



OCEANSIDE GARRISON

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FINAL
Local Transportation Study

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Executive Summary

Project Description and Setting

The Project seeks to construct 140 multi-family dwelling units on the old Garrison School site, located on the 300 block of Garrison Street within the City of Oceanside. The Project will provide access via Garrison Street, similar to the old Garrison School site, which will require project traffic to ingress/egress via the intersection of Garrison Street & Oceanside Boulevard. The project driveway will function as a side-street stop-controlled intersection, with Garrison Street as uncontrolled and the project driveway as stop-controlled. A secondary access point (emergency only) will be located at the northern end of Garrison Street. The anticipated opening year of the Project is 2027.

Project Trip Generation

Per the direction of City staff, trip generation rates were derived from the Institute of Transportation Engineer’s (ITE) *Trip Generation Manual, 11th Edition*. It should be noted that the Garrison School is no longer in operation. Therefore, no existing trip credits were applied. Based on the trip generation rates for Multifamily Housing (Low-Rise) (Land Use Code 220), the Project is anticipated to generate a total of 973 daily trips, including 66 (16-in/50-out) trips during the AM peak hour and 81 (51-in/30-out) trips during the PM peak hour.

Local Transportation Study Summary

Roadway and intersection study facilities were evaluated using the City of Oceanside Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment (TIAG) (August 2020). Detailed analyses are available in Chapters 4, 5, and 6.

Existing Conditions

Table ES.1 displays the roadway segment level of service (LOS) results under Existing and Existing with Project conditions.

Table ES.1 – Roadway Segment LOS Results – Existing Conditions

Roadway	Segment	Functional Classification	Capacity (LOS E)	Existing		Existing with Project		ΔV/C	Improvement Required?
				ADT	LOS	ADT	LOS		
Garrison Street	Northern Terminus to Oceanside Boulevard	Local Street	2,200	943	Below Capacity ¹	1,916	Below Capacity ¹	0.442	No
Oceanside Boulevard	Foussat Road to Garrison Street	4-Lane Secondary Collector w/TWLTL	30,000	26,607	E	26,802	E	0.006	No
Oceanside Boulevard	Garrison Street to El Camino Real	4-Lane Secondary Collector w/TWLTL	30,000	26,264	E	27,042	E	0.026	Yes

Source: CR Associates (2024)

Notes:

Bold indicates substandard LOS E or LOS F.

¹ Per the City’s TIAG, Local Streets have a threshold of 2,200 for LOS C. If the ADT falls below the threshold, the roadway segment operates “Below Capacity”. If the ADT falls above the threshold, the roadway segment operates “Above Capacity”.

Intersection Analysis

Table ES.2 displays the intersection LOS results under Existing and Existing with Project conditions.

Table ES.2 – Intersection LOS Results – Existing Conditions

ID	Intersection	Peak Hour	Level of Service		Δ	Improvement Required?
			Existing	Existing with Project		
1	Garrison Street & Oceanside Boulevard	AM	B	C	7.7	No
		PM	B	C	1.8	No
2	El Camino Real & Oceanside Boulevard	AM	E	E	1.2	No
		PM	E	E	1.2	No
3	Project Driveway & Garrison Street	AM	N/A	A	8.5	No
		PM	N/A	A	8.4	No

Source: CR Associates (2024)

Notes:

N/A = Not Applicable.

Bold indicates substandard LOS E or LOS F.

LOS Impacts and Improvement Thresholds

Based on the roadway segment and intersection analysis results, implementation of the Project triggers the need for roadway segment improvements along Oceanside Boulevard under Existing with Project conditions.

To mitigate the Project’s impact, the project proposes to provide and install (100% responsibility) a complete NoTraffic system at the intersection of Garrison Street & Oceanside Boulevard, including the installation of fiber optic communication from Oceanside Boulevard & El Camino Real to Oceanside Boulevard & Garrison Street. This improvement shall be completed prior to the issuance of occupancy and to the satisfaction of the City Traffic Engineer

Opening Year (2027) Conditions

Table ES.3 displays the roadway segment level of service (LOS) results under Opening Year (2027) and Opening Year (2027) with Project conditions.

Table ES.3 – Roadway Segment LOS Results – Opening Year (2027) Conditions

Roadway	Segment	Functional Classification	Capacity (LOS E)	Opening Year (2027)		Opening Year (2027) with Project		ΔV/C	Improvement Required?
				ADT	LOS	ADT	LOS		
Garrison Street	Northern Terminus to Oceanside Boulevard	Local Street	2,200	943	Below Capacity ¹	1,916	Below Capacity ¹	0.442	No
Oceanside Boulevard	Foussat Road to Garrison Street	4-Lane Secondary Collector w/TWLTL	30,000	30,279	F	30,474	F	0.007	No
Oceanside Boulevard	Garrison Street to El Camino Real	4-Lane Secondary Collector w/TWLTL	30,000	29,936	E	30,714	F	0.026	Yes

Source: CR Associates (2024)

Notes:

Bold indicates substandard LOS E or LOS F.

¹ Per the City’s TIAG, Local Streets have a threshold of 2,200 for LOS C. If the ADT falls below the threshold, the roadway segment operates “Below Capacity”. If the ADT falls above the threshold, the roadway segment operates “Above Capacity”.

Intersection Analysis

Table ES.4 displays the intersection LOS results under Opening Year (2027) and Opening Year (2027) with Project conditions.

Table ES.4 – Intersection LOS Results – Opening Year (2027) Conditions

ID	Intersection	Peak Hour	Level of Service		Δ	Improvement Required?
			Opening Year (2027)	Opening Year (2027) with Project		
1	Garrison Street & Oceanside Boulevard	AM	B	C	6.7	No
		PM	B	C	1.7	No
2	El Camino Real & Oceanside Boulevard	AM	F	F	1.0	No
		PM	F	F	0.9	No
3	Project Driveway & Garrison Street	AM	N/A	A	8.5	No
		PM	N/A	A	8.4	No

Source: CR Associates (2024)

Notes:

N/A = Not Applicable.

Bold indicates substandard LOS E or LOS F.

LOS Impacts and Improvement Thresholds

Based on the roadway segment and intersection analysis results, implementation of the Project triggers the need for roadway segment improvements along Oceanside Boulevard under Opening Year (2027) with Project conditions.

To mitigate the Project’s impact, the project proposes to provide and install (100% responsibility) a complete NoTraffic system at the intersection of Garrison Street & Oceanside Boulevard, including the installation of fiber optic communication from Oceanside Boulevard & El Camino Real to Oceanside Boulevard & Garrison Street. This improvement shall be completed prior to the issuance of occupancy and to the satisfaction of the City Traffic Engineer.

Horizon Year (2050) Conditions

Roadway Segment Analysis

Table ES.5 displays the roadway segment level of service (LOS) results under Horizon Year (2050) and Horizon Year (2050) with Project conditions.

Table ES.5 – Roadway Segment LOS Results – Horizon Year (2050) Conditions

Roadway	Segment	Functional Classification	Capacity (LOS E)	Horizon Year (2050)		Horizon Year (2050) with Project		ΔV/C	Improvement Required?
				ADT	LOS	ADT	LOS		
Garrison Street	Northern Terminus to Oceanside Boulevard	Local Street	2,200	1,200	Below Capacity ¹	2,173	Below Capacity ¹	0.442	No
Oceanside Boulevard	Foussat Road to Garrison Street	4-Lane Secondary Collector w/TWLTL	40,000	32,200	D	32,395	D	0.005	No
Oceanside Boulevard	Garrison Street to El Camino Real	4-Lane Secondary Collector w/TWLTL	40,000	32,200	D	32,978	D	0.019	No

Source: CR Associates (2024)

Notes:

Bold indicates substandard LOS E or LOS F.

¹ Per the City’s TIAG, Local Streets have a threshold of 2,200 for LOS C. If the ADT falls below the threshold, the roadway segment operates “Below Capacity”. If the ADT falls above the threshold, the roadway segment operates “Above Capacity”.

Intersection Analysis

Table ES.6 displays the intersection LOS results under Horizon Year (2050) and Horizon Year (2050) with Project conditions.

Table ES.6 – Intersection LOS Results – Horizon Year (2050) Conditions

ID	Intersection	Peak Hour	Level of Service		Δ	Improvement Required?
			Horizon Year (2050)	Horizon Year (2050) with Project		
1	Garrison Street & Oceanside Boulevard	AM	B	C	6.7	No
		PM	B	C	1.7	No
2	El Camino Real & Oceanside Boulevard	AM	F	F	1.0	No
		PM	F	F	0.9	No
3	Project Driveway & Garrison Street	AM	N/A	A	8.5	No
		PM	N/A	A	8.4	No

Source: CR Associates (2024)

Notes:

N/A = Not Applicable.

Bold indicates substandard LOS E or LOS F.

LOS Impacts and Improvement Thresholds

Based on the roadway segment and intersection analysis results, implementation of the Project does not trigger the need for roadway segment or intersection improvements under Horizon Year (2050) with Project conditions.

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1.0 Introduction

The purpose of this Local Transportation Study (LTS) is to identify and document any potential level of service (LOS) impacts associated with the Oceanside Garrison project (the “Project”), and to recommend improvement requirements, as necessary.

1.1 Project Description

The Project seeks to construct 140 multi-family dwelling units on the old Garrison School site, located on the 300 block of Garrison Street within the City of Oceanside. The Project will provide access via Garrison Street, similar to the old Garrison School site, which will require project traffic to ingress/egress via the intersection of Garrison Street & Oceanside Boulevard. The project driveway will function as a side-street stop-controlled intersection, with Garrison Street as uncontrolled and the project driveway as stop-controlled. A secondary access point (emergency only) will be located at the northern end of Garrison Street. The anticipated opening year of the Project is 2027. **Figure 1.1** displays the Project’s regional location. **Figure 1.2** displays the project site plan.

1.2 Report Organization

Following this introductory chapter, this report is organized into the following chapters:

2. **Analysis Methodology** – This chapter reviews the methods utilized to evaluate any LOS impacts associated with the implementation of the Project, as required by the City’s Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment (TIAG).
3. **Project Traffic** - This chapter describes the Project’s land use and associated trip generation. Additional information such as trip distribution patterns and project trip assignment are also included in this chapter, which is used to determine the project study area.
4. **Existing Conditions** – This chapter describes and evaluates the existing transportation network. Vehicular operations within the study area are evaluated and LOS analysis results are provided for Existing and Existing with Project vehicular traffic conditions. Additionally, the Project’s access to transit as well as pedestrian and bicycle facilities are evaluated. Recommendations are offered to enhance the experience and safety for pedestrians and bicyclists.
5. **Opening Year (2027) Conditions** – This chapter describes the cumulative projects utilized to determine Opening Year (2027) traffic volumes and establishes a baseline against which traffic generated by the Project can be compared to during project opening day. LOS analysis results are provided for Opening Year (2027) and Opening Year (2027) with Project vehicular traffic conditions.
6. **Horizon Year (2050) Conditions** – This chapter describes projected long-range conditions of the transportation network within the study area. Horizon Year (2050) scenario analysis is required per the City’s TIAG. LOS analysis results are provided for Horizon Year (2050) and Horizon Year (2050) with Project vehicular traffic conditions.
7. **LOS Impacts and Improvement Requirements** - This chapter identifies any substandard facilities and provides improvement requirements to improve substandard facilities to acceptable LOS or pre-project conditions.
8. **Site Access & Circulation** – This chapter addresses access to the Project site and discusses the functionality of the Project’s internal circulation.

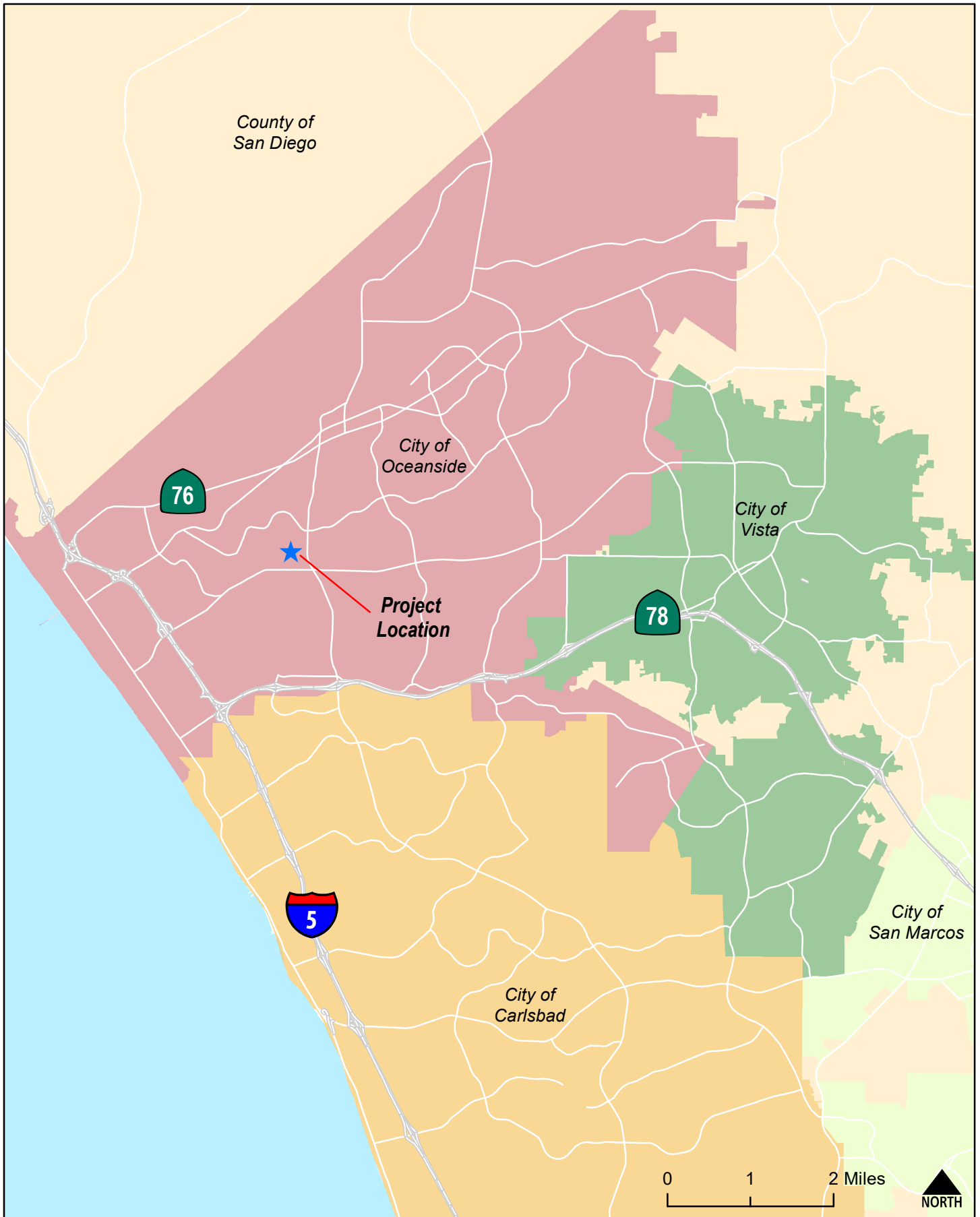


Figure 1.1
 Project Regional Location

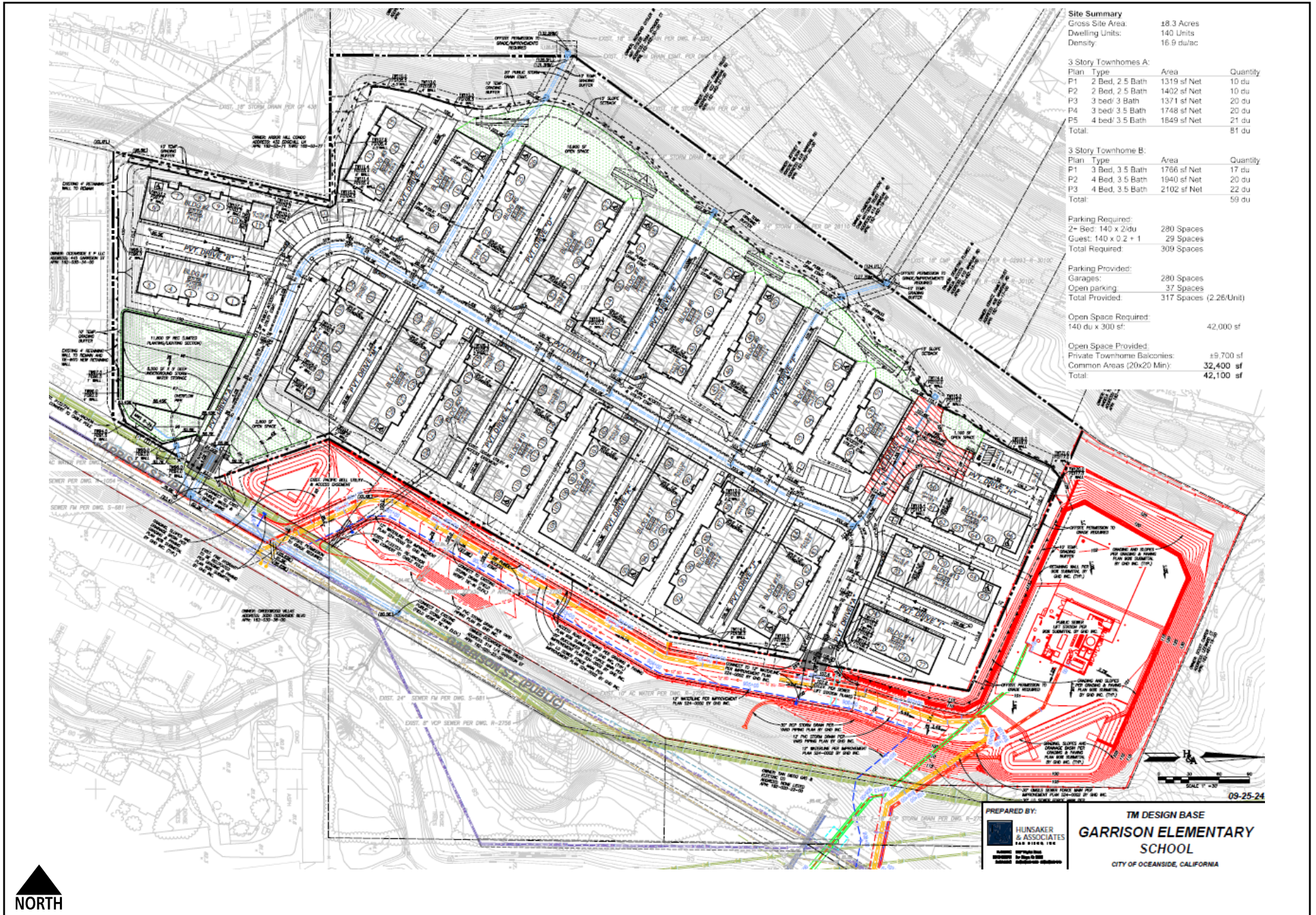


Figure 1.2
 Project Site Plan

2.0 Analysis Methodology

This study was performed in accordance with the standards and requirements in the City’s TIAG. All analysis assumptions were documented within a scoping agreement memorandum, provided in **Appendix A**, and approved by the city staff in June 2024. The following sections describe the analysis methods outlined in the City’s TIAG to describe how transportation related impacts are analyzed and identified in relation to LOS. A transportation impact in relation to LOS is considered a non-CEQA transportation impact based on the City’s TIAG.

2.1 LOS Definitions

LOS is a quantitative measure describing operational conditions within a traffic stream, and the motorist’s and/or passengers’ perception of operations. A LOS definition generally describes these conditions in terms of such factors as delay, speed, travel time, freedom to maneuver, interruptions in traffic flow, queuing, comfort, and convenience. **Table 2.1** describes generalized definitions of the various LOS categories (A through F) as applied to roadway operations.

Table 2.1 – LOS Definitions

LOS Category	Definition of Operation
A	This LOS represents a completely free-flow condition, where the operation of vehicles is virtually unaffected by the presence of other vehicles and only constrained by the geometric features of the highway and by driver preferences.
B	This LOS represents a relatively free-flow condition, although the presence of other vehicles becomes noticeable. Average travel speeds are the same as in LOS A, but drivers have slightly less freedom to maneuver.
C	At this LOS, the influence of traffic density on operations becomes marked. The ability to maneuver within the traffic stream is clearly affected by other vehicles.
D	At this LOS, the ability to maneuver is notably restricted due to traffic congestion, and only minor disruptions can be absorbed without extensive queues forming and the service deteriorating.
E	This LOS represents operations at or near capacity. LOS E is an unstable level, with vehicles operating with minimum spacing for maintaining uniform flow. At LOS E, disruptions cannot be dissipated readily thus causing deterioration down to LOS F.
F	At this LOS, forced or breakdown of traffic flow occurs, although operations appear to be at capacity, queues form behind these breakdowns. Operations within queues are highly unstable, with vehicles experiencing brief periods of movement followed by stoppages.

Source: Highway Capacity Manual 6th Edition (2016)

2.2 Roadway Segment LOS Standards and Thresholds

Roadway segment LOS standards and thresholds provide the basis for analysis of arterial roadway segment performance. The analysis of roadway segment LOS is based on the functional classification of the roadway, the maximum capacity, roadway geometrics, and existing or forecast Average Daily Traffic (ADT) volumes. **Table 2.2** displays roadway segment capacity standards found in the City’s TIAG. The actual capacity of a roadway facility varies according to its physical attributes.

Table 2.2 – Roadway Segment Daily Capacity and LOS Standards

Class	Lanes	LOS ¹				
		A	B	C	D	E
Expressway	6	0 to 29,999	30,000 to 41,999	42,000 to 59,999	60,000 to 69,999	70,000 to 79,999
Expressway	4	0 to 24,999	25,000 to 34,999	35,000 to 49,999	50,000 to 54,999	55,000 to 59,999
Prime Arterial	6	0 to 24,999	25,000 to 34,999	35,000 to 49,999	50,000 to 54,999	55,000 to 59,999
6-Lane Major Arterial	6	0 to 19,999	20,000 to 27,999	28,000 to 39,999	40,000 to 44,999	45,000 to 49,999
5-Lane Major Arterial	5	0 to 17,499	17,500 to 24,499	24,500 to 34,999	35,000 to 39,999	40,000 to 44,999
4-Lane Major Arterial	4	0 to 14,999	15,000 to 20,999	21,000 to 29,999	30,000 to 34,999	35,000 to 39,999
Secondary Collector (4 lanes with 2-way left turn lane)	4	0 to 9,999	10,000 to 13,999	14,000 to 19,999	20,000 to 24,999	25,000 to 29,999
Secondary Collector (4 lanes without 2-way left-turn lane, with left turn pockets)	4	0 to 8,999	9,000 to 12,999	13,000 to 17,999	18,000 to 21,999	22,000 to 24,999
Collector (commercial fronting, 2-lanes with 2-way left turn lane)	2	0 to 4,999	5,000 to 6,999	7,000 to 9,999	10,000 to 12,999	13,000 to 14,999
Collector (residential streets in the Circulation Element or industrial fronting)	2	0 to 3,999	4,000 to 5,499	5,500 to 7,499	7,500 to 8,999	9,000 to 9,999
Collector (One-Way)	2	0 to 7,499	7,500 to 9,499	9,500 to 12,499	12,500 to 14,999	15,000 to 17,499
Local Street (residential streets NOT in the Circulation Element)	2	-	-	2,200	-	-

Source: Oceanside TIAG (2020)

Notes:

¹ Roadway segments with a daily volume greater than the LOS E threshold operate at LOS F

These standards are generally used as long-range planning guidelines to determine the functional classification of roadways. The actual capacity of a roadway varies according to its physical attributes. Typically, the performance and LOS of a roadway segment is heavily influenced by the ability of its intersections to accommodate peak hour traffic volumes. For the purposes of this traffic analysis, LOS D or better is considered acceptable for circulation element roadway segments.

2.3 Peak Hour Intersection LOS Standards and Thresholds

This section presents the methodologies used to perform peak hour intersection capacity analyses at signalized and unsignalized intersections within the study area. The following assumptions were utilized in conducting all intersection LOS analyses:

- **Peak Hour Factor (PHF)** – PHF from existing traffic counts utilized for Existing and Near-Term Year 2027 scenarios. For Horizon Year 2050 scenarios, a PHF of 0.95 was utilized, unless already higher under Existing conditions. Existing traffic counts are included in **Appendix B**.
- **Conflicting Pedestrians/Bicycles** – Existing pedestrian and bicycle traffic counts utilized for all scenarios.
- **Signal Timings** – Based on existing signal timing plans (as of June 2024) provided by City staff and included in **Appendix C**.

2.3.1 Signalized Intersections

The analysis of signalized intersections utilized the operational analysis procedure as outlined in the Highway Capacity Manual (HCM) 6th Edition signalized (Chapter 19) intersection analysis methodology. This method defines LOS in terms of delay, or more specifically, average stopped delay per vehicle. Delay is a measure of driver and/or passenger discomfort, frustration, fuel consumption and lost travel time. This technique uses 1,900 vehicles per hour per lane (VPHPL) as the maximum saturation volume of an intersection. This saturation volume is adjusted to account for lane width, on-street parking, pedestrians, traffic composition (i.e., percentage trucks) and shared lane movements (i.e., through and right-turn movements originating from the same lane). The LOS criteria used for the analysis of signalized intersections are described in **Table 2.3**, identifying the thresholds of control delays and the associated LOS. The computerized analysis of intersection operations was performed utilizing the Synchro Version 11 traffic analysis software by Trafficware Ltd.

Table 2.3 – Signalized Intersection LOS Thresholds

Average Stopped Delay Per Vehicle (Seconds)	LOS Characteristics
<10	LOS A describes operations with very low delay. This occurs when progression is extremely favorable, and most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
>10– 20	LOS B describes operations with generally good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
>20 – 35	LOS C describes operations with higher delays, which may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
>35– 55	LOS D describes operations with high delay, resulting from some combination of unfavorable progression, long cycle lengths, or high volumes. The influence of congestion becomes more noticeable, and individual cycle failures are noticeable.
>55 – 80	LOS E is considered the limit of acceptable delay. Individual cycle failures are frequent occurrences.
>80	LOS F describes a condition of excessively high delay, considered unacceptable to most drivers. This condition often occurs when arrival flow rates exceed the LOS D capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes to such delay.

Source: Highway Capacity Manual 6th Edition (2016)

2.3.2 Unsignalized Intersections

The analysis of unsignalized intersections utilized the operational analysis procedures as outlined in the HCM 6th Edition side-street stop (Chapter 20) and all-way stop (Chapter 21) intersection analysis methodologies.

Unsignalized intersections were analyzed using the HCM 6th Edition side-street stop (Chapter 20) and all-way stop (Chapter 21) intersection analysis methodologies. The computerized analysis of intersection operations was performed utilizing the Synchro Version 11 traffic analysis software by Trafficware Ltd.

LOS was determined as follows:

- **All-Way Stop Intersections:** Reported for the entire intersection as an average value.
- **Side-Street Stop Intersections:** Reported for the worst-case movement.

The LOS criteria used for the analysis of unsignalized intersections are described in **Table 2.4**.

Table 2.4 – LOS Criteria for Stop-Controlled Unsignalized Intersections

Average Stopped Delay Per Vehicle (Seconds)	LOS
0 – 10	A
>10 – 15	B
>15 – 25	C
>25 – 35	D
>35 – 50	E
> 50	F

Source: Highway Capacity Manual 6th Edition (2016)

2.4 Determination of Project Study Area

Per the City’s TIAG, the study area was defined using the following criteria:

- All signalized and unsignalized intersections or project driveways where the project will add 50 or more peak hour (final cumulative) trips in either direction.
- All freeway ramp intersections where the project will add 20 or more peak hour (final cumulative) trips in either direction.

2.5 City of Oceanside LOS Standards

Based on the City’s TIAG, **Table 2.5** provides thresholds to determine if the Project is required to provide improvements to study area facilities.

Table 2.5 – Determination of the Need for Roadway Improvements

LOS with Project	Allowable Change Due to Project Effect					
	Freeway		Roadway Segments		Intersections	Ramp Metering
	V/C	Speed (MPH)	V/C	Speed	Delay (sec)	Delay (min)
E & F (or ramp meter delays above 15 min)	0.01	1	0.02	1	2	2

Source: City of Oceanside Traffic Impact Analysis Guidelines (August 2020)

Improvements should be identified to increase performance to acceptable or pre-project conditions under each scenario. Improvements should be considered as follows on a case-by-case basis:

- Improvements should be consistent with the General Plan.
- Improvements for transit, bike, and pedestrian facilities should be given priority in Transit Priority Areas or Smart Growth Opportunity Area as identified by SANDAG.
- Projects in Transit Priority Areas or Smart Growth Opportunity Area as identified by SANDAG, that are consistent with the General Plan at the time of project application, should not be denied due to the inability to provide roadway improvements (i.e., existing right of way is constrained, etc.).

3.0 Project Traffic

This chapter describes the Project, including the Project’s trip generation, trip distribution patterns, and trip assignment.

3.1 Project Trip Generation

Per the direction of City staff, trip generation rates were derived from the Institute of Transportation Engineer’s (ITE) *Trip Generation Manual, 11th Edition*. It should be noted that the Garrison School is no longer in operation. Therefore, no existing trip credits were applied. **Table 3.1** displays the projected daily and AM/PM peak hour project trip generation.

Table 3.1 – Project Trip Generation

Land Use	Units	Trip Rate	ADT	AM Peak Hour				PM Peak Hour					
				%	Trips	Split	In	Out	%	Trips	Split	In	Out
Multi-Family (Low-Rise) ¹	140 DU	6.95/DU	973	7%	66	24:76	16	50	8%	81	63:37	51	30

Source: ITE Trip Generation Manual, 11th Edition (2021); CR Associates (2024)

Note:

¹ ITE Land Use Code 220

As shown, the Project is anticipated to generate a total of 973 daily trips, including 66 (16-in/50-out) trips during the AM peak hour and 81 (51-in/30-out) trips during the PM peak hour.

3.2 Project Trip Distribution

The project trip distribution was manually developed based on the geographical location of the Project, characteristics of the proposed and surrounding land uses, and big data from Replica¹. **Figure 3.1** displays the project trip distribution.

3.3 Project Trip Assignment

Based on the Project’s trip generation and distribution patterns, daily and AM/PM peak hour project trips were assigned to the adjacent roadway network. **Figure 3.2** displays the daily and AM/PM peak hour trip assignment.

¹ Replica is a data provider that produces large-scale models to represent mobility throughout the United States. For more information, please visit the following: <https://replicahq.com/>

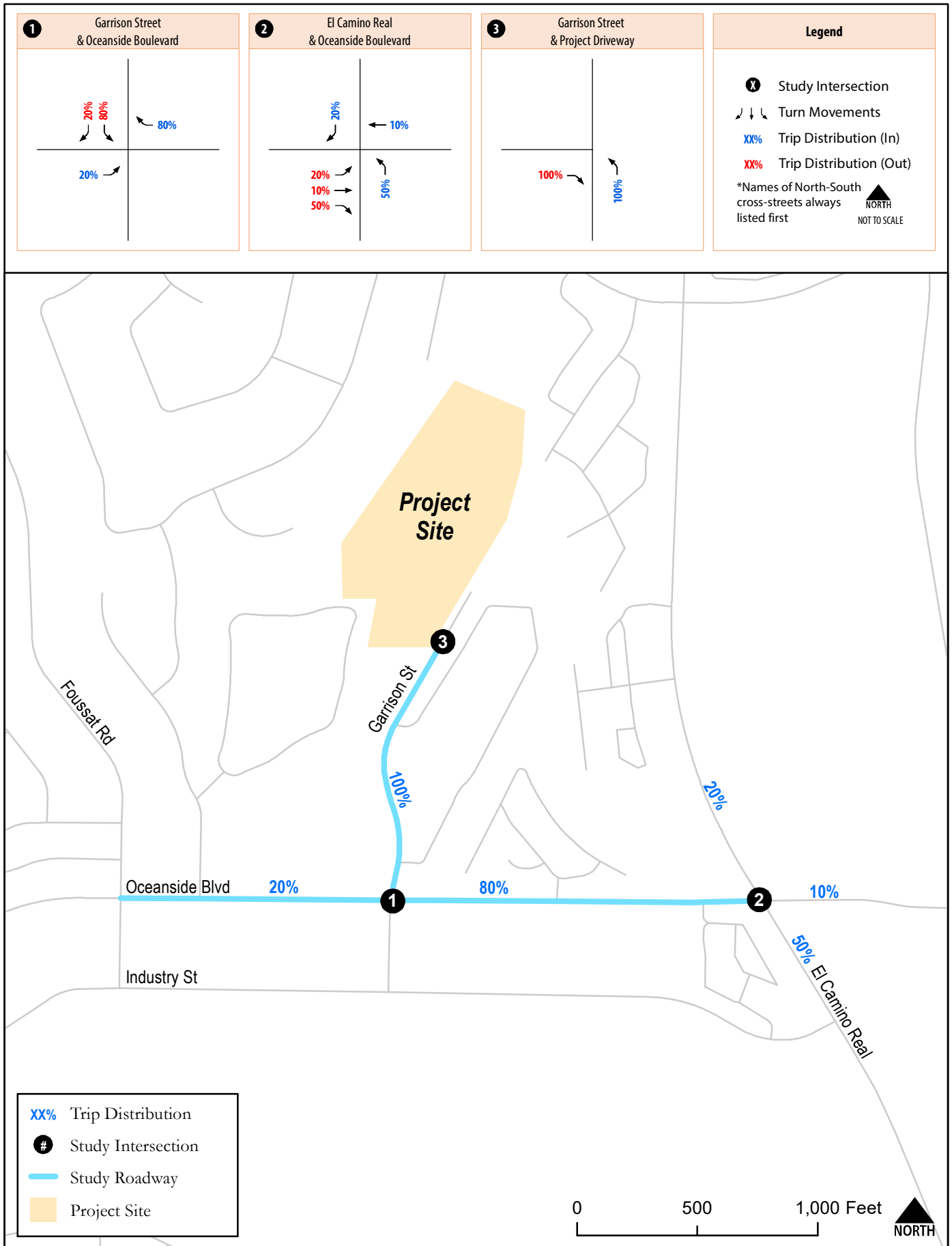
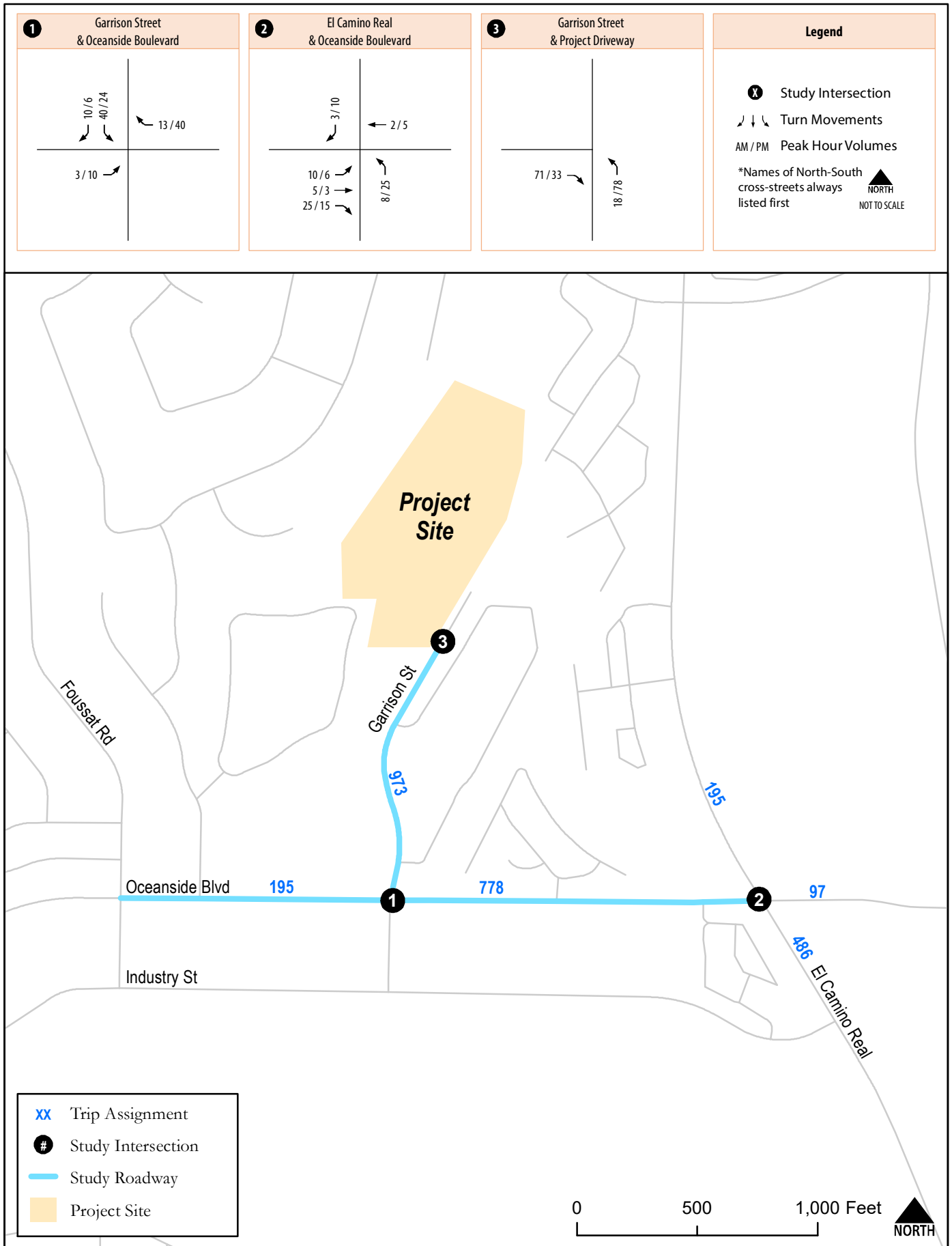


Figure 3.1
Project Trip Distribution



3.4 Project Study Area

Based on the Project's trip generation, distribution, and assignment, as well as the City's TIAG study area requirements previously outlined in Section 2.4, the following facilities were included in the project study area:

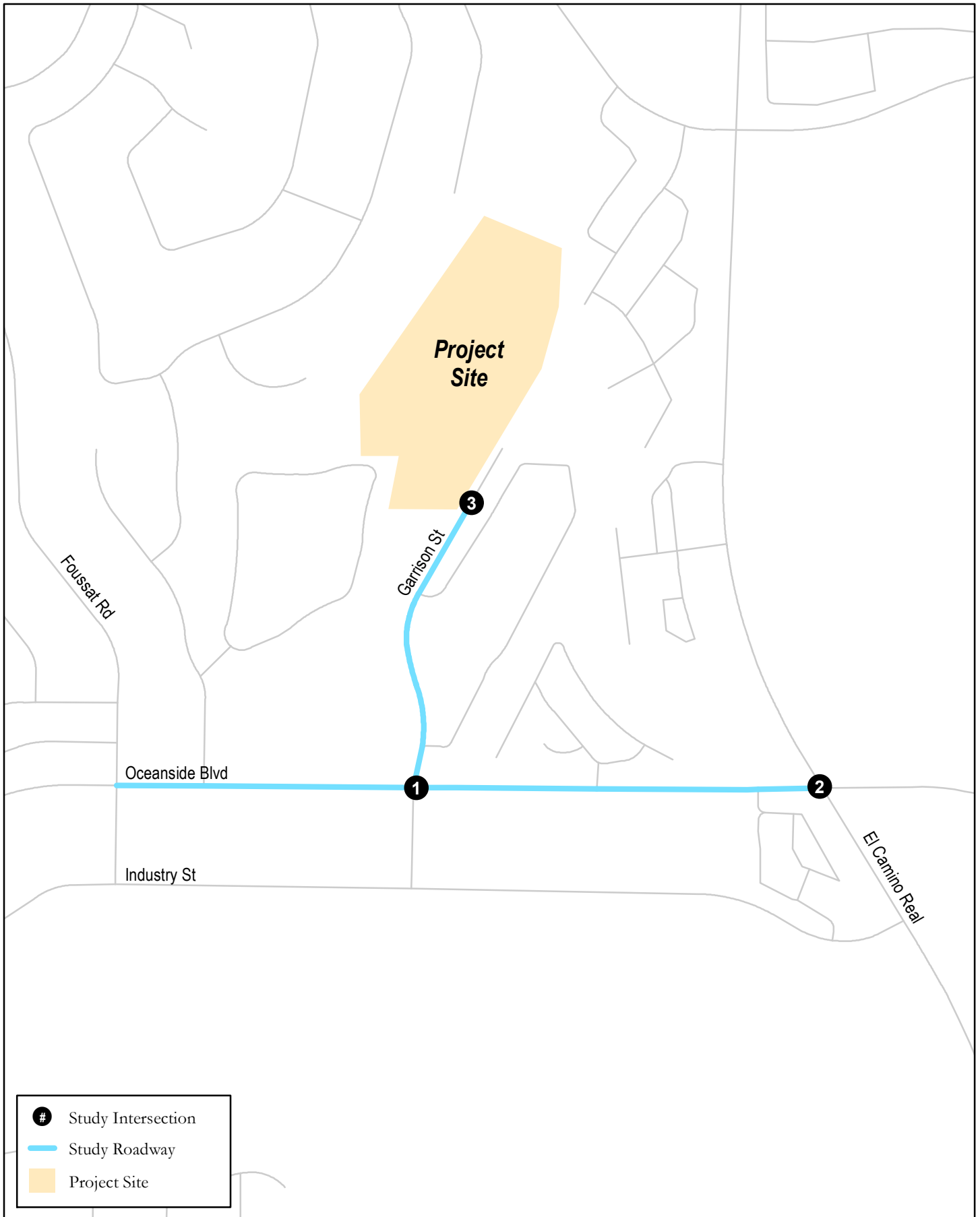
Roadway Segments

- Oceanside Boulevard, between Foussat Road and Garrison Street
- Oceanside Boulevard, between Garrison Street and El Camino Real
- Garrison Street, between Project Driveway and Oceanside Boulevard

Intersections

1. Garrison Street & Oceanside Boulevard (Signal)
2. El Camino Real & Oceanside Boulevard (Signal)
3. Garrison Street & Project Driveway (Side-Street Stop-Control)

Figure 3.3 displays the overall project study area.



4.0 Existing Conditions

This chapter provides a qualitative description of the transportation facilities located within the project study area. LOS analysis of the existing operations of the local transportation network facilities is also provided for study roadway segments and intersections.

4.1 Existing Transportation Network

Access to the Project from the regional transportation network will be provided via Interstate 5 (I-5), California State Route 76 (SR-76), Oceanside Boulevard, El Camino Real, and Garrison Street. These facilities will either provide a direct connection to the Project or will provide a critical link between the Project and the regional transportation network. **Table 4.1** summarizes the existing physical characteristics of roadways within the study area, while **Figure 4.1** displays the roadway classifications and study intersection geometrics under Existing conditions.

4.2 Active Transportation

This section discusses the project site's active transportation modes.

4.2.1 Pedestrian

Sidewalks are present along both sides of the roadways within a half mile walking distance from the project site, with the exception of Oceanside Boulevard, east of El Camino Real, which only has approximately 750 feet of existing sidewalk along the south side. These existing pedestrian facilities are mostly surrounded by residential, commercial, and industrial land uses.

The City of Oceanside Public Review Draft General Plan (Oceanside PRD GP, 2024) established a system of three pedestrian route typologies to guide level of pedestrian amenities for mobility network streets: Connectors, Corridors, and Pedestrian Priority Zones. **Figure 4.2** displays example treatments of the pedestrian route typologies and **Figure 4.3** displays the pedestrian route typology designations across the City. A summary of the pedestrian route typology designations within the project study area is provided below:

Pedestrian Priority Zones

- Oceanside Boulevard, approximately 600 feet east of Garrison Street to El Camino Real
- El Camino Real, Oceanside Boulevard to Sprinter Rail Line

Corridor

- El Camino Real, south of Sprinter Rail Line

Connector

- Oceanside Boulevard, Garrison Street to approximately 600 feet east of Garrison Street
- El Camino Real, north of Oceanside Boulevard

Based on the preliminary review of the project site plan, the Project would not conflict with existing or planned pedestrian facilities and would not result in any impacts to pedestrian safety and accessibility.

Table 4.1 – Existing Transportation Network Characteristics

Roadway	Segment	Number of Lanes	Curb to Curb Distance	Median Type	Roadway Classification ¹	Sidewalks	Bike Facility	Transit Route	Posted Speed Limit
Garrison Street	Northern Terminus to Oceanside Boulevard	2	40 ft	Undivided	Local Street	Present on both sides	None	None	N/A
Oceanside Boulevard	Foussat Road to Garrison Street	4	64 ft	TWLTL	4-Lane Secondary Collector w/TWLTL	Present on both sides	Class II	Bus 318	45 MPH
Oceanside Boulevard	Garrison Street to El Camino Real	4	64 ft	TWLTL	4-Lane Secondary Collector w/TWLTL	Present on both sides	Class II	Bus 318	45 MPH

Source: CR Associates (2024)

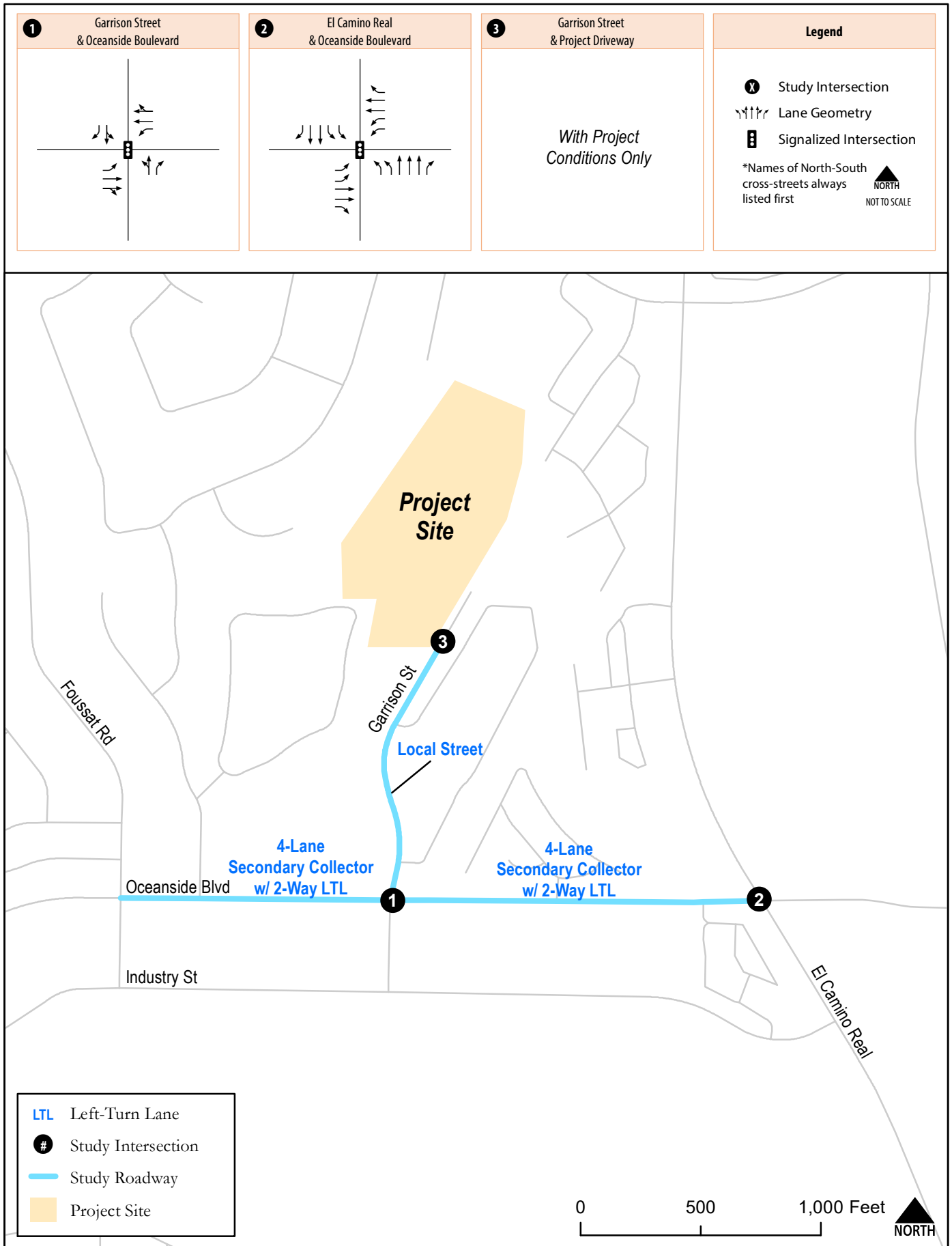
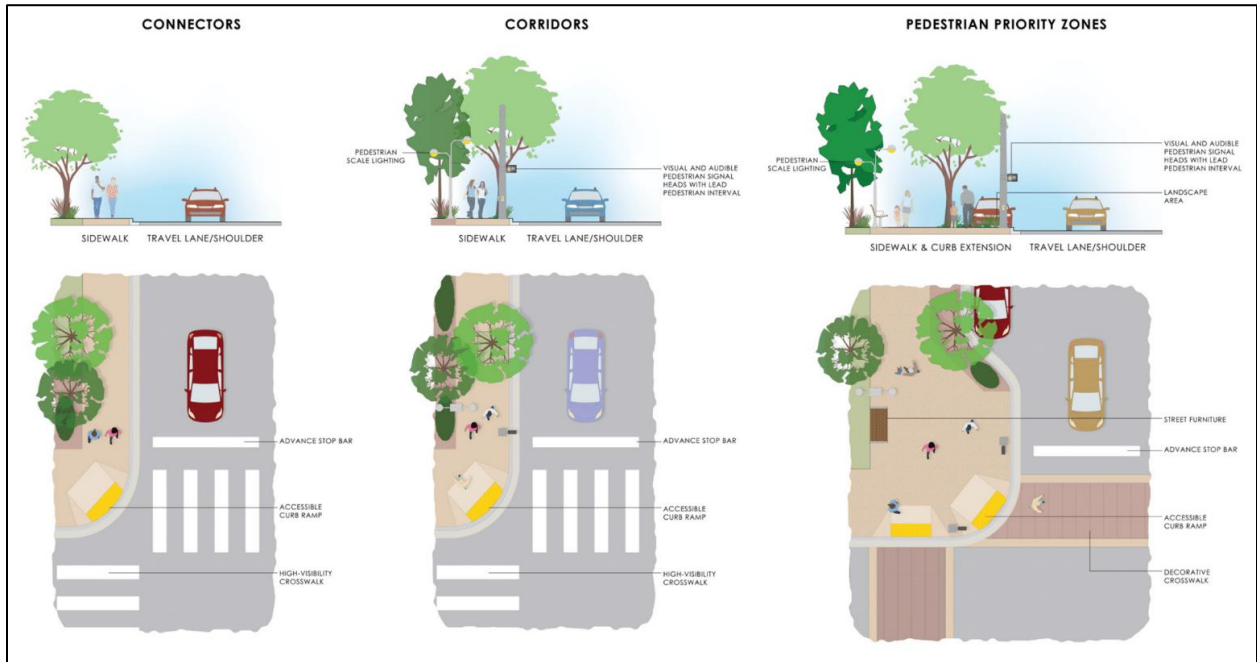
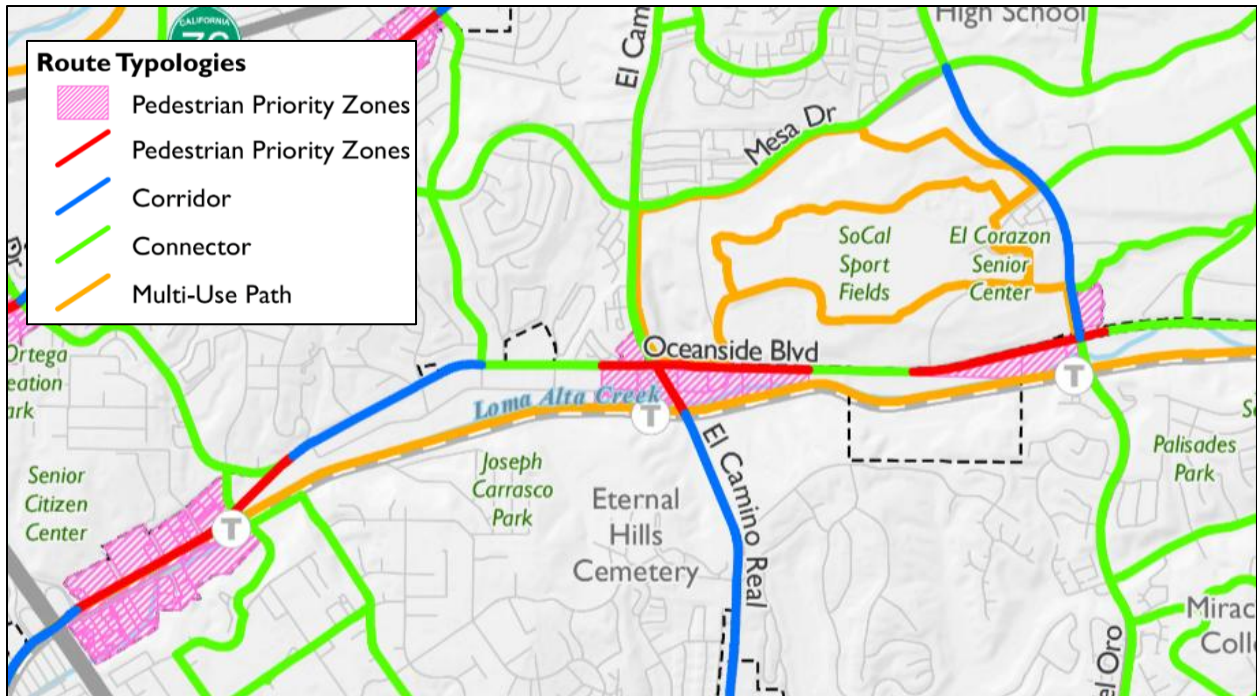


Figure 4.2 – Pedestrian Route Types



Source: City of Oceanside Public Review Draft General Plan (2024)

Figure 4.3 – Oceanside GPU Pedestrian Network



Source: City of Oceanside Public Review Draft General Plan (2024)

4.2.2 Bicycle

Within the project study area, there are existing Class II bicycle facilities along Oceanside Boulevard and El Camino Real. There are no bicycle facilities along Garrison Street. Per the Oceanside PRD GP, the following bicycle facilities, displayed in **Figure 4.4**, are planned within the project study area:

Class I

- El Camino Real, north of Oceanside Boulevard
- Oceanside Boulevard, east of El Camino Real

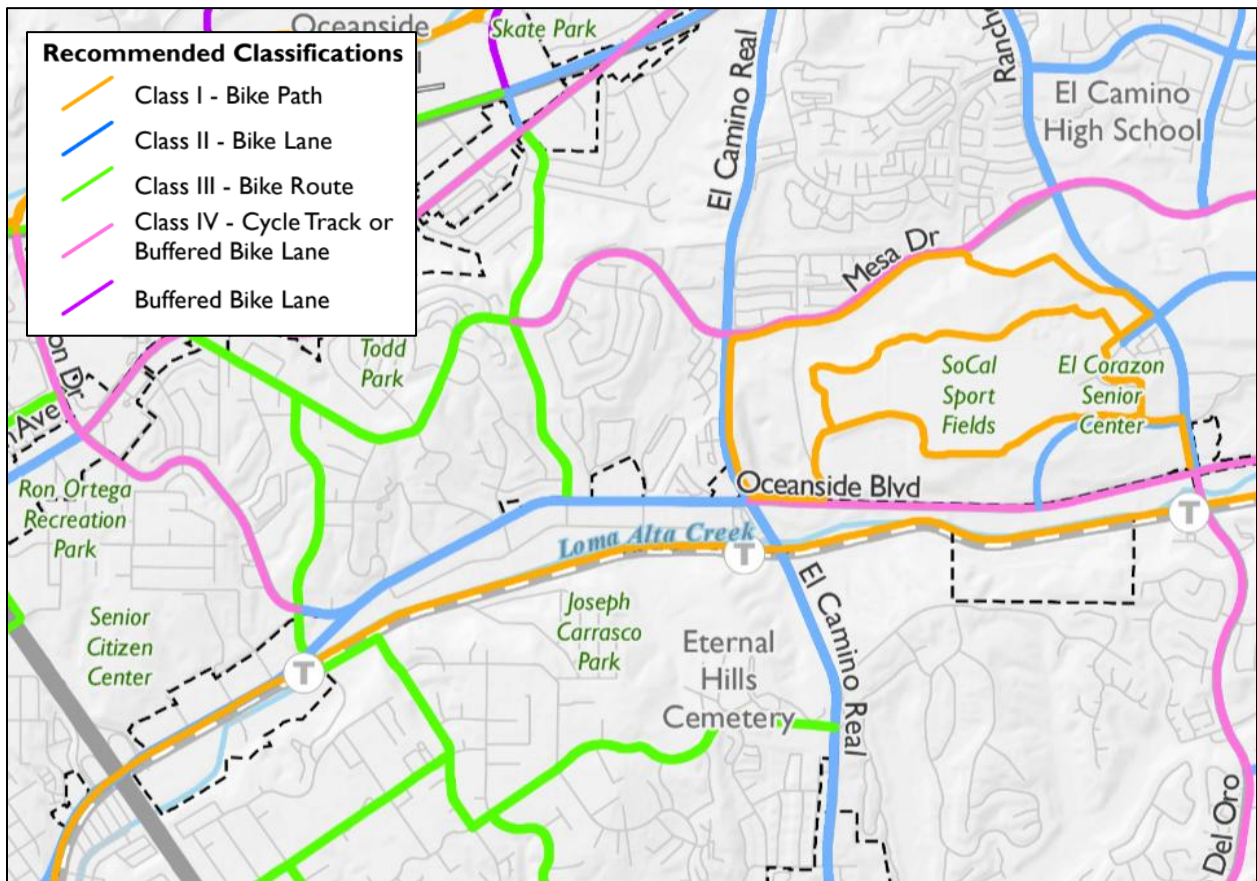
Class II

- Oceanside Boulevard, west of El Camino Real
- El Camino Real, north and south of Oceanside Boulevard

Class IV

- Oceanside Boulevard, east of El Camino Real

Figure 4.4 – Oceanside GPU Bicycle Network



Source: City of Oceanside Public Review Draft General Plan (2024)

Based on the preliminary review of the project site plan, the Project would not conflict with existing or planned bicycle facilities and would not result in any impacts to bicyclist safety and accessibility.

4.2.3 Transit

The project site is within ½-mile walking distance of the following transit lines serviced by North County Transit District (NCTD):

- Bus Route 318 - This bus route is serviced along Oceanside Boulevard in the eastbound/westbound direction within the project study area. The nearest bus stops are located along Oceanside Boulevard, both east and west of Garrison Street. This bus route connects the Oceanside Transit Center to the Vista Transit Center, and includes destinations such as Vista High School, North County Coastal Career Center, Alta Vista High School, and VA Clinic. The route operates with headways ranging between 50-70 minutes on both weekdays and weekends.

Bus route schedules are provided in **Appendix D**. An inventory of amenities present at each bus stop located within a half mile was collected. **Table 4.2** identifies the amenities provided at each transit stop.

Table 4.2 - Existing Transit Amenities

Stop ID	Stop Name	Bench	Shelter	Bus Stop Sign	ADA Accessible Pad	Connection to Adjacent Sidewalk	Trash Receptacle	Lighting	Bicycle Parking	Transit Route Information	Shading Elements	Transit System Information
20579	Oceanside Boulevard & Garrison Street (WB)	•		•		•						
20038	Oceanside Boulevard & Garrison Street (EB)			•		•						
21796	Oceanside Boulevard & El Camino Real (WB)	•		•		•						
22162	Oceanside Boulevard & El Camino Real (EB)	•		•		•						

Source: CR Associates (2024)

Based on the preliminary review of the project site plan, the Project would not conflict with existing or planned transit facilities and would not result in any impacts to transit facilities.

4.3 Existing Traffic Volumes

Traffic counts for study roadway segments and study intersections were conducted on May 23, 2024, by Elite Traffic Dynamics, LLC. **Figure 4.5** displays existing daily traffic volumes for study roadway segments and AM/PM peak hour turning movements for study intersections. Traffic count worksheets are provided in Appendix B.

4.4 Existing Traffic Conditions

LOS analyses under Existing conditions were conducted using the methodologies described in Chapter 2. Roadway segment and intersection LOS analysis results are discussed below.

4.4.1 Roadway Segment Analysis

Table 4.3 displays the roadway segment LOS analysis results for study roadway segments under Existing conditions.

Table 4.3 – Roadway Segment LOS Results – Existing Conditions

Roadway	Segment	Functional Classification	Capacity (LOS E)	ADT	LOS	V/C
Garrison Street	Northern Terminus to Oceanside Boulevard	Local Street	2,200	943	Below Capacity ¹	0.436
Oceanside Boulevard	Foussat Road to Garrison Street	4-Lane Secondary Collector w/TWLTL	30,000	26,607	E	0.887
Oceanside Boulevard	Garrison Street to El Camino Real	4-Lane Secondary Collector w/TWLTL	30,000	26,264	E	0.875

Source: CR Associates (2024)

Note:

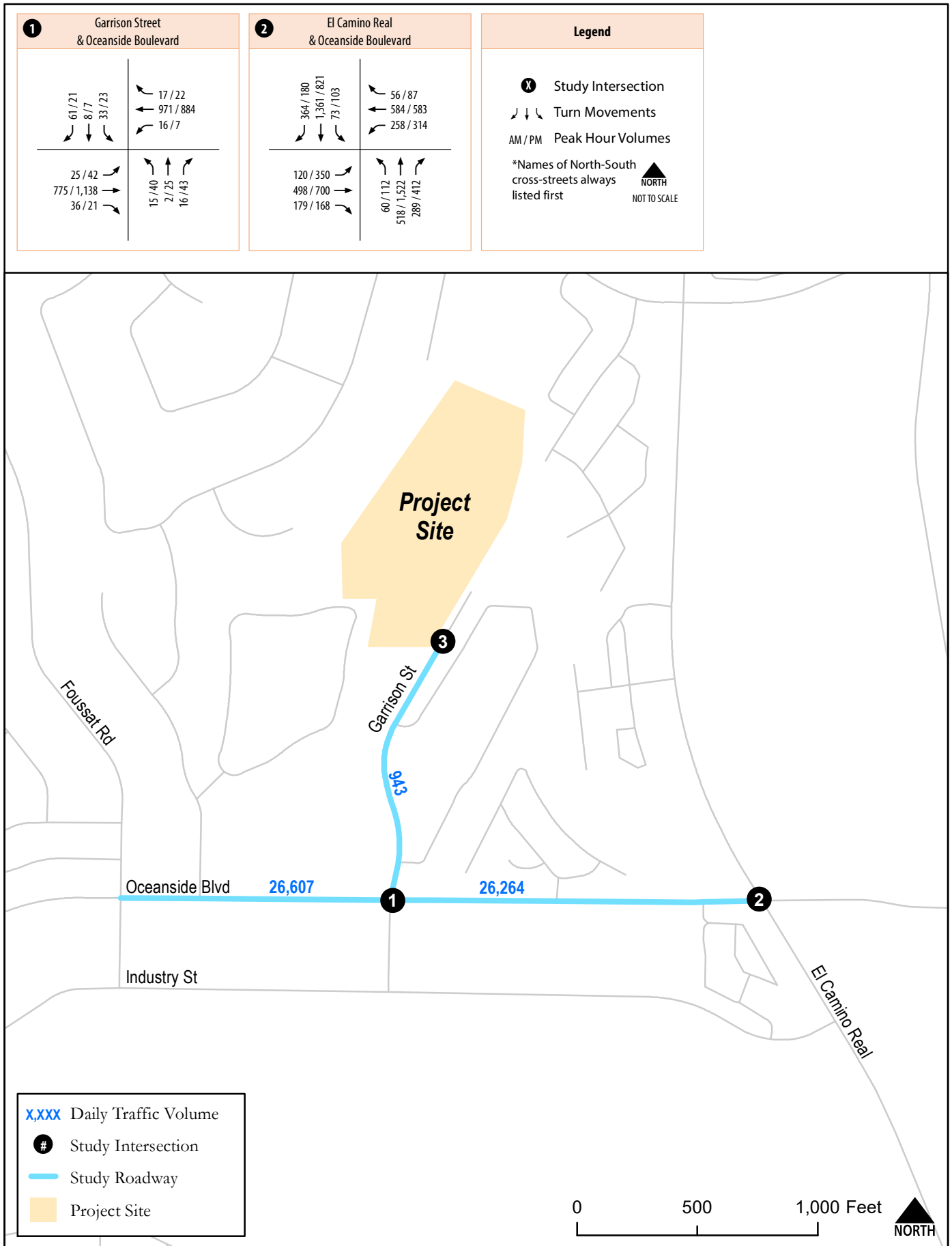
TWLTL = Two-Way Left-Turn Lane.

V/C = Volume-to-Capacity.

Bold indicates substandard LOS E or LOS F.

¹ Per the City’s TIAG, Local Streets have a threshold of 2,200 for LOS C. If the ADT falls below the threshold, the roadway segment operates “Below Capacity”. If the ADT falls above the threshold, the roadway segment operates “Above Capacity”.

As shown, Garrison Street currently operates below capacity, whereas Oceanside Boulevard currently operates at LOS E.



4.4.2 Intersection Analysis

Table 4.4 displays intersection LOS and average vehicle delay results for the study intersections under Existing conditions. LOS calculation worksheets for Existing conditions are provided in **Appendix E**.

Table 4.4 – Peak Hour Intersection LOS Results – Existing Conditions

#	Intersection	Control Type	Peak Hour	Avg. Delay (sec.)	LOS
1	Garrison Street & Oceanside Boulevard	Signal	AM	16.9	B
			PM	19.3	B
2	El Camino Real & Oceanside Boulevard	Signal	AM	57.4	E
			PM	59.8	E

Source: CR Associates (2024)

Note:

Bold indicates substandard LOS E or LOS F.

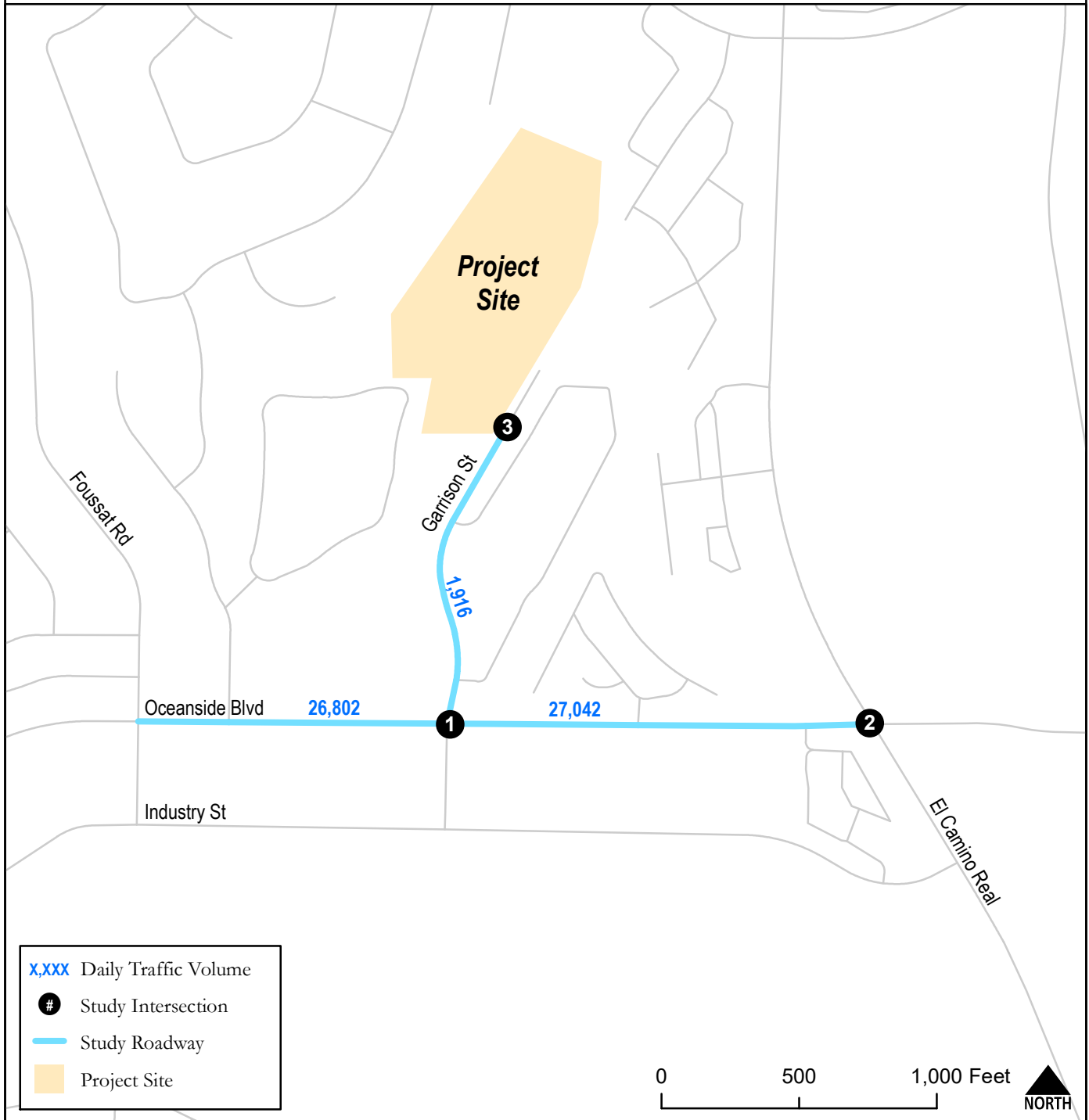
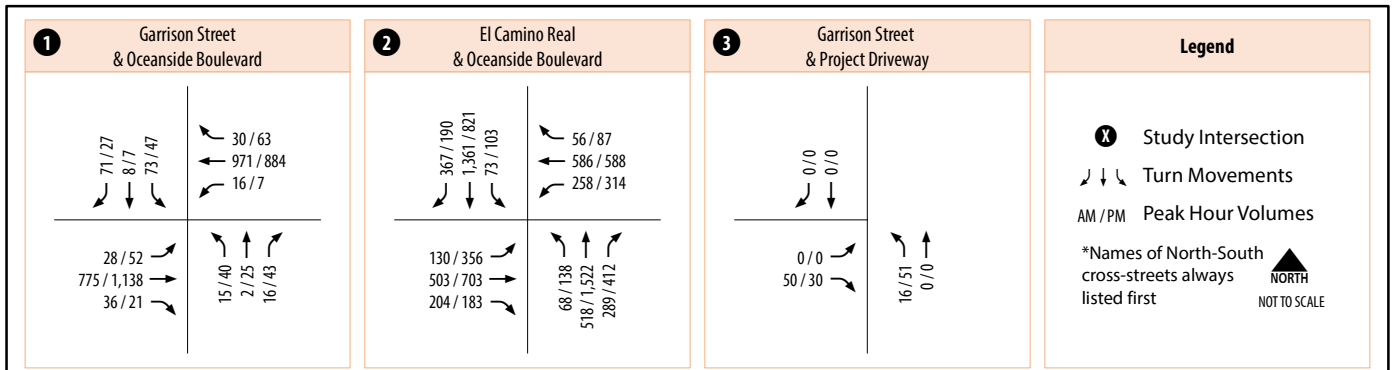
As shown, the intersection of Garrison Street & Oceanside Boulevard currently operates at LOS B during both the AM and PM peak hours. However, the intersection of El Camino Real & Oceanside Boulevard currently operates at LOS E during both the AM and PM peak hours.

4.5 Existing with Project Transportation Network and Traffic Volumes

Functional classifications and intersection geometrics under Existing with Project conditions were assumed to be identical to Existing conditions, with the exception of the following:

- Construction of Project Driveway, intersecting with Garrison Street.

Daily roadway segment and AM/PM peak hour intersection volumes for Existing with Project conditions were derived by combining the Project’s trip assignment (Figure 3.2) with the traffic volumes under Existing conditions (Figure 4.5). Peak hour intersection volumes under Existing with Project conditions are displayed in **Figure 4.6**.



4.6 Existing with Project Traffic Conditions

LOS analyses under Existing with Project conditions were conducted using the methodologies described in Chapter 2. Roadway segment and intersection LOS analysis results are discussed below.

4.6.1 Roadway Segment Analysis

Table 4.5 displays the roadway segment LOS analysis results for study roadway segments under Existing with Project conditions.

As shown, the study roadway segments are projected to continue to operate similar to Existing conditions, with Garrison Street operating below capacity and Oceanside Boulevard operating at LOS E. However, it should be noted that implementation of the Project increases the V/C ratio for Oceanside Boulevard, between Garrison Street and El Camino Real, by 0.026. This exceeds the threshold of 0.02 for roadway segments already operating at unacceptable LOS as shown in Table 2.5. Improvements are required to improve LOS to acceptable or pre-project conditions.

4.6.2 Intersection Analysis

Table 4.6 displays intersection LOS and average vehicle delay results for the study intersections under Existing with Project conditions. LOS calculation worksheets for Existing with Project conditions are provided in **Appendix F**.

As shown, all study intersections are projected to operate at acceptable LOS C or better under Existing with Project conditions, with the exception of the intersection of El Camino Real & Oceanside Boulevard. This intersection currently operates at unacceptable LOS E and implementation of the Project does not increase the average delay by more than 2.0 seconds. Therefore, no study intersections are anticipated to degrade in LOS to unacceptable levels and no improvements will be required.

Table 4.5 – Roadway Segment LOS Results – Existing with Project Conditions

Roadway	Segment	Functional Classification	Capacity (LOS E)	Existing			Existing with Project			ΔV/C	Improvement Required?
				ADT	LOS	V/C	ADT	LOS	V/C		
Garrison Street	Northern Terminus to Oceanside Boulevard	Local Street	2,200	943	Below Capacity ¹	0.429	1,916	Below Capacity ¹	0.871	0.442	No
Oceanside Boulevard	Foussat Road to Garrison Street	4-Lane Secondary Collector w/TWLTL	30,000	26,607	E	0.887	26,802	E	0.893	0.006	No
Oceanside Boulevard	Garrison Street to El Camino Real	4-Lane Secondary Collector w/TWLTL	30,000	26,264	E	0.875	27,042	E	0.901	0.026	Yes

Source: CR Associates (2024)

Note:

TWLTL = Two-Way Left-Turn Lane.

V/C = Volume-to-Capacity.

Bold indicates substandard LOS E or LOS F.

¹ Per the City's TIAG, Local Streets have a threshold of 2,200 for LOS C. If the ADT falls below the threshold, the roadway segment operates "Below Capacity". If the ADT falls above the threshold, the roadway segment operates "Above Capacity".

Table 4.6 – Peak Hour Intersection LOS Results – Existing with Project Conditions

#	Intersection	Control Type	Peak Hour	Existing		Existing with Project		Δ	Improvement Required?
				Avg. Delay (sec.)	LOS	Avg. Delay (sec.)	LOS		
1	Garrison Street & Oceanside Boulevard	Signal	AM	16.9	B	24.6	C	7.7	No
			PM	19.3	B	21.1	C	1.8	
2	El Camino Real & Oceanside Boulevard	Signal	AM	57.4	E	58.6	E	1.2	No
			PM	59.8	E	61.0	E	1.2	
3	Project Driveway & Garrison Street	SSSC	AM	N/A	N/A	8.5	A	8.5	No
			PM	N/A	N/A	8.4	A	8.4	

Source: CR Associates (2024)

Notes:

SSSC = Side-Street Stop-Controlled. For SSSC intersections, the delay shown is the worst delay experienced by any of the movements.

Bold indicates substandard LOS E or LOS F.

5.0 Opening Year (2027) Conditions

This section provides an analysis of Near-Term Year 2025 Base traffic conditions both with and without the Project. The scenarios analyzed in this section include:

- Opening Year (2027)
- Opening Year (2027) with Project

5.1 Cumulative Project Traffic

The Project is in a generally suburban area surrounded by residential and commercial areas. However, there are several significant nearby developments that will contribute vehicular traffic to the project study area roadways and intersections. A comprehensive list of nearby developments was compiled using the City of Oceanside Planning Projects Map Viewer. This initial list was subsequently refined through collaboration with City staff to determine the current status (approved, under construction, or built) of each project and its potential to add trips to the project study area.

The trip generation for projects, and components of partially constructed projects, that were recently completed were included, as their associated traffic volumes were not reflected under Existing conditions. For projects under partial construction, the projected trip generation was adjusted to reflect their current development phase. **Figure 5.1** displays the locations of these projects. **Table 5.1** displays the projected trip generation for these projects.

As shown, the cumulative projects would generate a combined total of 49,243 daily trips, with 3,234 occurring during the AM peak hour (1,694 inbound and 1,540 outbound) and 4,147 occurring during the PM peak hour (2,134 inbound and 2,013 outbound). **Figure 5.2** displays the roadway and peak hour intersection volumes for these projects.

Table 5.1 – Cumulative Project Trip Generation

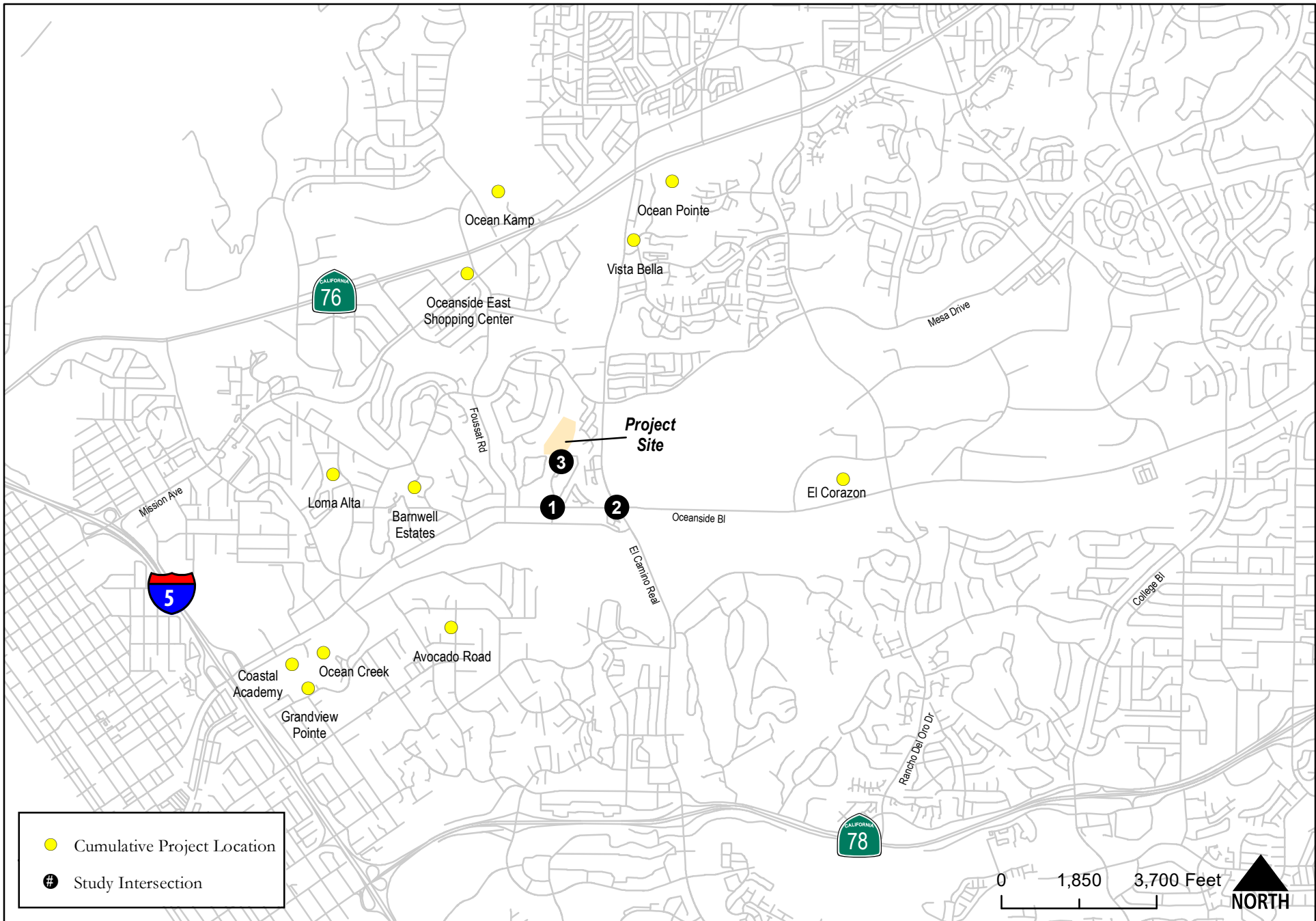
Cumulative Project	Land Use	Density/Size	Daily Trips	AM Peak Hour (In/Out)	PM Peak Hour (In/Out)	Status
Avocado Road	Multi-Family Residential	19 DU	137	9 (2-in/7-out)	11 (6-in/5-out)	Built ¹
Barnwell Estates	Single-Family Residential	7 DU	84	7 (2-in/5-out)	8 (6-in/2-out)	Built ¹
Coastal Academy	Charter School	1,200 Students	-921	120 (16-in/104-out)	-152 (-22-in/-130-out)	Built ¹
El Corazon ²	Mixed Use	268 DU 9.1 Acre Hotel 43.8 KSF Commercial/Retail 15.1 KSF Warehouse 350.45 KSF R&D 5.5 KSF Civic Services 97.75 KSF Office 99 Acres Active Park 99 Acres Passive Park	20,188	1,447 (1,009-in/438-out)	2,007 (792-in/1,215-out)	Under Construction
Grandview Pointe	Multi-Family Residential	28 DU	260	22 (7-in/15-out)	26 (19-in/7-out)	Built ¹
Loma Alta Terraces	Multi-Family Residential	13 DU	104	8 (2-in/6-out)	10 (6-in/4-out)	Approved
Ocean Creek	Mixed Use	395 DU 3.0 KSF Commercial/Retail	3,075	199 (71-in/128-out)	210 (132-in/78-out)	Under Construction
Oceanside East Shopping Center	Commercial/Retail	Gas Station (12 vfs) 1 Automatic Car Wash 2.5 KSF Fast-Food w/Drive Through 2.32 KSF Sit-Down Restaurant 3.48 KSF Commercial/Retail 4.5 KSF Tire Store	5,068	214 (109-in/105-out)	273 (139-in/134-out)	Under Construction
Ocean Kamp	Mixed Use	300 Hotel Rooms 700 DU 126 KSF Commercial/Retail 1 Surf Lagoon/Resort	19,040	1,057 (453-in/604-out)	1,532 (902-in/630-out)	Under Construction
Ocean Pointe	Multi-Family Residential	200 DU	1,600	128 (26-in/102-out)	160 (112-in/48-out)	Under Construction
Vista Bella	Mixed Use	73 DU 3.7 KSF Commercial/Retail	608	23 (-3-in/26-out)	62 (42-in/20-out)	Approved
Cumulative Total			49,243	3,234 (1,694 in/1,540-out)	4,147 (2,134 in/2,013-out)	

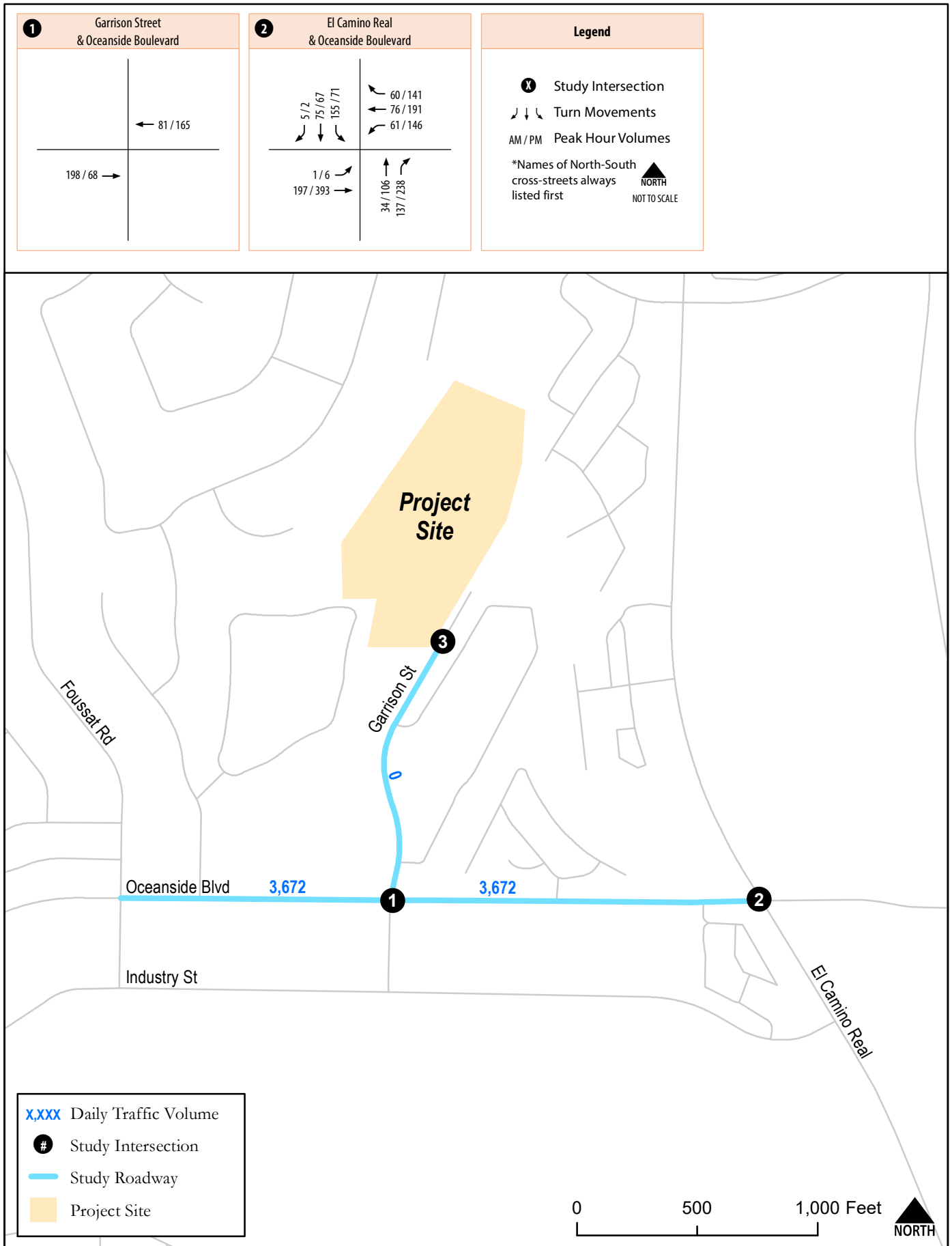
Source: CR Associates (2024)

Note:

¹ This project was recently completed. However, its associated traffic is included under Opening Year (2027) conditions since it is not reflected under Existing conditions.

² El Corazon is partially built. The land uses in this table represent the components that are currently unbuilt (hotel, commercial/retail, warehouse, R&D, civic services, office, active/passive park) and the component that was recently completed (multi-family dwelling units). The components that are complete and operational, such as Frontwave Arena and the senior center facilities are not included.





5.2 Opening Year (2027) Roadway Network and Traffic Volumes

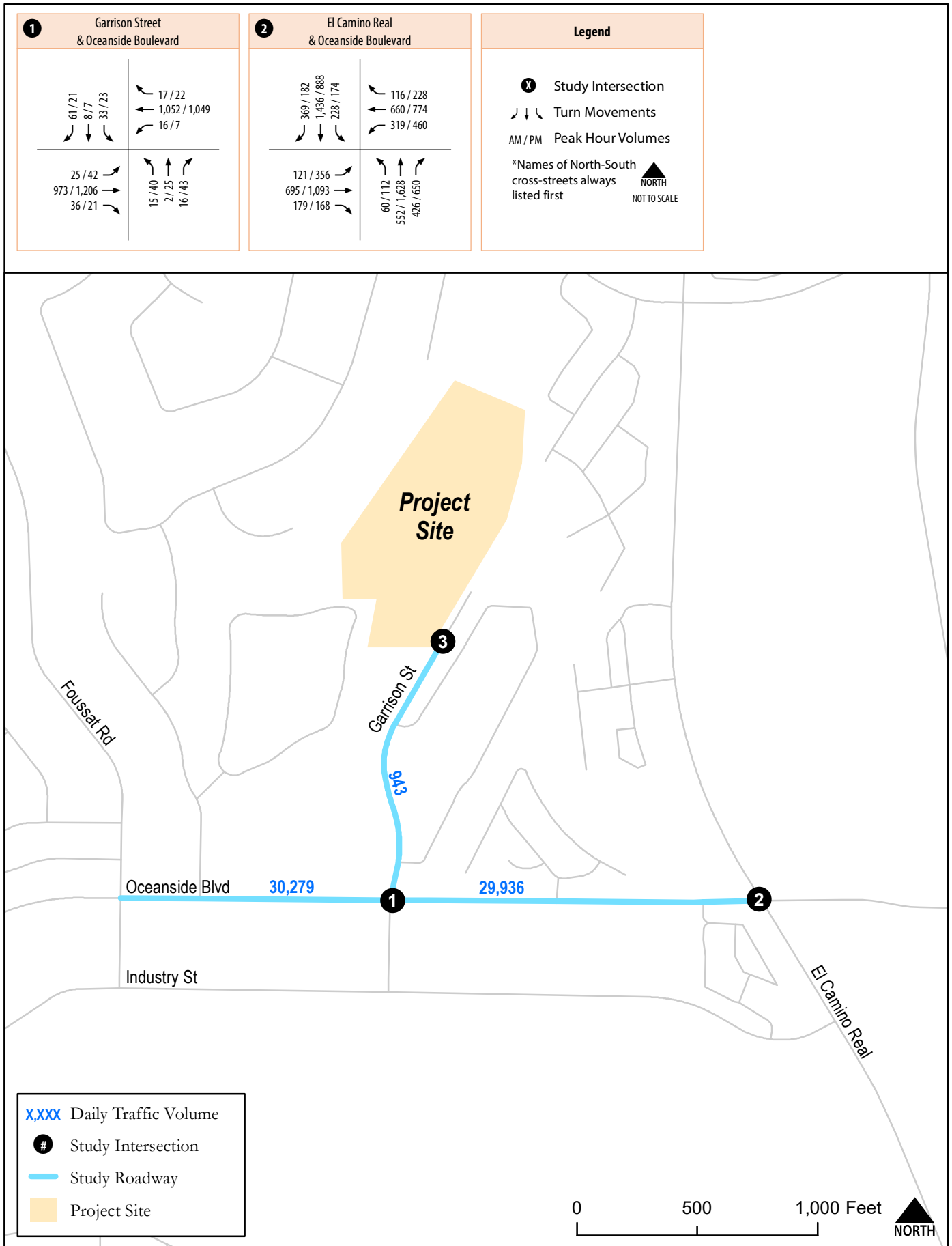
Roadway Network

Roadway functional classifications and intersection geometrics under Opening Year (2027) conditions were assumed to be identical to the Existing conditions.

Traffic Volumes

Opening Year (2027) scenario traffic volumes were derived by combining the trips generated by the cumulative projects listed in section 5.1 to the existing traffic volumes.

Traffic volume calculations for Opening Year (2027) conditions are included in **Appendix G**. Daily roadway and peak hour intersection volumes for this scenario are displayed in **Figure 5.3**.



5.3 Opening Year (2027) Traffic Conditions

LOS analyses under Opening Year (2027) conditions were conducted using the methodologies described in Chapter 2. Roadway segment and intersection LOS analysis results are discussed below.

5.3.1 Roadway Segment Analysis

Table 5.2 displays the roadway segment LOS analysis results for study roadway segments under Existing conditions.

Table 5.2 – Roadway Segment LOS Results – Opening Year (2027) Conditions

Roadway	Segment	Functional Classification	Capacity (LOS E)	ADT	LOS	V/C
Garrison Street	Northern Terminus to Oceanside Boulevard	Local Street	2,200	943	Below Capacity ¹	0.429
Oceanside Boulevard	Foussat Road to Garrison Street	4-Lane Secondary Collector w/TWLTL	30,000	30,279	F	1.009
Oceanside Boulevard	Garrison Street to El Camino Real	4-Lane Secondary Collector w/TWLTL	30,000	29,936	E	0.998

Source: CR Associates (2024)

Note:

TWLTL = Two-Way Left-Turn Lane.

V/C = Volume-to-Capacity.

Bold indicates substandard LOS E or LOS F.

¹ Per the City’s TIAG, Local Streets have a threshold of 2,200 for LOS C. If the ADT falls below the threshold, the roadway segment operates “Below Capacity”. If the ADT falls above the threshold, the roadway segment operates “Above Capacity”.

As shown, Garrison Street is projected to operate below capacity, whereas the two segments of Oceanside Boulevard are projected to operate at LOS F and E respectively.

5.3.2 Intersection Analysis

Table 5.3 displays intersection LOS and average vehicle delay results for the study intersections under Opening Year (2027) conditions. LOS calculation worksheets for Opening Year (2027) conditions are provided in **Appendix H**.

Table 5.3 – Peak Hour Intersection LOS Results – Opening Year (2027) Conditions

#	Intersection	Control Type	Peak Hour	Avg. Delay (sec.)	LOS
1	Garrison Street & Oceanside Boulevard	Signal	AM	17.7	B
			PM	19.8	B
2	El Camino Real & Oceanside Boulevard	Signal	AM	90.1	F
			PM	100.9	F

Source: CR Associates (2024)

Note:

Bold indicates substandard LOS E or LOS F.

As shown, the intersection of Garrison Street & Oceanside Boulevard is projected to operate at LOS B during both the AM and PM peak hours. However, the intersection of El Camino Real & Oceanside Boulevard is projected to operate at LOS F during both the AM and PM peak hours.

5.4 Opening Year (2027) with Project Transportation Network and Traffic Volumes

Functional classifications and intersection geometrics under Opening Year (2027) with Project conditions were assumed to be identical to Opening Year (2027) conditions, with the exception of the following:

- Construction of Project Driveway, intersecting with Garrison Street.

Daily roadway segment and AM/PM peak hour intersection volumes for Opening year (2027) with Project conditions were derived by combining the Project's trip assignment (Figure 3.2) with the traffic volumes under Opening Year (2027) conditions (Figure 5.1). Peak hour intersection volumes under Opening Year (2027) with Project conditions are displayed in **Figure 5.4**.

5.5 Opening Year (2027) with Project Traffic Conditions

LOS analyses under Opening Year (2027) with Project conditions were conducted using the methodologies described in Chapter 2. Roadway segment and intersection LOS analysis results are discussed below.

5.5.1 Roadway Segment Analysis

Table 5.4 displays the roadway segment LOS analysis results for study roadway segments under Opening Year (2027) with Project conditions.

As shown, the study roadway segments are expected to continue operating similarly to conditions projected for the Opening Year (2027), with Garrison Street operating below capacity and Oceanside Boulevard at LOS F. It should be noted, however, that the Project increases the volume-to-capacity (V/C) ratio for Oceanside Boulevard, between Garrison Street and El Camino Real, by 0.026. This exceeds the threshold of 0.02 for roadway segments already operating at unacceptable LOS as shown in Table 2.5. Improvements are required to improve LOS to acceptable or pre-project conditions.

5.5.2 Intersection Analysis

Table 5.5 displays intersection LOS and average vehicle delay results for the study intersections under Opening Year (2027) with Project conditions. LOS calculation worksheets for Opening Year (2027) with Project conditions are provided in **Appendix J**.

As shown, all study intersections are projected to operate at acceptable LOS C or better under Opening Year (2027) with Project conditions, with the exception of the intersection of El Camino Real & Oceanside Boulevard. This intersection is projected to operate at unacceptable LOS F and implementation of the Project does not increase the average delay by more than 2.0 seconds. Therefore, no study intersections are anticipated to degrade in LOS to unacceptable levels and no improvements will be required.

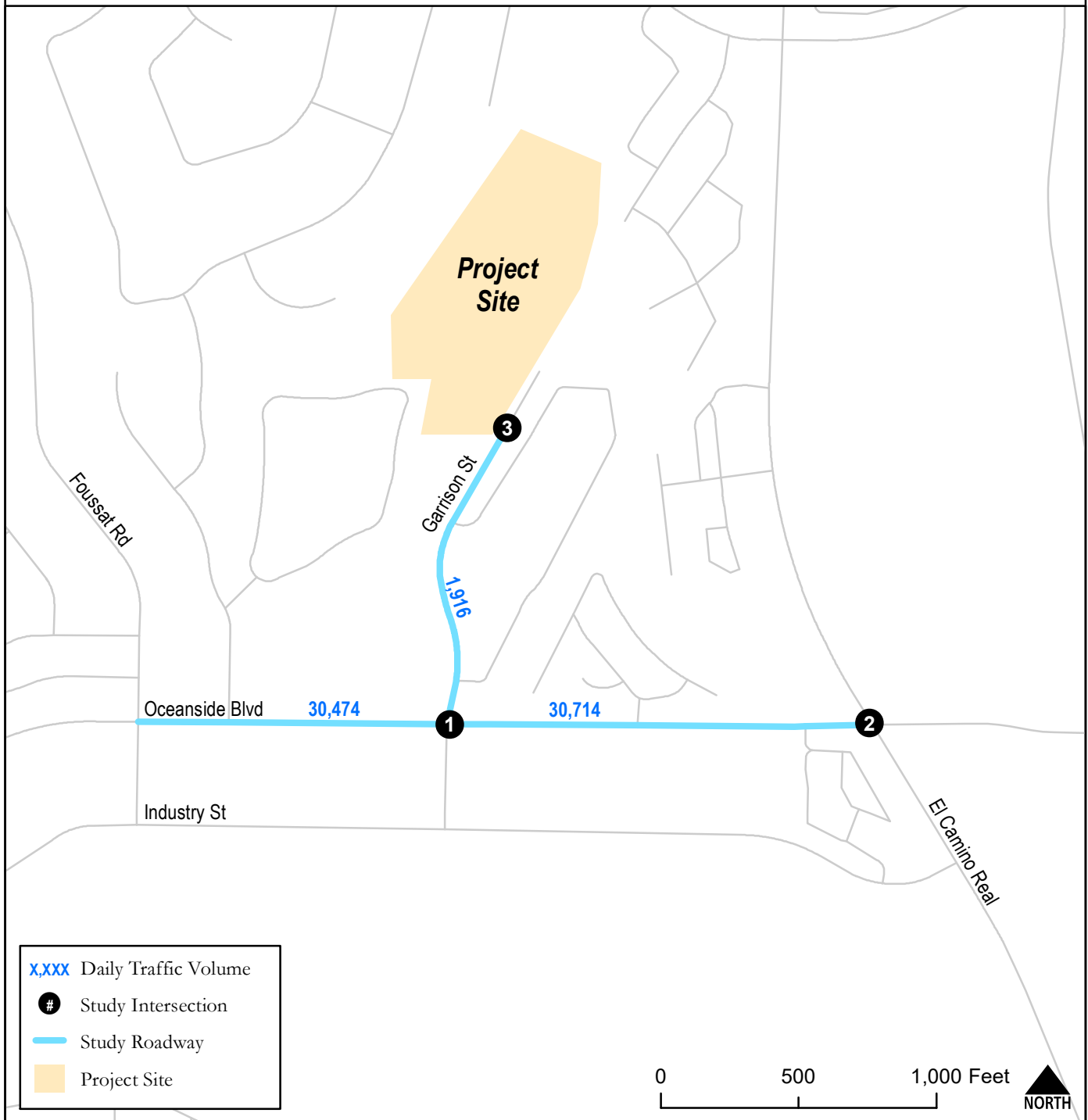
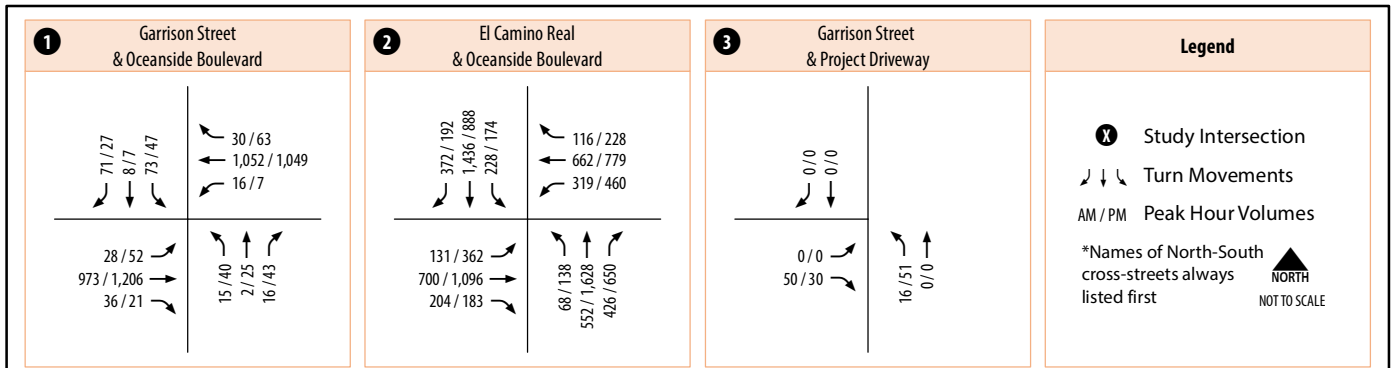


Table 5.4 – Roadway Segment LOS Results – Opening Year (2027) with Project Conditions

Roadway	Segment	Functional Classification	Capacity (LOS E)	Opening Year (2027)			Opening Year (2027) with Project			ΔV/C	Improvement Required?
				ADT	LOS	V/C	ADT	LOS	V/C		
Garrison Street	Northern Terminus to Oceanside Boulevard	Local Street	2,200	943	Below Capacity ¹	0.429	1,916	Below Capacity ¹	0.871	0.442	No
Oceanside Boulevard	Foussat Road to Garrison Street	4-Lane Secondary Collector w/TWLTL	30,000	30,279	F	1.009	30,474	F	1.016	0.007	No
Oceanside Boulevard	Garrison Street to El Camino Real	4-Lane Secondary Collector w/TWLTL	30,000	29,936	E	0.998	30,714	F	1.024	0.026	Yes

Source: CR Associates (2024)

Note:

TWLTL = Two-Way Left-Turn Lane.

V/C = Volume-to-Capacity.

Bold indicates substandard LOS E or LOS F.

¹ Per the City's TIAG, Local Streets have a threshold of 2,200 for LOS C. If the ADT falls below the threshold, the roadway segment operates "Below Capacity". If the ADT falls above the threshold, the roadway segment operates "Above Capacity".

Table 5.6 – Peak Hour Intersection LOS Results – Opening Year (2027) with Project Conditions

#	Intersection	Control Type	Peak Hour	Opening Year (2027)		Opening Year (2027) with Project		Δ	Improvement Required?
				Avg. Delay (sec.)	LOS	Avg. Delay (sec.)	LOS		
1	Garrison Street & Oceanside Boulevard	Signal	AM	17.7	B	24.4	C	6.7	No
			PM	19.8	B	21.5	C	1.7	
2	El Camino Real & Oceanside Boulevard	Signal	AM	90.1	F	91.1	F	1.0	No
			PM	100.9	F	101.8	F	0.9	
3	Project Driveway & Garrison Street	SSSC	AM	N/A	N/A	8.5	A	8.5	No
			PM	N/A	N/A	8.4	A	8.4	

Source: CR Associates (2024)

Notes:

SSSC = Side-Street Stop-Controlled. For SSSC intersections, the delay shown is the worst delay experienced by any of the movements.

Bold indicates substandard LOS E or LOS F.

6.0 Horizon Year (2050) Conditions

This section provides an analysis of Horizon Year (2050) traffic conditions both with and without the Project. The scenarios analyzed in this section include:

- Horizon Year (2050)
- Horizon Year (2050) with Project

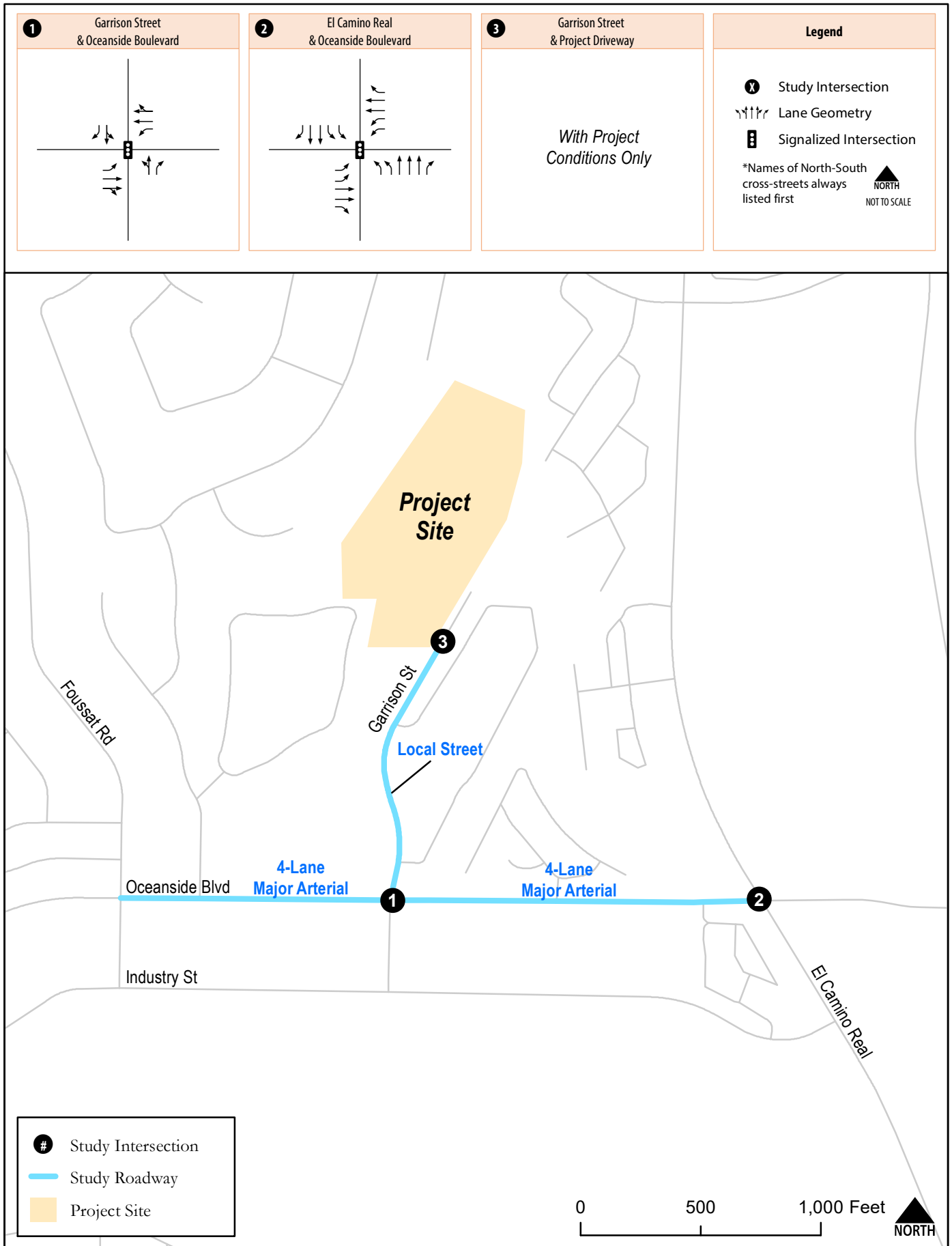
6.1 Horizon Year (2050) Roadway Network and Traffic Volumes

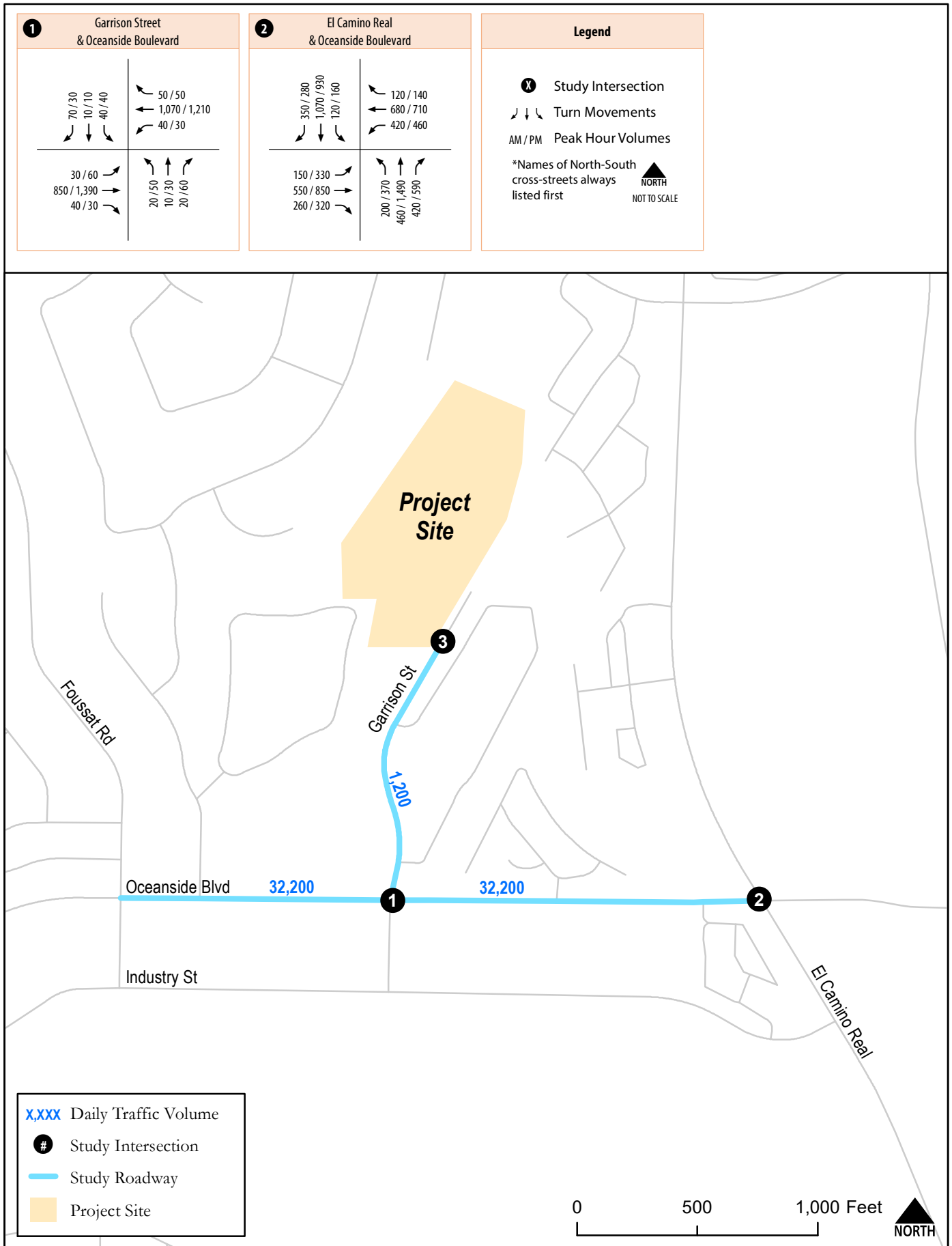
Functional classifications and intersection geometrics under Horizon Year (2050) conditions were obtained from the Oceanside PRD GP, which identifies the ultimate classifications of mobility network roadways. The following are changes to the roadway network when compared to Existing conditions:

- Oceanside Boulevard, between Foussat Road and Garrison Street – Per the Oceanside PRD GP, this segment of Oceanside Boulevard is classified as a 4-Lane Major Arterial.
- Oceanside Boulevard, between Garrison Street and El Camino Real – Per the Oceanside PRD GP, this segment of Oceanside Boulevard is classified as a 4-Lane Major Arterial.

Functional classifications and intersection geometrics under Horizon Year (2050) conditions are displayed in **Figure 6.1**

Traffic volumes under Horizon Year (2050) conditions were derived from the Oceanside PRD GP, with the exception of Garrison Street and the intersection of Garrison Street & Oceanside Boulevard, which were not evaluated in the Oceanside PRD GP. Traffic volumes for these locations were estimated based on the growth observed at adjacent facilities and the surrounding land uses. Daily roadway and peak hour intersection volumes for this scenario are displayed in **Figure 6.2**.





6.2 Horizon Year (2050) Traffic Conditions

LOS analyses under Horizon Year (2050) conditions were conducted using the methodologies described in Chapter 2. Roadway segment and intersection LOS analysis results are discussed below.

6.2.1 Roadway Segment Analysis

Table 6.1 displays the roadway segment LOS analysis results for study roadway segments under Horizon Year (2050) conditions.

Table 6.1 – Roadway Segment LOS Results – Horizon Year (2050) Conditions

Roadway	Segment	Functional Classification	Capacity (LOS E)	ADT	LOS	V/C
Garrison Street	Northern Terminus to Oceanside Boulevard	Local Street	2,200	1,200	Below Capacity ¹	0.545
Oceanside Boulevard	Foussat Road to Garrison Street	4-Lane Major Arterial	40,000	32,200	D	0.805
Oceanside Boulevard	Garrison Street to El Camino Real	4-Lane Major Arterial	40,000	32,200	D	0.805

Source: CR Associates (2024)

Note:

TWLT = Two-Way Left-Turn Lane.

V/C = Volume-to-Capacity.

Bold indicates substandard LOS E or LOS F.

¹ Per the City’s TIAG, Local Streets have a threshold of 2,200 for LOS C. If the ADT falls below the threshold, the roadway segment operates “Below Capacity”. If the ADT falls above the threshold, the roadway segment operates “Above Capacity”.

As shown, Garrison Street is projected to operate below capacity, whereas Oceanside Boulevard is projected to operate at LOS E.

6.2.2 Intersection Analysis

Table 6.2 displays intersection LOS and average vehicle delay results for the study intersections under Horizon Year (2050) conditions. LOS calculation worksheets for Horizon Year (2050) conditions are provided in **Appendix K**.

Table 6.2 – Peak Hour Intersection LOS Results – Horizon Year (2050) Conditions

#	Intersection	Control Type	Peak Hour	Avg. Delay (sec.)	LOS
1	Garrison Street & Oceanside Boulevard	Signal	AM	18.9	B
			PM	26.3	C
2	El Camino Real & Oceanside Boulevard	Signal	AM	48.0	D
			PM	60.3	E

Source: CR Associates (2024)

Note:

Bold indicates substandard LOS E or LOS F.

As shown, the intersection of Garrison Street & Oceanside Boulevard is projected to operate at LOS C or better during the AM and PM peak hours. However, the intersection of El Camino Real & Oceanside Boulevard is projected to operate at LOS E during the PM peak hour.

6.3 Horizon Year (2050) with Project Transportation Network and Traffic Volumes

Functional classifications and intersection geometrics under Horizon Year (2050) with Project conditions were assumed to be identical to Horizon Year (2050) conditions, with the exception of the following:

- Construction of Project Driveway, intersecting with Garrison Street.

Daily roadway segment and AM/PM peak hour intersection volumes for Horizon Year (2050) with Project conditions were derived by combining the Project's trip assignment (Figure 3.2) with the traffic volumes under Horizon Year (2050) conditions (Figure 6.2). Daily roadway segment and AM/PM peak hour intersection volumes under Horizon Year (2050) with Project conditions are displayed in **Figure 6.3**.

6.4 Horizon Year (2050) with Project Traffic Conditions

LOS analyses under Horizon Year (2050) with Project conditions were conducted using the methodologies described in Chapter 2. Roadway segment and intersection LOS analysis results are discussed below.

6.4.1 Roadway Segment Analysis

Table 6.3 displays the roadway segment LOS analysis results for study roadway segments under Horizon Year (2050) with Project conditions.

As shown, all study roadway segments are projected to continue to operate similar to Horizon Year (2050) conditions, with Garrison Street operating below capacity and Oceanside Boulevard operating at LOS D.

6.4.2 Intersection Analysis

Table 6.4 displays intersection LOS and average vehicle delay results for the study intersections under Horizon Year (2050) with Project conditions. LOS calculation worksheets for Horizon Year (2050) with Project conditions are provided in **Appendix L**.

As shown, all study intersections are projected to operate at acceptable LOS D or better under Horizon Year (2050) with Project conditions, with the exception of the intersection of El Camino Real & Oceanside Boulevard. This intersection is projected to operate at unacceptable LOS E during the PM peak hour and implementation of the Project does not increase the average delay by more than 2.0 seconds.

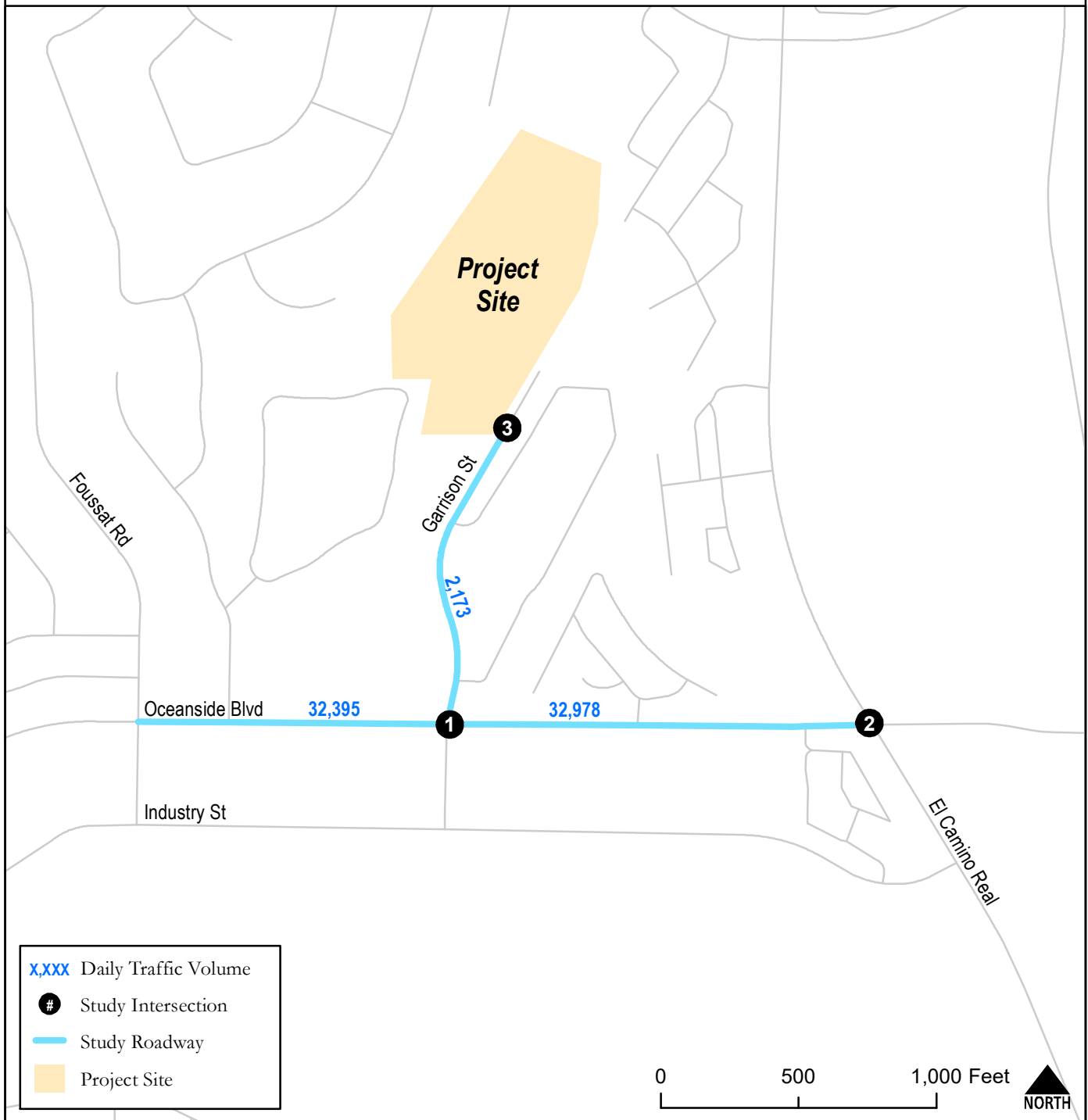
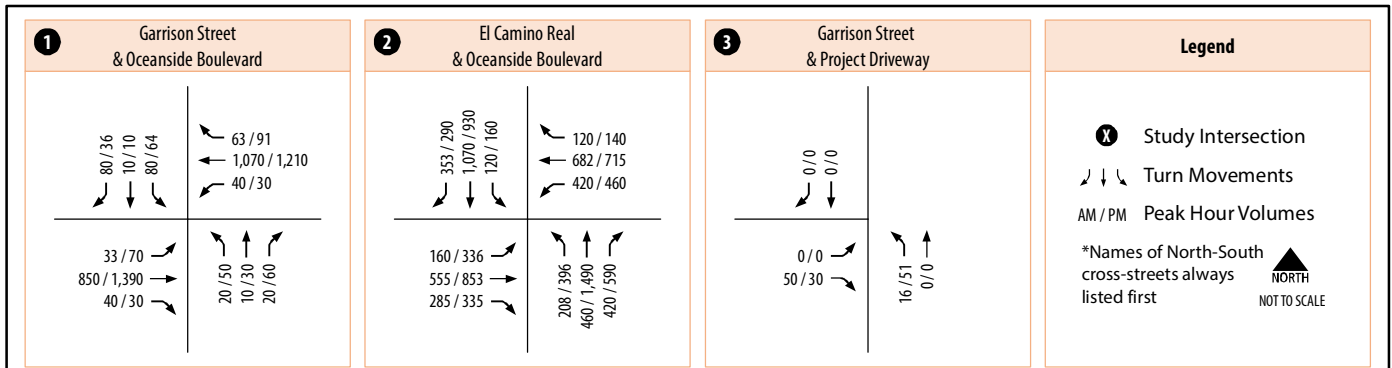


Table 6.3 – Roadway Segment LOS Results – Horizon Year (2050) with Project Conditions

Roadway	Segment	Functional Classification	Capacity (LOS E)	Horizon Year (2050)			Horizon Year (2050) with Project			ΔV/C	Improvement Required?
				ADT	LOS	V/C	ADT	LOS	V/C		
Garrison Street	Northern Terminus to Oceanside Boulevard	Local Street	2,200	1,200	Below Capacity ¹	0.545	2,173	Below Capacity ¹	0.988	0.442	No
Oceanside Boulevard	Foussat Road to Garrison Street	4-Lane Major Arterial	40,000	32,200	D	0.805	32,395	D	0.810	0.005	No
Oceanside Boulevard	Garrison Street to El Camino Real	4-Lane Major Arterial	40,000	32,200	D	0.805	32,978	D	0.824	0.019	No

Source: CR Associates (2024)

Note:

TWTL = Two-Way Left-Turn Lane.

V/C = Volume-to-Capacity.

Bold indicates substandard LOS E or LOS F.

¹ Per the City's TIAG, Local Streets have a threshold of 2,200 for LOS C. If the ADT falls below the threshold, the roadway segment operates "Below Capacity". If the ADT falls above the threshold, the roadway segment operates "Above Capacity".

Table 6.4 – Peak Hour Intersection LOS Results – Horizon Year (2050) with Project Conditions

#	Intersection	Control Type	Peak Hour	Horizon Year (2050)		Horizon Year (2050) with Project		Δ	Improvement Required?
				Avg. Delay (sec.)	LOS	Avg. Delay (sec.)	LOS		
1	Garrison Street & Oceanside Boulevard	Signal	AM	18.9	B	27.3	C	8.4	No
			PM	26.3	C	29.6	C	3.3	
2	El Camino Real & Oceanside Boulevard	Signal	AM	48.0	D	48.8	D	0.8	No
			PM	60.3	E	61.9	E	1.6	
3	Project Driveway & Garrison Street	SSSC	AM	N/A	N/A	8.5	A	8.5	No
			PM	N/A	N/A	8.4	A	8.4	

Source: CR Associates (2024)

Notes:

SSSC = Side-Street Stop-Controlled. For SSSC intersections, the delay shown is the worst delay experienced by any of the movements.

Bold indicates substandard LOS E or LOS F.

7.0 LOS Impacts and Improvement Requirements

This chapter provides improvements requirements needed to improve LOS to acceptable or pre-project conditions for any roadway segments or intersections found to operate unacceptably with implementation of the Project.

7.1 Roadway Segments

Based on the roadway segment analysis results, implementation of the Project triggers the need for roadway segment improvements under Existing with Project and Opening Year (2027) with Project conditions for the following roadway segment:

- Oceanside Boulevard, between Garrison Street and El Camino Real

To mitigate the Project's impact, the project proposes to provide and install (100% responsibility) a complete NoTraffic system at the intersection of Garrison Street & Oceanside Boulevard, including the installation of fiber optic communication from Oceanside Boulevard & El Camino Real to Oceanside Boulevard & Garrison Street. This improvement shall be completed prior to the issuance of occupancy and to the satisfaction of the City Traffic Engineer.

7.2 Intersections

Based on the intersection analysis results, implementation of the Project does not trigger the need for intersection improvements.

8.0 Site Access and Circulation

This chapter addresses access to the project site and discusses the functionality of the Project's internal circulation.

8.1 Driveway Access

The Project will be located at the northern terminus of Garrison Street. The project site is currently vacant and used to serve as the Garrison Elementary School. The property is bordered by residential land uses on all sides. The Project will be accessed via a new driveway located along the west side of Garrison Street. The project driveway will function as a side-street stop-controlled intersection with full access. This driveway is projected to operate at LOS A under all study scenarios. A secondary emergency only access road will be located at the northern terminus of Garrison Street.

After further review of the project site plan, the following recommendations are provided:

- Driveways are recommended to be constructed in accordance with City standards
- Stop sign (R1-1) to be installed at the project driveway

8.2 Internal Circulation

Internal roadways on the project site allow for two-way flow of vehicle traffic. Residential and guest parking is provided throughout the site.

Based upon review of the project site plan, the following recommendations are provided:

- Appropriate signage to warn drivers of pedestrian foot traffic
- Consider installation of speed cushions/bumps along internal roadways to calm traffic

Appendix A

Project Information Form

PROJECT INFORMATION FORM (PIF)

THE FOLLOWING IS TO BE COMPLETED BY THE PROJECT APPLICANT:

PROJECT INFORMATION FORM			
1.	PROJECT DESCRIPTION:	The Project proposes to construct 138 three-story multi-family dwelling units on an approximately 8.3 acre site.	
2.	PROJECT LOCATION:	333 Garrison Street (old Garrison School site)	
3.	LAND USE:	Residential	
3.	SIZE/DENSITY:	138 DU @17 DU/acre	
4.	ZONING AND LAND USE CONSISTENT WITH ADOPTED GENERAL PLAN?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
5.	PROJECT LOCATED IN TRANSIT PRIORITY AREA¹, SMART GROWTH AREA², OR LOW VMT AREA³? Located in low VMT area, per latest SANDAG VMT screening maps	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
6.	PROJECT TRIP GENERATION: 960 ADT	<input type="checkbox"/> < 200 ADT <input checked="" type="checkbox"/> ≥ 200 ADT <input type="checkbox"/> ≥ 1,000 ADT <input type="checkbox"/> ≥ 2,400 ADT	
ATTACHMENTS			
A.	PROJECT LOCATION MAP	<input checked="" type="checkbox"/> Attached	
B.	PROJECT TRIP DISTRIBUTION	<input checked="" type="checkbox"/> Attached	
C.	PROJECT TRIP ASSIGNMENT	<input checked="" type="checkbox"/> Attached	

1) Projects located in a TPA must be able to access the transit station within a ½ mile walking distance or 6 minute walk continuously without discontinuity of sidewalk or obstructions to the route. Qualifying transit stops means a site containing an existing rail transit station served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods (OPR, 2017). A high-quality transit corridor may also be considered if a corridor with fixed route bus service has service intervals no longer than 15 minutes during peak commute hours (OPR, 2017).

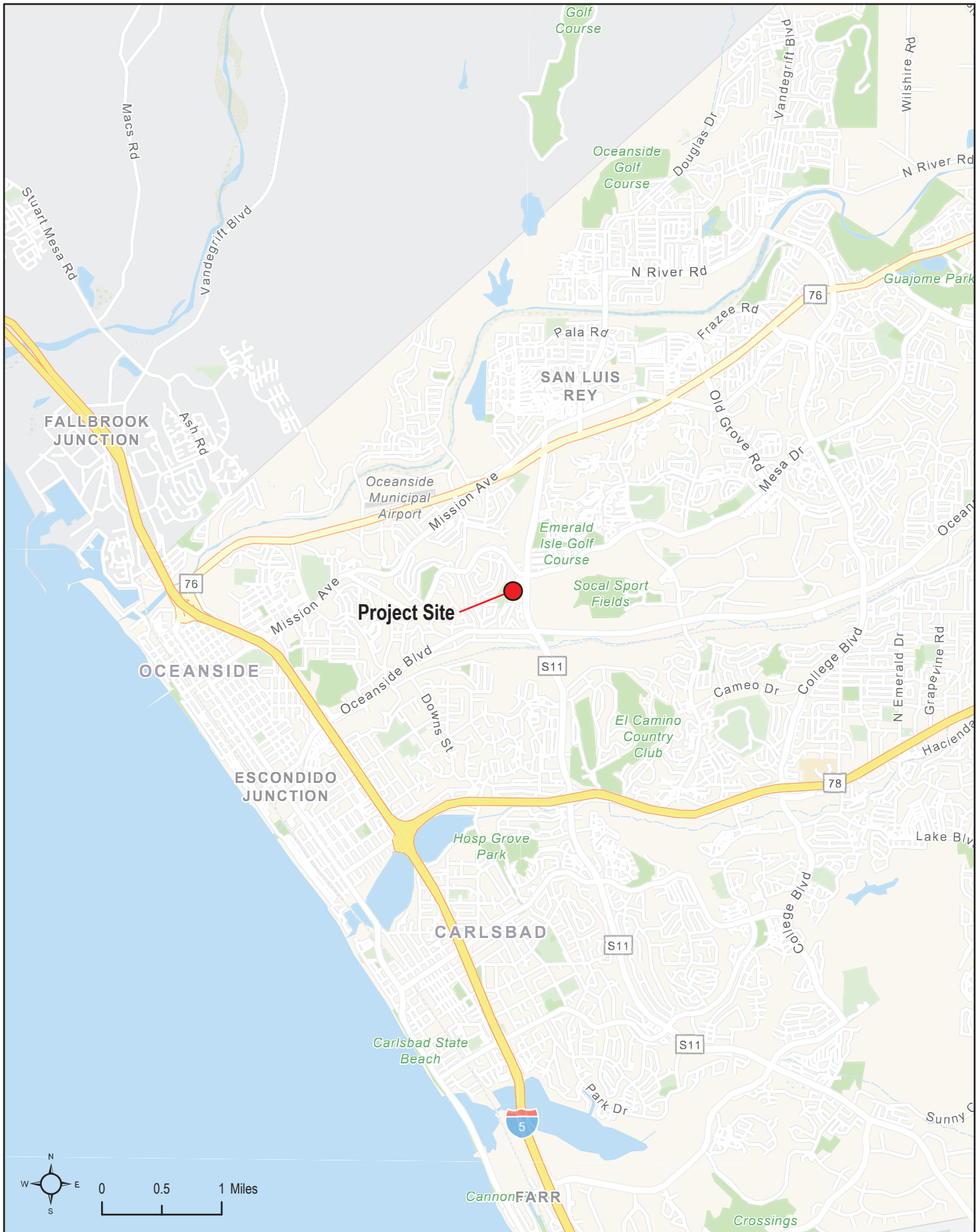
(2) See Appendix B.

(3) Based on the most recent SANDAG SB 743 Screening Map. Example shown in Appendix C.

TO BE COMPLETED BY CITY STAFF AND RETURNED TO PROJECT APPLICANT

PROJECT STUDY REQUIREMENTS				
1)	Does the project require a CEQA VMT analysis?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Incomplete ⁽¹⁾
	A. If yes, does the project require a SANDAG Model Run?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Incomplete ⁽¹⁾
2a)	Does the project require a Local Transportation Study?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Incomplete ⁽¹⁾
OR				
2b)	Does the project require a Local Transportation Assessment?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Incomplete ⁽¹⁾

⁽¹⁾ Incomplete application or additional information is needed to determine study requirements.



**Oceanside Garrison
Project Information Form**



*Attachment A
Project Location Map*

Scoping Information

The purpose of this memo is to document the results of a preliminary traffic analysis for the Oceanside Garrison project (the “Project”).

VMT Analysis

Based on the SANDAG VMT screening maps, the Project is located in an area where the average VMT per Capita is 16.0 miles or 84.3% of the regional average. **Figure 1** displays the Project’s VMT per Capita. Since the Project would generate less than 85% of the regional average VMT per Capita, the Project would be deemed to have a less-than-significant VMT impact and no additional VMT analysis would be required.

Local Transportation Study

The Oceanside Garrison project (the “Project”) proposes to construct 138 multi-family dwelling units on the old Garrison School site, located on the 300 block of Garrison Street within the City of Oceanside. The Project will provide access via Garrison Street, similar to the old Garrison School site, which would require project traffic to ingress/egress via the intersection of Garrison Street & Oceanside Boulevard.

Project Trip Generation

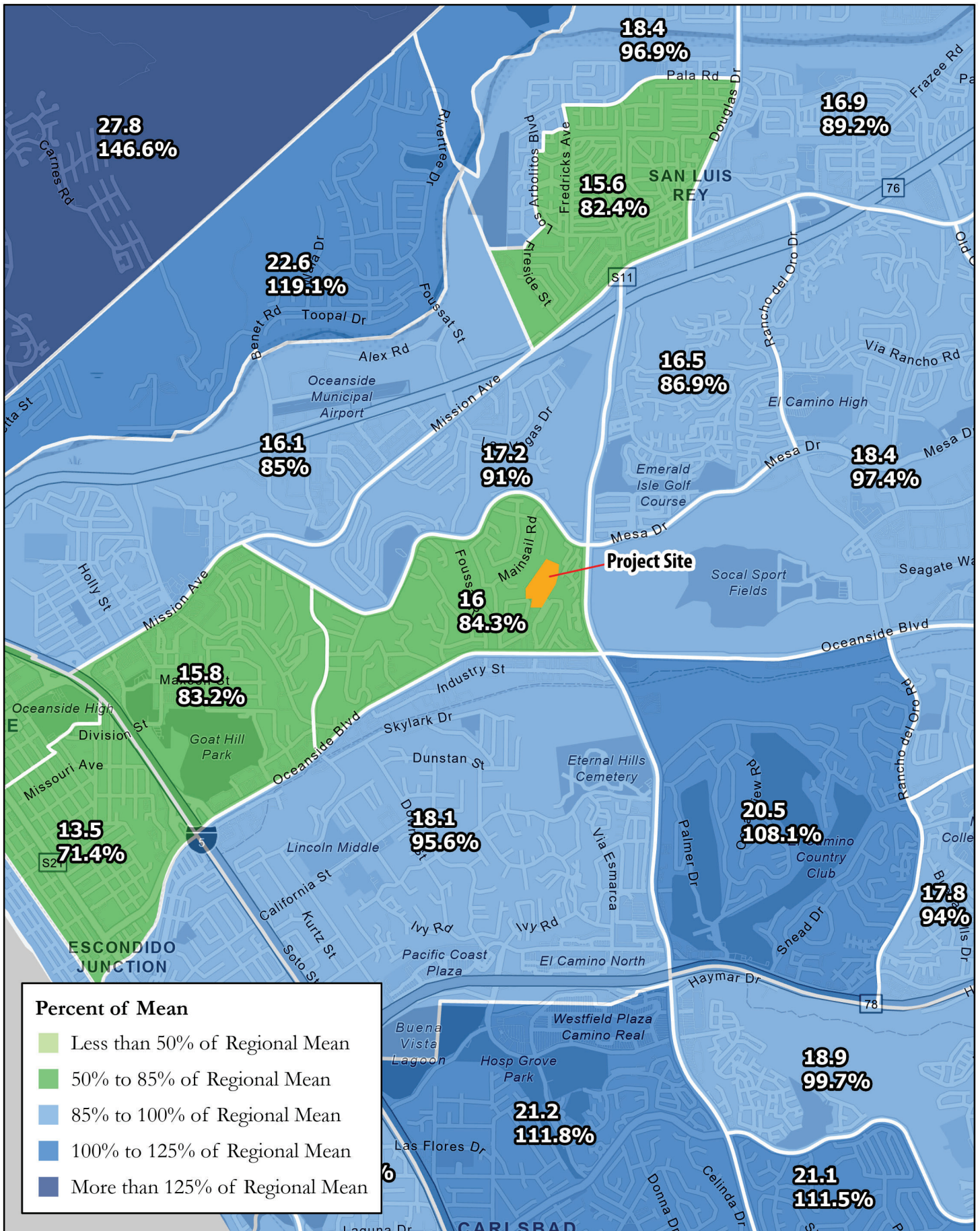
Trip generation for the Project was developed utilizing the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. **Table 1** displays the projected daily and AM/PM peak hour project trip generation. ITE trip rate information sheets are provided in **Attachment A**.

Table 1 - Project Trip Generation

Land Use	Units	Trip Rate	ADT	AM Peak Hour				PM Peak Hour					
				%	Trips	Split	In	Out	%	Trips	Split	In	Out
Multi-Family (Low-Rise)	138 DU	6.96/DU	960	7%	66	24:76	16	50	8%	80	63:38	50	30

Source: ITE Trip Generation Manual, 11th Edition (2021); The True Life Companies (2024); CR Associates (2024)

As shown, the Project is anticipated to generate a total of 960 daily trips, including 66 (16-in/50-out) trips during the AM peak hour and 80 (50-in/30-out) trips during the PM peak hour.



Oceanside Garrison
Project Information Form



Figure 1
SANDAG VMT Screening Map
VMT per Capita

Project Trip Distribution

The project trip distribution was manually developed based on the geographical location of the Project, characteristics of the proposed and surrounding land uses, and big data from Replica¹. **Figure 2** displays the project trip distribution.

Project Trip Assignment

Based on the Project's trip generation and distribution, daily projects trips and AM/PM peak hour trips were assigned to the adjacent roadway network. **Figure 3** displays the daily and AM/PM peak hour trip assignment.

Project Study Area

Based on the Project's trip generation, distribution, and assignment, as well as the City of Oceanside study area requirements for a Local Transportation Study (LTS), the following facilities were included in the Project's study area:

Roadway Segments

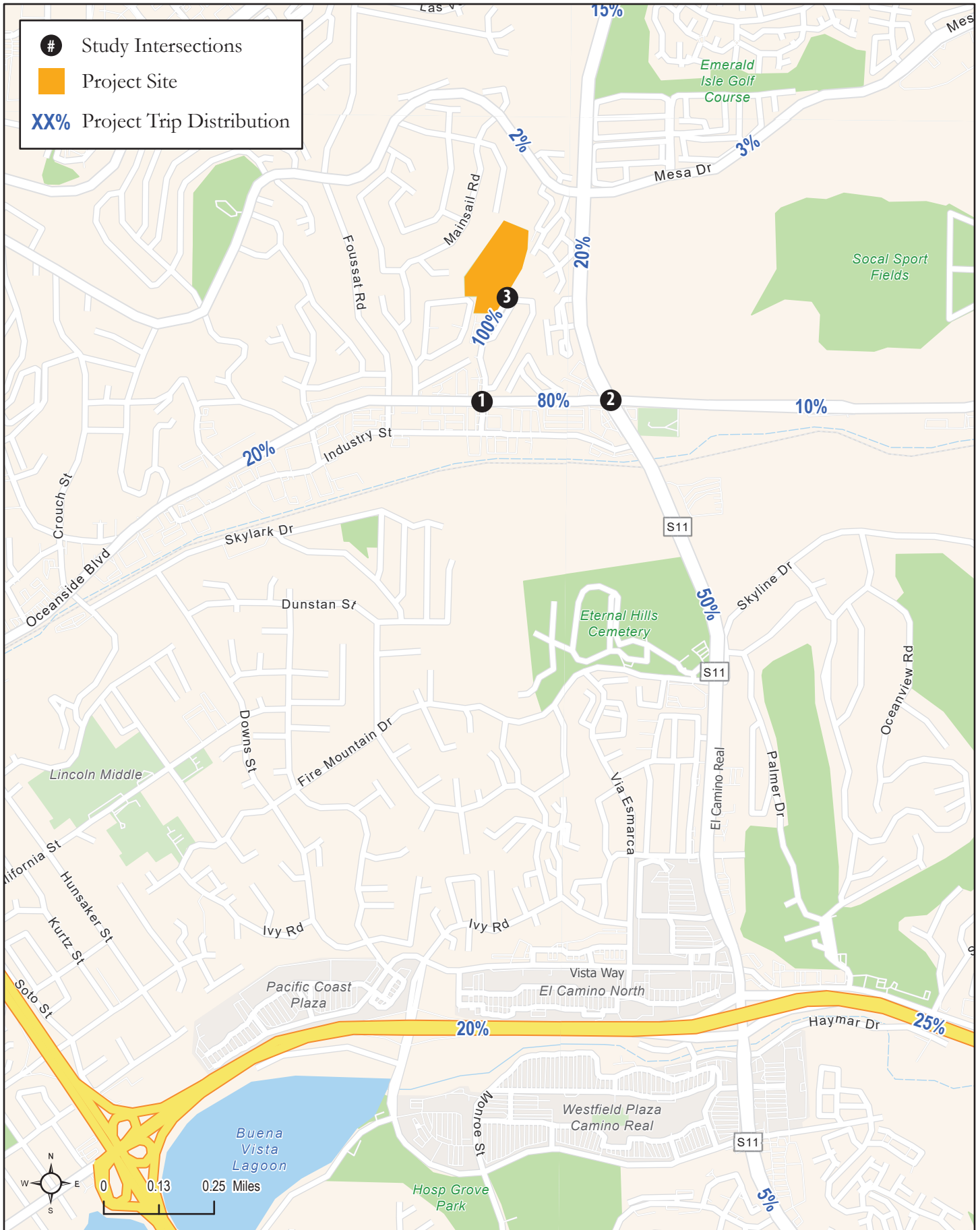
- Oceanside Boulevard, between Foussat Road and Garrison Street
- Oceanside Boulevard, between Garrison Street and El Camino Real
- Garrison Street, between Project Driveway and Oceanside Boulevard

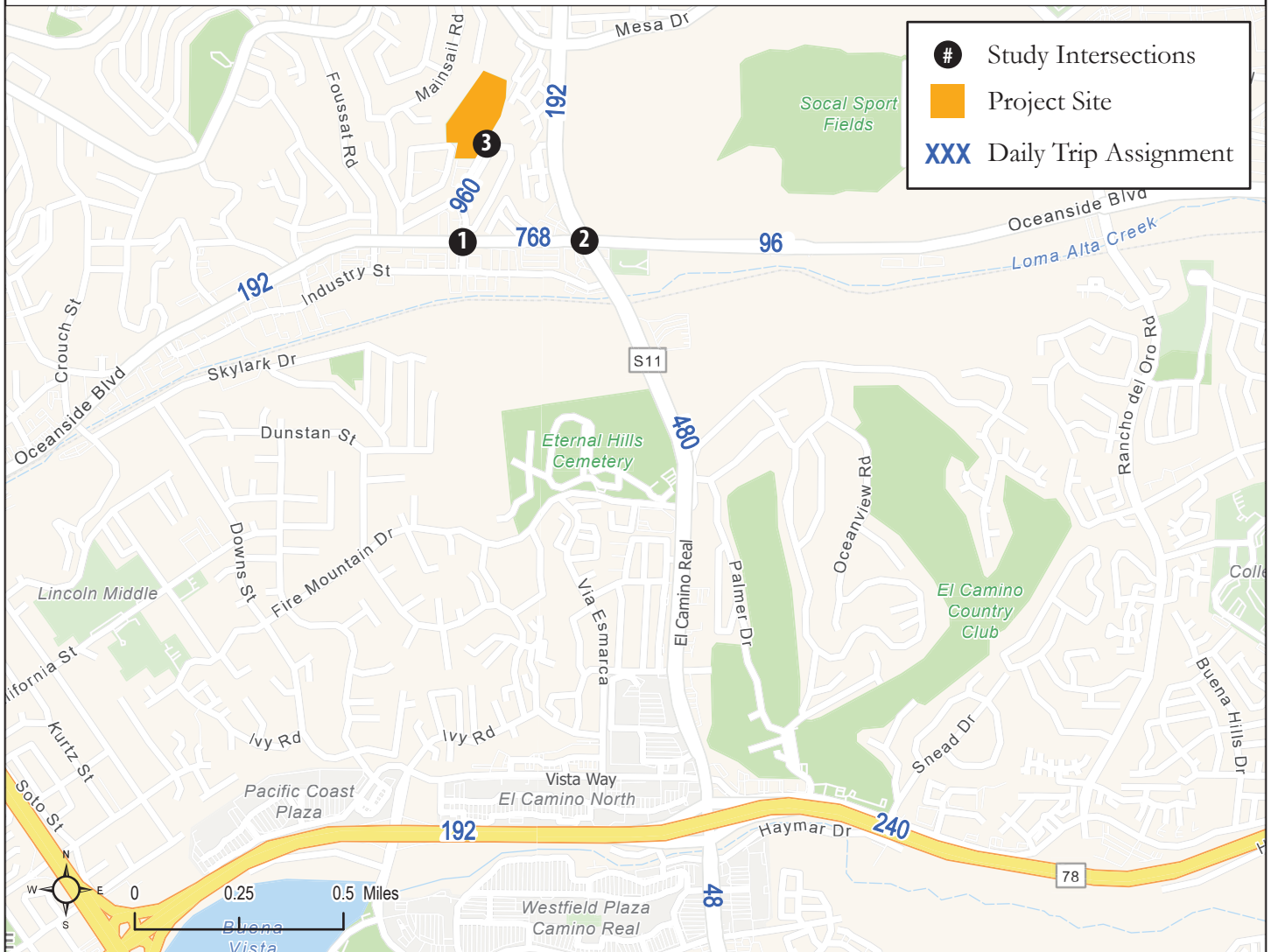
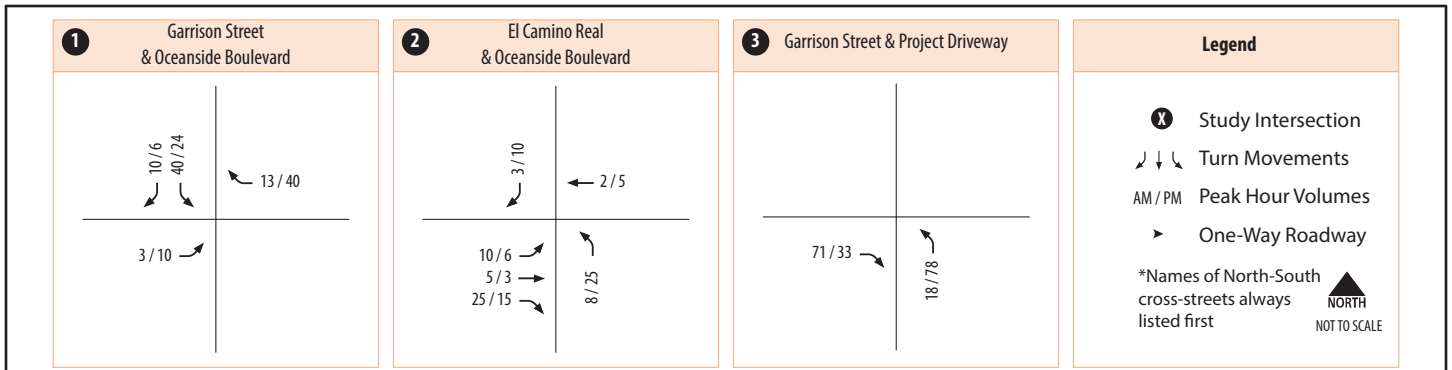
Intersections

1. Garrison Street & Oceanside Boulevard (Signal)
2. El Camino Real & Oceanside Boulevard (Signal)
3. Garrison Street & Project Driveway (Side-Street Stop-Control)

Figure 4 displays the project study area.

¹ Replica is a data provider that produces large-scale models to represent mobility throughout the United States. For more information, please visit the following: <https://replicahq.com/>

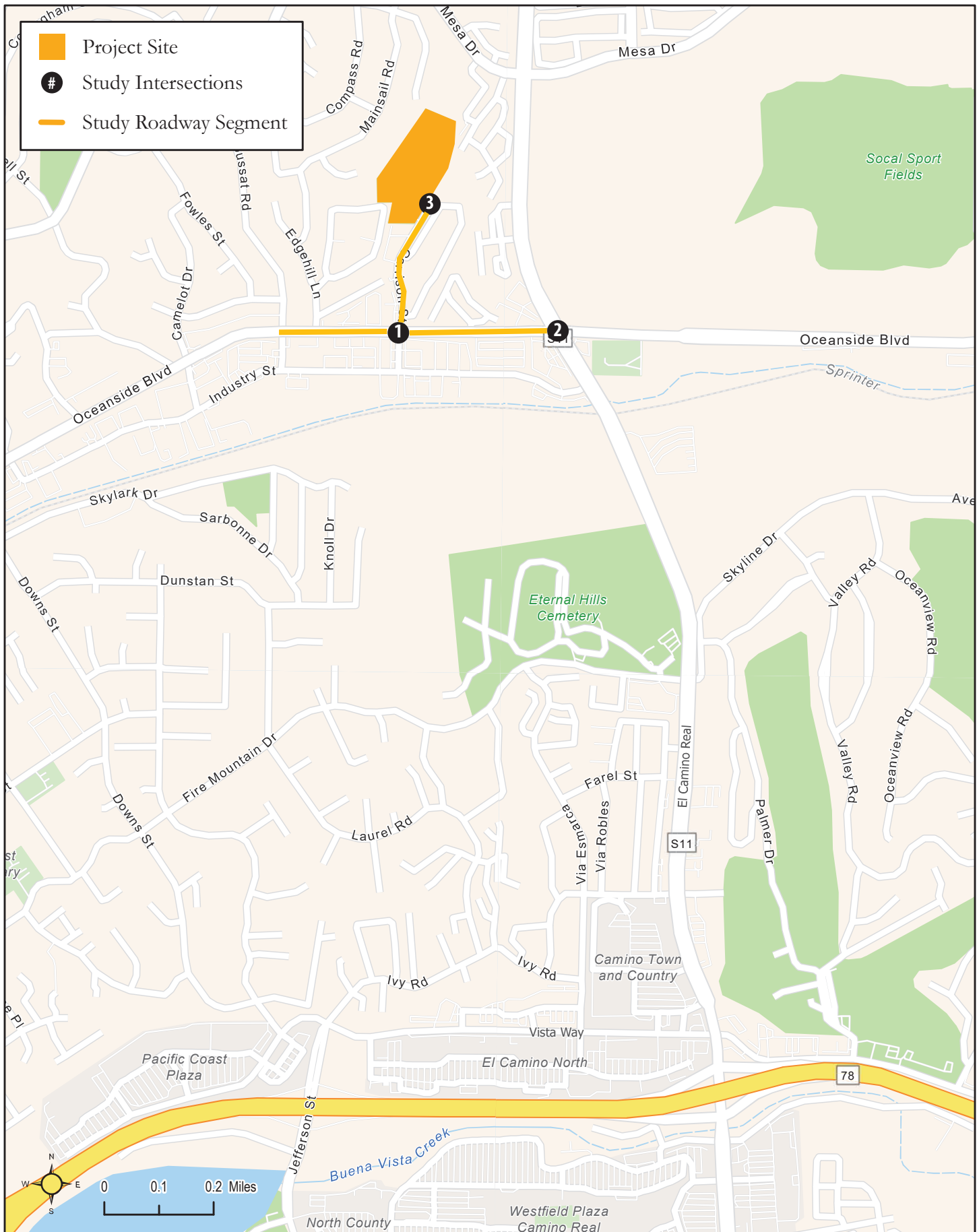




Oceanside Garrison
Project Information Form



Figure 3
Project Trip Assignment



**Oceanside Garrison
Project Information Form**



*Figure 4
Project Study Area*

Appendix B

Traffic Counts

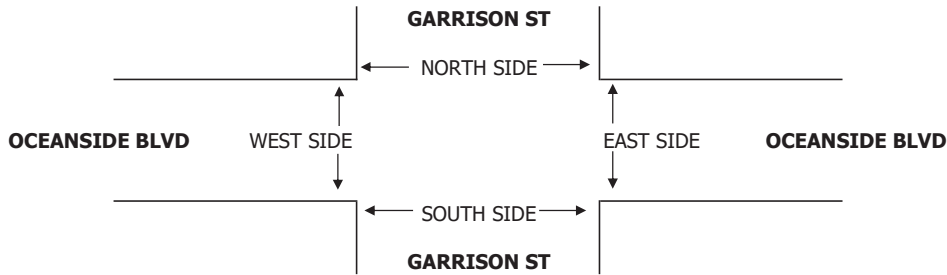
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: ELITE TRAFFIC DYNAMICS, LLC

DATE: 5/23/24 THURSDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	OCEANSIDE GARRISON ST OCEANSIDE BLVD	PROJECT #: LOCATION #: CONTROL:	ETD24-0524-01 1 SIGNAL
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NOTES: INCLUDES BIKE & PED	AM PM MD OTHER OTHER	▲ N ◀ W S ▶ E ▼
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	NORTHBOUND GARRISON ST			SOUTHBOUND GARRISON ST			EASTBOUND OCEANSIDE BLVD			WESTBOUND OCEANSIDE BLVD			TOTAL	U-TURNS					
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR		NB X	SB X	EB X	WB X	TTL	
AM	7:00 AM	2	0	4	7	0	8	2	117	2	1	204	3	350					0
	7:15 AM	2	2	2	9	3	8	2	153	4	3	241	5	434					0
	7:30 AM	3	1	4	8	6	14	4	215	7	0	228	5	495					0
	7:45 AM	3	0	1	12	3	20	7	205	9	5	268	4	537					0
	8:00 AM	3	2	4	7	2	21	5	201	6	3	246	6	506					0
	8:15 AM	4	0	6	8	0	10	5	191	11	3	194	5	437					0
	8:30 AM	5	0	5	6	3	10	8	178	10	5	263	2	495					0
	8:45 AM	4	0	11	6	0	5	5	201	8	2	207	1	450					0
	VOLUMES	26	5	37	63	17	96	38	1,461	57	22	1,851	31	3,704	0	0	0	0	0
	APPROACH %	38%	7%	54%	36%	10%	55%	2%	94%	4%	1%	97%	2%						
	APP/DEPART	68	/	74	176	/	96	1,556	/	1,561	1,904	/	1,973	0					
	BEGIN PEAK HR VOLUMES	7:45 AM			33	8	61	25	775	36	16	971	17	1,975					
APPROACH %	45%	6%	48%	32%	8%	60%	3%	93%	4%	2%	97%	2%							
PEAK HR FACTOR	0.825			0.729			0.925			0.906			0.919						
APP/DEPART	33	/	44	102	/	60	836	/	824	1,004	/	1,047	0						
PM	4:00 PM	8	4	11	3	1	1	11	244	4	2	222	3	514					0
	4:15 PM	8	4	7	6	0	4	5	241	8	4	260	2	549					0
	4:30 PM	11	9	7	6	3	12	9	269	7	1	238	5	577					0
	4:45 PM	8	3	9	5	0	3	12	289	2	2	259	6	598					0
	5:00 PM	11	6	16	8	3	3	12	281	5	4	193	5	547					0
	5:15 PM	10	7	11	4	1	3	9	299	7	0	194	6	551					0
	5:30 PM	10	3	11	4	6	6	11	314	4	4	197	5	575					0
	5:45 PM	5	2	6	4	1	2	10	252	3	3	177	7	472					0
	VOLUMES	71	38	78	40	15	34	79	2,189	40	20	1,740	39	4,383	0	0	0	0	0
	APPROACH %	38%	20%	42%	45%	17%	38%	3%	95%	2%	1%	97%	2%						
	APP/DEPART	187	/	156	89	/	75	2,308	/	2,307	1,799	/	1,845	0					
	BEGIN PEAK HR VOLUMES	4:30 PM			23	7	21	42	1,138	21	7	884	22	2,273					
APPROACH %	37%	23%	40%	45%	14%	41%	3%	95%	2%	1%	97%	2%							
PEAK HR FACTOR	0.818			0.607			0.953			0.855			0.950						
APP/DEPART	108	/	89	51	/	35	1,201	/	1,204	913	/	945	0						



		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM	7:00 AM					0
	7:15 AM					0
	7:30 AM			1		1
	7:45 AM				1	1
	8:00 AM	1			1	2
	8:15 AM				1	1
	8:30 AM	1	1			2
	8:45 AM				1	1
TOTAL	2	1	1	4	8	
PM	4:00 PM		1	4		5
	4:15 PM					0
	4:30 PM					0
	4:45 PM				1	1
	5:00 PM					0
	5:15 PM	1				1
	5:30 PM	1			1	2
	5:45 PM	3				3
TOTAL	5	1	4	2	12	

PEDESTRIAN CROSSINGS					
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
7:00 AM					0
7:15 AM					0
7:30 AM			1		1
7:45 AM				1	1
8:00 AM	1			1	2
8:15 AM				1	1
8:30 AM	1	1			2
8:45 AM				1	1
TOTAL	2	1	1	4	8
4:00 PM		1	4		5
4:15 PM					0
4:30 PM					0
4:45 PM				1	1
5:00 PM					0
5:15 PM	1				1
5:30 PM	1			1	2
5:45 PM	3				3
TOTAL	5	1	4	2	12

PEDESTRIAN ACTIVATIONS					
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

BICYCLE CROSSINGS					
	NS	SS	ES	WS	TOTAL
7:00 AM					0
7:15 AM					0
7:30 AM		1			1
7:45 AM					0
8:00 AM					0
8:15 AM	1	1			2
8:30 AM		1			1
8:45 AM					0
TOTAL	1	3	0	0	4
4:00 PM					0
4:15 PM					0
4:30 PM				1	1
4:45 PM	1				1
5:00 PM		1			1
5:15 PM	1	1		1	3
5:30 PM	1	1		2	4
5:45 PM	2	1		1	4
TOTAL	5	4	0	5	14

THURSDAY - MAY 23, 2024

AREA: OCEANSIDE

PROJECT: ETD24-0524-01

GARRISON ST & OCEANSIDE BLVD

AM	NB	SB	EB	WB	PM	NB	SB	EB	WB
00:00	1	1			12:00	5	2		
00:15	3	3			12:15	7	4		
00:30	0	0			12:30	8	8		
00:45	0	4	0	4	12:45	9	29	4	18
01:00	0	1			13:00	5	6		
01:15	2	0			13:15	5	6		
01:30	0	1			13:30	6	1		
01:45	0	2	0	2	13:45	6	22	5	18
02:00	0	0			14:00	9	6		
02:15	0	0			14:15	3	5		
02:30	3	0			14:30	8	6		
02:45	0	3	0	0	14:45	8	28	6	23
03:00	0	0			15:00	14	10		
03:15	0	0			15:15	9	4		
03:30	0	0			15:30	14	6		
03:45	2	2	0	0	15:45	10	47	5	25
04:00	2	1			16:00	9	3		
04:15	2	0			16:15	7	7		
04:30	1	2			16:30	13	8		
04:45	1	6	1	4	16:45	15	44	4	22
05:00	2	1			17:00	16	9		
05:15	1	1			17:15	8	3		
05:30	1	2			17:30	10	9		
05:45	2	6	6	10	17:45	12	46	9	30
06:00	2	2			18:00	8	5		
06:15	8	7			18:15	9	8		
06:30	2	2			18:30	10	6		
06:45	4	16	9	20	18:45	9	36	7	26
07:00	0	6			19:00	13	15		
07:15	10	13			19:15	10	3		
07:30	5	15			19:30	11	4		
07:45	11	26	16	50	19:45	9	43	4	26
08:00	10	14			20:00	11	5		
08:15	2	9			20:15	7	8		
08:30	6	7			20:30	11	5		
08:45	2	20	4	34	20:45	4	33	0	18
09:00	5	5			21:00	10	7		
09:15	7	7			21:15	5	5		
09:30	2	4			21:30	14	3		
09:45	2	16	4	20	21:45	6	35	2	17
10:00	4	3			22:00	4	1		
10:15	2	4			22:15	3	3		
10:30	2	5			22:30	7	3		
10:45	5	13	4	16	22:45	5	19	2	9
11:00	2	4			23:00	3	2		
11:15	5	5			23:15	5	1		
11:30	3	3			23:30	4	1		
11:45	7	17	0	12	23:45	8	20	2	6

Total Vol. 131 172 **303** 402 238 **640**

Daily Totals		EB	WB	Combined
NB	SB			
533	410			943

	AM			PM		
Split %	43.2%	56.8%	32.1%	62.8%	37.2%	67.9%
Peak Hour	07:15	07:15	07:15	16:30	18:15	16:15
Volume	36	58	94	52	36	79
P.H.F.	0.82	0.91	0.87	0.94	0.60	0.79

THURSDAY - MAY 23, 2024

AREA: OCEANSIDE

PROJECT: ETD24-0524-01

OCEANSIDE BLVD BETWEEN FOUSSAT RD & GARRISON ST

AM	NB	SB	EB	WB	PM	NB	SB	EB	WB			
00:00			20	21	12:00			244	188			
00:15			18	17	12:15			238	210			
00:30			15	13	12:30			193	174			
00:45			13	66	8	59	125	232	907	183	755	1662
01:00			9	16	13:00			244	220			
01:15			17	8	13:15			213	176			
01:30			9	14	13:30			273	155			
01:45			9	44	6	44	88	225	955	193	744	1699
02:00			20	13	14:00			206	226			
02:15			14	9	14:15			231	209			
02:30			7	13	14:30			246	229			
02:45			12	53	16	51	104	260	943	238	902	1845
03:00			22	5	15:00			268	213			
03:15			8	13	15:15			278	234			
03:30			9	15	15:30			269	231			
03:45			14	53	18	51	104	265	1080	230	908	1988
04:00			11	29	16:00			249	226			
04:15			12	19	16:15			242	268			
04:30			26	31	16:30			279	240			
04:45			30	79	49	128	207	294	1064	265	999	2063
05:00			57	71	17:00			304	215			
05:15			46	70	17:15			326	201			
05:30			62	80	17:30			316	225			
05:45			122	287	117	338	625	258	1204	181	822	2026
06:00			95	122	18:00			196	207			
06:15			108	157	18:15			230	198			
06:30			114	165	18:30			206	166			
06:45			129	446	228	672	1118	194	826	154	725	1551
07:00			122	215	19:00			184	125			
07:15			168	239	19:15			128	137			
07:30			230	245	19:30			144	118			
07:45			232	752	273	972	1724	143	599	132	512	1111
08:00			215	266	20:00			134	117			
08:15			214	215	20:15			134	90			
08:30			207	269	20:30			125	106			
08:45			210	846	209	959	1805	113	506	84	397	903
09:00			164	205	21:00			120	83			
09:15			176	183	21:15			96	93			
09:30			176	167	21:30			87	72			
09:45			185	701	189	744	1445	89	392	56	304	696
10:00			175	148	22:00			57	52			
10:15			219	171	22:15			74	39			
10:30			196	165	22:30			54	35			
10:45			216	806	186	670	1476	42	227	45	171	398
11:00			204	145	23:00			43	39			
11:15			217	211	23:15			33	22			
11:30			188	223	23:30			32	26			
11:45			228	837	193	772	1609	21	129	19	106	235

Total Vol. 4970 5460 **10430** 8832 7345 **16177**

		Daily Totals		
NB	SB	EB	WB	Combined
		13802	12805	26607

Split %	AM			PM		
	47.7%	52.3%	39.2%	54.6%	45.4%	60.8%
Peak Hour	11:45	07:15	07:45	16:45	16:00	16:45
Volume	903	1023	1891	1240	999	2146
P.H.F.	0.93	0.94	0.94	0.95	0.93	0.96

THURSDAY - MAY 23, 2024

AREA: OCEANSIDE

PROJECT: ETD24-0524-01

OCEANSIDE BLVD BETWEEN GARRISON ST & EL CAMINO REAL

AM	NB	SB	EB	WB	PM	NB	SB	EB	WB			
00:00			20	21	12:00			244	186			
00:15			14	18	12:15			253	202			
00:30			11	13	12:30			193	170			
00:45			13	58	8	60	118	239	929	178	736	1665
01:00			6	17	13:00			256	197			
01:15			10	10	13:15			218	168			
01:30			8	16	13:30			265	161			
01:45			9	33	5	48	81	243	982	181	707	1689
02:00			17	15	14:00			199	215			
02:15			15	9	14:15			228	205			
02:30			4	8	14:30			254	229			
02:45			8	44	16	48	92	252	933	235	884	1817
03:00			13	6	15:00			263	212			
03:15			1	11	15:15			269	218			
03:30			7	17	15:30			261	234			
03:45			3	24	20	54	78	270	1063	220	884	1947
04:00			10	27	16:00			259	225			
04:15			7	15	16:15			251	286			
04:30			22	31	16:30			274	223			
04:45			27	66	56	129	195	304	1088	267	1001	2089
05:00			38	68	17:00			310	203			
05:15			37	69	17:15			319	217			
05:30			60	81	17:30			330	187			
05:45			113	248	109	327	575	256	1215	188	795	2010
06:00			91	120	18:00			186	215			
06:15			116	154	18:15			234	191			
06:30			106	159	18:30			210	163			
06:45			117	430	249	682	1112	201	831	156	725	1556
07:00			128	212	19:00			184	122			
07:15			163	242	19:15			139	141			
07:30			228	238	19:30			142	119			
07:45			217	736	274	966	1702	151	616	135	517	1133
08:00			212	252	20:00			137	109			
08:15			206	212	20:15			126	94			
08:30			199	260	20:30			125	106			
08:45			208	825	212	936	1761	111	499	84	393	892
09:00			166	202	21:00			115	89			
09:15			174	181	21:15			87	82			
09:30			168	173	21:30			88	73			
09:45			177	685	176	732	1417	80	370	57	301	671
10:00			167	157	22:00			57	54			
10:15			208	168	22:15			66	32			
10:30			202	156	22:30			46	37			
10:45			210	787	184	665	1452	41	210	44	167	377
11:00			205	155	23:00			38	39			
11:15			211	216	23:15			32	21			
11:30			182	209	23:30			25	27			
11:45			230	828	204	784	1612	22	117	19	106	223

Total Vol. 4764 5431 **10195** 8853 7216 **16069**

		Daily Totals		
NB	SB	EB	WB	Combined
		13617	12647	26264

Split %	AM			PM		
	46.7%	53.3%	38.8%	55.1%	44.9%	61.2%
Peak Hour	11:45	07:15	07:30	16:45	16:00	16:45
Volume	920	1006	1839	1263	1001	2137
P.H.F.	0.91	0.92	0.94	0.96	0.88	0.94

Appendix C

Signal Timings

MAXTIME TIMING SHEET

Oceanside @ Garrison

3.1 Unit Information	
Controller Number	52
Software	2.10.2
Main Street	Oceanside
Side Street	Garrison

3.2.1 Ethernet Configuration

NET1 IP Address	10.160.0.178
NET1 Subnet Mask	255.255.255.0
NET1 Gateway	10.160.0.1

3.3 Time Source & NTP

Time Source	Crystal
NTP Server	10.32.0.40

Unit Parameters

Startup Flash	0
Startup Clearance Hold Time	5
Start Yellow Override	0.0
Start Red Override	0.0
Backup Time	600
Red Revert	2.0
All Red Flash Exit	5
Local Flash Through CVM	Disable
All Red Local Flash Sense	Disable
All Dark Local Flash Sense	Disable
Free Phase Plan	1
Free Overlap Plan	1
Free Veh Detector Plan	1
Free Sequence	1
Manual Control Enable	Enable
Manual Control Sequence	1
Auto Ped Clear	Disable
Preempt Lock Out Time	0

2.2.2-1 Phase Options Plan 1

Phase	1	2	3	4	5	6	7	8
Enable	X	X		X	X	X	X	X
Auto Flash Entry				X				
Auto Flash Exit				X				
Non Lock Detector	X	X		X	X	X	X	X
Min Vehicle Recall				X				
Max Vehicle Recall								
Ped Recall								
Soft Vehicle Recall				X		X	X	X
Dual Entry								
Disable Simult. Gap								
Actuated Rest in Walk								
Conditional Svc Enable								
Add Initial Calculation								
Ped Clear During Yellow								
Ped Clear During Red Clr								
Yellow Min Override								
No Startup Call								
Advanced Warning								
No Ped Startup Call								
Min Green 2								
Max Green 2								
Red Rest								
Ped Recycle								
Simultaneous Start								

2.1.1.1 Phase Plan 1

Phase	1	2	3	4	5	6	7	8
Description								
Walk	0	7	0	7	0	7	0	7
Ped Clear	0	14	0	17	0	12	0	17
Steady Don't Walk	0	0	0	0	0	0	0	0
Min Green	5	10	0	6	5	10	0	6
Min Green 2	0	0	0	0	0	0	0	0
Passage	2.5	4.0	0.0	3.0	2.5	4.0	0.0	3.0
Passage 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Green 1	20	50	0	25	25	50	0	25
Max Green 2	0	0	0	0	0	0	0	0
Yellow Change	4.1	4.8	3.0	3.6	4.1	4.8	3.0	3.6
Red Clear	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0
Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Initial	0	0	0	0	0	0	0	0
Time B4 Reduction	0	0	0	0	0	0	0	0
Cars B4 Reduction	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0
Reduce By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	0	0	0	0	0	0	0	0
Dynamic Max Step	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advance Walk	0	0	0	0	0	0	0	0
Delayed Ped	0	0	0	0	0	0	0	0

Notes

2.2.3 Global Phase Recalls

Phase	1	2	3	4	5	6	7	8
Min Recall								
Max Recall								
Ped recall								
Rest in Walk								

2.3.2 Phase Configuration

Phase	Startup	Description
1	Phase Not On	
2	Yellow Change	
3	None	
4	Secondary Start	
5	Phase Not On	
6	Yellow Change	
7	None	
8	Secondary Start	

Sequences

2.3.1-1 Sequence 1

Ring	Sequence
1	1.2.a.4,b
2	5.6.a.8,b
3	

2.3.1-2 Sequence 2

Ring	Sequence
1	2.1.a.3,4,b
2	5.6.a.7,8,b
3	

2.3.1-3 Sequence 3

Ring	Sequence
1	1.2.a.4,3,b
2	5.6.a.7,8,b
3	

2.3.1-4 Sequence 4

Ring	Sequence
1	2.1.a.4,3,b
2	5.6.a.7,8,b
3	

2.3.1-5 Sequence 5

Ring	Sequence
1	1.2.a.3,4,b
2	6.5.a.7,8,b
3	

2.3.1-6 Sequence 6

Ring	Sequence
1	2.1.a.3,4,b
2	6.5.a.7,8,b
3	

2.3.1-7 Sequence 7

Ring	Sequence
1	1.2.a.4,3,b
2	6.5.a.7,8,b
3	

2.3.1-8 Sequence 8

Ring	Sequence
1	2.1.a.4,3,b
2	6.5.a.7,8,b
3	

2.3.1-9 Sequence 9

Ring	Sequence
1	1.2.a.3,4,b
2	5.6.a.8,7,b
3	

2.3.1-10 Sequence 10

Ring	Sequence
1	2.1.a.3,4,b
2	5.6.a.8,7,b
3	

2.3.1-11 Sequence 11

Ring	Sequence
1	1.2.a.4,3,b
2	5.6.a.8,7,b
3	

2.3.1-12 Sequence 12

Ring	Sequence
1	2.1.a.4,3,b
2	5.6.a.8,7,b
3	

2.3.1-13 Sequence 13

Ring	Sequence
1	1.2.a.3,4,b
2	6.5.a.8,7,b
3	

2.3.1-14 Sequence 14

Ring	Sequence
1	2.1.a.3,4,b
2	6.5.a.8,7,b
3	

2.3.1-15 Sequence 15

Ring	Sequence
1	1.2.a.4,3,b
2	6.5.a.8,7,b
3	

2.3.1-16 Sequence 16

Ring	Sequence
1	2.1.a.4,3,b
2	6.5.a.8,7,b
3	

Backup Prevention / No Serve Phases

2.3.4-1-1 Sequence 1

Backup Protection Plan		Backup phase							
Serve Phs	1	2	3	4	5	6	7	8	No
1									
2									
3									
4									
5									
6									
7									
8									
Backup thru Red									No

2.3.4-1-2 Sequence 2

Backup Protection Plan		Backup phase							
Serve Phs	1	2	3	4	5	6	7	8	No
1									
2									
3									
4									
5									
6									
7									
8									
Backup thru Red									No

2.3.4-1-3 Sequence 3

Backup Protection Plan		Backup phase							
Serve Phs	1	2	3	4	5	6	7	8	No
1									
2									
3									
4									
5									
6									
7									
8									
Backup thru Red									No

2.3.4-1-4 Sequence 4

Backup Protection Plan		Backup phase							
Serve Phs	1	2	3	4	5	6	7	8	No
1									
2									
3									
4									
5									
6									
7									
8									
Backup thru Red									No

2.3.4-1-5 Sequence 5

Backup Protection Plan		Backup phase							
Serve Phs	1	2	3	4	5	6	7	8	No
1									
2									
3									
4									
5									
6									
7									
8									
Backup thru Red									No

2.3.4-1-6 Sequence 6

Backup Protection Plan		Backup phase							
Serve Phs	1	2	3	4	5	6	7	8	No
1									
2									
3									
4									
5									
6									
7									
8									
Backup thru Red									No

2.3.4-1-7 Sequence 7

Backup Protection Plan		Backup phase							
Serve Phs	1	2	3	4	5	6	7	8	No
1									
2									
3									
4									
5									
6									
7									
8									
Backup thru Red									No

2.3.4-1-8 Sequence 8

Backup Protection Plan		Backup phase							
Serve Phs	1	2	3	4	5	6	7	8	No
1									
2									
3									
4									
5									
6									
7									
8									
Backup thru Red									No

2.3.4-1-5 Sequence 5

Backup Protection Plan		Backup phase							
Serve Phs	1	2	3	4	5	6	7	8	No
1									
2									
3									
4									
5									
6									
7									
8									
Backup thru Red									No

2.3.4-1-6 Sequence 6

Backup Protection Plan		Backup phase							
Serve Phs	1	2	3	4	5	6	7	8	No
1									
2									
3									
4									
5									
6									
7									
8									
Backup thru Red									No

2.3.4-1-7 Sequence 7

Backup Protection Plan		Backup phase							
Serve Phs	1	2	3	4	5	6	7	8	No
1									
2									
3									
4									
5									
6									
7									
8									
Backup thru Red									No

2.3.4-1-8 Sequence 8

Backup Protection Plan		Backup phase							
Serve Phs	1	2	3	4	5	6	7	8	No
1									
2									
3									
4									
5									
6									
7									
8									
Backup thru Red									No

2.3.4-1-5 Sequence 5

Backup Protection Plan		Backup phase							
Serve Phs	1	2	3	4	5	6	7	8	No
1									
2									
3									
4									
5									
6									
7									
8									
Backup thru Red									No

2.3.4-1-6 Sequence 6

Backup Protection Plan		Backup phase							
Serve Phs	1	2	3	4	5	6	7	8	No

Detector Configuration

2.4.1.1 Vehicle Detector Plan 1

Det No.	Call Phase	Call Overlap	Add Call Phase	Switch Phase	Delay	Extend	Queue Limit	No Activity	Max Pres.	Errat Count	Fail Time	Failed Recall	Description
1	1	0	0	0	0.0	0.0	0	0	0	0	0	None	I-1
2	2	0	0	0	0.0	0.0	0	0	0	0	0	None	I-2U
3	2	0	0	0	0.0	0.0	0	0	0	0	0	None	I-2L
4	2	0	0	0	0.0	0.0	0	0	0	0	0	None	I-3U
5	2	0	0	0	0.0	0.0	0	0	0	0	0	None	I-3L
6	2	0	0	0	3.0	0.0	0	0	0	0	0	None	I-4
7	3	0	0	0	0.0	0.0	0	0	0	0	0	None	I-5
8	4	0	0	0	0.0	0.0	0	0	0	0	0	None	I-6U
9	4	0	0	0	0.0	0.0	0	0	0	0	0	None	I-6L
10	4	0	0	0	3.0	0.0	0	0	0	0	0	None	I-7U
11	4	0	0	0	0.0	0.0	0	0	0	0	0	None	I-7L
12	4	0	0	0	0.0	0.0	0	0	0	0	0	None	I-8
13	1	0	0	0	0.0	0.0	0	0	0	0	0	None	I-9U
14	3	0	0	0	0.0	0.0	0	0	0	0	0	None	I-9L
15	5	0	0	0	0.0	0.0	0	0	0	0	0	None	J-1
16	6	0	0	0	0.0	0.0	0	0	0	0	0	None	J-2U
17	6	0	0	0	0.0	0.0	0	0	0	0	0	None	J-2L
18	6	0	0	0	10.0	0.0	0	0	0	0	0	None	J-3U
19	6	0	0	0	0.0	0.0	0	0	0	0	0	None	J-3L
20	6	0	0	0	0.0	0.0	0	0	0	0	0	None	J-4
21	7	0	0	0	2.0	0.0	0	0	0	0	0	None	J-5
22	8	0	0	0	0.0	0.0	0	0	0	0	0	None	J-6U
23	8	0	0	0	10.0	0.0	0	0	0	0	0	None	J-6L
24	8	0	0	0	0.0	0.0	0	0	0	0	0	None	J-7U
25	8	0	0	0	0.0	0.0	0	0	0	0	0	None	J-7L
26	8	0	0	0	0.0	0.0	0	0	0	0	0	None	J-8
27	5	0	0	0	0.0	0.0	0	0	0	0	0	None	J-9U
28	7	0	0	0	0.0	0.0	0	0	0	0	0	None	J-9L
29	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
30	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
31	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
32	0	0	0	0	0.0	0.0	0	0	0	0	0	None	

2.4.1.1 Vehicle Detectors 33-64

Det No.	Call Phase	Call Overlap	Add Call Phase	Switch Phase	Delay	Extend	Queue Limit	No Activity	Max Pres.	Errat Count	Fail Time	Failed Recall	Description
33	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
34	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
35	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
36	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
37	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
38	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
39	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
40	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
41	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
42	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
43	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
44	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
45	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
46	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
47	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
48	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
49	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
50	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
51	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
52	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
53	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
54	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
55	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
56	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
57	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
58	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
59	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
60	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
61	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
62	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
63	0	0	0	0	0.0	0.0	0	0	0	0	0	None	
64	0	0	0	0	0.0	0.0	0	0	0	0	0	None	

Detector Configuration

2.4.2-1 Vehicle Detector Options Plan 1

Detector	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32			
Volume																																			
Occupancy																																			
Yellow Lock Call																																			
Red Lock Call																																			
Extend	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		
Added Initial	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		
Queue																																			
Call	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		
Terminate																																			
Min Green 2																																			
Prot. Perm.																																			
Dis. Delay Lead																																			
Dis. TS2 Diag																																			
Dis. Det Diag																																			
Passage 2																																			

2.4.2-1 Vehicle Detectors 33-64

Detector	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64		
Volume																																		
Occupancy																																		
Yellow Lock Call																																		
Red Lock Call																																		
Extend																																		
Added Initial																																		
Queue																																		
Call																																		
Terminate																																		
Min Green 2																																		
Prot. Perm.																																		
Dis. Delay Lead																																		
Dis. TS2 Diag																																		
Dis. Det Diag																																		
Passage 2																																		

2.4.8 Global Vehicle Detector Parameters

Global No Activity	0
Global Max Presence	40
Global Erratic Count	0
Global Failed Recall	Max Recall
Detector Reset Enable	Disabled

2.4.8 Global Ped Detector Parameters

Global No Activity	0
Global Max Pres.	5
Global Erratic Ct	0

2.4.6 Volume/Occupancy Data Collection

Data Collection Sees	60
Number of Periods	15

2.4.3-1 Pedestrian Detector Plan 1

Det No.	Call Ph	Call O/L	Call Ph	Addiml	Cancel Ph	Walk 2 Enable	Ped Chr 2	No Activ	Max Pres	Erratic Count
1	0	0					0	0	0	0
2	2	0					0	0	0	0
3	0	0					0	0	0	0
4	4	0					0	0	0	0
5	0	0					0	0	0	0
6	6	0					0	0	0	0
7	0	0					0	0	0	0
8	8	0					0	0	0	0

2.4.4-1 Pedestrian Detector Options Plan 1

Detector	1	2	3	4	5	6	7	8
Walk Extension								

2.4.5-1 Pre/Pri Detectors Plan 1

Det	Description	Low Call	High Call	Low High Num	Trail	Lead / Trail	Delay	Extend
1		None	None	0	0	None	0	0
2		None	None	0	0	None	0	0
3		None	None	0	0	None	0	0
4		None	None	0	0	None	0	0
5		None	None	0	0	None	0	0
6		None	None	0	0	None	0	0

2.4.5-2 Pre/Pri Detectors Plan 2

Det	Description	Low Call	High Call	Low High Num	Trail	Lead / Trail	Delay	Extend
1		None	None	0	0	None	0	0
2		None	None	0	0	None	0	0
3		None	None	0	0	None	0	0
4		None	None	0	0	None	0	0
5		None	None	0	0	None	0	0
6		None	None	0	0	None	0	0

Coordination Configuration

2.5.1 Coordination Parameters

Operational Mode	Automatic	25
Coord Mode	Auto Permissive	25
Maximum Mode	Max Dwell	0
Force Mode	Fixed	None
Correction Mode	Shortway (Auto)	

2.5.5 Advanced Coord Options

Ring Plan	Pattern	1	2	3	4	5	6	7	8	9	10
Allow Split Underrun		0	0	0	0	0	0	0	0	0	0
Allow Split Overrun											
Allow No Coord Phase											
Coord Now											

2.5.2 Patterns

Pat.	Cycle	Offset	Split	Seq	Ref.	Coord Mode	FO Mode	Max Mode	Cover Ped	Min Perm Md	Correction Mode			Phs	OL	Det	Ped	Pri/	Description
											Phs Only	Shortway (Auto)	Phs Only						
1	100	0	1	1	Yel	Auto	Fixed	Inh	None	Phs Only	Shortway (Auto)	1	1	1	1	1	1	1	
2	80	0	2	1	Yel	Auto	Fixed	Inh	None	Phs Only	Shortway (Auto)	1	1	1	1	1	1	1	
3	100	20	3	1	Yel	Auto	Fixed	Inh	None	Phs Only	Shortway (Auto)	1	1	1	1	1	1	1	
4	0	0	0	0	Yel	Auto	Fixed	Inh	None	Phs Only	Shortway (Auto)	1	1	1	1	1	1	1	
5	0	0	0	0	Yel	Auto	Fixed	Inh	None	Phs Only	Shortway (Auto)	1	1	1	1	1	1	1	
6	0	0	0	0	Yel	Auto	Fixed	Inh	None	Phs Only	Shortway (Auto)	1	1	1	1	1	1	1	
7	0	0	0	0	Yel	Auto	Fixed	Inh	None	Phs Only	Shortway (Auto)	1	1	1	1	1	1	1	
8	0	0	0	0	Yel	Auto	Fixed	Inh	None	Phs Only	Shortway (Auto)	1	1	1	1	1	1	1	
9	0	0	0	0	Yel	Auto	Fixed	Inh	None	Phs Only	Shortway (Auto)	1	1	1	1	1	1	1	
10	0	0	0	0	Yel	Auto	Fixed	Inh	None	Phs Only	Shortway (Auto)	1	1	1	1	1	1	1	

Split Parameters

2.5.3-1 Split 1

PH	Time	Min	Max	FO Mode	Crd	Ref	Cvr	Pri		
								Min	Max	FO Mode
1	25	0	0	Fix				0	0	Float
2	45	0	0	Fix	X			0	0	Float
3	0	0	0	Fix				0	0	Float
4	30	0	0	Fix				0	0	Float
5	25	0	0	Fix				0	0	Float
6	45	0	0	Fix	X			0	0	Float
7	0	0	0	Fix				0	0	Float
8	30	0	0	Fix				0	0	Float

2.5.3-2 Split 2

PH	Time	Min	Max	FO Mode	Crd	Ref	Cvr	Pri		
								Min	Max	FO Mode
1	22	0	0	Fix				0	0	Float
2	30	0	0	Fix	X			0	0	Float
3	0	0	0	Fix				0	0	Float
4	28	0	0	Fix				0	0	Float
5	22	0	0	Fix				0	0	Float
6	30	0	0	Fix	X			0	0	Float
7	0	0	0	Fix				0	0	Float
8	28	0	0	Fix				0	0	Float

2.5.3-3 Split 3

PH	Time	Min	Max	FO Mode	Crd	Ref	Cvr	Pri		
								Min	Max	FO Mode
1	25	0	0	Fix				0	0	Float
2	45	0	0	Fix	X			0	0	Float
3	0	0	0	Fix				0	0	Float
4	30	0	0	Fix				0	0	Float
5	25	0	0	Fix				0	0	Float
6	45	0	0	Fix	X			0	0	Float
7	0	0	0	Fix				0	0	Float
8	30	0	0	Fix				0	0	Float

2.5.3-4 Split 4

PH	Time	Min	Max	FO Mode	Crd	Ref	Cvr	Pri		
								Min	Max	FO Mode
1	0	0	0	Fix				0	0	Float
2	0	0	0	Fix				0	0	Float
3	0	0	0	Fix				0	0	Float
4	0	0	0	Fix				0	0	Float
5	0	0	0	Fix				0	0	Float
6	0	0	0	Fix				0	0	Float
7	0	0	0	Fix				0	0	Float
8	0	0	0	Fix				0	0	Float

Ring Plans

2.5.4-1 Ring Plan 1

Ring	Offset	Early	Gap	Early	FO
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0

2.5.4-2 Ring Plan 2

Ring	Offset	Early	Gap	Early	FO
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0

2.5.4-3 Ring Plan 3

Ring	Offset	Early	Gap	Early	FO
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0

2.5.4-4 Ring Plan 4

Ring	Offset	Early	Gap	Early	FO
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0

Split Parameters

2.5.3-5 Split 5

PH.	Time			Crd	Ref	Cvr	FO Mode	Mode	Pri	
	Min	Max	Phs						Min	Max
1	0	0	0				Fix	None	0	0
2	0	0	0				Fix	None	0	0
3	0	0	0				Fix	None	0	0
4	0	0	0				Fix	None	0	0
5	0	0	0				Fix	None	0	0
6	0	0	0				Fix	None	0	0
7	0	0	0				Fix	None	0	0
8	0	0	0				Fix	None	0	0

2.5.3-7 Split 7

PH.	Time			Crd	Ref	Cvr	FO Mode	Mode	Pri	
	Min	Max	Phs						Min	Max
1	0	0	0				Fix	None	0	0
2	0	0	0				Fix	None	0	0
3	0	0	0				Fix	None	0	0
4	0	0	0				Fix	None	0	0
5	0	0	0				Fix	None	0	0
6	0	0	0				Fix	None	0	0
7	0	0	0				Fix	None	0	0
8	0	0	0				Fix	None	0	0

2.5.3-9 Split 9

PH.	Time			Crd	Ref	Cvr	FO Mode	Mode	Pri	
	Min	Max	Phs						Min	Max
1	0	0	0				Fix	None	0	0
2	0	0	0				Fix	None	0	0
3	0	0	0				Fix	None	0	0
4	0	0	0				Fix	None	0	0
5	0	0	0				Fix	None	0	0
6	0	0	0				Fix	None	0	0
7	0	0	0				Fix	None	0	0
8	0	0	0				Fix	None	0	0

2.5.3-6 Split 6

PH.	Time			Crd	Ref	Cvr	FO Mode	Mode	Pri	
	Min	Max	Phs						Min	Max
1	0	0	0				Fix	None	0	0
2	0	0	0				Fix	None	0	0
3	0	0	0				Fix	None	0	0
4	0	0	0				Fix	None	0	0
5	0	0	0				Fix	None	0	0
6	0	0	0				Fix	None	0	0
7	0	0	0				Fix	None	0	0
8	0	0	0				Fix	None	0	0

2.5.3-8 Split 8

PH.	Time			Crd	Ref	Cvr	FO Mode	Mode	Pri	
	Min	Max	Phs						Min	Max
1	0	0	0				Fix	None	0	0
2	0	0	0				Fix	None	0	0
3	0	0	0				Fix	None	0	0
4	0	0	0				Fix	None	0	0
5	0	0	0				Fix	None	0	0
6	0	0	0				Fix	None	0	0
7	0	0	0				Fix	None	0	0
8	0	0	0				Fix	None	0	0

2.5.3-10 Split 10

PH.	Time			Crd	Ref	Cvr	FO Mode	Mode	Pri	
	Min	Max	Phs						Min	Max
1	0	0	0				Fix	None	0	0
2	0	0	0				Fix	None	0	0
3	0	0	0				Fix	None	0	0
4	0	0	0				Fix	None	0	0
5	0	0	0				Fix	None	0	0
6	0	0	0				Fix	None	0	0
7	0	0	0				Fix	None	0	0
8	0	0	0				Fix	None	0	0

Ring Plans

2.5.4-5 Ring Plan 5

Ring	Offset	Early Gap	Early FO
1	0	0	0
2	0	0	0
3	0	0	0

2.5.4-6 Ring Plan 6

Ring	Offset	Early Gap	Early FO
1	0	0	0
2	0	0	0
3	0	0	0

2.5.4-7 Ring Plan 7

Ring	Offset	Early Gap	Early FO
1	0	0	0
2	0	0	0
3	0	0	0

2.5.4-8 Ring Plan 8

Ring	Offset	Early Gap	Early FO
1	0	0	0
2	0	0	0
3	0	0	0

2.5.4-9 Ring Plan 9

Ring	Offset	Early Gap	Early FO
1	0	0	0
2	0	0	0
3	0	0	0

2.5.4-10 Ring Plan 10

Ring	Offset	Early Gap	Early FO
1	0	0	0
2	0	0	0
3	0	0	0

Scheduler Configuration

Schedule 1

Status	On										
Month of Year											
J	F	M	A	M	J	J	A	S	O	N	D
X	X	X	X	X	X	X	X	X	X	X	X
Description		Weekday		Day Plan		Days of Month		Weekend		Special Functions	
		S M T W T F S		1		1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1		X X X X X X X		3	

Schedule 2

Status	On										
Month of Year											
J	F	M	A	M	J	J	A	S	O	N	D
X	X	X	X	X	X	X	X	X	X	X	X
Description		Weekend		Day Plan		Days of Month		Weekend		Special Functions	
		S M T W T F S		2		1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1		X X X X X X X		3	

Schedule 3

Status	Off										
Month of Year											
J	F	M	A	M	J	J	A	S	O	N	D
X	X	X	X	X	X	X	X	X	X	X	X
Description		Days of Week		Day Plan		Days of Month		Weekend		Special Functions	
		S M T W T F S		0		1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1		X X X X X X X		3	

Day Plans

Day Plan 1

Event	HR	MIN	ACT	Description
1	6	30	1	
2	8	30	2	
3	15	0	3	
4	19	0	64	Free
5	0	0		
6	0	0		
7	0	0		
8	0	0		
9	0	0		
10	0	0		

Day Plan 2

Event	HR	MIN	ACT	Description
1	0	0		
2	0	0		
3	0	0		
4	0	0		
5	0	0		
6	0	0		
7	0	0		
8	0	0		
9	0	0		
10	0	0		

Day Plan 3

Event	HR	MIN	ACT	Description
1	0	0		
2	0	0		
3	0	0		
4	0	0		
5	0	0		
6	0	0		
7	0	0		
8	0	0		
9	0	0		
10	0	0		

Action Commands

Action	Command	Index
1	None	
2	None	
3	None	
4	None	
5	None	
6	None	
7	None	
8	None	
9	None	
10	None	

Action	Command	Index
11	None	
12	None	
13	None	
14	None	
15	None	

Action	Command	Index
16	None	
17	None	
18	None	
19	None	
20	None	

Actions

Action	Pattern	Aux	Special Functions
1	Pattern 1	1	2
2	Pattern 2	3	4
3	Pattern 3	5	6
4	Pattern 4	7	8
5	Pattern 5		
6	Pattern 6		
7	Pattern 7		
8	Pattern 8		
9	Pattern 9		
10	Pattern 10		
11	Pattern 11		
12	Pattern 12		
13	Pattern 13		
14	Pattern 14		
15	Pattern 15		
16	Pattern 16		
17	Pattern 17		
18	Pattern 18		
19	Pattern 19		
20	Pattern 20		
64	Free		

Preempt Configuration

2.2.8 Preemption Configuration

Preempt	1	2	3	4	5	6
Enabled	Enabled	Disabled	Enabled	Enabled	Enabled	Enabled
Type	Rail Road	Emerg Veh	Emerg Veh	Emerg Veh	Emerg Veh	Emerg Veh
Description	BBS Low Battery					
Track Phase						
Track 2 Phases						
Track Overlap						
Track 2 Overlap						
Dwell Phase			2,5	4	1,6	8
Dwell Ped						
Dwell Overlap						
Cycling Phase						
Cycling Ped						
Cycling Overlap						
Exit Phase						
Exit Overlaps						
Recovery Exit Omit						

Preemption Options

Preempt	1	2	3	4	5	6
Non Lock Men						
Not Override Flash		X	X	X	X	X
Not Override Next Preempt			X	X	X	X
Flash Dwell						
Ped Recycle in Dwell Cycle						
Immediate Ped Clear						
Dwell Only Status Output						
All Red Flash Dwell		X				
Allow All Overlaps						
Require All Red Entry						
Require Gate Down Track Exit						
Require Gate Up Dwell Exit						
Use Normal Onr/Normal Off Input						

Preemption Parameters

Preempt	1	2	3	4	5	6
Link	0	0	0	0	0	0
Delay	0	0	0	0	0	0
Min Duration	0	0	0	0	0	0
Min Presence	0.0	0.0	0.0	0.0	0.0	0.0
Max Presence	0	0	90	90	90	90
Max Presence Action	Terminate	Terminate	Terminate	Terminate	Terminate	Terminate
Reservice Lockout	0	0	0	0	0	0
Enter Min Green	25.5	0	5	5	5	5
Enter Yellow Change	25.5	25.5	25.5	25.5	25.5	25.5
Enter Red Clear	25.5	25.5	25.5	25.5	25.5	25.5
Enter Min Walk	25.5	0	0	0	0	0
Enter Ped Clear	25.5	25.5	25.5	25.5	25.5	25.5
Track Green	0	0	0	0	0	0
Track Yellow Change	25.5	25.5	25.5	25.5	25.5	25.5
Track Red Clear	25.5	25.5	25.5	25.5	25.5	25.5
Track 2 Green	0	0	0	0	0	0
Track 2 Yellow	25.5	25.5	25.5	25.5	25.5	25.5
Track 2 Red	25.5	25.5	25.5	25.5	25.5	25.5
Track Ext. Gate Down	0	0	0	0	0	0
Dwell Green	10	0	5	5	5	5

Preempt Exit Parameters

Preempt	1	2	3	4	5	6
Exit Ped Clear	25.5	25.5	25.5	25.5	25.5	25.5
Exit Yellow Change	25.5	25.5	25.5	25.5	25.5	25.5
Exit Red Clear	25.5	25.5	25.5	25.5	25.5	25.5
Dwell Exit Time	0.0	0.0	0.0	0.0	0.0	0.0
Max Exit Green	0	0	0	0	0	0
Exit Type	Exit Phases	Exit Phases	Exit Phases	Exit Phases	Exit Phases	Exit Phases
Exit Max Mode	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
Exit Max Apply Time	0	0	0	0	0	0
Veh Exit Calls						
Ped Exit Calls						

Prioritor Configuration

2.9.6.1 Prioritor Unit Settings

Enabled	
No	0

Lock Out Time

0

2.9.6.3 Prioritor Options

Prioritor	1	2	3	4	5	6
Lockout After First Service						
Presence Only Check-in						
Extend Walk Rest						
Use Phase History						

2.9.6.3 Prioritor Phase Settings

Prioritor	Enabled	Priority	Priority Phases			Skip Ped	Delay Time	Arrival Time	Max Presence	Reservice Lockout	Free Pri Min	Free Pri Max	Flush Time Per Veh	Max Flush Time	Description
			1	2	3										
1	Off	0					0	0	0	0	Min Green	Max Green	0.0	0	
2	Off	0					0	0	0	0	Min Green	Max Green	0.0	0	
3	Off	0					0	0	0	0	Min Green	Max Green	0.0	0	
4	Off	0					0	0	0	0	Min Green	Max Green	0.0	0	
5	Off	0					0	0	0	0	Min Green	Max Green	0.0	0	
6	Off	0					0	0	0	0	Min Green	Max Green	0.0	0	

Advanced I/O Configuration

Ch	Control Type	Source
1	Phs Veh	1
2	Phs Veh	2
3	Phs Veh	3
4	Phs Veh	4
5	Phs Veh	5
6	Phs Veh	6
7	Phs Veh	7
8	Phs Veh	8

Ch	Control Type	Source
9	None	0
10	None	0
11	None	0
12	None	0
13	Phs Ped	2
14	Phs Ped	4
15	Phs Ped	6
16	Phs Ped	8

Concurrency Mode
Auto

Channel Options	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Flash Yellow	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Flash Red	X															
Flash Alternate Half Hertz																

Cabinet Configuration

IO Module	Type
1	Caltrans 332
2	None
3	None
4	None
5	None
6	None
7	None
8	None
9	None
10	None

Alarm	Alarm Name
1	bbs on battery
2	
3	
4	
5	
6	
7	
8	
9	
10	

Advanced Cabinet Options

ITS Cabinet on Port 1 No

ITS Cabinet on Port C13S No

33X Input Leading Edge Filter 5

33X Input Trailing Edge Filter 5

Advanced TS2 Options

Enable TS2 Stop Time

Disable TS2 Startup Call

Disable TS2 Fault Flash

Disable TS2 Cabinet Alarms

2.9.1.4 Manual Concurrency	
Ch	Concurrency
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

2.9.1.5 Auto Concurrency	
Ch	Concurrency
1	5,6,15
2	5,6,13,15
3	
4	8,14,16
5	13
6	13,15
7	
8	14,16
9	
10	
11	
12	
13	15
14	16
15	
16	

2.9.1.6 CMU Concurrency	
Ch	Concurrency
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

Cabinet Configuration

Output Points

IN				OUT			
PUT	Desc	Input Type	Index	PUT	Desc	Output Type	Idx
1	C1-39	Veh Det Call	2	1	C1-2	Ch Red DWalk	14
2	C1-40	Veh Det Call	16	2	C1-3	Chl Green Walk	14
3	C1-41	Veh Det Call	8	3	C1-4	Ch Red DWalk	4
4	C1-42	Veh Det Call	22	4	C1-5	Ch Yel Ped Clear	4
5	C1-43	Veh Det Call	3	5	C1-6	Chl Green Walk	4
6	C1-44	Veh Det Call	17	6	C1-7	Ch Red DWalk	3
7	C1-45	Veh Det Call	9	7	C1-8	Ch Yel Ped Clear	3
8	C1-46	Veh Det Call	23	8	C1-9	Chl Green Walk	3
9	C1-47	Veh Det Call	6	9	C1-10	Ch Red DWalk	13
10	C1-48	Veh Det Call	20	10	C1-11	Chl Green Walk	13
11	C1-49	Veh Det Call	12	11	C1-12	Ch Red DWalk	2
12	C1-50	Veh Det Call	26	12	C1-13	Ch Yel Ped Clear	2
13	C1-51	Preempt Input	1	13	C1-15	Chl Green Walk	2
14	C1-52	Preempt Input	2	14	C1-16	Ch Red DWalk	1
15	C1-53	Man Ctrl Enable	1	15	C1-17	Ch Yel Ped Clear	1
16	C1-54	Custom Alarm	1	16	C1-18	Chl Green Walk	1
17	C1-55	Veh Det Call	15	17	C1-19	Ch Red DWalk	16
18	C1-56	Veh Det Call	1	18	C1-20	Chl Green Walk	16
19	C1-57	Veh Det Call	21	19	C1-21	Ch Red DWalk	8
20	C1-58	Veh Det Call	7	20	C1-22	Ch Yel Ped Clear	8
21	C1-59	Veh Det Call	27	21	C1-23	Chl Green Walk	8
22	C1-60	Veh Det Call	13	22	C1-24	Ch Red DWalk	7
23	C1-61	Veh Det Call	28	23	C1-25	Ch Yel Ped Clear	7
24	C1-62	Veh Det Call	14	24	C1-26	Chl Green Walk	7
25	C1-10	Not Active	0	25	C1-27	Ch Red DWalk	15
26	C1-11	Not Active	0	26	C1-28	Chl Green Walk	15
27	C1-12	Not Active	0	27	C1-29	Ch Red DWalk	6
28	C1-13	Not Active	0	28	C1-30	Ch Yel Ped Clear	6
29	C1-63	Veh Det Call	4	29	C1-31	Chl Green Walk	6
30	C1-64	Veh Det Call	18	30	C1-32	Ch Red DWalk	5
31	C1-65	Veh Det Call	10	31	C1-33	Ch Yel Ped Clear	5
32	C1-66	Veh Det Call	24	32	C1-34	Chl Green Walk	5
33	C1-35	Not Active	0	33	C1-35	Not Active	0
34	C1-36	Not Active	0	34	C1-36	Not Active	0
35	C1-37	Not Active	0	35	C1-37	Not Active	0
36	C1-38	Not Active	0	36	C1-38	Not Active	0
37	C1-100	Ch Yel Ped Clear	18	37	C1-100	Ch Yel Ped Clear	18
38	C1-101	Ch Yel Ped Clear	17	38	C1-101	Ch Yel Ped Clear	17
39	C1-102	Veh Det Reset	1	39	C1-102	Veh Det Reset	1
40	C1-103	Walchdog	0	40	C1-103	Walchdog	0
41	C1-83	Ch Red DWalk	18	41	C1-83	Ch Red DWalk	18
42	C1-84	Chl Green Walk	18	42	C1-84	Chl Green Walk	18
43	C1-85	Ch Red DWalk	12	43	C1-85	Ch Red DWalk	12
44	C1-86	Ch Yel Ped Clear	12	44	C1-86	Ch Yel Ped Clear	12
45	C1-87	Chl Green Walk	12	45	C1-87	Chl Green Walk	12
46	C1-88	Ch Red DWalk	11	46	C1-88	Ch Red DWalk	11
47	C1-89	Ch Yel Ped Clear	11	47	C1-89	Ch Yel Ped Clear	11
48	C1-90	Chl Green Walk	11	48	C1-90	Chl Green Walk	11
49	C1-91	Ch Red DWalk	17	49	C1-91	Ch Red DWalk	17
50	C1-93	Chl Green Walk	17	50	C1-93	Chl Green Walk	17
51	C1-94	Ch Red DWalk	10	51	C1-94	Ch Red DWalk	10
52	C1-95	Ch Yel Ped Clear	10	52	C1-95	Ch Yel Ped Clear	10
53	C1-96	Chl Green Walk	10	53	C1-96	Chl Green Walk	10
54	C1-97	Ch Red DWalk	9	54	C1-97	Ch Red DWalk	9
55	C1-98	Ch Yel Ped Clear	9	55	C1-98	Ch Yel Ped Clear	9
56	C1-99	Chl Green Walk	9	56	C1-99	Chl Green Walk	9
57	C1-11	Not Active	0	57	C1-11	Not Active	0
58	C1-12	Not Active	0	58	C1-12	Not Active	0
59	C1-3	Not Active	0	59	C1-3	Not Active	0
60	C1-14	Not Active	0	60	C1-14	Not Active	0
61	C1-5	Not Active	0	61	C1-5	Not Active	0
62	C1-6	Not Active	0	62	C1-6	Not Active	0
63	C1-7	Not Active	0	63	C1-7	Not Active	0
64	C1-8	Not Active	0	64	C1-8	Not Active	0

User Programs

Program 1

Line	Result	Idx	Operation	Parameter A	Idx	Parameter B	Idx	Dly	Ext	Description
1	Unit Stop Time	0	R=A	Aux Switch State	0	None	0	0.0	0.0	Aux switch stop time
2	None	0	None	None	0	None	0	0.0	0.0	
3	None	0	None	None	0	None	0	0.0	0.0	
4	None	0	None	None	0	None	0	0.0	0.0	
5	None	0	None	None	0	None	0	0.0	0.0	
6	None	0	None	None	0	None	0	0.0	0.0	
7	None	0	None	None	0	None	0	0.0	0.0	
8	None	0	None	None	0	None	0	0.0	0.0	
9	None	0	None	None	0	None	0	0.0	0.0	
10	None	0	None	None	0	None	0	0.0	0.0	

User Programs

Program 2

Line	Result	Idx	Operation	Parameter A	Idx	Parameter B	Idx	Dly	Ext	Description
1	None	0	None	None	0	None	0	0.0	0.0	
2	None	0	None	None	0	None	0	0.0	0.0	
3	None	0	None	None	0	None	0	0.0	0.0	
4	None	0	None	None	0	None	0	0.0	0.0	
5	None	0	None	None	0	None	0	0.0	0.0	
6	None	0	None	None	0	None	0	0.0	0.0	
7	None	0	None	None	0	None	0	0.0	0.0	
8	None	0	None	None	0	None	0	0.0	0.0	
9	None	0	None	None	0	None	0	0.0	0.0	
10	None	0	None	None	0	None	0	0.0	0.0	

Program 3

Line	Result	Idx	Operation	Parameter A	Idx	Parameter B	Idx	Dly	Ext	Description
1	None	0	None	None	0	None	0	0.0	0.0	
2	None	0	None	None	0	None	0	0.0	0.0	
3	None	0	None	None	0	None	0	0.0	0.0	
4	None	0	None	None	0	None	0	0.0	0.0	
5	None	0	None	None	0	None	0	0.0	0.0	
6	None	0	None	None	0	None	0	0.0	0.0	
7	None	0	None	None	0	None	0	0.0	0.0	
8	None	0	None	None	0	None	0	0.0	0.0	
9	None	0	None	None	0	None	0	0.0	0.0	
10	None	0	None	None	0	None	0	0.0	0.0	

INTERSECTION: El Camino & Oceanside

Group Assignment: **NONE**

Field Master Assignment: **NONE**

System Reference Number: **21**

N/S Street Name: **Not Assigned**

E/W Street Name: **Not Assigned**

Change Record			
Change	By	Date	Change

Drop Number	4	<C/0+0+0>
Zone Number	4	<C/0+0+1>
Area Number	1	<C/0+0+2>
Area Address	21	<C/0+0+3>

QuicNet Channel Serial:COM36: (QuicNet)

Communication Addresses

Manual Plan	
Manual Offset	

Manual Selection

Notes:

Manual Plan
 0 = Automatic
 1-9 = Plan 1-9
 14 = Free
 15 = Flash

Manual Offset
 0 = Automatic
 1 = Offset A
 2 = Offset B
 3 = Offset C

Flash Start	0	<F/1+0+E>
Red Revert	5.0	<F/1+0+F>
All Red Start	5.0	<F/1+C+0>
FYA Red Revert	2.0	<F/1+0+5>
OVLPG CHG Red	6.0	<F/1+0+3>

Start / Revert Times

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase
 (Outputs specified in Assignable
 Outputs at E/127+A+E & F)

Row	Phase Names ---->	Phase							
		1	2	3	4	5	6	7	8
0	Ped Walk	0	7	0	7	0	7	0	7
1	Ped FDW	0	26	0	24	0	24	0	25
2	Min Green	6	10	6	10	6	10	6	10
3	Type 3 Disconnect	0	99	0	99	0	99	0	99
4	Added per Vehicle	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
5	Veh Extension	3.0	5.0	3.0	4.0	3.0	5.0	3.0	4.0
6	Max Gap	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0
7	Min Gap	3.0	2.5	3.0	3.0	3.0	2.5	3.0	2.5
8	Max Limit	20	50	30	40	20	50	35	40
9	Max Limit 2	30	70	70	70	30	70	30	70
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	26	0	24	0	24	0	25
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	1.2	0.0	1.0	0.0	1.2	0.0	1.0
E	Yellow Change	4.4	5.5	4.8	5.5	4.4	5.5	4.8	5.5
F	Red Clear	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0

Phase Timing - Bank 1 <C+0+F=1>

9	A	B	C	D
Phase 1	---	---	---	---
Phase 2	0	0	0	0.0
Phase 3	20	0	0	0.0
Phase 4	0	0	0	0.0
Phase 5	60	0	0	0.0
Phase 6	0	0	0	0.0
Phase 7	0	0	0	0.0
Phase 8	20	0	0	0.0
Max Initial				
Alternate Walk				
Alternate FDW				
Alternate Initial				
Alternate Extension				

Alternate Timing <C+0+F=1>

E	F
RR-1 Delay	0
RR-1 Clear	0
EV-A Delay	0
EV-A Clear	5
EV-B Delay	0
EV-B Clear	5
EV-C Delay	0
EV-C Clear	5
EV-D Delay	0
EV-D Clear	5
RR-2 Delay	0
RR-2 Clear	20
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing

Row	F
Permit	12345678
Red Lock	1_3_5_7_
Yellow Lock	_4_8
Min Recall	_2_6_
Ped Recall	_
View Set Peds	-----
Rest In Walk	
Red Rest	
Dual Entry	_2_4_6_8
Max Recall	
Soft Recall	
Max 2	
Cond. Service	
Man Cntrl Calls	
Yellow Start	_2_6_
First Phases	_3_7_

Phase Functions <C+0+F=1>

Row	Overlap							
	1	2	3	4	5	6	7	8
0								
1	0	0	0	0	0	0	0	0
2								
3								
4								
5								
6								
7								
8	N	N	N	N	N	N	N	N
9								
A	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0
D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Overlap Assignments <C+0+E=29>

Row	C
EV-A	0
EV-B	0
EV-C	0
EV-D	0
RR-1 *	---
RR-2 *	---
SE-1	0
SE-2	0

- Extra 1 Flags
 1 = TBC Type 1
 2 = NEMA Ext. Coord
 3 = Auto Daylight Savings
 4 = Solid FDW on EV
 5 = Extended Status
 6 = International Ped
 7 = Flash - Clear Outputs
 8 = Split Ring

Extra 2 Flags

- 1 = AWB During Initial
 2 = 3 Section FYA
 3 = Disable Min Walk
 4 = QuickNet System
 5 = Ignore P/P on EV
 6 = Manual Hold in FDW
 7 = Allow QuickNet PE
 8 = Flash Gm B4 Yellow

Preempt Priority

<C+0+E=125>
 (* RR-1 is always Highest, and RR-2 is always Second Highest)

Row	E
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
A	2_5
B	4_7
C	1_6
D	3_8
E	1_45
F	2

Configuration <C+0+E=125>

Row	F
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

Configuration <C+0+E=125>

Row	F
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

Configuration <C+0+E=125>

Row	2
0	
1	10
2	10
3	10
4	10
5	10
6	10
7	10
8	10

- Flash to PE & PE Non-Lock
 1 = EVA 5 = RR 1
 2 = EVB 6 = RR 2
 3 = EVC 7 = SE 1
 4 = EVD 8 = SE 2
- IC Select Flags
 1 =
 2 = Modem
 3 = 7-Wire Slave
 4 = FYA/Ped call side
 5 = Ped Inhibit FYA
 6 = Simplex Master
 7 =
 8 = Offset Interrupter

Coordination Transition Minimums <C+0+C=5>

Coord Extra

1 = Programmed WALK Time for Sync Phases
2 = Always Terminate Sync Phase Peds

Column Numbers ---->	1	2	3	4	5	6	7	8	9
Plan Name ---->					Plan				
Cycle Length	100	100	100	100	100	100	100	100	100
Phase 1 - ForceOff	55	55	55	55	55	55	55	55	55
Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0
Phase 3 - ForceOff	20	20	20	20	20	20	20	20	20
Phase 4 - ForceOff	40	40	40	40	40	40	40	40	40
Phase 5 - ForceOff	55	55	55	55	55	55	55	55	55
Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0
Phase 7 - ForceOff	20	20	20	20	20	20	20	20	20
Phase 8 - ForceOff	40	40	40	40	40	40	40	40	40
Ring Offset	0	0	0	0	0	0	0	0	0
Offset 1	0	0	0	0	0	0	0	0	0
Offset 2	0	0	0	0	0	0	0	0	0
Offset 3	0	0	0	0	0	0	0	0	0
Perm 1 - End	15	15	15	15	15	15	15	15	15
Hold Release	255	255	255	255	255	255	255	255	255
Reserved	0	0	0	0	0	0	0	0	0

Coordination - Bank 1 <C+0+C=1>

Row	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Plan 1 - Sync																
Plan 2 - Sync																
Plan 3 - Sync																
Plan 4 - Sync																
Plan 5 - Sync																
Plan 6 - Sync																
Plan 7 - Sync																
Plan 8 - Sync																
Plan 9 - Sync																
NEMA Sync																
NEMA Hold																
Coord Extra																

Sync Phases <C+0+C=1>

Row	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Free Lag																
Plan 1 - Lag																
Plan 2 - Lag																
Plan 3 - Lag																
Plan 4 - Lag																
Plan 5 - Lag																
Plan 6 - Lag																
Plan 7 - Lag																
Plan 8 - Lag																
Plan 9 - Lag																
External Lag																
Lag Hold																

Lag Phases <C+0+C=1>

Row	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Ped Adjustment																
Perm 2 - Start																
Perm 2 - End																
Perm 3 - Start																
Perm 3 - End																
Reservice Time																
Reservice Phases																
Pretimed Phases																
Max Recall																
Perm 1 Veh Phase																
Perm 1 Ped Phase																
Perm 2 Veh Phase																
Perm 2 Ped Phase																
Perm 3 Veh Phase																
Perm 3 Ped Phase																

Coordination - Bank 2 <C+0+C=2>

Row	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Ped Adjustment																
Perm 2 - Start																
Perm 2 - End																
Perm 3 - Start																
Perm 3 - End																
Reservice Time																
Reservice Phases																
Pretimed Phases																
Max Recall																
Perm 1 Veh Phase																
Perm 1 Ped Phase																
Perm 2 Veh Phase																
Perm 2 Ped Phase																
Perm 3 Veh Phase																
Perm 3 Ped Phase																

Row	Column 8	Column 9	Column A	Column B	Column C	Column D	Column E	Column F
0	One-Shot Timer	Latch 1 Set	NOT-3	Max 2	PreTimed	Set DOW	Dial 2 (7-Wire)	Sim Term
1	AND-5 (a)	Latch 1 Reset	NOT-4	Bus Checkin A	Plan 1	Ext. Perm 1	Dial 3 (7-Wire)	EV-A
2	AND-5 (b)	Latch 2 Set	OR-4 (a)	Bus Checkin B	Plan 2	Ext. Perm 2	Offset 1 (7-Wire)	EV-B
3	AND-6 (a)	Latch 2 Reset	OR-4 (b)	Bus Checkin C	Plan 3	Gate Down	Offset 2 (7-Wire)	EV-C
4	AND-6 (b)	NAND-3 (a)	OR-5 (a)	Bus Checkin D	Plan 4	Set Clock	Offset 3 (7-Wire)	EV-D
5	Reserved	NAND-3 (b)	OR-5 (b)	Bus Checkout A	Plan 5	Stop Time	Free (7-Wire)	RR-1
6	Reserved	NAND-4 (a)	OR-6 (a)	Bus Checkout B	Plan 6	Flash Sense	Flash (7-Wire)	RR-2
7	Reserved	NAND-4 (b)	OR-6 (b)	Bus Checkout C	Plan 7	Manual Enable	Excl. Ped Omit	Spec. Event 1
8	Spec. Funct. 1	OR-7 (a)	EXTMR	Bus Checkout D	Plan 8	Man. Advance	NOT-1	Spec. Event 2
9	Spec. Funct. 2	OR-7 (b)	External Alarm 1	Max Inhibit (nema)	Plan 9	External Alarm 2	NOT-2	External Lag
A	Spec. Funct. 3	OR-7 (c)	AND-4 (a)	Force A (nema)	DELAY-A	Phase Bank 2	OR-1 (a)	AND-1 (a)
B	Spec. Funct. 4	OR-7 (d)	AND-4 (b)	Force B (nema)	DELAY-B	Phase Bank 3	OR-1 (b)	AND-1 (b)
C	Reserved	OR-8 (a)	NAND-1 (a)	C.N.A. (nema)	DELAY-C	Overlap Set 2	OR-2 (a)	AND-2 (a)
D	Reserved	OR-8 (b)	NAND-1 (b)	Hold (nema)	DELAY-D	Overlap Set 3	OR-2 (b)	AND-2 (b)
E	Reserved	OR-8 (c)	NAND-2 (a)	Max Recall	DELAY-E	Detector Set 2	OR-3 (a)	AND-3 (a)
F	Reserved	OR-8 (d)	NAND-2 (b)	Min Recall	DELAY-F	Detector Set 3	OR-3 (b)	AND-3 (b)

<C+0+E=126>

Assignable Inputs

Row	Column 8	Column 9	Column A	Column B	Column C	Column D	Column E	Column F
0	Reserved	Phase ON - 1	Preempt Fail	Flasher 0	Free	NOT-1	TOD Out 1	Dial 2 (7-Wire)
1	Reserved	Phase ON - 2	Sp Evt Out 1	Flasher 1	Plan 1	OR-1	TOD Out 2	Dial 3 (7-Wire)
2	Reserved	Phase ON - 3	Sp Evt Out 2	Fast Flasher	Plan 2	OR-2	TOD Out 3	Offset 1 (7-Wire)
3	Reserved	Phase ON - 4	Sp Evt Out 3	EXTMR	Plan 3	OR-3	TOD Out 4	Offset 2 (7-Wire)
4	Reserved	Phase ON - 5	Sp Evt Out 4	One-Shot Timer	Plan 4	AND-1	TOD Out 5	Offset 3 (7-Wire)
5	Reserved	Phase ON - 6	Sp Evt Out 5	Reserved	Plan 5	AND-2	TOD Out 6	Free (7-Wire)
6	Reserved	Phase ON - 7	Sp Evt Out 6	Latch 1	Plan 6	AND-3	TOD Out 7	Flash (7-Wire)
7	Reserved	Phase ON - 8	Sp Evt Out 7	Latch 2	Plan 7	NOT-2	TOD Out 8	Preempt
8	Fl'n Yell Arrow 1	Ph. Check - 1	Sp Evt Out 8	NOT-3	Plan 8	EV-A	Adv. Warn - 1	Low Priority A
9	Green 1	Ph. Check - 2	Coord On	NOT-4	Plan 9	EV-B	Adv. Warn - 2	Low Priority B
A	Fl'n Yell Arrow 3	Ph. Check - 3	Detector Fail	OR-4	Spec. Funct. 3	EV-C	DELAY-A	Low Priority C
B	Green 3	Ph. Check - 4	Spec. Funct. 1	OR-5	Spec. Funct. 4	EV-D	DELAY-B	Low Priority D
C	Fl'n Yell Arrow 5	Ph. Check - 5	Spec. Funct. 2	OR-6	NAND-3	RR-1	DELAY-C	AND-5
D	Green 5	Ph. Check - 6	Central Control	AND-4	NAND-4	RR-2	DELAY-D	AND-6
E	Fl'n Yell Arrow 7	Ph. Check - 7	Excl. Ped DW	NAND-1	OR-7	Spec. Event 1	DELAY-E	Reserved
F	Green 7	Ph. Check - 8	Excl. Ped WK	NAND-2	OR-8	Spec. Event 2	DELAY-F	Reserved

<C+0+E=127>

Assignable Outputs

Row	Column Numbers ---->	Phase											
		1	2	3	4	5	6	7	8				
0	Ped Walk												
1	Ped FDW	0	7	0	7	0	7	0	7	0	7	0	7
2	Min Green	6	10	6	10	6	10	6	10	6	10	6	10
3	Type 3 Disconnect	0	99	0	99	0	99	0	99	0	99	0	99
4	Added per Vehicle	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
5	Veh Extension	3.0	5.0	3.0	4.0	3.0	5.0	3.0	4.0	3.0	5.0	3.0	4.0
6	Max Gap	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0
7	Min Gap	3.0	2.5	3.0	2.5	3.0	2.5	3.0	2.5	3.0	2.5	3.0	2.5
8	Max Limit	20	45	40	45	20	45	40	45	20	45	40	45
9	Max Limit 2	30	70	30	70	30	70	30	70	30	70	30	70
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	20	0	22	0	20	0	20	0	20	0	20
C	Cond Serv Check	0	0	0	0	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	1.2	0.0	1.0	0.0	1.2	0.0	1.0	0.0	1.2	0.0	1.0
E	Yellow Change	4.1	4.8	4.1	4.8	4.1	4.8	4.1	4.8	4.1	4.8	4.1	4.8
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Phase Timing - Bank 2

<C+0+F=2>

	9	A	B	C	D
Phase 1	---	---	---	---	---
Phase 2	20	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	20	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	20	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	20	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Row	Phase Names ---->	Phase											
		1	2	3	4	5	6	7	8				
0	Ped Walk												
1	Ped FDW	0	7	0	7	0	7	0	7	0	7	0	7
2	Min Green	6	10	6	10	6	10	6	10	6	10	6	10
3	Type 3 Disconnect	0	99	0	99	0	99	0	99	0	99	0	99
4	Added per Vehicle	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
5	Veh Extension	3.0	5.0	3.0	4.0	3.0	5.0	3.0	4.0	3.0	5.0	3.0	4.0
6	Max Gap	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0
7	Min Gap	3.0	2.5	3.0	2.5	3.0	2.5	3.0	2.5	3.0	2.5	3.0	2.5
8	Max Limit	20	45	40	45	20	45	40	45	20	45	40	45
9	Max Limit 2	30	70	30	70	30	70	30	70	30	70	30	70
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	20	0	22	0	20	0	20	0	20	0	20
C	Cond Serv Check	0	0	0	0	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	1.2	0.0	1.0	0.0	1.2	0.0	1.0	0.0	1.2	0.0	1.0
E	Yellow Change	4.1	4.8	4.1	4.8	4.1	4.8	4.1	4.8	4.1	4.8	4.1	4.8
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Phase Timing - Bank 3

<C+0+F=3>

	9	A	B	C	D
Phase 1	---	---	---	---	---
Phase 2	20	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	20	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	20	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	20	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Transition Type	0.3	<C/5+1+9>
-----------------	-----	-----------

TBC Transition

Transition Type
 0 X = Shortway
 1 X = Lengthen
 X-1 thru X, 4 =
 Number of
 cycles when
 lengthening

Hawk Select	0	F/1+0+4>
-------------	---	----------

Hawk Select

200 = Mid-Block, 201 = Hawk

Address	0	<C/1+0+6>
Select Parity	0	<C/1+0+5>

AB3418 Comm 2

0 = No Parity, 1 = Even

Begin Month	3	<C/5+2+A>
Begin Week	2	<C/5+2+B>
End Month	11	<C/5+2+C>
End Week	1	<C/5+2+D>

Daylight Savings Time

Daylight Savings
 Date
 If set to all zeros,
 standard dates
 will be used.

Time B4 Yellow	0.0	<F/1+C+E>
Phase Number	0	<F/1+C+F>

Advance Warning Beacon - Sign 1

Time B4 Yellow	0.0	<F/1+D+F>
Phase Number	0	<F/1+D+F>

Advance Warning Beacon - Sign 2

Offset Time	0	<C/5+2+E>
Max Cycle Time	20	<C/5+2+F>

Yellow Yield Coordination

Omit Alarm	12345678	<C/5+F+0>
Local Alarm Disable	12345678	<C/5+F+0>

INTERSECTION: El Camino & Oceanside

Column Numbers ---->

Row	0	1	2	3	1	3
					Delay	Carry-over
0	39	45_7_2	2	123_8	0.0	0.0
1	40	45_7_6	6	123_8	0.0	0.0
2	41	45_7_4	4	123_8	0.0	0.0
3	42	45_7_8	8	123_8	0.0	0.0
4	43	45_7_2	2	123_8	0.0	0.0
5	44	45_7_6	6	123_8	0.0	0.0
6	45	45_7_4	4	123_8	0.0	0.0
7	46	45_7_8	8	123_8	0.0	0.0
8	47	67_2	2	123_8	0.0	0.0
9	48	67_6	6	123_8	0.0	0.0
A	49	67_4	4	123_8	0.0	0.0
B	50	67_8	8	123_8	0.0	0.0
C	55	45_7_5	5	123_8	0.0	0.0
D	56	45_7_1	1	123_8	0.0	0.0
E	57	45_7_7	7	123_8	0.0	0.0
F	58	45_7_3	3	123_8	0.0	0.0

Row	1	2	3	4	5	6	7	8
	Ped / Phase / Overlap							
	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0

Redirect Phase Outputs <C+0+E=127>

Cabinet Type 0 <E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes) 255 <D/0+0+1>

Max ON (minutes) 7 <D/0+0+2>

Chatter Fail Time 0 <D/0+0+4>

Detector Failure Monitor

Ped Ovlp Parent Ph 0 <E/125+D+1>

Ped Ovlp Phases <E/125+D+2>

RR1 Exit Phases <E/125+D+3>

Excl Ped/Ped Svc 0 <E/125+D+4>

Miscellaneous

Detector Attributes

1 = Full Time Delay

2 = Ped Call

3 = Overlap

4 = Count

5 = Extension

6 = Type 3

7 = Calling

8 = Alternate

Det. Assignments

1 = Det. Set 1

2 = Det. Set 2

3 = Det. Set 3

4 =

5 =

6 = Failure - Min Recall

7 = Failure - Max Recall

8 = Report on Failure

Row	4	5	6	7	2	4
					Delay	Carry-over
0	59	45_7_5	5	123_8	0.0	0.0
1	60	45_7_1	1	123_8	0.0	0.0
2	61	45_7_7	7	123_8	0.0	0.0
3	62	45_7_3	3	123_8	0.0	0.0
4	63	45_7_2	2	123_8	0.0	0.0
5	64	45_7_6	6	123_8	0.0	0.0
6	65	45_7_4	4	123_8	0.0	0.0
7	66	45_7_8	8	123_8	0.0	0.0
8	67	2_2	2	123_8	0.0	0.0
9	68	2_6	6	123_8	0.0	0.0
A	69	2_4	4	123_8	0.0	0.0
B	70	2_8	8	123_8	0.0	0.0
C	76	45_7_2	2	123_8	0.0	0.0
D	77	45_7_6	6	123_8	0.0	0.0
E	78	45_7_4	4	123_8	0.0	0.0
F	79	45_7_8	8	123_8	0.0	0.0

Detector Assignments <C+0+E=126>

Row	B
8	0.0
9	0
A	0
B	0
C	0
D	0
E	0
F	0

Delay Logic Times

<C+0+D=0> (seconds)

Row	6	7	8	9	A	B	C	D	E	F
	Clear	Time	Ped Call	Hold	Advance	Force Off	Vehicle Call	Permit Phases	Ped Omnit	Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Special Event Schedule -- Table 1

<C+0+E=27>

Notes:

0 <E/27+5+F>

Limited Service Interval

Row	6	7	8	9	A	B	C	D	E	F
	Clear	Time	Ped Call	Hold	Advance	Force Off	Vehicle Call	Permit Phases	Ped Omnit	Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Special Event Schedule -- Table 2

<C+0+E=28>

Notes:

0 <E/28+5+F>

Limited Service Interval

Min Time (seconds) <F/1+0+8>

Min Green Before PE Force Off

Max Time (minutes) <F/1+0+9>

Max Preempt Time Before Failure

Min Time (seconds) <F/1+0+A>

Min Time Between Same Preempts

(Does Not Apply To Railroad Preempt)

Low Pri. Channel <E/125+C+8>

Disable Low Priority Channel

Low Priority

- 1 = Channel A
- 2 = Channel B
- 3 = Channel C
- 4 = Channel D

Row	C	Bus Headway	0
D	Bus Delay	0	0
E	Max Early Grn	0	0
F	Max Grn Ext.	0	0

Priority Parameters

<F/1 +A+Row>

Row	Time	Headway	Direction	Day of Week
0	00:00	0	0	
1	00:00	0	0	
2	00:00	0	0	
3	00:00	0	0	
4	00:00	0	0	
5	00:00	0	0	
6	00:00	0	0	
7	00:00	0	0	
8	00:00	0	0	
9	00:00	0	0	
A	00:00	0	0	
B	00:00	0	0	
C	00:00	0	0	
D	00:00	0	0	
E	00:00	0	0	
F	00:00	0	0	

Headway Schedule <C+0+9=2.1>

Headway Time (minutes)
1 thru 9 = 1 thru 9

- A = 10
- B = 11
- C = 12
- D = 13
- E = 14
- F = 15

Low Priority Preemption (Bus Priority)

Note: Also see "Time of Day Functions", Function E, Bit 5 (Disable Low Priority)

Appendix D

Bus Route Schedules

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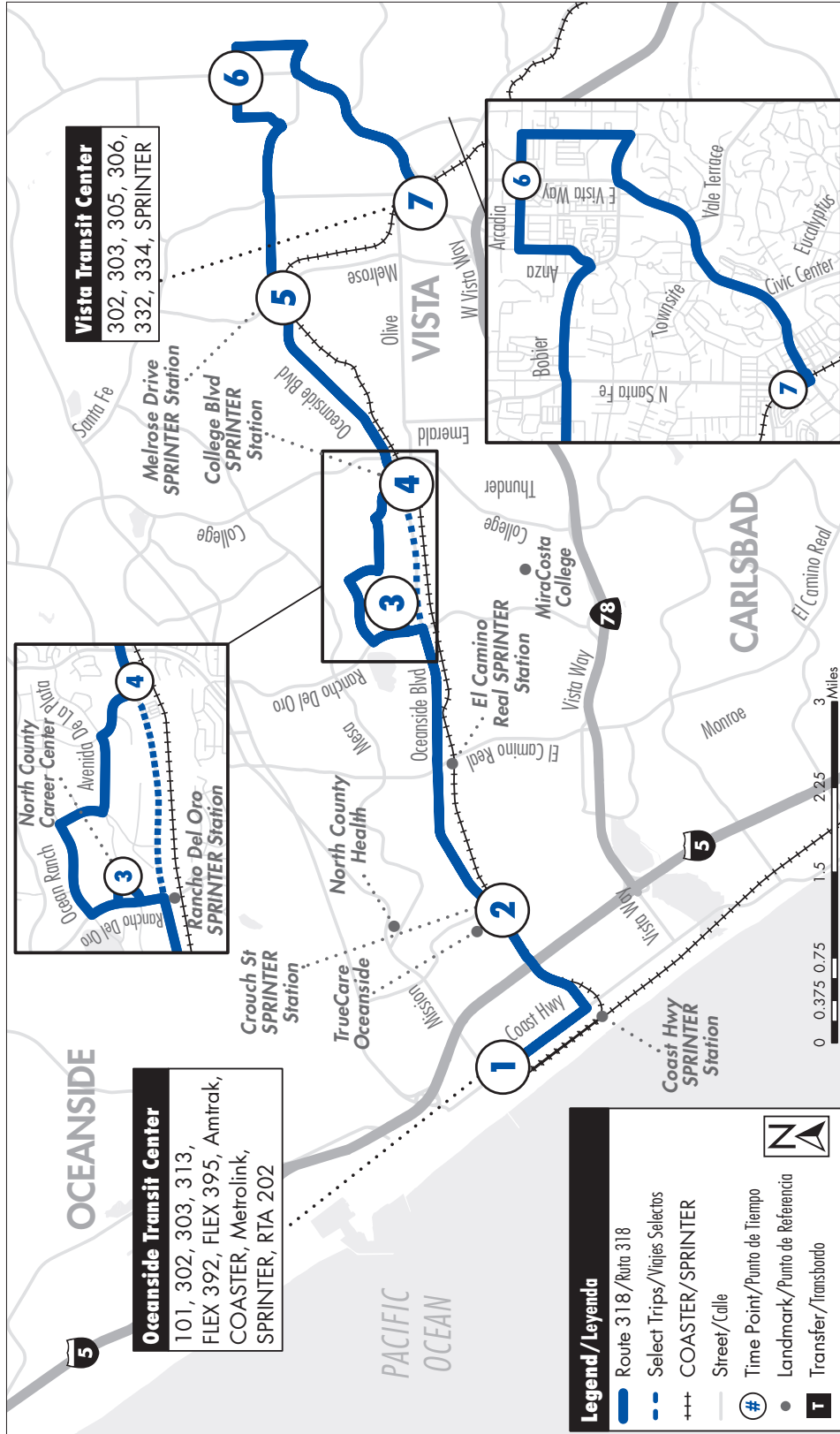
Oceanside to Vista via Oceanside Blvd. & Bobier Dr.

Oceanside a Vista vía Oceanside Blvd. y Bobier Dr.

M-F • SA
L-V • SÁ

Destinations/Destinos

- Vista High School
- North County Coastal Career Center
- Alta Vista High School
- VA Clinic



Monday - Friday Eastbound to Vista <i>Lunes a Viernes • Dirección hacia el este a Vista</i>						
Oceanside Transit Center	Oceanside Bl. & Crouch St.	VA Clinic	Oceanside Bl. & Avenida Del Oro	Oceanside Bl. & Melrose Dr.	Arcadia Ave. & E. Vista Way	Vista Transit Center
1	2	3	4	5	6	7
–	–	–	–	4:33a	4:40a	4:52a
5:04a	5:10a	5:16a	5:22a	5:30a	5:40a	5:52a
6:01a	6:07a	6:14a	6:21a	6:29a	6:40a	6:52a
6:48a	6:56a	7:05a	7:12a	7:21a	7:32a	7:52a
7:54a	8:03a	8:11a	8:18a	8:27a	8:38a	8:52a
8:51a	9:00a	9:08a	9:16a	9:25a	9:36a	9:52a
9:51a	10:00a	10:08a	10:16a	10:25a	10:36a	10:52a
10:51a	11:00a	11:08a	11:16a	11:25a	11:36a	11:52a
11:49	11:58	12:07p	12:16p	12:25p	12:36p	12:52p
12:45p	12:55p	1:04p	1:13p	1:22p	1:33p	1:52p
1:44p	1:54p	2:04p	2:13p	2:22p	2:33p	2:52p
2:46p	2:57p	3:07p	3:16p	3:25p	3:36p	3:52p
3:46p	3:57p	4:06p	4:15p	4:24p	4:36p	4:52p
4:49p	4:59p	5:08p	5:17p	5:27p	5:39p	5:53p
5:53p	6:02p	6:11p	6:19p	6:27p	6:38p	6:52p
6:56p	7:05p	7:12p	7:20p	7:28p	7:38p	7:52p

Monday - Friday Westbound to Oceanside <i>Lunes a Viernes • Dirección hacia el oeste a Oceanside</i>						
Vista Transit Center	Arcadia Ave. & E. Vista Way	Oceanside Bl. & Melrose Dr.	Oceanside Bl. & Avenida Del Oro	VA Clinic	Oceanside Bl. & Crouch St.	Oceanside Transit Center
7	6	5	4	3	2	1
5:06a	5:16a	5:22a	5:27a	5:33a	5:41a	5:51a
6:07a	6:18a	6:25a	6:32a	6:38a	6:47a	6:58a
7:06a	7:19a	7:32a	7:40a	7:46a	7:57a	8:09a
8:06a	8:18a	8:26a	8:33a	8:39a	8:50a	9:03a
9:06a	9:17a	9:25a	9:32a	9:38a	9:49a	10:02a
10:06a	10:18a	10:26a	10:33a	10:39a	10:50a	11:03a
11:06a	11:18a	11:26a	11:33a	11:39a	11:50a	12:04p
12:06p	12:19p	12:27p	12:34p	12:40p	12:51p	1:05p
1:06p	1:20p	1:28p	1:36p	1:42p	1:53p	2:07p
2:06p	2:20p	2:30p	2:39p	2:46p	2:57p	3:11p
3:06p	3:20p	3:29p	3:39p	3:46p	3:57p	4:11p
4:06p	4:20p	4:29p	4:38p	4:45p	4:56p	5:10p
5:06p	5:19p	5:28p	5:37p	5:44p	5:53p	6:07p
6:06p	6:19p	6:27p	6:34p	6:40p	6:49p	7:01p
7:06p	7:18p	7:26p	7:32p	7:38p	7:47p	7:59p

Saturday Eastbound to Vista <i>Sábado • Dirección hacia el este a Vista</i>						
Oceanside Transit Center	Oceanside Bl. & Crouch St.	VA Clinic	Oceanside Bl. & Avenida Del Oro	Oceanside Bl. & Melrose Dr.	Arcadia Ave. & E. Vista Way	Vista Transit Center
1	2	3	4	5	6	7
–	–	–	–	5:35a	5:42a	5:52a
6:09a	6:15a	–	6:25a	6:31a	6:40a	6:52a
7:07a	7:14a	–	7:24a	7:30a	7:40a	7:52a
8:04a	8:12a	–	8:22a	8:29a	8:39a	8:52a
9:03a	9:11a	–	9:21a	9:28a	9:38a	9:52a
10:01a	10:11a	–	10:21a	10:28a	10:38a	10:52a
11:00a	11:10a	–	11:21a	11:28a	11:38a	11:52a
12:00p	12:10p	–	12:21p	12:28p	12:38p	12:52p
1:00p	1:10p	–	1:21p	1:28p	1:38p	1:52p
2:00p	2:10p	–	2:21p	2:28p	2:38p	2:52p
3:00p	3:10p	–	3:21p	3:28p	3:38p	3:52p
4:00p	4:10p	–	4:21p	4:28p	4:38p	4:52p
5:00p	5:10p	–	5:21p	5:28p	5:38p	5:52p
6:02p	6:12p	–	6:23p	6:29p	6:39p	6:52p
7:04p	7:12p	–	7:23p	7:29p	7:39p	7:52p

Saturday Westbound to Oceanside <i>Sábado • Dirección hacia el oeste a Oceanside</i>						
Vista Transit Center	Arcadia Ave. & E. Vista Way	Oceanside Bl. & Melrose Dr.	Oceanside Bl. & Avenida Del Oro	VA Clinic	Oceanside Bl. & Crouch St.	Oceanside Transit Center
7	6	5	4	3	2	1
6:06a	6:15a	6:22a	6:27a	–	6:36a	6:44a
7:06a	7:16a	7:23a	7:29a	–	7:38a	7:46a
8:06a	8:16a	8:23a	8:29a	–	8:38a	8:48a
9:06a	9:16a	9:23a	9:30a	–	9:40a	9:50a
10:06a	10:17a	10:24a	10:31a	–	10:41a	10:52a
11:06a	11:18a	11:25a	11:32a	–	11:42a	11:53a
12:06p	12:18p	12:25p	12:32p	–	12:42p	12:53p
1:06p	1:18p	1:25p	1:32p	–	1:42p	1:53p
2:06p	2:18p	2:25p	2:32p	–	2:42p	2:53p
3:06p	3:18p	3:25p	3:32p	–	3:42p	3:53p
4:06p	4:18p	4:25p	4:32p	–	4:42p	4:53p
5:06p	5:18p	5:25p	5:32p	–	5:42p	5:53p
6:06p	6:17p	6:24p	6:30p	–	6:40p	6:51p
7:06p	7:17p	7:24p	7:30p	–	7:40p	7:49p

Appendix E

Synchro Calculation Worksheets Existing Conditions

HCM 6th Signalized Intersection Summary
 1: Garrison St & Oceanside Blvd

































Existing Conditions
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	775	36	16	971	17	15	2	16	33	8	61
Future Volume (veh/h)	25	775	36	16	971	17	15	2	16	33	8	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	27	842	35	17	1055	16	16	2	13	36	9	53
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	47	1972	82	33	2007	30	69	5	399	65	9	398
Arrive On Green	0.03	0.57	0.57	0.02	0.56	0.56	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1767	3445	143	1767	3553	54	3	19	1572	3	37	1567
Grp Volume(v), veh/h	27	431	446	17	523	548	18	0	13	45	0	53
Grp Sat Flow(s),veh/h/ln	1767	1763	1826	1767	1763	1844	21	0	1572	40	0	1567
Q Serve(g_s), s	1.5	13.8	13.8	1.0	18.4	18.4	0.1	0.0	0.6	0.1	0.0	2.6
Cycle Q Clear(g_c), s	1.5	13.8	13.8	1.0	18.4	18.4	25.4	0.0	0.6	25.4	0.0	2.6
Prop In Lane	1.00		0.08	1.00		0.03	0.89		1.00	0.80		1.00
Lane Grp Cap(c), veh/h	47	1009	1045	33	996	1042	73	0	399	75	0	398
V/C Ratio(X)	0.58	0.43	0.43	0.51	0.53	0.53	0.25	0.00	0.03	0.60	0.00	0.13
Avail Cap(c_a), veh/h	352	1009	1045	352	996	1042	74	0	399	75	0	398
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.75	0.75	0.75	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.1	12.1	12.1	48.6	13.5	13.5	43.5	0.0	28.1	44.8	0.0	28.8
Incr Delay (d2), s/veh	24.1	1.3	1.3	6.6	1.5	1.4	1.7	0.0	0.0	12.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	5.1	5.3	0.5	6.8	7.1	0.5	0.0	0.2	1.4	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.2	13.4	13.4	55.2	15.0	14.9	45.2	0.0	28.1	57.4	0.0	29.0
LnGrp LOS	E	B	B	E	B	B	D	A	C	E	A	C
Approach Vol, veh/h		904			1088			31				98
Approach Delay, s/veh		15.2			15.6			38.0				42.0
Approach LOS		B			B			D				D
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	63.0		30.0	7.7	62.3		30.0				
Change Period (Y+Rc), s	5.1	5.8		4.6	5.1	5.8		4.6				
Max Green Setting (Gmax), s	19.9	39.2		25.4	19.9	39.2		25.4				
Max Q Clear Time (g_c+I1), s	3.0	15.8		27.4	3.5	20.4		27.4				
Green Ext Time (p_c), s	0.0	7.6		0.0	0.1	8.6		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				16.9								
HCM 6th LOS				B								





















HCM 6th Signalized Intersection Summary
2: El Camino Real & Oceanside Blvd

Existing Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	  		 	 	
Traffic Volume (veh/h)	120	498	179	258	584	56	60	518	289	73	1361	364
Future Volume (veh/h)	120	498	179	258	584	56	60	518	289	73	1361	364
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	126	524	150	272	615	47	63	545	0	77	1433	0
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	214	745	332	305	838	369	179	1824		192	1283	
Arrive On Green	0.06	0.21	0.21	0.09	0.24	0.24	0.05	0.36	0.00	0.06	0.36	0.00
Sat Flow, veh/h	3428	3526	1570	3428	3526	1552	3428	5066	1572	3428	3526	1572
Grp Volume(v), veh/h	126	524	150	272	615	47	63	545	0	77	1433	0
Grp Sat Flow(s),veh/h/ln	1714	1763	1570	1714	1763	1552	1714	1689	1572	1714	1763	1572
Q Serve(g_s), s	3.3	12.7	7.7	7.2	14.9	2.2	1.6	7.1	0.0	2.0	33.6	0.0
Cycle Q Clear(g_c), s	3.3	12.7	7.7	7.2	14.9	2.2	1.6	7.1	0.0	2.0	33.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	214	745	332	305	838	369	179	1824		192	1283	
V/C Ratio(X)	0.59	0.70	0.45	0.89	0.73	0.13	0.35	0.30		0.40	1.12	
Avail Cap(c_a), veh/h	227	1184	527	305	1264	557	223	1844		223	1283	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	42.1	33.7	31.7	41.6	32.5	27.7	42.3	21.2	0.0	42.1	29.4	0.0
Incr Delay (d2), s/veh	3.6	1.7	1.4	26.5	1.8	0.2	1.2	0.2	0.0	1.4	63.6	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	1.4	5.3	2.8	4.0	6.0	0.8	0.7	2.6	0.0	0.8	24.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.7	35.5	33.1	68.1	34.3	27.9	43.4	21.4	0.0	43.4	93.0	0.0
LnGrp LOS	D	D	C	E	C	C	D	C		D	F	
Approach Vol, veh/h		800			934			608			1510	
Approach Delay, s/veh		36.6			43.8			23.7			90.5	
Approach LOS		D			D			C			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.6	40.7	14.0	27.0	10.2	41.1	11.6	29.4				
Change Period (Y+Rc), s	5.4	7.5	5.8	7.5	5.4	7.5	5.8	7.5				
Max Green Setting (Gmax), s	6.0	33.6	8.2	31.0	6.0	33.6	6.1	33.1				
Max Q Clear Time (g_c+I1), s	4.0	9.1	9.2	14.7	3.6	35.6	5.3	16.9				
Green Ext Time (p_c), s	0.0	6.3	0.0	4.6	0.0	0.0	0.0	4.7				
Intersection Summary												
HCM 6th Ctrl Delay				57.4								
HCM 6th LOS				E								
Notes												
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

























HCM 6th Signalized Intersection Summary
 1: Garrison St & Oceanside Blvd

Existing Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	1138	21	7	884	22	40	25	43	23	7	21
Future Volume (veh/h)	42	1138	21	7	884	22	40	25	43	23	7	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.99
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	44	1198	20	7	931	21	42	26	36	24	7	18
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	62	2065	34	16	1958	44	58	23	399	64	11	393
Arrive On Green	0.04	0.58	0.58	0.01	0.56	0.56	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1767	3547	59	1767	3522	79	0	91	1572	0	43	1549
Grp Volume(v), veh/h	44	595	623	7	466	486	68	0	36	31	0	18
Grp Sat Flow(s),veh/h/ln	1767	1763	1843	1767	1763	1839	91	0	1572	43	0	1549
Q Serve(g_s), s	2.5	21.3	21.3	0.4	16.0	16.0	0.0	0.0	1.7	0.0	0.0	0.9
Cycle Q Clear(g_c), s	2.5	21.3	21.3	0.4	16.0	16.0	25.4	0.0	1.7	25.4	0.0	0.9
Prop In Lane	1.00		0.03	1.00		0.04	0.62		1.00	0.77		1.00
Lane Grp Cap(c), veh/h	62	1026	1073	16	980	1022	81	0	399	75	0	393
V/C Ratio(X)	0.71	0.58	0.58	0.45	0.48	0.48	0.84	0.00	0.09	0.41	0.00	0.05
Avail Cap(c_a), veh/h	352	1026	1073	352	980	1022	81	0	399	75	0	393
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.83	0.83	0.83	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.7	13.2	13.2	49.3	13.4	13.4	41.6	0.0	28.5	41.2	0.0	28.2
Incr Delay (d2), s/veh	29.0	2.4	2.3	11.9	1.4	1.3	50.1	0.0	0.1	3.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	7.9	8.2	0.2	5.9	6.2	2.8	0.0	0.7	0.8	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	76.7	15.6	15.5	61.2	14.8	14.7	91.8	0.0	28.6	44.9	0.0	28.2
LnGrp LOS	E	B	B	E	B	B	F	A	C	D	A	C
Approach Vol, veh/h		1262			959			104			49	
Approach Delay, s/veh		17.7			15.1			69.9			38.7	
Approach LOS		B			B			E			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	64.0		30.0	8.6	61.4		30.0				
Change Period (Y+Rc), s	5.1	5.8		4.6	5.1	5.8		4.6				
Max Green Setting (Gmax), s	19.9	39.2		25.4	19.9	39.2		25.4				
Max Q Clear Time (g_c+I1), s	2.4	23.3		27.4	4.5	18.0		27.4				
Green Ext Time (p_c), s	0.0	9.0		0.0	0.1	8.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				19.3								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary
2: El Camino Real & Oceanside Blvd

Existing Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	350	700	168	314	583	87	112	1522	412	103	821	180
Future Volume (veh/h)	350	700	168	314	583	87	112	1522	412	103	821	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	357	714	136	320	595	72	114	1553	0	105	838	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	250	908	398	284	944	421	199	1709		196	1187	
Arrive On Green	0.07	0.26	0.26	0.08	0.27	0.27	0.06	0.34	0.00	0.06	0.34	0.00
Sat Flow, veh/h	3428	3526	1546	3428	3526	1572	3428	5066	1572	3428	3526	1572
Grp Volume(v), veh/h	357	714	136	320	595	72	114	1553	0	105	838	0
Grp Sat Flow(s),veh/h/ln	1714	1763	1546	1714	1763	1572	1714	1689	1572	1714	1763	1572
Q Serve(g_s), s	7.2	18.6	7.1	8.2	14.7	3.5	3.2	29.0	0.0	2.9	20.5	0.0
Cycle Q Clear(g_c), s	7.2	18.6	7.1	8.2	14.7	3.5	3.2	29.0	0.0	2.9	20.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	250	908	398	284	944	421	199	1709		196	1187	
V/C Ratio(X)	1.43	0.79	0.34	1.13	0.63	0.17	0.57	0.91		0.53	0.71	
Avail Cap(c_a), veh/h	250	1105	485	284	1141	509	222	1721		208	1187	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.9	34.2	29.9	45.4	31.9	27.8	45.4	31.3	0.0	45.3	28.5	0.0
Incr Delay (d2), s/veh	215.3	3.6	0.7	91.6	1.1	0.3	2.8	7.9	0.0	2.3	2.4	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	10.4	8.0	2.5	6.9	5.9	1.2	1.4	12.2	0.0	1.3	8.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	261.1	37.8	30.6	137.0	33.0	28.1	48.2	39.2	0.0	47.7	31.0	0.0
LnGrp LOS	F	D	C	F	C	C	D	D		D	C	
Approach Vol, veh/h		1207			987			1667			943	
Approach Delay, s/veh		103.0			66.4			39.8			32.8	
Approach LOS		F			E			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.1	40.9	14.0	33.0	11.1	40.8	13.0	34.0				
Change Period (Y+Rc), s	5.4	7.5	5.8	7.5	5.4	7.5	5.8	7.5				
Max Green Setting (Gmax), s	6.0	33.6	8.2	31.0	6.4	33.2	7.2	32.0				
Max Q Clear Time (g_c+I1), s	4.9	31.0	10.2	20.6	5.2	22.5	9.2	16.7				
Green Ext Time (p_c), s	0.0	2.4	0.0	4.7	0.0	6.0	0.0	4.5				

Intersection Summary

HCM 6th Ctrl Delay	59.8
HCM 6th LOS	E

Notes

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

Appendix F

Synchro Calculation Worksheets Existing with Project Conditions

HCM 6th Signalized Intersection Summary
 1: Garrison St & Oceanside Blvd

Existing with Project Conditions
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	775	36	16	971	30	15	2	16	73	8	71
Future Volume (veh/h)	28	775	36	16	971	30	15	2	16	73	8	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	30	842	35	17	1055	30	16	2	13	79	9	62
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	50	1971	82	33	1969	56	68	5	399	68	4	398
Arrive On Green	0.03	0.57	0.57	0.02	0.56	0.56	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1767	3445	143	1767	3498	99	0	18	1572	0	17	1567
Grp Volume(v), veh/h	30	431	446	17	532	553	18	0	13	88	0	62
Grp Sat Flow(s),veh/h/ln	1767	1763	1826	1767	1763	1835	18	0	1572	17	0	1567
Q Serve(g_s), s	1.7	13.8	13.8	1.0	18.9	18.9	0.0	0.0	0.6	0.0	0.0	3.1
Cycle Q Clear(g_c), s	1.7	13.8	13.8	1.0	18.9	18.9	25.4	0.0	0.6	25.4	0.0	3.1
Prop In Lane	1.00		0.08	1.00		0.05	0.89		1.00	0.90		1.00
Lane Grp Cap(c), veh/h	50	1009	1045	33	992	1033	73	0	399	73	0	398
V/C Ratio(X)	0.60	0.43	0.43	0.51	0.54	0.54	0.25	0.00	0.03	1.21	0.00	0.16
Avail Cap(c_a), veh/h	352	1009	1045	352	992	1033	73	0	399	73	0	398
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.75	0.75	0.75	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.0	12.1	12.1	48.6	13.7	13.7	43.5	0.0	28.1	48.5	0.0	29.0
Incr Delay (d2), s/veh	24.3	1.3	1.3	6.6	1.6	1.5	1.8	0.0	0.0	173.8	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	5.1	5.3	0.5	7.0	7.2	0.5	0.0	0.2	5.3	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.4	13.4	13.4	55.2	15.2	15.2	45.2	0.0	28.1	222.3	0.0	29.2
LnGrp LOS	E	B	B	E	B	B	D	A	C	F	A	C
Approach Vol, veh/h		907			1102			31				150
Approach Delay, s/veh		15.4			15.8			38.0				142.5
Approach LOS		B			B			D				F
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	63.0		30.0	7.9	62.1		30.0				
Change Period (Y+Rc), s	5.1	5.8		4.6	5.1	5.8		4.6				
Max Green Setting (Gmax), s	19.9	39.2		25.4	19.9	39.2		25.4				
Max Q Clear Time (g_c+I1), s	3.0	15.8		27.4	3.7	20.9		27.4				
Green Ext Time (p_c), s	0.0	7.6		0.0	0.1	8.6		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				24.6								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary
2: El Camino Real & Oceanside Blvd

Existing with Project Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↖	↖↗	↑↑	↖	↖↗	↑↑↑	↖	↖↗	↑↑	↖
Traffic Volume (veh/h)	130	503	204	258	586	56	68	518	289	73	1361	367
Future Volume (veh/h)	130	503	204	258	586	56	68	518	289	73	1361	367
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	137	529	172	272	617	47	72	545	0	77	1433	0
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	215	752	335	303	842	371	187	1826		191	1275	
Arrive On Green	0.06	0.21	0.21	0.09	0.24	0.24	0.05	0.36	0.00	0.06	0.36	0.00
Sat Flow, veh/h	3428	3526	1570	3428	3526	1552	3428	5066	1572	3428	3526	1572
Grp Volume(v), veh/h	137	529	172	272	617	47	72	545	0	77	1433	0
Grp Sat Flow(s),veh/h/ln	1714	1763	1570	1714	1763	1552	1714	1689	1572	1714	1763	1572
Q Serve(g_s), s	3.6	12.9	9.0	7.3	15.0	2.2	1.9	7.2	0.0	2.0	33.6	0.0
Cycle Q Clear(g_c), s	3.6	12.9	9.0	7.3	15.0	2.2	1.9	7.2	0.0	2.0	33.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	215	752	335	303	842	371	187	1826		191	1275	
V/C Ratio(X)	0.64	0.70	0.51	0.90	0.73	0.13	0.39	0.30		0.40	1.12	
Avail Cap(c_a), veh/h	225	1177	524	303	1256	553	221	1832		221	1275	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	42.5	33.8	32.3	41.9	32.6	27.7	42.4	21.3	0.0	42.4	29.6	0.0
Incr Delay (d2), s/veh	5.5	1.7	1.7	27.6	1.8	0.2	1.3	0.2	0.0	1.4	66.4	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	1.6	5.4	3.3	4.0	6.0	0.8	0.8	2.7	0.0	0.9	24.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.0	35.5	34.0	69.6	34.4	28.0	43.7	21.5	0.0	43.7	96.0	0.0
LnGrp LOS	D	D	C	E	C	C	D	C		D	F	
Approach Vol, veh/h		838			936			617			1510	
Approach Delay, s/veh		37.3			44.3			24.1			93.4	
Approach LOS		D			D			C			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	41.0	14.0	27.3	10.5	41.1	11.6	29.7					
Change Period (Y+Rc), s	5.4	7.5	5.8	7.5	5.4	7.5	5.8	7.5				
Max Green Setting (Gmax), s	33.6	8.2	31.0	6.0	33.6	6.1	33.1					
Max Q Clear Time (g_c+14), s	9.2	9.3	14.9	3.9	35.6	5.6	17.0					
Green Ext Time (p_c), s	0.0	6.3	0.0	4.8	0.0	0.0	4.7					

Intersection Summary

HCM 6th Ctrl Delay	58.6
HCM 6th LOS	E

Notes

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

Intersection						
Int Delay, s/veh	8.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	50	16	0	0	0
Future Vol, veh/h	0	50	16	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	54	17	0	0	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	35	1	1	0	0
Stage 1	1	-	-	-	-
Stage 2	34	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-
Pot Cap-1 Maneuver	975	1081	1615	-	-
Stage 1	1020	-	-	-	-
Stage 2	986	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	964	1081	1615	-	-
Mov Cap-2 Maneuver	964	-	-	-	-
Stage 1	1009	-	-	-	-
Stage 2	986	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.5	7.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1615	-	1081	-	-
HCM Lane V/C Ratio	0.011	-	0.05	-	-
HCM Ctrl Dly (s/v)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q (veh)	0	-	0.2	-	-

HCM 6th Signalized Intersection Summary
 1: Garrison St & Oceanside Blvd

Existing with Project Conditions
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	1138	21	7	884	62	40	25	43	47	7	27
Future Volume (veh/h)	52	1138	21	7	884	62	40	25	43	47	7	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.99
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	55	1198	20	7	931	59	42	26	36	49	7	23
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	73	2065	34	16	1848	117	58	23	399	68	5	393
Arrive On Green	0.04	0.58	0.58	0.01	0.55	0.55	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1767	3547	59	1767	3361	213	0	90	1572	0	21	1549
Grp Volume(v), veh/h	55	595	623	7	488	502	68	0	36	56	0	23
Grp Sat Flow(s),veh/h/ln	1767	1763	1843	1767	1763	1811	90	0	1572	21	0	1549
Q Serve(g_s), s	3.1	21.3	21.3	0.4	17.2	17.2	0.0	0.0	1.7	0.0	0.0	1.1
Cycle Q Clear(g_c), s	3.1	21.3	21.3	0.4	17.2	17.2	25.4	0.0	1.7	25.4	0.0	1.1
Prop In Lane	1.00		0.03	1.00		0.12	0.62		1.00	0.87		1.00
Lane Grp Cap(c), veh/h	73	1026	1073	16	969	996	81	0	399	73	0	393
V/C Ratio(X)	0.75	0.58	0.58	0.45	0.50	0.50	0.84	0.00	0.09	0.77	0.00	0.06
Avail Cap(c_a), veh/h	352	1026	1073	352	969	996	81	0	399	73	0	393
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.81	0.81	0.81	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.4	13.2	13.2	49.3	14.0	14.0	41.6	0.0	28.5	47.6	0.0	28.2
Incr Delay (d2), s/veh	30.3	2.4	2.3	11.6	1.5	1.5	50.3	0.0	0.1	38.4	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	7.9	8.2	0.2	6.4	6.6	2.8	0.0	0.7	2.2	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	77.8	15.6	15.5	60.9	15.5	15.5	91.9	0.0	28.6	86.0	0.0	28.3
LnGrp LOS	E	B	B	E	B	B	F	A	C	F	A	C
Approach Vol, veh/h		1273			997			104				79
Approach Delay, s/veh		18.2			15.8			70.0				69.2
Approach LOS		B			B			E				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	64.0		30.0	9.2	60.8		30.0				
Change Period (Y+Rc), s	5.1	5.8		4.6	5.1	5.8		4.6				
Max Green Setting (Gmax), s	19.9	39.2		25.4	19.9	39.2		25.4				
Max Q Clear Time (g_c+I1), s	2.4	23.3		27.4	5.1	19.2		27.4				
Green Ext Time (p_c), s	0.0	9.0		0.0	0.2	8.2		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				21.1								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary
2: El Camino Real & Oceanside Blvd

Existing with Project Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↗	↔↔	↑↑	↗	↔↔	↑↑↑	↗	↔↔	↑↑	↗
Traffic Volume (veh/h)	356	703	183	314	588	87	137	1522	412	103	821	190
Future Volume (veh/h)	356	703	183	314	588	87	137	1522	412	103	821	190
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	363	717	149	320	600	72	140	1553	0	105	838	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	249	911	400	284	947	422	203	1707		196	1181	
Arrive On Green	0.07	0.26	0.26	0.08	0.27	0.27	0.06	0.34	0.00	0.06	0.33	0.00
Sat Flow, veh/h	3428	3526	1546	3428	3526	1572	3428	5066	1572	3428	3526	1572
Grp Volume(v), veh/h	363	717	149	320	600	72	140	1553	0	105	838	0
Grp Sat Flow(s),veh/h/ln	1714	1763	1546	1714	1763	1572	1714	1689	1572	1714	1763	1572
Q Serve(g_s), s	7.2	18.7	7.8	8.2	14.9	3.5	4.0	29.0	0.0	3.0	20.5	0.0
Cycle Q Clear(g_c), s	7.2	18.7	7.8	8.2	14.9	3.5	4.0	29.0	0.0	3.0	20.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	249	911	400	284	947	422	203	1707		196	1181	
V/C Ratio(X)	1.46	0.79	0.37	1.13	0.63	0.17	0.69	0.91		0.54	0.71	
Avail Cap(c_a), veh/h	249	1103	484	284	1139	508	222	1719		208	1182	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.9	34.2	30.1	45.4	31.9	27.8	45.7	31.4	0.0	45.4	28.7	0.0
Incr Delay (d2), s/veh	226.3	3.6	0.8	92.2	1.1	0.3	7.8	8.0	0.0	2.4	2.5	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/ft	0.8	8.0	2.8	6.9	6.0	1.2	1.8	12.2	0.0	1.3	8.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	272.3	37.8	31.0	137.6	33.1	28.0	53.5	39.4	0.0	47.8	31.2	0.0
LnGrp LOS	F	D	C	F	C	C	D	D		D	C	
Approach Vol, veh/h		1229			992			1693			943	
Approach Delay, s/veh		106.2			66.4			40.5			33.1	
Approach LOS		F			E			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.1	40.9	14.0	33.1	11.3	40.7	13.0	34.1				
Change Period (Y+Rc), s	5.4	7.5	5.8	7.5	5.4	7.5	5.8	7.5				
Max Green Setting (Gmax), s	6.0	33.6	8.2	31.0	6.4	33.2	7.2	32.0				
Max Q Clear Time (g_c+1/3), s	6.0	31.0	10.2	20.7	6.0	22.5	9.2	16.9				
Green Ext Time (p_c), s	0.0	2.3	0.0	4.7	0.0	6.0	0.0	4.5				

Intersection Summary

HCM 6th Ctrl Delay	61.0
HCM 6th LOS	E

Notes

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

Intersection						
Int Delay, s/veh	7.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			L		T
Traffic Vol, veh/h	0	30	51	0	0	0
Future Vol, veh/h	0	30	51	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	33	55	0	0	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	111	1	1	0	0
Stage 1	1	-	-	-	-
Stage 2	110	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-
Pot Cap-1 Maneuver	883	1081	1615	-	-
Stage 1	1020	-	-	-	-
Stage 2	912	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	853	1081	1615	-	-
Mov Cap-2 Maneuver	853	-	-	-	-
Stage 1	985	-	-	-	-
Stage 2	912	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.4	7.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1615	-	1081	-	-
HCM Lane V/C Ratio	0.034	-	0.03	-	-
HCM Ctrl Dly (s/v)	7.3	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q (veh)	0.1	-	0.1	-	-

Appendix G

Traffic Volume Calculations

Opening Year (2027) Conditions

Barnwell Estates Oceanside Trip Generation Analysis Memo (June 2020)

A public street and cul-de-sac would be constructed within the project site to provide vehicular and pedestrian access from Barnwell Street to the driveways of each dwelling unit. The public street would be constructed per City of Oceanside’s street design standards of a cul-de-sac street, to a width of 36 feet. A 10 foot wide sidewalk would be provided along the project’s frontage with the public street.

Trip Generation

The project proposes to demolish an existing single-family residential home and construct seven single-family residences. Trip generation estimates for the proposed project are based on daily and AM and PM peak hour trip generation rates obtained from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (2002). Trip generation estimates for the project are based on the trip generation rates for residential land uses. Since the proposed density of units is comparable to estate residential use, a higher trip generation rate of 12 daily trips per dwelling unit (compared to the 10 daily trips per single family unit) was utilized from the SANDAG guidelines. No trip credit was assumed for the existing single-family home that would be demolished.

As shown in Table 1, the proposed project would generate approximately 84 daily trips, with 7 trips (2 inbound and 5 outbound) in the AM peak hour, and 8 trips (6 inbound and 2 outbound) in the PM peak hour.

Table 1: Project Trip Generation Summary

Land Use	Daily Trip Rate/ Unit	AM Peak Hour			PM Peak Hour			
		In	Out	Total	In	Out	Total	
Trip Rates								
Residential (Estate)	12/DU	30%	70%	8%	70%	30%	10%	
Trip Generation								
Land Use	Total Trips	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Residential (Estate)	Total Trips	84	2	5	7	6	2	8

Notes: DU = Dwelling Unit

Trip rates from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, 2002.

Project Screening Analysis

The City considers both vehicle miles traveled and level of service to be relevant and necessary measurements for transportation impacts. Therefore, it has provided criteria and methodology for conducting these analyses to provide consistency with General Plan Circulation Element while adhering to CEQA law.

Coastal Academy Charter School - Project Information Form (May 2021)

Coastal Academy Charter School (Grades 7-12)

The proposed Coastal Academy is a charter school for grades 7-12. A maximum of 1,200 students are anticipated to physically attend on campus classes (400 in grades 7-8; and 800 in grades 9-12). However, being a charter school, all the students will not be on campus at one time because students have the option of selecting different learning programs that include online learning. The school develops a parent partnership to support learning in a home environment as an option to physically going to the campus. The maximum 1,200 students are NOT anticipated to be on campus on a daily basis, rather they are shown in case there is a school event that requires all 1,200 students to be on campus.

The charter school is proposed to occupy the office buildings at 1305-1320 Union Plaza Court. Interior tenant improvements will convert the office space into classrooms. All four buildings are to be used solely by the School.

Since the mid-1990s, the overall office buildings at 1305-1320 Union Plaza Court were occupied in the range of 80 to 90%. During that time, the County of San Diego leased a space of approximately 65,000 sf. Near the end of 2020, the County and two other tenants with close relationship with the County moved out. Currently, about 13,600 sf of office space remains occupied. The vacant space can be occupied at any time.

The school trip generation with credit based on recent historical office use.

Land Use	Rate	Size & Units	ADT	%	Split	AM			PM			
						IN	OUT	%	Split	IN	OUT	
<u>Proposed Project</u>												
Junior/Middle School	1.4 /Student	400 Students	560	30%	0.6 0.4	101	67	9%	0.4 0.6	21	30	
High School	1.3 /Student	800 Students	1,040	20%	0.7 0.3	146	62	10%	0.4 0.6	42	62	
		Subtotal 1,200	1,600			246	130			63	93	
<u>Recent historical office use</u>												
Government Office	30 /KSF	-65,000 SF	-1,950	9%	0.9 0.1	-158	-18	12%	0.3 0.7	-70	-164	
Standard Office	20 /KSF	-28,552 SF	-571	14%	0.9 0.1	-72	-8	13%	0.2 0.8	-15	-59	
		Subtotal -93,552	-2,521			-230	-26			-85	-223	
Trip Generation Net Change:						-921	16	104		-22	-130	

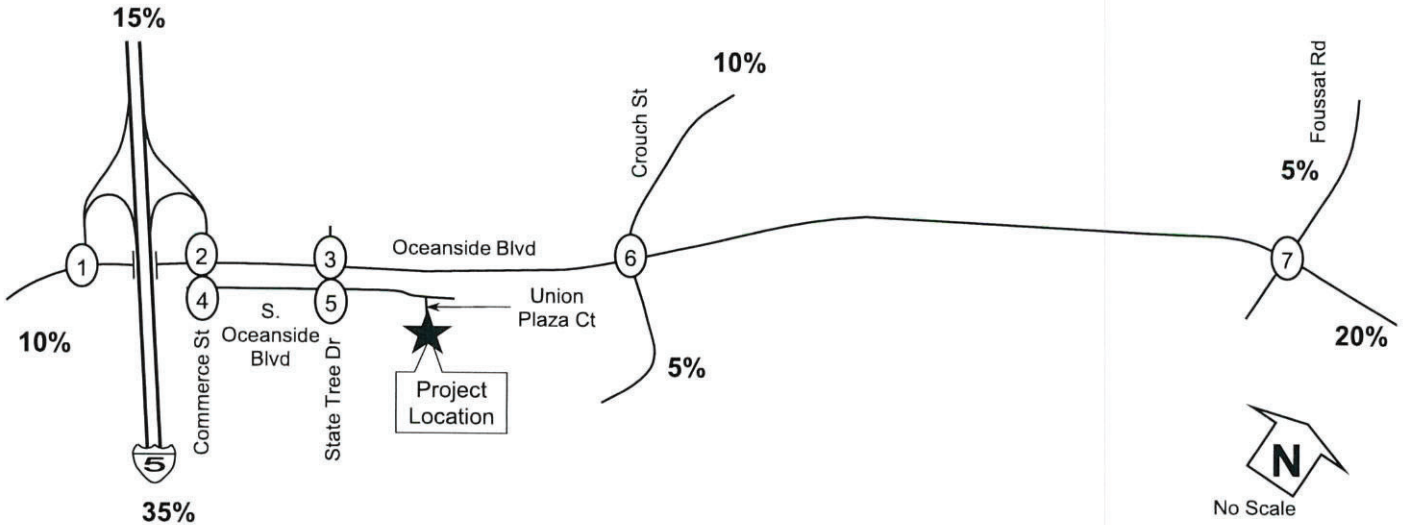
Source: SANDAG Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002. Excel rounding may result ± 1 to some of the above numbers.

Pickup areas will be coordinated with City staff. The school will have multiple end bell times to help reduce pick-up queuing.

In addition to a VMT screenline analysis, the following are proposed:

- 1) Pedestrian Analysis
- 2) Bicycle Analysis
- 3) Transit Analysis
- 4) Circulation and Queuing Analysis

Project Location Map and Proposed Distribution

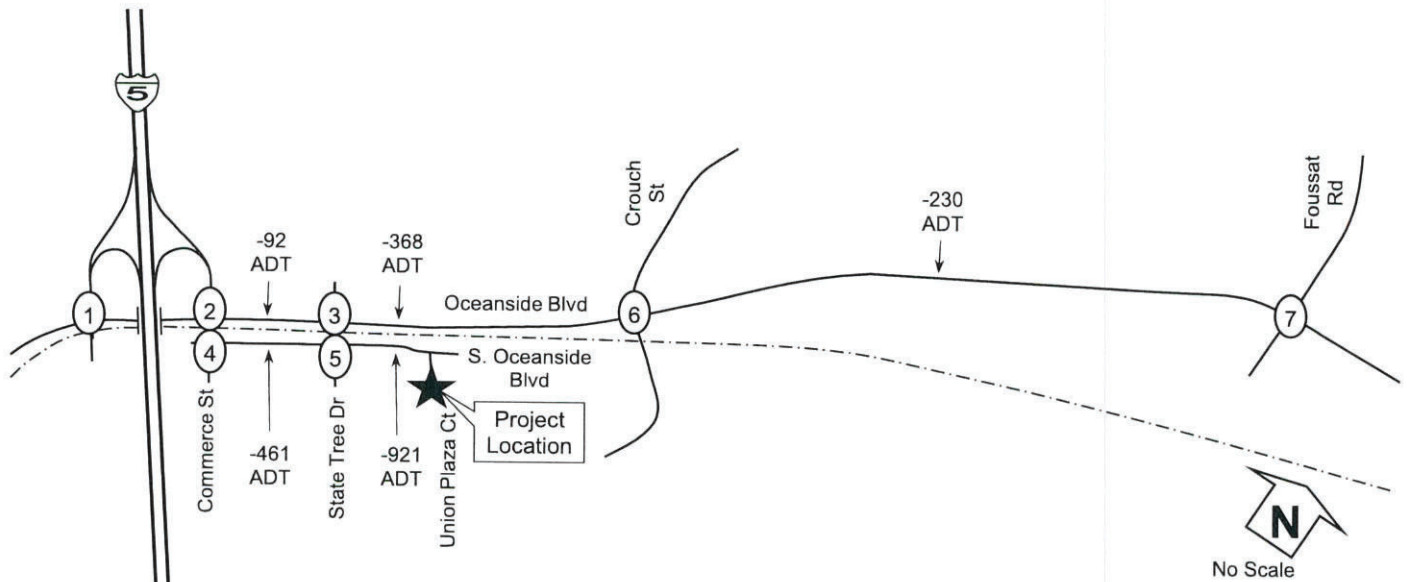


<p>Oceanside Blvd</p> <p>10% → (1) ← 15%</p> <p>→ 35% ← I-5 SB Ramps</p> <p>← 10%</p>	<p>Oceanside Blvd</p> <p>5% → (2) ← 5%</p> <p>20% → 30% ← I-5 NB Ramps</p> <p>← 40% 10%</p>	<p>Oceanside Blvd</p> <p>10% → (3) ← 10%</p> <p>← 40% 40%</p> <p>State Tree Dr</p>
<p>S. Oceanside Blvd</p> <p>→ (4) ← 50%</p> <p>← 50%</p> <p>Commerce St</p>	<p>S. Oceanside Blvd</p> <p>→ (5) ← 50%</p> <p>← 50%</p> <p>State Tree Dr</p>	
<p>Oceanside Blvd</p> <p>10% → (6) ← 10%</p> <p>25% → 5% ← Crouch St</p> <p>← 5%</p>	<p>Oceanside Blvd</p> <p>5% → (7) ← 5%</p> <p>20% → 20% ← Foussat Rd</p> <p>← 20%</p>	

LEGEND

- % Distribution Percentage
- # Intersection Reference Number to LOS Tables
- Existing Roadways

Preliminary Project Trip Assignment



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- XX AM peak hour volumes at intersections
- (YY) PM peak hour volumes at intersections
- Z,ZZZ ADT volumes shown along segments
- (#) Intersection Reference Number to LOS Tables
- Existing Roadways
- - - - - Sprinter RR Tracks

El Corazon OBC Development Project - Transportation Assessment (June 2022)

TABLE C-1
 EL CORAZON 2022 TRAFFIC STUDY TRIP GENERATION SUMMARY – ULTIMATE LAND USE MIX

Use	Quantity	SANDAG Rate Category	Daily Trip Ends (ADT)		AM Peak Hour					PM Peak Hour								
			Rate ^a	Volume	Rate	In:Out Split %	Volume		Rate	In:Out Split %	Volume							
							In	Out			In	Out	Total	Total				
Phase I																		
Senior Center (built)	20,396 KSF	b	20 / KSF	408	10%	90:10	37	4	41	10%	20:80	8	33	41				
Shopoff Multi-Family (built)	70 DU	Condominium / Multi-Family	8 / DU	560	8%	20:80	9	36	45	10%	70:30	39	17	56				
Aquatic Center (built)	2.2 Acres	b	-	110	-	-	2	1	3	-	-	8	8	16				
Sudberry Retail	5 KSF	Specialty Retail / Strip Commercial	40 / KSF	200	3%	60:40	4	2	6	9%	50:50	9	9	18				
Sudberry Apartments	268 DU	Apartment	6 / DU	1,608	8%	20:80	26	103	129	9%	70:30	102	43	145				
Shopoff Retail	3 KSF	Specialty Retail / Strip Commercial	40 / KSF	120	3%	60:40	2	2	4	9%	50:50	6	6	12				
Arena	8,000 Seats	Indoor Arena	0.1 / Seat	800	1%	80:20	6	2	8	8%	60:40	38	26	64				
Phase II (OBC)																		
Retail / Restaurant Uses ^c	35.8 KSF	Neighborhood Shopping Center	120 / KSF	4,296	4%	60:40	103	69	172	10%	50:50	215	215	430				
Research & Development	350.45 KSF	Science Research & Development	8 / KSF	2,804	16%	90:10	404	45	449	14%	10:90	39	354	393				
Office	97.75 KSF	Standard Commercial Office	20 / KSF	1,955	14%	90:10	247	27	274	13%	20:80	51	203	254				
Warehouse	15.1 KSF	Warehousing	5 / KSF	76	13%	70:30	7	3	10	15%	40:60	4	7	11				

TABLE C-1 (CONTINUED)
 EL CORAZON 2022 TRAFFIC STUDY TRIP GENERATION SUMMARY – ULTIMATE LAND USE MIX

Use	Quantity	SANDAG Rate Category	Daily Trip Ends (ADT)			AM Peak Hour					PM Peak Hour						
			Rate ^a	Volume	Rate	In:Out Split %	Volume		Rate	In:Out Split %	Volume		Rate	In:Out Split %	Volume		
							In	Out			Total	In			Out	Total	
Phase III																	
Hotel Site A	3.1 Acres	Hotel	300 / Acre	930	5%	60:40	28	19	47	7%	40:60	26	40	66			
Hotel Site B	6 Acres	Resort Hotel	100 / Acre	600	5%	60:40	18	12	30	7%	40:60	17	25	42			
Civic Services Site 2	5.5 Acres	Cultural / Community Center	50 / Acre	275	4%	50:50	6	5	11	8%	50:50	11	11	22			
Active Park	47.5 Acres ^d	City Park (developed w/ meeting rooms and sports facilities)	50 / Acre	2,375	4%	50:50	48	47	95	8%	50:50	95	95	190			
Passive Park	47.5 Acres ^d	Neighborhood / County Park	5 / Acre	238	4%	50:50	5	5	10	8%	50:50	10	10	20			
Active Park (formal Field of Dreams site)	51.5 Acres ^e	Developed Park	50 / Acre	2,575	4%	50:50	52	51	103	8%	50:50	103	103	206			
Passive Park (formal Field of Dreams site)	51.5 Acres ^e	Undeveloped Park	5 / Acre	258	4%	50:50	5	5	10	8%	50:50	11	10	21			
Total	-	-	-	20,188	-	-	1,009	438	1,447	-	-	792	1,215	2,007			
Approved El Corazon Specific Plan	-	-	-	34,604			704	492	1,196	-	-	1,796	1,774	3,570			

Footnotes:

- Rates from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002.
- Source: Site Specific Rate
- Pass-by trip reduction not included
- The Specific Plan Amendment calls out 198 acres of parks. With 103 acres of this space being the Field of Dreams site, the remaining 95 acres was assumed to consist of half Active Park and half Passive Park.
- The 103 acres was assumed to be converted to 51.5 acres of Active Park and 51.5 acres of Passive Park.

General Notes:

- OBC – Oceanside Boulevard Commercial

Grandview (26 Dwelling Units) 1902 Grandview Street - Traffic Impact Analysis (March 2018)

4.0 Project Description

The project includes the removal of two (2) existing dwelling units and replacing with 26 dwelling units for a net increase of 24 units. The location of the two existing dwelling units to be removed are shown in **Appendix E**.

4.1 Project Traffic Generation

The project traffic generation was calculated using the San Diego Association of Governments (SANDAG) rates from the *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. A copy of SANDAG traffic generation rates is included in **Appendix F**. This analysis is based on a slightly conservative trip generation from a previous sight design of replacing 2 units with 28 new dwelling units resulting in a net increase of 26 units. The current site plan results in a net increase of only 24 units. The conservative net increase of 26 units is calculated at 260 ADT with 22 AM peak hour trips (7 inbound and 15 outbound) and 26 PM peak hour trips (19 inbound and 7 outbound). The net increase in project traffic is calculated at 260 ADT with 22 AM peak hour trips (7 inbound and 15 outbound) and 26 PM peak hour trips (19 inbound and 7 outbound) as shown in **Table 6**.

TABLE 6: PROJECT TRAFFIC GENERATION

Proposed and Existing Land Use	Rate	Size & Units	ADT	%	Split	AM		PM			
						IN	OUT	IN	OUT		
Proposed Project											
Residential Homes	10 /DU	28 DU	280	8%	0.3 0.7	7	16	10%	0.3 0.7	20	8
Existing Use to be replaced by Project (Credit)											
Residential Homes	10 /DU	-2 DU	-20	8%	0.3 0.7	0	-1	10%	0.3 0.7	-1	-1
Project Trip Generation			260			7	15			19	7

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

4.2 Project Access, Circulation, and Corner Sight Distance

The existing project driveway will be reconstructed with a roadway ending in a cul-de-sac as previously shown in Figure 2. The project driveway corner sight distance is provided under separate cover on the Civil Engineering drawings.

4.3 Project Distribution and Assignment

Project trips were distributed to the adjacent roadway network based on coordination with City staff. The project distribution is shown in **Figure 5** with assignment of the project volumes shown in **Figure 6**.

Figure 5: Project Distribution

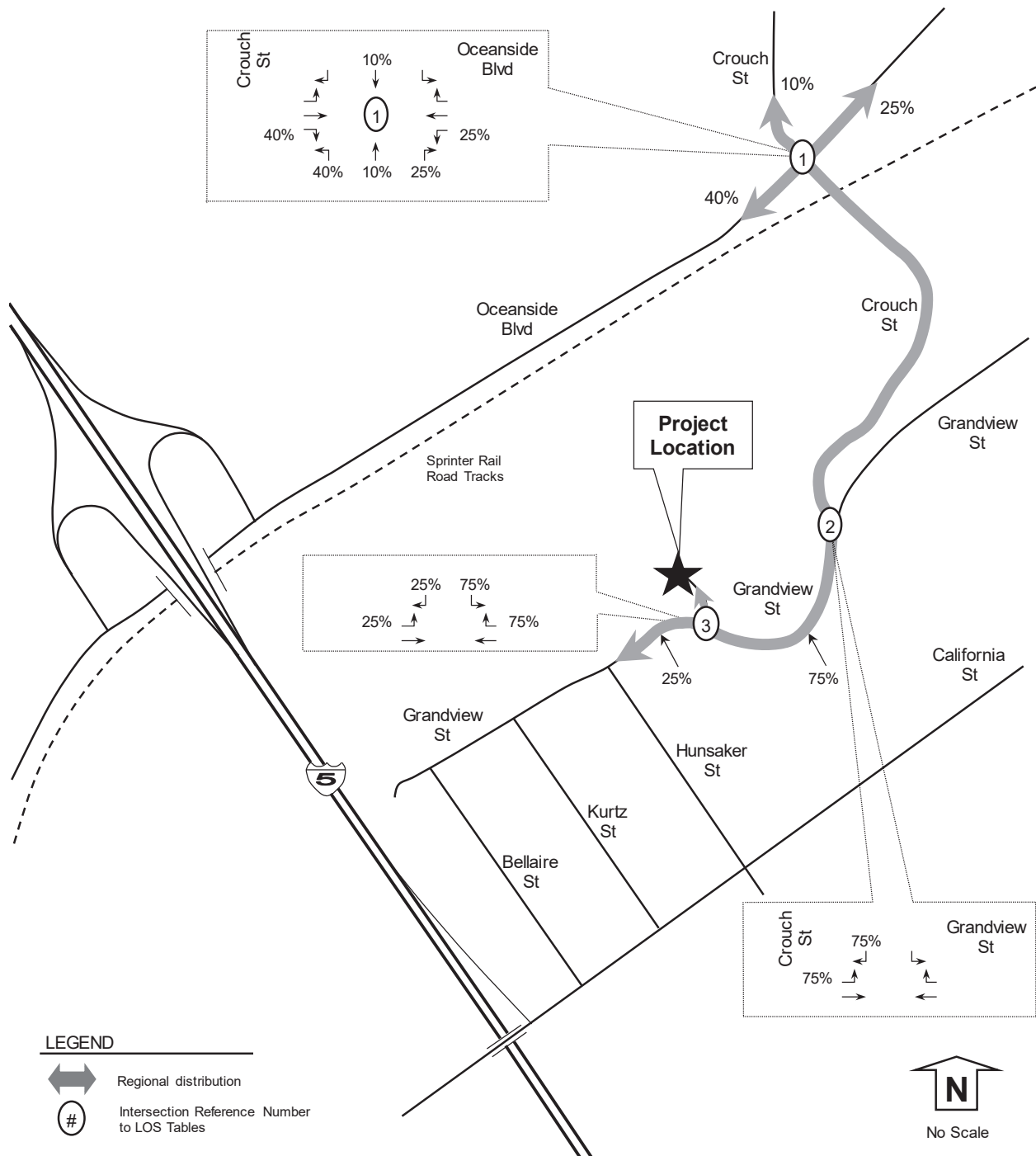
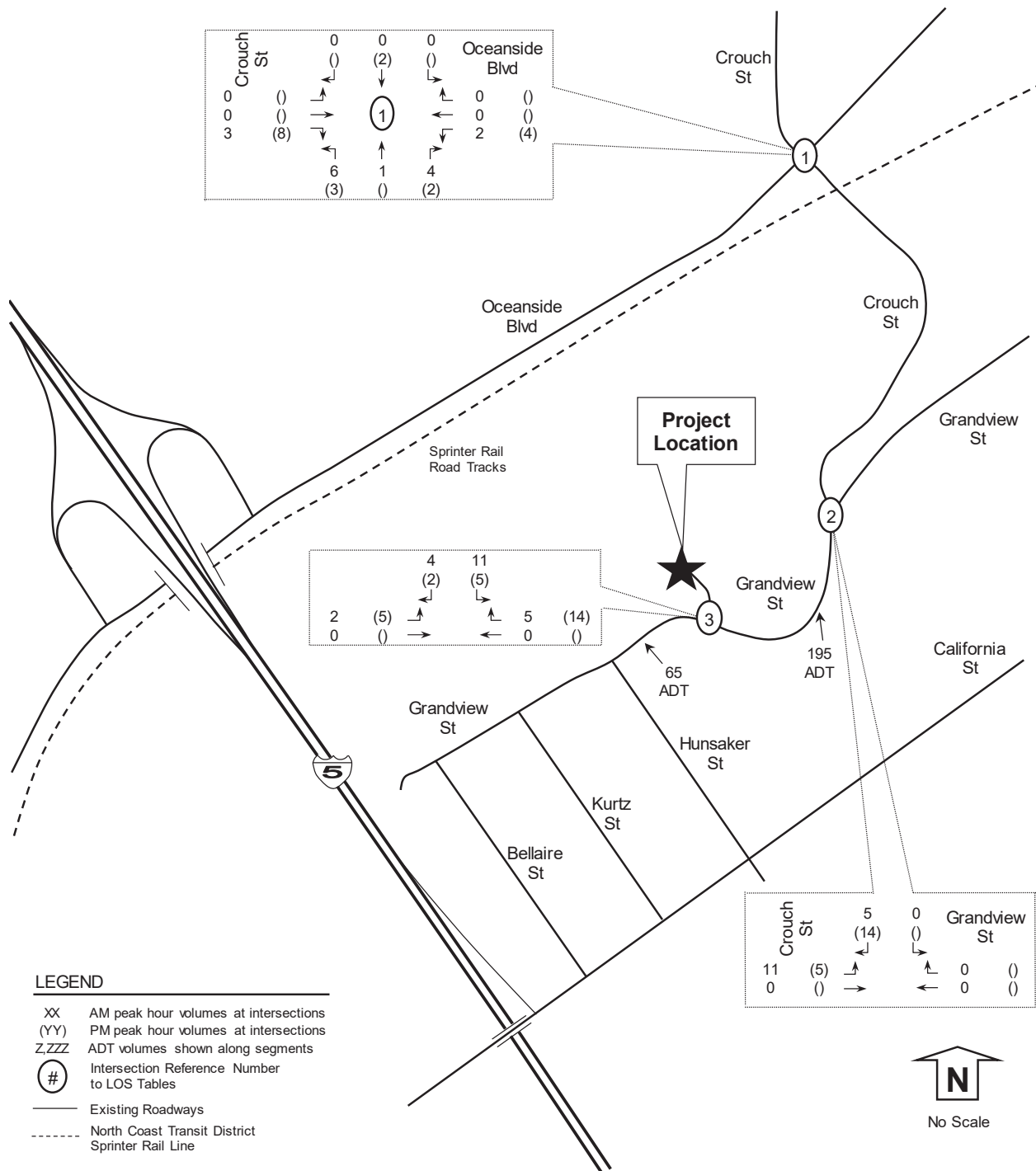


Figure 6: Project Traffic Assignment



Loma Alta 13 Lot Subdivision - Traffic Study (June 2022)

Project Description

The proposed project involves the construction of 13 duplex dwelling units on a 87,120 SF parcel at 0 Loma Alta, Oceanside, CA 92054 (APN: 149-021-18)

Project Aerial Photo



Project Map



Trip Generation

Utilizing trip rates from the SANDAG (not so) Brief Guide of Vehicular Traffic Generation Rates, it can be seen that the project would be classified as a Residential use with over 6 dwelling units per acre. As a result, the anticipated trip generation is calculated at a rate of 8 trips per du. The calculated trip generation is therefore, 104 trips per day with 8 trips in the AM peak hour and 10 trips in the PM peak hour.

City of Oceanside Guidelines

Following the City of Oceanside Guidelines, posted on the City's website, the proposed project would be screened out of conducting a VMT analysis as a small project (less than 1,000 ADT):

Table 2 – Screened Out Projects

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

(1) Projects located in a TPA must be able to access the transit station within a ½ mile walking distance or 6 minute walk continuously without discontinuity of sidewalk or obstructions to the route. Qualifying transit stops means a site containing an existing rail transit station served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods (OPR, 2017). A high-quality transit corridor may also be considered if a corridor with fixed route bus service has service intervals no longer than 15 minutes during peak commute hours (OPR, 2017).

(2) Smart Growth Opportunity Area Map is provided in **Appendix B**. The most recent version available shall be used.

(3) If a project is a mix of affordable housing and market rate housing or unscreened use, only the affordable housing component would qualify as screened out. Additionally, any removal of affordable housing automatically requires CEQA VMT analysis.

Ocean Creek Residential - Local Transportation Study (September 2021)

5.0 PROPOSED PROJECT

The proposed project includes the development of 295 dwelling units of residential apartments and 3,000 square feet of commercial/retail in the City of Oceanside. The project is located on the southwest corner of the intersection of South Oceanside Boulevard and Crouch Street and is adjacent to the Crouch Street Sprinter Station. The project site is approximately 12.87 acres with a project density of 22.9 units per acre. The project will also provide a pedestrian improvement at the project driveway, a continental sidewalk will be provided for pedestrians to access the sprinter station from the project.

5.1 Project Trip Generation

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

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

Table 5-2: Project Trip Generation

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

Source:

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

Note:

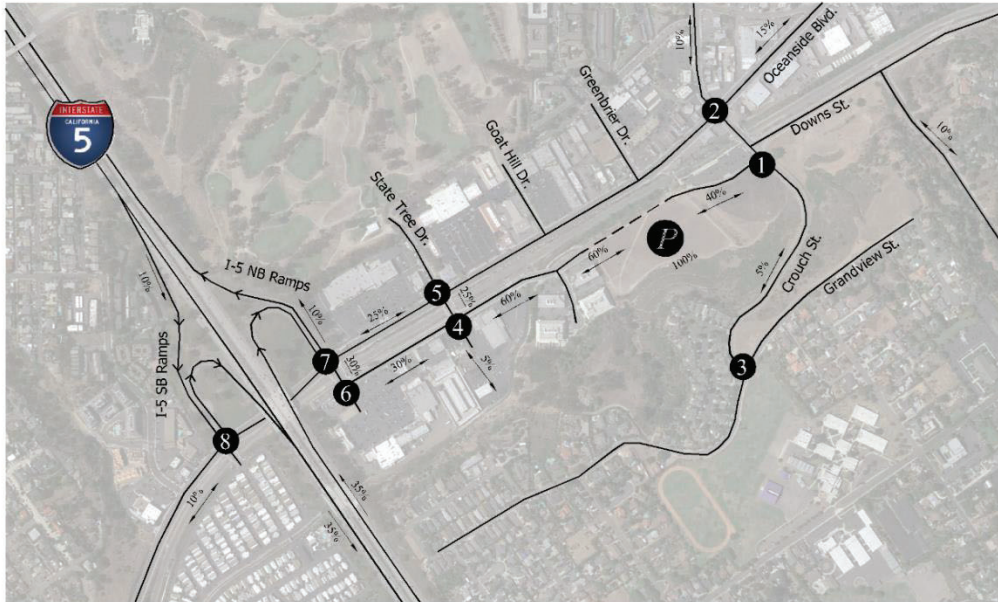
ADT= Average Daily Trips
 KSF = 1,000 Square Feet
 DU = Dwelling Units

5.2 Project Trip Distribution and Assignment

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

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

Figure 5-1: Project Trip Distribution

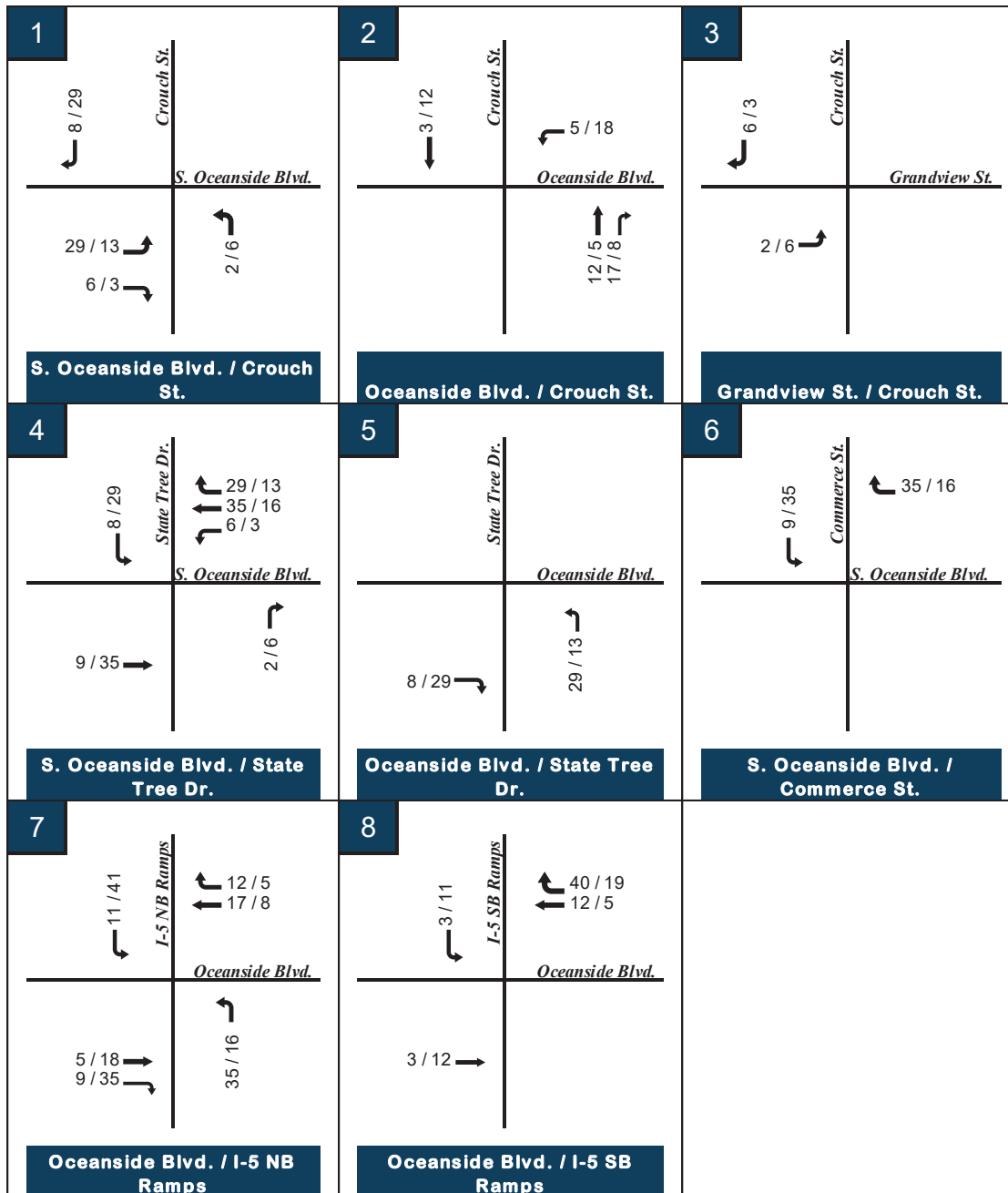


Legend

-  = Project Location
-  = Future Roadway
-  = Studied Intersection Location
-  = Project Distribution Percentage



Figure 5-2: Project Trip Assignment



XX / XX = AM / PM Peak hour volumes

Oceanside East Shopping Center - Transportation Impact Study (May 2019)

4 PROJECT TRAFFIC

The following section describes the trip generation, distribution, and assignment related to the proposed project.

4.1 TRIP GENERATION

Trip generation and pass-by rates for the project site were estimated using traffic generation rates from SANDAG's *Not So Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region* (April 2002). Pass-by trips are vehicle trips that are already on the road, which stop at a site (typically commercial/retail uses) along its route. Pass-by trips are not considered new trips generated by the site but should be accounted for in the analysis at the project site driveways. The utilized pass-by rates are listed below:

- 10% - Specialty Retail (PM only)
- 50% - Gas Stations
- 40% - Fast Food Restaurants
- 20% - Sit Down Restaurants (PM only)

The proposed site would consist of a gas station (12 fueling stations) with a 3,000-sf food mart, a car wash, retail sites totaling 7,980 sf, fast food restaurants totaling 2,500 sf, and a 2,320-sf high turnover restaurant. The mix of land uses on the site was calculated to generate 5,068 new daily trips, 213 AM peak-hour trips (109 in, 105 out), and 273 PM peak-hour trips (139 in, 134 out) after pass-by trip reductions were applied. **Table 4-1** summarizes the trip generation for the proposed site before and after pass-by trip reduction.

4.2 TRIP DISTRIBUTION

Traffic trip distribution for the proposed project was based on input from the City of Oceanside, proposed access locations, and the existing roadway network within the study area. The following is a general description of the estimated trip distribution for the site.

- 25% to/from the west via SR 76
- 20% to/from the west via Mission Avenue
- 25% to/from the east via SR 76
- 20% to/from the east via Mission Avenue
- 5% to/from the north via Foussat Road
- 5% to/from the south via Foussat Road

Figure 4-1 illustrates the estimated traffic distribution for the proposed project. **Figure 4-2** illustrates the estimated traffic distribution for the pass-by trips for the proposed project.

4.3 TRIP ASSIGNMENT

Based on the expected project trip distributions, daily, AM, and PM peak-hour project trips were assigned to the roadway network and through the study intersections. The trip assignment for the proposed project is presented in **Figure 4-3**. The pass-by assignment for the proposed project is presented in **Figure 4-4**.

Table 4-1 Trip Generation Summary

Land Use	SANDAG Land Use	Units ¹	Trip Rate ²	Daily Trips	AM Peak Hour		PM Peak Hour		
					In	Out	In	Out	Total
Proposed									
Building A: Gas Station + 3,000 sf Food Mart	Gas Station with/Food Mart	12 vfs	160 / vfs	1,920	67	67	77	77	154
Building B: Car Wash	Automatic	1.00 site	900 / site	900	18	18	41	40	81
Building C: Drive Thru Restaurant	Fast Food (w/drive-through)	1.50 ksf	650 / ksf	975	34	34	34	34	68
Building D: Restaurant	Sit-down, high turnover	2.32 ksf	160 / ksf	371	15	15	18	12	30
Building D: Retail	Specialty Retail/Strip Commercial	3.48 ksf	40 / ksf	139	3	1	6	7	13
Building E: Drive Thru Restaurant	Fast Food (w/drive-through)	1.00 ksf	650 / ksf	650	23	23	23	23	46
Building F: Tire/Oil Facility	Tire Store	4.50 ksf	25 / ksf	113	5	3	6	6	12
Proposed Total					165	161	205	199	404
Pass-by									
Specialty Retail (10%)							-1	-1	-3
Gas Station (50%)					-34	-34	-39	-39	-77
Fast Food (40%)					-23	-23	-23	-23	-46
Sit-down Restaurant (20%)							-4	-2	-6
Pass-by Sub-Total					-56	-56	-113	-66	-131
Net Trip Generation					109	105	213	139	273

Notes:

1. ksf = Thousand Square Feet; vfs = vehicle fueling stations
2. Trip rates referenced from the Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, SANDAG, April 2002

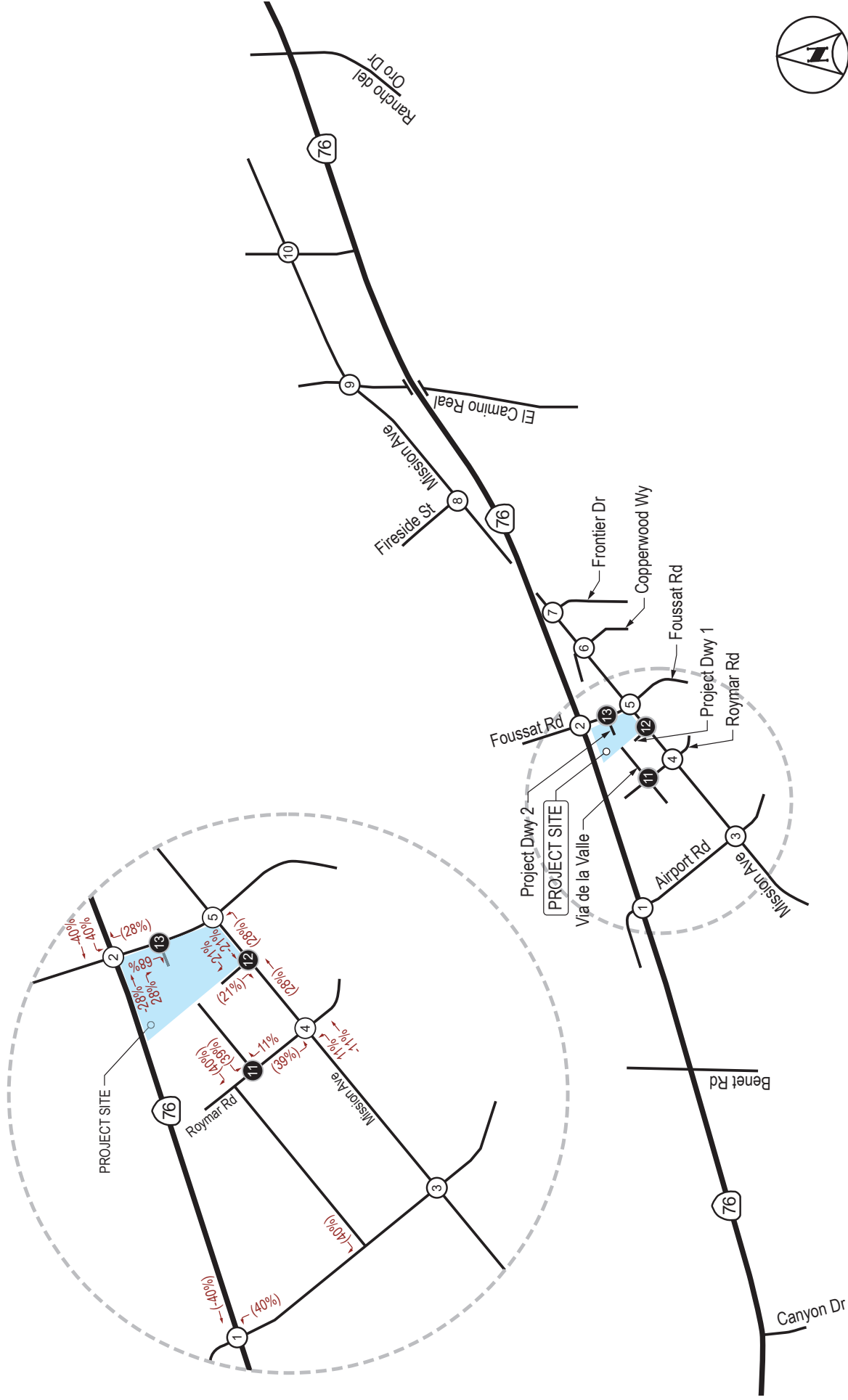
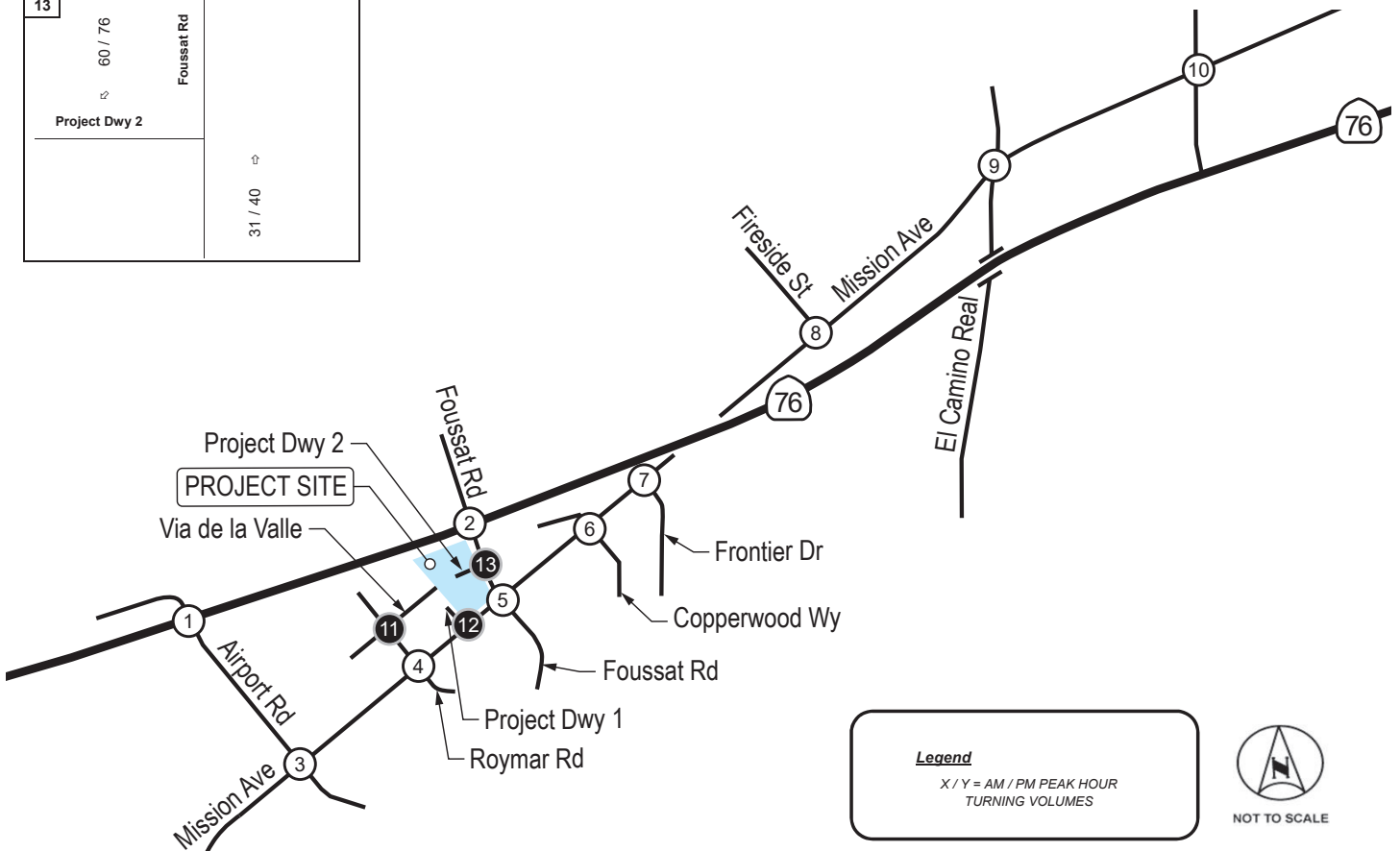


FIGURE 4-2
Proposed Pass-By Trip Distribution

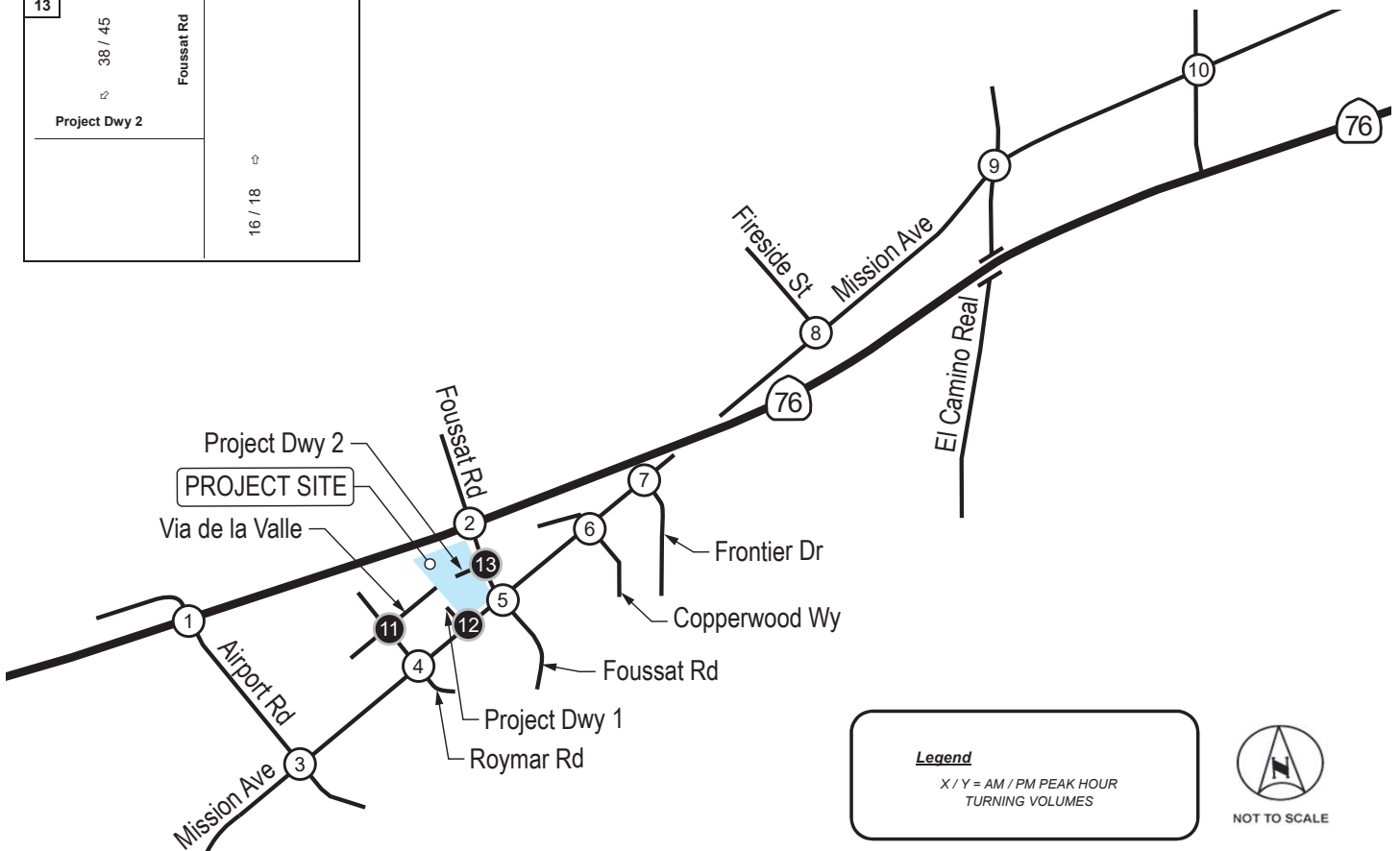
OnPoint - Oceanside

<p>1</p> <p>SR 76</p> <p>27 / 35</p> <p>↓</p> <p>26 / 34</p> <p>↑</p>	<p>2</p> <p>Foussat Rd</p> <p>5 / 7</p> <p>↓</p> <p>27 / 35</p> <p>↑</p> <p>27 / 35</p> <p>SR 76</p>	<p>3</p> <p>Airport Rd</p> <p>16 / 20</p> <p>21 / 27</p> <p>↑</p> <p>22 / 28</p> <p>↓</p> <p>Mission Ave</p>	<p>4</p> <p>Roymar Rd</p> <p>47 / 60</p> <p>↓</p> <p>22 / 28</p> <p>↑</p> <p>37 / 47</p> <p>10 / 13</p> <p>Mission Ave</p>
<p>5</p> <p>Foussat Rd</p> <p>22 / 28</p> <p>↑</p> <p>Mission Ave</p> <p>31 / 40</p> <p>21 / 27</p> <p>5 / 7</p> <p>↓</p> <p>5 / 7</p>	<p>6</p> <p>Copperwood Wy</p> <p>22 / 28</p> <p>↑</p> <p>Mission Ave</p> <p>21 / 27</p> <p>↓</p>	<p>7</p> <p>22 / 28</p> <p>↑</p> <p>Mission Ave</p> <p>21 / 27</p> <p>↓</p> <p>Frontier Dr</p>	<p>8</p> <p>Fireside St</p> <p>22 / 28</p> <p>↑</p> <p>Mission Ave</p> <p>21 / 27</p> <p>↓</p>
<p>9</p> <p>El Camino Real</p> <p>11 / 14</p> <p>↓</p> <p>5 / 7</p> <p>↑</p> <p>Mission Ave</p> <p>10 / 13</p> <p>5 / 7</p> <p>5 / 7</p> <p>↓</p> <p>5 / 7</p>	<p>10</p> <p>Douglas Dr</p> <p>5 / 7</p> <p>↓</p> <p>5 / 7</p> <p>↑</p> <p>Mission Ave</p> <p>5 / 7</p> <p>↓</p>	<p>11</p> <p>Roymar Rd</p> <p>10 / 13</p> <p>47 / 60</p> <p>↓</p> <p>Via de la Valle</p> <p>22 / 28</p> <p>↓</p>	<p>12</p> <p>Project Dwy 1</p> <p>47 / 60</p> <p>↓</p> <p>58 / 74</p> <p>↓</p> <p>27 / 35</p> <p>Mission Ave</p>
<p>13</p> <p>Foussat Rd</p> <p>60 / 76</p> <p>↓</p> <p>Project Dwy 2</p> <p>31 / 40</p> <p>↓</p>			



OnPoint - Oceanside

<p>1</p> <p>Airport Rd</p> <p>↑ -23 / -26</p> <p>SR 76</p> <p>Airport Rd</p> <p>↗ 23 / 26</p>	<p>2</p> <p>Foussat Rd</p> <p>↖ -23 / -26</p> <p>23 / 26</p> <p>SR 76</p> <p>-16 / -19</p> <p>16 / 19</p> <p>↘ 16 / 18</p>	<p>3</p> <p>Airport Rd</p> <p>Mission Ave</p>	<p>4</p> <p>↖ 22 / 25</p> <p>Roymar Rd</p> <p>Mission Ave</p> <p>↘ 6 / 7</p> <p>-6 / -7</p>
<p>5</p> <p>Foussat Rd</p> <p>Mission Ave</p> <p>16 / 18</p>	<p>6</p> <p>Copperwood Wy</p> <p>Mission Ave</p>	<p>7</p> <p>Mission Ave</p> <p>Frontier Dr</p>	<p>8</p> <p>Fireside St</p> <p>Mission Ave</p>
<p>9</p> <p>El Camino Real</p> <p>Mission Ave</p>	<p>10</p> <p>Douglas Dr</p> <p>Mission Ave</p>	<p>11</p> <p>Roymar Rd</p> <p>↖ 23 / 26</p> <p>↘ 22 / 25</p> <p>Via de la Valle</p> <p>↘ 6 / 7</p>	<p>12</p> <p>↖ 12 / 14</p> <p>Project Dwy 1</p> <p>↖ 12 / 14</p> <p>-12 / -14</p> <p>Mission Ave</p> <p>16 / 18</p>
<p>13</p> <p>↖ 38 / 45</p> <p>Foussat Rd</p> <p>Project Dwy 2</p> <p>16 / 18</p>			



Ocean Kamp Project - Local Transportation Study (July 2021)

7.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

The following is a discussion of the Project site's trip generation calculations, both for the previously approved Pavilion at Oceanside project and the currently proposed Ocean Kamp project, as well as the Project's traffic distribution and assignment through the street system.

7.1 Previously Approved Trip Generation

As previously discussed in *Section 2.2* of this study, an EIR addressing development of the Project site was certified by the City of Oceanside in 2008. The Pavilion at Oceanside project described in the EIR consisted of a 950,000-square foot (SF) shopping center with a variety of retail uses. *Table 7-1* shows the Pavilion at Oceanside traffic generation calculations. As shown, the previously approved project was calculated to generate 32,175 ADT, with 1,254 AM peak hour trips (862 inbound / 376 outbound) and 2,872 PM peak hour trips (1,485 inbound / 1,388 outbound).

7.2 Proposed Project Trip Generation

The Project proposes to construct a 300-room resort hotel, approximately 126,000 SF of retail / commercial uses, 700 residential dwelling units, and a wave lagoon.

7.2.1 Weekday

The Weekday trip generation for the proposed Project was calculated using the SANDAG (*Not so*) *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002.

The following trip rates were used to calculate the Project's trip generation:

Hotel: SANDAG's "Hotel (w/convention facilities / restaurant)" rate was used. The independent variable is occupied rooms. In order to provide a conservative analysis, it was assumed that all 300 of the proposed hotel rooms would be occupied. The trip rate is 10 trips per occupied room.

Multi-Family Residential: SANDAG's "Condominium (or any multi-family 6-20 DU / acre)" rate was used. The independent variable is dwelling units. The trip rate is 8 trips per dwelling unit.

Retail / Commercial Center: SANDAG's "Community Shopping Center" rate was used. The independent variable is square feet. The trip rate is 80 trips per 1,000 square feet. Pass-by credits for this land use were applied as follows:

- Commercial Use Pass-By & Primary Trips

Development of new land uses will create trips on a street system that are new, or "primary" trips. However, several types of retail/commercial developments experience local and regional trips at the driveways that are already on the street system, whether that development exists or not. These trips are known as "pass-by" trips.

- *Pass-by* trips are trips that are already on the street system passing along the Project frontage (SR 76 and Mission Avenue), and only appear as new trips in and out of the Project driveways. SANDAG indicates a 30% pass-by rate for the PM peak hour and 22% for daily trips. An AM peak hour pass-by rate is not provided.

Based on consultation with City staff, a pass-by rate of 30% was used for the PM peak hour, and 0% for the daily and AM peak hour trips. It should be noted that pass-by trips were only assumed for the Project's commercial uses.

- *Primary Trips:* The remaining retail / commercial related trips (70% PM peak, 100% daily and AM peak) are those that are new to the street system, also called “primary” trips. These trips occur due to the development of the Project and the Project itself becomes one end of a primary trip, either the origin or the destination.

Wave Lagoon: No published rates for “wave lagoons” were found. Therefore, for the purposes of this traffic study, a rate was estimated based on expected use. The Wave Lagoon will have a maximum capacity of 12 people per hour, and will operate ten-hours per day for a total of 120 visitors per day. Spectators and employees of the Wave Lagoon were also accounted for. Ultimately, a rate of 360 trips per Weekday was calculated. Additional information regarding calculation of the Wave Lagoon's trip generation is provided in *Appendix E*.

It should be noted that the Project's trip generation does not account for any mixed-use credits. Per the SANDAG guide, up to a 10% mixed-use reduction can be applied to projects “where residential and commercial retail are combined (demonstrate mode split of walking trips to replace vehicular trips).” Given the potential synergy between the Project's proposed land uses, application of a mixed-use credit is likely applicable. However, to provide a conservative assessment of the Project's effect on the circulation system, no mixed-use credits were applied.

Table 7–2 shows the Weekday Project traffic generation. As shown, the Project is calculated to generate 19,040 ADT with 1,057 AM peak hour trips (453 inbound / 604 outbound) and 1,834 total PM peak hour trips (1,053 inbound / 781 outbound) at the Project driveways. It's worth noting that the proposed Project is calculated to generate 13,135 fewer ADT (approximately 41% less) than the site's previously approved Pavilion project (32,175 ADT).

7.2.2 Weekend

Since SANDAG does not provide weekend trip rates, the Project's Weekend trip generation was calculated based on the *Institute of Transportation Engineers, Trip Generation Manual, 10th Edition*, September 2017.

The following trip rates were used to calculate the Project's trip generation:

Hotel: ITE's “Hotel (310)” rate was used. The independent variable is rooms. The Saturday trip rate is 8.19 trips per room.

Multi-Family Residential: ITE's “Multifamily Housing (Low-Rise) (220)” rate was used. The independent variable is dwelling units. The Saturday trip rate is 8.14 trips per dwelling unit.

Retail / Commercial Center: ITE's “Shopping Center (820)” rate was used. The independent variable is square feet. The Saturday trip rate is 46.12 trips per 1,000 square feet. Pass-by credits for

this land use were not applied under Weekend conditions. It should be noted that the ITE Saturday rate is nearly half the SANDAG weekday rate for commercial land uses.

Wave Lagoon: No published rates for “wave lagoons” were found. Therefore, for the purposes of this traffic study, a rate was estimated based on expected use. The Wave Lagoon will have a maximum capacity of 12 people per hour, and will operate ten-hours per day for a total of 120 visitors per day. Spectators and employees of the Wave Lagoon were also accounted for. Ultimately, a rate of 460 trips per Weekend day was calculated. Additional information regarding calculation of the Wave Lagoon’s trip generation is provided in *Appendix E*.

Similar to the Project’s Weekday trip generation calculations, the Project’s Weekend trip generation does not take any mixed-use credits to account for the potential synergy between the Project’s proposed land uses in order to provide a conservative analysis.

Table 7–3 shows the Weekend Project traffic generation. As shown, the Project is calculated to generate 14,426 ADT with 1,319 peak hour trips (684 inbound / 635 outbound).

**TABLE 7-1
PREVIOUSLY APPROVED PROJECT SITE TRIP GENERATION**

Land Use	Daily Trip Ends (ADTs)	AM Peak Hour		PM Peak Hour		
		In	Out	In	Out	Total
Oceanside Pavilion	32,175	862	376	1,485	1,388	2,872

General Notes:

1. Source: *Oceanside Pavilion Traffic Impact Analysis Report*, March 2008, prepared by RBF Consulting
2. ADT = Average daily traffic

**TABLE 7-2
WEEKDAY PROJECT TRIP GENERATION**

Land Use	Size	Daily Trip Ends (ADTs)		AM Peak Hour				PM Peak Hour					
		Rate ^a	Volume	% of ADT	In:Out Split	Volume		% of ADT	In:Out Split	Volume			
						In	Out			In	Out	Total	Total
Hotel (w/ convention facilities / restaurant)	300 Rooms	10 / Room	3,000	6%	60:40	108	72	180	8%	60:40	144	96	240
Multi-Family Residential	700 Units	8 / DU	5,600	8%	20:80	90	358	448	10%	70:30	392	168	560
Retail / Commercial Center	126 KSF	80 / KSF	10,080	4%	60:40	242	161	403	10%	50:50	504	504	1,008
<i>Pass-by Credit (30% PM peak)</i>	-	-	-	-	-	-	-	-	-	-	-151	-151	-302
Surf Lagoon / Resort Pass Guests ^b	1 Site	-	360	-	-	13	13	26	-	-	13	13	26
Proposed Project Weekday Total			19,040			453	604	1,057			902	630	1,532
Proposed Project Weekday Total (Driveway Trips)^c			19,040			453	604	1,057			1,053	781	1,834

Footnotes:

- a. Rates based on SANDAG's (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002 except where noted.
- b. 120 Surf Lagoon guests and 50 Resort Pass guests expected daily. See *Appendix E* for Trip Generation Calculations.
- c. Driveway trip calculations do not include pass-by credits.

General Notes:

- 1. ADT = Average daily traffic

**TABLE 7-3
WEEKEND PROJECT TRIP GENERATION**

Land Use	Size	Daily Trip Ends (ADTs)		% of ADT	In:Out Split	Peak Hour		Total
		Rate ^a	Volume			In	Out	
Hotel (w/ convention facilities / restaurant)	300 Rooms	8.19 / Room	2,457	0.72	56:44	121	95	216
Multi-Family Residential	700 Units	8.14 / DU	5,698	0.70	50:50	245	245	490
Retail / Commercial Center	126 KSF	46.12 / KSF	5,811	4.50	52:48	295	272	567
Surf Lagoon / Resort Pass Guests ^b	1 Site	-	460	-	-	23	23	46
Proposed Project Weekend Total			14,426			684	635	1,319

Footnotes:

- a. Rates based on the Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, September 2017 except where noted.
- b. 120 Surf Lagoon guests and 100 Report Pass guests expected daily. See *Appendix E* for Trip Generation Calculations.

General Notes:

- 1. ADT = Average daily traffic

7.3 Trip Distribution/Assignment

The distribution of Project traffic was determined based on information in the previously approved TIA for the Pavilion at Oceanside project as well as the locations of the proposed access points, traffic patterns observed from the existing traffic counts, and the proximity of the project to surrounding freeways, attractions, and residential and commercial areas. The trip distribution was developed in consultation with City staff.

Figures 7-1a and *7-1b* show the distribution of Project trips to the study street segments and intersections, respectively.

Once the traffic distribution was established, the Project-generated traffic was assigned to the adjacent street system. It should be noted that the Project's Weekday and Weekend distribution was assumed to be the same.

Figures 7-2a and *7-2b* depict the Weekday Project daily traffic volumes and AM / PM peak hour traffic volumes, respectively.

Figure 7-3 depicts the Weekend Project daily traffic and peak hour traffic volumes.

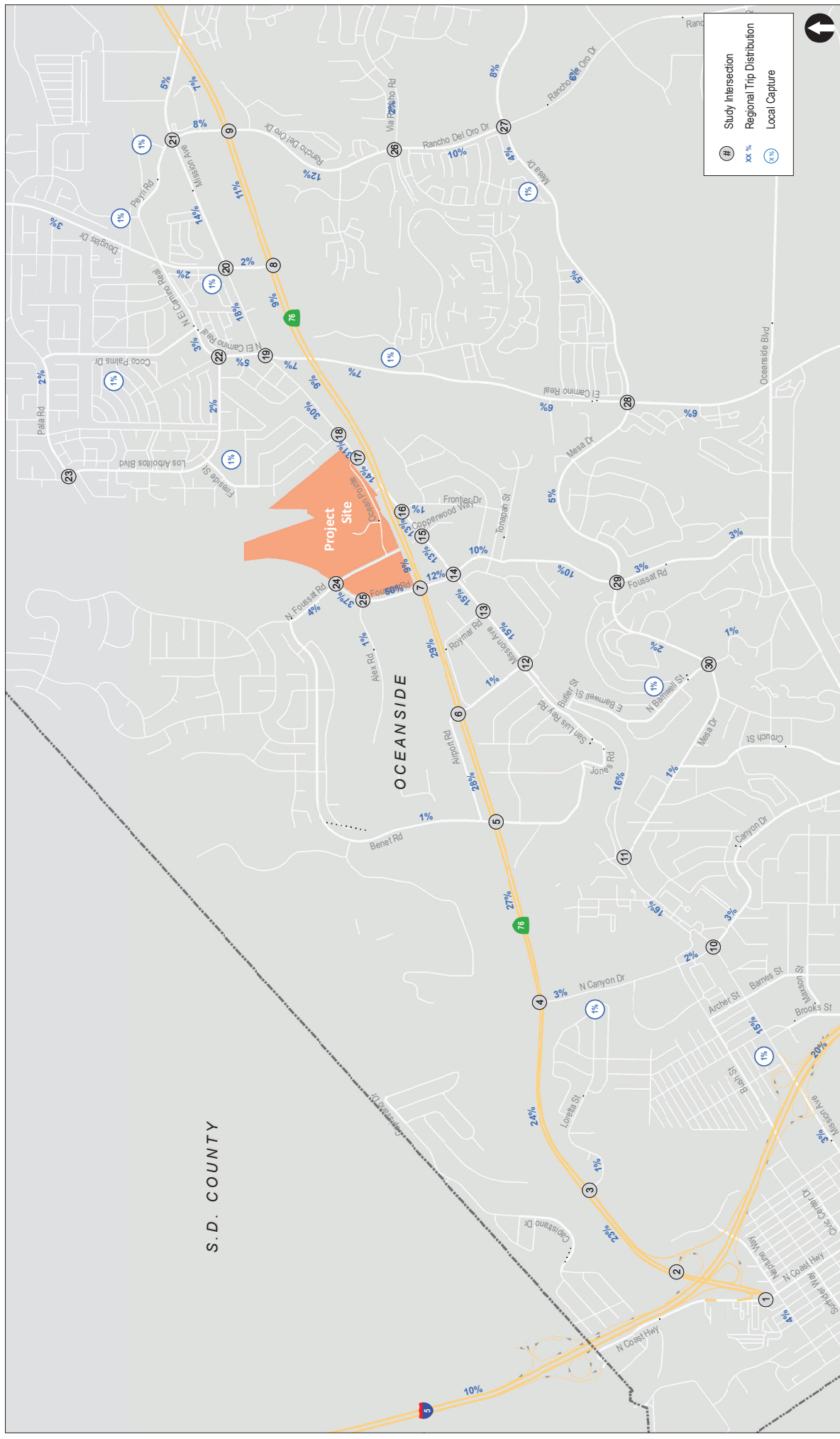


Figure 7-1
Project Traffic Distribution
 (Page 1 of 2)
 OCEAN KAMP

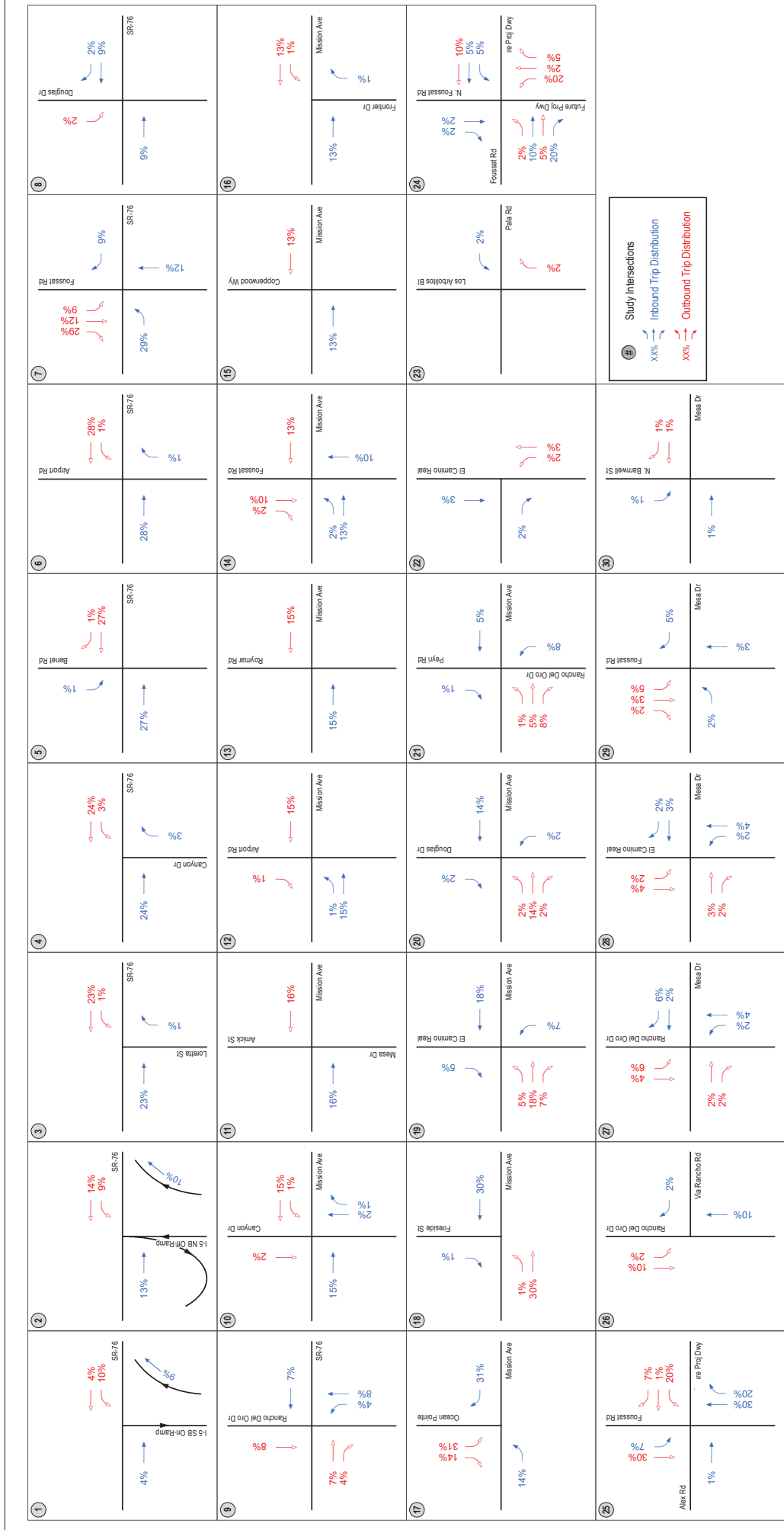


Figure 7-1
Project Traffic Distribution
 (Page 2 of 2)
 OCEAN KAMP



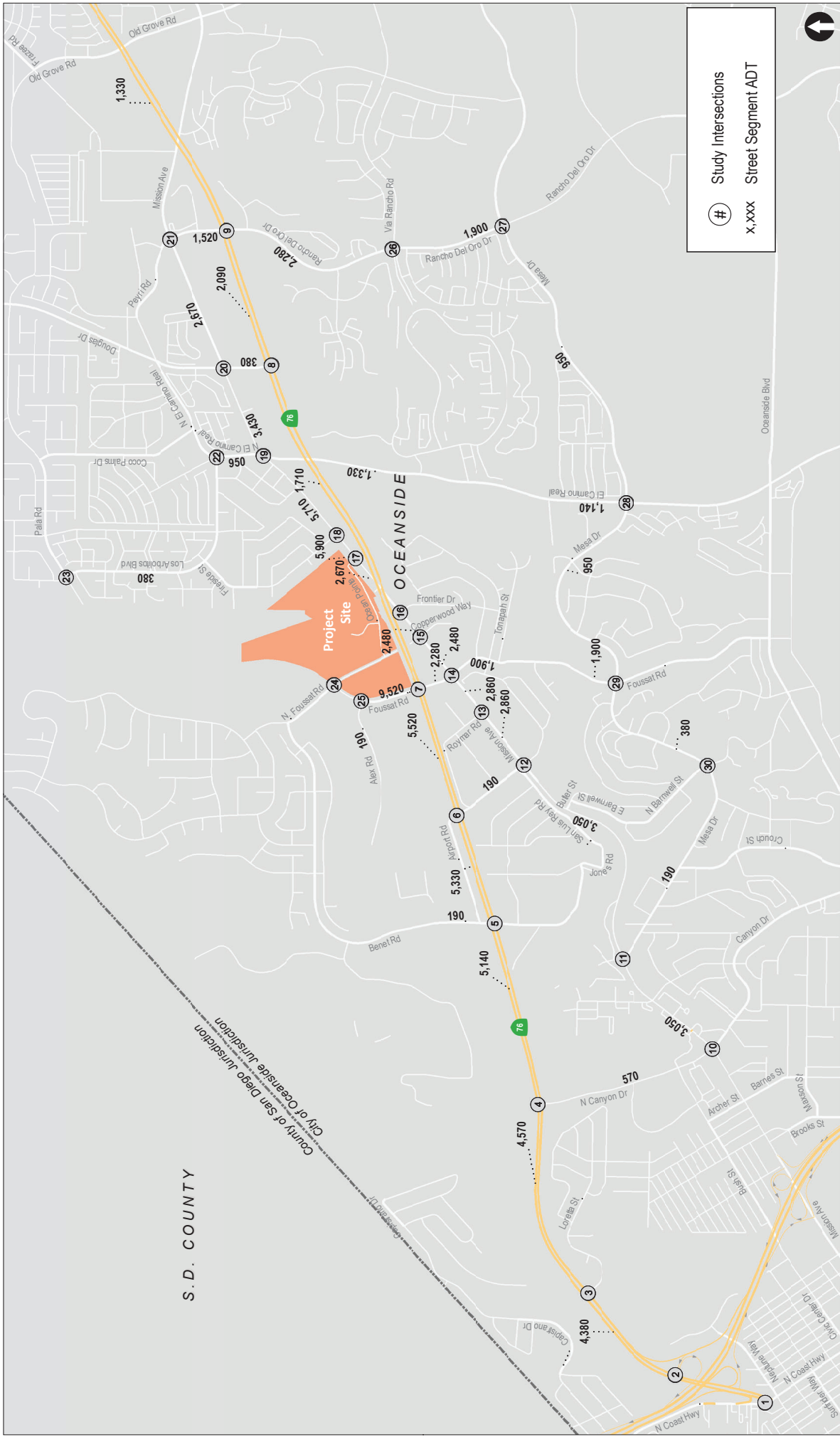


Figure 7-2a
Weekday Project Traffic Volumes
 (Page 1 of 2)
 OCEAN KAMP

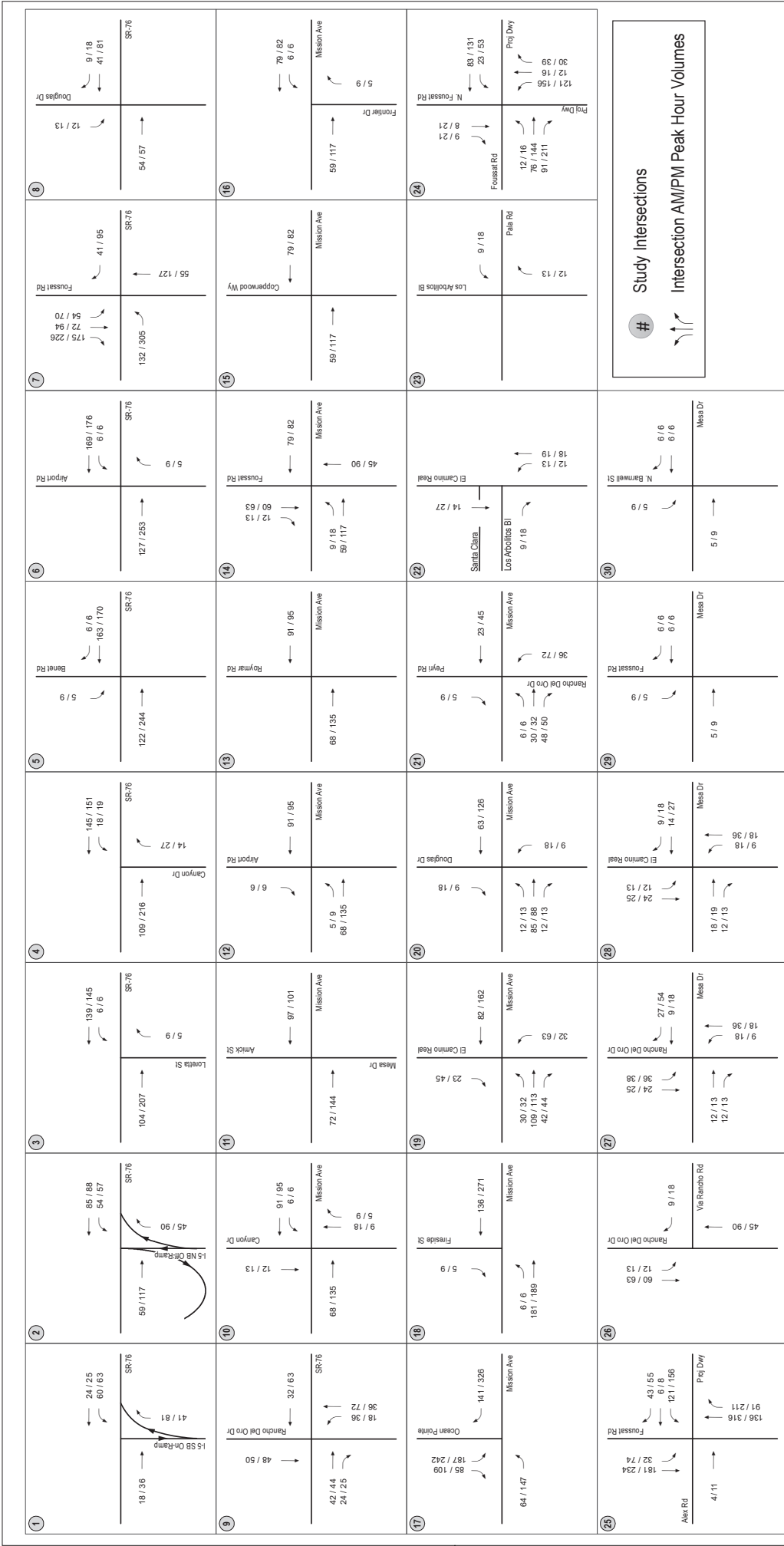


Figure 7-2b
 Weekday Project Traffic Volumes
 (Page 2 of 2)
 OCEAN KAMP

Oceanpointe Multi-Family Development - Traffic Impact Analysis (March 2005)

4.0 Project Description

The Oceanpointe multi-family residential project will consist of a maximum of 200 dwelling units clustered in three groups on a vacant lot of approximately 36 acres.

4.1 Project Traffic Generation

The project traffic generation was calculated using SANDAG trip rates from the *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. Copies of SANDAG rates are included in **Appendix D**. Using SANDAG traffic generation rates, the project is calculated to generate 1,600 ADT, 128 AM peak hour trips (26 inbound and 102 outbound), and 160 PM peak hour trips (112 inbound and 48 outbound) as shown in **Table 9**.

TABLE 9: PROJECT TRAFFIC GENERATION

Proposed Land Use	Rate	Size & Units	ADT	%	Split	AM				PM	
						IN	OUT	%	Split	IN	OUT
Multi-Family	8 Unit	200 DU	1600	8%	0.2 0.8	26	102	10%	0.7 0.3	112	48

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002.

DU - Dwelling Unit; ADT-Average Daily Traffic rounded to nearest 10 for total; Split-percent inbound and outbound.

4.2 Project Access

Project access will be provided from Stage Coach Road west of the project site and San Ramon Drive east of the site. The project will provide a connection between Stage Coach Road and San Ramon Drive; however, the project will be a gated community with restricted access to its residents and guests thereby controlling cut-through traffic.

4.3 Project Distribution and Assignment

Project trips were distributed to the adjacent roadway network based on expressway access and other attractions such as existing commercial centers. The distribution of project trips to Stage Coach Road and to San Ramon Drive was based on where the dwelling units were located and their access options. Sixty percent of the project trips were assigned to Stage Coach Road and fourth percent to San Ramon Drive due to their access options. The project distribution is shown in **Figure 5** with assignment of the project volumes shown in **Figure 6**.

Figure 5: Project Distribution

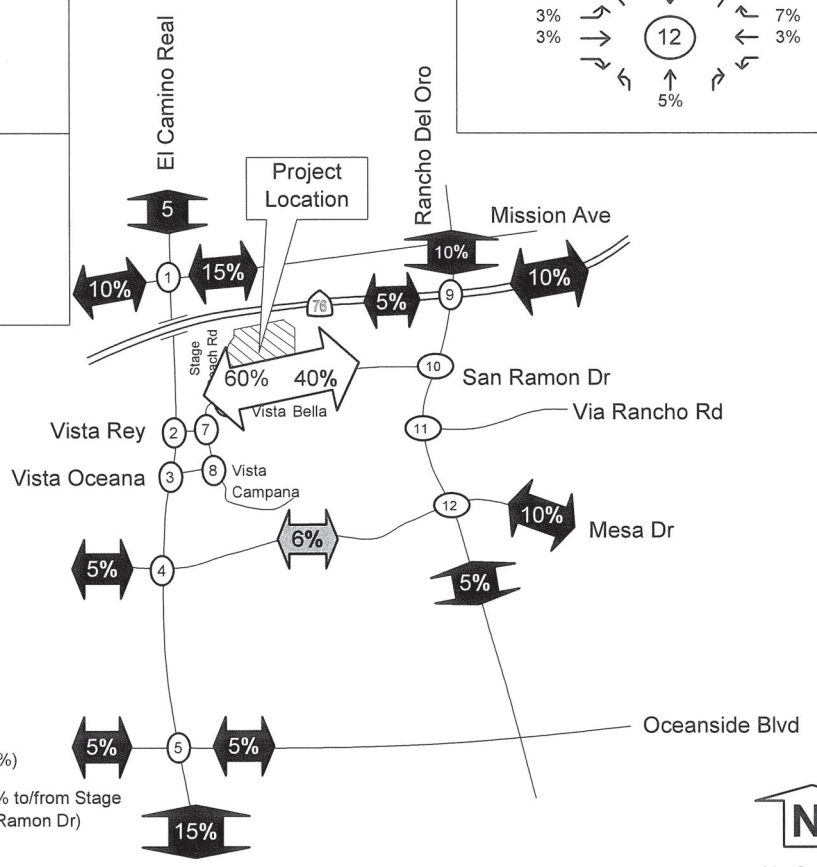
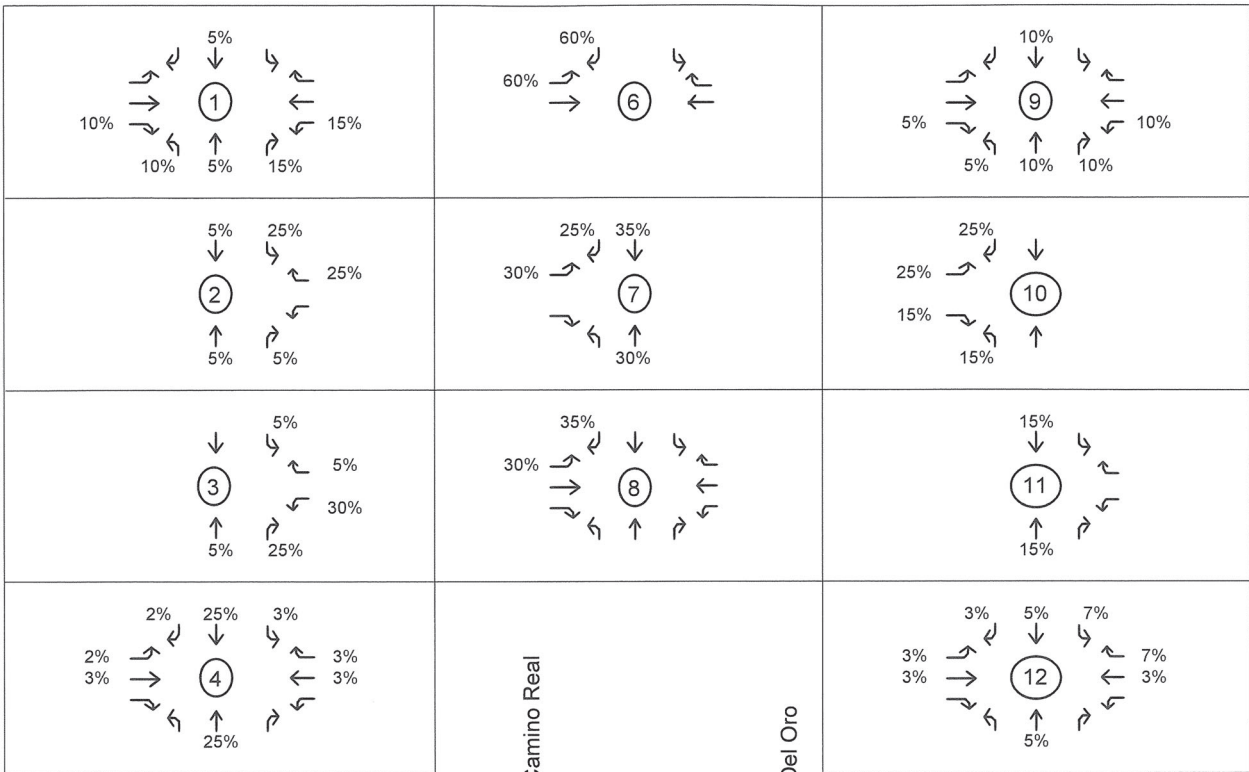
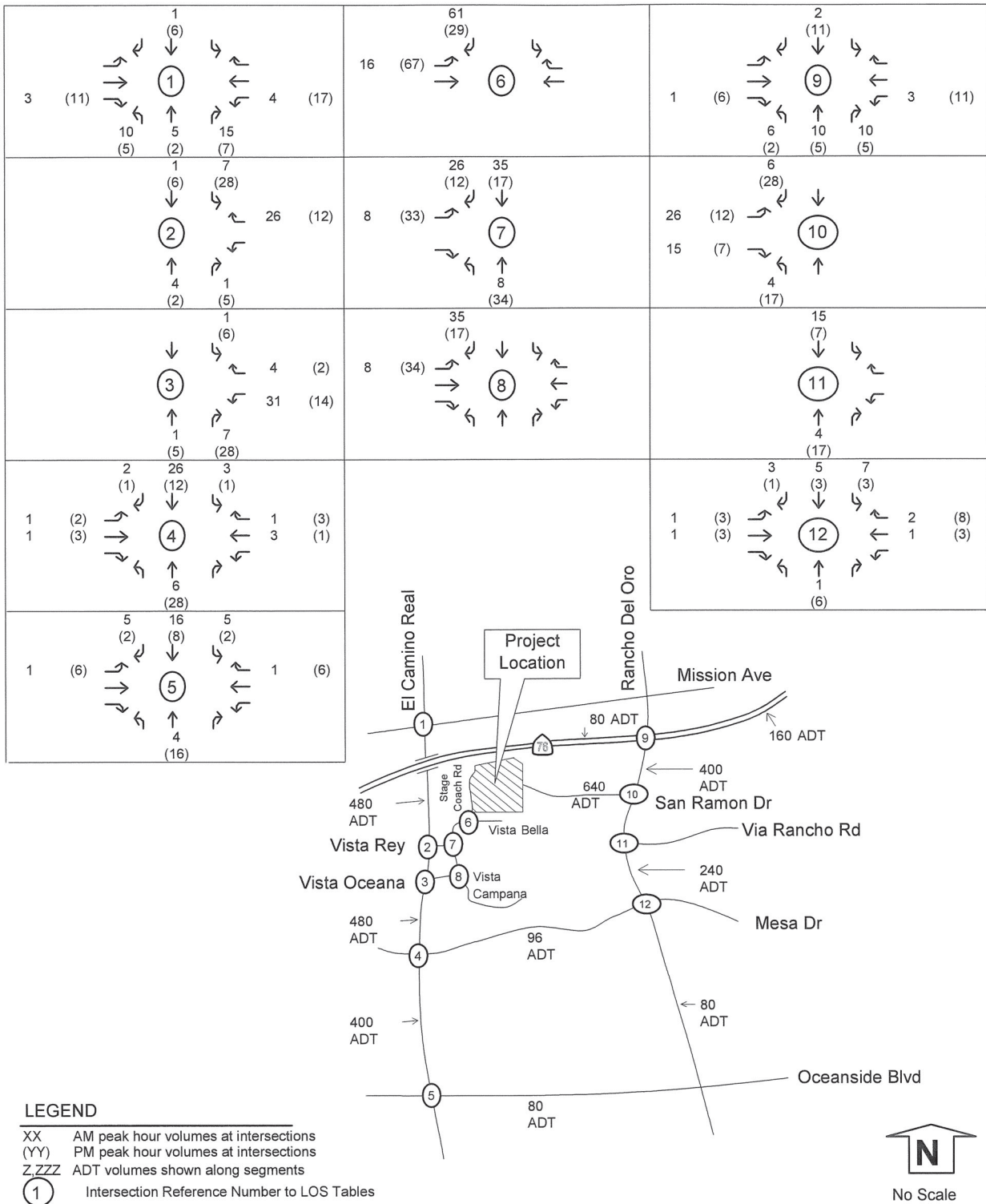


Figure 6: Project Volumes



Vista Bella Property Redevelopment - Traffic Impact Study (June 2024)

4.0 Project Traffic

The following section describes the trip generation, distribution, and assignment related to the proposed project.

Trip Generation

Trip generation and pass-by rates for the project site were estimated using traffic generation rates from SANDAG's *Not So Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region* (April 2002). The site includes offices that have been leased to commercial businesses. For analysis purposes, the office building trips were subtracted from the trip generation calculations. Pass-by trips are vehicle trips that are already on the road, which stop at a site (typically commercial/retail uses) along its route. Pass-by trips are not considered new trips generated by the site but should be accounted for in the analysis at the project site driveways.

With the reduction of trips currently generated from the existing offices the proposed project is calculated to generate 608 new daily trips, 23 AM peak-hour trips (-3 in, 26 out), and 62 PM peak-hour trips (42 in, 20 out) after pass-by trip reductions were applied for the small commercial area. **Table 4.1** summarizes the trip generation for the proposed site before and after pass-by trip reduction. Because the existing land use of an office building which generates a larger AM in-bound trips were replaced with residential land use which does not generate large AM in-bound trips, the subtraction of the existing trips generated resulted in fewer trips from the proposed development (shown in negative numbers).

Table 4.1 Trip Generation¹

TRIP GENERATION FOR THE PROPOSED PROJECT (Weekday)														
Land Use	Intensity		Daily Rate	ADT	AM Peak Rate	AM In	AM Out	AM in (%)	AM Out (%)	PM Peak Rate	PM In	PM Out	PM in (%)	PM Out (%)
Mixed Use: Residential	73	EA	5	365	0.09	10	23	30%	70%	0.13	28	19	60%	40%
Mixed Use: Commercial	3.658	TSF	110	403	0.03	7	5	60%	40%	0.09	18	18	50%	50%
Exist Office	-8	TSF	20	-160	0.14	-20	-2	90%	10%	0.13	-4	-17	20%	80%
Total				608		-3	26				42	20		

¹The mix-use project is eligible for a 10 percent vehicle trip reduction from the SANDAG Not-so-Brief-Guide to Trip Generation but was not taken as the total new daily trips generated is below the threshold for a full buildout conditions analysis.

Trip Distribution

Trip distribution and assignment is the process of identifying the probable destinations, directions, and traffic routes that project related traffic will likely affect. Trip distribution and assignment information were estimated from observed traffic patterns, experience, and review of previously prepared studies. Once the proposed developments trips have been estimated, they are assigned to the study area street network. The trip distribution for the project-related trips is shown in **Figure 4.1**.

Figure 4.1 Trip Distribution



Trip Assignment

Based on the expected project trip distributions, daily, AM, and PM peak-hour project trips were assigned to the roadway network and through the study intersections. The trip assignment for the proposed project is presented in **Figure 4.2**.

Figure 4.2 Project Trip Assignment























Appendix H

Synchro Calculation Worksheets Opening Year (2027) Conditions





























HCM 6th Signalized Intersection Summary
 1: Garrison St & Oceanside Blvd

Opening Year (2027) Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	973	36	16	1052	17	15	2	16	33	8	61
Future Volume (veh/h)	25	973	36	16	1052	17	15	2	16	33	8	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	27	1058	35	17	1143	16	16	2	13	36	9	52
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	47	1991	66	33	2010	28	69	5	399	66	9	398
Arrive On Green	0.03	0.57	0.57	0.02	0.56	0.56	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1767	3479	115	1767	3558	50	3	19	1572	3	37	1567
Grp Volume(v), veh/h	27	536	557	17	566	593	18	0	13	45	0	52
Grp Sat Flow(s),veh/h/ln	1767	1763	1832	1767	1763	1845	22	0	1572	40	0	1567
Q Serve(g_s), s	1.5	18.7	18.7	1.0	20.6	20.6	0.1	0.0	0.6	0.1	0.0	2.6
Cycle Q Clear(g_c), s	1.5	18.7	18.7	1.0	20.6	20.6	25.4	0.0	0.6	25.4	0.0	2.6
Prop In Lane	1.00		0.06	1.00		0.03	0.89		1.00	0.80		1.00
Lane Grp Cap(c), veh/h	47	1009	1048	33	996	1042	73	0	399	75	0	398
V/C Ratio(X)	0.58	0.53	0.53	0.51	0.57	0.57	0.24	0.00	0.03	0.60	0.00	0.13
Avail Cap(c_a), veh/h	352	1009	1048	352	996	1042	74	0	399	75	0	398
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.75	0.75	0.75	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.1	13.1	13.1	48.6	14.0	14.0	43.5	0.0	28.1	44.8	0.0	28.8
Incr Delay (d2), s/veh	24.1	2.0	1.9	6.6	1.8	1.7	1.7	0.0	0.0	12.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	7.0	7.2	0.5	7.6	7.9	0.5	0.0	0.2	1.4	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.2	15.1	15.1	55.2	15.7	15.6	45.2	0.0	28.1	57.3	0.0	28.9
LnGrp LOS	E	B	B	E	B	B	D	A	C	E	A	C
Approach Vol, veh/h		1120			1176			31				97
Approach Delay, s/veh		16.5			16.3			38.0				42.1
Approach LOS		B			B			D				D
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	63.0		30.0	7.7	62.3		30.0				
Change Period (Y+Rc), s	5.1	5.8		4.6	5.1	5.8		4.6				
Max Green Setting (Gmax), s	19.9	39.2		25.4	19.9	39.2		25.4				
Max Q Clear Time (g_c+I1), s	3.0	20.7		27.4	3.5	22.6		27.4				
Green Ext Time (p_c), s	0.0	8.8		0.0	0.1	8.8		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				17.7								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary
2: El Camino Real & Oceanside Blvd

Opening Year (2027) Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	  				
Traffic Volume (veh/h)	121	695	179	319	660	116	60	552	426	228	1436	369
Future Volume (veh/h)	121	695	179	319	660	116	60	552	426	228	1436	369
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	127	732	148	336	695	108	63	581	0	240	1512	0
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	202	922	411	285	1007	444	171	1669		208	1199	
Arrive On Green	0.06	0.26	0.26	0.08	0.29	0.29	0.05	0.33	0.00	0.06	0.34	0.00
Sat Flow, veh/h	3428	3526	1571	3428	3526	1552	3428	5066	1572	3428	3526	1572
Grp Volume(v), veh/h	127	732	148	336	695	108	63	581	0	240	1512	0
Grp Sat Flow(s),veh/h/ln	1714	1763	1571	1714	1763	1552	1714	1689	1572	1714	1763	1572
Q Serve(g_s), s	3.6	19.1	7.6	8.2	17.3	5.3	1.8	8.6	0.0	6.0	33.6	0.0
Cycle Q Clear(g_c), s	3.6	19.1	7.6	8.2	17.3	5.3	1.8	8.6	0.0	6.0	33.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	202	922	411	285	1007	444	171	1669		208	1199	
V/C Ratio(X)	0.63	0.79	0.36	1.18	0.69	0.24	0.37	0.35		1.15	1.26	
Avail Cap(c_a), veh/h	212	1106	493	285	1181	520	208	1723		208	1199	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.4	34.0	29.7	45.3	31.4	27.1	45.4	25.1	0.0	46.4	32.6	0.0
Incr Delay (d2), s/veh	5.5	3.8	0.8	111.4	1.7	0.4	1.3	0.3	0.0	109.5	124.2	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	1.6	8.2	2.7	7.7	7.0	1.9	0.8	3.3	0.0	5.6	33.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.9	37.8	30.5	156.7	33.1	27.5	46.7	25.4	0.0	155.9	156.8	0.0
LnGrp LOS	D	D	C	F	C	C	D	C		F	F	
Approach Vol, veh/h		1007			1139			644			1752	
Approach Delay, s/veh		38.4			69.0			27.4			156.7	
Approach LOS		D			E			C			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.4	40.0	14.0	33.3	10.3	41.1	11.6	35.7				
Change Period (Y+Rc), s	5.4	7.5	5.8	7.5	5.4	7.5	5.8	7.5				
Max Green Setting (Gmax), s	6.0	33.6	8.2	31.0	6.0	33.6	6.1	33.1				
Max Q Clear Time (g_c+I1), s	8.0	10.6	10.2	21.1	3.8	35.6	5.6	19.3				
Green Ext Time (p_c), s	0.0	6.6	0.0	4.7	0.0	0.0	0.0	5.1				

Intersection Summary





















HCM 6th Ctrl Delay	90.1
HCM 6th LOS	F

Notes

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


































HCM 6th Signalized Intersection Summary
 1: Garrison St & Oceanside Blvd

Opening Year (2027) Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	1206	21	7	1049	22	40	25	43	23	7	21
Future Volume (veh/h)	42	1206	21	7	1049	22	40	25	43	23	7	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.99
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	44	1269	20	7	1104	21	42	26	36	24	7	17
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	62	2067	33	16	1966	37	58	23	399	64	11	393
Arrive On Green	0.04	0.58	0.58	0.01	0.56	0.56	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1767	3551	56	1767	3537	67	0	91	1572	0	43	1549
Grp Volume(v), veh/h	44	630	659	7	550	575	68	0	36	31	0	17
Grp Sat Flow(s),veh/h/ln	1767	1763	1844	1767	1763	1842	91	0	1572	43	0	1549
Q Serve(g_s), s	2.5	23.2	23.2	0.4	20.2	20.2	0.0	0.0	1.7	0.0	0.0	0.8
Cycle Q Clear(g_c), s	2.5	23.2	23.2	0.4	20.2	20.2	25.4	0.0	1.7	25.4	0.0	0.8
Prop In Lane	1.00		0.03	1.00		0.04	0.62		1.00	0.77		1.00
Lane Grp Cap(c), veh/h	62	1026	1074	16	980	1023	81	0	399	75	0	393
V/C Ratio(X)	0.71	0.61	0.61	0.45	0.56	0.56	0.84	0.00	0.09	0.41	0.00	0.04
Avail Cap(c_a), veh/h	352	1026	1074	352	980	1023	81	0	399	75	0	393
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.72	0.72	0.72	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.7	13.6	13.6	49.3	14.3	14.3	41.6	0.0	28.5	41.2	0.0	28.1
Incr Delay (d2), s/veh	29.0	2.7	2.6	10.4	1.7	1.6	50.1	0.0	0.1	3.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	8.7	9.0	0.2	7.5	7.8	2.8	0.0	0.7	0.8	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	76.7	16.3	16.2	59.7	16.0	16.0	91.7	0.0	28.6	44.9	0.0	28.2
LnGrp LOS	E	B	B	E	B	B	F	A	C	D	A	C
Approach Vol, veh/h		1333			1132			104				48
Approach Delay, s/veh		18.3			16.3			69.9				39.0
Approach LOS		B			B			E				D
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	64.0		30.0	8.6	61.4		30.0				
Change Period (Y+Rc), s	5.1	5.8		4.6	5.1	5.8		4.6				
Max Green Setting (Gmax), s	19.9	39.2		25.4	19.9	39.2		25.4				
Max Q Clear Time (g_c+I1), s	2.4	25.2		27.4	4.5	22.2		27.4				
Green Ext Time (p_c), s	0.0	8.7		0.0	0.1	8.6		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				19.8								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary
2: El Camino Real & Oceanside Blvd

Opening Year (2027) Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	  		 	 	
Traffic Volume (veh/h)	356	1093	168	460	774	228	112	1628	650	174	888	182
Future Volume (veh/h)	356	1093	168	460	774	228	112	1628	650	174	888	182
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	363	1115	132	469	790	214	114	1661	0	178	906	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	235	1041	457	268	1074	479	189	1621		196	1135	
Arrive On Green	0.07	0.30	0.30	0.08	0.30	0.30	0.06	0.32	0.00	0.06	0.32	0.00
Sat Flow, veh/h	3428	3526	1547	3428	3526	1572	3428	5066	1572	3428	3526	1572
Grp Volume(v), veh/h	363	1115	132	469	790	214	114	1661	0	178	906	0
Grp Sat Flow(s),veh/h/ln	1714	1763	1547	1714	1763	1572	1714	1689	1572	1714	1763	1572
Q Serve(g_s), s	7.2	31.0	6.9	8.2	21.1	11.5	3.4	33.6	0.0	5.4	24.6	0.0
Cycle Q Clear(g_c), s	7.2	31.0	6.9	8.2	21.1	11.5	3.4	33.6	0.0	5.4	24.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	235	1041	457	268	1074	479	189	1621		196	1135	
V/C Ratio(X)	1.54	1.07	0.29	1.75	0.74	0.45	0.60	1.02		0.91	0.80	
Avail Cap(c_a), veh/h	235	1041	457	268	1074	479	209	1621		196	1135	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.9	37.0	28.5	48.4	32.7	29.4	48.5	35.7	0.0	49.2	32.5	0.0
Incr Delay (d2), s/veh	264.9	49.0	0.5	353.3	2.9	0.9	4.1	28.9	0.0	39.8	4.7	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	11.6	19.6	2.4	16.5	8.7	4.2	1.5	17.2	0.0	3.3	10.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	313.8	86.0	29.0	401.7	35.6	30.3	52.6	64.6	0.0	89.0	37.1	0.0
LnGrp LOS	F	F	C	F	D	C	D	F		F	D	
Approach Vol, veh/h		1610			1473			1775			1084	
Approach Delay, s/veh		132.7			151.4			63.8			45.7	
Approach LOS		F			F			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.4	41.1	14.0	38.5	11.2	41.3	13.0	39.5				
Change Period (Y+Rc), s	5.4	7.5	5.8	7.5	5.4	7.5	5.8	7.5				
Max Green Setting (Gmax), s	6.0	33.6	8.2	31.0	6.4	33.2	7.2	32.0				
Max Q Clear Time (g_c+I1), s	7.4	35.6	10.2	33.0	5.4	26.6	9.2	23.1				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	4.3	0.0	4.7				

Intersection Summary

HCM 6th Ctrl Delay	100.9
HCM 6th LOS	F

Notes

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

Appendix I

Synchro Calculation Worksheets

Opening Year (2027) with Project Conditions

HCM 6th Signalized Intersection Summary
1: Garrison St & Oceanside Blvd

Opening Year (2027) with Project Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	973	36	16	1052	30	15	2	16	73	8	71
Future Volume (veh/h)	28	973	36	16	1052	30	15	2	16	73	8	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	30	1058	35	17	1143	30	16	2	13	79	9	61
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	50	1991	66	33	1974	52	68	5	399	68	4	398
Arrive On Green	0.03	0.57	0.57	0.02	0.56	0.56	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1767	3479	115	1767	3507	92	0	18	1572	0	17	1567
Grp Volume(v), veh/h	30	536	557	17	574	599	18	0	13	88	0	61
Grp Sat Flow(s),veh/h/ln	1767	1763	1832	1767	1763	1836	18	0	1572	17	0	1567
Q Serve(g_s), s	1.7	18.7	18.7	1.0	21.1	21.1	0.0	0.0	0.6	0.0	0.0	3.0
Cycle Q Clear(g_c), s	1.7	18.7	18.7	1.0	21.1	21.1	25.4	0.0	0.6	25.4	0.0	3.0
Prop In Lane	1.00		0.06	1.00		0.05	0.89		1.00	0.90		1.00
Lane Grp Cap(c), veh/h	50	1009	1048	33	992	1033	73	0	399	73	0	398
V/C Ratio(X)	0.60	0.53	0.53	0.51	0.58	0.58	0.25	0.00	0.03	1.21	0.00	0.15
Avail Cap(c_a), veh/h	352	1009	1048	352	992	1033	73	0	399	73	0	398
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.75	0.75	0.75	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.0	13.1	13.2	48.6	14.2	14.2	43.5	0.0	28.1	48.5	0.0	29.0
Incr Delay (d2), s/veh	24.3	2.0	1.9	6.6	1.9	1.8	1.8	0.0	0.0	173.8	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	7.0	7.2	0.5	7.8	8.1	0.5	0.0	0.2	5.3	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.4	15.2	15.1	55.2	16.0	16.0	45.2	0.0	28.1	222.3	0.0	29.1
LnGrp LOS	E	B	B	E	B	B	D	A	C	F	A	C
Approach Vol, veh/h		1123			1190			31				149
Approach Delay, s/veh		16.6			16.6			38.0				143.2
Approach LOS		B			B			D				F
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	63.0		30.0	7.9	62.1		30.0				
Change Period (Y+Rc), s	5.1	5.8		4.6	5.1	5.8		4.6				
Max Green Setting (Gmax), s	19.9	39.2		25.4	19.9	39.2		25.4				
Max Q Clear Time (g_c+I1), s	3.0	20.7		27.4	3.7	23.1		27.4				
Green Ext Time (p_c), s	0.0	8.8		0.0	0.1	8.7		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				24.4								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary
2: El Camino Real & Oceanside Blvd

Opening Year (2027) with Project Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↗	↔↔	↑↑	↗	↔↔	↑↑↑	↗	↔↔	↑↑	↗
Traffic Volume (veh/h)	131	700	204	319	662	116	68	552	426	228	1436	372
Future Volume (veh/h)	131	700	204	319	662	116	68	552	426	228	1436	372
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	138	737	170	336	697	108	72	581	0	240	1512	0
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	203	927	413	283	1009	444	179	1673		207	1193	
Arrive On Green	0.06	0.26	0.26	0.08	0.29	0.29	0.05	0.33	0.00	0.06	0.34	0.00
Sat Flow, veh/h	3428	3526	1571	3428	3526	1552	3428	5066	1572	3428	3526	1572
Grp Volume(v), veh/h	138	737	170	336	697	108	72	581	0	240	1512	0
Grp Sat Flow(s),veh/h/ln	1714	1763	1571	1714	1763	1552	1714	1689	1572	1714	1763	1572
Q Serve(g_s), s	3.9	19.3	8.9	8.2	17.5	5.3	2.0	8.6	0.0	6.0	33.6	0.0
Cycle Q Clear(g_c), s	3.9	19.3	8.9	8.2	17.5	5.3	2.0	8.6	0.0	6.0	33.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	203	927	413	283	1009	444	179	1673		207	1193	
V/C Ratio(X)	0.68	0.80	0.41	1.19	0.69	0.24	0.40	0.35		1.16	1.27	
Avail Cap(c_a), veh/h	211	1101	491	283	1176	518	207	1715		207	1193	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.8	34.1	30.2	45.5	31.5	27.2	45.5	25.2	0.0	46.6	32.8	0.0
Incr Delay (d2), s/veh	8.2	3.9	0.9	113.7	1.7	0.4	1.5	0.3	0.0	111.7	126.9	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	1.8	8.3	3.2	7.8	7.0	1.9	0.9	3.3	0.0	5.7	34.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.0	38.0	31.2	159.2	33.2	27.6	47.0	25.4	0.0	158.3	159.8	0.0
LnGrp LOS	D	D	C	F	C	C	D	C		F	F	
Approach Vol, veh/h		1045			1141			653			1752	
Approach Delay, s/veh		39.0			69.8			27.8			159.6	
Approach LOS		D			E			C			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	1.4	40.3	14.0	33.6	10.6	41.1	11.7	35.9				
Change Period (Y+Rc), s	5.4	7.5	5.8	7.5	5.4	7.5	5.8	7.5				
Max Green Setting (Gmax), s	33.6	33.6	8.2	31.0	6.0	33.6	6.1	33.1				
Max Q Clear Time (g_c+1/3), s	10.6	10.6	10.2	21.3	4.0	35.6	5.9	19.5				
Green Ext Time (p_c), s	0.0	6.6	0.0	4.7	0.0	0.0	0.0	5.1				

Intersection Summary

HCM 6th Ctrl Delay	91.1
HCM 6th LOS	F

Notes

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

Intersection						
Int Delay, s/veh	8.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	50	16	0	0	0
Future Vol, veh/h	0	50	16	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	54	17	0	0	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	35	1	1	0	0
Stage 1	1	-	-	-	-
Stage 2	34	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-
Pot Cap-1 Maneuver	975	1081	1615	-	-
Stage 1	1020	-	-	-	-
Stage 2	986	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	964	1081	1615	-	-
Mov Cap-2 Maneuver	964	-	-	-	-
Stage 1	1009	-	-	-	-
Stage 2	986	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	7.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1615	-	1081	-	-
HCM Lane V/C Ratio	0.011	-	0.05	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

HCM 6th Signalized Intersection Summary
 1: Garrison St & Oceanside Blvd

Opening Year (2027) with Project Conditions
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	1206	21	7	1049	63	40	25	43	47	7	27
Future Volume (veh/h)	52	1206	21	7	1049	63	40	25	43	47	7	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.99
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	55	1269	20	7	1104	60	42	26	36	49	7	22
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	73	2067	33	16	1867	101	58	23	399	68	5	393
Arrive On Green	0.04	0.58	0.58	0.01	0.55	0.55	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1767	3551	56	1767	3396	184	0	90	1572	0	21	1549
Grp Volume(v), veh/h	55	630	659	7	573	591	68	0	36	56	0	22
Grp Sat Flow(s),veh/h/ln	1767	1763	1844	1767	1763	1817	91	0	1572	21	0	1549
Q Serve(g_s), s	3.1	23.2	23.2	0.4	21.7	21.7	0.0	0.0	1.7	0.0	0.0	1.1
Cycle Q Clear(g_c), s	3.1	23.2	23.2	0.4	21.7	21.7	25.4	0.0	1.7	25.4	0.0	1.1
Prop In Lane	1.00		0.03	1.00		0.10	0.62		1.00	0.87		1.00
Lane Grp Cap(c), veh/h	73	1026	1074	16	969	999	81	0	399	73	0	393
V/C Ratio(X)	0.75	0.61	0.61	0.45	0.59	0.59	0.84	0.00	0.09	0.77	0.00	0.06
Avail Cap(c_a), veh/h	352	1026	1074	352	969	999	81	0	399	73	0	393
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.70	0.70	0.70	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.4	13.6	13.6	49.3	15.0	15.0	41.6	0.0	28.5	47.6	0.0	28.2
Incr Delay (d2), s/veh	30.3	2.7	2.6	10.1	1.9	1.8	50.3	0.0	0.1	38.4	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	8.7	9.0	0.2	8.1	8.3	2.8	0.0	0.7	2.2	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	77.8	16.3	16.2	59.4	16.9	16.8	91.9	0.0	28.6	86.0	0.0	28.3
LnGrp LOS	E	B	B	E	B	B	F	A	C	F	A	C
Approach Vol, veh/h		1344			1171			104				78
Approach Delay, s/veh		18.8			17.1			70.0				69.7
Approach LOS		B			B			E				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	64.0		30.0	9.2	60.8		30.0				
Change Period (Y+Rc), s	5.1	5.8		4.6	5.1	5.8		4.6				
Max Green Setting (Gmax), s	19.9	39.2		25.4	19.9	39.2		25.4				
Max Q Clear Time (g_c+I1), s	2.4	25.2		27.4	5.1	23.7		27.4				
Green Ext Time (p_c), s	0.0	8.7		0.0	0.2	8.4		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				21.5								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary
2: El Camino Real & Oceanside Blvd

Opening Year (2027) with Project Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↔	↔↔	↑↑	↔	↔↔	↑↑↑	↔	↔↔	↑↑	↔
Traffic Volume (veh/h)	362	1096	183	460	779	228	138	1628	650	174	888	192
Future Volume (veh/h)	362	1096	183	460	779	228	138	1628	650	174	888	192
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	369	1118	145	469	795	214	141	1661	0	178	906	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	235	1041	457	268	1074	479	201	1621		196	1123	
Arrive On Green	0.07	0.30	0.30	0.08	0.30	0.30	0.06	0.32	0.00	0.06	0.32	0.00
Sat Flow, veh/h	3428	3526	1547	3428	3526	1572	3428	5066	1572	3428	3526	1572
Grp Volume(v), veh/h	369	1118	145	469	795	214	141	1661	0	178	906	0
Grp Sat Flow(s),veh/h/ln	1714	1763	1547	1714	1763	1572	1714	1689	1572	1714	1763	1572
Q Serve(g_s), s	7.2	31.0	7.7	8.2	21.3	11.5	4.2	33.6	0.0	5.4	24.7	0.0
Cycle Q Clear(g_c), s	7.2	31.0	7.7	8.2	21.3	11.5	4.2	33.6	0.0	5.4	24.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	235	1041	457	268	1074	479	201	1621		196	1123	
V/C Ratio(X)	1.57	1.07	0.32	1.75	0.74	0.45	0.70	1.02		0.91	0.81	
Avail Cap(c_a), veh/h	235	1041	457	268	1074	479	209	1621		196	1123	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.9	37.0	28.8	48.4	32.8	29.4	48.5	35.7	0.0	49.2	32.8	0.0
Incr Delay (d2), s/veh	275.9	50.0	0.6	353.3	3.0	0.9	9.7	28.9	0.0	39.8	5.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ft	2.0	19.8	2.7	16.5	8.8	4.2	2.0	17.2	0.0	3.3	10.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	324.8	87.0	29.3	401.7	35.7	30.3	58.2	64.6	0.0	89.0	37.8	0.0
LnGrp LOS	F	F	C	F	D	C	E	F		F	D	
Approach Vol, veh/h		1632			1478			1802			1084	
Approach Delay, s/veh		135.7			151.1			64.1			46.2	
Approach LOS		F			F			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.1	41.1	14.0	38.5	11.5	41.0	13.0	39.5				
Change Period (Y+Rc), s	5.4	7.5	5.8	7.5	5.4	7.5	5.8	7.5				
Max Green Setting (Gmax), s	33.6	33.6	8.2	31.0	6.4	33.2	7.2	32.0				
Max Q Clear Time (g_c+11), s	35.6	35.6	10.2	33.0	6.2	26.7	9.2	23.3				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	4.3	0.0	4.6				

Intersection Summary

HCM 6th Ctrl Delay	101.8
HCM 6th LOS	F

Notes

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

Intersection						
Int Delay, s/veh	7.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	30	51	0	0	0
Future Vol, veh/h	0	30	51	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	33	55	0	0	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	111	1	1	0	0
Stage 1	1	-	-	-	-
Stage 2	110	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-
Pot Cap-1 Maneuver	883	1081	1615	-	-
Stage 1	1020	-	-	-	-
Stage 2	912	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	853	1081	1615	-	-
Mov Cap-2 Maneuver	853	-	-	-	-
Stage 1	985	-	-	-	-
Stage 2	912	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	7.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1615	-	1081	-	-
HCM Lane V/C Ratio	0.034	-	0.03	-	-
HCM Control Delay (s)	7.3	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Appendix J

Synchro Calculation Worksheets

Horizon Year (2050) Conditions

HCM 6th Signalized Intersection Summary
 1: Garrison St & Oceanside Blvd

Horizon Year (2050) Conditions
 AM Peak Hour
































Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	850	40	40	1070	50	20	10	20	40	10	70
Future Volume (veh/h)	30	850	40	40	1070	50	20	10	20	40	10	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	32	895	38	42	1126	48	21	11	17	42	11	59
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	52	1916	81	61	1933	82	60	19	399	65	10	398
Arrive On Green	0.03	0.56	0.56	0.03	0.56	0.56	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1767	3442	146	1767	3441	147	0	77	1572	0	38	1567
Grp Volume(v), veh/h	32	458	475	42	577	597	32	0	17	53	0	59
Grp Sat Flow(s),veh/h/ln	1767	1763	1825	1767	1763	1825	77	0	1572	39	0	1567
Q Serve(g_s), s	1.8	15.6	15.6	2.4	21.3	21.3	0.0	0.0	0.8	0.0	0.0	2.9
Cycle Q Clear(g_c), s	1.8	15.6	15.6	2.4	21.3	21.3	25.4	0.0	0.8	25.4	0.0	2.9
Prop In Lane	1.00		0.08	1.00		0.08	0.66		1.00	0.79		1.00
Lane Grp Cap(c), veh/h	52	981	1016	61	990	1025	79	0	399	74	0	398
V/C Ratio(X)	0.61	0.47	0.47	0.69	0.58	0.58	0.40	0.00	0.04	0.71	0.00	0.15
Avail Cap(c_a), veh/h	352	981	1016	352	990	1025	79	0	399	74	0	398
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.64	0.64	0.64	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.0	13.3	13.3	47.8	14.3	14.3	34.9	0.0	28.1	45.4	0.0	28.9
Incr Delay (d2), s/veh	24.7	1.6	1.5	6.5	1.6	1.6	3.3	0.0	0.0	27.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	5.9	6.1	1.1	7.8	8.1	0.9	0.0	0.3	1.9	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.6	14.9	14.8	54.2	15.9	15.8	38.2	0.0	28.2	72.7	0.0	29.1
LnGrp LOS	E	B	B	D	B	B	D	A	C	E	A	C
Approach Vol, veh/h		965			1216			49				112
Approach Delay, s/veh		16.8			17.2			34.7				49.7
Approach LOS		B			B			C				D
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.5	61.5		30.0	8.0	62.0		30.0				
Change Period (Y+Rc), s	5.1	5.8		4.6	5.1	5.8		4.6				
Max Green Setting (Gmax), s	19.9	39.2		25.4	19.9	39.2		25.4				
Max Q Clear Time (g_c+I1), s	4.4	17.6		27.4	3.8	23.3		27.4				
Green Ext Time (p_c), s	0.0	7.9		0.0	0.1	8.6		0.0				

Intersection Summary												
HCM 6th Ctrl Delay				18.9								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary
2: El Camino Real & Oceanside Blvd

Horizon Year (2050) Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	  				
Traffic Volume (veh/h)	150	550	260	420	680	120	200	460	420	120	1070	350
Future Volume (veh/h)	150	550	260	420	680	120	200	460	420	120	1070	350
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	158	579	220	442	716	101	211	484	0	126	1126	0
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	221	767	342	463	1016	447	243	1766		187	1172	
Arrive On Green	0.06	0.22	0.22	0.14	0.29	0.29	0.07	0.35	0.00	0.05	0.33	0.00
Sat Flow, veh/h	3428	3526	1570	3428	3526	1552	3428	5066	1572	3428	3526	1572
Grp Volume(v), veh/h	158	579	220	442	716	101	211	484	0	126	1126	0
Grp Sat Flow(s),veh/h/ln	1714	1763	1570	1714	1763	1552	1714	1689	1572	1714	1763	1572
Q Serve(g_s), s	4.9	16.5	13.7	13.7	19.5	5.3	6.5	7.4	0.0	3.9	33.6	0.0
Cycle Q Clear(g_c), s	4.9	16.5	13.7	13.7	19.5	5.3	6.5	7.4	0.0	3.9	33.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	221	767	342	463	1016	447	243	1766		187	1172	
V/C Ratio(X)	0.72	0.76	0.64	0.95	0.70	0.23	0.87	0.27		0.67	0.96	
Avail Cap(c_a), veh/h	319	1018	454	463	1166	513	243	1766		214	1173	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.2	39.3	38.2	46.1	34.1	29.1	49.4	25.2	0.0	49.8	35.1	0.0
Incr Delay (d2), s/veh	4.3	2.8	2.9	30.4	1.9	0.4	26.9	0.2	0.0	6.7	17.9	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	2.1	7.1	5.2	7.5	8.0	1.9	3.6	2.9	0.0	1.8	16.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.5	42.2	41.1	76.5	36.1	29.4	76.3	25.3	0.0	56.5	53.0	0.0
LnGrp LOS	D	D	D	E	D	C	E	C		E	D	
Approach Vol, veh/h		957			1259			695			1252	
Approach Delay, s/veh		43.8			49.7			40.8			53.3	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.3	44.9	20.3	30.8	13.0	43.2	12.7	38.4				
Change Period (Y+Rc), s	5.4	7.5	5.8	7.5	5.4	7.5	5.8	7.5				
Max Green Setting (Gmax), s	6.7	36.6	14.5	31.0	7.6	35.7	10.0	35.5				
Max Q Clear Time (g_c+I1), s	5.9	9.4	15.7	18.5	8.5	35.6	6.9	21.5				
Green Ext Time (p_c), s	0.0	5.8	0.0	4.7	0.0	0.1	0.1	5.3				
Intersection Summary												
HCM 6th Ctrl Delay			48.0									
HCM 6th LOS			D									
Notes												
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

HCM 6th Signalized Intersection Summary
 1: Garrison St & Oceanside Blvd

Horizon Year (2050) Conditions
 PM Peak Hour



































Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	1390	30	30	1210	50	50	30	60	40	10	30
Future Volume (veh/h)	60	1390	30	30	1210	50	50	30	60	40	10	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.99
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	63	1463	29	32	1274	48	53	32	50	42	11	26
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	84	1985	39	52	1881	71	58	22	399	65	10	393
Arrive On Green	0.05	0.56	0.56	0.03	0.54	0.54	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1767	3534	70	1767	3461	130	0	88	1572	0	38	1549
Grp Volume(v), veh/h	63	729	763	32	648	674	85	0	50	53	0	26
Grp Sat Flow(s),veh/h/ln	1767	1763	1841	1767	1763	1829	88	0	1572	38	0	1549
Q Serve(g_s), s	3.5	30.9	31.0	1.8	26.6	26.6	0.0	0.0	2.4	0.0	0.0	1.3
Cycle Q Clear(g_c), s	3.5	30.9	31.0	1.8	26.6	26.6	25.4	0.0	2.4	25.4	0.0	1.3
Prop In Lane	1.00		0.04	1.00		0.07	0.62		1.00	0.79		1.00
Lane Grp Cap(c), veh/h	84	990	1034	52	958	994	81	0	399	74	0	393
V/C Ratio(X)	0.75	0.74	0.74	0.61	0.68	0.68	1.05	0.00	0.13	0.71	0.00	0.07
Avail Cap(c_a), veh/h	352	990	1034	352	958	994	81	0	399	74	0	393
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.57	0.57	0.57	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.0	16.4	16.4	48.0	16.5	16.5	43.1	0.0	28.7	45.4	0.0	28.3
Incr Delay (d2), s/veh	26.6	4.9	4.7	4.9	2.2	2.1	114.8	0.0	0.1	27.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	12.1	12.6	0.8	9.9	10.3	4.6	0.0	0.9	1.9	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.6	21.3	21.1	52.9	18.7	18.6	157.9	0.0	28.9	72.9	0.0	28.4
LnGrp LOS	E	C	C	D	B	B	F	A	C	E	A	C
Approach Vol, veh/h		1555			1354			135				79
Approach Delay, s/veh		23.3			19.5			110.1				58.2
Approach LOS		C			B			F				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	62.0		30.0	9.9	60.1		30.0				
Change Period (Y+Rc), s	5.1	5.8		4.6	5.1	5.8		4.6				
Max Green Setting (Gmax), s	19.9	39.2		25.4	19.9	39.2		25.4				
Max Q Clear Time (g_c+I1), s	3.8	33.0		27.4	5.5	28.6		27.4				
Green Ext Time (p_c), s	0.0	5.0		0.0	0.2	7.2		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				26.3								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary

2: El Camino Real & Oceanside Blvd

Horizon Year (2050) Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	  		 	 	
Traffic Volume (veh/h)	330	850	320	460	710	140	370	1490	590	160	930	280
Future Volume (veh/h)	330	850	320	460	710	140	370	1490	590	160	930	280
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	337	867	261	469	724	107	378	1520	0	163	949	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	391	889	390	477	977	436	401	1737		192	994	
Arrive On Green	0.11	0.25	0.25	0.14	0.28	0.28	0.12	0.34	0.00	0.06	0.28	0.00
Sat Flow, veh/h	3428	3526	1546	3428	3526	1572	3428	5066	1572	3428	3526	1572
Grp Volume(v), veh/h	337	867	261	469	724	107	378	1520	0	163	949	0
Grp Sat Flow(s),veh/h/ln	1714	1763	1546	1714	1763	1572	1714	1689	1572	1714	1763	1572
Q Serve(g_s), s	12.1	30.5	19.0	17.0	23.3	6.6	13.7	35.2	0.0	5.9	33.0	0.0
Cycle Q Clear(g_c), s	12.1	30.5	19.0	17.0	23.3	6.6	13.7	35.2	0.0	5.9	33.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	391	889	390	477	977	436	401	1737		192	994	
V/C Ratio(X)	0.86	0.98	0.67	0.98	0.74	0.25	0.94	0.88		0.85	0.95	
Avail Cap(c_a), veh/h	428	889	390	477	977	436	401	1739		192	996	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.4	46.3	42.0	53.6	41.1	35.0	54.8	38.5	0.0	58.4	44.1	0.0
Incr Delay (d2), s/veh	15.3	24.3	4.9	36.5	3.3	0.4	30.9	5.7	0.0	28.3	18.8	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	5.9	15.9	7.4	9.4	10.0	2.5	7.5	14.8	0.0	3.3	16.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.6	70.6	47.0	90.1	44.3	35.4	85.7	44.2	0.0	86.8	62.8	0.0
LnGrp LOS	E	E	D	F	D	D	F	D		F	E	
Approach Vol, veh/h		1465			1300			1898			1112	
Approach Delay, s/veh		66.2			60.1			52.5			66.3	
Approach LOS		E			E			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.4	50.3	23.2	39.0	20.0	42.7	20.1	42.1				
Change Period (Y+Rc), s	5.4	7.5	5.8	7.5	5.4	7.5	5.8	7.5				
Max Green Setting (Gmax), s	7.0	42.9	17.4	31.5	14.6	35.3	15.6	33.3				
Max Q Clear Time (g_c+I1), s	7.9	37.2	19.0	32.5	15.7	35.0	14.1	25.3				
Green Ext Time (p_c), s	0.0	5.0	0.0	0.0	0.0	0.2	0.2	3.7				
Intersection Summary												
HCM 6th Ctrl Delay			60.3									
HCM 6th LOS			E									
Notes												
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Appendix K

Synchro Calculation Worksheets

Horizon Year (2050) with Project Conditions

HCM 6th Signalized Intersection Summary
1: Garrison St & Oceanside Blvd

Horizon Year (2050) with Project Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	850	40	40	1070	63	20	10	20	80	10	80
Future Volume (veh/h)	33	850	40	40	1070	63	20	10	20	80	10	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	35	895	38	42	1126	60	21	11	17	84	11	67
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	55	1916	81	61	1904	101	60	19	399	68	5	398
Arrive On Green	0.03	0.56	0.56	0.03	0.56	0.56	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1767	3442	146	1767	3400	181	0	77	1572	0	19	1567
Grp Volume(v), veh/h	35	458	475	42	584	602	32	0	17	95	0	67
Grp Sat Flow(s),veh/h/ln	1767	1763	1825	1767	1763	1818	77	0	1572	19	0	1567
Q Serve(g_s), s	2.0	15.6	15.6	2.4	21.8	21.8	0.0	0.0	0.8	0.0	0.0	3.3
Cycle Q Clear(g_c), s	2.0	15.6	15.6	2.4	21.8	21.8	25.4	0.0	0.8	25.4	0.0	3.3
Prop In Lane	1.00		0.08	1.00		0.10	0.66		1.00	0.88		1.00
Lane Grp Cap(c), veh/h	55	981	1016	61	987	1018	79	0	399	73	0	398
V/C Ratio(X)	0.64	0.47	0.47	0.69	0.59	0.59	0.40	0.00	0.04	1.31	0.00	0.17
Avail Cap(c_a), veh/h	352	981	1016	352	987	1018	79	0	399	73	0	398
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.63	0.63	0.63	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.9	13.3	13.3	47.8	14.5	14.5	34.9	0.0	28.1	48.3	0.0	29.1
Incr Delay (d2), s/veh	25.4	1.6	1.5	6.4	1.6	1.6	3.3	0.0	0.0	208.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	5.9	6.1	1.1	8.0	8.3	0.9	0.0	0.3	6.0	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.3	14.9	14.8	54.1	16.1	16.1	38.2	0.0	28.2	256.4	0.0	29.3
LnGrp LOS	E	B	B	D	B	B	D	A	C	F	A	C
Approach Vol, veh/h		968			1228			49				162
Approach Delay, s/veh		17.0			17.4			34.7				162.5
Approach LOS		B			B			C				F
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.5	61.5		30.0	8.2	61.8		30.0				
Change Period (Y+Rc), s	5.1	5.8		4.6	5.1	5.8		4.6				
Max Green Setting (Gmax), s	19.9	39.2		25.4	19.9	39.2		25.4				
Max Q Clear Time (g_c+I1), s	4.4	17.6		27.4	4.0	23.8		27.4				
Green Ext Time (p_c), s	0.0	7.9		0.0	0.1	8.6		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				27.3								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary
2: El Camino Real & Oceanside Blvd

Horizon Year (2050) with Project Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↖	↖↗	↑↑	↖	↖↗	↑↑↑	↖	↖↗	↑↑	↖
Traffic Volume (veh/h)	160	555	285	420	682	120	208	460	420	120	1070	353
Future Volume (veh/h)	160	555	285	420	682	120	208	460	420	120	1070	353
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	168	584	246	442	718	101	219	484	0	126	1126	0
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	231	774	345	462	1011	445	242	1762		187	1169	
Arrive On Green	0.07	0.22	0.22	0.13	0.29	0.29	0.07	0.35	0.00	0.05	0.33	0.00
Sat Flow, veh/h	3428	3526	1570	3428	3526	1552	3428	5066	1572	3428	3526	1572
Grp Volume(v), veh/h	168	584	246	442	718	101	219	484	0	126	1126	0
Grp Sat Flow(s),veh/h/ln	1714	1763	1570	1714	1763	1552	1714	1689	1572	1714	1763	1572
Q Serve(g_s), s	5.2	16.7	15.6	13.8	19.6	5.3	6.8	7.4	0.0	3.9	33.8	0.0
Cycle Q Clear(g_c), s	5.2	16.7	15.6	13.8	19.6	5.3	6.8	7.4	0.0	3.9	33.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	231	774	345	462	1011	445	242	1762		187	1169	
V/C Ratio(X)	0.73	0.75	0.71	0.96	0.71	0.23	0.90	0.27		0.67	0.96	
Avail Cap(c_a), veh/h	319	1015	452	462	1163	512	242	1762		213	1169	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.2	39.3	38.9	46.3	34.4	29.3	49.7	25.3	0.0	49.9	35.3	0.0
Incr Delay (d2), s/veh	5.2	2.9	4.6	31.0	2.0	0.4	33.6	0.2	0.0	6.8	18.3	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	2.3	7.2	6.1	7.5	8.1	1.9	4.0	2.9	0.0	1.8	16.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.4	42.2	43.5	77.3	36.4	29.6	83.3	25.5	0.0	56.8	53.6	0.0
LnGrp LOS	D	D	D	E	D	C	F	C		E	D	
Approach Vol, veh/h		998			1261			703			1252	
Approach Delay, s/veh		44.5			50.2			43.5			53.9	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	1.3	44.9	20.3	31.1	13.0	43.2	13.1	38.4				
Change Period (Y+Rc), s	5.4	7.5	5.8	7.5	5.4	7.5	5.8	7.5				
Max Green Setting (Gmax), s	3.7	36.6	14.5	31.0	7.6	35.7	10.0	35.5				
Max Q Clear Time (g_c+1/3), s	9.5	9.4	15.8	18.7	8.8	35.8	7.2	21.6				
Green Ext Time (p_c), s	0.0	5.8	0.0	4.8	0.0	0.0	0.1	5.3				

Intersection Summary

HCM 6th Ctrl Delay	48.8
HCM 6th LOS	D

Notes

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

Intersection						
Int Delay, s/veh	8.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	50	16	0	0	0
Future Vol, veh/h	0	50	16	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	54	17	0	0	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	35	1	1	0	0
Stage 1	1	-	-	-	-
Stage 2	34	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-
Pot Cap-1 Maneuver	975	1081	1615	-	-
Stage 1	1020	-	-	-	-
Stage 2	986	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	964	1081	1615	-	-
Mov Cap-2 Maneuver	964	-	-	-	-
Stage 1	1009	-	-	-	-
Stage 2	986	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.5	7.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1615	-	1081	-	-
HCM Lane V/C Ratio	0.011	-	0.05	-	-
HCM Ctrl Dly (s/v)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q (veh)	0	-	0.2	-	-

HCM 6th Signalized Intersection Summary
 1: Garrison St & Oceanside Blvd




































Horizon Year (2050) with Project Conditions
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	1390	30	30	1210	90	50	30	60	64	10	36
Future Volume (veh/h)	70	1390	30	30	1210	90	50	30	60	64	10	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.99
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	74	1463	29	32	1274	86	53	32	50	67	11	31
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	99	1985	39	52	1791	121	58	22	399	67	6	393
Arrive On Green	0.06	0.56	0.56	0.03	0.54	0.54	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1767	3534	70	1767	3346	225	0	88	1572	0	24	1549
Grp Volume(v), veh/h	74	729	763	32	670	690	85	0	50	78	0	31
Grp Sat Flow(s),veh/h/ln	1767	1763	1841	1767	1763	1809	88	0	1572	24	0	1549
Q Serve(g_s), s	4.1	30.9	31.0	1.8	28.5	28.7	0.0	0.0	2.4	0.0	0.0	1.5
Cycle Q Clear(g_c), s	4.1	30.9	31.0	1.8	28.5	28.7	25.4	0.0	2.4	25.4	0.0	1.5
Prop In Lane	1.00		0.04	1.00		0.12	0.62		1.00	0.86		1.00
Lane Grp Cap(c), veh/h	99	990	1034	52	943	968	81	0	399	73	0	393
V/C Ratio(X)	0.75	0.74	0.74	0.61	0.71	0.71	1.05	0.00	0.13	1.07	0.00	0.08
Avail Cap(c_a), veh/h	352	990	1034	352	943	968	81	0	399	73	0	393
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.53	0.53	0.53	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.5	16.4	16.4	48.0	17.4	17.5	43.1	0.0	28.7	47.9	0.0	28.4
Incr Delay (d2), s/veh	23.1	4.9	4.7	4.6	2.4	2.4	114.8	0.0	0.1	125.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	12.1	12.6	0.8	10.7	11.1	4.6	0.0	0.9	4.4	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.6	21.3	21.1	52.5	19.9	19.9	157.9	0.0	28.9	173.2	0.0	28.5
LnGrp LOS	E	C	C	D	B	B	F	A	C	F	A	C
Approach Vol, veh/h		1566			1392			135				109
Approach Delay, s/veh		23.5			20.6			110.1				132.0
Approach LOS		C			C			F				F
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	62.0		30.0	10.7	59.3		30.0				
Change Period (Y+Rc), s	5.1	5.8		4.6	5.1	5.8		4.6				
Max Green Setting (Gmax), s	19.9	39.2		25.4	19.9	39.2		25.4				
Max Q Clear Time (g_c+I1), s	3.8	33.0		27.4	6.1	30.7		27.4				
Green Ext Time (p_c), s	0.0	5.0		0.0	0.3	6.2		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				29.6								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary
2: El Camino Real & Oceanside Blvd

Horizon Year (2050) with Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 	 	 	 	 	 	  	 	 	 	
Traffic Volume (veh/h)	336	853	335	460	715	140	396	1490	590	160	930	290
Future Volume (veh/h)	336	853	335	460	715	140	396	1490	590	160	930	290
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	343	870	276	469	730	107	404	1520	0	163	949	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	397	889	390	477	972	433	401	1737		192	994	
Arrive On Green	0.12	0.25	0.25	0.14	0.28	0.28	0.12	0.34	0.00	0.06	0.28	0.00
Sat Flow, veh/h	3428	3526	1546	3428	3526	1572	3428	5066	1572	3428	3526	1572
Grp Volume(v), veh/h	343	870	276	469	730	107	404	1520	0	163	949	0
Grp Sat Flow(s),veh/h/ln	1714	1763	1546	1714	1763	1572	1714	1689	1572	1714	1763	1572
Q Serve(g_s), s	12.3	30.6	20.3	17.0	23.6	6.6	14.6	35.2	0.0	5.9	33.0	0.0
Cycle Q Clear(g_c), s	12.3	30.6	20.3	17.0	23.6	6.6	14.6	35.2	0.0	5.9	33.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	397	889	390	477	972	433	401	1737		192	994	
V/C Ratio(X)	0.86	0.98	0.71	0.98	0.75	0.25	1.01	0.88		0.85	0.95	
Avail Cap(c_a), veh/h	428	889	390	477	972	433	401	1739		192	996	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.3	46.4	42.5	53.6	41.3	35.2	55.2	38.5	0.0	58.4	44.1	0.0
Incr Delay (d2), s/veh	15.8	25.0	6.4	36.5	3.6	0.4	47.1	5.7	0.0	28.3	18.8	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	6.0	16.0	8.1	9.4	10.2	2.5	8.8	14.8	0.0	3.3	16.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	70.1	71.4	48.9	90.1	44.9	35.6	102.3	44.2	0.0	86.8	62.8	0.0
LnGrp LOS	E	E	D	F	D	D	F	D		F	E	
Approach Vol, veh/h		1489			1306			1924			1112	
Approach Delay, s/veh		67.0			60.4			56.4			66.3	
Approach LOS		E			E			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.4	50.3	23.2	39.0	20.0	42.7	20.3	41.9				
Change Period (Y+Rc), s	5.4	7.5	5.8	7.5	5.4	7.5	5.8	7.5				
Max Green Setting (Gmax), s	7.0	42.9	17.4	31.5	14.6	35.3	15.6	33.3				
Max Q Clear Time (g_c+I1), s	7.9	37.2	19.0	32.6	16.6	35.0	14.3	25.6				
Green Ext Time (p_c), s	0.0	5.0	0.0	0.0	0.0	0.2	0.2	3.6				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			61.9									
HCM 6th LOS			E									
Notes												
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Intersection						
Int Delay, s/veh	7.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			L		T
Traffic Vol, veh/h	0	30	51	0	0	0
Future Vol, veh/h	0	30	51	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	33	55	0	0	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	111	1	1	0	0
Stage 1	1	-	-	-	-
Stage 2	110	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-
Pot Cap-1 Maneuver	883	1081	1615	-	-
Stage 1	1020	-	-	-	-
Stage 2	912	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	853	1081	1615	-	-
Mov Cap-2 Maneuver	853	-	-	-	-
Stage 1	985	-	-	-	-
Stage 2	912	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.4	7.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1615	-	1081	-	-
HCM Lane V/C Ratio	0.034	-	0.03	-	-
HCM Ctrl Dly (s/v)	7.3	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q (veh)	0.1	-	0.1	-	-