blvd.	SSS	4.0	A	SSS	4.0	A	0.0	No
13	Neptune Ave. / N El Portal St.	SSS	2.8	A	SSS	2.8	A	0.0	No
14	La Costa Ave. / Vulcan Ave.	SSS	5.2	A	SSS	5.2	A	0.0	No
15	La Costa Ave. / Sheridan Rd.	SSS	1.9	A	SSS	1.9	A	0.0	No
16	La Costa Ave. / I-5 SB Ramps	Signal	32.1	C	Signal	32.1	C	0.0	No
17	La Costa Ave. / I-5 NB Ramps	Signal	33.8	C	Signal	33.8	C	0.0	No
18	Leucadia Blvd. / Vulcan Ave.	Signal	44.2	D	Signal	44.2	D	0.0	No
19	Leucadia Blvd. / Hygeia Ave.	AWS	17.0	C	AWS	17.0	C	0.0	No
20	Leucadia Blvd. / Hymettus Ave.	Roundabout	10.7	B	R	10.7	B	0.0	No
21	Leucadia Blvd. / Orpheus Ave.	Signal	24.6	C	Signal	24.6	C	0.0	No
22	Leucadia Blvd. / I-5 SB Ramps	Signal	30.9	C	Signal	30.9	C	0.0	No
23	Leucadia Blvd. / I-5 NB Ramps	Signal	24.6	C	Signal	24.6	C	0.0	No
24	Encinitas Blvd. / Vulcan Ave.	Signal	33.5	C	Signal	33.5	C	0.0	No
25	Encinitas Blvd. / I-5 SB Ramps	Signal	40.2	D	Signal	40.2	D	0.0	No
26	Encinitas Blvd. / I-5 NB Ramps	Signal	68.8	E	Signal	68.8	E	0.0	No
27	Vulcan Ave. / Orpheus Ave.	SSS	1.2	A	SSS	1.2	A	0.0	No

SSS - Side Street Stop
AWS - All-Way Stop
R- Roundabout

Ramp Meter Conditions Analysis

The Project does not propose any modifications to the studied ramp meter locations, and traffic volumes would be the same as without Project conditions. Therefore, the Existing Plus Project ramp meter analysis is the same as Existing without Project. As shown in Table 3.5-4, all ramp meter locations operate at an acceptable condition except for I-5 Northbound On-Ramps from Leucadia Boulevard and Encinitas Boulevard, which operates at unacceptable conditions. These results are consistent with the Existing without Project scenario. Therefore, the Project would not result in a significant impact at any ramp meter locations (no change due to Project implementation).

As shown in Tables 3.5-10 and 3.5-11, the meter at the SB I-5 onramp from Leucadia Boulevard is projected to operate at an unacceptable delay during the AM peak hour under Year 2035 baseline conditions for both Alternatives 1 and 2 scenarios.

For Year 2035 Plus Project forecast conditions, it is assumed that the I-5 North Coast Corridor Managed Lanes Project would be completed with a HOV/managed lane in each direction in the freeway median between 2020 and 2030 and an additional HOV/managed lane in each direction by 2030. With these HOV/managed lanes in place, the freeway main line would likely operate at a higher average speed and better LOS than under current conditions without the managed lanes.

Nevertheless, based on a conservative analysis, unacceptable delays are projected to occur at the SB I-5 onramp at Leucadia Boulevard during the AM peak hour (Tables 3.5-10 and 3.5-11). For the Year 2035 Alternative 1 with SMUP conditions, the Project would not result in significant delays at this ramp (see Table 17 in the TIA). Overall, the proposed Project would result in a significant impact at this onramp under Year 2035 Plus Project conditions for both Alternatives 1 and 2 scenarios (**Impact TC-2**).

Pedestrian Crossing Evaluation

Highway 101 / Diana Street

As shown in Figure 3.5-1, a pedestrian signal is proposed at the North Highway 101/Diana Street intersection, which is currently a one-way stop-controlled intersection without any crosswalks. The proposed pedestrian signal would provide a designated protected location for pedestrians and bicyclists to cross the highway. The intersection improvements would include a modification to the raised median restricting vehicles from turning left onto the highway from Diana Street. A northbound turn pocket would allow left turn movements onto Diana Street, while traffic on Diana Street approaching the highway would continue to use the stop sign that exists today.

As part of the proposed streetscape improvements, a surface parking pocket would be constructed in the NCTD right-of-way on the east side of North Highway 101 across from Diana Street. To accommodate pedestrians crossing the highway from this new parking lot to local business attractions, a marked pedestrian crosswalk is proposed on the north side of the intersection with a pedestrian activated signal. Given the distance of Diana Street to Leucadia Boulevard (approximately 950 feet), the pedestrian signal would use a separate controller to be coordinated with the signal at Leucadia Boulevard.

TABLE 3.5-10: RAMP METER OPERATIONS UNDER YEAR 2035 ALTERNATIVE 1 CONDITIONS

Location	Peak Hour	Meter Rate (veh/hr/ln)	Year 2035 No Build				Year 2035 Alternative 1				Comparison	
			Demand (veh/hr/ln)	Excess Demand (veh/hr/ln)	Delay (min/ln)	Queue (ft/ln)	Demand (veh/hr/ln)	Excess Demand (veh/hr/ln)	Delay (min/ln)	Queue (ft/ln)	△ Delay (min)	Significant?
La Costa Avenue / I-5 Ramp												
La Costa Ave. / I-5 NB On-Ramp	PM	744	260	0	0.0	0	270	0	0	0	0.0	No
La Costa Ave. / I-5 SB On-Ramp	AM	455	330	0	0.0	0	350	0	0	0	0.0	No
La Costa Ave. / I-5 SB On-Ramp	PM	455	350	0	0.0	0	350	0	0	0	0.0	No
Leucadia Boulevard / I-5 Ramp												
Leucadia Blvd. / I-5 NB On-Ramp	PM	453	370	0	0.0	0	370	0	0	0	0.0	No
Leucadia Blvd. / I-5 SB On-Ramp	AM	255	360	105	24.7	2,625	370	115	27.1	2,875	2.4	**Yes**
Leucadia Blvd. / I-5 SB On-Ramp	PM	257	300	43	10.0	1,075	310	53	12.4	1,325	2.3	No
Encinitas Boulevard / I-5 Ramp												
Encinitas Blvd. / I-5 NB On-Ramp (Slip)	PM	414	210	0	0.0	0	230	0	0	0	0.0	No
Encinitas Blvd. / I-5 NB On-Ramp (Loop)	PM	414	230	0	0.0	0	230	0	0	0	0.0	No
Encinitas Blvd. / I-5 SB On-Ramp	AM	744	330	0	0.0	0	360	0	0	0	0.0	No
Encinitas Blvd. / I-5 SB On-Ramp	PM	744	320	0	0.0	0	330	0	0	0	0.0	No

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

TABLE 3.5-11: RAMP METER OPERATIONS UNDER YEAR 2035 ALTERNATIVE 2 CONDITIONS

Location	Peak Hour	Meter Rate (veh/hr/ln)	Year 2035 No Build				Year 2035 Alternative 2				Comparison	
			Demand (veh/hr/ln)	Excess Demand (veh/hr/ln)	Delay (min/ln)	Queue (ft/ln)	Demand (veh/hr/ln)	Excess Demand (veh/hr/ln)	Delay (min/ln)	Queue (ft/ln)	△ Delay (min)	Significant?
La Costa Avenue / I-5 Ramp												
La Costa Ave. / I-5 NB On-Ramp	PM	744	260	0	0.0	0	270	0	0.0	0	0.0	No
La Costa Ave. / I-5 SB On-Ramp	AM	455	330	0	0.0	0	310	0	0.0	0	0.0	No
La Costa Ave. / I-5 SB On-Ramp	PM	455	350	0	0.0	0	360	0	0.0	0	0.0	No
Leucadia Boulevard / I-5 Ramp												
Leucadia Blvd. / I-5 NB On-Ramp	PM	453	370	0	0.0	0	380	0	0.0	0	0.0	No
Leucadia Blvd. / I-5 SB On-Ramp	AM	255	360	105	24.7	2,625	370	115	27.1	2,875	2.4	**Yes**
Leucadia Blvd. / I-5 SB On-Ramp	PM	257	300	43	10.0	1,075	310	53	12.4	1,325	2.3	No
Encinitas Boulevard / I-5 Ramp												
Encinitas Blvd. / I-5 NB On-Ramp (Slip)	PM	414	210	0	0.0	0	230	0	0.0	0	0.0	No
Encinitas Blvd. / I-5 NB On-Ramp (Loop)	PM	414	230	0	0.0	0	230	0	0.0	0	0.0	No
Encinitas Blvd. / I-5 SB On-Ramp	AM	744	330	0	0.0	0	360	0	0.0	0	0.0	No
Encinitas Blvd. / I-5 SB On-Ramp	PM	744	320	0	0.0	0	330	0	0.0	0	0.0	No

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

A supplemental peak-hour queuing analysis was conducted along the Project corridor between Diana Street and Leucadia Boulevard to assess the impact of the proposed pedestrian signal on traffic flow along North Highway 101 to/from Leucadia Boulevard. The traffic volumes used in the queuing analysis are based on the Year 2035 with Alternative 1 and SMUP conditions since these volumes are higher compared to the other alternatives. Without signal coordination along the corridor, the queues would approach, but not spill back into, the upstream Leucadia Boulevard intersection in the northbound approach during the PM peak hour. As such, the proposed signalized pedestrian crossing at Diana Street would not result in a significant traffic impact along the segment of North Highway 101 between Diana Street and Leucadia Boulevard during the AM and PM peak hours under the Year 2035 with Alternative 1 and SMUP conditions. It should be noted that the queues at each approach of the North Highway 101/Leucadia Boulevard intersection would be further reduced (by at least 50%) by limiting the pedestrian phase at Diana Street to coincide with the signal phases on Leucadia Boulevard versus North Coast Highway 101. By doing so, the eastbound and westbound approaches at Leucadia Boulevard would contribute less traffic to the intersection than the through traffic on North Highway 101, and would generate lower queues at the new pedestrian signal. Therefore, the proposed Diana Street pedestrian signal would be coordinated with the Leucadia Boulevard signal to improve traffic flow along the Project corridor.

Highway 101 / North Court

As shown in Figure 3.5-1, a pedestrian signal is proposed at the North Highway 101/North Court intersection which currently operates as a one-way stop-controlled intersection with free-flowing traffic on the highway. A proposed raised median would restrict left-turn movements, allowing only right turns in/out of North Court. As part of the proposed streetscape improvements, a surface parking pocket would be constructed in the NCTD right-of-way on the east side of North Highway 101 across from North Court. To accommodate pedestrians crossing the highway from this new parking lot to local business attractions, a marked pedestrian crosswalk is proposed with a pedestrian activated signal. Given the distance of North Court to Leucadia Boulevard (approximately 2,500 feet), the pedestrian signal would use a separate controller to be coordinated with the signal at Leucadia Boulevard to improve traffic flow on North Highway 101.

A supplemental peak-hour queuing analysis was conducted along the Project corridor between North Court and Leucadia Boulevard to assess the impact of the proposed pedestrian signal on traffic flow along North Highway 101 to/from Leucadia Boulevard. The traffic volumes used in the queuing analysis are based on the Year 2035 with Alternative 1 and SMUP conditions since these volumes are higher compared to the other alternatives. Without signal coordination along the corridor, the queues would approach, but not spill back into, the upstream Leucadia Boulevard intersection in the southbound approach during the AM peak hour. As such, the proposed signalized pedestrian crossing at North Court would not result in a significant traffic impact along the segment of North Highway 101 between North Court and Leucadia Boulevard during the AM and PM peak hours under the Year 2035 with Alternative 1 and SMUP conditions. It should be noted that the reduced the queues at each approach of the North Highway 101/Leucadia Boulevard intersection would be further reduced (by at least 50%) by limiting the pedestrian phase at North Court to coincide with the signal phases on Leucadia Boulevard versus North Highway 101. By doing so, the eastbound and westbound approaches at Leucadia Boulevard would contribute less traffic to the intersection than the through traffic on North Highway 101, and would generate lower queues at the new pedestrian

signal. Therefore, the proposed North Court pedestrian signal would be coordinated with the Leucadia Boulevard signal to improve traffic flow along the Project corridor.

Issue 2: Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways.

Please refer to Issue 1 above and the following discussion in Section 3.5.3.

Issue 3: Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

This issue is not applicable to the proposed Project.

Issue 4: Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

The proposed Project would increase public safety within the Project corridor by providing six roundabouts and two signalized pedestrian crossings to slow traffic speeds through the corridor; a 7-foot-wide "Park Assist" lane for the outer southbound lane to reduce potential public safety and traffic congestion ("bottle-neck") effects due to conflicts with the through travel lane, bike lane, and reverse angle parking movements; expanded sidewalks and enhanced crosswalks at uncontrolled intersections near bus stops; improvements to ensure adequate circulation of emergency vehicles through the corridor (e.g., minimum 20-foot paved travel width, mountable curbs within the roundabouts); and removal of trees in the median that are considered a safety hazard due to potential dropping limbs, possibly onto vehicles, bicyclists, and pedestrians. Therefore, the proposed Project would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

Issue 5: Result in inadequate emergency access.

As evaluated in Section 3.4.2 of this EIR, the proposed Project would not result in inadequate emergency access.

Issue 6: Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

As evaluated in Section 3.3.2 of this EIR, the proposed Project would not conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

3.5.3 Cumulative Impact Analysis

3.5.3.1 Cumulative Setting

The geographic scope for cumulative traffic impacts includes the projects in Figure 2-5 and Table 2-2. Development of these cumulative projects would have the potential to contribute to a cumulative increase in traffic volumes along the Project corridor. Such cumulative traffic volumes have been incorporated into the TIA via modeling of Existing Plus Project and Year 2035 traffic conditions for all three alternatives

scenarios analyzed in Issue 1 above, based on a SANDAG Series 12 forecast that includes land use, roadway network configuration and geometry specific to the City's General Plan.

Issue 7: Cumulative Traffic and Transportation Impacts

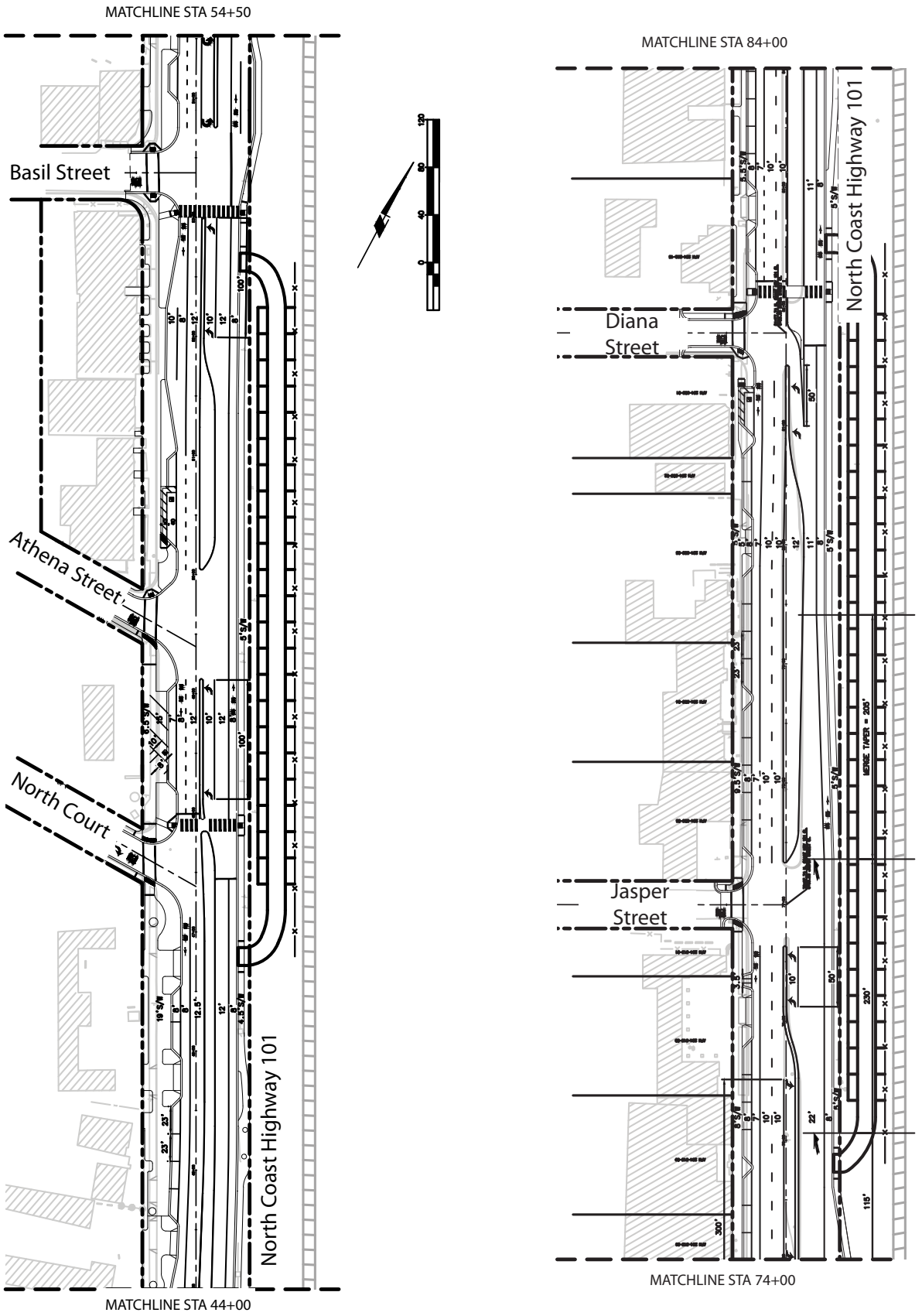
Because the significant impacts at the southbound North Highway 101 segment between Leucadia Boulevard and El Portal Street (during Year 2035 Alternative 1 Plus SMUP AM peak hours), and at the SB I-5 onramp from Leucadia Boulevard (during the Year 2035 Plus Project AM peak hours for both Alternatives 1 and 2 scenarios) would all be the result of cumulative traffic volumes, the proposed Project would result in cumulatively considerable traffic impacts at these locations (**Impact TC-3**).

3.5.4 Mitigation Measures

The proposed Project would result in significant unavoidable cumulative impacts at the southbound North Highway 101 segment between Leucadia Boulevard and El Portal Street (during Year 2035 Alternative 1 Plus SMUP AM peak hours); and the southbound I-5 onramp from Leucadia Boulevard (during the Year 2035 Plus Project AM peak hours for both Alternatives 1 and 2 scenarios). The only way to avoid the Project impact along the North Highway 101 segment would be to add another southbound lane in this segment by Year 2035; however, this solution is infeasible due to insufficient right-of-way. Project impacts at the I-5 onramps could be mitigated if the discharge rates from the metering at these ramps could be adjusted slightly higher (i.e., to an average discharge rate of 2 vehicles/hour/lane) resulting in less delay and queuing (see Table 22 of the TIA); however, there is no guarantee that such adjustments of these ramp meters can occur since they are controlled by another agency (Caltrans) and not the City.

3.5.5 Conclusions

The proposed Project would result in significant unavoidable cumulative impacts at the southbound North Highway 101 segment between Leucadia Boulevard and El Portal Street (during Year 2035 Alternative 1 Plus SMUP AM peak hours) and the southbound I-5 onramp from Leucadia Boulevard (during the Year 2035 Plus Project AM peak hours for both Alternatives 1 and 2 scenarios). There are no other feasible Project design features, mitigation measures, or alternatives to reduce these impacts to less than significant.



Michael Baker INTERNATIONAL

Source: TIA, November 2016
137350Exhibits.indd

North Coast Highway 101 Streetscape Improvement Project

PROPOSED SIGNALIZED PEDESTRIAN CROSSINGS

Figure 3.5-1

THIS PAGE INTENTIONALLY LEFT BLANK