Appendix I2
Local Transportation Study

Olive Park Apartments (290 homes)
Western Terminus of Olive Drive
City of Oceanside
October 16, 2024

Local Transportation Study

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Job #2401

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Olive Park Apartments (290 homes)

This Local Transportation Study (LTS) determines if there are measurable impacts based on the City of Oceanside *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment*, August 2020 ("Traffic Guidelines"). A separate Vehicle Miles Traveled (VMT) analysis is provided under separate cover to satisfy the California Environmental Quality Act (CEQA) requirements. This report provides a non-CEQA analysis as required by the City of Oceanside.

Pedestrian, Bicycle, Transit, and Traffic study elements were analyzed based on the City of Oceanside Traffic Guidelines.

The project is located at the western terminus of Olive Dr west of College Blvd in Oceanside, California. The project site is vacant. The project includes a total of up to 290 apartments across two buildings, an open space area that will be maintained and managed by the project that will include an all-weather accessible pedestrian/bicycle path, and an off-site all weather accessible pedestrian/bicycle path that connects the property and the adjacent neighborhood to the adjacent Sprinter trolley station. This connection will also be available for use by neighboring residents.

The traffic analysis included the analysis of AM peak hour, PM peak hour, and daily traffic volumes. The project trip generation is based on the ITE 11th Edition as shown in **Table E-1**.

TABLE E-1: PROJECT TRAFFIC GENERATION

ITE 11th Edition Code and Land Use Description		Rates & Size			*Daily* Trips	AM Peak Hour IN	AM Peak Hour OUT	AM Peak Hour Total	PM Peak Hour IN	PM Peak Hour OUT	PM Peak Hour Total
ITE (221) Weekday	Rates:	4.75	/DU			56%	44%	0.32	43%	57%	0.29
MF 4-10 floors Close to transit	Size:	290	DU	Trips:	**1,378**	52	41	**93**	36	48	**84**

Source: Institute of Transportation Engineers (ITE) 11th Edition *Trip Generation* . Daily: 24 hour traffic.
MF: Multi-Family. DU: Dwelling Unit

As required by the Traffic Guidelines, six traffic scenarios were analyzed, which included Existing, Existing plus Project, Near Term (15 cumulative projects), Near Term plus Project, Buildout Year 2050, and Buildout Year 2050 plus Project. The Level of Service (LOS) by scenario for the study locations are shown in **Figure E-2**.

TABLE E-2: LEVEL OF SERVICE BY SCENARIO AND LOCATION

Study Location \ Study Scenario	Existing	Existing + Project	Project Impact ?	Near Term	Near Term + Project	Project Impact ?	Buildout Year 2050	Buildout Year 2050 + Project	Project Impact ?
INT: Olive/Bradley (AM/PM)	A/A	A/A	No	A/A	A/A	No	A/A	A/B	No
INT: Olive/College (AM/PM)	D/D	D/D	No	D/D	D/D	No	F/E	F/E	YES
SEG: Olive (Project to Bradley)	C	C	No	C	C	No	C	C	No
SEG: Olive (Bradley to College)	A	A	No	A	A	No	A	A	No
SEG: Olive (College to Joann)	D	D	No	D	D	No	E	E	No
SEG: College (Oceanside to Olive)	F	F	No	F	F	No	F	F	No
SEG: College (Olive to Thunder)	D	D	No	D	D	No	F	F	No

INT: Intersection. SEG: Segment: LOS shown in table is the lowest LOS for intersections with multiple approaches reported.

Based on the City Traffic Guidelines criteria, except as discussed below, the project is consistent with the City standards. The project would exceed the Guidelines maximum contribution of delay at the intersection of College Blvd and Olive Drive in the Buildout Year 2050 conditions as that intersection will operate at LOS E/F without the project. The City intends to install conduit to address the operational functioning of the signal at the College Blvd/Olive Drive intersection including elements such as east-west split phase operations with signal head improvements, mast arms (if needed), striping, and signing. That work is consistent with the type of operational efficiency improvements the traffic Guidelines contemplate for situations such as the ones identified in this report.

The multi-modal analysis covered pedestrian, bicycle, and transit elements.

There is a missing sidewalk section adjacent to the project site; therefore, the project owner/permittee proposes to construct the missing sidewalk section of approximately 100 feet in length along the western edge of the cul-de-sac. In addition, to provide a more proximate pedestrian connection, the project design includes the construction of an all-weather pedestrian access path to the Sprinter College Blvd Station.

No deficiencies were observed on the existing bike lane on College Blvd in the project vicinity; therefore, no improvements are recommended.

The project building entrances are all within ½ mile of the Sprinter College Blvd Station with the proposed construction of an all-weather walking path to the station, which has Sprinter light rail service along with connections to bus routes 315, 318, 323, 325, and 623. The Sprinter College Blvd Station includes bike lockers, shelters, and trash receptacles. The existing transit amenities are in good condition. No other transit improvements are proposed as part of this project.

1.0 Introduction

This LTS determines if there are measurable impacts based on the City of Oceanside local Traffic Guidelines. A separate Vehicle Miles Traveled (VMT) analysis is provided under separate cover to satisfy the CEQA requirements. This LTS provides a non-CEQA analysis based on the City of Oceanside Traffic Guidelines, which states on pages 5 and 6.

> "The purpose of a Local Transportation Study is to ensure the goals, objectives, and policies adopted by the City are supported and implemented while monitoring the capacity for the roadway networks."
>
> "A Local Transportation Study (LTS) will be required if a project exceeds 1,000 ADT and is consistent with the adopted General Plan."

The project is located at the western terminus of Olive Dr west of College Blvd in Oceanside, California. The project site is vacant. The project includes a total of up to 290 apartments across two buildings, an open space area that will be maintained and managed by the project that will include an all-weather accessible pedestrian/bicycle path, and an off-site all weather accessible pedestrian/bicycle path that connects the property and the adjacent neighborhood to the adjacent Sprinter trolley station. This connection will also be available for use by neighboring residents. The regional location of the project is shown in **Figure 1** with a site plan shown in **Figure 2**.

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

1.0 Introduction
2.0 Alternative Transportation Analysis
3.0 Traffic Analysis
4.0 Conclusion

Figure 1: Project Location

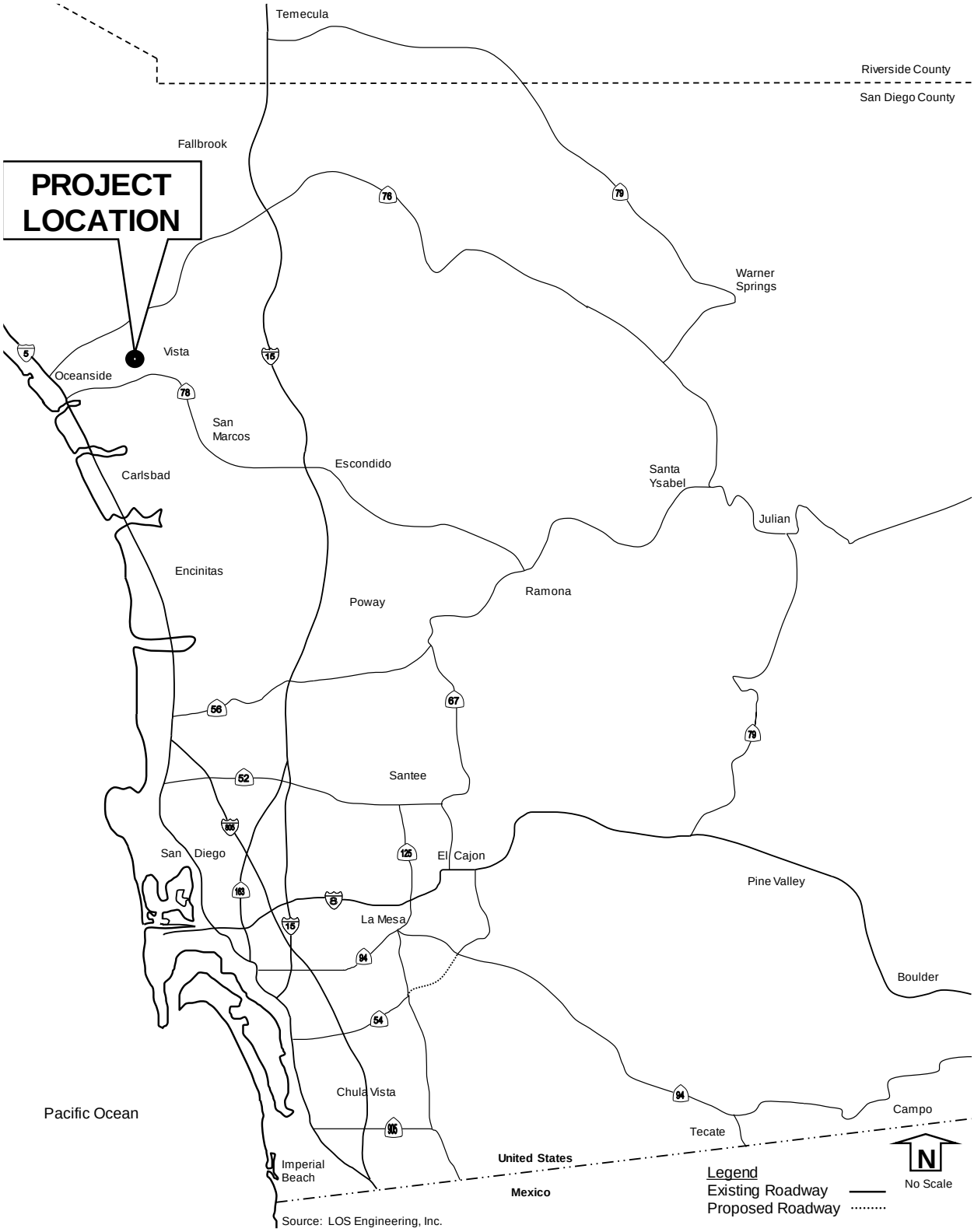
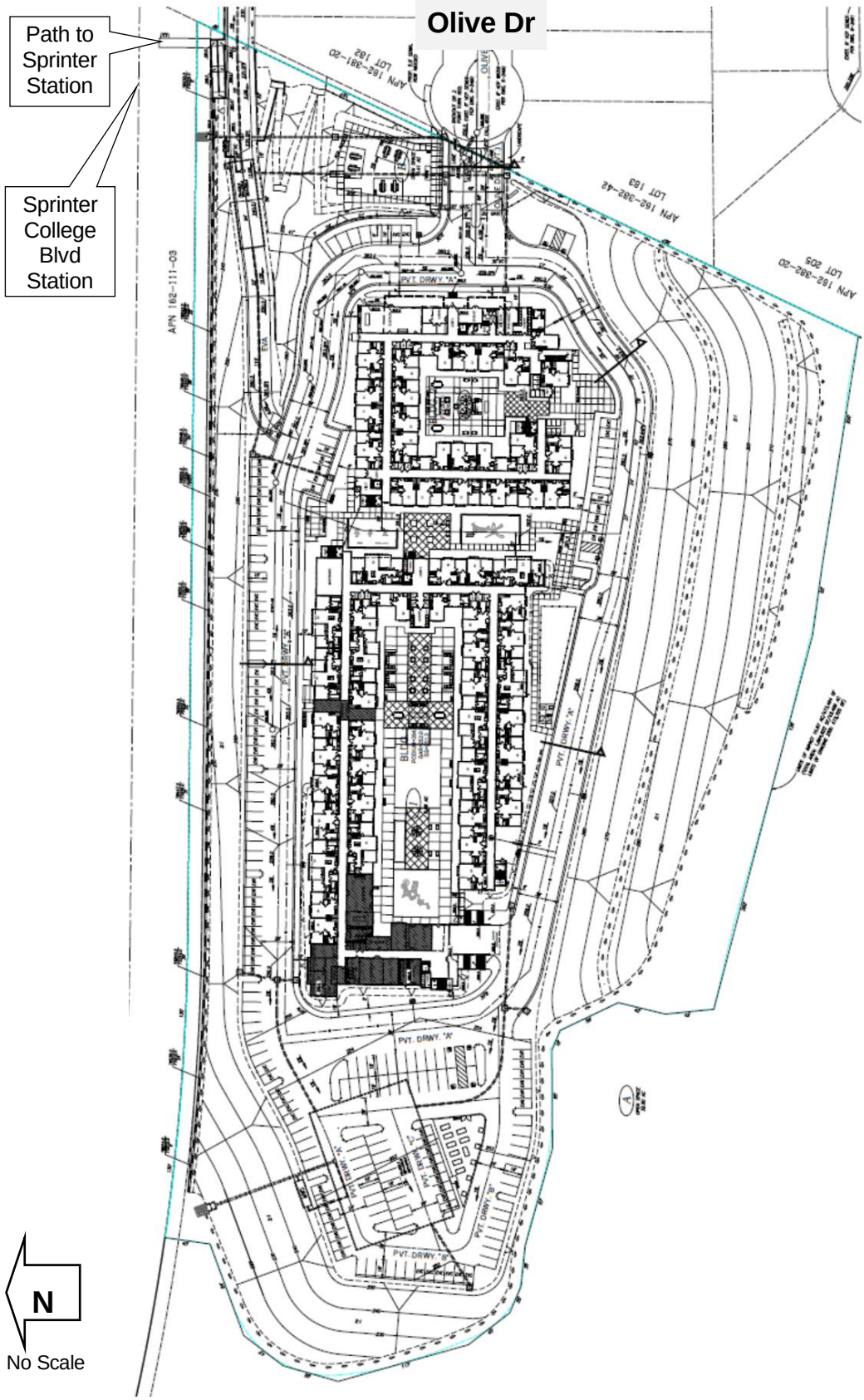


Figure 2: Site Plan



2.0 Alternative Transportation Analysis

The following alternative transportation modes were analyzed based on criteria outlined in the City of Oceanside Traffic Guidelines, which states on page 22:

1) Pedestrian:
    a. The LTS/LTA shall include pedestrian infrastructure available including any opportunities or deficiencies such as path obstructions or missing sidewalk for ½ mile walking distance from project pedestrian access points.
    b. All pedestrian facilities directly connected to project access points or adjacent to the project development, extending in each direction to the nearest intersection with a classified roadway or connection with a Class I path.
    c. Facilities connecting to transit stops within two blocks of the project.
    d. Only facilities on the side of the project or along the walking route to transit stop.

2) Bicycle:
    a. The LTS/LTA shall include a discussion of bicycle infrastructure available including any opportunities or deficiencies such as bike lanes, bike buffers, or bike boxes. This section must also include discussion of what is planned based on City and regional documentation. The extents are as follows:
        i. All roadways adjacent to the project, extending in each direction to the nearest intersection with a classified roadway or with a Class I path.
        ii. Both directions of travel should be evaluated.

3) Transit:
    a. The LTS/LTA shall identify any transit stops or routes existing and planned near the project site.
    b. This section shall also include a discussion and evaluation of transit stop amenities within ½ mile of each pedestrian access point.

2.1 Pedestrian

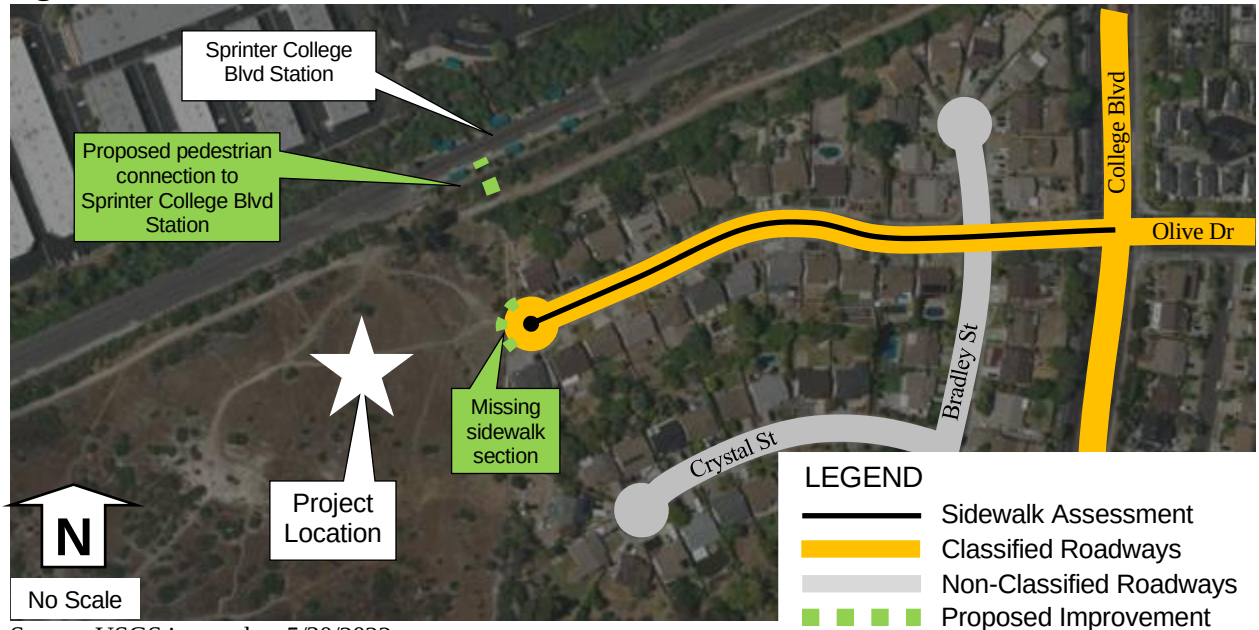
The pedestrian analysis consists of documenting pedestrian infrastructure available including any opportunities or deficiencies such as path obstructions or missing sidewalk from the project access points extending to the nearest intersection with a classified roadway or to a connection with a Class I path.

> Olive Dr from the westerly cul-de-sac terminus to College Blvd (nearest classified roadway) has sidewalks on both sides of the roadway except for a missing sidewalk of approximately 100 feet in length along the western edge of the cul-de-sac. There are mailboxes installed within the pathway of the sidewalk on both sides of the street along this section. There are no other major sidewalk obstructions along this section.

Consistent with the Traffic Guidelines, the project owner/permittee proposes to complete the construction of the missing sidewalk section of approximately 100 feet in length along the western edge of the cul-de-sac. In addition, to provide a closer connection for project residents, the project proposes to construct an all-weather pedestrian access path to the Sprinter College Blvd Station.

The pedestrian elements are shown in **Figure 3**.

Figure 3: Pedestrian Elements



Source: USGS image date 5/30/2022

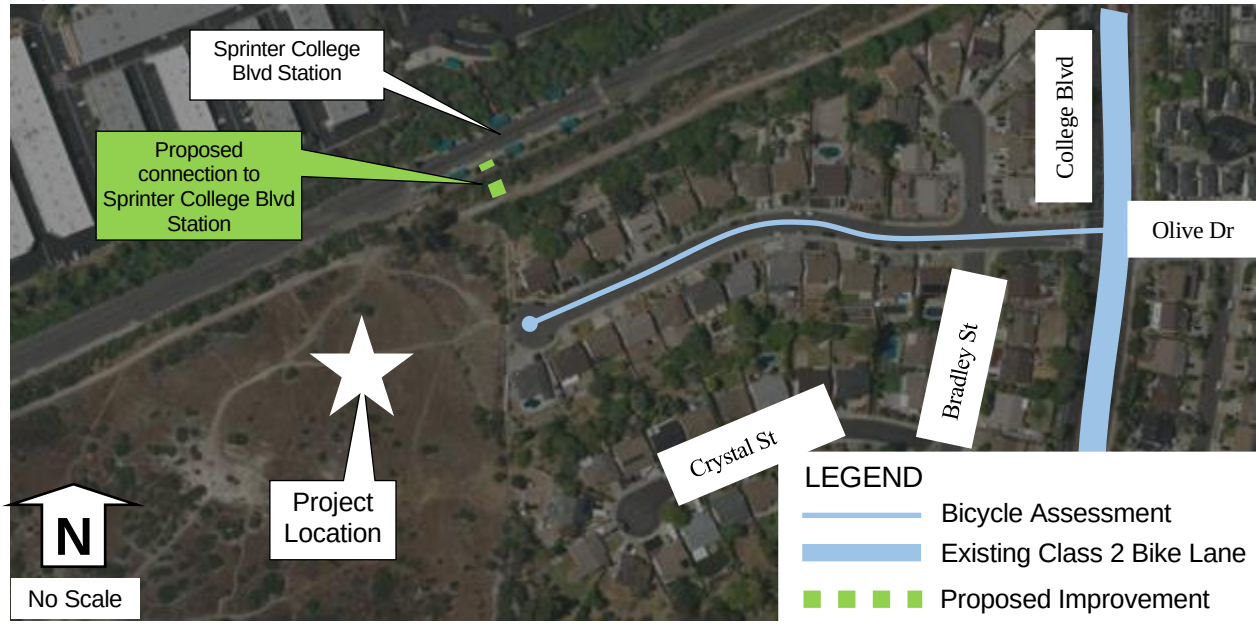
2.2 Bicycle

The bicycle analysis consists of documenting existing and planned bicycle infrastructure available including any opportunities or deficiencies such as bike lanes, bike buffers, or bike boxes from the project access points extending in each direction to the nearest intersection with a classified roadway or connection with a Class I path. Additionally, this analysis must include a discussion of what is planned based on City and regional documentation. The study area has the following existing and planned bicycle infrastructure based on City documentation.

> College Blvd has an existing Class 2 bike lane that matches what is shown in the *City of Oceanside Bicycle Master Plan 2017 Update.*
>
> Sprinter Corridor near the project site has a proposed Class 1 bike path as shown in the *City of Oceanside Bicycle Master Plan 2017 Update.* However, city staff have disclosed that the proposed Class I bike path in the project vicinity is no longer feasible due to environmental constraints.

Olive Dr provides access to the existing bike lane on College Blvd. No deficiencies were observed on the existing bike lane on College Blvd in the project vicinity; therefore, no improvements are recommended. Excerpts from the *City of Oceanside Bicycle Master Plan 2017 Update* are included in **Appendix A**. The bicycle elements study area is shown in **Figure 4**.

Figure 4: Bicycle Elements



Source: USGS image date 5/30/2022

2.3 Transit

The transit analysis includes identifying and describing the conditions of all transit stops within a ½ mile (2,640 ft) walking distance from the project pedestrian access points. The project pedestrian access points are all within ½ mile of the Sprinter College Blvd Station with the proposed construction of an all-weather walking path to the station, which has Sprinter light rail service along with connections to bus routes 315, 318, 323, 325, and 623. There are also five bus stops within ½ mile walking distance from the project pedestrian access points. The conditions of the Sprinter Station and bus stops.

The Sprinter College Blvd Station includes bike lockers, shelters, and trash receptacles. The existing transit amenities are all in good condition.

The College Blvd southbound bus stop located approximately 325 feet south of Oceanside Blvd has a bus stop sign in good condition.

The Oceanside Blvd eastbound bus stop located approximately 175 feet east of College Blvd has a bus stop sign, bench, shelter, and trash can all in good condition.

The Oceanside Blvd westbound bus stop located approximately 250 feet west of College Blvd has a bus stop sign and bench all in good condition.

The Oceanside Blvd eastbound bus stop located approximately 200 feet east of Avenida del Oro has a bus stop sign, bench, shelter, and trash can all in good condition.

The Oceanside Blvd westbound bus stop located approximately 200 feet east of Avenida del Oro has a bus stop sign, bench, shelter, and trash can all in good condition.

No transit stop improvements are recommended as part of this project because the existing amenities are all in good condition.

A summary of the service times is shown in **Table 1** for weekdays and **Table 2** for Saturday and Sunday. The noted bus schedules are included in **Appendix B**.

TABLE 1: WEEKDAY BUS SERVICE OPERATIONS AND FREQUENCY

Transit Route	Weekday (Mon-Fri) Service Operations (Off-Peak Service Frequency Range)	7-9 AM Peak Hour Service Frequency	4-6 PM Peak Hour Service Frequency
Sprinter	≈ 4:30 AM to ≈ 9:00 PM (≈ 30 minutes)	30 minutes	30 minutes
Route 315/325	≈ 4:30 AM to ≈ 9:30 PM (≈ 30-60 minutes)	30 minutes	30 minutes
Route 318	≈ 5:30 AM to ≈ 7:30 PM (≈ 60 minutes)	60 minutes	60 minutes
Route 323	≈ 6:30 AM to ≈ 6:00 PM (≈ 60 minutes)	60 minutes	60 minutes
Route 623	7:15 AM (Mon), 2:15 PM (Mon), 3:39 PM (Wed), and 4:40 PM (M, T, Th, F) Serves only Sage Creek High School	One Run	One Run

Notes: Above service times are summaries, thus please refer to Appendix B for exact service details.

TABLE 2: SATURDAY & SUNDAY BUS SERVICE OPERATIONS AND FREQUENCY

Transit Route	Saturday Service Operations (Service Frequency Range)	Sunday Service Operations (Service Frequency Range)
Sprinter	≈ 5:30 AM to ≈ 9:00 PM (≈ 30-60 min)	≈ 5:30 AM to ≈ 9:00 PM (≈ 30-60 min)
Route 315/325	≈ 7:00 AM to ≈ 9:00 PM (≈ 30-60 min)	≈ 7:00 AM to ≈ 9:00 PM (≈ 60 min)
Route 318	≈ 6:30 AM to ≈ 7:30 PM (≈ 60 min.)	No Sunday Service
Route 323	No Sunday Service	No Sunday Service
Route 623	No Sunday Service	No Sunday Service

Notes: Above service times are summaries, thus please refer to Appendix B for exact service details.

The nearby transit routes are shown in **Figure 5**.

Figure 5: Transit Elements

Source: NCTD Map dated Oct 2023

N

No Scale

3.0 Traffic Analysis

The Local Transportation Study includes the analysis of specific study scenarios, methodology for the analysis of roadway operations, and determination of potential off-site improvements. Details for each of these parameters are included herein.

3.1 Study Area and Scenario Criteria

This vehicular analysis was prepared based on criteria outlined in the City of Oceanside *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment*, August 2020, which states on page 6:

> A Local Transportation Study (LTS) will be required if a project exceeds 1,000 ADT and is consistent with the adopted General Plan. If a project is inconsistent with the adopted General Plan, an LTS will be required if the project exceeds 500 ADT.

The City of Oceanside Traffic Guidelines also define the study area on page 22 as follows:

> All signalized intersections and signalized project driveways shall be analyzed if:
> The project will add 50 or more peak hour (final cumulative) trips in either direction
>
> All unsignalized intersections and unsignalized project driveways shall be analyzed if:
> The project will add 50 or more peak hour (final cumulative) trips in either direction
>
> All freeway ramp intersections and signalized project driveways shall be analyzed if:
> The project will add 20 or more peak hour (final cumulative) trips in either direction

The City of Oceanside requires an approved Project Information Form (PIF) in advance of preparation of a Local Transportation Study. An approved PIF is required before the traffic analysis can be submitted. A city approved PIF is included in **Appendix C**, which defined the trip generation and study area. The study area is defined by the area where the project will add at least 50 peak hour directional trips. For the project, that includes the intersections of:

1) Olive Dr/Bradley St (Un-Signalized)
2) Olive Dr/College Blvd (Signalized)

The following street segments between study intersections were included based on the Traffic Guidelines, consultation with City staff and engineering judgement:

1) Olive Dr from project access to Bradley St
2) Olive Dr from Bradley St to College Blvd

While not required by the Traffic Guidelines or engineering judgement, to be conservative, these additional segments adjacent to the study intersection of Olive/College are analyzed:

3) Olive Dr from College Blvd to Joann Dr
4) College Blvd from Oceanside Blvd to Olive Dr
5) College Blvd From Olive Dr to Thunder Dr

The number of scenarios for a LTS is based on the City of Oceanside *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment*, August 2020, which states on page 6:

1) Existing Conditions
2) Existing plus Project Conditions
3) Near Term (Existing + Cumulative) Conditions
4) Near Term (Existing + Cumulative) plus Project Conditions
5) Buildout Year 2050 Conditions
6) Buildout Year 2050 plus Project Conditions

3.2 Vehicular Analysis Criteria

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

3.2.1 Intersections

The study intersections were analyzed based on the **operational analysis** outlined in the 7th Ed HCM using existing signal timing data. This process defines LOS in terms of **average control delay** per vehicle measured in seconds. LOS at the intersections were calculated using the computer software program Synchro 12 (Cubic Transportation Systems). The 7th Ed HCM LOS for the range of delay by seconds for un-signalized and signalized intersections is described in **Table 3**.

TABLE 3: INTERSECTION LEVEL OF SERVICE DEFINITIONS (7TH EDITION HCM)

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

TWSC: Two Way Stop Control. AWSC: All Way Stop Control. Source: 7th Edition HCM.

3.2.2 Street Segments

The street segments were analyzed based on the functional classification of the roadway using the City of Oceanside *Average Daily Vehicle Trips* capacity lookup table. The roadway segment capacity and LOS standards used to analyze street segments are summarized in **Table 4**.

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

Circulation Element Road Classification	Lanes	LOS A	LOS B	LOS C	LOS D	LOS E
Expressway	6	<30,000	<42,000	<60,000	<70,000	<80,000
Expressway	4	<25,000	<35,000	<50,000	<55,000	<60,000
Prime Arterial	6	<25,000	<35,000	<50,000	<55,000	<60,000
6-Lane Major Arterial	6	<20,000	<28,000	<40,000	<45,000	<50,000
5-Lane Major Arterial	5	<17,500	<24,500	<35,000	<40,000	<45,000
4-Lane Major Arterial	4	<15,000	<21,000	<30,000	<35,000	<40,000
Secondary Collector with TWLTL	4	<10,000	<14,000	<20,000	<25,000	<30,000
Secondary Collector no TWLTL	4	<9,000	<13,000	<18,000	<22,000	<25,000
Collector – Commercial Fronting	2	<5,000	<7,000	<10,000	<13,000	<15,000
Collector – Residential Fronting	2	<4,000	<5,500	<7,500	<9,000	<10,000
Local Street	2	na	na	<2,200*	na	na

Source: City of Oceanside *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment*, August 2020. * City of Oceanside General Plan *Circulation Element*, September 2012 applied.

3.2.3 Transportation Impact Thresholds and Need for Roadway Improvements

A project Owner/Permittee may be required to provide an off-site improvement if the project traffic exceeds the City of Oceanside *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment,* August 2020 defined thresholds as shown in **Table 5** (excerpts included in **Appendix D**).

TABLE 5: DETERMINATION OF THE NEED FOR ROADWAY IMPROVEMENTS

Level of Service with Project	**Allowable Increase Due to Project Effect**	
	Roadway Segments	**Intersections**
	V/C	**Delay (sec.)**
E & F	0.02	2

Source: City of Oceanside *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment* (August 2020), page 25.

A project effect is considered a non-CEQA transportation impact based on CEQA and the City's Traffic Guidelines. The Traffic Guidelines define when a project's contribution to traffic justifies the need for roadway improvements. If a project causes the values identified in Table 5 above to be exceeded, the City will consider roadway improvements as follows on a case by case basis:

1) Improvements should be consistent with the General Plan.

2) Improvements for transit, bike and pedestrian facilities should be given priority in Transit Priority Areas or Smart Growth Opportunity Areas as identified by SANDAG.

3) Projects in Transit Priority Areas or Smart Growth Opportunity Areas 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.)

3.3 Existing Conditions

This section describes the study area street system, existing daily roadway and peak hour intersection traffic volumes and existing LOS results.

3.3.1 Existing Street System

In the vicinity of the project, the following roadways were analyzed as part of this study, which are described below. The roadway classification was obtained from the City of Oceanside General Plan *Circulation Element*, September 2012 (excerpts included in **Appendix E**).

Olive Drive is unclassified from the project site to Bradley Street; classified as a *Collector* from Bradley St to College Blvd; and classified as a *Secondary Collector* from College Blvd to the Vista City Limits. From the project site to Bradley St, Olive Dr is built as a 2-lane undivided roadway with sidewalks and parking permitted on both sides of the roadway. From Bradley St to College Blvd, Olive Dr is built as a 2-lane undivided roadway with sidewalks and no on-street parking signs on both side of the roadway. From College Blvd to the Vista City Limits, Olive Dr is built as a 4-lane undivided roadway with either a center two way left turn lane or striped left turn pockets. Along this same segment, there are sidewalks and no on-street parking signs on both side of the roadway and the posted speed limit is 35 Miles Per Hour (MPH).

College Blvd is classified as a 4-lane *Major Arterial* from Oceanside Blvd to Thunder Dr. This segment of College Blvd is built as a 4-lane divided roadway with Class II bike lanes and sidewalks on both sides of the roadway. The posted speed limit is 45 MPH.

3.3.2 Existing Traffic Volumes and LOS Analyses

Traffic counts were collected on Thursday 1/25/2024 when nearby schools and MiraCosta College were in session. Existing 7-9 AM and 4-6 PM peak hour traffic volumes along with pedestrians and bicycle users were collected for the following intersections:

1) Olive Dr/Bradley St
2) Olive Dr/College Blvd

Daily segment traffic counts were collected for the following street segments:

1) Olive Dr from project access to Bradley St
2) Olive Dr from Bradley St to College Blvd
3) Olive Dr from College Blvd to Joann Dr
4) College Blvd from Oceanside Blvd to Olive Dr
5) College Blvd from Olive Dr to Thunder Dr

Count data and signal timing sheets are included in **Appendix F**. The existing roadway conditions are shown in **Figure 6** and the existing AM peak hour, PM peak hour, and daily volumes are shown on **Figure 7.**

Figure 6: Existing Roadway Conditions

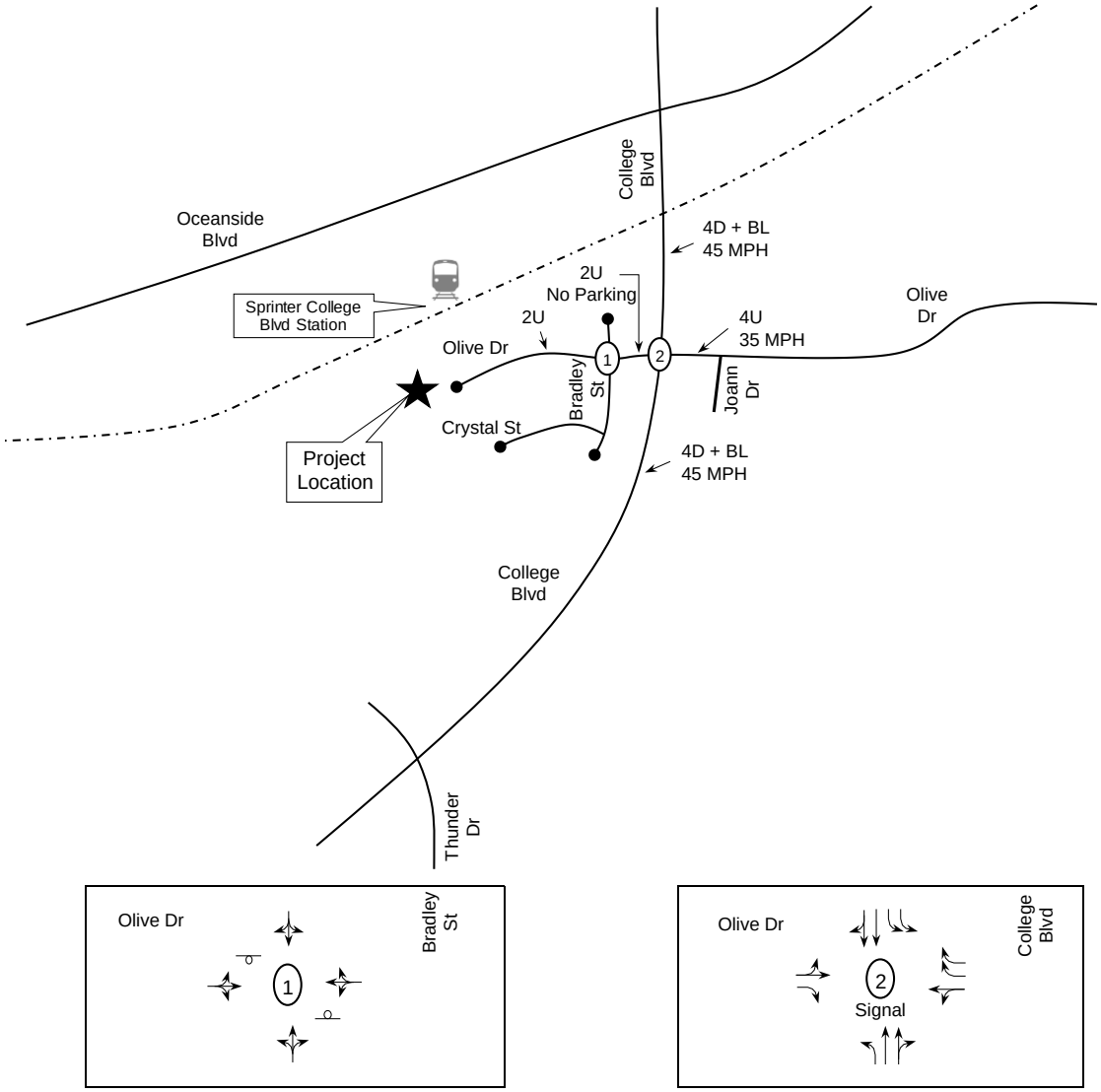
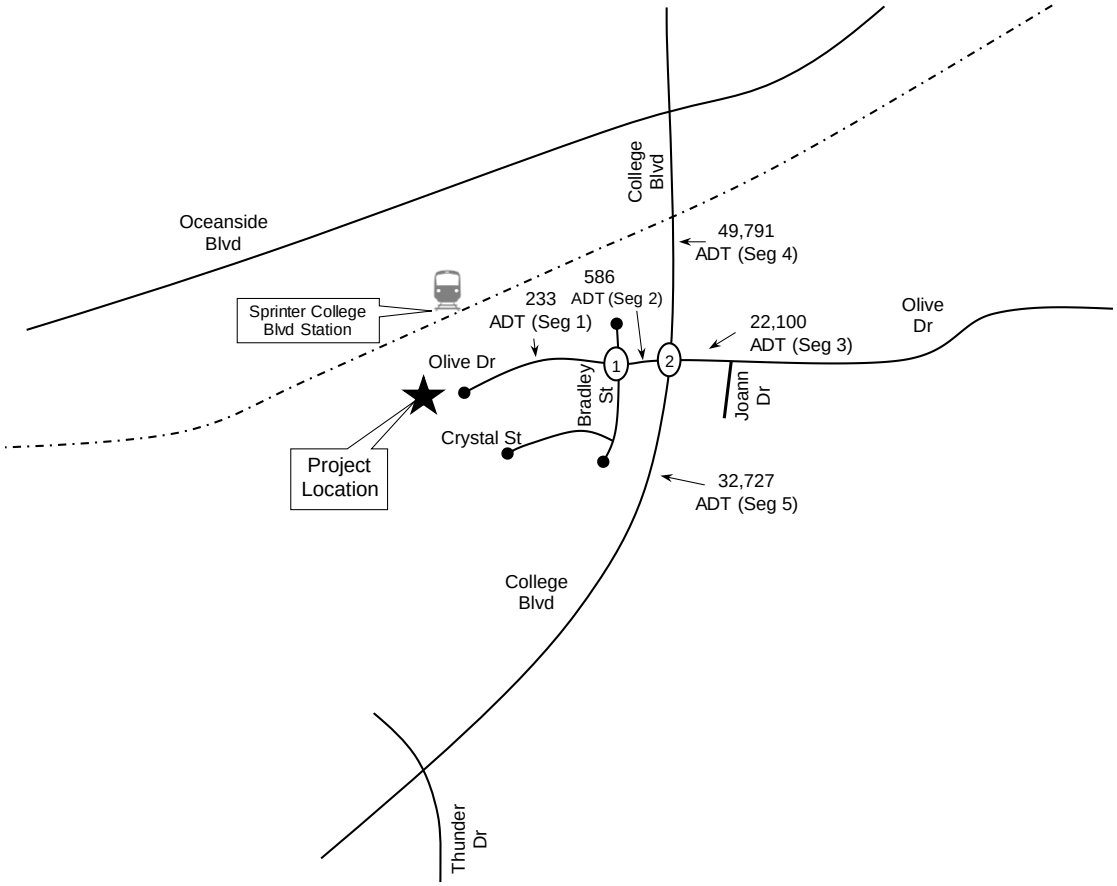


Figure 7: Existing Volumes



The LOS calculated for the intersections and segments are shown in **Tables 6 and 7**, respectively. Existing intersection LOS worksheets are included in **Appendix G**.

TABLE 6: EXISTING INTERSECTION LEVEL OF SERVICE

Intersection and (Analysis)[1]	Movement	Study Period	Existing Delay[2]	Existing LOS[3]
1) Olive Dr at	NB	AM	8.5	A
Bradley St (U)	SB	AM	8.9	A
	NB	PM	8.5	A
	SB	PM	9.2	A
2) Olive Dr at	All	AM	45.5	D
College Blvd (S)	All	PM	37.0	D

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service.

TABLE 7: EXISTING SEGMENT LEVEL OF SERVICE

Segment	Functional Classification	LOS E Capacity	Existing Daily Volume	Existing V/C	Existing LOS
Olive Drive					
1) Project Site to Bradley St	Unclassified	2,200*	233	0.106	C
2) Bradley St to College Blvd	Collector	9,000	586	0.065	A
3) College Blvd to Joann Dr	Sec. Coll. + TWLTL	25,000	22,100	0.884	D
College Blvd					
4) Oceanside Blvd to Olive Dr	4 Lane Major Arterial	35,000	49,791	1.423	**F**
5) Olive Dr to Thunder Dr	4 Lane Major Arterial	35,000	32,727	0.935	D

Notes: Sec. Coll. + TWLTL = Secondary Collector + two way left turn lane. Daily volume is a 24 hour volume.
LOS: Level of Service. V/C: Volume to Capacity Ratio. BOLD indicates unacceptable LOS. *At LOS C.

Under Existing conditions, the study elements are calculated to operate at LOS D or better except for Segment #4: College Blvd from Oceanside Blvd to Olive Dr (LOS F).

3.4 Project Traffic Generation

The project is located at the western terminus of Olive Dr west of College Blvd in Oceanside, California. The project site is vacant. The project includes a total of up to 290 apartments across two buildings, an open space area that will be maintained and managed by the project that will include an all-weather accessible pedestrian/bicycle path, and an off-site all weather accessible pedestrian/bicycle path that connects the property and the adjacent neighborhood to the adjacent Sprinter trolley station. This connection will also be available for use by neighboring residents.

The project traffic generation is calculated using rates from the Institute of Transportation Engineers (ITE) *11th Edition Trip Generation*, Sept 2021 (**Appendix H**). The project is calculated to generate 1,378 daily trips, 93 AM peak hour trips (52 inbound and 41 outbound), and 84 PM peak hour trips (36 inbound and 48 outbound) as shown in **Table 8**.

TABLE 8: PROJECT TRAFFIC GENERATION

ITE 11th Edition Code and Land Use Description		Rates & Size			*Daily* Trips	AM Peak Hour IN	AM Peak Hour OUT	AM Peak Hour Total	PM Peak Hour IN	PM Peak Hour OUT	PM Peak Hour Total
ITE (221) Weekday	Rates:	4.75	/DU			56%	44%	0.32	43%	57%	0.29
MF 4-10 floors Close to transit	Size:	290	DU	Trips:	**1,378**	52	41	**93**	36	48	**84**

Source: Institute of Transportation Engineers (ITE) 11th Edition *Trip Generation* . Daily: 24 hour traffic.
MF: Multi-Family. DU: Dwelling Unit

3.5 Project Distribution and Assignment

Project trips were distributed to the adjacent roadway network based on engineering judgement; the roadway network, location of employment centers, stores, schools, other relevant uses; and the existing residential traffic patterns using Olive Dr west of College Blvd. The project distribution is shown in **Figure 8** while the project assignment is shown in **Figure 9.**

Figure 8: Project Distribution

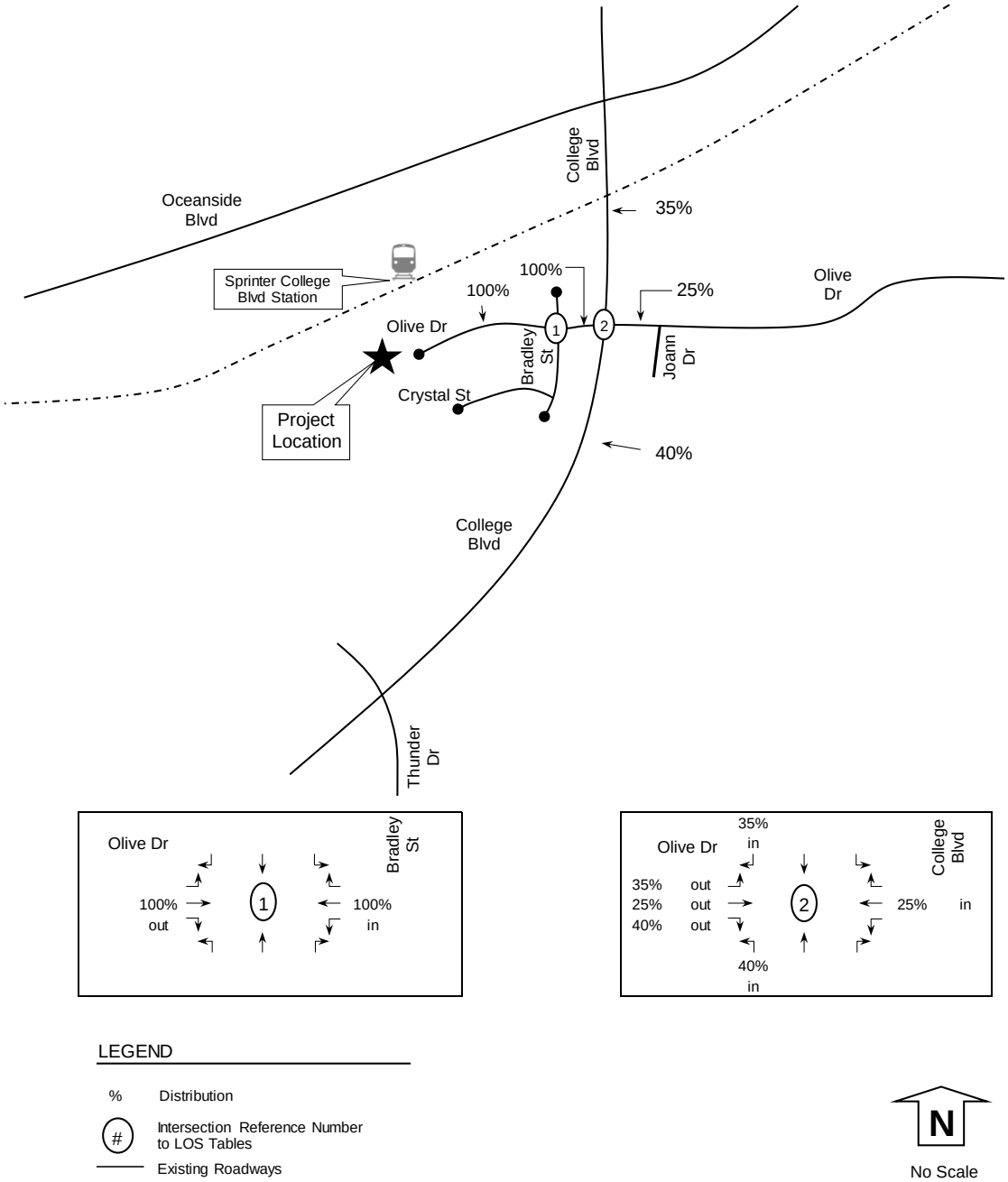
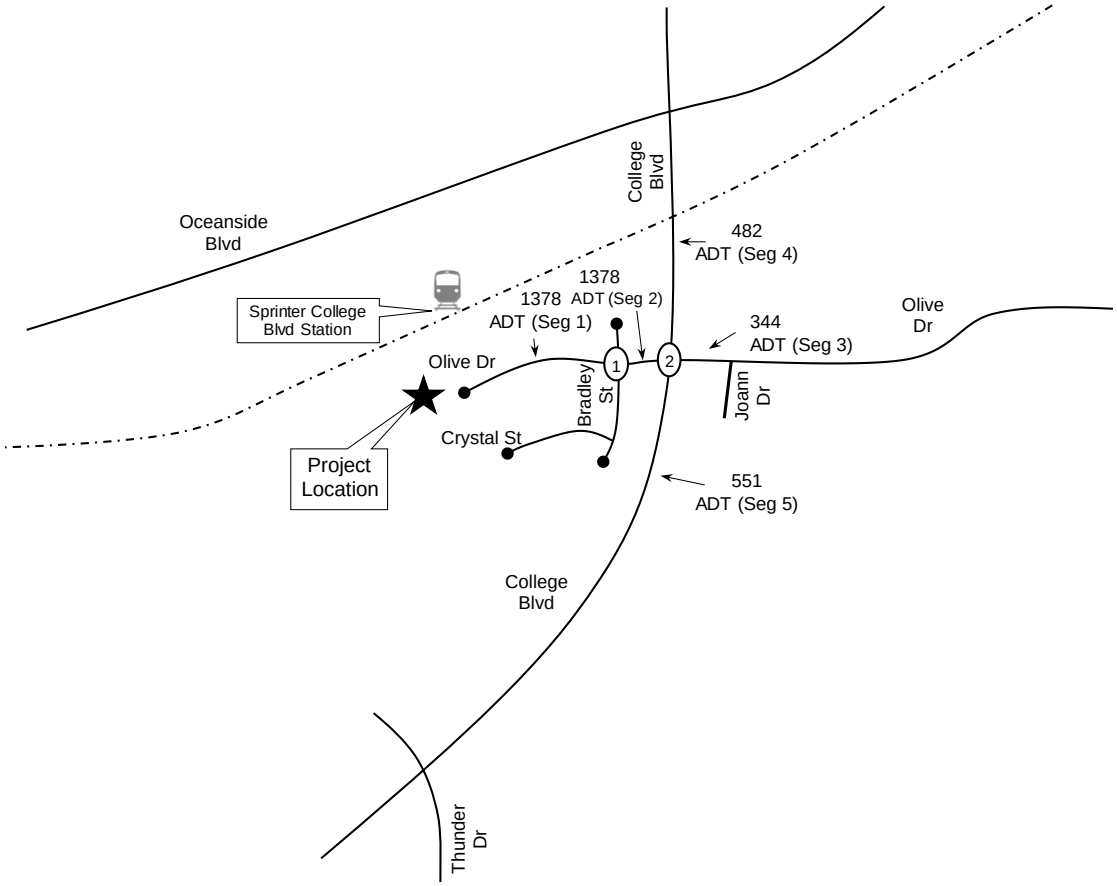
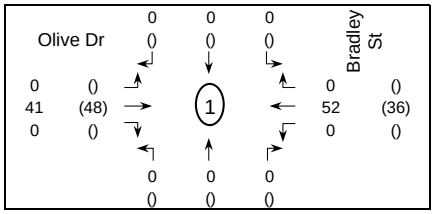
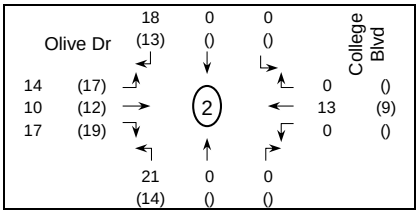


Figure 9: Project Volumes







LEGEND

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

N

No Scale

3.6 Existing plus Project Conditions

This scenario analyzes the addition of project traffic onto the existing background traffic for AM peak hour, PM peak hour and daily traffic conditions. The peak hour intersection volumes and daily traffic volumes for this scenario of existing plus project are shown in **Figure 10**. The intersection LOS calculated with the addition of project traffic is shown in **Table 9** with segment LOS shown in **Table 10.** Intersection LOS worksheets are included in **Appendix I**.

TABLE 9: EXISTING PLUS PROJECT INTERSECTION LEVEL OF SERVICE

Intersection and	Movement	Study	Existing		Existing + Project			
(Analysis)[1]		Period	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delta[4]	Impact?[5]
1) Olive Dr at	NB	AM	8.5	A	8.7	A	0.2	No
Bradley St (U)	SB	AM	8.9	A	9.7	A	0.8	No
	NB	PM	8.5	A	8.8	A	0.3	No
	SB	PM	9.2	A	9.9	A	0.7	No
2) Olive Dr at	All	AM	45.5	D	51.9	D	6.4	No
College Blvd (S)	All	PM	37.0	D	39.0	D	2.0	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Roadway improvement may be required if project traffic exceeds threshold.

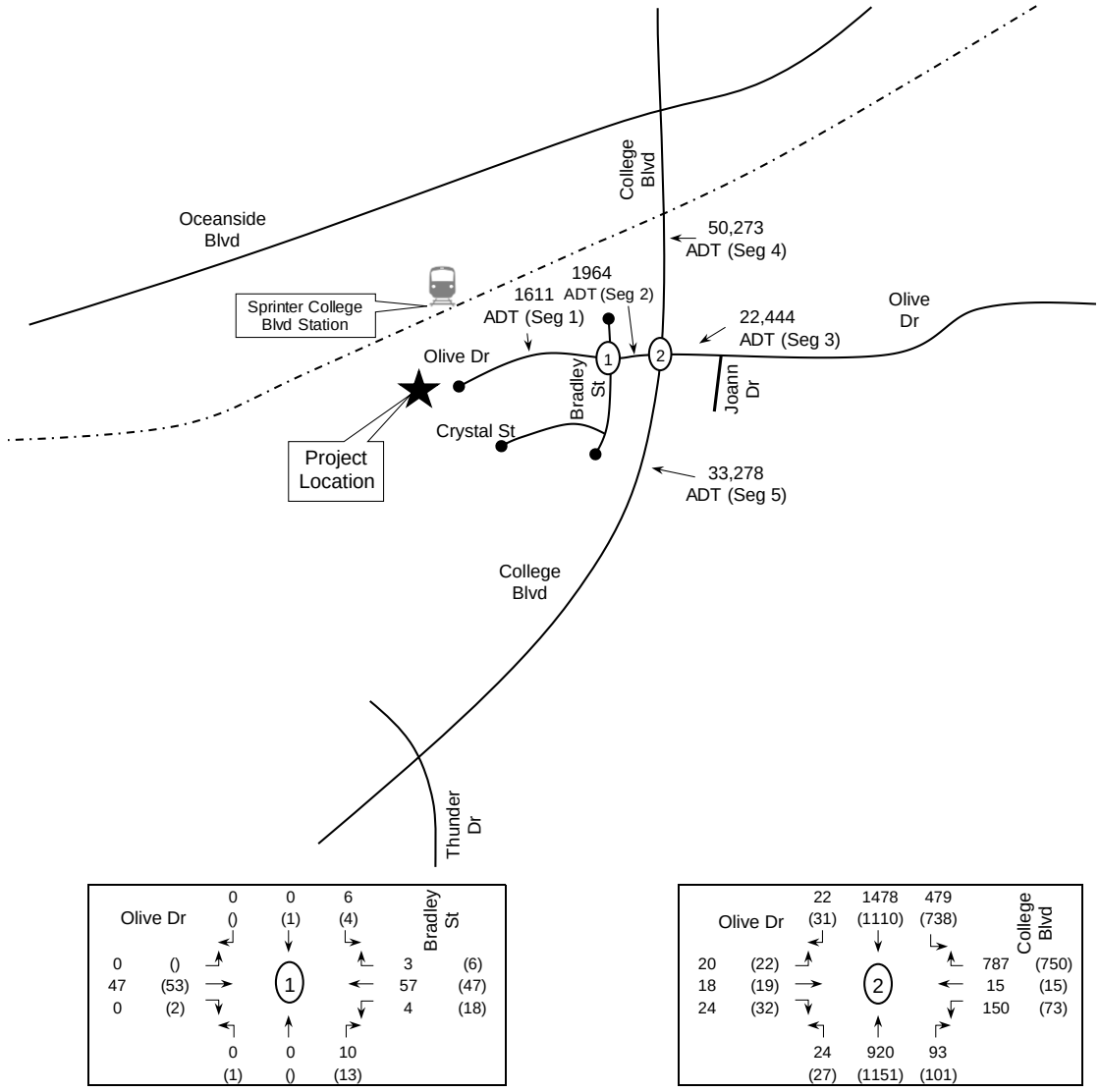
TABLE 10: EXISTING PLUS PROJECT SEGMENT LEVEL OF SERVICE

Segment	Functional Classification	LOS E Capacity	Existing Daily Volume	Existing V/C	Existing LOS	Project Daily Volume	Existing + Project Daily Volume	Existing + Project V/C	Existing + Project LOS	Change in V/C	Project Impact?
Olive Drive											
1) Project Site to Bradley St	Unclassified	2,200*	233	0.106	C	1,378	1,611	0.732	C	0.626	No
2) Bradley St to College Blvd	Collector	9,000	586	0.065	A	1,378	1,964	0.218	A	0.153	No
3) College Blvd to Joann Dr	Sec. Coll. + TWLTL	25,000	22,100	0.884	D	344	22,444	0.898	D	0.014	No
College Blvd											
4) Oceanside Blvd to Olive Dr	4 Lane Major Arterial	35,000	49,791	1.423	**F**	482	50,273	1.436	**F**	0.014	No
5) Olive Dr to Thunder Dr	4 Lane Major Arterial	35,000	32,727	0.935	D	551	33,278	0.951	D	0.016	No

Notes: Sec. Coll. + TWLTL = Secondary Collector + two way left turn lane. Daily volume is a 24 hour volume.
LOS: Level of Service. V/C: Volume to Capacity Ratio. BOLD indicates unacceptable LOS. *At LOS C.

Under Existing plus Project conditions, the study elements are calculated to operate at LOS D or better except for Segment #4: College Blvd from Oceanside Blvd to Olive Dr (LOS F). The project will not exceed the thresholds as defined in the Traffic Guidelines; therefore, no off-site roadway improvements are recommended.

Figure 10: Existing plus Project Volumes



LEGEND

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

N

No Scale

3.7 Cumulative Projects

For purposes of conducting the Near-Term analysis, this report identifies cumulative projects that once completed are anticipated to add traffic to the study roadways. The cumulative project details and trip assignments are included in **Appendix J**. The following cumulative projects are anticipated to add traffic to the study area in the Near-Term (before or during completion of the proposed project). Cumulative projects that are located within the City of Oceanside start with "Oceanside" while the cumulative projects located within the City of Vista start with "Vista".

1) Oceanside Arroyo Verde Commercial Center: A 27,200 SF commercial center that is calculated to generate 4,816 daily trips with 398 AM peak hour trips, and 361 PM peak hour trips. This center was completed and partially occupied when traffic counts were collected; however, to be conservative the cumulative project trip generation was included in this analysis.

2) Oceanside El Corazon Specific Plan: a mixed-use project with commercial, retail, hotel, residential, and recreation facilities on 465 acres generally bounded by Mesa Drive to the north, Rancho del Oro Drive to the east, Oceanside Boulevard to the south, and El Camino Real to the west in the City of Oceanside.
    a. OBD Phase II includes 35,800 SF of Neighborhood Shopping Center, 350,450 SF of Science Research & Development, 97,750 SF of Standard Commercial Office, and 15,100 SF of Warehousing for a cumulative project generation of 9,131 daily trips with 905 AM trips and 1,088 PM trips.
    b. Sudberry includes 268 Apartments and 5,000 sf Retail for a cumulative project generation of 1,808 daily trips with 135 AM trips and 163 PM trips.
    c. Arena includes 8,000 seats for a cumulative project generation of 5,511 daily trips with no AM or PM peak hour trips. There are 1,792 trips from 6-7 PM, which is outside the PM peak hour.

3) Oceanside Garrison Creek: a residential project with 138 multi-family homes. This cumulative project is calculated to generate 1,104 daily trips with 88 AM peak hour trips, and 110 PM peak hour trips.

4) Oceanside Melrose Heights: a mixed-use project with 313 homes, 10,000 sf restaurant space, and 10,000 sf office space. This cumulative project is calculated to generate 4,059 daily trips with 121 AM peak hour trips, and 150 PM peak hour trips. Most of the residential units of this cumulative project have been completed; however, to be conservative the entire cumulative project trip generation was included in this analysis.

5) Oceanside Modera Melrose: a mixed-use project with up to 324 apartments and 2,338 sf of local serving retail located on the southeast corner of Oceanside Blvd at N. Melrose Drive. This cumulative project is calculated to generate 2,038 daily trips with 159 AM peak hour trips, and 183 PM peak hour trips.

6) Oceanside North River Farms: a mixed-use project with up to 689 homes, 25,000 sf commercial space, 5,000 sf restaurant space, 30 acres farm use, and 100 room hotel located on N. River Road east of Stallion Dr. This cumulative project is calculated to generate driveway trips in the amount of 7,921 daily trips with 562 AM peak hour trips, and 777 PM peak hour trips. Please note that this cumulative project is included based on the May 2021 Superior Court ruling upholding the project approval and to keep the analysis more conservative.

7) Oceanside Ocean Pointe: a residential project with 158 multi-family homes. This cumulative project is calculated to generate 1,264 daily trips with 101 AM peak hour trips, and 126 PM peak hour trips.

8) Oceanside Ord Way Industrial: a 72,544 SF industrial building located at 1800 Ord Way. The project is calculated to generate 826 daily trips with 92 AM peak hour trips, and 100 PM peak hour trips.

9) Oceanside Tierra Norte Residential Development Plan: a residential project with up to 400 homes located at 4617 and 4665 N. River Rd. This cumulative project is calculated to generate 3,200 daily trips, 256 AM peak hour trips, and 320 PM peak hour trips.

10) Oceanside Titleist Leadership Center: an 8,000 SF building for a leadership center and ball research. This cumulative project is calculated to generate 160 daily trips, 22 AM peak hour trips, and 21 PM peak hour trips.

11) Oceanside Vista Bella: a mixed-use project with 77 homes and 688 SF of commercial space. This cumulative project is calculated to generate 644 daily trips with 50 AM peak hour trips, and 64 PM peak hour trips.

12) Oceanside Vista Pacific Industrial: a 49,538 SF industrial building located on the southeast corner of North Ave and Vista Pacific Dr. The project is calculated to generate 352 daily trips with 39 AM peak hour trips, and 45 PM peak hour trips.

13) Vista Earth Dr: a residential subdivision with 7 homes. This cumulative project is calculated to generate 70 daily trips with 6 AM peak hour trips, and 7 PM peak hour trips.

14) Vista 1435 Olive Dr: a residential subdivision with 15 homes. This cumulative project is calculated to generate 150 daily trips with 12 AM peak hour trips, and 16 PM peak hour trips.

15) Vista 1505 Olive Dr: a residential subdivision with 8 homes. This cumulative project is calculated to generate 80 daily trips with 6 AM peak hour trips, and 8 PM peak hour trips.

The traffic generated from the proposed cumulative projects is summarized in **Table 11**:

TABLE 11: CUMULATIVE PROJECT TRAFFIC GENERATION

Cumulative Project	ADT	AM Peak Hour Trips	PM Peak Hour Trips
1) Arroyo Verde Commercial Center	4,816	398	361
2a) El Corazon (mixed use), OBD Phase II	9,131	905	1,088
2b) El Corazon (mixed use), Sudberry Apts and Retail	1,808	135	163
2c) El Corazon (mixed use), Arena	5,511	0*	0*
3) Garrison Creek (138 multi-family homes)	1,104	88	110
4) Melrose Heights (mixed use)	4,059	121	150
5) Modera Melrose (mixed use)	2,038	159	183
6) North River Farms (mixed use)	7,921	562	777
7) Ocean Pointe (158 multi-family homes)	1,264	101	126
8) Ord Way Industrial	826	92	100
9) Tierra Norte (400 homes)	3,200	256	320
10) Titleist Leadership Center	160	22	21
11) Vista Bella (mixed use)	644	50	64
12) Vista Pacific Industrial	352	39	45
13) Earth Dr 7 residential lots	70	6	7
14) 1435 Olive Dr 15 residential lots	150	12	16
15) 1505 Olive Dr 8 residential lots	80	6	8
TOTALS	**43,134**	**2,952**	**3,539**

Notes: *The Corazon Arena does not have any forecasted trips during the AM or PM periods, rather the trips are after the PM peak hour.

The cumulative project locations are shown in **Figure 11.** The cumulative project traffic volumes are shown in **Figure 12**.

Figure 11: Cumulative Project Locations

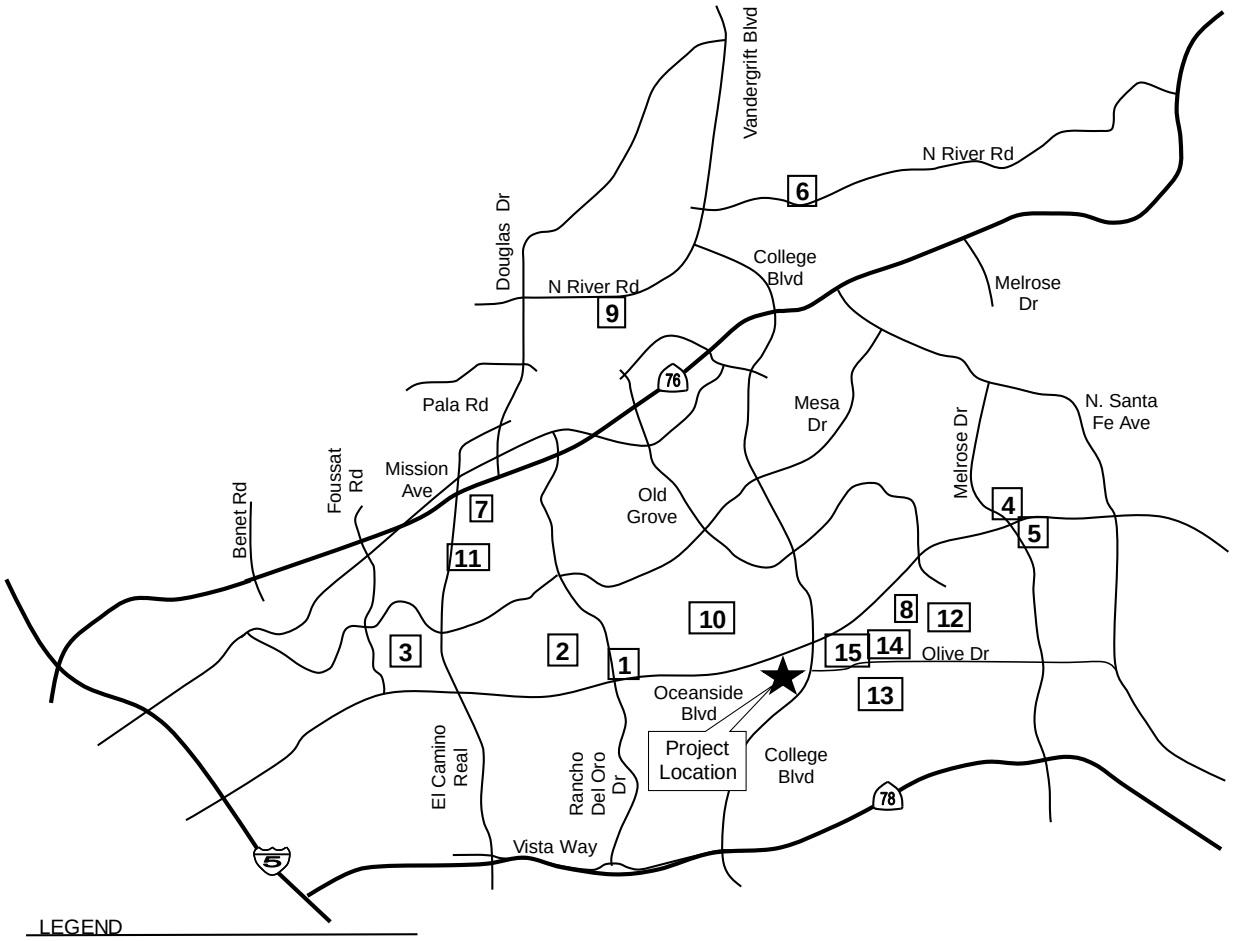
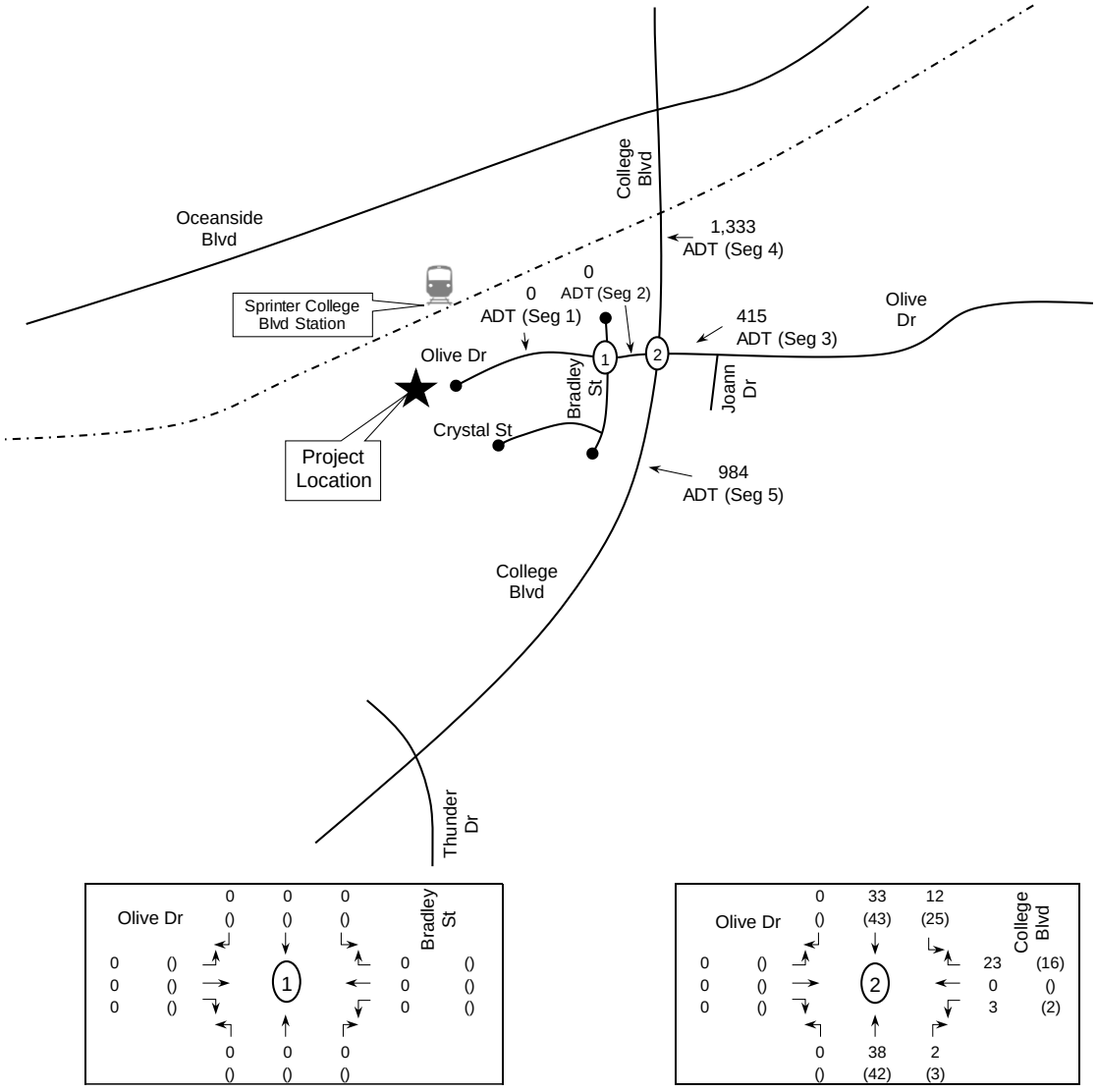


Figure 12: Cumulative Project Volumes



LEGEND

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

N

No Scale

3.8 Near Term (Existing + Cumulative) Conditions

This scenario analyzes the addition of cumulative project traffic onto the existing traffic for AM peak hour, PM peak hour, and daily traffic conditions. The peak hour intersection volumes and daily traffic volumes for this scenario are shown in **Figure 13**. The intersection LOS calculated with the addition of cumulative traffic is shown in **Table 12** with segment LOS shown in **Table 13.** Intersection LOS worksheets are included in **Appendix K**.

TABLE 12: NEAR TERM (EXISTING + CUMULATIVE) INTERSECTION LEVEL OF SERVICE

Intersection and (Analysis)[1]	Movement	Peak Hour	Existing + Cumulative Delay[2]	Existing + Cumulative LOS[3]
1) Olive Dr at	NB	AM	8.5	A
Bradley St (U)	SB	AM	8.9	A
	NB	PM	8.5	A
	SB	PM	9.2	A
2) Olive Dr at	All	AM	47.9	D
College Blvd (S)	All	PM	39.7	D

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service.

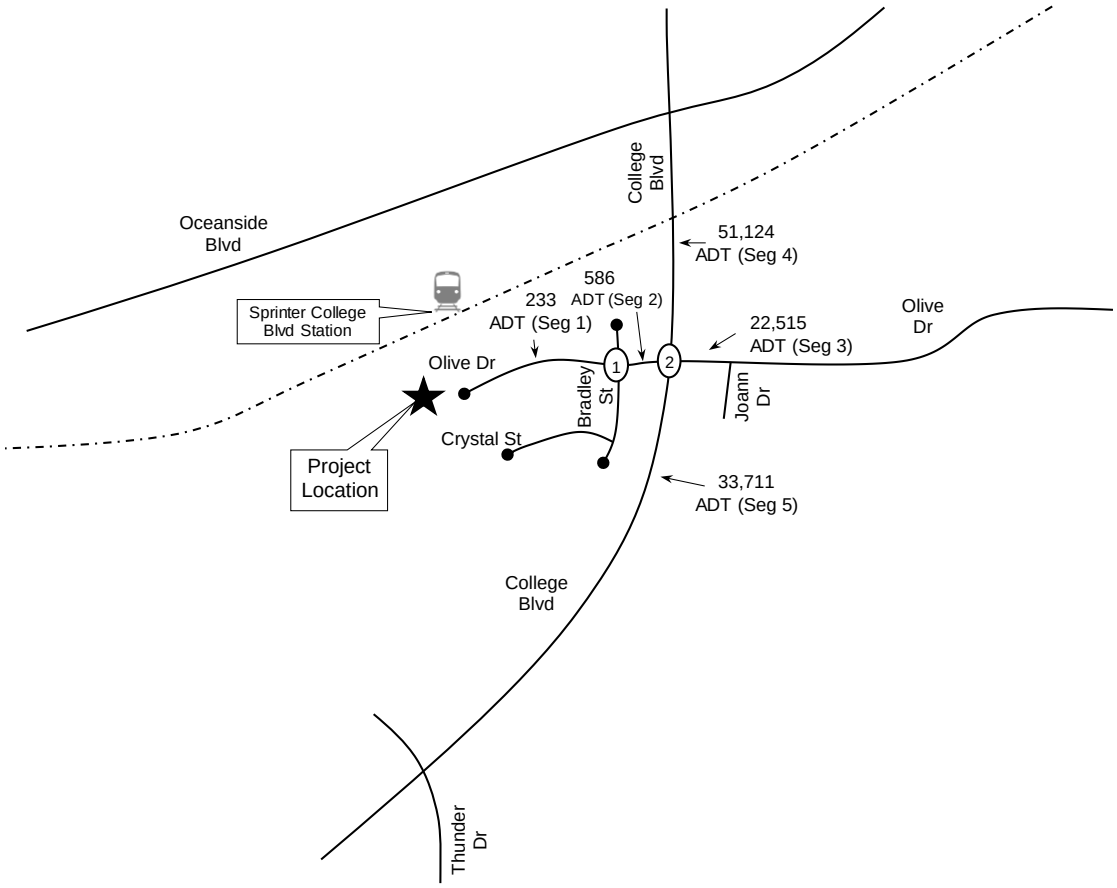
TABLE 13: NEAR TERM (EXISTING + CUMULATIVE) SEGMENT LEVEL OF SERVICE

Segment	Functional Classification	LOS E Capacity	Existing + Cumulative Daily Volume	Existing + Cumulative V/C	Existing + Cumulative LOS
Olive Drive					
1) Project Site to Bradley St	Unclassified	2,200*	233	0.106	C
2) Bradley St to College Blvd	Collector	9,000	586	0.065	A
3) College Blvd to Joann Dr	Sec. Coll. + TWLTL	25,000	22,515	0.901	D
College Blvd					
4) Oceanside Blvd to Olive Dr	4 Lane Major Arterial	35,000	51,124	1.461	**F**
5) Olive Dr to Thunder Dr	4 Lane Major Arterial	35,000	33,711	0.963	D

Notes: Sec. Coll. + TWLTL = Secondary Collector + two way left turn lane. Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity Ratio. BOLD indicates unacceptable LOS. *At LOS C.

Under Near Term (Existing + Cumulative) conditions, the study elements are calculated to operate at LOS D or better except for Segment #4: College Blvd from Oceanside Blvd to Olive Dr (LOS F).

Figure 13: Near Term (Existing + Cumulative) Volumes



LEGEND

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

N

No Scale

3.9 Near Term (Existing + Cumulative) plus Project Conditions

This scenario analyzes the addition of Project traffic onto Near Term (Existing + Cumulative) conditions for AM peak hour, PM peak hour, and daily traffic conditions. The peak hour intersection volumes and daily traffic volumes for this scenario are shown in **Figure 14**. The intersection LOS is shown in **Table 14** and the segment LOS is shown in **Table 15**. LOS worksheets are included in **Appendix L**.

TABLE 14: NEAR TERM (EXISTING + CUMULATIVE) PLUS PROJECT INTERSECTION LEVEL OF SERVICE

Intersection and	Movement	Peak	Existing + Cumulative		Existing + Cumulative + Project			
(Analysis)[1]		Hour	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delta[4]	Cumulative Impact[5]
1) Olive Dr at	NB	AM	8.5	A	8.7	A	0.2	No
Bradley St (U)	SB	AM	8.9	A	9.8	A	0.9	No
	NB	PM	8.5	A	8.8	A	0.3	No
	SB	PM	9.2	A	9.9	A	0.7	No
2) Olive Dr at	All	AM	47.9	D	54.0	D	6.1	No
College Blvd (S)	All	PM	39.7	D	41.9	D	2.2	No

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

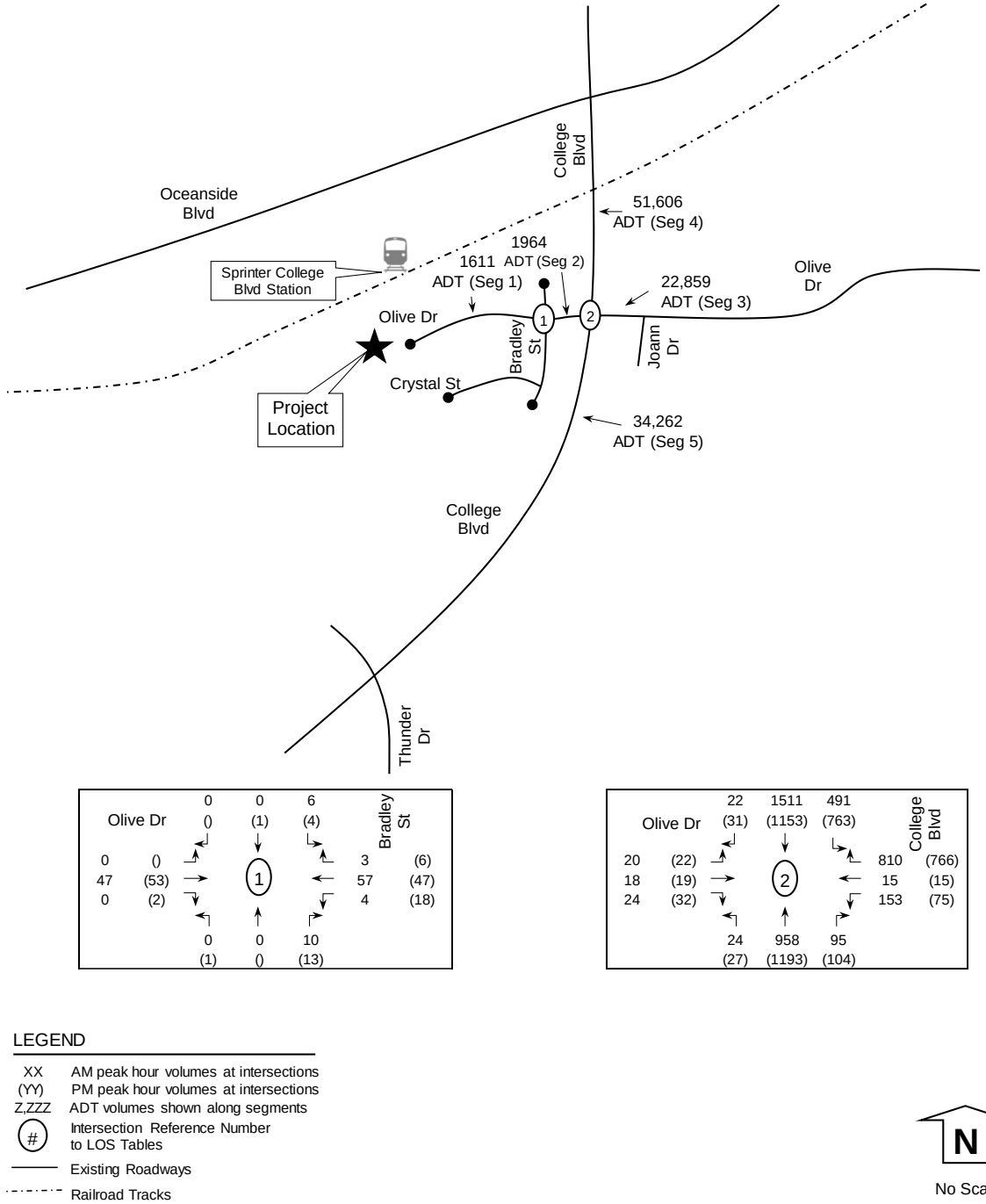
TABLE 15: NEAR TERM (EXISTING + CUMULATIVE) PLUS PROJECT SEGMENT LEVEL OF SERVICE

Segment	Functional Classification	LOS E Capacity	Existing + Cumulative Daily Volume	Existing + Cumulative V/C	Existing + Cumulative LOS	Project Daily Volume	Existing + Cumulative + Project Daily Volume	Existing + Cumulative + Project V/C	Existing + Cumulative + Project LOS	Change in V/C	Cumulative Impact?
Olive Drive											
1) Project Site to Bradley St	Unclassified	2,200*	233	0.106	C	1,378	1,611	0.732	C	0.626	No
2) Bradley St to College Blvd	Collector	9,000	586	0.065	A	1,378	1,964	0.218	A	0.153	No
3) College Blvd to Joann Dr	Sec. Coll. + TWLTL	25,000	22,515	0.901	D	344	22,859	0.914	D	0.014	No
College Blvd											
4) Oceanside Blvd to Olive Dr	4 Lane Major Arterial	35,000	51,124	1.461	**F**	482	51,606	1.474	**F**	0.014	No
5) Olive Dr to Thunder Dr	4 Lane Major Arterial	35,000	33,711	0.963	D	551	34,262	0.979	D	0.016	No

Notes: Sec. Coll. + TWLTL = Secondary Collector + two way left turn lane. Daily volume is a 24 hour volume.
LOS: Level of Service. V/C: Volume to Capacity Ratio. BOLD indicates unacceptable LOS. *At LOS C.

Under Near Term (Existing + Cumulative) plus Project conditions, the study elements are calculated to operate at LOS D or better except for Segment #4: College Blvd from Oceanside Blvd to Olive Dr (LOS F). The project will not exceed the thresholds as defined in the Traffic Guidelines; therefore, no off-site roadway improvements are recommended.

Figure 14: Near Term (Existing + Cumulative) plus Project Volumes



3.10 Buildout Year 2050 Conditions

This scenario represents Buildout Year 2050 conditions based on transportation forecasting information developed by city staff for the General Plan update, National Cooperative Highway Research Program (NCHRP) turn move forecasting and growth factors analysis for Olive Drive west of College Blvd (**Appendices M and N**). The Buildout Year study locations included:

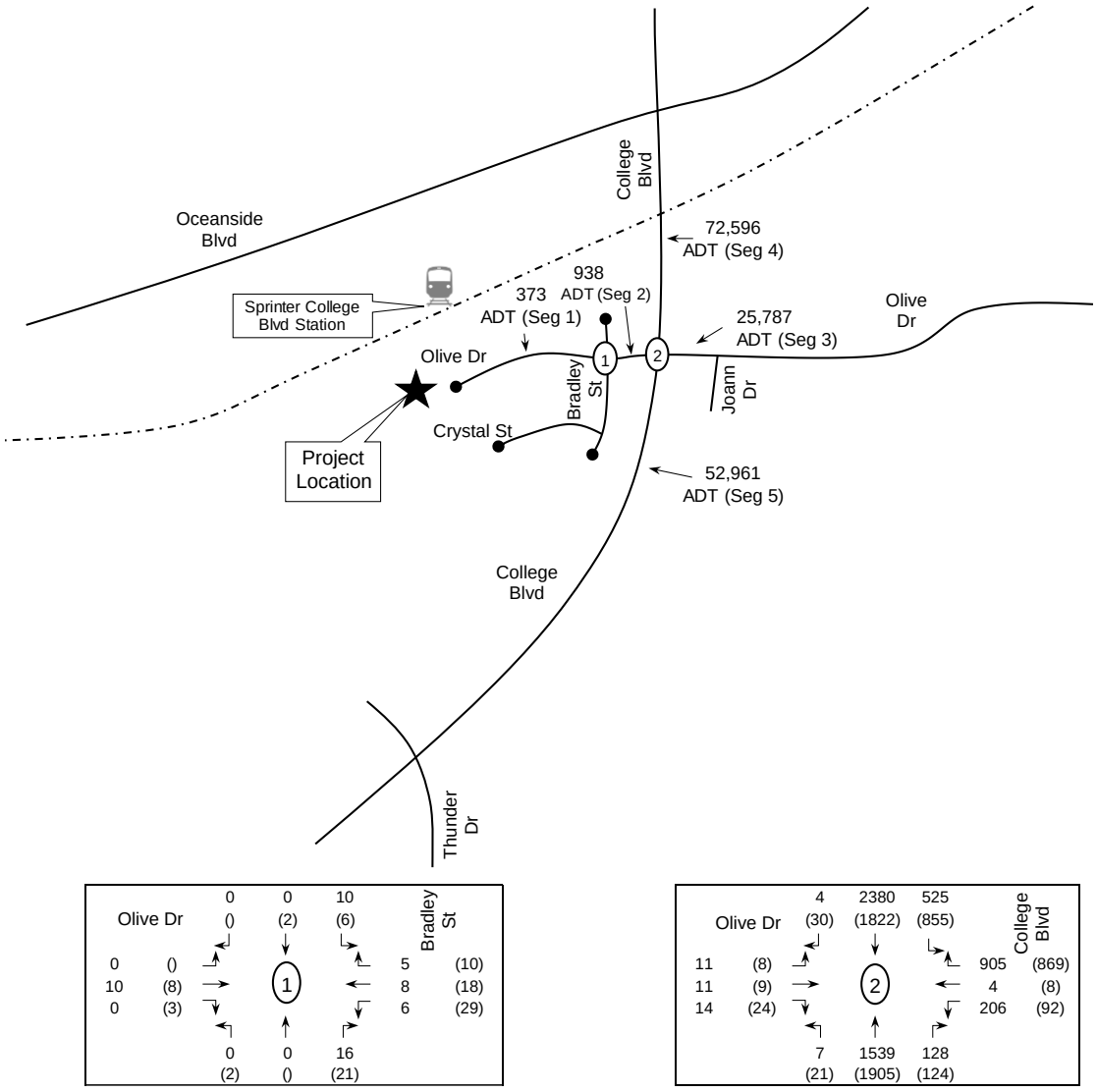
1) Intersection: Olive Dr/Bradley St
2) Intersection: Olive Dr/College Blvd
3) Segment: Olive Dr from project access to Bradley St
4) Segment: Olive Dr from Bradley St to College Blvd
5) Segment: Olive Dr from College Blvd to Joann Dr
6) Segment: College Blvd from Oceanside Blvd to Olive Dr
7) Segment: College Blvd From Olive Dr to Thunder Dr

Where necessary, Buildout Year 2050 volumes were forecasted using two methods based on available volumes.

1) The National Cooperative Highway Research Program (NCHRP) turn move volume forecasting using available year 2050 segment volumes and existing segment and turn move volumes. This methodology was applied at the intersection of Olive Dr/College Blvd.
2) A growth factor between existing segment ADT and city forecasted segment ADT on Olive Drive west of College Blvd. The segment of Olive Dr between Bradley St and College Blvd has an existing volume of 586 ADT and a city forecasted year 2050 volume of 938 ADT. The growth from 586 to 938 represents a 60.1% increase ([938-586]/586). Therefore, the existing volumes for the intersection of Olive Dr/Bradley St and the segment of Olive Dr west of Bradley St were increased by 60.1% to represent year 2050 volumes.

The Buildout Year 2050 scenario reflects the current roadway network as shown previously in Figure 6. The horizon year 2050 peak hour intersection volumes and daily traffic volumes are shown in **Figure 15**.

Figure 15: Buildout Year 2050 Volumes



The intersection LOS calculated is shown in **Table 16** with segment LOS shown in **Table 17.** Intersection LOS worksheets are included in **Appendix O**.

TABLE 16: BUILDOUT YEAR 2050 INTERSECTION LOS

Intersection and (Analysis)[1]	Movement	Study Period	Buildout Year 2050 Delay[2]	Buildout Year 2050 LOS[3]
1) Olive Dr at	NB	AM	8.5	A
Bradley St (U)	SB	AM	9.0	A
	NB	PM	8.6	A
	SB	PM	9.6	A
2) Olive Dr at	All	AM	93.0	**F**
College Blvd (S)	All	PM	71.8	**E**

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service. BOLD indicates unacceptable LOS.

TABLE 17: BUILDOUT YEAR 2050 SEGMENT VOLUMES AND LOS

Segment	Functional Classification	LOS E Capacity	Buildout Year 2050 Daily Volume	V/C	LOS
Olive Drive					
1) Project Site to Bradley St	Unclassified	2,200*	373	0.170	C
2) Bradley St to College Blvd	Collector	9,000	938	0.104	A
3) College Blvd to Joann Dr	Sec. Coll. + TWLTL	25,000	25,787	1.031	**E**
College Blvd					
4) Oceanside Blvd to Olive Dr	4 Lane Major Arterial	35,000	72,596	2.074	**F**
5) Olive Dr to Thunder Dr	4 Lane Major Arterial	35,000	52,961	1.513	**F**

Notes: Sec. Coll. + TWLTL = Secondary Collector + two way left turn lane. Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity Ratio. BOLD indicates unacceptable LOS. *At LOS C.

Under Buildout Year 2050 conditions, the following study locations are calculated to operate at LOS E/F:

1) Intersection #2: College Blvd/Olive Dr (AM&PM)
2) Segment #3: Olive Dr from College Blvd to Joann Dr
3) Segment #4: College Blvd from Oceanside Blvd to Olive Dr
4) Segment #5: College Blvd from Olive Dr to Thunder Dr

3.11 Buildout Year 2050 plus Project Conditions

This scenario documents the addition of project traffic onto Buildout Year 2050 conditions. To be conservative, the entire project traffic was added on top of the Buildout Year 2050 volumes. The horizon year + project volumes are shown in **Figure 16**. The intersection LOS is shown in **Table 18** with segment LOS shown in **Table 19.** Intersection LOS worksheets are included in **Appendix P**.

TABLE 18: BUILDOUT YEAR 2050 PLUS PROJECT INTERSECTION LEVEL OF SERVICE

Intersection and	Movement	Study	Buildout Year 2050		Buildout Year 2050 + Project			
(Analysis)[1]		Period	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delta[4]	Impact?[5]
1) Olive Dr at	NB	AM	8.5	A	8.8	A	0.3	No
Bradley St (U)	SB	AM	9.0	A	9.9	A	0.9	No
	NB	PM	8.6	A	8.9	A	0.3	No
	SB	PM	9.6	A	10.3	B	0.7	No
2) Olive Dr at	All	AM	93.0	**F**	107.6	**F**	14.6	Yes
College Blvd (S)	All	PM	71.8	**E**	74.3	**E**	2.5	Yes

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Buildout impact if project traffic exceeds threshold. BOLD indicated unacceptable LOS.

TABLE 19: BUILDOUT YEAR 2050 PLUS PROJECT SEGMENT LEVEL OF SERVICE

Segment	Functional Classification	LOS E Capacity	Buildout Year 2050 Daily Volume	V/C	LOS	Project Daily Volume	Buildout Year 2050 + Proejct Daily Volume	V/C	LOS	Change In V/C	Impact?
Olive Drive											
1) Project Site to Bradley St	Unclassified	2,200*	373	0.170	C	1,378	1,751	0.796	C	0.626	No
2) Bradley St to College Blvd	Collector	9,000	938	0.104	A	1,378	2,316	0.257	A	0.153	No
3) College Blvd to Joann Dr	Sec. Coll. + TWLTL	25,000	25,787	1.031	**E**	344	26,131	1.045	**E**	0.014	No
College Blvd											
4) Oceanside Blvd to Olive Dr	4 Lane Major Arterial	35,000	72,596	2.074	**F**	482	73,078	2.088	**F**	0.014	No
5) Olive Dr to Thunder Dr	4 Lane Major Arterial	35,000	52,961	1.513	**F**	551	53,512	1.529	**F**	0.016	No

Notes: Sec. Coll. + TWLTL = Secondary Collector + two way left turn lane. Daily volume is a 24 hour volume.
LOS: Level of Service. V/C: Volume to Capacity Ratio. BOLD indicates unacceptable LOS. *At LOS C.

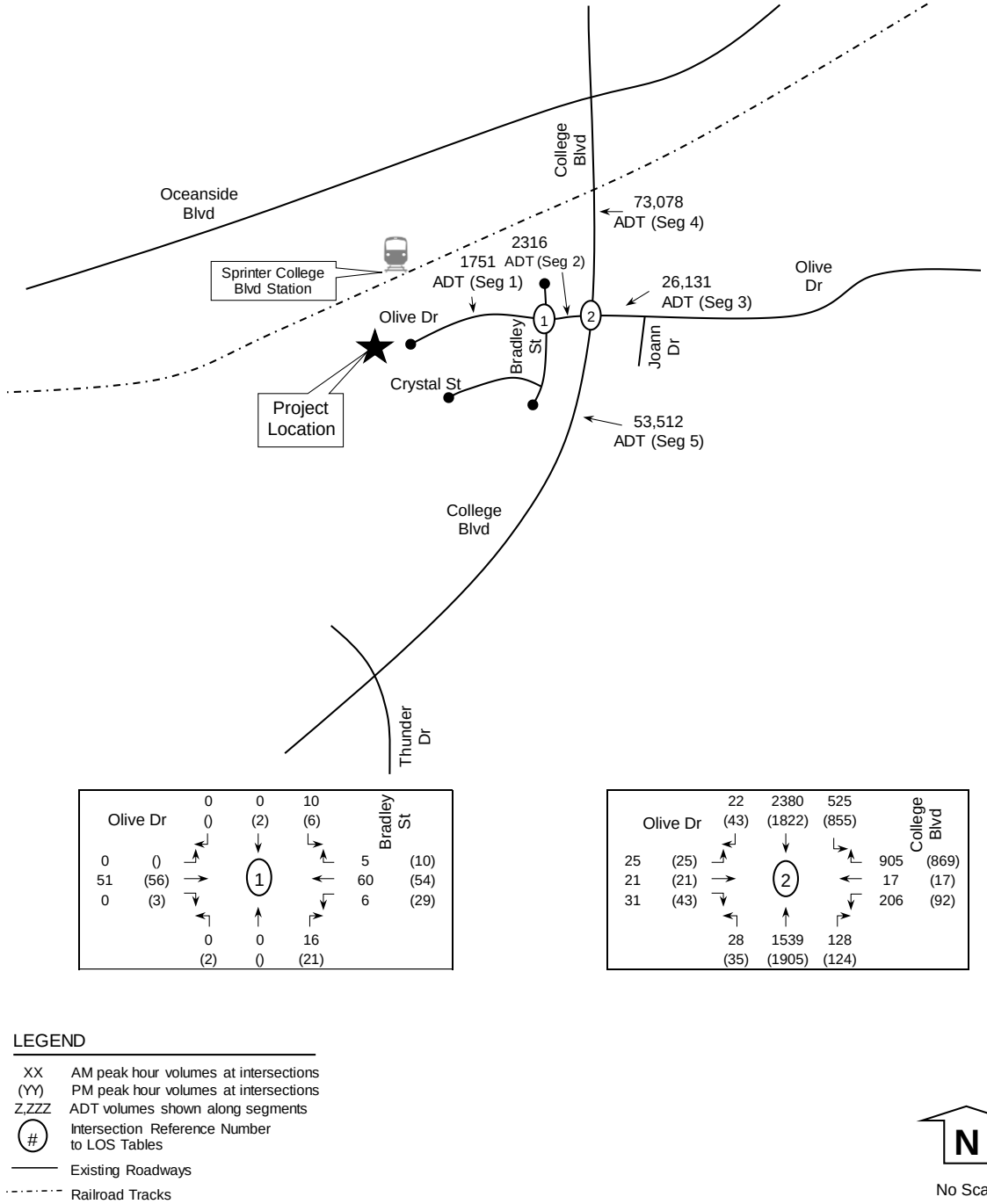
Under Buildout Year 2050 plus Project conditions, the following study location is calculated to operate at LOS E/F AND the project causes the intersection to exceed the thresholds:

1) Intersection #2: College Blvd/Olive Dr

The following locations are calculated to operate at LOS E/F without the project and the addition of project traffic does not exceed the thresholds defined in the Traffic Guidelines; therefore, off-site improvements are not recommended:

2) Segment #3: Olive Dr from College Blvd to Joann Dr
3) Segment #4: College Blvd from Oceanside Blvd to Olive Dr
4) Segment #5: College Blvd from Olive Dr to Thunder Dr

Figure 16: Buildout Year 2050 plus Project Volumes



3.12 Summary of Transportation Impacts and Recommended Improvements

Based on the City Traffic Guidelines criteria, except as discussed below, the project is consistent with the City standards. The project would exceed the Guidelines maximum contribution of delay at the intersection of College Blvd and Olive Drive in the Buildout Year 2050 conditions as shown previously in **Table 18** as that intersection will operate at LOS E/F without the project.

The City intends to install conduit to address the operational functioning of the signal at the College Blvd/Olive Drive intersection including elements such as east-west split phase operations with signal head improvements, mast arms (if needed), striping, and signing. That work is consistent with the type of operational efficiency improvements the traffic Guidelines contemplate for situations such as the ones identified in this report.

4.0 Conclusion

This LTS determined if there were measurable impacts based on the City of Oceanside local impact thresholds. Pedestrian, Bicycle, Transit, and Traffic study elements were also analyzed based on the City of Oceanside Traffic Guidelines.

The traffic analysis included the analysis of AM peak hour, PM peak hour, and daily traffic volumes. The project is calculated to generate 1,378 daily trips, 93 AM peak hour trips (52 inbound and 41 outbound), and 84 PM peak hour trips (36 inbound and 48 outbound).

As required by the Traffic Guidelines, six traffic scenarios were analyzed, which included Existing, Existing plus Project, Near Term (15 cumulative projects), Near Term plus Project, Buildout Year 2050, and Buildout Year 2050 plus Project. Based on the City Traffic Guidelines criteria, except as discussed below, the project is consistent with the City standards. The project would exceed the Guidelines maximum contribution of delay at the intersection of College Blvd and Olive Drive in the Buildout Year 2050 conditions as that intersection will operate at LOS E/F without the project. The City intends to install conduit to address the operational functioning of the signal at the College Blvd/Olive Drive intersection including elements such as east-west split phase operations with signal head improvements, mast arms (if needed), striping, and signing. That work is consistent with the type of operational efficiency improvements the traffic Guidelines contemplate for situations such as the ones identified in this report.

The multi-modal analysis covered pedestrian, bicycle, and transit elements.

There is a missing sidewalk section adjacent to the project site; therefore, the project owner/permittee proposes to construct the missing sidewalk section of approximately 100 feet in length along the western edge of the cul-de-sac. In addition, to provide a more proximate pedestrian connection, the project design includes the construction of an all-weather pedestrian access path to the Sprinter College Blvd Station.

No deficiencies were observed on the existing bike lane on College Blvd in the project vicinity; therefore, no improvements are recommended.

The project building entrances are all within ½ mile of the Sprinter College Blvd Station with the proposed construction of an all-weather walking path to the station, which has Sprinter light rail service along with connections to bus routes 315, 318, 323, 325, and 623. The Sprinter College Blvd Station includes bike lockers, shelters, and trash receptacles. The existing transit amenities are in good condition. No other transit improvements are proposed as part of this project.

# # #

Appendix A

Excerpts from City of Oceanside Bicycle Master Plan 2017 Update

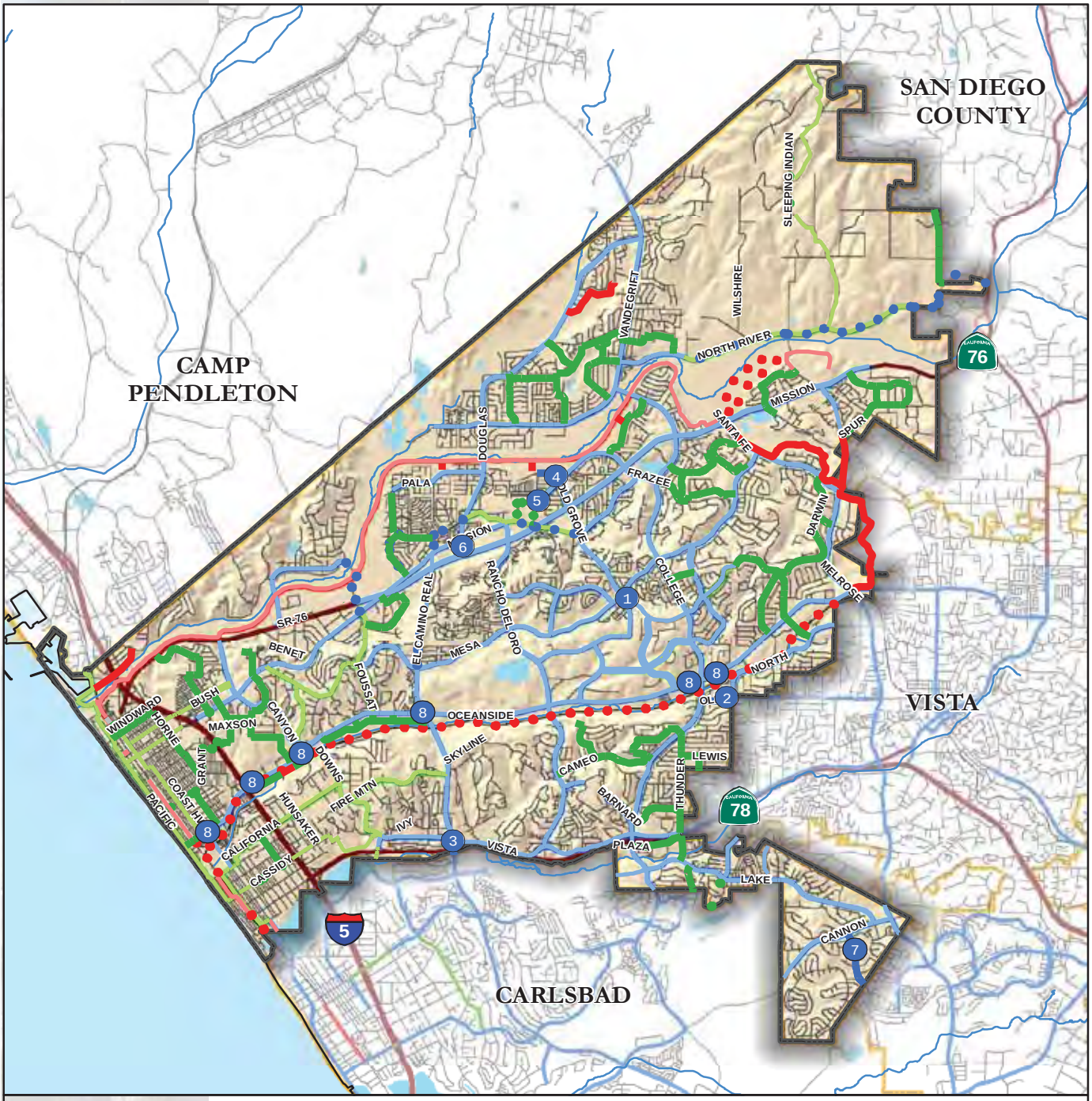
City of Oceanside
Bicycle Master Plan

2017 Bicycle Master Plan Update Prepared by
STC Traffic, Inc.

2008 Bicycle Master Plan Prepared by
KTU+A Planning + Landscape Architecture

In association with
IBI Group Transportation Planning

for the
City of Oceanside, California



Existing Bicycle Facilities

- Class 1: Bike Path
- Class 2: Bike Lane
- Class 3: Bike Route

Planned Bicycle Facilities

- Class 1: Bike Path
- Class 2: Bike Lane
- Class 3: Bike Route

Recommended Facilities

- Class 1: Bike Path
- Class 2: Bike Lane
- Class 3: Bike Route

Data Source: City of Oceanside

Figure 4.2 A: Class 2 Bike Lane Recommended Projects

(2017 Update)

0 0.5 1 Miles

Appendix B

Bus Schedules

SPRINTER SCHEDULE

Schedule subject to change / Los horarios están sujetos a cambios

EASTBOUND — OCEANSIDE TO ESCONDIDO

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

STATIONS	READ DOWN	30 MIN FREQUENCY												
Oceanside Transit Center	↓	:03 | :33	4:03a	4:33a	5:03a	5:33a	6:03a	6:33a	7:03a	7:33a	8:03a	8:33a	9:03a	9:33a
Coast Highway	↓	:05 | :35	4:05a	4:35a	5:05a	5:35a	6:05a	6:35a	7:05a	7:35a	8:05a	8:35a	9:05a	9:35a
Crouch Street	↓	:07 | :37	4:07a	4:37a	5:07a	5:37a	6:07a	6:37a	7:07a	7:37a	8:07a	8:37a	9:07a	9:37a
El Camino Real	↓	:11 | :41	4:11a	4:41a	5:11a	5:41a	6:11a	6:41a	7:11a	7:41a	8:11a	8:41a	9:11a	9:41a
Rancho Del Oro	↓	:14 | :44	4:14a	4:44a	5:14a	5:44a	6:14a	6:44a	7:14a	7:44a	8:14a	8:44a	9:14a	9:44a
College Boulevard	↓	:17 | :47	4:17a	4:47a	5:17a	5:47a	6:17a	6:47a	7:17a	7:47a	8:17a	8:47a	9:17a	9:47a
Melrose Drive	↓	:22 | :52	4:22a	4:52a	5:22a	5:52a	6:22a	6:52a	7:22a	7:52a	8:22a	8:52a	9:22a	9:52a
Vista Transit Center	↓	:26 | :56	4:26a	4:56a	5:26a	5:56a	6:26a	6:56a	7:26a	7:56a	8:26a	8:56a	9:26a	9:56a
Civic Center-Vista	↓	:29 | :59	4:29a	4:59a	5:29a	5:59a	6:29a	6:59a	7:29a	7:59a	8:29a	8:59a	9:29a	9:59a
Buena Creek	↓	:35 | :05	4:35a	5:05a	5:35a	6:05a	6:35a	7:05a	7:35a	8:05a	8:35a	9:05a	9:35a	10:05a
Palomar College	↓	:40 | :10	4:40a	5:10a	5:40a	6:10a	6:40a	7:10a	7:40a	8:10a	8:40a	9:10a	9:40a	10:10a
San Marcos Civic Center	↓	:43 | :13	4:43a	5:13a	5:43a	6:13a	6:43a	7:13a	7:43a	8:13a	8:43a	9:13a	9:43a	10:13a
Cal State San Marcos	↓	:46 | :16	4:46a	5:16a	5:46a	6:16a	6:46a	7:16a	7:46a	8:16a	8:46a	9:16a	9:46a	10:16a
Nordahl Road	↓	:51 | :21	4:51a	5:21a	5:51a	6:21a	6:51a	7:21a	7:51a	8:21a	8:51a	9:21a	9:51a	10:21a
Escondido Transit Center	↓	:56 | :26	4:56a	5:26a	5:56a	6:26a	6:56a	7:26a	7:56a	8:26a	8:56a	9:26a	9:56a	10:26a

STATIONS												
Oceanside Transit Center	10:03a	10:33a	11:03a	11:33a	12:03p	12:33p	1:03p	1:33p	2:03p	2:33p	3:03p	3:33p
Coast Highway	10:05a	10:35a	11:05a	11:35a	12:05p	12:35p	1:05p	1:35p	2:05p	2:35p	3:05p	3:35p
Crouch Street	10:07a	10:37a	11:07a	11:37a	12:07p	12:37p	1:07p	1:37p	2:07p	2:37p	3:07p	3:37p
El Camino Real	10:11a	10:41a	11:11a	11:41a	12:11p	12:41p	1:11p	1:41p	2:11p	2:41p	3:11p	3:41p
Rancho Del Oro	10:14a	10:44a	11:14a	11:44a	12:14p	12:44p	1:14p	1:44p	2:14p	2:44p	3:14p	3:44p
College Boulevard	10:17a	10:47a	11:17a	11:47a	12:17p	12:47p	1:17p	1:47p	2:17p	2:47p	3:17p	3:47p
Melrose Drive	10:22a	10:52a	11:22a	11:52a	12:22p	12:52p	1:22p	1:52p	2:22p	2:52p	3:22p	3:52p
Vista Transit Center	10:26a	10:56a	11:26a	11:56a	12:26p	12:56p	1:26p	1:56p	2:26p	2:56p	3:26p	3:56p
Civic Center-Vista	10:29a	10:59a	11:29a	11:59a	12:29p	12:59p	1:29p	1:59p	2:29p	2:59p	3:29p	3:59p
Buena Creek	10:35a	11:05a	11:35a	12:05p	12:35p	1:05p	1:35p	2:05p	2:35p	3:05p	3:35p	4:05p
Palomar College	10:40a	11:10a	11:40a	12:10p	12:40p	1:10p	1:40p	2:10p	2:40p	3:10p	3:40p	4:10p
San Marcos Civic Center	10:43a	11:13a	11:43a	12:13p	12:43p	1:13p	1:43p	2:13p	2:43p	3:13p	3:43p	4:13p
Cal State San Marcos	10:46a	11:16a	11:46a	12:16p	12:46p	1:16p	1:46p	2:16p	2:46p	3:16p	3:46p	4:16p
Nordahl Road	10:51a	11:21a	11:51a	12:21p	12:51p	1:21p	1:51p	2:21p	2:51p	3:21p	3:51p	4:21p
Escondido Transit Center	10:56a	11:26a	11:56a	12:26p	12:56p	1:26p	1:56p	2:26p	2:56p	3:26p	3:56p	4:26p

STATIONS										
Oceanside Transit Center	4:03p	4:33p	5:03p	5:33p	6:03p	6:33p	7:03p	7:33p	8:03p	8:33p
Coast Highway	4:05p	4:35p	5:05p	5:35p	6:05p	6:35p	7:05p	7:35p	8:05p	8:35p
Crouch Street	4:07p	4:37p	5:07p	5:37p	6:07p	6:37p	7:07p	7:37p	8:07p	8:37p
El Camino Real	4:11p	4:41p	5:11p	5:41p	6:11p	6:41p	7:11p	7:41p	8:11p	8:41p
Rancho Del Oro	4:14p	4:44p	5:14p	5:44p	6:14p	6:44p	7:14p	7:44p	8:14p	8:44p
College Boulevard	4:17p	4:47p	5:17p	5:47p	6:17p	6:47p	7:17p	7:47p	8:17p	8:47p
Melrose Drive	4:22p	4:52p	5:22p	5:52p	6:22p	6:52p	7:22p	7:52p	8:22p	8:52p
Vista Transit Center	4:26p	4:56p	5:26p	5:56p	6:26p	6:56p	7:26p	7:56p	8:26p	8:56p
Civic Center-Vista	4:29p	4:59p	5:29p	5:59p	6:29p	6:59p	7:29p	7:59p	8:29p	8:59p
Buena Creek	4:35p	5:05p	5:35p	6:05p	6:35p	7:05p	7:35p	8:05p	8:35p	9:05p
Palomar College	4:40p	5:10p	5:40p	6:10p	6:40p	7:10p	7:40p	8:10p	8:40p	9:10p
San Marcos Civic Center	4:43p	5:13p	5:43p	6:13p	6:43p	7:13p	7:43p	8:13p	8:43p	9:13p
Cal State San Marcos	4:46p	5:16p	5:46p	6:16p	6:46p	7:16p	7:46p	8:16p	8:46p	9:16p
Nordahl Road	4:51p	5:21p	5:51p	6:21p	6:51p	7:21p	7:51p	8:21p	8:51p	9:21p
Escondido Transit Center	4:56p	5:26p	5:56p	6:26p	6:56p	7:26p	7:56p	8:26p	8:56p	9:26p

EASTBOUND — FRIDAY NIGHT ONLY

STATIONS						
Oceanside Transit Center	9:03p	9:33p	10:03p	10:33p	11:03p	11:33p
Coast Highway	9:05p	9:35p	10:05p	10:35p	11:05p	11:35p
Crouch Street	9:07p	9:37p	10:07p	10:37p	11:07p	11:37p
El Camino Real	9:11p	9:41p	10:11p	10:41p	11:11p	11:41p
Rancho Del Oro	9:14p	9:44p	10:14p	10:44p	11:14p	11:44p
College Boulevard	9:17p	9:47p	10:17p	10:47p	11:17p	11:47p
Melrose Drive	9:22p	9:52p	10:22p	10:52p	11:22p	11:52p
Vista Transit Center	9:26p	9:56p	10:26p	10:56p	11:26p	11:56p
Civic Center-Vista	9:29p	9:59p	10:29p	10:59p	11:29p	11:59p
Buena Creek	9:35p	10:05p	10:35p	11:05p	11:35p	12:05a
Palomar College	9:40p	10:10p	10:40p	11:10p	11:40p	12:10a
San Marcos Civic Center	9:43p	10:13p	10:43p	11:13p	11:43p	12:13a
Cal State San Marcos	9:46p	10:16p	10:46p	11:16p	11:46p	12:16a
Nordahl Road	9:51p	10:21p	10:51p	11:21p	11:51p	12:21a
Escondido Transit Center	9:56p	10:26p	10:56p	11:26p	11:56p	12:26a

EB — SATURDAY NIGHT ONLY

STATIONS			
Oceanside Transit Center	9:33p	10:33p	11:33p
Coast Highway	9:35p	10:35p	11:35p
Crouch Street	9:37p	10:37p	11:37p
El Camino Real	9:41p	10:41p	11:41p
Rancho Del Oro	9:44p	10:44p	11:44p
College Boulevard	9:47p	10:47p	11:47p
Melrose Drive	9:52p	10:52p	11:52p
Vista Transit Center	9:56p	10:56p	11:56p
Civic Center-Vista	9:59p	10:59p	11:59p
Buena Creek	10:05p	11:05p	12:05a
Palomar College	10:10p	11:10p	12:10a
San Marcos Civic Center	10:13p	11:13p	12:13a
Cal State San Marcos	10:16p	11:16p	12:16a
Nordahl Road	10:21p	11:21p	12:21a
Escondido Transit Center	10:26p	11:26p	12:26a

WESTBOUND — ESCONDIDO TO OCEANSIDE

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

STATIONS	READ DOWN	30 MIN FREQUENCY												
Escondido Transit Center	↓	:03 | :33	4:03a	4:33a	5:03a	5:33a	6:03a	6:33a	7:03a	7:33a	8:03a	8:33a	9:03a	9:33a
Nordahl Road	↓	:06 | :36	4:06a	4:36a	5:06a	5:36a	6:06a	6:36a	7:06a	7:36a	8:06a	8:36a	9:06a	9:36a
Cal State San Marcos	↓	:11 | :41	4:11a	4:41a	5:11a	5:41a	6:11a	6:41a	7:11a	7:41a	8:11a	8:41a	9:11a	9:41a
San Marcos Civic Center	↓	:14 | :44	4:14a	4:44a	5:14a	5:44a	6:14a	6:44a	7:14a	7:44a	8:14a	8:44a	9:14a	9:44a
Palomar College	↓	:17 | :47	4:17a	4:47a	5:17a	5:47a	6:17a	6:47a	7:17a	7:47a	8:17a	8:47a	9:17a	9:47a
Buena Creek	↓	:22 | :52	4:22a	4:52a	5:22a	5:52a	6:22a	6:52a	7:22a	7:52a	8:22a	8:52a	9:22a	9:52a
Civic Center-Vista	↓	:27 | :57	4:27a	4:57a	5:27a	5:57a	6:27a	6:57a	7:27a	7:57a	8:27a	8:57a	9:27a	9:57a
Vista Transit Center	↓	:30 | :00	4:30a	5:00a	5:30a	6:00a	6:30a	7:00a	7:30a	8:00a	8:30a	9:00a	9:30a	10:00a
Melrose Drive	↓	:35 | :05	4:35a	5:05a	5:35a	6:05a	6:35a	7:05a	7:35a	8:05a	8:35a	9:05a	9:35a	10:05a
College Boulevard	↓	:40 | :10	4:40a	5:10a	5:40a	6:10a	6:40a	7:10a	7:40a	8:10a	8:40a	9:10a	9:40a	10:10a
Rancho Del Oro	↓	:43 | :13	4:43a	5:13a	5:43a	6:13a	6:43a	7:13a	7:43a	8:13a	8:43a	9:13a	9:43a	10:13a
El Camino Real	↓	:46 | :16	4:46a	5:16a	5:46a	6:16a	6:46a	7:16a	7:46a	8:16a	8:46a	9:16a	9:46a	10:16a
Crouch Street	↓	:49 | :19	4:49a	5:19a	5:49a	6:19a	6:49a	7:19a	7:49a	8:19a	8:49a	9:19a	9:49a	10:19a
Coast Highway	↓	:52 | :22	4:52a	5:22a	5:52a	6:22a	6:52a	7:22a	7:52a	8:22a	8:52a	9:22a	9:52a	10:22a
Oceanside Transit Center	↓	:56 | :26	4:56a	5:26a	5:56a	6:26a	6:56a	7:26a	7:56a	8:26a	8:56a	9:26a	9:56a	10:26a

STATIONS												
Escondido Transit Center	10:03a	10:33a	11:03a	11:33a	12:03p	12:33p	1:03p	1:33p	2:03p	2:33p	3:03p	3:33p
Nordahl Road	10:06a	10:36a	11:06a	11:36a	12:06p	12:36p	1:06p	1:36p	2:06p	2:36p	3:06p	3:36p
Cal State San Marcos	10:11a	10:41a	11:11a	11:41a	12:11p	12:41p	1:11p	1:41p	2:11p	2:41p	3:11p	3:41p
San Marcos Civic Center	10:14a	10:44a	11:14a	11:44a	12:14p	12:44p	1:14p	1:44p	2:14p	2:44p	3:14p	3:44p
Palomar College	10:17a	10:47a	11:17a	11:47a	12:17p	12:47p	1:17p	1:47p	2:17p	2:47p	3:17p	3:47p
Buena Creek	10:22a	10:52a	11:22a	11:52a	12:22p	12:52p	1:22p	1:52p	2:22p	2:52p	3:22p	3:52p
Civic Center-Vista	10:27a	10:57a	11:27a	11:57a	12:27p	12:57p	1:27p	1:57p	2:27p	2:57p	3:27p	3:57p
Vista Transit Center	10:30a	11:00a	11:30a	12:00p	12:30p	1:00p	1:30p	2:00p	2:30p	3:00p	3:30p	4:00p
Melrose Drive	10:35a	11:05a	11:35a	12:05p	12:35p	1:05p	1:35p	2:05p	2:35p	3:05p	3:35p	4:05p
College Boulevard	10:40a	11:10a	11:40a	12:10p	12:40p	1:10p	1:40p	2:10p	2:40p	3:10p	3:40p	4:10p
Rancho Del Oro	10:43a	11:13a	11:43a	12:13p	12:43p	1:13p	1:43p	2:13p	2:43p	3:13p	3:43p	4:13p
El Camino Real	10:46a	11:16a	11:46a	12:16p	12:46p	1:16p	1:46p	2:16p	2:46p	3:16p	3:46p	4:16p
Crouch Street	10:49a	11:19a	11:49a	12:19p	12:49p	1:19p	1:49p	2:19p	2:49p	3:19p	3:49p	4:19p
Coast Highway	10:52a	11:22a	11:52a	12:22p	12:52p	1:22p	1:52p	2:22p	2:52p	3:22p	3:52p	4:22p
Oceanside Transit Center	10:56a	11:26a	11:56a	12:26p	12:56p	1:26p	1:56p	2:26p	2:56p	3:26p	3:56p	4:26p

STATIONS										
Escondido Transit Center	4:03p	4:33p	5:03p	5:33p	6:03p	6:33p	7:03p	7:33p	8:03p	8:33p
Nordahl Road	4:06p	4:36p	5:06p	5:36p	6:06p	6:36p	7:06p	7:36p	8:06p	8:36p
Cal State San Marcos	4:11p	4:41p	5:11p	5:41p	6:11p	6:41p	7:11p	7:41p	8:11p	8:41p
San Marcos Civic Center	4:14p	4:44p	5:14p	5:44p	6:14p	6:44p	7:14p	7:44p	8:14p	8:44p
Palomar College	4:17p	4:47p	5:17p	5:47p	6:17p	6:47p	7:17p	7:47p	8:17p	8:47p
Buena Creek	4:22p	4:52p	5:22p	5:52p	6:22p	6:52p	7:22p	7:52p	8:22p	8:52p
Civic Center-Vista	4:27p	4:57p	5:27p	5:57p	6:27p	6:57p	7:27p	7:57p	8:27p	8:57p
Vista Transit Center	4:30p	5:00p	5:30p	6:00p	6:30p	7:00p	7:30p	8:00p	8:30p	9:00p
Melrose Drive	4:35p	5:05p	5:35p	6:05p	6:35p	7:05p	7:35p	8:05p	8:35p	9:05p
College Boulevard	4:40p	5:10p	5:40p	6:10p	6:40p	7:10p	7:40p	8:10p	8:40p	9:10p
Rancho Del Oro	4:43p	5:13p	5:43p	6:13p	6:43p	7:13p	7:43p	8:13p	8:43p	9:13p
El Camino Real	4:46p	5:16p	5:46p	6:16p	6:46p	7:16p	7:46p	8:16p	8:46p	9:16p
Crouch Street	4:49p	5:19p	5:49p	6:19p	6:49p	7:19p	7:49p	8:19p	8:49p	9:19p
Coast Highway	4:52p	5:22p	5:52p	6:22p	6:52p	7:22p	7:52p	8:22p	8:52p	9:22p
Oceanside Transit Center	4:56p	5:26p	5:56p	6:26p	6:56p	7:26p	7:56p	8:26p	8:56p	9:26p

WESTBOUND — FRIDAY NIGHT ONLY

STATIONS				
Escondido Transit Center	9:03p	9:33p	10:03p	10:33p
Nordahl Road	9:06p	9:36p	10:06p	10:36p
Cal State San Marcos	9:11p	9:41p	10:11p	10:41p
San Marcos Civic Center	9:14p	9:44p	10:14p	10:44p
Palomar College	9:17p	9:47p	10:17p	10:47p
Buena Creek	9:22p	9:52p	10:22p	10:52p
Civic Center-Vista	9:27p	9:57p	10:27p	10:57p
Vista Transit Center	9:30p	10:00p	10:30p	11:00p
Melrose Drive	9:35p	10:05p	10:35p	11:05p
College Boulevard	9:40p	10:10p	10:40p	11:10p
Rancho Del Oro	9:43p	10:13p	10:43p	11:13p
El Camino Real	9:46p	10:16p	10:46p	11:16p
Crouch Street	9:49p	10:19p	10:49p	11:19p
Coast Highway	9:52p	10:22p	10:52p	11:22p
Oceanside Transit Center	9:56p	10:26p	10:56p	11:26p

WB — SAT NIGHT ONLY

STATIONS		
Escondido Transit Center	9:33p	10:33p
Nordahl Road	9:36p	10:36p
Cal State San Marcos	9:41p	10:41p
San Marcos Civic Center	9:44p	10:44p
Palomar College	9:47p	10:47p
Buena Creek	9:52p	10:52p
Civic Center-Vista	9:57p	10:57p
Vista Transit Center	10:00p	11:00p
Melrose Drive	10:05p	11:05p
College Boulevard	10:10p	11:10p
Rancho Del Oro	10:13p	11:13p
El Camino Real	10:16p	11:16p
Crouch Street	10:19p	11:19p
Coast Highway	10:22p	11:22p
Oceanside Transit Center	10:26p	11:26p

- **Monday - Sunday 7 days a week service/**Lunes - domingo servicio los 7 días a la semana
- **Monday - Friday ONLY. Service does not run on Saturday, Sunday, and Holidays/**Lunes - viernes ÚNICAMENTE. El servicio no funciona los sábados, domingos, ni en días festivos
- **Friday night service ONLY/**Servicio el viernes en la noche ÚNICAMENTE
- **Saturday night service ONLY/**Servicio el sábado en la noche ÚNICAMENTE

Holiday SPRINTER Schedule

Saturday Schedule
- Memorial Day
- Independence Day
- Labor Day
- Veterans Day

Sunday Schedule
- New Year's Day
- Cesar Chavez Day
- Thanksgiving Day
- Christmas Eve
- Christmas Day

Schedule subject to change.

Horario Festivo de SPRINTER

Horario del sábado
- Día de los Caídos
- Día de la Independencia
- Día del Trabajo
- Día de los Veteranos

Horario del domingo
- Año Nuevo
- Día de César Chavez
- Día de Acción de Gracias
- Nochebuena
- Día de Navidad

Los horarios están sujetos a cambios.

NORTH COUNTY TRANSIT DISTRICT
GoNCTD.com (760) 966-6500
Twitter: twitter.com @GoNCTD
Twitter Service Alerts: twitter.com @NCTD_Alerts
Facebook: facebook.com @GoNCTD
Instagram: instagram.com @GoNCTD
YouTube: youtube.com @GoNCTD
Mobile Real Time Info: GoNCTD.com/NOW

SPRINTER STATIONS

W — OCEANSIDE TRANSIT CENTER — COAST HIGHWAY — CROUCH STREET — EL CAMINO REAL — RANCHO DEL ORO — COLLEGE BOULEVARD — MELROSE DRIVE — VISTA TRANSIT CENTER — CIVIC CENTER-VISTA — BUENA CREEK — PALOMAR COLLEGE — SAN MARCOS CIVIC CENTER — CAL STATE SAN MARCOS — NORDAHL ROAD — ESCONDIDO TRANSIT CENTER — E

315/325

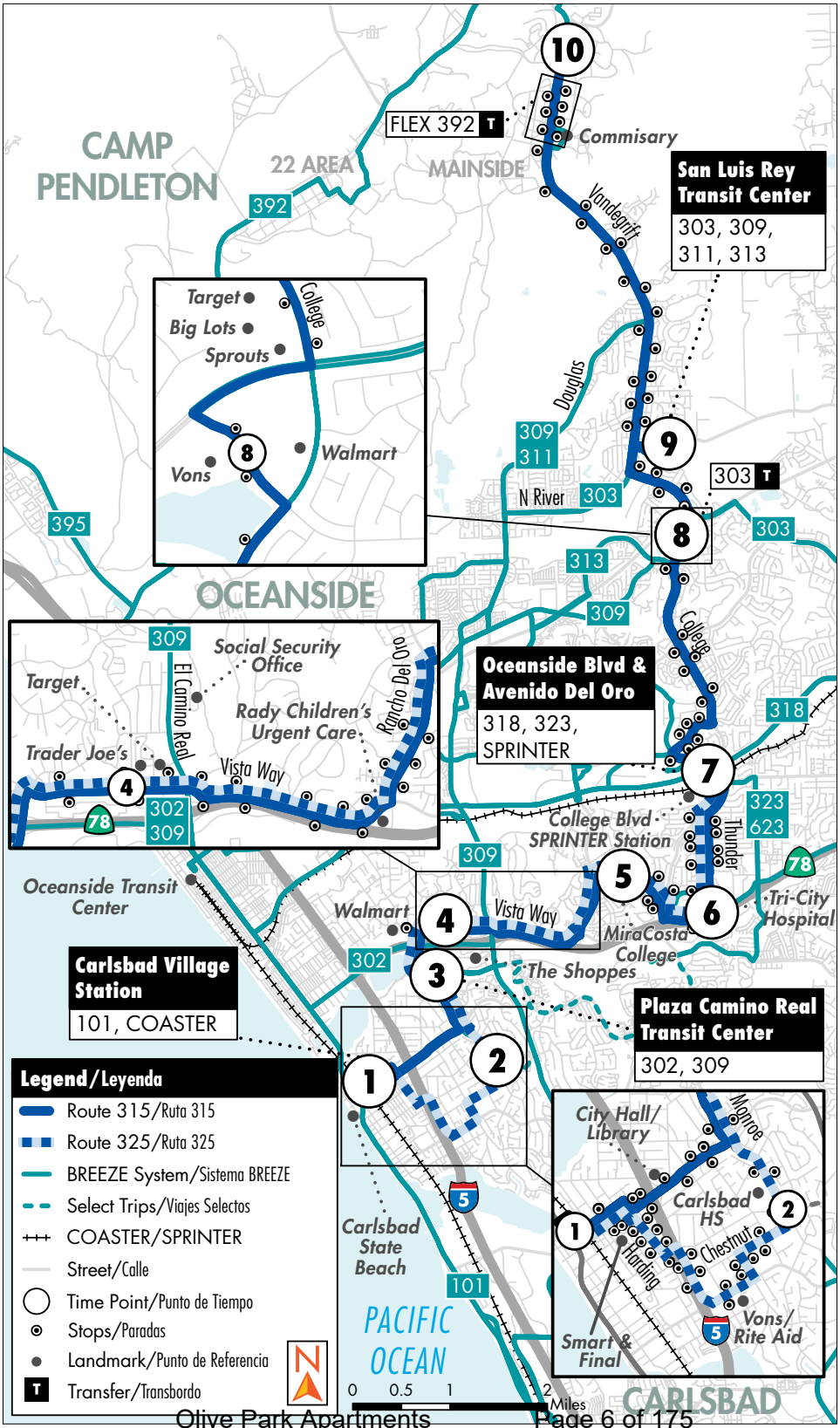
Carlsbad Village Station to 14 Area/ College Blvd. SPRINTER Station

Carlsbad Village Station a 14 Area/College Blvd. Estación de SPRINTER

M-F • SA • SU
L-V • SÁ • DO

M-F • SA
L-V • SÁ

Destinations/Destinos
- MiraCosta College
- Target
- Walmart
- Tri-City Medical Center
- The Shoppes at Carlsbad
- Carlsbad State Beach
- Camp Pendelton - Mainside



315/325

Carlsbad Village Station to 14 Area/ College Blvd. SPRINTER Station

Carlsbad Village Station a 14 Area/College Blvd. Estación de SPRINTER

See pg. 6 for Holiday schedules/Ver pág. 276 para obtener los horarios de días festivos

Monday - Friday
Northbound to 14 Area/College Blvd. SPRINTER Station
Lunes a Viernes • Dirección hacia el norte a 14 Area/College Blvd. Estación de SPRINTER

Route Ruta	Carlsbad Village Station	Chestnut & Monroe St. (Carlsbad HS)	Plaza Camino Real Transit Center	Vista Way & Via Esmarca	Mira Costa College	Thunder Dr. & Vista Way	Oceanside Bl. & Avenida Del Oro	Town Center North	San Luis Rey Transit Center	Vandegrift & 16th St.
	1	2	3	4	5	6	7	8	9	10
315	4:05	–	4:13	4:17	4:23	4:28	4:37	4:45	4:53	5:09a
315	5:02	–	5:11	5:15	5:22	5:28	5:37	5:45	5:54	6:11
315	5:58	–	6:07	6:11	6:18	6:24	6:34	6:42	6:51	7:08
325	6:14	6:27	6:33	6:37	6:45	6:52	7:04	–	–	–
315	6:51	–	7:03	7:07	7:15	7:22	7:34	7:44	7:53	8:10
325	7:10	7:26	7:33	7:37	7:45	7:52	8:04	–	–	–
315	7:48	–	8:00	8:06	8:15	8:22	8:34	8:44	8:53	9:10
325	8:06	8:23	8:30	8:35	8:44	8:51	9:04	–	–	–
315	8:48	–	9:00	9:06	9:15	9:22	9:34	9:44	9:53	10:10
325	9:06	9:23	9:30	9:36	9:45	9:52	10:04	–	–	–
315	9:48	–	10:00	10:06	10:15	10:22	10:34	10:44	10:53	11:10
325	10:06	10:23	10:30	10:36	10:45	10:52	11:04	–	–	–
315	10:45	–	10:59	11:05	11:14	11:21	11:34	11:44	11:53	**12:10p**
325	11:03	11:20	11:27	11:33	11:43	11:51	**12:04**	–	–	–
315	11:42	–	11:57	**12:03**	**12:13**	**12:21**	**12:34**	**12:44**	**12:53**	**1:10**
325	**12:02**	**12:19**	**12:27**	**12:33**	**12:43**	**12:51**	**1:04**	–	–	–
315	**12:42**	–	**12:57**	**1:03**	**1:13**	**1:21**	**1:34**	**1:44**	**1:53**	**2:10**
325	**1:02**	**1:19**	**1:27**	**1:33**	**1:43**	**1:51**	**2:04**	–	–	–
315	**1:40**	–	**1:55**	**2:01**	**2:11**	**2:19**	**2:32**	**2:45**	**2:54**	**3:11**
325	**2:00**	**2:17**	**2:25**	**2:31**	**2:41**	**2:49**	**3:02**	–	–	–

Route 325 Service
Servicio de la Ruta 325

All persons entering Camp Pendleton must have valid identification and are subject to search at any time.
Todas las personas que ingresen a Camp Pendleton deben tener una identificación válida y están sujetas a registros en cualquier momento.

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315/325

Carlsbad Village Station to 14 Area/ College Blvd. SPRINTER Station

Carlsbad Village Station a 14 Area/College Blvd. Estación de SPRINTER

See pg. 6 for Holiday schedules/Ver pág. 276 para obtener los horarios de días festivos

Monday - Friday
Northbound to 14 Area/College Blvd. SPRINTER Station
Lunes a Viernes • Dirección hacia el norte a 14 Area/College Blvd. Estación de SPRINTER

Route Ruta	Carlsbad Village Station	Chestnut & Monroe St. (Carlsbad HS)	Plaza Camino Real Transit Center	Vista Way & Via Esmarca	Mira Costa College	Thunder Dr. & Vista Way	Oceanside Bl. & Avenida Del Oro	Town Center North	San Luis Rey Transit Center	Vandegrift & 16th St.
	1	2	3	4	5	6	7	8	9	10
315	2:40	–	2:55	3:01	3:11	3:19	3:32	3:45	3:55	4:12
325	2:59	3:17	3:25	3:31	3:41	3:49	4:02	–	–	–
315	3:40	–	3:55	4:01	4:11	4:19	4:32	4:45	4:55	5:12
325	4:03	4:20	4:27	4:33	4:43	4:51	5:04	–	–	–
315	4:42	–	4:57	5:03	5:13	5:21	5:34	5:47	5:57	6:14
325	5:04	5:21	5:27	5:33	5:43	5:51	6:04	–	–	–
315	5:45	–	6:00	6:06	6:16	6:23	6:34	6:46	6:55	7:10
325	6:10	6:27	6:33	6:38	6:47	6:54	7:04	–	–	–
315	6:45	–	6:58	7:03	7:12	7:19	7:29	7:40	7:48	8:03
315	7:45	–	7:57	8:02	8:10	8:17	8:27	8:38	8:45	9:00
315	8:45	–	8:57	9:02	9:10	9:17	9:27	9:38	9:45	–

Route 325 Service
Servicio de la Ruta 325

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315/325

Carlsbad Village Station to 14 Area/ College Blvd. SPRINTER Station

Carlsbad Village Station a 14 Area/College Blvd. Estación de SPRINTER

See pg. 6 for Holiday schedules/Ver pág. 276 para obtener los horarios de días festivos

Monday - Friday
Southbound to Carlsbad Village Station
Lunes a Viernes • Dirección hacia el sur a la Estación Carlsbad Village

Route Ruta	Vandegrift & 16th St.	San Luis Rey Transit Center	Town Center North	Oceanside Bl. & Avenida Del Oro	Thunder Dr. & Vista Way	MiraCosta College	Vista Way & Via Esmarca	Plaza Camino Real Transit Center	Chestnut & Monroe St. (Carlsbad HS)	Carlsbad Village Station
	10	9	8	7	6	5	4	3	2	1
315	–	5:06	5:13	5:23	5:29	5:37	5:43	5:49	–	5:58a
315	5:22	5:36	5:43	5:53	5:59	6:08	6:14	6:20	–	6:29
325	–	–	–	6:23	6:30	6:40	6:46	6:52	6:58	7:09
315	6:20	6:34	6:43	6:53	7:00	7:10	7:16	7:22	–	7:32
325	–	–	–	7:23	7:30	7:40	7:47	7:55	8:00	8:14
315	7:16	7:31	7:41	7:53	8:00	8:10	8:17	8:24	–	8:34
325	–	–	–	8:23	8:31	8:41	8:48	8:56	9:00	9:13
315	8:16	8:31	8:41	8:53	9:01	9:11	9:18	9:26	–	9:36
325	–	–	–	9:23	9:31	9:41	9:48	9:56	10:00	10:13
315	9:16	9:31	9:41	9:53	10:01	10:11	10:18	10:26	–	10:36
325	–	–	–	10:23	10:31	10:41	10:48	10:56	11:01	11:14
315	10:16	10:31	10:41	10:53	11:01	11:11	11:18	11:26	–	11:36
325	–	–	–	11:23	11:31	11:41	11:49	11:57	**12:02**	**12:15p**
315	11:15	11:31	11:41	11:53	**12:01**	**12:11**	**12:18**	**12:26**	–	**12:36**
325	–	–	–	**12:23**	**12:31**	**12:41**	**12:49**	**12:57**	**1:02**	**1:15**
315	**12:15**	**12:31**	**12:41**	**12:53**	**1:01**	**1:11**	**1:19**	**1:27**	–	**1:37**
325	–	–	–	**1:23**	**1:31**	**1:41**	**1:49**	**1:58**	**2:04**	**2:19**
315	**1:13**	**1:31**	**1:41**	**1:53**	**2:01**	**2:11**	**2:19**	**2:28**	–	**2:38**
325	–	–	–	**2:23**	**2:31**	**2:42**	**2:50**	**2:59**	**3:04**	**3:21**
315	**2:12**	**2:30**	**2:41**	**2:53**	**3:01**	**3:12**	**3:20**	**3:29**	–	**3:39**

Route 325 Service
Servicio de la Ruta 325

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315/325

Carlsbad Village Station to 14 Area/ College Blvd. SPRINTER Station

Carlsbad Village Station a 14 Area/College Blvd. Estación de SPRINTER

See pg. 6 for Holiday schedules/Ver pág. 276 para obtener los horarios de días festivos

Monday - Friday
Southbound to Carlsbad Village Station
Lunes a Viernes • Dirección hacia el sur a la Estación Carlsbad Village

Route Ruta	Vandegrift & 16th St.	San Luis Rey Transit Center	Town Center North	Oceanside Bl. & Avenida Del Oro	Thunder Dr. & Vista Way	MiraCosta College	Vista Way & Via Esmarca	Plaza Camino Real Transit Center	Chestnut & Monroe St. (Carlsbad HS)	Carlsbad Village Station
	10	9	8	7	6	5	4	3	2	1
325	–	–	–	3:23	3:31	3:42	3:50	3:59	4:04	4:16
315	3:12	3:30	3:41	3:53	4:01	4:12	4:20	4:29	–	4:39
325	–	–	–	4:23	4:31	4:42	4:50	4:59	5:03	5:15
315	4:12	4:30	4:41	4:53	5:01	5:12	5:20	5:29	–	5:39
325	–	–	–	5:23	5:31	5:42	5:50	5:59	6:03	6:15
315	4:42	5:00	5:11	5:23	5:31	5:42	5:50	5:59	–	6:09
315	5:13	5:29	5:40	5:52	6:00	6:11	6:19	6:28	–	6:38
315	6:17	6:31	6:42	6:53	7:01	7:11	7:18	7:26	–	7:36
315	7:20	7:34	7:42	7:53	8:00	8:10	8:17	8:25	–	8:34
315	8:04	8:18	8:26	8:37	8:44	8:53	9:00	9:07	–	9:16

Route 325 Service
Servicio de la Ruta 325

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315/325

Carlsbad Village Station to 14 Area/ College Blvd. SPRINTER Station

Carlsbad Village Station a 14 Area/College Blvd. Estación de SPRINTER

See pg. 6 for Holiday schedules/Ver pág. 276 para obtener los horarios de días festivos

Saturday
Northbound to 14 Area/College Blvd. SPRINTER Station
Sábado • Dirección hacia el norte a 14 Area/College Blvd. Estación de SPRINTER

Route Ruta	Carlsbad Village Station	Chestnut & Monroe St. (Carlsbad HS)	Plaza Camino Real Transit Center	Vista Way & Via Esmarca	MiraCosta College	Thunder Dr. & Vista Way	Oceanside Bl. & Avenida Del Oro	Town Center North	San Luis Rey Transit Center	Vandegrift & 16th St.
	1	2	3	4	5	6	7	8	9	10
315	6:58	–	7:08	7:11	7:19	7:25	7:35	7:45	7:54	8:10a
315	7:56	–	8:07	8:11	8:19	8:25	8:35	8:46	8:55	9:11
315	8:55	–	9:06	9:11	9:19	9:25	9:35	9:46	9:55	10:11
315	9:52	–	10:04	10:09	10:17	10:25	10:35	10:46	10:55	11:11
325	10:22	10:37	10:43	10:48	10:56	11:04	11:14	–	–	–
315	10:51	–	11:04	11:09	11:17	11:25	11:35	11:46	11:55	**12:11p**
315	11:51	–	**12:04**	**12:09**	**12:17**	**12:25**	**12:35**	**12:46**	**12:55**	**1:11**
315	**12:51**	–	**1:04**	**1:09**	**1:17**	**1:25**	**1:35**	**1:46**	**1:55**	**2:11**
325	**1:10**	**1:26**	**1:34**	**1:39**	**1:47**	**1:55**	**2:05**	–	–	–
315	**1:51**	–	**2:04**	**2:09**	**2:17**	**2:25**	**2:35**	**2:46**	**2:55**	**3:11**
315	**2:51**	–	**3:04**	**3:09**	**3:17**	**3:25**	**3:35**	**3:46**	**3:55**	**4:11**
315	**3:49**	–	**4:03**	**4:09**	**4:17**	**4:25**	**4:35**	**4:46**	**4:55**	**5:11**
325	**4:09**	**4:25**	**4:33**	**4:39**	**4:47**	**4:55**	**5:05**	–	–	–
315	**4:49**	–	**5:03**	**5:09**	**5:17**	**5:25**	**5:35**	**5:47**	**5:56**	**6:12**
315	**5:51**	–	**6:04**	**6:10**	**6:18**	**6:25**	**6:35**	**6:47**	**6:56**	**7:12**
325	**7:22**	**7:38**	**7:46**	**7:51**	**7:59**	**8:06**	**8:16**	–	–	–
315	**6:53**	–	**7:05**	**7:10**	**7:18**	**7:25**	**7:35**	**7:47**	**7:56**	**8:12**
315	**7:53**	–	**8:05**	**8:10**	**8:18**	**8:25**	**8:35**	**8:46**	**8:55**	**9:10**
315	**8:53**	–	**9:05**	**9:10**	**9:18**	**9:25**	**9:35**	**9:46**	**9:55**	**10:10**

Route 325 Service
Servicio de la Ruta 325

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315/325

Carlsbad Village Station to 14 Area/ College Blvd. SPRINTER Station

Carlsbad Village Station a 14 Area/College Blvd. Estación de SPRINTER

See pg. 6 for Holiday schedules/Ver pág. 276 para obtener los horarios de días festivos

Saturday
Southbound to Carlsbad Village Station
Sábado • Dirección hacia el sur a la Estación Carlsbad Village

Route Ruta	Vandegrift & 16th St.	San Luis Rey Transit Center	Town Center North	Oceanside Bl. & Avenida Del Oro	Thunder Dr. & Vista Way	MiraCosta College	Vista Way & Via Esmarca	Plaza Camino Real Transit Center	Chestnut & Monroe St. (Carlsbad HS)	Carlsbad Village Station
	10	9	8	7	6	5	4	3	2	1
315	6:21	6:33	6:40	6:50	6:56	7:04	7:10	7:18	–	7:27a
315	7:20	7:33	7:40	7:50	7:57	8:05	8:12	8:20	–	8:30
325	–	–	–	8:28	8:35	8:43	8:50	8:59	9:03	9:15
315	8:20	8:33	8:40	8:50	8:57	9:05	9:12	9:21	–	9:31
315	9:18	9:32	9:40	9:50	9:57	10:05	10:12	10:22	–	10:32
315	10:16	10:30	10:39	10:50	10:57	11:05	11:12	11:23	–	11:33
325	–	–	–	11:25	11:32	11:41	11:49	**12:00**	**12:04**	**12:16p**
315	11:16	11:30	11:39	11:50	11:57	**12:06**	**12:14**	**12:25**	**–**	**12:36**
315	**12:16**	**12:30**	**12:39**	**12:50**	**12:57**	**1:06**	**1:14**	**1:25**	**–**	**1:36**
315	**1:16**	**1:30**	**1:39**	**1:50**	**1:57**	**2:06**	**2:14**	**2:25**	**–**	**2:36**
325	–	–	–	**2:26**	**2:33**	**2:42**	**2:50**	**3:01**	**3:05**	**3:16**
315	**2:16**	**2:30**	**2:39**	**2:50**	**2:57**	**3:06**	**3:14**	**3:25**	**–**	**3:36**
315	**3:16**	**3:30**	**3:39**	**3:50**	**3:57**	**4:06**	**4:14**	**4:25**	**–**	**4:36**
325	**4:16**	**4:30**	**4:39**	**4:50**	**4:57**	**5:06**	**5:14**	**5:25**	**–**	**5:36**
325	–	–	–	**5:27**	**5:34**	**5:43**	**5:51**	**6:01**	**6:05**	**6:16**
315	**5:16**	**5:30**	**5:39**	**5:50**	**5:57**	**6:06**	**6:14**	**6:24**	**–**	**6:35**
315	**6:17**	**6:30**	**6:39**	**6:50**	**6:57**	**7:04**	**7:12**	**7:22**	**–**	**7:32**
315	**7:18**	**7:31**	**7:39**	**7:50**	**7:57**	**8:04**	**8:10**	**8:20**	**–**	**8:30**
315	**8:19**	**8:32**	**8:39**	**8:50**	**8:57**	**9:04**	**9:10**	**9:20**	**–**	**9:30**

Route 325 Service
Servicio de la Ruta 325

All persons entering Camp Pendleton must have valid identification and are subject to search at any time.
Todas las personas que ingresen a Camp Pendleton deben tener una identificación válida y están sujetas a registros en cualquier momento.

BE PREPARED: Base access subject to discretion of Camp Pendleton personnel. If passenger is declined access to the Base, it is the passenger's responsibility to be prepared to consider other transit options. For more information on *Traveling through Camp Pendleton,* see Rider's Guide index.

Esté listo: El acceso a la base es a discreción del personal de Camp Pendleton. Si un pasajero es negado el acceso a la base, es su responsabilidad encontrar otras opciones de transporte. Para obtener más información sobre cómo *viajar a través de Camp Pendleton,* refiérase al Índice de la Guía de Pasajeros.

315 Carlsbad Village Station to 14 Area
Carlsbad Village Station a 14 Area

See pg. 6 for Holiday schedules/Ver pág. 276 para obtener los horarios de días festivos

Sunday
Northbound to 14 Area
Domingo • Dirección hacia el norte a 14 Area

Route Ruta	Carlsbad Village Station	Plaza Camino Real Transit Center	Vista Way & Via Esmarca	MiraCosta College	Thunder Dr. & Vista Way	Oceanside Bl. & Avenida Del Oro	Town Center North	San Luis Rey Transit Center	Vandegrift & 16th St.
	1	3	4	5	6	7	8	9	10
315	6:58	7:08	7:11	7:19	7:25	7:35	7:45	7:54	8:10a
315	7:56	8:07	8:11	8:19	8:25	8:35	8:46	8:55	9:11
315	8:55	9:06	9:11	9:19	9:25	9:35	9:46	9:55	10:11
315	9:52	10:04	10:09	10:17	10:25	10:35	10:46	10:55	11:11
315	10:51	11:04	11:09	11:17	11:25	11:35	11:46	11:55	**12:11p**
315	11:51	**12:04**	**12:09**	**12:17**	**12:25**	**12:35**	**12:46**	**12:55**	**1:11**
315	**12:51**	**1:04**	**1:09**	**1:17**	**1:25**	**1:35**	**1:46**	**1:55**	**2:11**
315	**1:51**	**2:04**	**2:09**	**2:17**	**2:25**	**2:35**	**2:46**	**2:55**	**3:11**
315	**2:51**	**3:04**	**3:09**	**3:17**	**3:25**	**3:35**	**3:46**	**3:55**	**4:11**
315	**3:49**	**4:03**	**4:09**	**4:17**	**4:25**	**4:35**	**4:46**	**4:55**	**5:11**
315	**4:49**	**5:03**	**5:09**	**5:17**	**5:25**	**5:35**	**5:47**	**5:56**	**6:12**
315	**5:51**	**6:04**	**6:10**	**6:18**	**6:25**	**6:35**	**6:47**	**6:56**	**7:12**
315	**6:53**	**7:05**	**7:10**	**7:18**	**7:25**	**7:35**	**7:47**	**7:56**	**8:12**
315	**7:53**	**8:05**	**8:10**	**8:18**	**8:25**	**8:35**	**8:46**	**8:55**	**9:10**
315	**8:53**	**9:05**	**9:10**	**9:18**	**9:25**	**9:35**	**9:46**	**9:55**	**10:10**

All persons entering Camp Pendleton must have valid identification and are subject to search at any time.
Todas las personas que ingresen a Camp Pendleton deben tener una identificación válida y están sujetas a registros en cualquier momento.

BE PREPARED: Base access subject to discretion of Camp Pendleton personnel. If passenger is declined access to the Base, it is the passenger's responsibility to be prepared to consider other transit options. For more information on *Traveling through Camp Pendleton,* see Rider's Guide index.

Esté listo: El acceso a la base es a discreción del personal de Camp Pendleton. Si un pasajero es negado el acceso a la base, es su responsabilidad encontrar otras opciones de transporte. Para obtener más información sobre cómo *viajar a través de Camp Pendleton,* refiérase al Índice de la Guía de Pasajeros.

315 Carlsbad Village Station to 14 Area
Carlsbad Village Station a 14 Area

See pg. 6 for Holiday schedules/Ver pág. 276 para obtener los horarios de días festivos

Sunday
Southbound to Carlsbad Village Station
Domingo • Dirección hacia el sur a la Estación Carlsbad Village

Route Ruta	Vandegrift & 16th St.	San Luis Rey Transit Center	Town Center North	Oceanside Bl. & Avenida Del Oro	Thunder Dr. & Vista Way	MiraCosta College	Vista Way & Via Esmarca	Plaza Camino Real Transit Center	Carlsbad Village Station
	10	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**1**
315	6:21	6:33	6:40	6:50	6:56	7:04	7:10	7:18	7:27a
315	7:20	7:33	7:40	7:50	7:57	8:05	8:12	8:20	8:30
315	8:20	8:33	8:40	8:50	8:57	9:05	9:12	9:21	9:31
315	9:18	9:32	9:40	9:50	9:57	10:05	10:12	10:22	10:32
315	10:16	10:30	10:39	10:50	10:57	11:05	11:12	11:23	11:33
315	11:16	11:30	11:39	11:50	11:57	**12:06**	**12:14**	**12:25**	**12:36p**
315	**12:16**	**12:30**	**12:39**	**12:50**	**12:57**	**1:06**	**1:14**	**1:25**	**1:36**
315	**1:16**	**1:30**	**1:39**	**1:50**	**1:57**	**2:06**	**2:14**	**2:25**	**2:36**
315	**2:16**	**2:30**	**2:39**	**2:50**	**2:57**	**3:06**	**3:14**	**3:25**	**3:36**
315	**3:16**	**3:30**	**3:39**	**3:50**	**3:57**	**4:06**	**4:14**	**4:25**	**4:36**
315	**4:16**	**4:30**	**4:39**	**4:50**	**4:57**	**5:06**	**5:14**	**5:25**	**5:36**
315	**5:16**	**5:30**	**5:39**	**5:50**	**5:57**	**6:06**	**6:14**	**6:24**	**6:35**
315	**6:17**	**6:30**	**6:39**	**6:50**	**6:57**	**7:04**	**7:12**	**7:22**	**7:32**
315	**7:18**	**7:31**	**7:39**	**7:50**	**7:57**	**8:04**	**8:10**	**8:20**	**8:30**
315	**8:19**	**8:32**	**8:39**	**8:50**	**8:57**	**9:04**	**9:10**	**9:20**	**9:30**

All persons entering Camp Pendleton must have valid identification and are subject to search at any time.
Todas las personas que ingresen a Camp Pendleton deben tener una identificación válida y están sujetas a registros en cualquier momento.

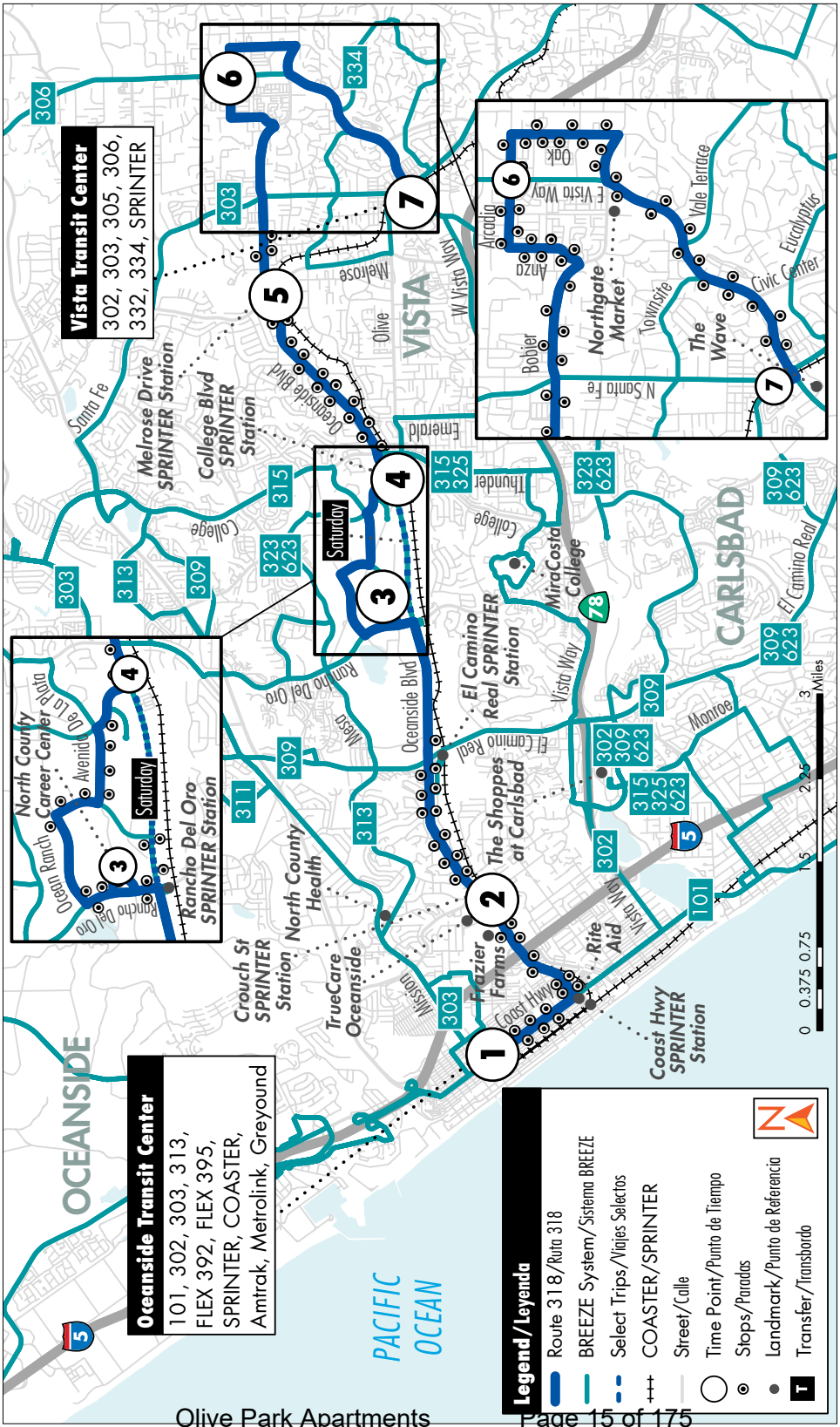
BE PREPARED: Base access subject to discretion of Camp Pendleton personnel. If passenger is declined access to the Base, it is the passenger's responsibility to be prepared to consider other transit options. For more information on *Traveling through Camp Pendleton,* see Rider's Guide index.
Esté listo: El acceso a la base es a discreción del personal de Camp Pendleton. Si un pasajero es negado el acceso a la base, es su responsabilidad encontrar otras opciones de transporte. Para obtener más información sobre cómo *viajar a través de Camp Pendleton,* refiérase al Índice de la Guía de Pasajeros.

318 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
- Albertsons
- Alta Vista High School
- VA Clinic



318 Oceanside to Vista via Oceanside Blvd. & Bobier Dr.

Oceanside a Vista vía Oceanside Blvd. y Bobier Dr.

See pg. 6 for Holiday schedules/Ver pág. 276 para obtener los horarios de días festivos

Monday - Friday
Eastbound to Vista
Lunes a Viernes • Dirección hacia el este a Vista

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
–	–	–	–	4:33	4:40	4:52a
5:04	5:10	5:16	5:22	5:30	5:40	5:52
6:01	6:07	6:14	6:21	6:29	6:40	6:52
6:48	6:56	7:05	7:12	7:21	7:32	7:52
7:54	8:03	8:11	8:18	8:27	8:38	8:52
8:51	9:00	9:08	9:16	9:25	9:36	9:52
9:51	10:00	10:08	10:16	10:25	10:36	10:52
10:51	11:00	11:08	11:16	11:25	11:36	11:52
11:49	11:58	**12:07**	**12:16**	**12:25**	**12:36**	**12:52p**
12:45	**12:55**	**1:04**	**1:13**	**1:22**	**1:33**	**1:52**
1:44	**1:54**	**2:04**	**2:13**	**2:22**	**2:33**	**2:52**
2:46	**2:57**	**3:07**	**3:16**	**3:25**	**3:36**	**3:52**
3:46	**3:57**	**4:06**	**4:15**	**4:24**	**4:36**	**4:52**
4:49	**4:59**	**5:08**	**5:17**	**5:27**	**5:39**	**5:53**
5:53	**6:02**	**6:11**	**6:19**	**6:27**	**6:38**	**6:52**
6:56	**7:05**	**7:12**	**7:20**	**7:28**	**7:38**	**7:52**

Route 318 does not operate on Sundays or when a Sunday schedule is operated. See page 6 (Holiday Transit Schedule) for details.
La ruta 318 no funciona los domingos ni cuando haya programado un horario de domingo. Consulte la pág. 276 (calendario de tránsito para días festivos) para obtener más detalles.

318 Oceanside to Vista via Oceanside Blvd. & Bobier Dr.

Oceanside a Vista vía Oceanside Blvd. y Bobier Dr.

See pg. 6 for Holiday schedules/Ver pág. 276 para obtener los horarios de días festivos

Monday - Friday
Westbound to Oceanside
Lunes a Viernes • Dirección hacia el oeste a Oceanside

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**
5:06	5:16	5:22	5:27	5:33	5:41	5:51a
6:07	6:18	6:25	6:32	6:38	6:47	6:58
7:06	7:19	7:32	7:40	7:46	7:57	8:09
8:06	8:18	8:26	8:33	8:39	8:50	9:03
9:06	9:17	9:25	9:32	9:38	9:49	10:02
10:06	10:18	10:26	10:33	10:39	10:50	11:03
11:06	11:18	11:26	11:33	11:39	11:50	**12:04p**
12:06	**12:19**	**12:27**	**12:34**	**12:40**	**12:51**	**1:05**
1:06	**1:20**	**1:28**	**1:36**	**1:42**	**1:53**	**2:07**
2:06	**2:20**	**2:30**	**2:39**	**2:46**	**2:57**	**3:11**
3:06	**3:20**	**3:29**	**3:39**	**3:46**	**3:57**	**4:11**
4:06	**4:20**	**4:29**	**4:38**	**4:45**	**4:56**	**5:10**
5:06	**5:19**	**5:28**	**5:37**	**5:44**	**5:53**	**6:07**
6:06	**6:19**	**6:27**	**6:34**	**6:40**	**6:49**	**7:01**
7:06	**7:18**	**7:26**	**7:32**	**7:38**	**7:47**	**7:59**

Route 318 does not operate on Sundays or when a Sunday schedule is operated. See page 6 (Holiday Transit Schedule) for details.
La ruta 318 no opera los domingos ni cuando haya programado un horario de domingo. Consulte la pág. 276 (calendario de tránsito para días festivos) para obtener más detalles.

318 Oceanside to Vista via Oceanside Blvd. & Bobier Dr.

Oceanside a Vista vía Oceanside Blvd. y Bobier Dr.

See pg. 6 for Holiday schedules/Ver pág. 276 para obtener los horarios de días festivos

Saturday
Eastbound to Vista
Sábado • Dirección hacia el este a Vista

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**
–	–	–	–	5:35	5:42	5:52a
6:09	6:15	–	6:25	6:31	6:40	6:52
7:07	7:14	–	7:24	7:30	7:40	7:52
8:04	8:12	–	8:22	8:29	8:39	8:52
9:03	9:11	–	9:21	9:28	9:38	9:52
10:01	10:11	–	10:21	10:28	10:38	10:52
11:00	11:10	–	11:21	11:28	11:38	11:52
12:00	**12:10**	**–**	**12:21**	**12:28**	**12:38**	**12:52p**
1:00	**1:10**	**–**	**1:21**	**1:28**	**1:38**	**1:52**
2:00	**2:10**	**–**	**2:21**	**2:28**	**2:38**	**2:52**
3:00	**3:10**	**–**	**3:21**	**3:28**	**3:38**	**3:52**
4:00	**4:10**	**–**	**4:21**	**4:28**	**4:38**	**4:52**
5:00	**5:10**	**–**	**5:21**	**5:28**	**5:38**	**5:52**
6:02	**6:12**	**–**	**6:23**	**6:29**	**6:39**	**6:52**
7:04	**7:12**	**–**	**7:23**	**7:29**	**7:39**	**7:52**

Route 318 does not operate on Sundays or when a Sunday schedule is operated. See page 6 (Holiday Transit Schedule) for details.
La ruta 318 no opera los domingos ni cuando haya programado un horario de domingo. Consulte la pág. 276 (calendario de tránsito para días festivos) para obtener más detalles.

318 Oceanside to Vista via Oceanside Blvd. & Bobier Dr.

Oceanside a Vista vía Oceanside Blvd. y Bobier Dr.

See pg. 6 for Holiday schedules/Ver pág. 276 para obtener los horarios de días festivos

Saturday
Westbound to Oceanside
Sábado • Dirección hacia el oeste a Oceanside

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**
6:06	6:15	6:22	6:27	–	6:36	6:44a
7:06	7:16	7:23	7:29	–	7:38	7:46
8:06	8:16	8:23	8:29	–	8:38	8:48
9:06	9:16	9:23	9:30	–	9:40	9:50
10:06	10:17	10:24	10:31	–	10:41	10:52
11:06	11:18	11:25	11:32	–	11:42	11:53
12:06	**12:18**	**12:25**	**12:32**	**–**	**12:42**	**12:53p**
1:06	**1:18**	**1:25**	**1:32**	**–**	**1:42**	**1:53**
2:06	**2:18**	**2:25**	**2:32**	**–**	**2:42**	**2:53**
3:06	**3:18**	**3:25**	**3:32**	**–**	**3:42**	**3:53**
4:06	**4:18**	**4:25**	**4:32**	**–**	**4:42**	**4:53**
5:06	**5:18**	**5:25**	**5:32**	**–**	**5:42**	**5:53**
6:06	**6:17**	**6:24**	**6:30**	**–**	**6:40**	**6:51**
7:06	**7:17**	**7:24**	**7:30**	**–**	**7:40**	**7:49**

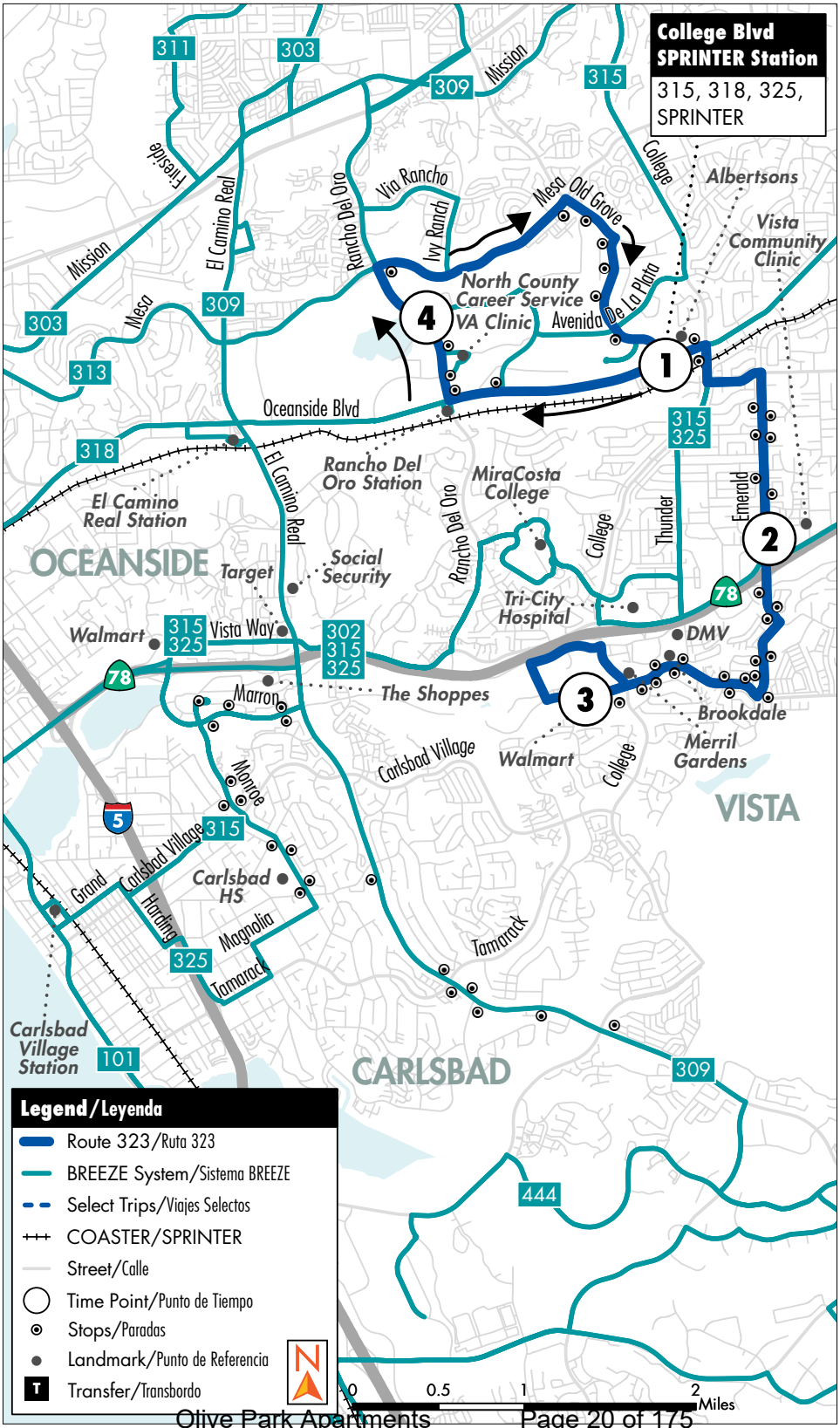
Route 318 does not operate on Sundays or when a Sunday schedule is operated. See page 6 (Holiday Transit Schedule) for details.
La ruta 318 no opera los domingos ni cuando haya programado un horario de domingo. Consulte la pág. 276 (calendario de tránsito para días festivos) para obtener más detalles.

323 College Blvd. SPRINTER Station to Quarry Creek

Estación College Blvd. de SPRINTER vía Quarry Creek

M-F
L-V

Destinations/Destinos
- Quarry Creek (Walmart)
- DMV
- Salvation Army
- Vista Community Clinic
- VA Clinic



323 College Blvd. SPRINTER Station to Quarry Creek
Estación College Blvd. de SPRINTER vía Quarry Creek

See pg. 6 for Holiday schedules/Ver pág. 276 para obtener los horarios de días festivos

Monday - Friday
Southbound to Quarry Creek/Plaza Camino Real
Lunes a Viernes • Dirección hacia el sur a Quarry Creek/Plaza Camino Real

#Oceanside Bl & Avenida Del Oro	Emerald Dr. & West Dr.	Quarry Creek Plaza (Walmart)
1	**2**	**3**
6:22	6:28	6:41a
7:20	7:26	7:41
8:20	8:26	8:42
9:20	9:26	9:40
10:20	10:26	10:41
11:20	11:26	11:42
12:20	**12:26**	**12:42p**
1:20	**1:26**	**1:42**
2:18	**2:24**	**2:41**
3:18	**3:25**	**3:42**
4:18	**4:25**	**4:41**
5:18	**5:25**	**5:41**
6:18	**6:24**	**6:39**

Route 323 does not operate on Saturdays, Sundays, or holidays.
La Ruta 323 no opera los sábados, domingos o en días festivos.

 # Board southbound Route 323 buses on south side of Oceanside Blvd. by Panda Express.
Subir a bordo de los autobuses de la Ruta 323, dirección hacia el sur, en el lado sur de Oceanside Blvd. cerca de Panda Express.

323 College Blvd. SPRINTER Station to Quarry Creek
Estación College Blvd. de SPRINTER vía Quarry Creek

See pg. 6 for Holiday schedules/Ver pág. 276 para obtener los horarios de días festivos

Monday - Friday
Northbound to College Blvd. SPRINTER Station
Lunes a Viernes • Dirección hacia el norte a College Blvd. Estación de SPRINTER

Quarry Creek Plaza (Walmart)	Emerald Dr. & West Dr.	#Oceanside Bl & Avenida Del Oro Westbound	Rancho Del Oro Dr. & Ocean Ranch Blvd.	Oceanside Bl & Avenida Del Oro Eastbound
3	**2**	**1**	**4**	**1**
5:45	5:53	6:04	6:07	6:19a
6:43	6:52	7:02	7:05	7:18
7:45	7:54	8:03	8:06	8:18
8:45	8:54	9:03	9:06	9:18
9:44	9:53	10:03	10:06	10:18
10:44	10:53	11:03	11:06	11:18
11:44	11:53	**12:02**	**12:05**	**12:17p**
12:44	**12:53**	**1:02**	**1:05**	**1:17**
1:44	**1:53**	**2:02**	**2:05**	**2:17**
2:44	**2:53**	**3:02**	**3:06**	**3:20**
3:44	**3:53**	**4:03**	**4:07**	**4:20**
4:44	**4:53**	**5:03**	**5:07**	**5:20**
5:44	**5:53**	**6:04**	**6:07**	**6:19**

Route 323 does not operate on Saturdays, Sundays, or holidays.
La Ruta 323 no opera los sábados, domingos o en días festivos.

 # Board northbound Route 323 buses on the north side of Oceanside Blvd. by KFC.
Subir a bordo de los autobuses de la Ruta 323, dirección hacia el norte, en el lado norte de Oceanside Blvd. cerca de KFC.

623

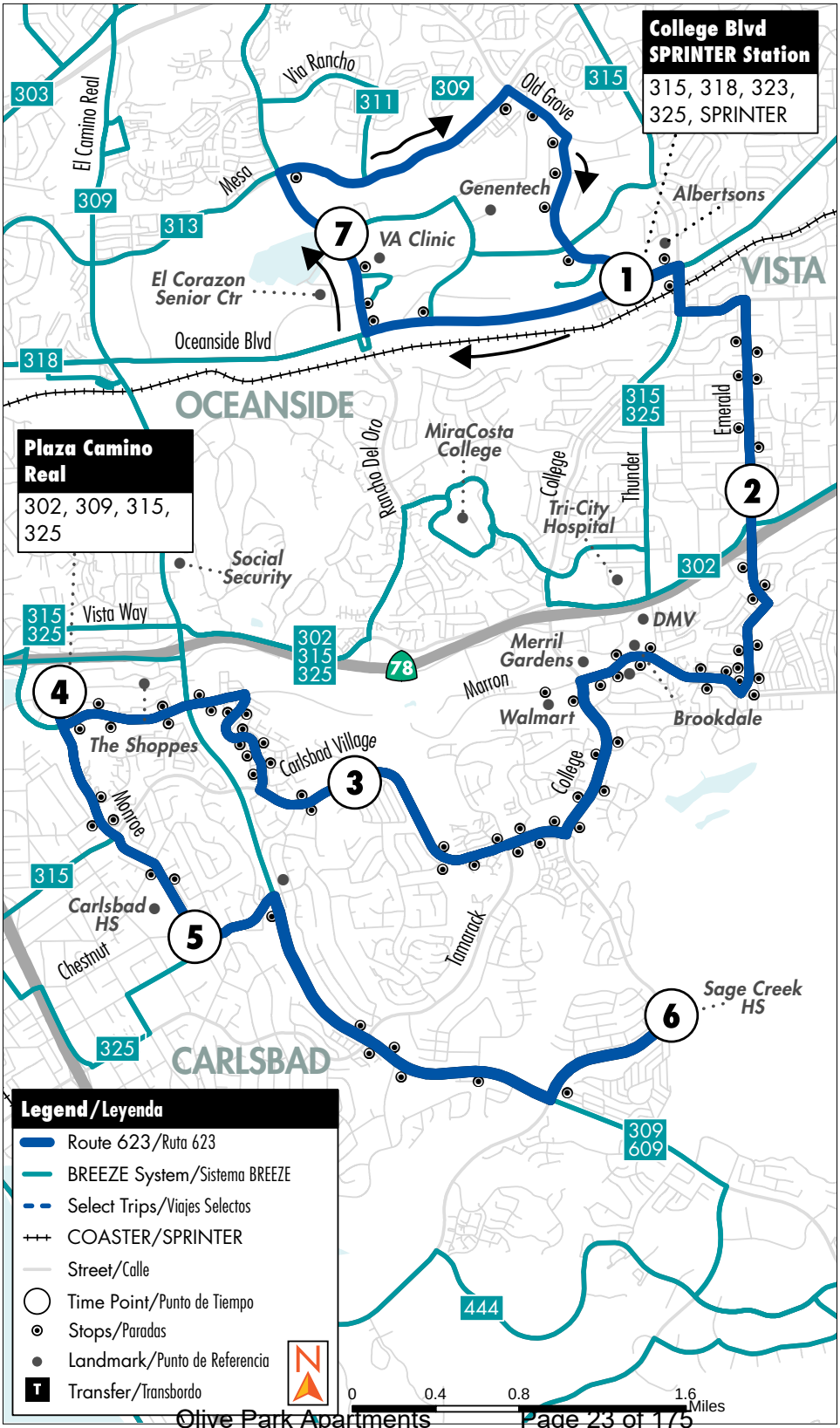
College Blvd. SPRINTER Station to Sage Creek High School

College Blvd. SPRINTER Station a Sage Creek High School

M-F
L-V

Destinations/Destinos

- Plaza Camino Real
- Quarry Creek (Walmart)
- The Shoppes at Carlsbad
- Carlsbad High School
- Sage Creek High School
- DMV
- Salvation Army
- Vista Community Clinic
- Valley Middle School
- VA Clinic



623 College Blvd. SPRINTER Station to Sage Creek High School

College Blvd. SPRINTER Station a Sage Creek High School

See pg. 6 for Holiday schedules/Ver pág. 276 para obtener los horarios de días festivos

Monday - Friday
Southbound to Sage Creek High School
Lunes a Viernes • Dirección hacia el sur a Sage Creek High School

#Oceanside Bl & Avenida Del Oro	Emerald Dr. & West Dr.	Carlsbad Village Dr. & Santa Clara Way	Plaza Camino Real Transit Center	Chestnut Ave. & Monroe St. (Carlsbad HS)	Cannon Rd. & College Blvd. (Sage Creek HS)
1	**2**	**3**	**4**	**5**	**6**
*7:15	*7:21	*7:36	*7:52	*8:04	*8:15a

Monday - Friday
Northbound to College Blvd. SPRINTER Station
Lunes a Viernes • Dirección hacia el norte a College Blvd. Estación de SPRINTER

Cannon Rd. & College Blvd. (Sage Creek HS)	Chestnut Ave. & Monroe St. (Carlsbad HS)	Plaza Camino Real Transit Center	Carlsbad Village Dr. & Santa Clara Way	Emerald Dr. & West Dr.	#Oceanside Bl & Avenida Del Oro Westbound	Rancho Del Oro Dr. & Ocean Ranch Blvd.	Oceanside Bl & Avenida Del Oro Eastbound
6	**5**	**4**	**3**	**2**	**1**	**7**	**1**
*1:26	*1:35	*1:43	*1:50	*2:07	*2:15	*2:18	*2:30p
**2:45	**2:56	**3:04	**3:11	**3:28	**3:39	**3:42	**3:54
***3:45	***3:56	***4:04	***4:11	***4:28	***4:40	***4:43	***4:56

Trips will operate when NCTD runs weekday service. NCTD will update trip planning applications and GoNCTD.com if this service changes.

Los viajes funcionarán cuando NCTD opere el servicio en días laborables. Si este servicio se modifica, NCTD actualizará las aplicaciones de planificación de viajes y el sitio **GoNCTD.com**.

* **Operates Monday only.**
Opera solamente los Lunes.

** **Operates Wednesday only.**
Opera solamente los Miércoles.

*** **Operates Monday, Tuesday, Thursday, and Friday.**
Opera Lunes, Martes, Jueves y Viernes.

Please note, BREEZE "school tripper" bus service only runs while Carlsbad High School and/or Sage Creek High School are in session for in-person learning and are subject to change based on bell times. NCTD will update trip planning applications and GoNCTD.com if this service changes.
Tenga en cuenta que el servicio de autobús "school tripper" de BREEZE solo opera mientras Carlsbad High School y/o Sage Creek High School se encuentren abiertas para clases presenciales y está sujeto a cambios en función de los horarios de entrada y salida. NCTD actualizará las aplicaciones de planificación de viaje y GoNCTD.com si este servicio cambia.

Appendix C

City Approved Project Information Form

PROJECT INFORMATION FORM (PIF)

THE FOLLOWING IS TO BE COMPLETED BY THE PROJECT APPLICANT:

PROJECT INFORMATION FORM			
1.	**PROJECT DESCRIPTION:** Olive Park Apts		
2.	**PROJECT LOCATION:** Western terminus of Olive Drive, west of College Blvd		
3.	**LAND USE:** 290 Multi-Famliy Units **SIZE/DENSITY:** 8.27 du/acre (290 du/35.06 acres)		
4.	**ZONING AND LAND USE CONSISTENT WITH ADOPTED GENERAL PLAN?**	☑ Yes	☐ No
5.	**PROJECT LOCATED IN TRANSIT PRIORITY AREA[1], SMART GROWTH AREA[2], OR LOW VMT AREA[3]?**	☑ Yes	☐ No
6.	**PROJECT TRIP GENERATION:** 1,378 **ADT**	☐ < 200 ADT ☐ ≥ 200 ADT ☑ ≥ 1,000 ADT ☐ ≥ 2,400 ADT	
	ATTACHMENTS		
A.	**PROJECT LOCATION MAP**	☑ Attached	
B.	**PROJECT TRIP DISTRIBUTION**	☑ Attached	
C.	**PROJECT TRIP ASSIGNMENT**	☑ Attached	

1) Projects located in a TPA must be able to access the transit station within a ½ mile walking distance or 6 minute walk continuously without discontinuity of sidewalk or obstructions to the route. Qualifying transit stops means a site containing an existing rail transit station served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods (OPR, 2017). A high-quality transit corridor may also be considered if a corridor with fixed route bus service has service intervals no longer than 15 minutes during peak commute hours (OPR, 2017).
(2) See Appendix B.
(3) Based on the most recent SANDAG SB 743 Screening Map. Example shown in Appendix C.

TO BE COMPLETED BY CITY STAFF AND RETURNED TO PROJECT APPLICANT

PROJECT STUDY REQUIREMENTS				
1)	**Does the project require a CEQA VMT analysis?**	☐ Yes	☑ No	☐ Incomplete[(1)]
	A. If yes, does the project require a SANDAG Model Run?	☐ Yes	☐ No	
2a)	**Does the project require a Local Transportation Study?**	☑ Yes	☐ No	☐ Incomplete[(1)]
	OR			
2b)	**Does the project require a Local Transportation Assessment?**	☐ Yes	☑ No	☐ Incomplete[(1)]

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

Shannon Vitale — Digitally signed by Shannon Vitale DN: cn=Shannon Vitale, ou=Building, email=SVitale@oceansideca.org Date: 2024.02.14 09:35:11 -08'00'

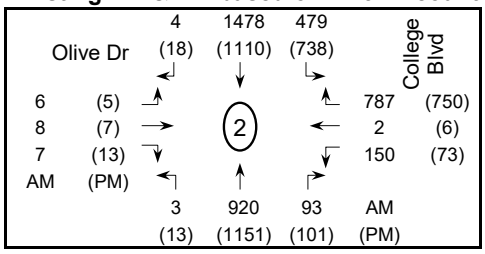
Planning Division Date

Tam Tran — Digitally signed by Tam Tran DN: cn=Tam Tran, ou=Traffic, email=TTran@oceansideca.org Date: 2024.02.08 09:51:47 -08'00'

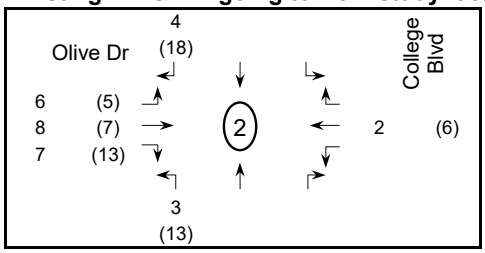
Transportation Engineering Section Date

Distribution based on existing residential traffic using Olive Dr west of College Blvd because the neighborhood is all residential and does not have a secondary access.

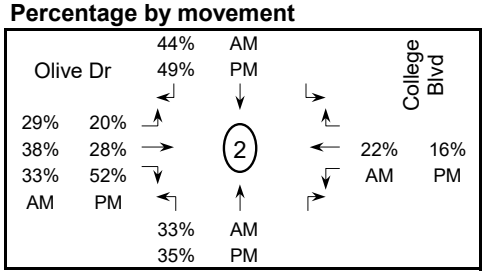
Existing AM & PM based on 1/25/24 count with schools in session



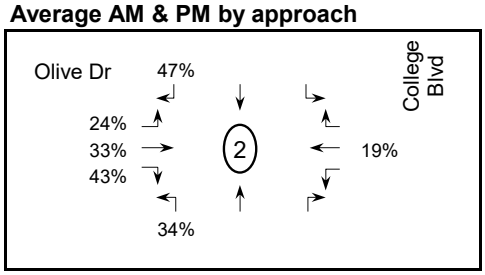
Existing AM & PM going to/from study location



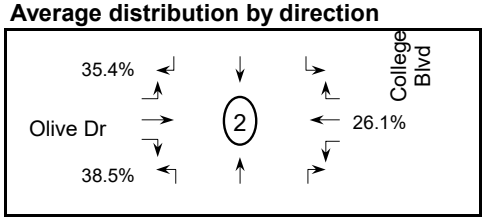
Percentage by movement



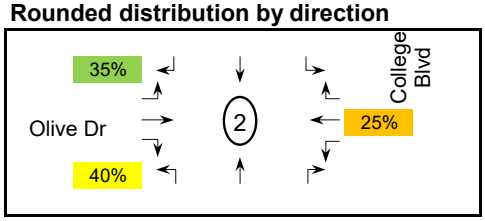
Average AM & PM by approach

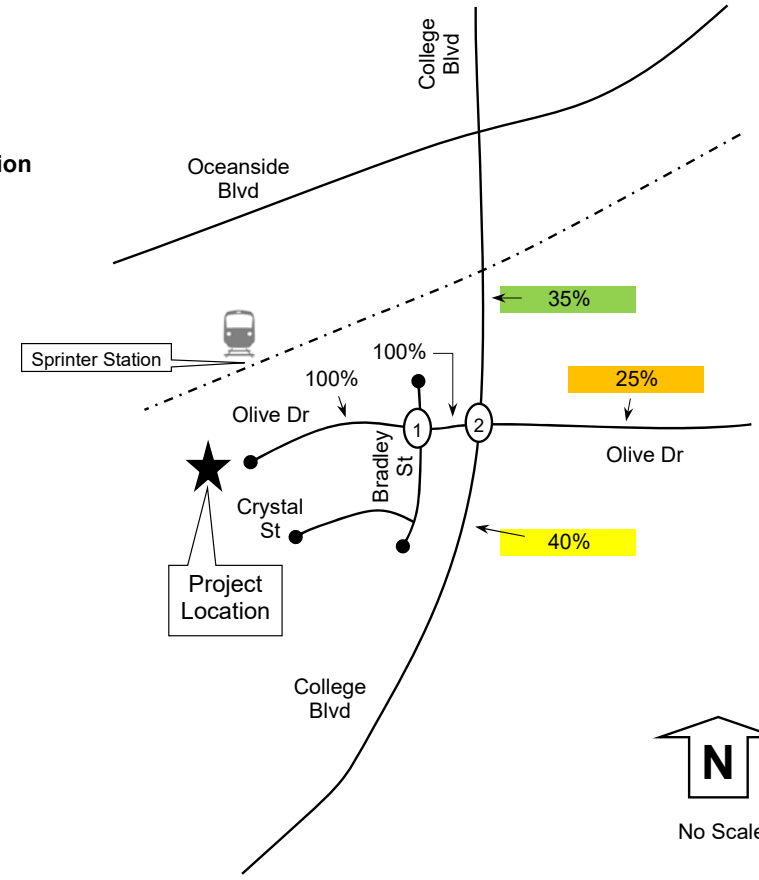


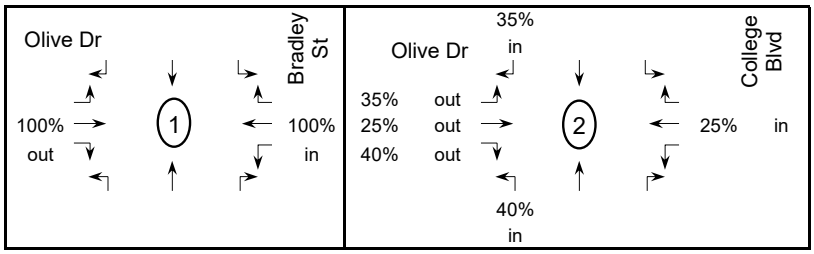
Average distribution by direction



Rounded distribution by direction







Proposed Trip Generation and Assignment

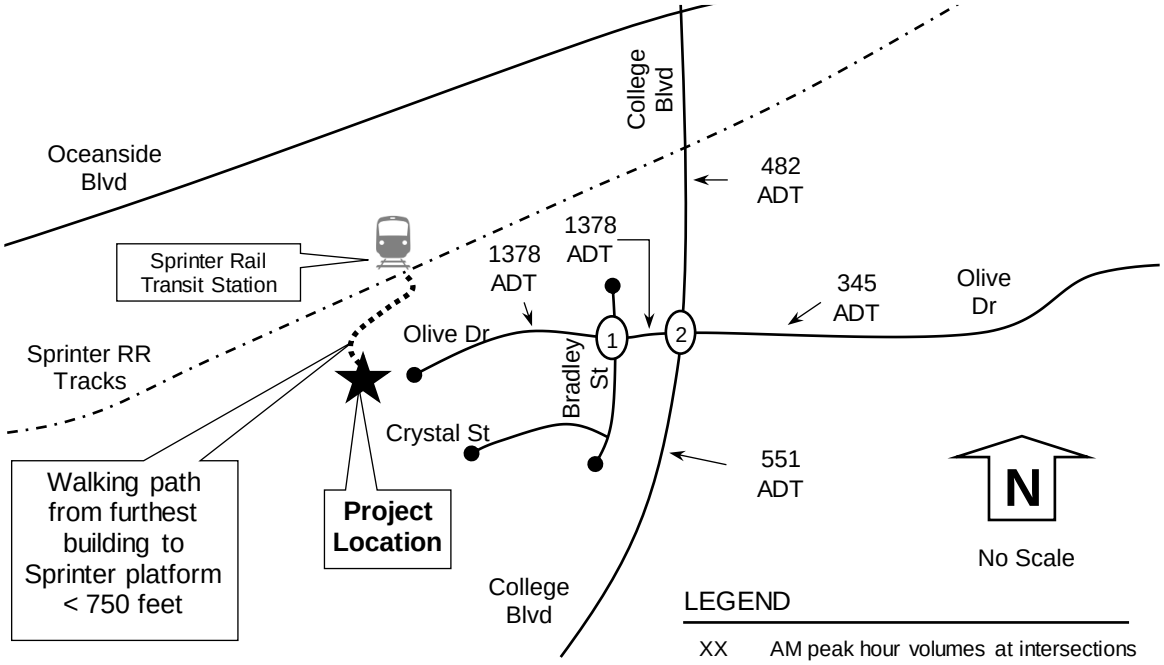
Trip generation is based on most current 11th Edition ITE Trip Generation Manual vs. SANDAG because ITE provides a trip rate that better matches the project details as follows. ITE has a trip rate specifically for multi-family buildings that are between 4 and 10 stories tall AND located within ½ mile of a rail transit station. The project has 4 stories of residential units and has a walkig distance of less than 750 feet to the Sprinter rail transit station. Furthermore, SANDAG trip generation for apartments is from 1979 while ITE data is from the 1990s through 2020s.

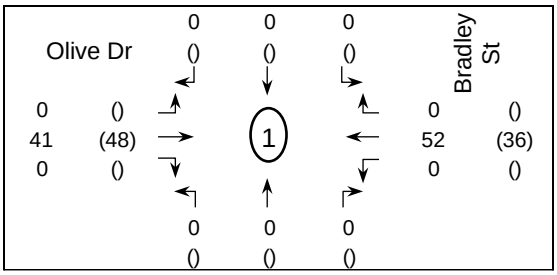
Trip Generation

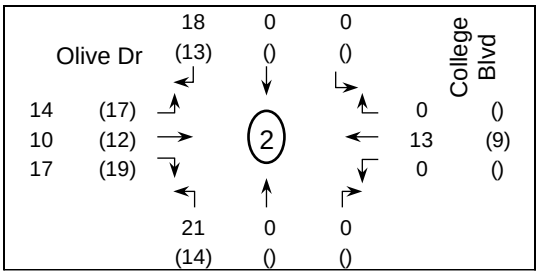
ITE 11th Edition Code and Land Use Description	Rates & Size			*Daily* Trips	AM Peak Hour IN	AM Peak Hour OUT	AM Peak Hour Total	PM Peak Hour IN	PM Peak Hour OUT	PM Peak Hour Total
ITE (221) Weekday Multi-Family	Rates:	4.75	/DU		56%	44%	0.32	43%	57%	0.29
with 4-10 floors close to transit	Size:	290	DU	Trips: **1,378**	52	41	**93**	36	48	**84**

Source: Institute of Transportation Engineers (ITE) 11th Edition *Trip Generation* . Daily: 24 hour traffic.

Trip Assignment







Multifamily Housing (Mid-Rise)
Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

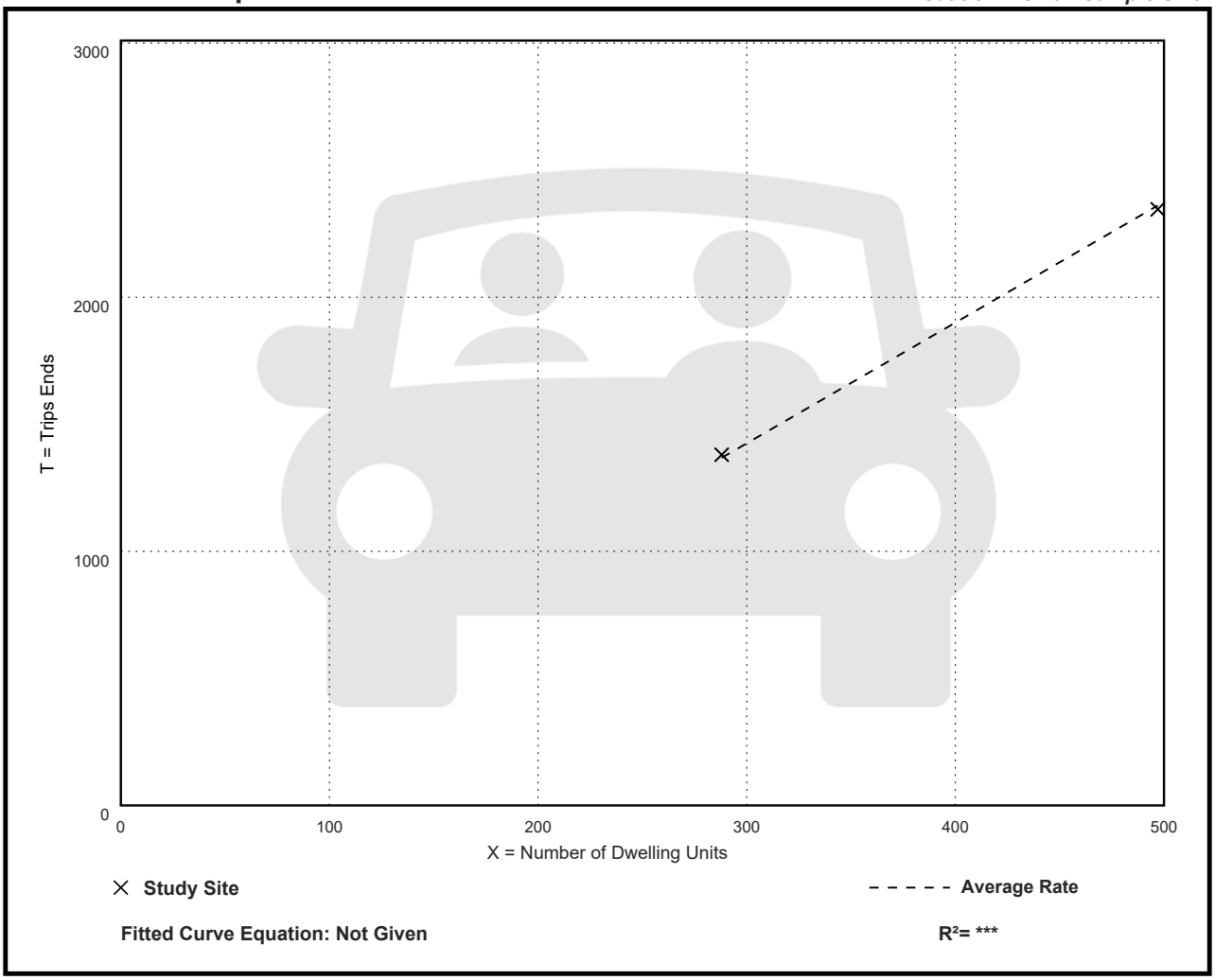
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Dwelling Units: 393
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.75	4.72 - 4.79	***

Data Plot and Equation

Caution – Small Sample Size



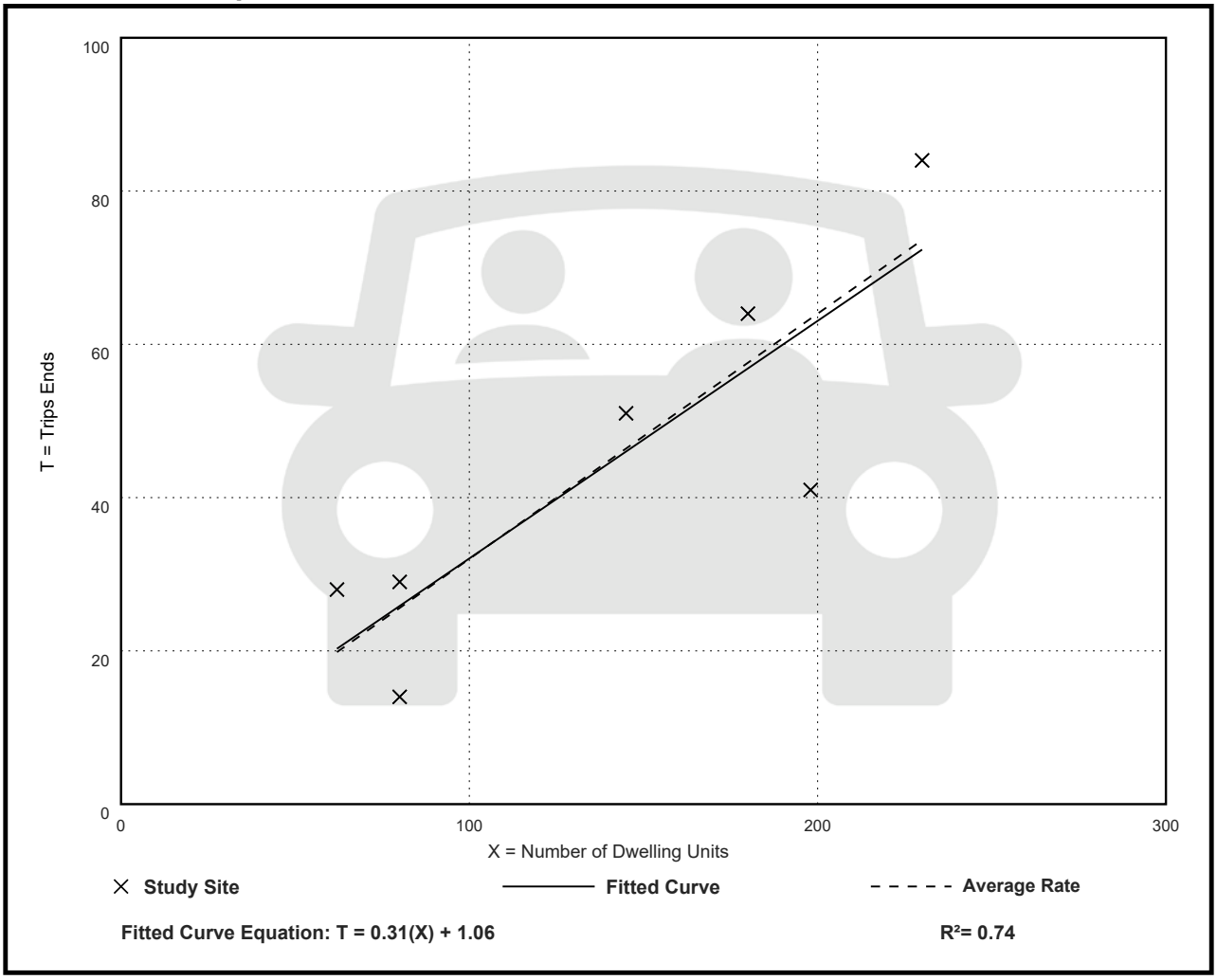
Multifamily Housing (Mid-Rise)
Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 7
Avg. Num. of Dwelling Units: 139
Directional Distribution: 56% entering, 44% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.32	0.18 - 0.45	0.09

Data Plot and Equation



Fitted Curve Equation: T = 0.31(X) + 1.06

R^2= 0.74

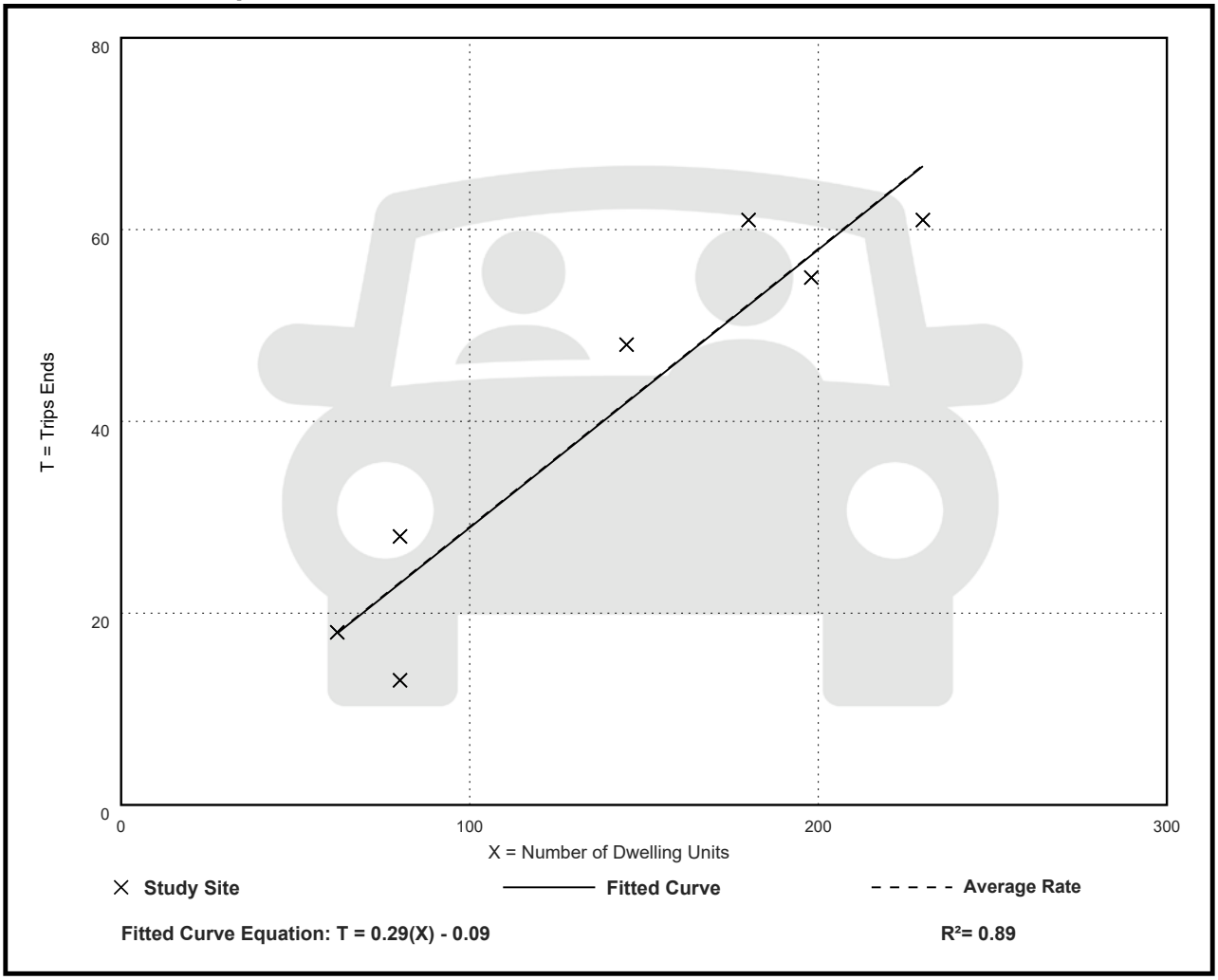
Multifamily Housing (Mid-Rise)
Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 7
Avg. Num. of Dwelling Units: 139
Directional Distribution: 43% entering, 57% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.29	0.16 - 0.35	0.05

Data Plot and Equation



Appendix D

Excerpts from City of Oceanside VMT and LOS Guidelines

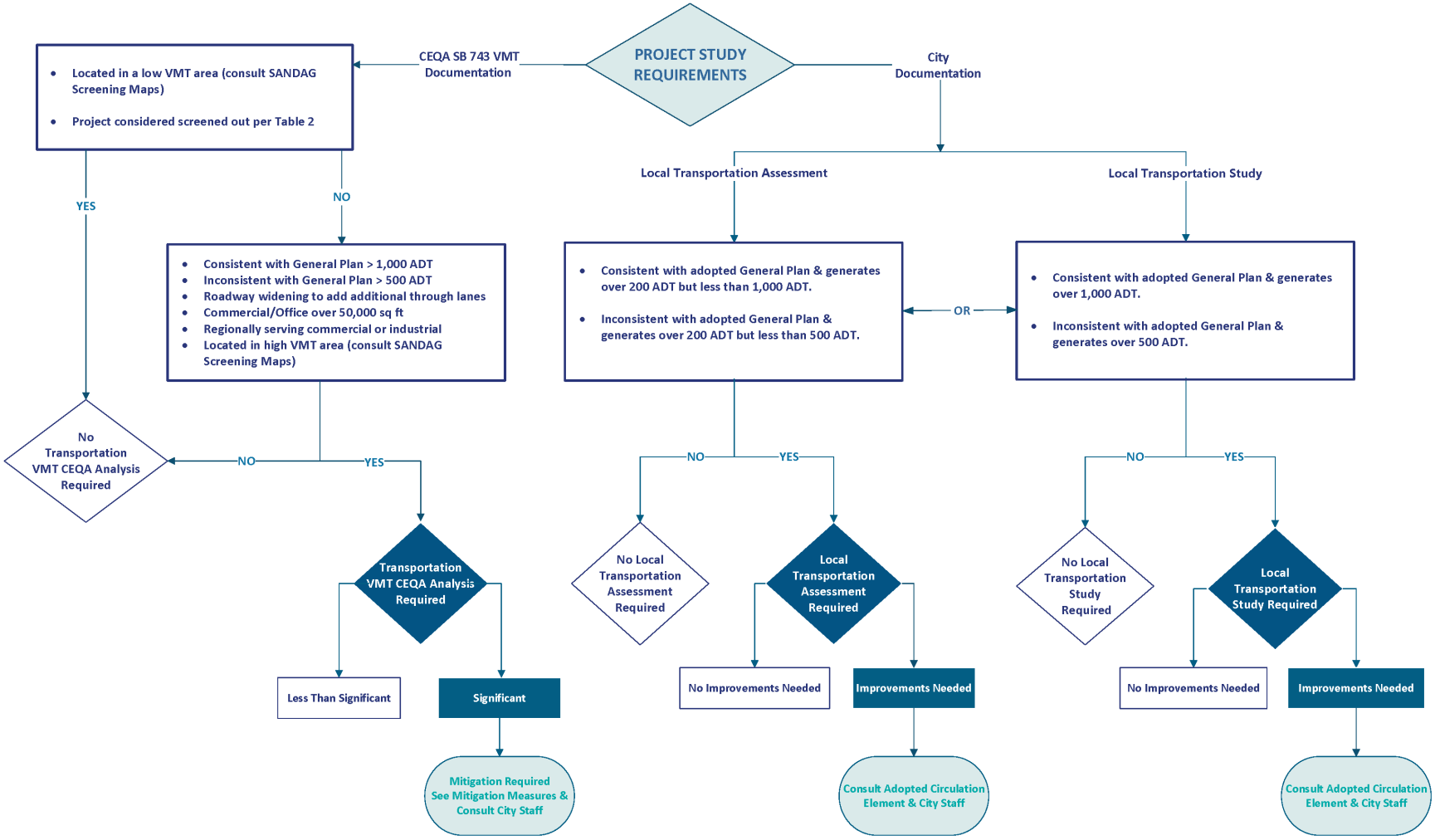
City of Oceanside

Traffic Impact Analysis Guidelines for

Vehicle Miles Traveled (VMT) and Level of Service Assessment

August 2020
Final Version

Figure 8-1 Project Study Requirements



* Projects are not confined to what is listed above and will need to be coordinated with City Staff to determine study requirements for developments not listed.
This flowchart is a generalization, it is up to the City's discretion to determine if additional analyses will be required and if potential mitigation or improvements are acceptable.

9.0 San Diego Regional Guidelines For VMT

The City of Oceanside utilizes the Institute of Transportation Engineers (ITE) San Diego Regional Guidelines (May 2019) to establish thresholds and methodology for VMT analysis. For analysis purposes the most recent version of these guidelines shall be utilized. The following sections summarize the VMT thresholds requirements for Oceanside in alignment with ITE. Thorough analysis explanation can be found in the most recent ITE guidance.

Minimum Threshold for VMT Analysis

Based on the recommendations of the Institute of Transportation Engineers (ITE) for the San Diego section, **Table 3** indicates when a VMT analysis for CEQA is required. This is based on keeping consistent with the thresholds previously used and *SANDAG's Not So Brief Guide Trip Generation (2002)*. These thresholds are based on the understanding that SANDAG trip generation rates differ from ITE trip generation rates which OPR's recommendations are based on.

Projects Consistent with the Adopted General Plan

The City's adopted General Plan represents the vision and goals the City has for the community. Projects that support these goals will adhere to the following VMT analysis thresholds identified in Table 3.

Table 3 – Threshold for VMT Analysis for Projects Consistent with the Adopted General Plan

	VMT Analysis Not Needed	VMT Analysis Needed (1)
Average Daily Traffic Volume (ADT)	Less than 1,000 ADT	Greater than 1,000 ADT

(1) If ADT is equal to 1,000 ADT, VMT analysis is required.

Projects Inconsistent with the Adopted General Plan

The City's adopted General Plan represents the vision and goals the City has for the community. Projects that are not in support of the General Plan have a lower VMT threshold and will require a General Plan Amendment. The following VMT analysis thresholds for projects that are inconsistent are identified in **Table 4**.

Table 4 – Threshold for VMT Analysis for Projects Inconsistent with the Adopted General Plan

	VMT Analysis Not Needed	VMT Analysis Needed (1)
Average Daily Traffic Volume (ADT)	Less than 500 ADT	Greater than 500 ADT

(1) If ADT is equal to 500 ADT, VMT analysis is required.

The thresholds identified in Table 3 and Table 4 stem from the professional expertise and judgement of the ITE San Diego section. These thresholds reflect what is appropriate for the San Diego region to use for VMT and have previously helped determine LOS impacts.

VMT Thresholds

This section identifies what type of VMT analysis is required based on the land use and thresholds identified in the previous section. If a project qualifies for a VMT analysis, the VMT analysis can be compared based on City-wide, Regional, or community basis. The method of comparison shall be agreed upon by the City Traffic Engineer and shall be appropriate based on the use of the site.

The following defines the metrics identified in **Table 5**. It is important the appropriate metrics are applied for each project.

VMT/Capita:

Includes all vehicle-based person trips grouped and summed to the home location of individuals who are drivers or passengers on each trip. It includes home-based and non-home-based trips. The VMT for each home is then summed for all homes in a particular census tract and divided by the population of that census tract to arrive at Resident VMT/Capita.

VMT/Employee:

Includes all vehicle-based person trips grouped and summed to the work location of individuals on the trip. This includes all trips, not just work-related trips. The VMT for each work location is then summed for all work locations in a particular census tract and divided by the number of employees of that census tract to arrive at Employee VMT/Employee.

Small Projects

Small projects, under 2,400 ADT, shall utilize the most recent version of the SANDAG SB 743 Concept Maps. SANDAG has prepared an online mapping system that calculates average VMT/capita and VMT/employee at the census tract level. This tool determines the project's VMT/employee or VMT/capita to be compared to community, city, and/or regional averages. **Appendix C** provides an example of how to use the SANDAG Concept Maps to determine the project's VMT.

Large Projects

Projects consisting of 2,400 ADT or higher will require the use of the most recent SANDAG model to determine VMT. The SANDAG transportation model provides a systematic analytical platform so that different alternatives and inputs can be evaluated in an iterative and controlled environment.

Table 5 identifies the significance thresholds for proposed land uses. Projects that exceed the significance thresholds are considered significant and will require VMT analysis and mitigation.

Table 5 – City of Oceanside Project Threshold

Project Type	Metric	Significance Threshold[1]
Residential	Resident VMT / Capita	15 % below regional average
Commercial	Employee VMT / Employee	15 % below regional average
Industrial	Employee VMT / Employee	15 % below regional average
Retail [2]	Net increase in the regional VMT	Net increase in regional VMT
Mixed-Use	Evaluate each land use separately	Based on proposed land use
Redevelopment [3]	Based on the proposed land use	Based on the proposed land use

(1) The City may request the applicant to analyze VMT using a more localized threshold if the project requires.

(2) Locally serving retail is presumed to decrease VMT however retail projects over 50,000 square feet are considered regionally serving.

(3) A redevelopment project that reduces VMT is presumed to have less than a significant impact and is screened out. The removal of affordable housing will require VMT analysis.

10.0 Mitigation Measures and Strategies for VMT Reduction

A project that exceeds the thresholds identified in the previous tables is considered to have a significant impact and will require mitigation measures and strategies. With appropriate mitigation the project may be able to apply VMT reductions to part or all of the project depending on the land use and strategy chosen. It is critical to implement strategies that are appropriate for the land use, for example, a residential project would not implement a telecommute strategy but may include providing a bike facility and amenities on-site.

SANDAG Mobility Management Guidebook

The purpose of the mitigation measures and strategies is to reduce the VMT generated by the project through a reduction of the distance driven or reducing the number of vehicle trips. It is recommended the SANDAG Mobility Management Guidebook (2019) be consulted to determine mitigation measures for the project site.

The guidebook consists of the following resources:

- Mobility Management Guidebook
- VMT Reduction Calculator Tool
- Calculator Design Document
- Recommendations for Application
- User Training Videos

Figure 10-1 identifies the potential mobility management strategies included in the guidebook that are recommended for a project exceeding the VMT thresholds. It is also recommended the SANDAG iCommute and MTS programs be utilized for projects generating employment. Several opportunities included in these programs are identified in **Table 6**. **Appendix D** contains the SANDAG Mobility Management Guidebook for reference.

Figure 10-1 Mobility Management Strategies

	Strategy Type	Strategy Name	Included in VMT Calculator?
Project/Site Level	Employer Commute Programs	Comprehensive Employer Commute Program	√
		Employer Carpool Program	√
		Employer Transit Pass Subsidy	√
		Employer Vanpool Program	√
		Employer Telework Program	√
		Employer Guaranteed Ride Home Program	
		On-Site Bike Amenities	
	Land Use Strategies	Higher-Density Development	
		Transit-Oriented Development	√
		Mixed-Use Development	√
	Parking Management	Parking Pricing	√
		Parking Cash-Out	√
		Reduced Parking	
		Unbundled Parking	
		Smart Parking	
		Shared Parking	
		Shared Mobility Parking	
		Flexible Curb Space	
Community/City Level	Neighborhood Enhancements	Street Connectivity Improvement	√
		Pedestrian Facility Improvement	√
		Bikeway Network Expansion	√
		Bike Facility Improvement	√
		Bikeshare	√
		Carshare	√
		Community-Based Travel Planning	√
	Transit Strategies	Transit Service Expansion	√
		Transit Frequency Improvements	√
		Transit-Supportive Treatments	√
		Transit Fare Reduction	√
		Microtransit NEV Shuttle	√
		Microtransit Commuter Shuttle	
	Transportation System Management	Adaptive Traffic Signal Systems	
		Smart Signals and Intersections	
		Optimized Signal Timing for Bicycles	
		Advanced Bicycle Detection	
		Real-Time Traveler Information	
		Active Traffic Management	
		Traffic Incident Management	
		Roadway Weather Management	

Source: SANDAG Mobility Management Strategy Guidebook, June 2019

11.0 LOCAL TRANSPORTATION STUDY AND LOCAL TRANSPORTATION ASSESSMENT GUIDELINES

The City of Oceanside utilizes the Institute of Transportation Engineers (ITE) San Diego Regional Guidelines (May 2019) to establish thresholds and methodology for a Local Transportation Study (LTS). A Local Transportation Study is different from VMT analysis for CEQA purposes and may be required in addition to the VMT analysis or individually. A Local Transportation Study will analyze the projects influence on the surrounding intersections and roadway network utilizing level of service (LOS) for all project scenarios. The purpose of the LTS is to help quantify the local impact of the development and expected changes in transportation conditions. The LTS should include roadway, bicycle, pedestrian, and transit evaluations. The following sections identify the project requirements for a Local Transportation Study. The Local Transportation Study helps the City ensure the goals, objectives, and policies adopted by the City are supported and implemented while monitoring the capacity for the roadway networks.

Data should be collected during typical operation hours. Data should be recent and no more than 2 years old for an LTS. **The acceptable level of service for the City of Oceanside that is consistent with the adopted Circulation Element is LOS D.**

Minimum Threshold for Local Transportation Study

Based on the recommendations of the Institute of Transportation Engineers (ITE) for the San Diego section, **Table 8** indicates when a Local Transportation Study is required for the City. This is based on keeping consistent with the thresholds previously used and *SANDAG's Not So Brief Guide (2002) Trip Generation*.

Projects Consistent with the Adopted General Plan

The City's adopted General Plan represents the vision and goals the City has for the community. Projects that support these goals will adhere to the following LTS thresholds identified in Table 8.

Table 8 – Threshold for LTS for Projects Consistent with the Adopted General Plan

	LTS Analysis Not Needed	LTS Analysis Needed (1)
Average Daily Traffic Volume (ADT)	Less than 1,000 ADT	Greater than 1,000 ADT

(1) If ADT is equal to 1,000 ADT, an LTS is required.

A Local Transportation Study (LTS) will be required if a project exceeds 1,000 ADT and is consistent with the adopted General Plan.

Projects Inconsistent with the Adopted General Plan

The City's adopted General Plan represents the vision and goals the City has for the community. Projects that are not in support of the General Plan have a lower LTS threshold and will require a General Plan Amendment. The following LTS analysis thresholds for projects that are inconsistent are identified in **Table 9**.

Table 9 – Threshold for LTS for Projects Inconsistent with the Adopted General Plan

	LTS Analysis Not Needed	LTS Analysis Needed [1]
Average Daily Traffic Volume (ADT)	Less than 500 ADT	Greater than 500 ADT

(1) If ADT is equal to 500 ADT, an LTS is required.

A Local Transportation Study (LTS) will be required if a project exceeds 500 ADT and is inconsistent with the adopted General Plan.

The thresholds identified in Table 7 and Table 8 stem from the professional expertise and judgement of the ITE San Diego section. These thresholds keep consistent with regional practice and will help ensure developments will not overburden the transportation network.

If a project would add peak hour trips to any existing on- or off-ramp it is recommended to consult with the City and Caltrans to determine if an LTS would be required.

Study Scenarios

The following scenarios are included in an LTS and may be modified in agreement with the City Traffic Engineer.

- Existing Conditions
- Existing Conditions Plus Project
- Existing Conditions Plus Near-Term Cumulative Projects
- Existing Conditions Plus Near-Term Cumulative Projects Plus Project
- Buildout Conditions (2030)
- Buildout Conditions Plus Project

Local Transportation Assessment (LTA)

A Local Transportation Assessment (LTA) may be required instead of a Local Transportation Study depending on the size of the project. A helps the City monitor development impacts on the transportation network and is similar to a Local Transportation Study(LTS). The main difference between the two studies is a Local Transportation Assessment (LTA) analyzes fewer scenarios than a Local Transportation Study (LTS). A Local Transportation Assessment (LTA) will be required if a project is less than 1,000 ADT but is anticipated to influence the surrounding environment.

A Local Transportation Assessment (LTA) will be required to analyze the following scenarios based on the thresholds for identified for the project's ADT.

- **A project that generates between 200-500 ADT will be required to analyze existing conditions and existing conditions plus project.**

- **A project that generates between 500-1,000 ADT will be required to analyze existing conditions, existing conditions plus project, existing conditions plus near-term cumulative projects, and existing conditions plus near-term cumulative projects plus project.**

Transportation Modes to be Included for Discussion in the LTS/LTA

Pedestrian:

- The LTS/LTA shall include pedestrian infrastructure available including any opportunities or deficiencies such as path obstructions or missing sidewalk for ½ mile walking distance from project pedestrian access points.
- All pedestrian facilities directly connected to project access points or adjacent to the project development, extending in each direction to the nearest intersection with a classified roadway or connection with a Class I path
- Facilities connecting to transit stops within two blocks of the project
- Only facilities on the side of the project or along the walking route to transit stop
- Additional geographic areas may be included in certain cases to address special cases such as schools or retail centers

Bicycle:

- The LTS/LTA shall include a discussion of bicycle infrastructure available including any opportunities or deficiencies such as bike lanes, bike buffers, or bike boxes. This section must also include discussion of what is planned based on City and regional documentation. The extents are as follows:
    - All roadways adjacent to the project, extending in each direction to the nearest intersection with a classified roadway or with a Class I path
    - Both directions of travel should be evaluated

Transit:

- The LTS/LTA shall identify any transit stops or routes existing and planned near the project site. This section shall also include a discussion and evaluation of transit stop amenities within ½ mile of each pedestrian access point.

Vehicle:

All signalized intersections and signalized project driveways shall be analyzed if:

- The project will add 50 or more peak hour (final cumulative) trips in either direction

All unsignalized intersections and unsignalized project driveways shall be analyzed if:

- The project will add 50 or more peak hour (final cumulative) trips in either direction

All freeway ramp intersections and signalized project driveways shall be analyzed if:

- The project will add 20 or more peak hour (final cumulative) trips in either direction

Intersection Level of Service analysis should be conducted using the Highway Capacity Manual (HCM) Methodology. For signalized intersections, the methodology described in the HCM for signalized intersections is used. With this methodology, the average control delay per vehicle is estimated for each lane group and aggregated for each approach and for the intersection as a whole. The relationship between control delay per vehicle and LOS for signalized intersections is summarized in **Table 10**.

Table 10 – HCM Level of Service Description for Signalized Intersections

Level of Service	Description of Traffic Conditions	Control Delay (sec/veh)
A	Insignificant delays: no approach phase is fully utilized and no vehicle waits longer than one red indication	≤ 10
B	Minimal delays: an occasional approach phase is fully utilized. Drivers begin to feel restricted.	> 10 – 20
C	Acceptable delays: major approach phase may become fully utilized. Most drivers feel somewhat restricted.	> 25 – 35
D	Tolerable delays: Drivers may wait through more than one red indication. Queues may develop but dissipate rapidly without excessive delays.	> 35 – 55
E	Significant delays: Volumes approaching capacity. Vehicles may wait through several cycles and long vehicle queues form upstream.	> 55 – 80
F	Excessive delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80

Source: Highway Capacity Manual, Transportation Research Board, 2010.

For unsignalized intersections, the methodology described in the HCM for unsignalized intersections is used. With this methodology, LOS is related to the control delay for each stop-controlled movement. The relationship between control delay per vehicle and LOS for unsignalized intersections is summarized in **Table 11**.

Table 11 – HCM Level of Service Description for Unsignalized Intersections

Level of Service	Description of Traffic Conditions	Control Delay (sec/veh)
A	No delay for stop-controlled approaches.	≤ 10
B	Operations with minor delay.	> 10 – 15
C	Operations with moderate delays.	> 15 – 25
D	Operations with some delays.	> 25 – 35
E	Operations with high delays and long queues.	> 35 – 50
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers.	> 50

Source: Highway Capacity Manual, Transportation Research Board, 2010.

Table 12 provides guidance on the levels of ADT that can be accommodated on various types of roadways, based on level of service.

Table 12 – Circulation Element Roadway Classification LOS & Capacity

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

(1) Cross sections are listed as curd-to-curb width/total right of way width, in feet.

(2) Vandegrift Boulevard is the only Circulation Element roadway designated as a 5-lane Major Arterial. It is not intended that other roadways be build to 5-lane Major Arterial standards.

(3) This capacity will also be assumed for a two-lane one-way collector.

Table 13 indicates when a project's effect on the roadway system is considered to justify the need for roadway improvements. That is, if a project's traffic effect causes the values in this table to be exceeded, roadway 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 Areas as identified by SANDAG.
- Projects in Transit Priority Areas or Smart Growth Opportunity Areas 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.)

Table 13 – Determination of the Need for Roadway Improvements

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

12.0 TRANSPORTATION DEMAND MANAGEMENT (TDM) STRATEGIES

In general, the goal of City Staff is to help Oceanside increase connectivity and level of comfort for pedestrians, bicyclists, and transit users. Project improvements may come from the City's adopted General Plan or other City policies that help improve the overall quality of life for the community. **Table 14** identifies some TDM improvement measures that may be considered for a project.

Table 14 – Potential TDM Improvement Measures

Potential TDM Measures	
Transit Facilities	Telecommuting
Bike Facilities	Rideshare Programs
Walkability	Flex-time
Carpool Incentives	Parking Cash-Out
Subsidized Transit Passes	Shuttle Service

A measure that is not listed may be considered if the mitigation is appropriately applied and reasonable. Additional improvement measures may be identified as future technologies and policies evolve or with consultation by City Staff.

Appendix E

Excerpts from the *Oceanside General Plan Circulation Element*, Sept 2012

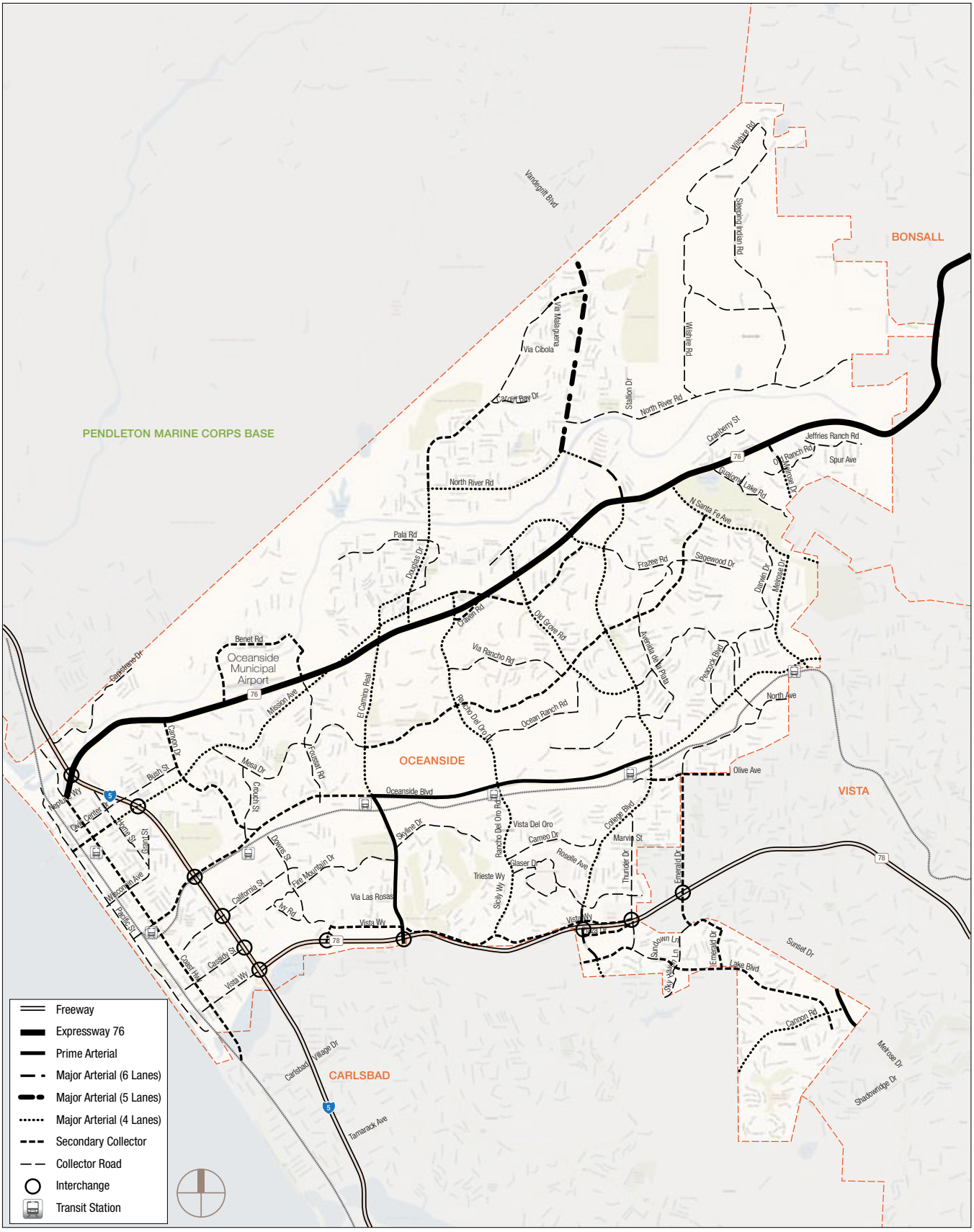
OCEANSIDE GENERAL PLAN
CIRCULATION ELEMENT UPDATE
City of Oceanside, California

Prepared for
City of Oceanside
Transportation Engineering Division
300 North Coast Highway
Oceanside, CA 92054

Prepared by

701 B Street, Suite 1810
San Diego, CA 92101

September 2012



Not to Scale

Existing Roadway Classifications

Figure 3.1

Appendix F

Count Data and Signal Timing Sheets

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

Location: Oceanside
N/S: Bradley St
E/W: Olive Dr

Date: 1/25/2024
Day: THURSDAY
Project # 143-24064

TURNING MOVEMENT COUNT

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

Vehicle Counts

	Bradley St Northbound			Bradley St Southbound			Olive Dr Eastbound			Olive Dr Westbound			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
7:00 AM	0	0	1	0	0	0	0	3	0	1	1	0	6
7:15 AM	0	0	1	2	0	0	0	1	0	0	0	2	6
7:30 AM	0	0	1	0	0	0	0	4	0	1	1	0	7
7:45 AM	0	0	3	0	0	0	0	3	0	2	0	0	8
8:00 AM	0	0	1	1	0	0	0	2	0	0	2	0	6
8:15 AM	0	0	2	3	0	0	0	0	0	0	1	1	7
8:30 AM	0	0	3	2	0	0	0	4	0	2	0	1	12
8:45 AM	0	0	4	0	0	0	0	0	0	2	2	1	9
TOTAL VOLUMES:	0	0	16	8	0	0	0	17	0	8	7	5	61

AM Peak Hr Begins at: 800 AM

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	0	0	10	6	0	0	0	6	0	4	5	3	34

PEAK HR FACTOR:	0.625	0.500	0.375	0.600	0.708

Bicycle Counts

	Bradley St Northbound			Bradley St Southbound			Olive Dr Eastbound			Olive Dr Westbound			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

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

Pedestrian Counts

	Bradley St North Leg	Bradley St South Leg	Olive Dr East Leg	Olive Dr West Leg	TOTAL
7:00 AM	0	1	1	1	3
7:15 AM	2	0	1	0	3
7:30 AM	0	0	1	0	1
7:45 AM	0	0	1	0	1
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	2	0	2
8:45 AM	1	0	0	0	1
TOTAL VOLUMES:	3	1	6	1	11

	North Leg	South Leg	East Leg	West Leg	TOTAL
PEAK VOLUMES:	1	0	2	0	3

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

Location: Oceanside
N/S: Bradley St
E/W: Olive Dr

Date: 1/25/2024
Day: THURSDAY
Project # 143-24064

TURNING MOVEMENT COUNT

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

Vehicle Counts

	Bradley St Northbound			Bradley St Southbound			Olive Dr Eastbound			Olive Dr Westbound			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
4:00 PM	0	0	5	1	0	0	0	1	2	3	5	1	18
4:15 PM	0	0	3	0	0	0	0	1	0	9	3	1	17
4:30 PM	1	0	3	1	0	0	0	1	0	4	2	2	14
4:45 PM	0	0	2	2	1	0	0	2	0	2	1	2	12
5:00 PM	0	0	1	2	0	0	0	1	0	2	4	1	11
5:15 PM	0	0	1	2	0	0	0	4	0	4	1	3	15
5:30 PM	0	0	3	1	0	0	0	2	0	3	4	0	13
5:45 PM	0	0	2	0	0	0	0	3	0	2	3	1	11
TOTAL VOLUMES:	1	0	20	9	1	0	0	15	2	29	23	11	111

PM Peak Hr Begins at: 400 PM

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	1	0	13	4	1	0	0	5	2	18	11	6	61

PEAK HR FACTOR:	0.700	0.417	0.583	0.673	0.847

Bicycle Counts

	Bradley St Northbound			Bradley St Southbound			Olive Dr Eastbound			Olive Dr Westbound			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

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

Pedestrian Counts

	Bradley St North Leg	Bradley St South Leg	Olive Dr East Leg	Olive Dr West Leg	TOTAL
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	2	2	0	4
4:45 PM	0	0	2	0	2
5:00 PM	0	0	2	0	2
5:15 PM	0	1	1	1	3
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	3	7	1	11

	North Leg	South Leg	East Leg	West Leg	TOTAL
PEAK VOLUMES:	0	2	4	0	6

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

Location: Oceanside
N/S: College Blvd
E/W: Olive Dr

Date: 1/25/2024
Day: THURSDAY
Project # 143-24064

TURNING MOVEMENT COUNT

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

Vehicle Counts

	College Blvd Northbound			College Blvd Southbound			Olive Dr Eastbound			Olive Dr Westbound			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
7:00 AM	0	161	11	129	283	1	1	0	3	16	1	151	757
7:15 AM	0	177	17	135	329	1	3	1	2	38	0	159	862
7:30 AM	1	277	27	115	370	1	2	3	1	39	0	194	1030
7:45 AM	1	249	31	118	386	1	2	1	3	34	1	197	1024
8:00 AM	1	213	21	126	361	1	0	1	2	35	0	202	963
8:15 AM	0	181	14	120	361	1	2	3	1	42	1	194	920
8:30 AM	1	177	18	143	341	2	3	1	6	28	0	214	934
8:45 AM	2	203	23	142	297	4	2	0	2	32	0	201	908
TOTAL VOLUMES:	6	1638	162	1028	2728	12	15	10	20	264	3	1512	7398

AM Peak Hr Begins at: 730 AM

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	3	920	93	479	1478	4	6	8	7	150	2	787	3937

PEAK HR FACTOR:	0.833	0.971	0.875	0.991	0.956

Bicycle Counts

	College Blvd Northbound			College Blvd Southbound			Olive Dr Eastbound			Olive Dr Westbound			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	1
7:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	2	0	0	0	0	0	0	0	0	0	0	2
8:30 AM	0	0	0	1	1	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	3	0	2	1	0	0	0	0	0	0	1	7

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

Pedestrian Counts

	College Blvd North Leg	College Blvd South Leg	Olive Dr East Leg	Olive Dr West Leg	TOTAL
7:00 AM	0	0	0	0	0
7:15 AM	0	0	1	0	1
7:30 AM	0	0	1	0	1
7:45 AM	0	1	0	1	2
8:00 AM	0	0	0	0	0
8:15 AM	0	0	1	1	2
8:30 AM	0	0	0	1	1
8:45 AM	1	0	0	0	1
TOTAL VOLUMES:	1	1	3	3	8

	North Leg	South Leg	East Leg	West Leg	TOTAL
PEAK VOLUMES:	0	1	2	2	5

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

Location: Oceanside
N/S: College Blvd
E/W: Olive Dr

Date: 1/25/2024
Day: THURSDAY
Project # 143-24064

TURNING MOVEMENT COUNT

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

Vehicle Counts

	College Blvd Northbound			College Blvd Southbound			Olive Dr Eastbound			Olive Dr Westbound			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
4:00 PM	6	279	29	185	298	3	1	1	6	22	2	186	1018
4:15 PM	6	308	27	189	262	6	3	1	1	12	1	180	996
4:30 PM	1	292	22	182	270	5	1	1	3	20	2	189	988
4:45 PM	0	272	23	182	280	4	0	4	3	19	1	195	983
5:00 PM	1	248	27	174	256	4	0	1	3	16	2	194	926
5:15 PM	4	268	30	184	247	3	4	2	1	19	2	218	982
5:30 PM	1	316	26	180	250	6	1	3	2	14	1	153	953
5:45 PM	2	238	34	178	245	4	3	1	3	21	1	206	936
TOTAL VOLUMES:	21	2221	218	1454	2108	35	13	14	22	143	12	1521	7782

PM Peak Hr Begins at: 400 PM

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES:	13	1151	101	738	1110	18	5	7	13	73	6	750	3985

PEAK HR FACTOR:	0.927	0.960	0.781	0.964	0.979

Bicycle Counts

	College Blvd Northbound			College Blvd Southbound			Olive Dr Eastbound			Olive Dr Westbound			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	1
4:45 PM	0	1	0	1	1	0	0	0	0	0	0	1	4
5:00 PM	0	0	0	0	2	0	0	0	0	1	0	0	3
5:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	2	0	2	4	0	0	0	0	1	0	2	11

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

Pedestrian Counts

	College Blvd North Leg	College Blvd South Leg	Olive Dr East Leg	Olive Dr West Leg	TOTAL
4:00 PM	1	1	0	1	3
4:15 PM	0	0	1	0	1
4:30 PM	0	0	2	2	4
4:45 PM	1	1	1	1	4
5:00 PM	0	0	0	0	0
5:15 PM	0	0	2	1	3
5:30 PM	0	0	0	0	0
5:45 PM	0	0	1	0	1
TOTAL VOLUMES:	2	2	7	5	16

	North Leg	South Leg	East Leg	West Leg	TOTAL
PEAK VOLUMES:	2	2	4	4	12

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878

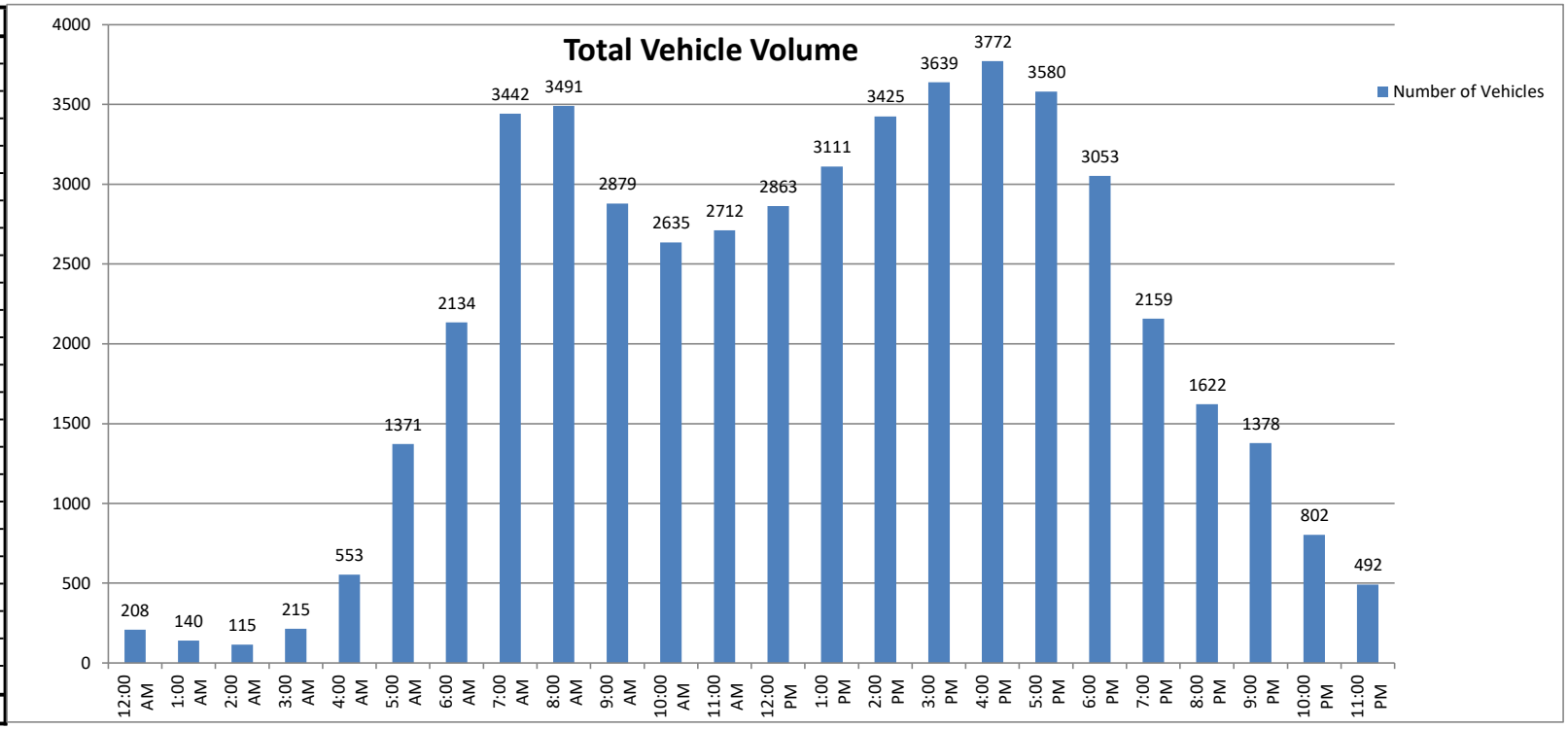
24 Hour Volume Plot

College Boulevard

N/ Olive Drive

1/25/2024

Start Time	1/25/2024
12:00 AM	208
1:00 AM	140
2:00 AM	115
3:00 AM	215
4:00 AM	553
5:00 AM	1371
6:00 AM	2134
7:00 AM	3442
8:00 AM	3491
9:00 AM	2879
10:00 AM	2635
11:00 AM	2712
12:00 PM	2863
1:00 PM	3111
2:00 PM	3425
3:00 PM	3639
4:00 PM	3772
5:00 PM	3580
6:00 PM	3053
7:00 PM	2159
8:00 PM	1622
9:00 PM	1378
10:00 PM	802
11:00 PM	492
Total	49791



Volumes represent the combined totals for both directions

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878

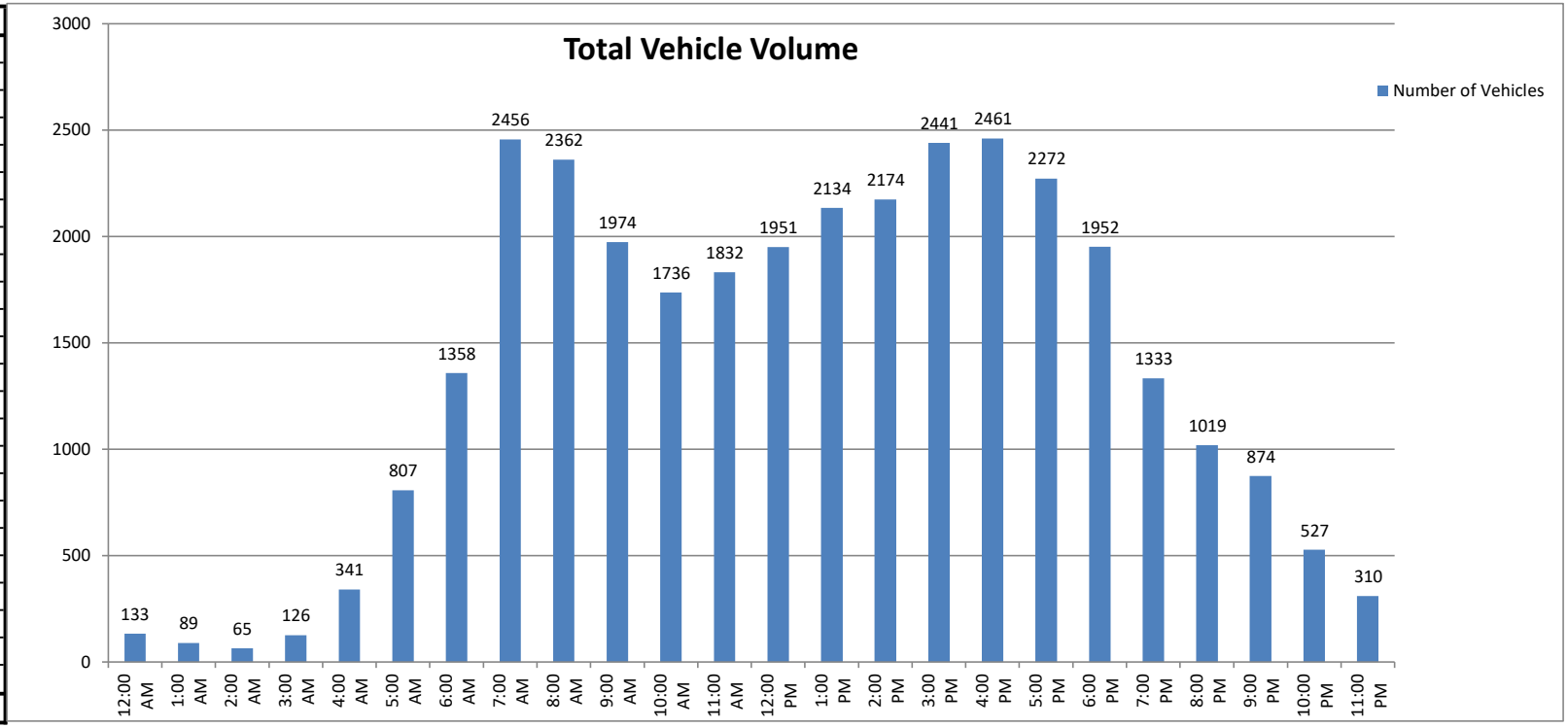
24 Hour Volume Plot

College Boulevard

S/ Olive Drive

1/25/2024

Start Time	1/25/2024
12:00 AM	133
1:00 AM	89
2:00 AM	65
3:00 AM	126
4:00 AM	341
5:00 AM	807
6:00 AM	1358
7:00 AM	2456
8:00 AM	2362
9:00 AM	1974
10:00 AM	1736
11:00 AM	1832
12:00 PM	1951
1:00 PM	2134
2:00 PM	2174
3:00 PM	2441
4:00 PM	2461
5:00 PM	2272
6:00 PM	1952
7:00 PM	1333
8:00 PM	1019
9:00 PM	874
10:00 PM	527
11:00 PM	310
Total	32727



Volumes represent the combined totals for both directions

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878

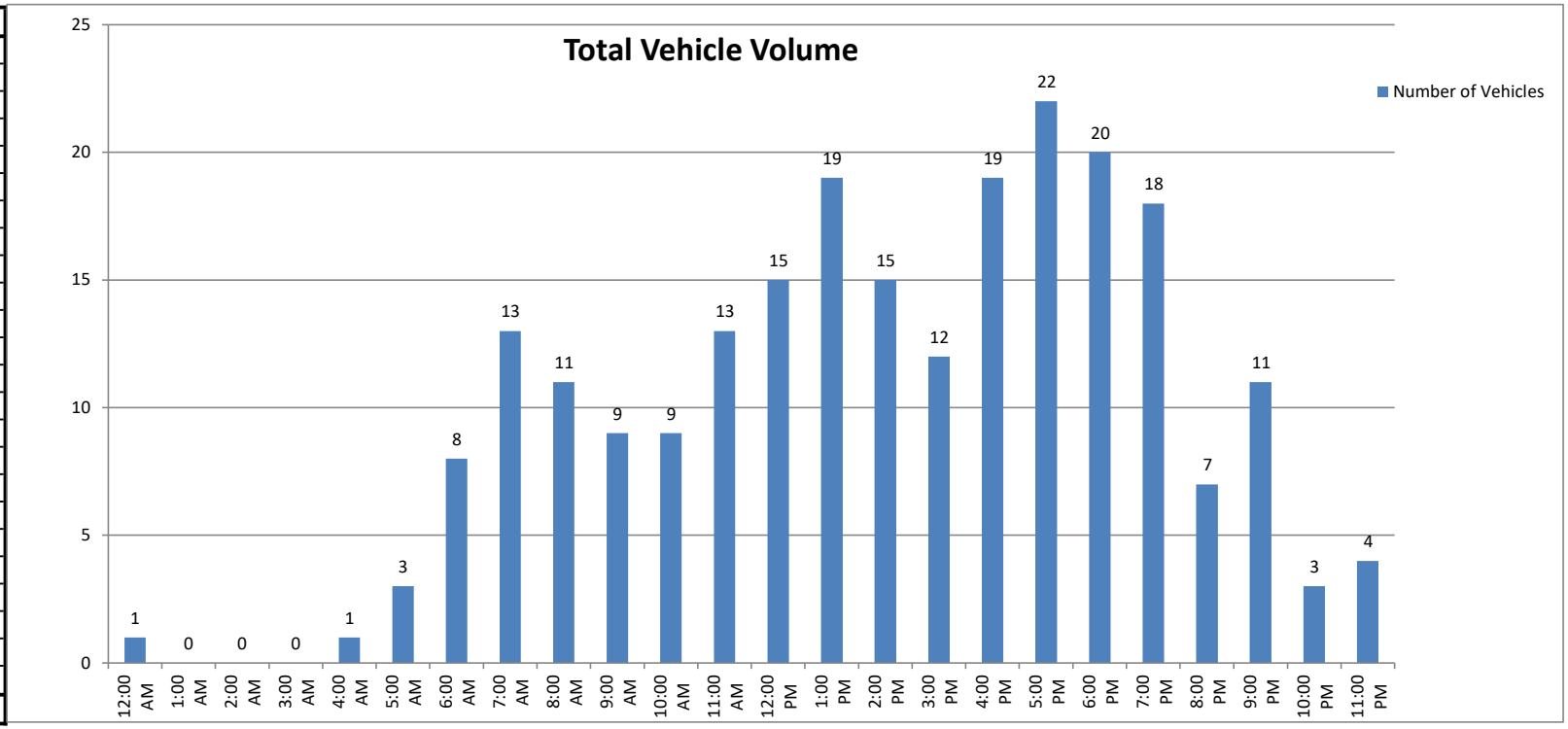
24 Hour Volume Plot

Olive Drive

W/ Bradley Street

1/25/2024

Start Time	1/25/2024
12:00 AM	1
1:00 AM	0
2:00 AM	0
3:00 AM	0
4:00 AM	1
5:00 AM	3
6:00 AM	8
7:00 AM	13
8:00 AM	11
9:00 AM	9
10:00 AM	9
11:00 AM	13
12:00 PM	15
1:00 PM	19
2:00 PM	15
3:00 PM	12
4:00 PM	19
5:00 PM	22
6:00 PM	20
7:00 PM	18
8:00 PM	7
9:00 PM	11
10:00 PM	3
11:00 PM	4
Total	233



Volumes represent the combined totals for both directions

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878

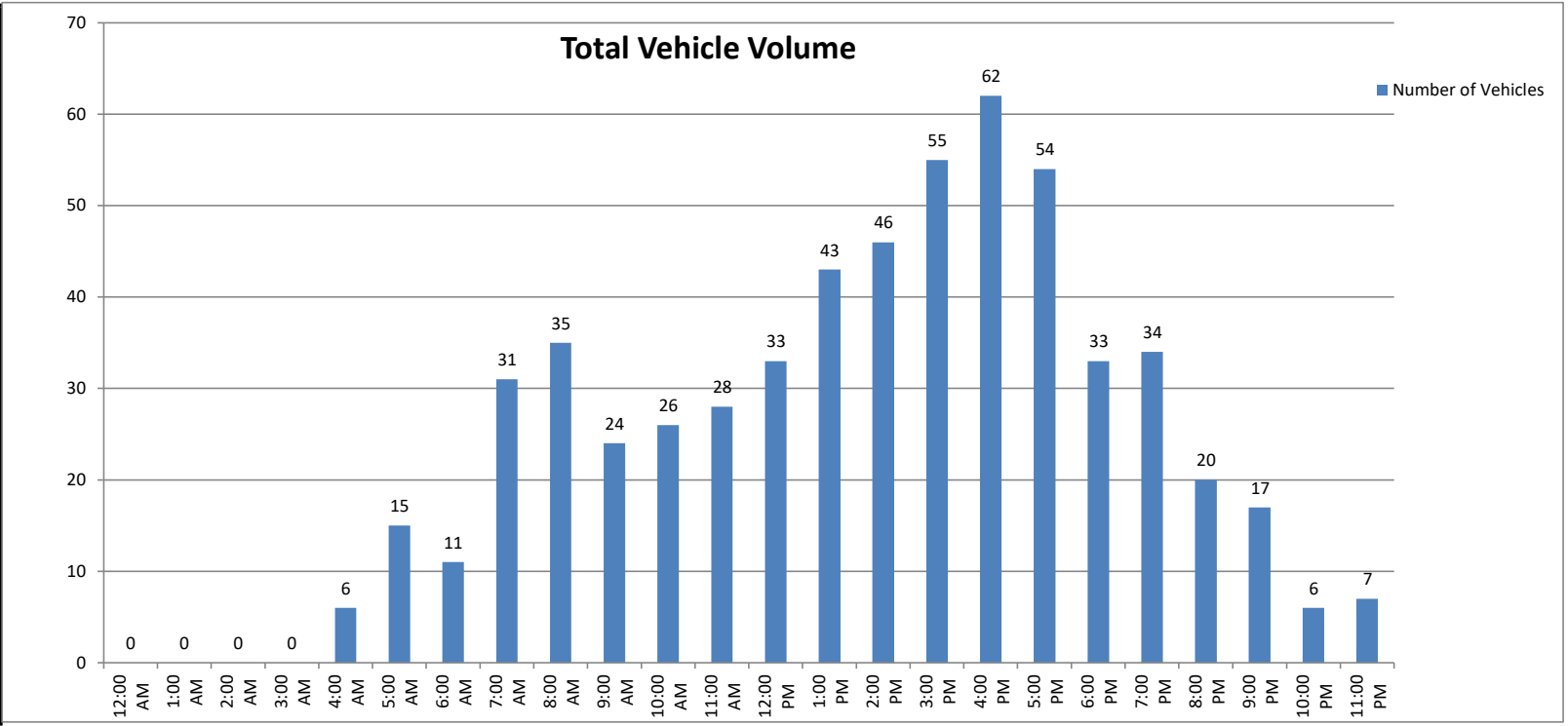
24 Hour Volume Plot

Olive Drive

B/ Bradley Street - College Boulevard

1/25/2024

Start Time	1/25/2024
12:00 AM	0
1:00 AM	0
2:00 AM	0
3:00 AM	0
4:00 AM	6
5:00 AM	15
6:00 AM	11
7:00 AM	31
8:00 AM	35
9:00 AM	24
10:00 AM	26
11:00 AM	28
12:00 PM	33
1:00 PM	43
2:00 PM	46
3:00 PM	55
4:00 PM	62
5:00 PM	54
6:00 PM	33
7:00 PM	34
8:00 PM	20
9:00 PM	17
10:00 PM	6
11:00 PM	7
Total	586



Volumes represent the combined totals for both directions

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878

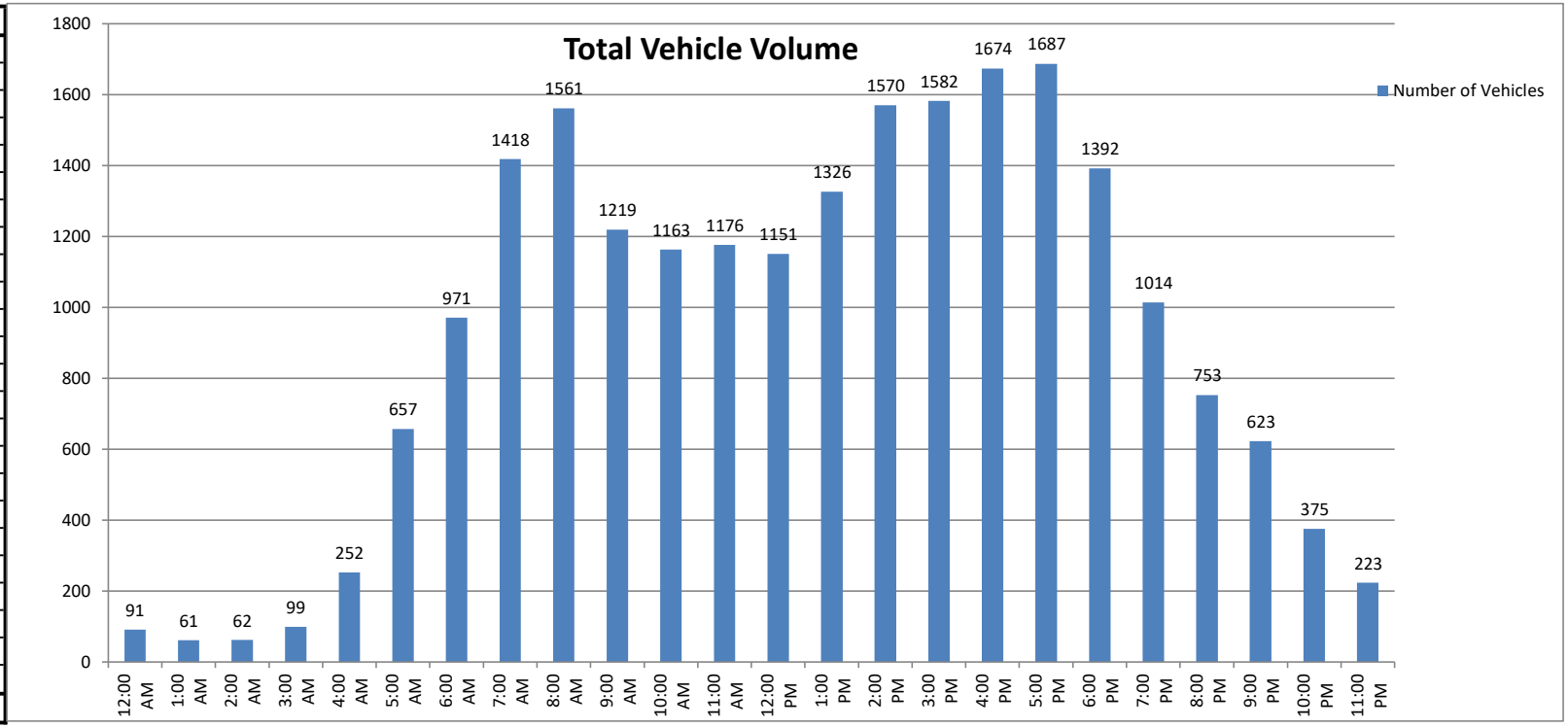
24 Hour Volume Plot

Olive Drive

E/ Joann Drive

1/25/2024

Start Time	1/25/2024
12:00 AM	91
1:00 AM	61
2:00 AM	62
3:00 AM	99
4:00 AM	252
5:00 AM	657
6:00 AM	971
7:00 AM	1418
8:00 AM	1561
9:00 AM	1219
10:00 AM	1163
11:00 AM	1176
12:00 PM	1151
1:00 PM	1326
2:00 PM	1570
3:00 PM	1582
4:00 PM	1674
5:00 PM	1687
6:00 PM	1392
7:00 PM	1014
8:00 PM	753
9:00 PM	623
10:00 PM	375
11:00 PM	223
Total	22100



Volumes represent the combined totals for both directions

Phone: 951-268-6268
counts@countsunlimited.com
Fax: 951-268-6267

INTERSECTION: College & Olive

Group Assignment: **NONE**
Field Master Assignment: **NONE**
System Reference Number: **32**

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

Last Database Change: **10/23/2023 8:46:58 I**

Change Record					
Change	By	Date	Change	By	Date

Notes:

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

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

Drop Number	**3**	<C/0+0+0>
Zone Number	**1**	<C/0+0+1>
Area Number	**1**	<C/0+0+2>
Area Address	**32**	<C/0+0+3>
QuicNet Channel	**Serial:COM19:**	(QuicNet)

Communication Addresses

Manual Plan		<C/0+A+1>
Manual Offset		<C/0+B+1>

Manual Selection

Flash Start	**0**	<F/1+0+E>
Red Revert	**5.0**	<F/1+0+F>
All Red Start	**5.0**	<F/1+C+0>
FYA Red Revert	**5.0**	<F/1+0+5>
OVLP 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	Column Numbers ----> / Phase Names ---->	Phase 1	2	3	4	5	6	7	8
0	Ped Walk	0	7	0	4	0	7	0	4
1	Ped FDW	0	18	0	22	0	10	0	22
2	Min Green	5	7	3	8	5	7	3	8
3	Type 3 Disconnect	0	10	0	0	0	10	0	0
4	Added per Vehicle	0.0	1.5	0.0	0.0	0.0	1.5	0.0	0.0
5	Veh Extension	3.0	3.5	0.5	3.0	3.0	3.5	0.5	3.0
6	Max Gap	3.0	4.0	0.5	3.0	3.0	5.0	0.5	3.0
7	Min Gap	3.0	2.0	0.5	3.0	3.0	2.0	0.5	3.0
8	Max Limit	45	40	17	30	20	40	17	10
9	Max Limit 2	30	70	30	70	30	70	30	70
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	15	0	0	0	0	0	0	0
D	Reduce Every	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0
E	Yellow Change	4.1	4.8	3.0	4.1	4.1	4.8	3.0	4.1
F	Red Clear	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0

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

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

Alternate Timing <C+0+F=1>

	E
RR-1 Delay	0
RR-1 Clear	10
EV-A Delay	0
EV-A Clear	5
EV-B Delay	0
EV-B Clear	5
EV-C Delay	0
EV-C Clear	5
EV-D Delay	0
EV-D Clear	5
RR-2 Delay	0
RR-2 Clear	10
View EV Delay	- - -
View EV Clear	- - -
View RR Delay	- - -
View RR Clear	- - -

Preempt Timing

Row		F
0	Permit	12_456_8
1	Red Lock	_____
2	Yellow Lock	_____
3	Min Recall	_2___6__
4	Ped Recall	_____
5	*View Set Peds*	- - - - -
6	Rest In Walk	_____
7	Red Rest	_____
8	Dual Entry	_2_4_6_8
9	Max Recall	_____
A	Soft Recall	_____
B	Max 2	_____
C	Cond. Service	_____
D	Man Cntrl Calls	_____
E	Yellow Start	_2___6__
F	First Phases	_2___6__

Phase Functions <C+0+F=1>

Overlap Assignments <C+0+E=29>

Row	Column Numbers ---->	Overlap 1	2	3	4	5	6	7	8
	Overlap Name ---->								
0	Load Switch Number	9	0	0	0	0	0	0	0
1	Veh Set 1 - Phases	1							
2	Veh Set 2 - Phases								
3	Veh Set 3 - Phases								
4	Neg Veh Phases	2 7							
5	Neg Ped Phases	8							
6	Green Omit Phases	4 8							
7	Green Clear Omit Phs.								
8	Overlap Recall	N	N	N	N	N	N	N	N
9	Queue Jump Phase								
A	Queue Jump Time	0	0	0	0	0	0	0	0
B	Minimum Green	0	0	0	0	0	0	0	0
C	Maximum Green	15	0	0	0	0	0	0	0
D	Green Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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 = QuicNet System
5 = Ignore P/P on EV
6 = Manual Hold in FDW
7 = Allow QuicNet PE
8 = Flash Grn B4 Yellow

Row		C
0	EV-A	0
1	EV-B	0
2	EV-C	0
3	EV-D	0
4	RR-1 *	- - -
5	RR-2 *	- - -
6	SE-1	0
7	SE-2	0

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

Row	Column Numbers ---->	E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Flash to PE Circuits	
6	Flash Entry Phases	
7	Disable Yellow Range	
8	Disable Ovp Yel Range	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	4 7
C	EV-C Phases	1 6
D	EV-D Phases	3 8
E	Extra 1 Config. Bits	1 45
F	IC Select (Interconnect)	2

Configuration <C+0+E=125>

	F
Ext. Permit 1 Phases	
Ext. Permit 2 Phases	
Exclusive Ped Assign	
Preempt Non-Lock	
Ped for 2P Output	2
Ped for 6P Output	6
Ped for 4P Output	4
Ped for 8P Output	8
Yellow Flash Phases	
Low Priority A Phases	
Low Priority B Phases	
Low Priority C Phases	
Low Priority D Phases	
Restricted Phases	
Extra 2 Config. Bits	4

Configuration <C+0+E=125>

	F
Fast Green Flash Phase	
Green Flash Phases	
Flashing Walk Phases	
Guaranteed Passage	
Simultaneous Gap Term	12345678
Sequential Timing	
Advance Walk Phases	
Delay Walk Phases	
External Recall	1
Start-up Overlap Green	
Max Extension	
Inhibit Ped Reservice	
Semi-Actuated	
Start-up Overlap Yellow	
Start-up Vehicle Calls	12345678
Start-up Ped Calls	12345678

Specials <C+0+F=2>

Flash to PE & PE Non-Lock
1 = EV A
2 = EV B
3 = EV C
4 = EV D
5 = RR 1
6 = RR 2
7 = SE 1
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

Row		2
0		
1	Phase 1	40
2	Phase 2	30
3	Phase 3	0
4	Phase 4	25
5	Phase 5	20
6	Phase 6	30
7	Phase 7	0
8	Phase 8	25

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

Plan

Row	Column Numbers ---->	1	2	3	4	5	6	7	8	9	Row
	Plan Name ---->										
0	Cycle Length	120	120	150	150	120	140	130	150	150	0
1	Phase 1 - ForceOff	90	80	50	50	30	40	40	45	40	1
2	Phase 2 - ForceOff	25	0	0	0	0	0	0	0	0	2
3	Phase 3 - ForceOff	0	0	0	0	0	0	0	0	0	3
4	Phase 4 - ForceOff	55	40	70	80	60	65	65	70	60	4
5	Phase 5 - ForceOff	25	20	95	100	80	85	85	90	85	5
6	Phase 6 - ForceOff	0	0	30	30	0	0	0	0	20	6
7	Phase 7 - ForceOff	0	0	0	0	0	0	0	0	0	7
8	Phase 8 - ForceOff	55	40	70	75	60	65	65	70	60	8
9	Ring Offset	0	0	0	0	0	0	0	0	0	9
A	Offset 1	50	105	25	0	110	112	5	110	70	A
B	Offset 2	0	0	0	0	0	0	0	0	0	B
C	Offset 3	0	0	0	0	0	0	0	0	0	C
D	Perm 1 - End	1	1	1	1	40	42	45	50	1	D
E	Hold Release	255	255	255	255	255	255	255	140	255	E
F	Reserved	0	0	0	0	0	0	0	0	0	F

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

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

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

Row											Row
0	Ped Adjustment	5	5	10	5	5	5	5	0	0	0
1	Perm 2 - Start	24	19	49	45	0	0	0	0	0	1
2	Perm 2 - End	26	21	51	51	0	0	0	0	0	2
3	Perm 3 - Start	50	35	65	75	0	0	0	0	0	3
4	Perm 3 - End	56	41	71	81	0	0	0	0	0	4
5	Reservice Time	0	85	0	0	90	0	0	0	0	5
6	Reservice Phases		1			1					6
7											7
8	Pretimed Phases										8
9	Max Recall						1	1			9
A	Perm 1 Veh Phase	5	5	1	1	12345678	12345678	12345678	12345678	12345678	A
B	Perm 1 Ped Phase					12345678	12345678	12345678	12345678	12345678	B
C	Perm 2 Veh Phase	4 8	4 8	4 8	4 8						C
D	Perm 2 Ped Phase	4 8	4 8	4 8	4 8						D
E	Perm 3 Veh Phase	1	1	5	5						E
F	Perm 3 Ped Phase										F

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

Sync Phases <C+0+C=1>

Row		F	Row
0	Free Lag	2 4 6 8	0
1	Plan 1 - Lag	2 45 8	1
2	Plan 2 - Lag	2 45 8	2
3	Plan 3 - Lag	1 4 6 8	3
4	Plan 4 - Lag	1 4 6 8	4
5	Plan 5 - Lag	1 4 6 8	5
6	Plan 6 - Lag	1 4 6 8	6
7	Plan 7 - Lag	1 4 6 8	7
8	Plan 8 - Lag	1 4 6 8	8
9	Plan 9 - Lag	1 4 6 8	9
A	External Lag		A
B	Lag Hold		B
C			C
D			D
E			E
F			F

Lag Phases <C+0+C=1>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	One-Shot Timer	0	Latch 1 Set	0	NOT-3	0	Max 2	0	Pretimed	0	Set DOW	0	Dial 2 (7-Wire)	0	Sim Term	0	0
1	AND-5 (a)	0	Latch 1 Reset	0	NOT-4	0	Bus Checkin A	0	Plan 1	0	Ext. Perm 1	0	Dial 3 (7-Wire)	0	EV-A	71	1
2	AND-5 (b)	0	Latch 2 Set	0	OR-4 (a)	0	Bus Checkin B	0	Plan 2	0	Ext. Perm 2	0	Offset 1 (7-Wire)	0	EV-B	72	2
3	AND-6 (a)	0	Latch 2 Reset	0	OR-4 (b)	0	Bus Checkin C	0	Plan 3	0	Gate Down	0	Offset 2 (7-Wire)	0	EV-C	73	3
4	AND-6 (b)	0	NAND-3 (a)	0	OR-5 (a)	0	Bus Checkin D	0	Plan 4	0	Set Clock	0	Offset 3 (7-Wire)	0	EV-D	74	4
5	Reserved		NAND-3 (b)	0	OR-5 (b)	0	Bus Checkout A	0	Plan 5	0	Stop Time	82	Free (7-Wire)	0	RR-1	51	5
6	Reserved		NAND-4 (a)	0	OR-6 (a)	0	Bus Checkout B	0	Plan 6	0	Flash Sense	81	Flash (7-Wire)	0	RR-2	52	6
7	Reserved		NAND-4 (b)	0	OR-6 (b)	0	Bus Checkout C	0	Plan 7	0	Manual Enable	0	Excl. Ped Omit	0	Spec. Event 1	0	7
8	Spec. Funct. 1	0	OR-7 (a)	0	EXTMR	0	Bus Checkout D	0	Plan 8	0	Man. Advance	0	NOT-1	200	Spec. Event 2	0	8
9	Spec. Funct. 2	50	OR-7 (b)	0	External Alarm 1	0	Max Inhibit (nema)	0	Plan 9	0	External Alarm 2	0	NOT-2	0	External Lag	0	9
A	Spec. Funct. 3	0	OR-7 (c)	0	AND-4 (a)	0	Force A (nema)	0	DELAY-A	0	Phase Bank 2	0	OR-1 (a)	0	AND-1 (a)	0	A
B	Spec. Funct. 4	0	OR-7 (d)	0	AND-4 (b)	0	Force B (nema)	0	DELAY-B	0	Phase Bank 3	0	OR-1 (b)	0	AND-1 (b)	0	B
C	Reserved		OR-8 (a)	0	NAND-1 (a)	0	C.N.A. (nema)	0	DELAY-C	0	Overlap Set 2	0	OR-2 (a)	0	AND-2 (a)	0	C
D	Reserved		OR-8 (b)	0	NAND-1 (b)	0	Hold (nema)	0	DELAY-D	0	Overlap Set 3	0	OR-2 (b)	0	AND-2 (b)	0	D
E	Reserved		OR-8 (c)	0	NAND-2 (a)	0	Max Recall	0	DELAY-E	0	Detector Set 2	0	OR-3 (a)	0	AND-3 (a)	0	E
F	Reserved		OR-8 (d)	0	NAND-2 (b)	0	Min Recall	201	DELAY-F	0	Detector Set 3	0	OR-3 (b)	0	AND-3 (b)	0	F

Assignable Inputs <C+0+E=126>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Reserved		Phase ON - 1	0	Preempt Fail	0	Flasher 0	0	Free	0	NOT-1	201	TOD Out 1	0	Dial 2 (7-Wire)	0	0
1	Reserved		Phase ON - 2	0	Sp Evnt Out 1	0	Flasher 1	0	Plan 1	0	OR-1	0	TOD Out 2	0	Dial 3 (7-Wire)	0	1
2	Reserved		Phase ON - 3	0	Sp Evnt Out 2	0	Fast Flasher	0	Plan 2	0	OR-2	0	TOD Out 3	0	Offset 1 (7-Wire)	0	2
3	Reserved		Phase ON - 4	0	Sp Evnt Out 3	0	EXTMR	0	Plan 3	0	OR-3	0	TOD Out 4	0	Offset 2 (7-Wire)	0	3
4	Reserved		Phase ON - 5	0	Sp Evnt Out 4	0	One-Shot Timer	0	Plan 4	0	AND-1	0	TOD Out 5	0	Offset 3 (7-Wire)	0	4
5	Reserved		Phase ON - 6	0	Sp Evnt Out 5	0	Reserved		Plan 5	0	AND-2	0	TOD Out 6	0	Free (7-Wire)	200	5
6	Reserved		Phase ON - 7	0	Sp Evnt Out 6	0	Latch 1	0	Plan 6	0	AND-3	0	TOD Out 7	0	Flash (7-Wire)	0	6
7	Reserved		Phase ON - 8	0	Sp Evnt Out 7	0	Latch 2	0	Plan 7	0	NOT-2	0	TOD Out 8	0	Preempt	0	7
8	Flh Yell Arrow 1	0	Ph. Check - 1	0	Sp Evnt Out 8	0	NOT-3	0	Plan 8	0	EV-A	0	Adv. Warn - 1	0	Low Priority A	0	8
9	Green 1	0	Ph. Check - 2	0	Coord On	0	NOT-4	0	Plan 9	0	EV-B	0	Adv. Warn - 2	0	Low Priority B	0	9
A	Flh Yell Arrow 3	0	Ph. Check - 3	0	Detector Fail	0	OR-4	0	Spec. Funct. 3	0	EV-C	0	DELAY-A	0	Low Priority C	0	A
B	Green 3	0	Ph. Check - 4	0	Spec. Funct. 1	0	OR-5	0	Spec. Funct. 4	0	EV-D	0	DELAY-B	0	Low Priority D	0	B
C	Flh Yell Arrow 5	0	Ph. Check - 5	0	Spec. Funct. 2	0	OR-6	0	NAND-3	0	RR-1	0	DELAY-C	0	AND-5	0	C
D	Green 5	0	Ph. Check - 6	0	Central Control	0	AND-4	0	NAND-4	0	RR-2	0	DELAY-D	0	AND-6	0	D
E	Flh Yell Arrow 7	0	Ph. Check - 7	0	Excl. Ped DW	0	NAND-1	0	OR-7	0	Spec. Event 1	0	DELAY-E	0	Reserved		E
F	Green 7	0	Ph. Check - 8	0	Excl. Ped WK	0	NAND-2	0	OR-8	0	Spec. Event 2	0	DELAY-F	0	Reserved		F

Assignable Outputs <C+0+E=127>

		Phase							
	Column Numbers ---->	1	2	3	4	5	6	7	8
Row	*Phase Names ---->*								
0	Ped Walk	0	7	0	4	0	7	0	4
1	Ped FDW	0	18	0	22	0	10	0	22
2	Min Green	10	7	3	8	5	7	3	8
3	Type 3 Disconnect	0	10	0	0	0	10	0	0
4	Added per Vehicle	0.0	1.5	0.0	0.0	0.0	1.5	0.0	0.0
5	Veh Extension	3.0	3.5	0.5	3.0	3.0	3.5	0.5	3.0
6	Max Gap	3.0	4.0	0.5	3.0	3.0	5.0	0.5	3.0
7	Min Gap	3.0	2.0	0.5	3.0	3.0	2.0	0.5	3.0
8	Max Limit	45	40	17	30	20	40	17	10
9	Max Limit 2	30	70	30	70	30	70	30	70
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	15	0	0	0	0	0	0	0
D	Reduce Every	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0
E	Yellow Change	4.1	4.8	3.0	4.1	4.1	4.8	3.0	4.1
F	Red Clear	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0

Phase Timing - Bank 2 <C+0+F=2>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = Number of cycles when lengthing

Transition Type	1.3	<C/5+1+9>

TBC Transition

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

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

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

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	`
Phase Number	0	<F/1+D+F>

Advance Warning Beacon - Sign 2

Offset Time	0	<C/5+2+E>
Max Cycle Time	50	<C/5+2+F>

Yellow Yield Coordination

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

Local Alarm Disable

Row		1	2	3	4	5	6	7	8
0	Ped Walk	0	7	0	7	0	7	0	7
1	Ped FDW	0	15	0	15	0	15	0	15
2	Min Green	4	7	4	4	4	7	4	4
3	Type 3 Disconnect	0	20	0	20	0	20	0	20
4	Added per Vehicle	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0
5	Veh Extension	2.0	4.0	2.0	2.5	2.0	4.0	2.0	2.5
6	Max Gap	3.0	6.0	3.0	3.0	3.0	6.0	3.0	3.0
7	Min Gap	0.5	2.0	0.5	1.5	0.5	2.0	0.5	1.5
8	Max Limit	20	30	20	25	20	30	20	25
9	Max Limit 2	30	50	30	40	30	50	30	40
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	7	7	7	7	7	7	7	7
C	Cond Serv Check	10	10	10	10	10	10	10	10
D	Reduce Every	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
E	Yellow Change	3.0	4.0	3.0	3.0	3.0	4.0	3.0	3.0
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Phase Timing - Bank 3 <C+0+F=3>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing

Column Numbers ---->	0	1	2	3	1	3
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		39	45_7	2	123	0.0	0.0
1		40	45_7	6	123	0.0	0.0
2		41	45_7	4	123	0.0	0.0
3		42	45_7	8	123	0.0	0.0
4		43	45_7	2	123	0.0	0.0
5		44	45_7	6	123	0.0	0.0
6		45	45_7	4	123	0.0	0.0
7		46	45_7	8	123	2.0	0.0
8		47	67	2	123	0.0	0.0
9		48	67	6	123	0.0	0.0
A		49	67	4	123	0.0	0.0
B		50	67	8	123	0.0	0.0
C		55	45_7	5	123	2.0	0.0
D		56	45_7	1	123	0.0	0.0
E		57	45_7	7	123	0.0	0.0
F		58	45_7	3	123	0.0	0.0

	4	5	6	7	2	4
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		59	45_7	5	123	0.0	0.0
1		60	45_7	1	123	0.0	0.0
2		61	45_7	7	123	0.0	0.0
3		62	45_7	3	123	0.0	0.0
4		63	45_7	2	123	0.0	0.0
5		64	45_7	6	123	0.0	0.0
6		65	45_7	4	123	0.0	0.0
7		66	45_7	8	123	3.0	0.0
8		67	2	2	123	0.0	0.0
9		68	2	6	123	0.0	0.0
A		69	2	4	123	0.0	0.0
B		70	2	8	123	0.0	0.0
C		76	45_7	2	123	0.0	0.0
D		77	45_7	6	123	0.0	0.0
E		78	45_7	4	123	0.0	0.0
F		79	45_7	8	123	0.0	0.0

Detector Assignments <C+0+E=126> <C+0+D=0>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 = 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

Column Numbers ---->	Ped / Phase / Overlap 1	2	3	4	5	6	7	8	Row
Walk	0	0	0	0	0	0	0	0	0
Don't Walk	0	0	0	0	0	0	0	0	1
Phase Green	0	0	0	0	0	0	0	0	2
Phase Yellow	0	0	0	0	0	0	0	0	3
Phase Red	0	0	0	0	0	0	0	0	4
Overlap Green	35	0	0	0	0	0	0	0	5
Overlap Yellow	37	0	0	0	0	0	0	0	6
Overlap Red	0	0	0	0	0	0	0	0	7

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

Cabinet Type	30	<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

	B	Row
One-Shot	0.0	8
Ext. Timer	0	9
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

Delay Logic Times
<C+0+D=0> (seconds)

Row	Time	Plan	Offset	Day of Week
0	00 : 00	E	0	1234567
1	07 : 00	1	A	_23456_
2	07 : 30	4	A	_23456_
3	08 : 45	2	A	_23456_
4	15 : 00	3	A	_23456_
5	18 : 30	E	A	_23456_
6	10 : 00	2	A	1_____7
7	18 : 00	E	0	1_____7
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

TOD Coordination <C+0+9=0.1>
(Bank 1)

Time	Funct.	Day of Week	Column 4 Phases/Bits
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____

TOD Function <C+0+7=0.1> <C+0+E=27>

Day	Year	Month	Holiday Type
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____

Holiday Dates <C+0+8=1.1>
(Bank 1)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____

Holiday Events <C+0+9=1.1>
(Bank 1)

T.O.D. Functions
0 =
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 5 - Disable Low Priority Preempt
Bit 6 - FYA Inhibit
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

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

TOD Coordination <C+0+9=0.2>
(Bank 2)

Time	Funct.	Holiday Type	Column 4 Phases/Bits
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____

Holiday TOD Function <C+0+7=0.2> <C+0+E=28>

Day	Year	Month	Holiday Type
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____

Holiday Events <C+0+9=1.2>
(Bank 2)

Month Select: October = A, November = B, Decmber = C

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

Special Event Schedule -- Table 1 <C+0+E=27>

Notes:

0 <E/27+5+F>
Limited Service Interval

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

Min Green Before PE Force Off

Max Time (minutes)	255	<F/1+0+9>

Max Preempt Time Before Failure

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

Min Time Between Same Preempts
(Does Not Apply To Railroad Preempt)

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

Disable Low Priority Channel

Low Priority
1 = Channel A
2 = Channel B
3 = Channel C
4 = Channel D

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

Existing Intersection LOS Worksheets

Intersection												
Int Delay, s/veh	4.9											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	6	0	4	5	3	0	0	10	6	0	0
Future Vol, veh/h	0	6	0	4	5	3	0	0	10	6	0	0
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	8	0	6	7	4	0	0	14	8	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	16	0	0	13	0	0	37	41	18	39	39	19
Stage 1	-	-	-	-	-	-	13	13	-	25	25	-
Stage 2	-	-	-	-	-	-	23	28	-	13	13	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1601	-	-	1605	-	-	969	851	1060	966	853	1059
Stage 1	-	-	-	-	-	-	1007	884	-	992	874	-
Stage 2	-	-	-	-	-	-	995	872	-	1007	884	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1594	-	-	1598	-	-	957	841	1051	941	843	1050
Mov Cap-2 Maneuver	-	-	-	-	-	-	957	841	-	941	843	-
Stage 1	-	-	-	-	-	-	1003	881	-	985	867	-
Stage 2	-	-	-	-	-	-	987	865	-	989	881	-

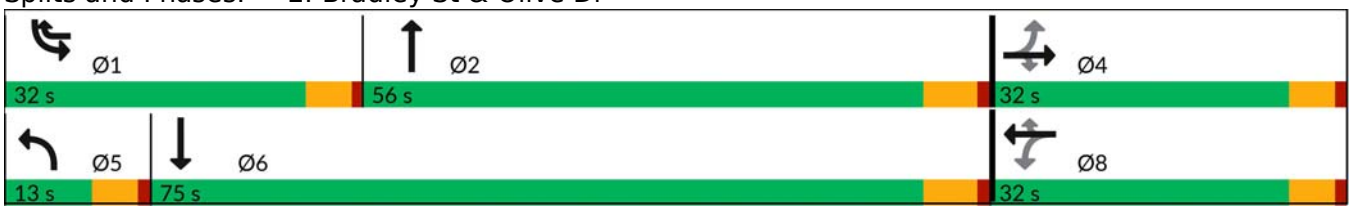
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	2.42	8.47	8.86
HCM LOS			A	A

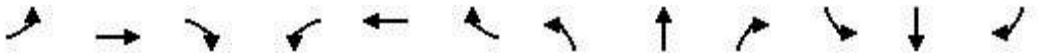
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1051	1594	-	-	558	-	-	941
HCM Lane V/C Ratio	0.013	-	-	-	0.004	-	-	0.009
HCM Control Delay (s/veh)	8.5	0	-	-	7.3	0	-	8.9
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	6	8	7	150	2	787	3	920	479	1478
Future Volume (vph)	6	8	7	150	2	787	3	920	479	1478
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases		4			8	1	5	2	1	6
Permitted Phases	4		4	8		8				
Detector Phase	4	4	4	8	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	31.1	31.1	31.1	31.1	31.1	10.1	10.1	30.8	10.1	23.8
Total Split (s)	32.0	32.0	32.0	32.0	32.0	32.0	13.0	56.0	32.0	75.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%	26.7%	10.8%	46.7%	26.7%	62.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.8	4.1	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1		5.1	5.1	5.1	5.8	5.1	5.8
Lead/Lag						Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	Min	Min	Min	Min	None	None	Min	None	Min
Act Effct Green (s)		16.8	16.8		16.8	37.7	6.1	35.3	20.9	59.8
Actuated g/C Ratio		0.19	0.19		0.19	0.42	0.07	0.39	0.23	0.67
v/c Ratio		0.04	0.01		0.63	0.68	0.02	0.76	0.62	0.65
Control Delay (s/veh)		35.1	0.1		49.2	19.8	50.6	28.6	37.0	11.8
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		35.1	0.1		49.2	19.8	50.6	28.6	37.0	11.8
LOS		D	A		D	B	D	C	D	B
Approach Delay (s/veh)		23.5			24.6			28.7		18.0
Approach LOS		C			C			C		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 89.9	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay (s/veh): 22.4	Intersection LOS: C
Intersection Capacity Utilization 78.8%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Bradley St & Olive Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	8	7	150	2	787	3	920	93	479	1478	4
Future Volume (veh/h)	6	8	7	150	2	787	3	920	93	479	1478	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	6	8	7	156	2	820	3	958	97	499	1540	4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	54	451	77	1	1273	7	1173	119	608	1938	5
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.00	0.36	0.36	0.18	0.53	0.53
Sat Flow, veh/h	0	185	1552	0	2	2693	1781	3251	329	3456	3636	9
Grp Volume(v), veh/h	14	0	7	158	0	820	3	524	531	499	752	792
Grp Sat Flow(s),veh/h/ln	185	0	1552	2	0	1346	1781	1777	1804	1728	1777	1868
Q Serve(g_s), s	0.0	0.0	0.3	0.0	0.0	21.6	0.2	24.7	24.7	12.9	31.8	31.8
Cycle Q Clear(g_c), s	26.9	0.0	0.3	26.9	0.0	21.6	0.2	24.7	24.7	12.9	31.8	31.8
Prop In Lane	0.43		1.00	0.99		1.00	1.00		0.18	1.00		0.01
Lane Grp Cap(c), veh/h	109	0	451	78	0	1273	7	641	651	608	947	996
V/C Ratio(X)	0.13	0.00	0.02	2.03	0.00	0.64	0.42	0.82	0.82	0.82	0.79	0.79
Avail Cap(c_a), veh/h	109	0	451	78	0	1273	152	963	977	1003	1327	1396
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.7	0.0	23.4	46.1	0.0	19.0	46.0	26.8	26.8	36.8	17.5	17.5
Incr Delay (d2), s/veh	0.5	0.0	0.0	506.4	0.0	1.1	34.8	3.4	3.4	2.8	2.3	2.2
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	0.2	0.0	0.1	12.7	0.0	6.5	0.1	10.2	10.3	5.4	11.6	12.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.2	0.0	23.4	552.5	0.0	20.1	80.8	30.2	30.2	39.6	19.8	19.7
LnGrp LOS	C		C	F		C	F	C	C	D	B	B
Approach Vol, veh/h		21			978			1058			2043	
Approach Delay, s/veh		25.9			106.1			30.4			24.6	
Approach LOS		C			F			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.4	39.2		32.0	5.5	55.2		32.0				
Change Period (Y+Rc), s	5.1	5.8		5.1	5.1	5.8		5.1				
Max Green Setting (Gmax), s	26.9	50.2		26.9	7.9	69.2		26.9				
Max Q Clear Time (g_c+I1), s	11.9	26.7		28.9	2.2	33.8		28.9				
Green Ext Time (p_c), s	1.4	6.7		0.0	0.0	13.4		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	45.5
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	5	2	18	11	6	1	0	13	4	1	0
Future Vol, veh/h	0	5	2	18	11	6	1	0	13	4	1	0
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #		0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	6	2	21	13	7	1	0	15	5	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	25	0	0	13	0	0	73	79	17	75	77	26
Stage 1	-	-	-	-	-	-	12	12	-	64	64	-
Stage 2	-	-	-	-	-	-	61	67	-	11	13	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1589	-	-	1605	-	-	918	811	1062	915	813	1049
Stage 1	-	-	-	-	-	-	1008	885	-	947	842	-
Stage 2	-	-	-	-	-	-	950	839	-	1010	884	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1583	-	-	1599	-	-	897	793	1053	883	796	1040
Mov Cap-2 Maneuver	-	-	-	-	-	-	897	793	-	883	796	-
Stage 1	-	-	-	-	-	-	1004	882	-	930	827	-
Stage 2	-	-	-	-	-	-	932	824	-	991	881	-

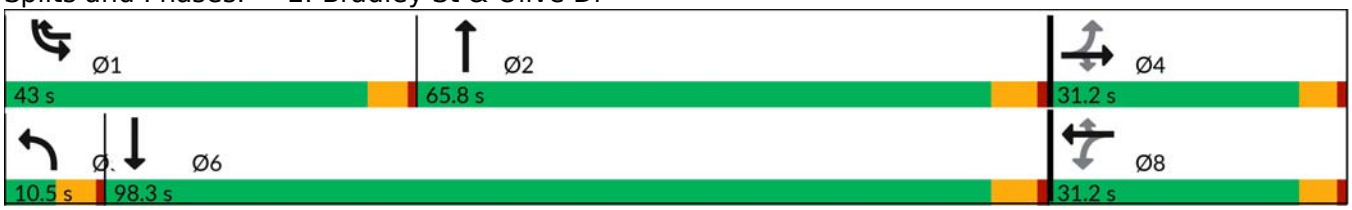
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	3.75	8.52	9.2
HCM LOS			A	A

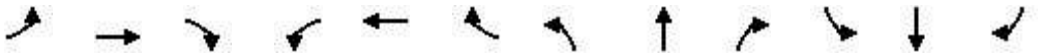
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1040	1583	-	-	865	-	-	864
HCM Lane V/C Ratio	0.016	-	-	-	0.013	-	-	0.007
HCM Control Delay (s/veh)	8.5	0	-	-	7.3	0	-	9.2
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	5	7	13	73	6	750	13	1151	738	1110
Future Volume (vph)	5	7	13	73	6	750	13	1151	738	1110
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases		4			8	1	5	2	1	6
Permitted Phases	4		4	8		8				
Detector Phase	4	4	4	8	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	31.1	31.1	31.1	31.1	31.1	10.1	10.1	30.8	10.1	23.8
Total Split (s)	31.2	31.2	31.2	31.2	31.2	43.0	10.5	65.8	43.0	98.3
Total Split (%)	22.3%	22.3%	22.3%	22.3%	22.3%	30.7%	7.5%	47.0%	30.7%	70.2%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.8	4.1	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1		5.1	5.1	5.1	5.8	5.1	5.8
Lead/Lag						Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	Min	Min	Min	Min	None	None	Min	None	Min
Act Effct Green (s)		15.7	15.7		15.7	47.8	5.7	48.3	32.2	82.4
Actuated g/C Ratio		0.14	0.14		0.14	0.42	0.05	0.43	0.29	0.73
v/c Ratio		0.05	0.04		0.42	0.64	0.14	0.85	0.76	0.44
Control Delay (s/veh)		46.7	0.3		55.3	24.8	66.0	36.8	45.1	8.2
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		46.7	0.3		55.3	24.8	66.0	36.8	45.1	8.2
LOS		D	A		E	C	E	D	D	A
Approach Delay (s/veh)		22.6			27.8			37.1		22.9
Approach LOS		C			C			D		C

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 112.9	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay (s/veh): 28.4	Intersection LOS: C
Intersection Capacity Utilization 84.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 2: Bradley St & Olive Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	7	13	73	6	750	13	1151	101	738	1110	18
Future Volume (veh/h)	5	7	13	73	6	750	13	1151	101	738	1110	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	7	13	74	6	765	13	1174	103	753	1133	18
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	42	43	333	57	3	1259	26	1347	118	846	2284	36
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.01	0.41	0.41	0.24	0.64	0.64
Sat Flow, veh/h	0	200	1547	0	12	2678	1781	3300	289	3456	3578	57
Grp Volume(v), veh/h	12	0	13	80	0	765	13	631	646	753	563	588
Grp Sat Flow(s),veh/h/ln	200	0	1547	12	0	1339	1781	1777	1812	1728	1777	1858
Q Serve(g_s), s	0.0	0.0	0.8	0.0	0.0	26.1	0.9	39.6	39.7	25.5	20.3	20.3
Cycle Q Clear(g_c), s	26.1	0.0	0.8	26.1	0.0	26.1	0.9	39.6	39.7	25.5	20.3	20.3
Prop In Lane	0.42		1.00	0.92		1.00	1.00		0.16	1.00		0.03
Lane Grp Cap(c), veh/h	85	0	333	60	0	1259	26	725	739	846	1134	1186
V/C Ratio(X)	0.14	0.00	0.04	1.34	0.00	0.61	0.50	0.87	0.87	0.89	0.50	0.50
Avail Cap(c_a), veh/h	85	0	333	60	0	1259	79	879	896	1080	1355	1417
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.8	0.0	37.7	59.6	0.0	24.8	59.3	33.0	33.0	44.2	11.6	11.6
Incr Delay (d2), s/veh	0.7	0.0	0.0	232.1	0.0	0.8	14.0	8.2	8.2	7.8	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	5.7	0.0	8.2	0.5	17.7	18.1	11.4	7.2	7.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.6	0.0	37.7	291.7	0.0	25.6	73.3	41.1	41.2	52.0	11.9	11.9
LnGrp LOS	D		D	F		C	E	D	D	D	B	B
Approach Vol, veh/h		25			845			1290			1904	
Approach Delay, s/veh		39.1			50.8			41.5			27.8	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	34.8	55.3		31.2	6.9	83.2		31.2				
Change Period (Y+Rc), s	5.1	5.8		5.1	5.1	5.8		5.1				
Max Green Setting (Gmax), s	37.9	60.0		26.1	5.4	92.5		26.1				
Max Q Clear Time (g_c+I1), s	21.5	41.7		28.1	2.9	22.3		28.1				
Green Ext Time (p_c), s	2.2	7.7		0.0	0.0	8.8		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	37.0
HCM 7th LOS	D

Appendix H

ITE 11th Edition Trip Generation

Multifamily Housing (Mid-Rise)
Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

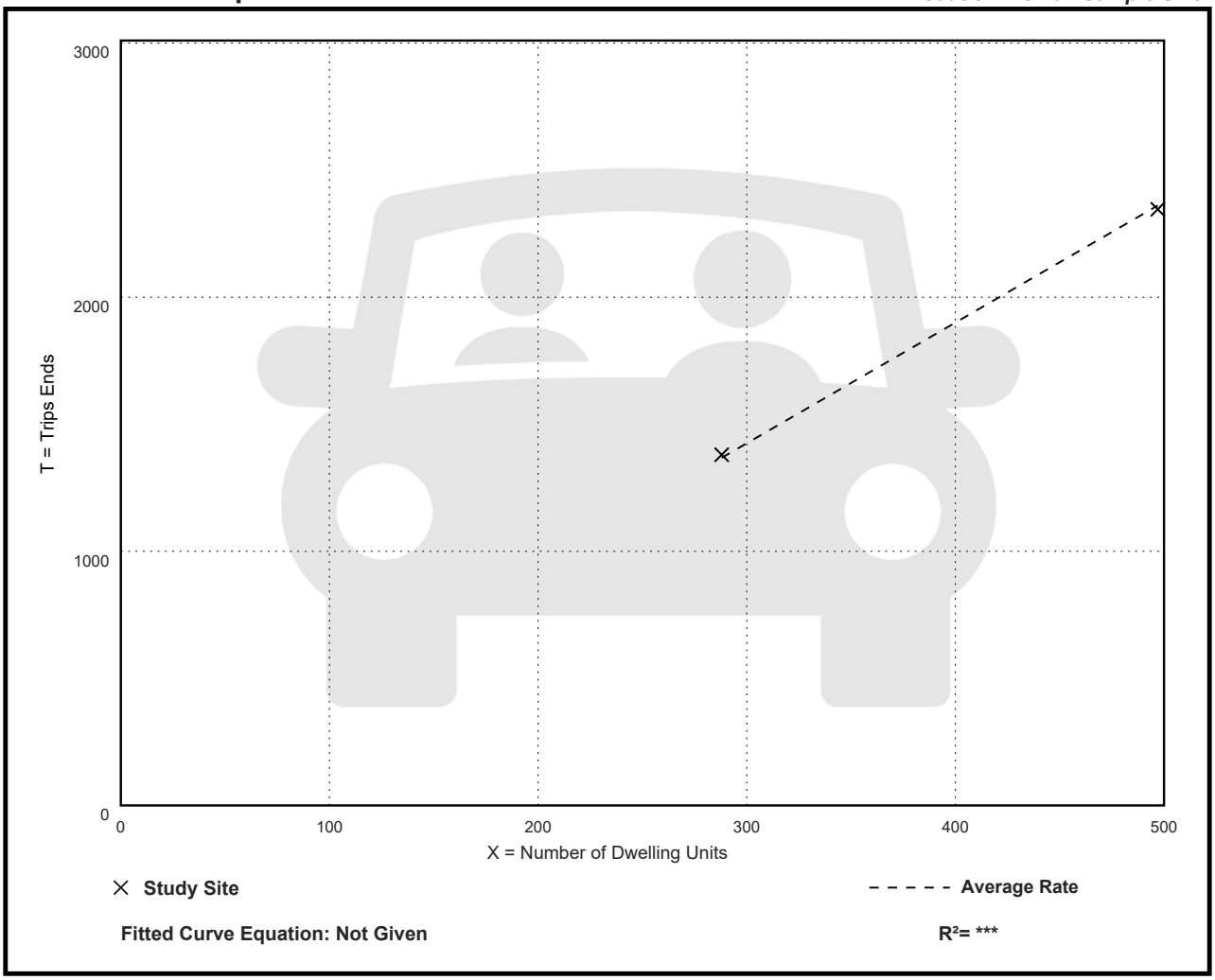
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Dwelling Units: 393
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.75	4.72 - 4.79	***

Data Plot and Equation

Caution – Small Sample Size



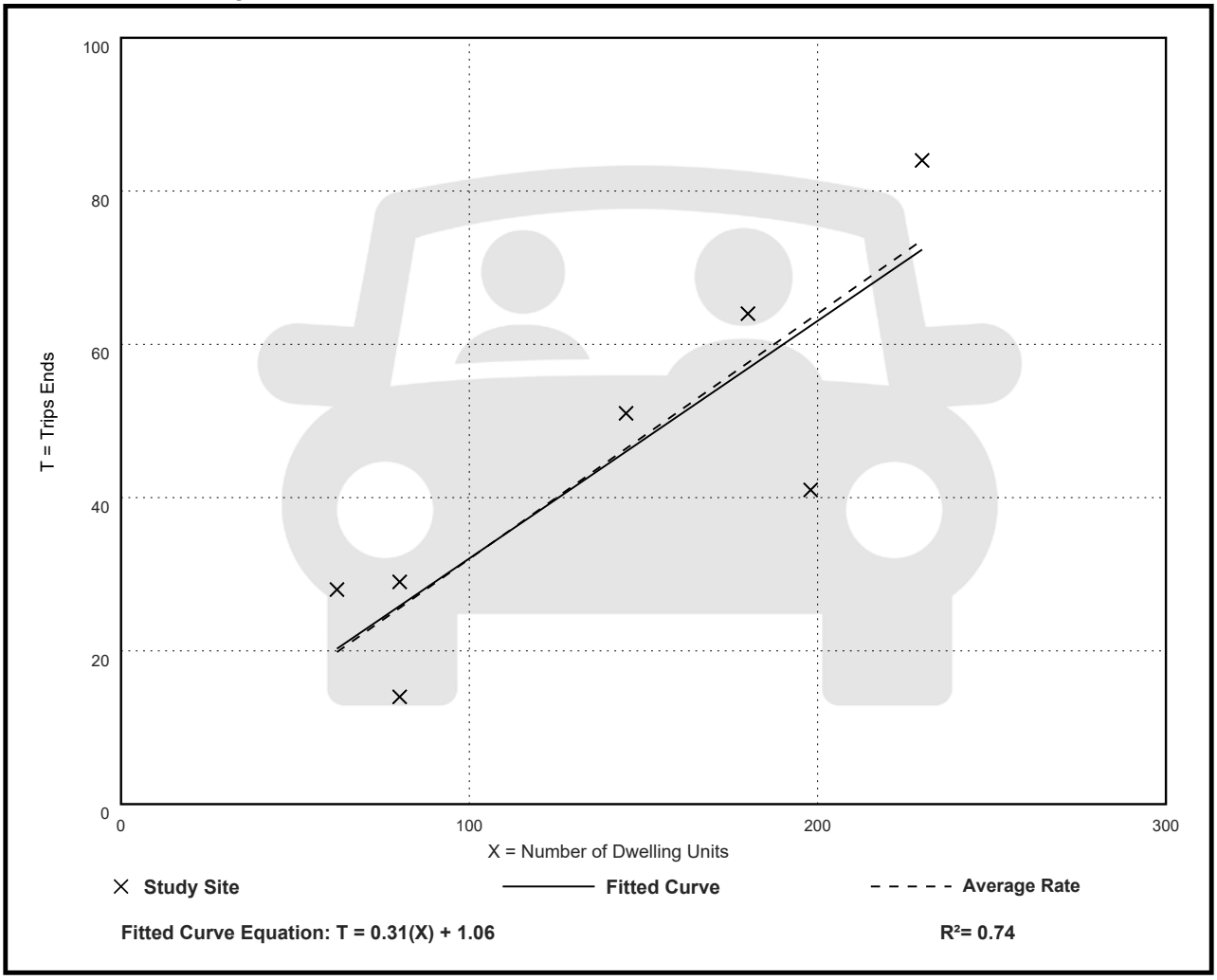
Multifamily Housing (Mid-Rise)
Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 7
Avg. Num. of Dwelling Units: 139
Directional Distribution: 56% entering, 44% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.32	0.18 - 0.45	0.09

Data Plot and Equation



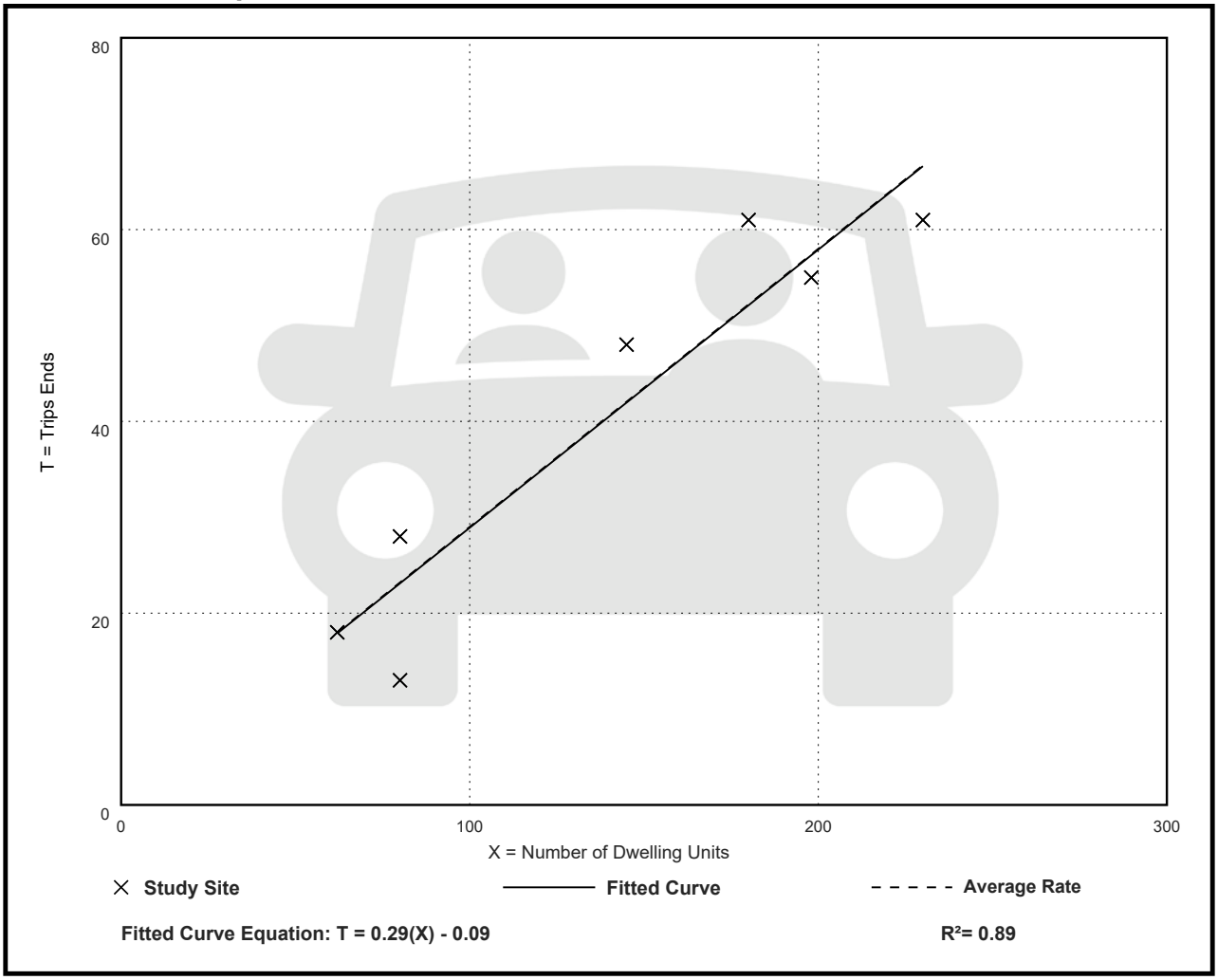
Multifamily Housing (Mid-Rise)
Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 7
Avg. Num. of Dwelling Units: 139
Directional Distribution: 43% entering, 57% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.29	0.16 - 0.35	0.05

Data Plot and Equation



Appendix I

Existing + Project Intersection LOS Worksheets

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	47	0	4	57	3	0	0	10	6	0	0
Future Vol, veh/h	0	47	0	4	57	3	0	0	10	6	0	0
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #		0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	66	0	6	80	4	0	0	14	8	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	90	0	0	71	0	0	168	172	76	170	170	92
Stage 1	-	-	-	-	-	-	71	71	-	99	99	-
Stage 2	-	-	-	-	-	-	97	101	-	71	71	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1506	-	-	1529	-	-	796	721	985	794	723	965
Stage 1	-	-	-	-	-	-	939	836	-	908	813	-
Stage 2	-	-	-	-	-	-	910	812	-	939	836	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1500	-	-	1523	-	-	787	712	977	773	714	957
Mov Cap-2 Maneuver	-	-	-	-	-	-	787	712	-	773	714	-
Stage 1	-	-	-	-	-	-	935	832	-	900	807	-
Stage 2	-	-	-	-	-	-	903	805	-	921	832	-

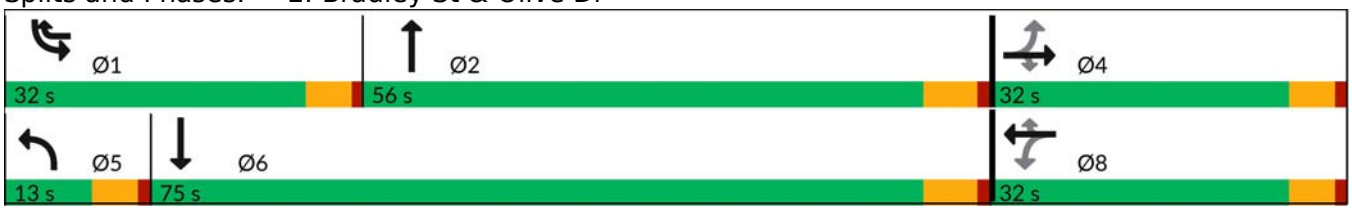
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.46	8.74	9.71
HCM LOS			A	A

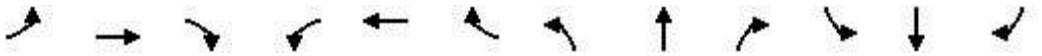
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	977	1500	-	-	111	-	-	773
HCM Lane V/C Ratio	0.014	-	-	-	0.004	-	-	0.011
HCM Control Delay (s/veh)	8.7	0	-	-	7.4	0	-	9.7
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	20	18	24	150	15	787	24	920	479	1478
Future Volume (vph)	20	18	24	150	15	787	24	920	479	1478
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases		4			8	1	5	2	1	6
Permitted Phases	4		4	8		8				
Detector Phase	4	4	4	8	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	31.1	31.1	31.1	31.1	31.1	10.1	10.1	30.8	10.1	23.8
Total Split (s)	32.0	32.0	32.0	32.0	32.0	32.0	13.0	56.0	32.0	75.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%	26.7%	10.8%	46.7%	26.7%	62.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.8	4.1	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1		5.1	5.1	5.1	5.8	5.1	5.8
Lead/Lag						Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	Min	Min	Min	Min	None	None	Min	None	Min
Act Effct Green (s)		17.6	17.6		17.6	38.7	7.0	35.6	21.1	57.9
Actuated g/C Ratio		0.19	0.19		0.19	0.42	0.08	0.39	0.23	0.63
v/c Ratio		0.13	0.06		0.67	0.67	0.18	0.77	0.63	0.69
Control Delay (s/veh)		35.6	0.2		50.9	19.6	51.2	29.2	37.7	15.0
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		35.6	0.2		50.9	19.6	51.2	29.2	37.7	15.0
LOS		D	A		D	B	D	C	D	B
Approach Delay (s/veh)		22.1			25.1			29.8		20.5
Approach LOS		C			C			C		C

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 91.3	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay (s/veh): 24.0	Intersection LOS: C
Intersection Capacity Utilization 78.8%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Bradley St & Olive Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	18	24	150	15	787	24	920	93	479	1478	22
Future Volume (veh/h)	20	18	24	150	15	787	24	920	93	479	1478	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	21	19	25	156	16	820	25	958	97	499	1540	23
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	58	36	440	72	4	1252	45	1212	123	605	1871	28
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.03	0.37	0.37	0.18	0.52	0.52
Sat Flow, veh/h	0	126	1552	0	14	2692	1781	3251	329	3456	3582	53
Grp Volume(v), veh/h	40	0	25	172	0	820	25	523	532	499	763	800
Grp Sat Flow(s),veh/h/ln	126	0	1552	14	0	1346	1781	1777	1804	1728	1777	1859
Q Serve(g_s), s	0.0	0.0	1.1	0.0	0.0	22.5	1.3	24.9	24.9	13.2	34.1	34.2
Cycle Q Clear(g_c), s	26.9	0.0	1.1	26.9	0.0	22.5	1.3	24.9	24.9	13.2	34.1	34.2
Prop In Lane	0.52		1.00	0.91		1.00	1.00		0.18	1.00		0.03
Lane Grp Cap(c), veh/h	94	0	440	76	0	1252	45	662	672	605	928	971
V/C Ratio(X)	0.43	0.00	0.06	2.25	0.00	0.66	0.55	0.79	0.79	0.82	0.82	0.82
Avail Cap(c_a), veh/h	94	0	440	76	0	1252	148	940	954	980	1296	1356
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	24.8	46.0	0.0	20.0	45.7	26.5	26.5	37.7	19.0	19.0
Incr Delay (d2), s/veh	3.1	0.0	0.1	602.7	0.0	1.2	10.1	3.0	3.0	3.1	3.1	3.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.4	14.6	0.0	6.8	0.7	10.2	10.3	5.6	12.9	13.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.3	0.0	24.8	648.7	0.0	21.2	55.8	29.5	29.5	40.8	22.0	22.0
LnGrp LOS	C		C	F		C	E	C	C	D	C	C
Approach Vol, veh/h		65			992			1080			2062	
Approach Delay, s/veh		28.8			130.0			30.1			26.6	
Approach LOS		C			F			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.7	41.2		32.0	7.5	55.4		32.0				
Change Period (Y+Rc), s	5.1	5.8		5.1	5.1	5.8		5.1				
Max Green Setting (Gmax), s	16.9	50.2		26.9	7.9	69.2		26.9				
Max Q Clear Time (g_c+I1), s	11.2	26.9		28.9	3.3	36.2		28.9				
Green Ext Time (p_c), s	1.4	6.7		0.0	0.0	13.3		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	51.9
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	53	2	18	47	6	1	0	13	4	1	0
Future Vol, veh/h	0	53	2	18	47	6	1	0	13	4	1	0
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #		0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	62	2	21	55	7	1	0	15	5	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	67	0	0	70	0	0	172	178	74	174	176	69
Stage 1	-	-	-	-	-	-	69	69	-	106	106	-
Stage 2	-	-	-	-	-	-	103	110	-	67	70	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1534	-	-	1531	-	-	791	715	988	789	718	994
Stage 1	-	-	-	-	-	-	942	838	-	899	807	-
Stage 2	-	-	-	-	-	-	903	805	-	943	837	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1528	-	-	1525	-	-	772	699	980	759	701	986
Mov Cap-2 Maneuver	-	-	-	-	-	-	772	699	-	759	701	-
Stage 1	-	-	-	-	-	-	938	834	-	883	792	-
Stage 2	-	-	-	-	-	-	885	790	-	924	833	-

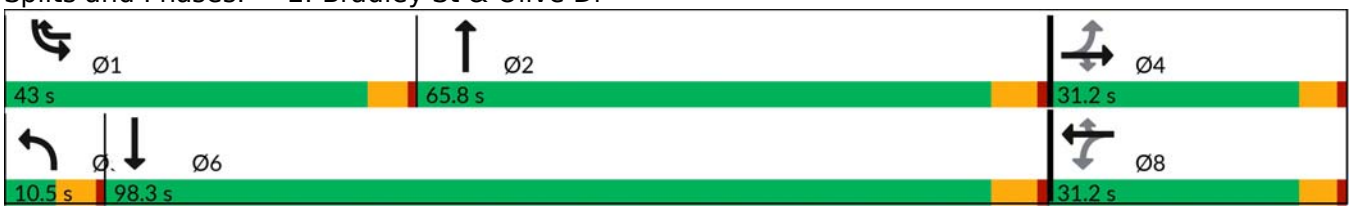
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	1.87	8.81	9.86
HCM LOS			A	A

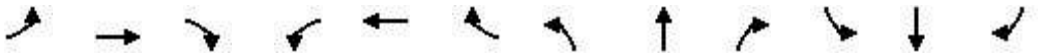
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	962	1528	-	-	446	-	-	747
HCM Lane V/C Ratio	0.017	-	-	-	0.014	-	-	0.008
HCM Control Delay (s/veh)	8.8	0	-	-	7.4	0	-	9.9
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	22	19	32	73	15	750	27	1151	738	1110
Future Volume (vph)	22	19	32	73	15	750	27	1151	738	1110
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases		4			8	1	5	2	1	6
Permitted Phases	4		4	8		8				
Detector Phase	4	4	4	8	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	31.1	31.1	31.1	31.1	31.1	10.1	10.1	30.8	10.1	23.8
Total Split (s)	31.2	31.2	31.2	31.2	31.2	43.0	10.5	65.8	43.0	98.3
Total Split (%)	22.3%	22.3%	22.3%	22.3%	22.3%	30.7%	7.5%	47.0%	30.7%	70.2%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.8	4.1	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1		5.1	5.1	5.1	5.8	5.1	5.8
Lead/Lag						Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	Min	Min	Min	Min	None	None	Min	None	Min
Act Effct Green (s)		16.0	16.0		16.0	48.3	5.7	48.5	32.3	80.7
Actuated g/C Ratio		0.14	0.14		0.14	0.43	0.05	0.43	0.28	0.71
v/c Ratio		0.19	0.10		0.46	0.64	0.31	0.85	0.77	0.46
Control Delay (s/veh)		48.8	0.7		56.5	24.8	71.1	37.0	45.5	9.2
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		48.8	0.7		56.5	24.8	71.1	37.0	45.5	9.2
LOS		D	A		E	C	E	D	D	A
Approach Delay (s/veh)		27.4			28.2			37.8		23.5
Approach LOS		C			C			D		C

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 113.6	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay (s/veh): 29.0	Intersection LOS: C
Intersection Capacity Utilization 84.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 2: Bradley St & Olive Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	19	32	73	15	750	27	1151	101	738	1110	31
Future Volume (veh/h)	22	19	32	73	15	750	27	1151	101	738	1110	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	19	33	74	15	765	28	1174	103	753	1133	32
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	46	27	333	54	6	1259	45	1347	118	846	2214	63
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.03	0.41	0.41	0.24	0.63	0.63
Sat Flow, veh/h	0	124	1547	0	29	2678	1781	3300	289	3456	3526	100
Grp Volume(v), veh/h	41	0	33	89	0	765	28	631	646	753	571	594
Grp Sat Flow(s),veh/h/ln	124	0	1547	29	0	1339	1781	1777	1812	1728	1777	1849
Q Serve(g_s), s	0.0	0.0	2.1	0.0	0.0	26.1	1.9	39.6	39.7	25.5	21.4	21.4
Cycle Q Clear(g_c), s	26.1	0.0	2.1	26.1	0.0	26.1	1.9	39.6	39.7	25.5	21.4	21.4
Prop In Lane	0.54		1.00	0.83		1.00	1.00		0.16	1.00		0.05
Lane Grp Cap(c), veh/h	72	0	333	61	0	1259	45	725	739	846	1115	1161
V/C Ratio(X)	0.57	0.00	0.10	1.47	0.00	0.61	0.62	0.87	0.87	0.89	0.51	0.51
Avail Cap(c_a), veh/h	72	0	333	61	0	1259	79	879	896	1080	1355	1410
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.2	0.0	38.2	58.0	0.0	24.8	58.5	33.0	33.0	44.2	12.4	12.4
Incr Delay (d2), s/veh	10.0	0.0	0.1	280.6	0.0	0.8	13.4	8.2	8.2	7.8	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.8	6.6	0.0	8.2	1.0	17.7	18.1	11.4	7.7	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.3	0.0	38.3	338.6	0.0	25.6	71.9	41.1	41.2	52.0	12.7	12.7
LnGrp LOS	D		D	F		C	E	D	D	D	B	B
Approach Vol, veh/h		74			854			1305			1918	
Approach Delay, s/veh		47.1			58.2			41.8			28.2	
Approach LOS		D			E			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	34.8	55.3		31.2	8.2	81.9		31.2				
Change Period (Y+Rc), s	5.1	5.8		5.1	5.1	5.8		5.1				
Max Green Setting (Gmax), s	37.9	60.0		26.1	5.4	92.5		26.1				
Max Q Clear Time (g_c+I1), s	21.5	41.7		28.1	3.9	23.4		28.1				
Green Ext Time (p_c), s	2.2	7.7		0.0	0.0	9.0		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	39.0
HCM 7th LOS	D

Appendix J

Cumulative Project Traffic Volumes and Assignments

Arroyo Verde Commercial and El Corazon

Rancho Del Oro Commercial Development
TRAFFIC IMPACT ANALYSIS REPORT

Prepared for

City of Oceanside

300 North Coast Hwy
Oceanside, CA 92054

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Draft: July 25, 2016

JN 144233

Table 5
Proposed Project Trip Generation

SANDAG Trip Generation Rates

Land Use	Unit	Daily (per unit)	AM Peak Hour			PM Peak Hour		
			Total (of daily)	Inbound (% AM)	Outbound (% AM)	Total (of daily)	Inbound (% PM)	Outbound (% PM)
Specialty Retail	TSF	40	3%	60%	40%	9%	50%	50%
Bank (Walk-in Only)	TSF	150	4%	70%	30%	8%	40%	60%
Fast Food (Without Drive-Through)	TSF	700	5%	60%	40%	7%	50%	50%
Fast Food (With Drive-Through)	TSF	650	7%	50%	50%	7%	50%	50%
Restaurant (Sit-down, High Turnover)	TSF	160	8%	50%	50%	8%	60%	40%

Forecast Project Generated Trips

Bldg.	Land Use	Size	Unit	Daily Trips	AM Peak Hour			PM Peak Hour		
					Total	Inbound	Outbound	Total	Inbound	Outbound
1	Specialty Retail	2.0	TSF	80	2	1	1	8	4	4
	Bank (Walk-in Only)	4.0	TSF	600	24	17	7	48	19	29
	Fast Food (Without Drive-Through)	2.7	TSF	1,890	95	57	38	132	66	66
2	Restaurant (Sit-down, High Turnover)	6.0	TSF	960	77	38	39	77	46	31
3	Restaurant (Sit-down, High Turnover)	8.0	TSF	1,280	102	51	51	102	61	41
4	Fast Food (With Drive-Through)	4.5	TSF	2,925	205	103	102	205	102	103
SUBTOTAL				**7,735**	**505**	**267**	**238**	**573**	**299**	**274**
Transit Access Trip Reduction (5% - Daily & AM / PM)				*-387*	*-25*	*-13*	*-12*	*-29*	*-15*	*-14*
Specialty Retail Pass-By Trip Reduction (10% - Daily & AM / PM)				*-8*	*0*	*0*	*0*	*-1*	*0*	*-1*
Bank Pass-By Trip Reduction (25% - Daily & PM only) [(a)]				*-150*	*0*	*0*	*0*	*-12*	*-5*	*-7*
Restaurant Pass-By Trip Reduction (20% - Daily & PM only) [(a)]				*-448*	*0*	*0*	*0*	*-36*	*-22*	*-14*
Fast Food (Without Drive-Through) Pass-By Trip Reduction (40% - Daily & PM only) [(a)]				*-756*	*0*	*0*	*0*	*-53*	*-27*	*-26*
Fast Food (With Drive-Through) Pass-By Trip Reduction (40% - Daily & AM / PM)				*-1,170*	*-82*	*-41*	*-41*	*-82*	*-41*	*-41*
NET PROJECT TRIPS				**4,816**	**398**	**213**	**185**	**361**	**190**	**171**

TSF = Thousand Square-Feet

(a) = Trip reductions in the AM peak hour were not assumed for the Bank, Restaurant and Fast Food (without a drive-through) land uses since traffic during the AM peak would primarily consist of employees only.

Project Trip Distribution and Assignment

The project trip distribution was developed based on the existing roadway network and surrounding land uses, existing traffic patterns and access to SR-78, SR-76 and Interstate 5. The El Camino Real / SR-78 and the College Blvd / SR-78 interchanges provide access between the project site and SR-78. Rancho Del Oro Drive connects with SR-76 to the north and Oceanside Blvd. connects with Interstate 5 to the west.

Exhibit 7 illustrates the project trip distribution under existing and near-term future (existing plus cumulative), and Horizon Year 2030 conditions assuming the SR-78 / RDO interchange is not constructed. **Exhibit 8** shows the project trip distribution which includes the future SR-78 / RDO interchange.

Utilizing the project trip distribution shown in **Exhibit 7** and **Exhibit 8**, the forecast project-generated trips were assigned to the roadway network.

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Pasadena
Irvine
San Diego
Woodland Hills

June 27, 2022

Mr. Mark Radelow
Sudberry Properties
5465 Morehouse Drive, Suite 260
San Diego, CA 92121

LLG Reference: 3-22-3561

Subject: **El Corazon OBC Development Project – Transportation Assessment**
City of Oceanside

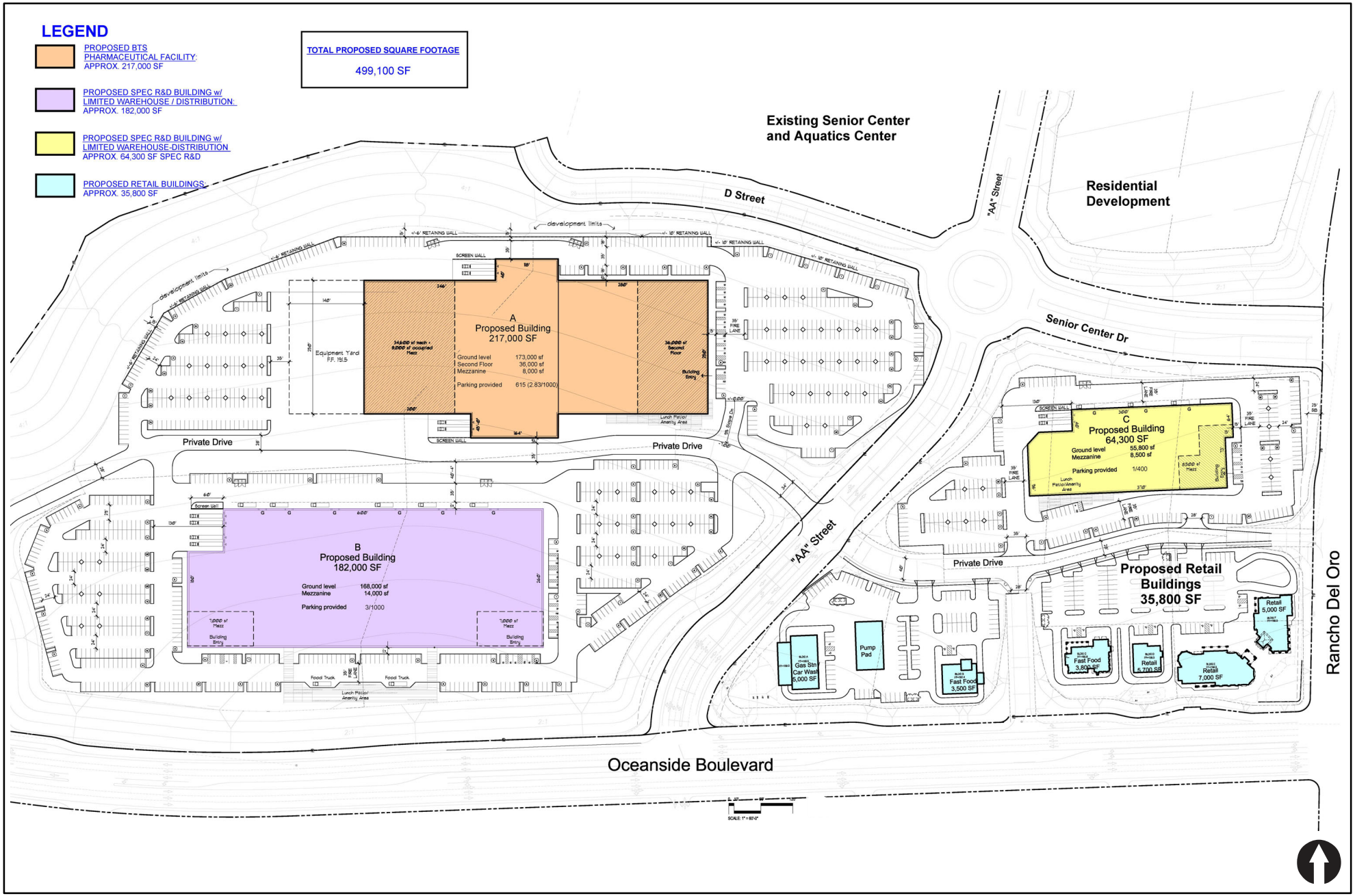
Dear Mark:

Linscott, Law & Greenspan (LLG) Engineers has prepared this transportation assessment for the El Corazon project. El Corazon is a 465-acre parcel bounded by Rancho Del Oro Road to the east, Oceanside Boulevard to the south, El Camino Real to the west and Mesa Drive to the north in the City of Oceanside. The ongoing development of the parcel is in accordance with the El Corazon Specific Plan, approved by the Oceanside City Council in 2009. The Project will contain a mix of land uses including parks and recreation, natural habitat, residential uses, civic services, commercial and hotels. LLG completed a transportation analysis report for the Specific Plan to support the EIR and the study (hereafter referred to as the 2009 traffic study).

LLG also prepared a transportation analysis report dated August 30, 2018 in support of the Specific Plan Amendment which addressed changes to the proposed land uses (hereafter referred to as the 2018 traffic study). The Project is now proceeding to construct the 34.3-acre Oceanside Boulevard Commercial (OBC) development adjacent to Oceanside Boulevard, which entails additional land use changes. The purpose of this report is to compare the trip generation based on the latest revision to both the 2009 and 2018 traffic studies. LLG has also reviewed the mitigation measures / conditions of approval associated with the Environmental Impact Report (EIR) to determine when they are needed.

The transportation assessment includes the following:

- Existing Conditions
- Trip Generation Comparison
- Phasing Analysis



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N:\3561\Figures
Date: 05/26/22

Figure 3

Site Plan

LINSCOTT LAW & GREENSPAN engineers

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 In	Volume Out	Volume Total	Rate	In:Out Split %	Volume In	Volume Out	Volume 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

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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 In	Volume Out	Volume Total	Rate	In:Out Split %	Volume In	Volume Out	Volume 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:

a. Rates from the *SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002.
b. Source: Site Specific Rate
c. Pass-by trip reduction not included
d. 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.
e. The 103 acres was assumed to be converted to 51.5 acres of Active Park and 51.5 acres of Passive Park.

General Notes:

1. OBC – Oceanside Boulevard Commercial

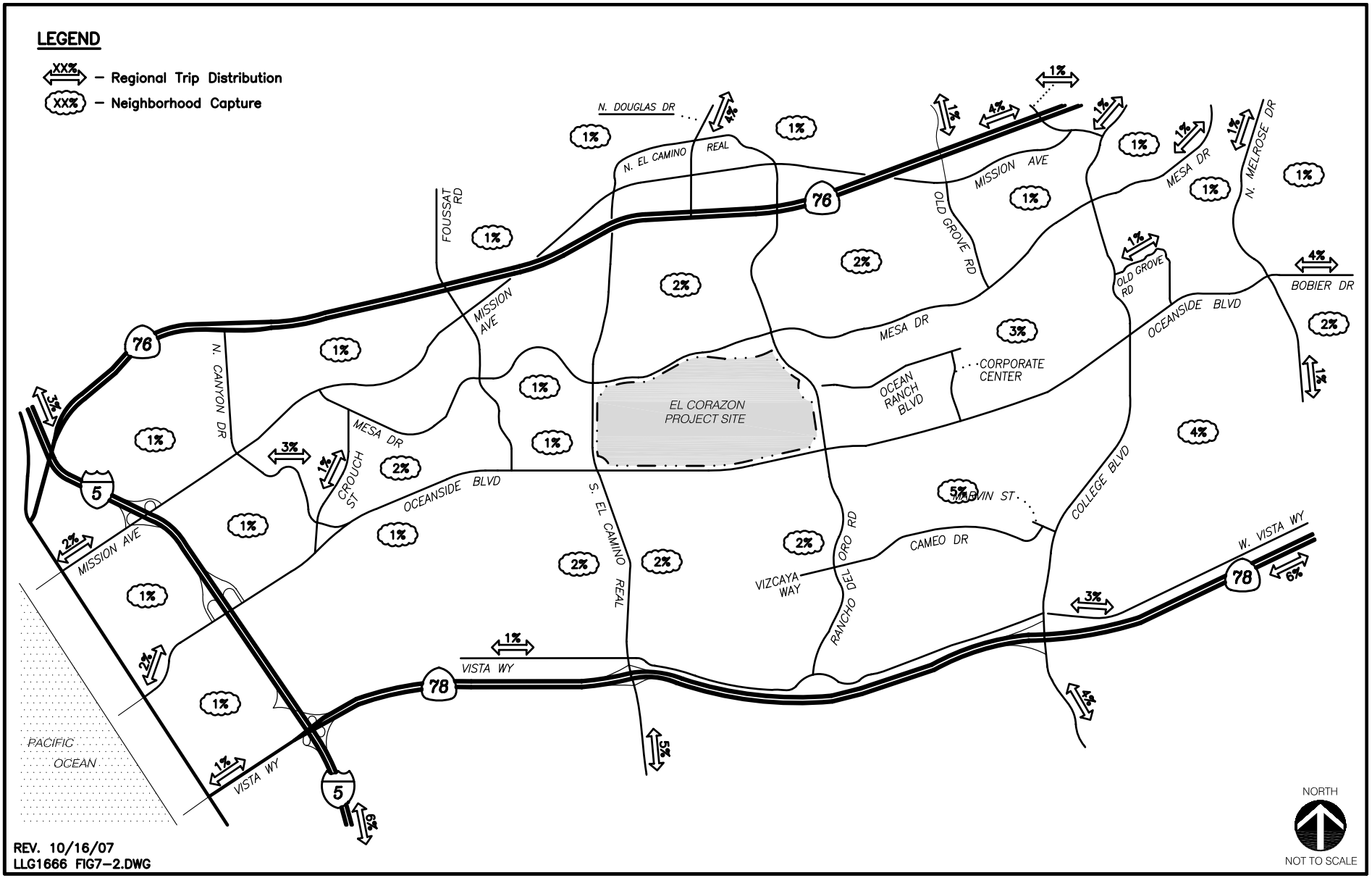

Figure 7-2

Commercial - Project Regional Traffic Distribution

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Pasadena
Irvine
San Diego
Woodland Hills

August 30, 2018

John Amberson
City of Oceanside
300 North Coast Highway
Oceanside, California 92054

LLG Reference: 3-16-2646

Subject: **El Corazon Transportation Analysis**
Oceanside, California

Dear Mr. Amberson:

1. INTRODUCTION

Linscott, Law & Greenspan, Engineers (LLG) has prepared this transportation analysis in support of the Tentative Map (TM) submittal for the El Corazon project. Only new proposed project intersections and internal roadways were analyzed in this report. A formal traffic impact analysis addressing off-site intersections was not prepared since the total El Corazon site trip generation has reduced substantially as compared to the approved Specific Plan for the site. It should be noted that a standalone traffic analysis was prepared for the proposed arena since that use was not contemplated in the approved Specific Plan.

The transportation analysis includes the following:

- Project Description
- Analysis Approach/Methodology
- Trip Generation Comparison
- Year 2030 Conditions/Traffic Volumes
- Year 2030 Analysis
- Queueing Analysis
- Internal Roadway Analysis
- Corridor Arterial Analysis
- Phasing Analysis
- Conclusions

This transportation analysis does not address the potential impacts of an event at the 8,000-seat arena. This analysis is presented in a separate traffic analysis dated March 23, 2018.

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2. PROJECT DESCRIPTION

El Corazon is a 465-acre parcel located in the center of the city of Oceanside, bounded by Rancho Del Oro Road on the east, Oceanside Boulevard on the south, El Camino Real on the west, and Mesa Drive on the north. Development of the parcel is ongoing and guided by the El Corazon Specific Plan, approved by the Oceanside City Council in 2009. El Corazon will eventually contain a mix of land uses including parks and recreation, natural habitat, civic services, commercial, and hotels.

Figure 1 depicts the general location of the El Corazon Specific Plan area and ***Figure 2*** depicts a more detailed project area map. ***Figure 3A*** graphically shows the entire site. All figures are included at the end of this letter report.

The now-proposed El Corazon proposed land uses are as follows:

- A 6 acre resort hotel and a 3.1 acre regional hotel
- 3,000 sf of retail (Shopoff)
- 70 DU of multi-family (Shopoff)
- 5,000 sf Sudberry retail
- 268 DU Sudberry Apartments
- 150,000 sf retail center (Lots 5-13)
- 348,130 sf office/manufacturing/storage (Lots 1-4)
- 8,000 seat arena
- 15,000 sf arena office
- 20,396 sf senior center
- 2.2 acre aquatic center
- 47.5 acres of active park
- 47.5 acres of passive park
- 103 acres (temporary use is the Field of Dreams site – Park space planned ultimately).
- Civic Services Site 2 (5.5 AC)

Since the now proposed project generates less traffic than the previously approved project, the analysis focuses on the project driveways and the internal roadways.

TABLE C-1
EL CORAZON TRIP GENERATION SUMMARY (1/27/17) – 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 In	Volume Out	Volume Total	Rate	In:Out Split %	Volume In	Volume Out	Volume Total
Built														
Senior Center	20.396 KSF	[b]	20 / KSF	408	10%	90:10	37	4	41	10%	20:80	8	33	41
Phase I														
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
Shopoff Multi-Family	70 DU	Condominium / Multi-Family	8 / DU	560	8%	20:80	9	36	45	10%	70:30	39	17	56
Aquatic Center	2.2 Acres	[b]	-	110	-	-	2	1	3	-	-	8	8	16
Phase II														
Retail Project[c]	150 KSF	Community Shopping Center	80 / KSF	12,000	4%	60:40	288	192	480	10%	50:50	600	600	1,200
Phase III														
Arena	8,000 Seats	Indoor Arena	0.1 / Seat	800	1%	80:20	6	2	8	8%	60:40	38	26	64
Arena Site Office	15,000 KSF	Standard Commercial Office	20 / KSF	300	14%	90:10	38	4	42	13%	20:80	8	31	39
Phase IV														
Manufacturing	99.9 KSF	Manufacturing/Assembly	4 / KSF	400	19%	90:10	68	8	76	20%	20:80	16	64	80
Storage	70.15 KSF	Storage	2 / KSF	140	6%	50:50	4	4	8	9%	50:50	7	7	14
R & D	24.0 KSF	Science Research & Development	8 / KSF	192	16%	90:10	28	3	31	14%	10:90	3	24	27

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TRANSPORTATION IMPACT ANALYSIS

EL CORAZON ARENA

Oceanside, California
March 23, 2018

LLG Ref. 3-16-2646

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TABLE 7–1A
TRIP GENERATION – WEEKDAY

Use	Quantity	Mode Split [a]	Attendees	Vehicle Occupancy Rate [b]	Daily Trip Ends (ADT) [c]	Weekend PM Peak Hour of the Generator (6-7 PM)[d]		
						In	Out	Total
Arena	8,000 Seats	Auto (93%)	7,440	2.7	5,511	1,654	138	1,792
		Transit (5%)	400	-	-	-	-	-
		Ped / Bike (2%)	160	-	-	-	-	-
Total Vehicular Trips					**5,511**	**1,654**	**138**	**1,792**

Footnotes:

a. Mode split estimated based on expected use.
b. Vehicle Occupancy Rate obtained from the Stadium Replacement EIR Traffic Impact Analysis, August 2015 and was based on existing parking data and occupancy rates used for similar stadiums and venues in California.
c. Average Daily Trips
d. 60% of the total inbound trips and 5% of the total outbound trips estimated to occur one hour prior to an event.

TABLE 7–1B
TRIP GENERATION – WEEKEND

Use	Quantity	Mode Split [a]	Attendees	Vehicle Occupancy Rate [b]	Daily Trip Ends (ADT) [c]	Weekend Midday Peak Hour of the Generator (12-1 PM)[d]			Weekend PM Peak Hour of the Generator (4-5 PM)[d]		
						In	Out	Total	In	Out	Total
Arena	8,000 Seats	Auto (93%)	7,440	3.0	4,960	1,488	124	1,612	1,488	124	1,612
		Transit (5%)	400	-	-	-	-	-	-	-	-
		Ped / Bike (2%)	160	-	-	-	-	-	-	-	-
Total Vehicular Trips					**4,960**	**1,488**	**124**	**1,612**	**1,488**	**124**	**1,612**

Footnotes:

a. Mode split estimated based on expected use.
b. Vehicle Occupancy Rate obtained from the Stadium Replacement EIR Traffic Impact Analysis, August 2015 and was based on existing parking data and occupancy rates used for similar stadiums and venues in California.
c. Average Daily Trips
d. 60% of the total inbound trips and 5% of the total outbound trips estimated to occur one hour prior to an event.

Note: Only one event is assumed to be scheduled per day. For example, the arena will not host a midday event and an evening event on the same day.

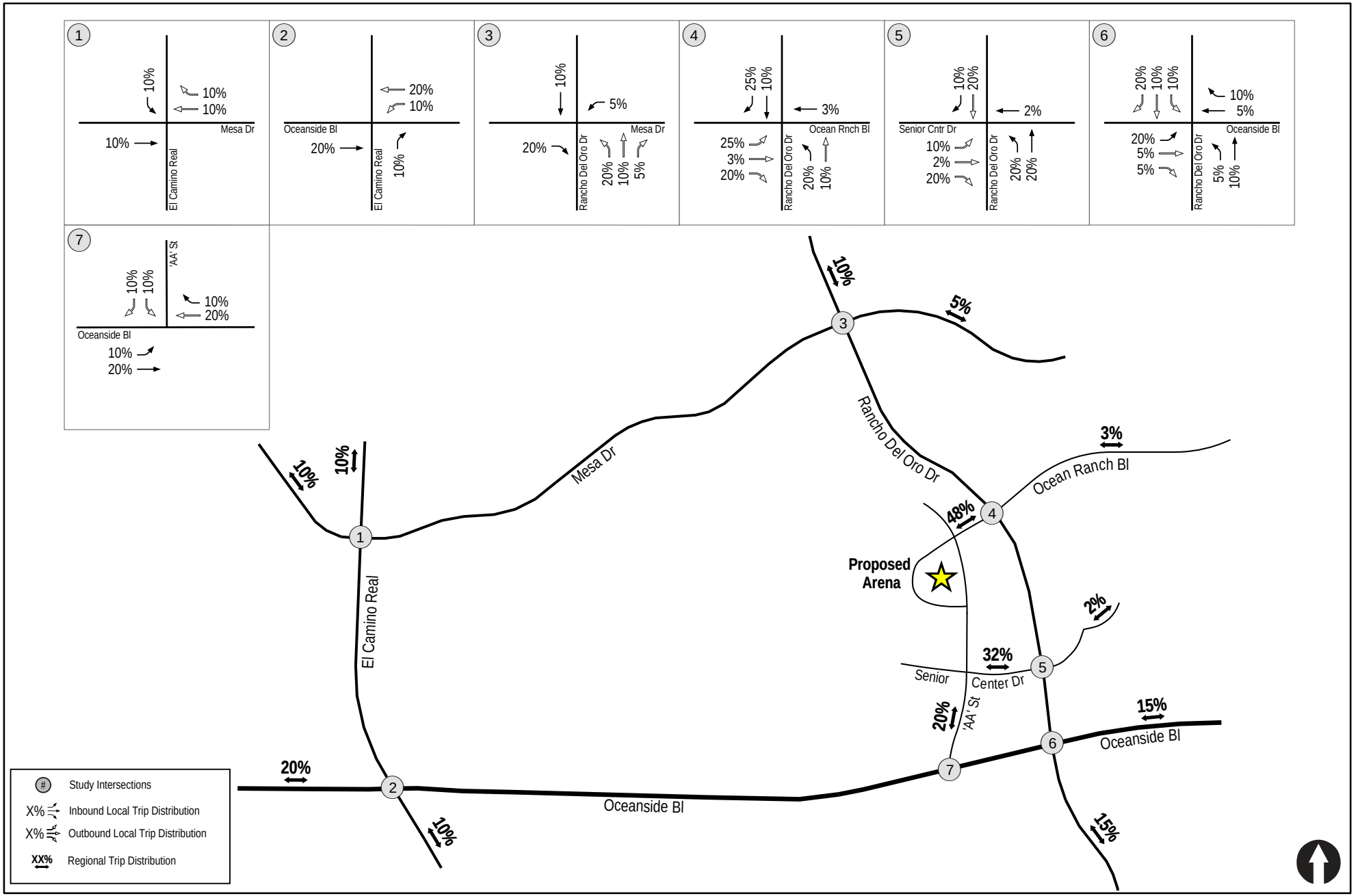

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Figure 7-1

Project Traffic Distribution

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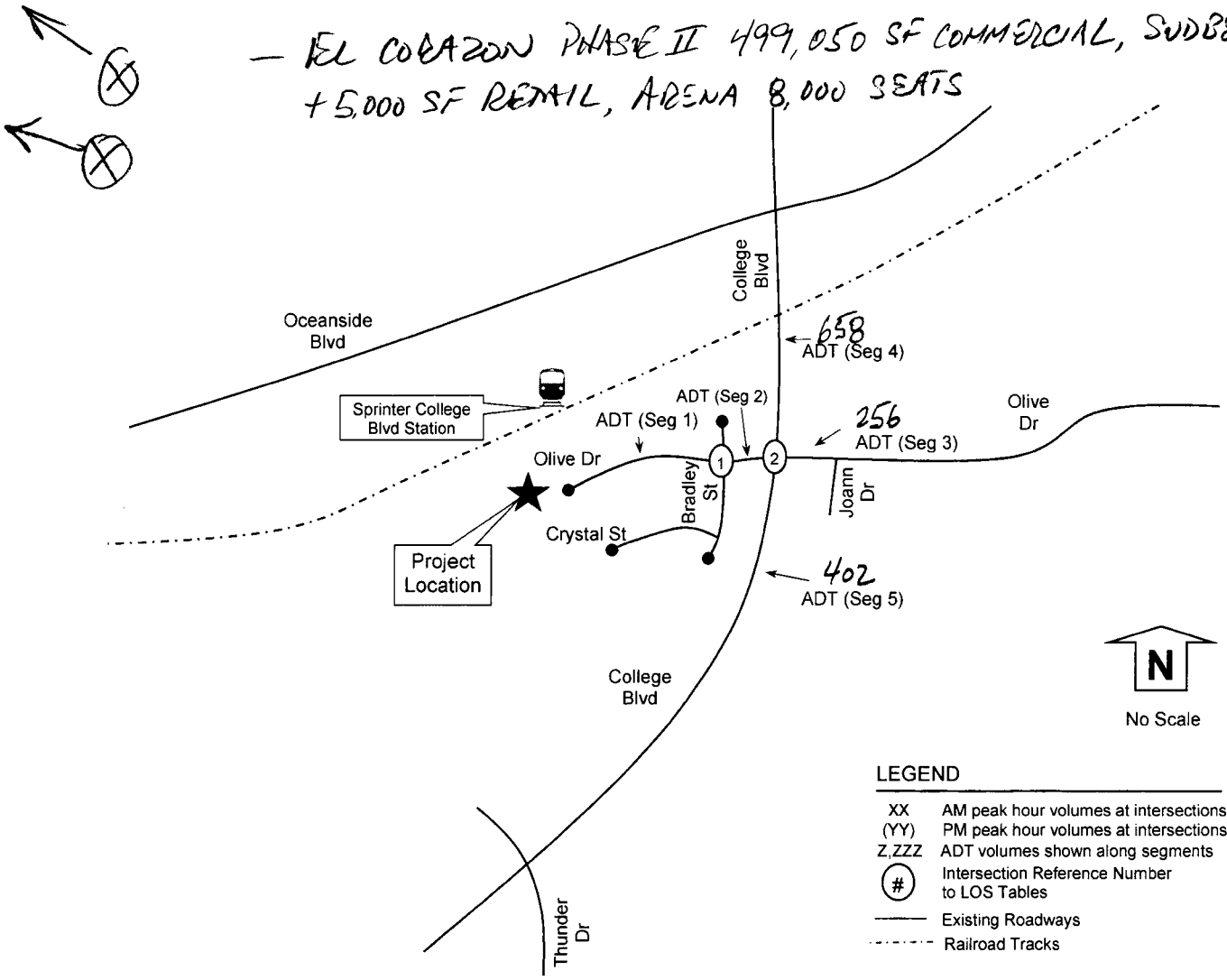
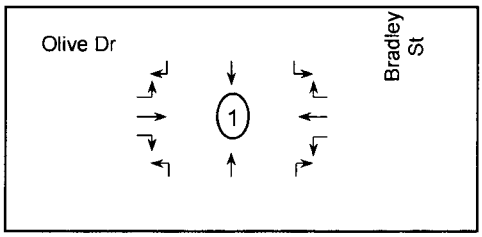
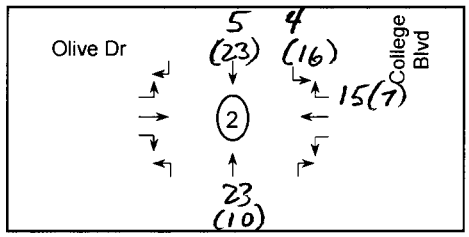
GROUPED TOGETHER BECAUSE THEY ARE NEXT TO EACH OTHER.

- ARROYO VERDE COMMERCIAL 27,200 SF COMMERCIAL
- EL CORAZON PHASE II 499,050 SF COMMERCIAL, SUDBERRY 268 APTS +5,000 SF RETAIL, ARENA 8,000 SEATS



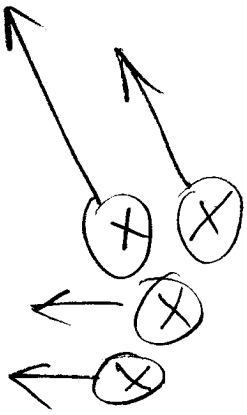


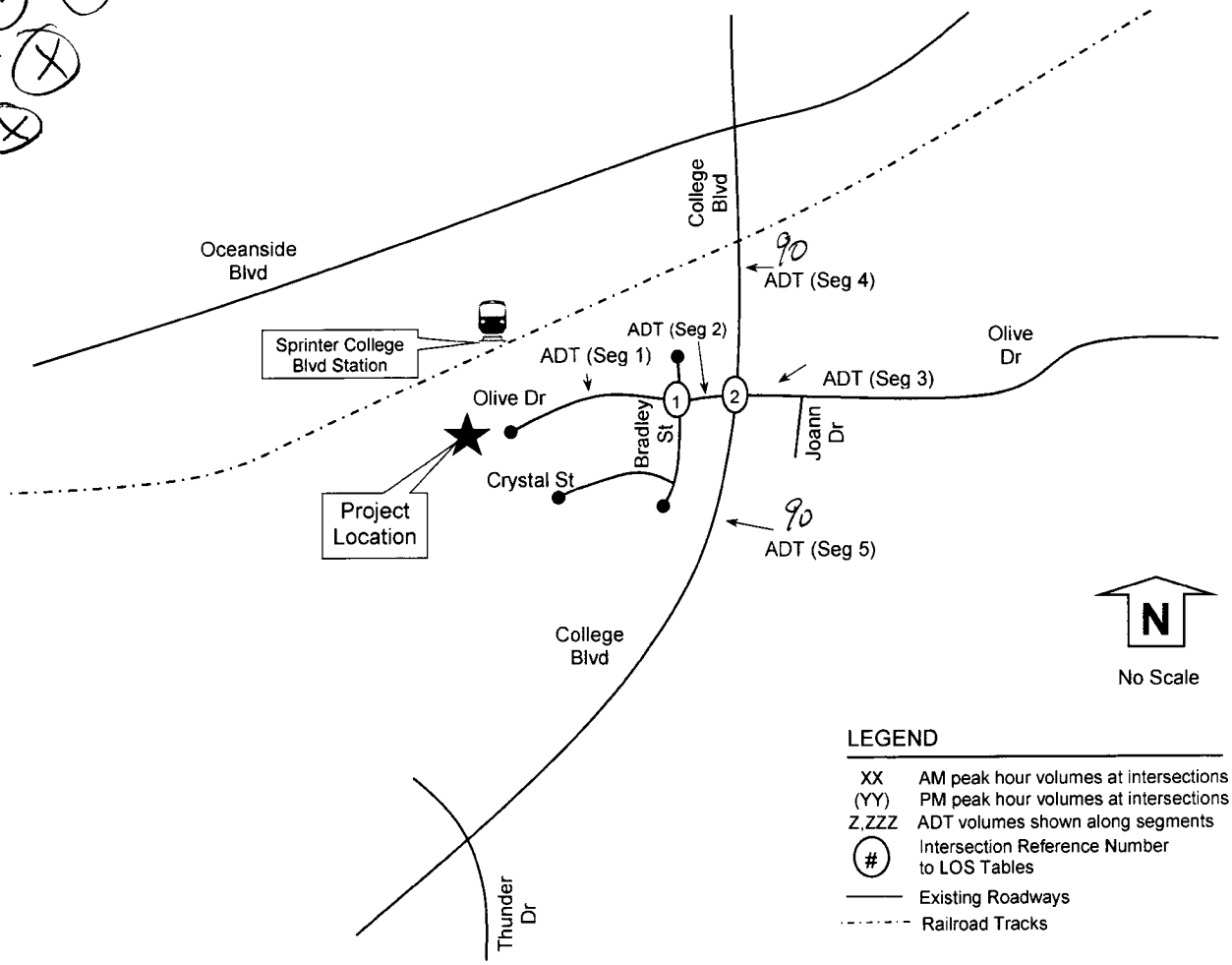


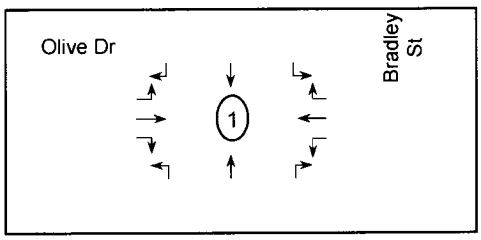
Garrison Creek, Ocean Pointe, Vista Bella, and Titleist

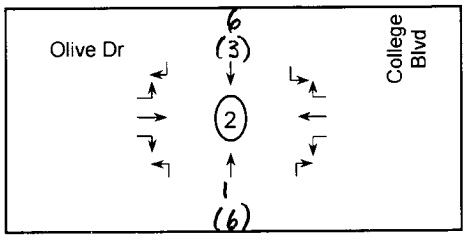
(no posted traffic reports, thus manual trip assignments)

GARRISON CREEK, OCEAN POINTE, BELLA VISTA AND TITLEIST.









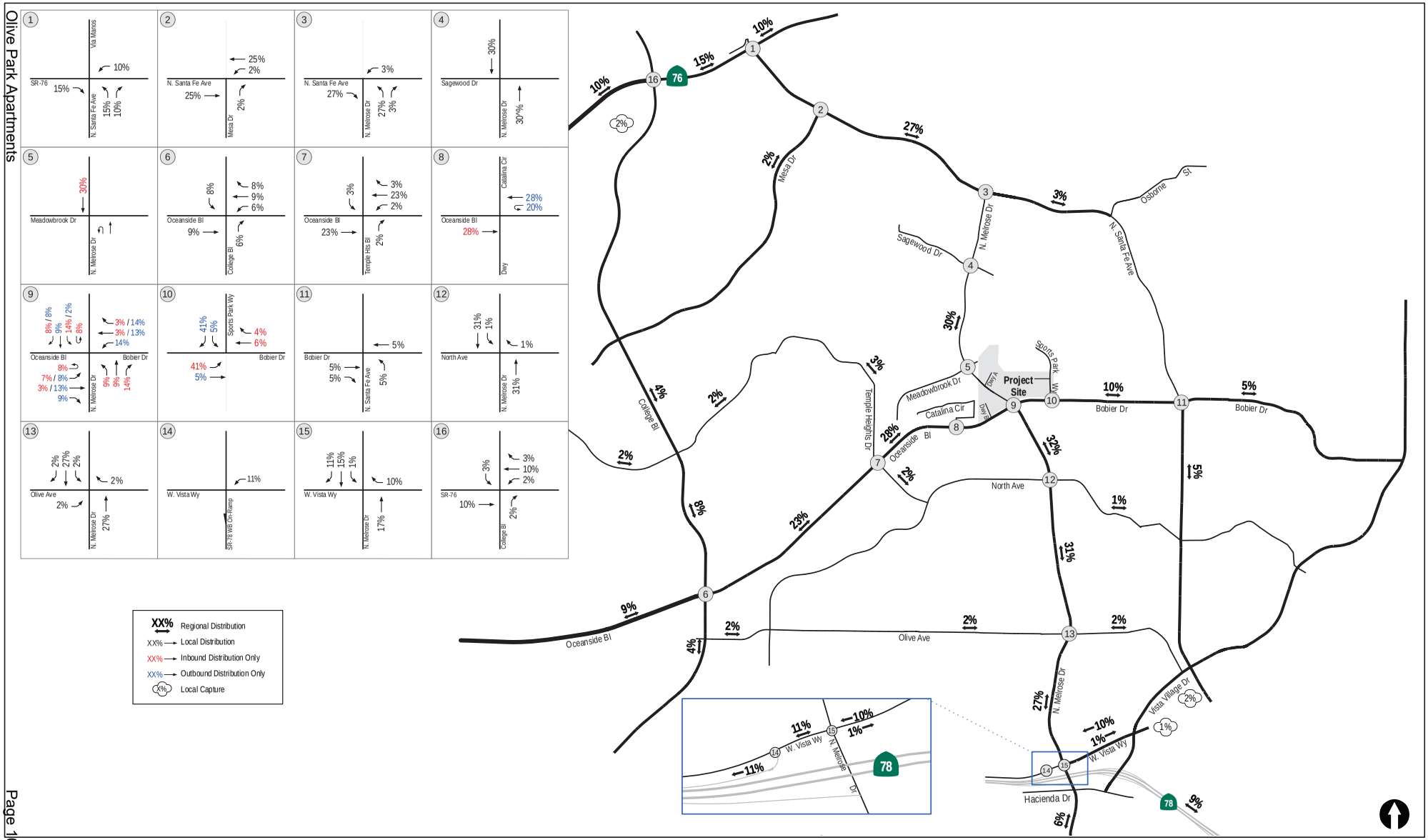
Melrose Heights

TABLE 7–1
PROJECT TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)		AM Peak Hour					PM Peak Hour				
				% of ADT	In:Out Split	Volume			% of ADT	In:Out Split	Volume		
		Rate [a]	Volume			In	Out	Total			In	Out	Total
PA-1													
Condominiums	78 DU	8 /DU [b]	624	8%	2:8	10	40	50	10%	7:3	43	19	62
Office	10 KSF	20 /KSF [c]	200	14%	9:1	25	3	28	13%	2:8	5	21	26
Restaurant	10 KSF	160 /KSF	1,600	8%	5:5	64	64	128	8%	6:4	77	51	128
Mixed-use Reduction [d]		*5%*	*(80)*			*(3)*	*(3)*	*(6)*			*(4)*	*(3)*	*(7)*
Pass-by Reduction [e]		*20%*	*(25)*								*(15)*	*(10)*	*(25)*
Subtotal PA-1			**2,319**			**96**	**104**	**200**			**106**	**78**	**184**
Transit Reduction		*5%*	*(116)*			*(5)*	*(5)*	*(10)*			*(5)*	*(4)*	*(9)*
Final PA-1			***2,203***			***91***	***99***	***190***			***101***	***74***	***175***
PA-2													
Single Family	37 DU	10 /DU	370	8%	3:7	9	21	30	10%	7:3	26	11	37
Transit Reduction		*5%*	*(19)*			—	*(1)*	*(1)*			*(1)*	*(1)*	*(2)*
Final PA-2			***351***			***9***	***20***	***29***			***25***	***10***	***35***
PA-3													
Townhomes	198 DU	8 /DU	1,584	8%	2:8	26	101	127	10%	7:3	110	48	158
Transit Reduction		*5%*	*(79)*			*(1)*	*(5)*	*(6)*			*(6)*	*(2)*	*(8)*
Final PA-3			***1,505***			***25***	***96***	***121***			***104***	***46***	***150***
Total Project	**313 DU**		**4,059**			**125**	**215**	**340**			**230**	**130**	**360**

Footnotes:

a. Rates obtained from a Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002, published by SANDAG.
b. DU – Dwelling Units
c. 1 KSF = 1,000 SF.
d. Up to 10% daily trip reduction for mixed-use developments where residential and commercial retail are combined. (SANDAG, 2002. Footnote T[2]).
e. Suggested pass-by percentage for trip rate reduction during PM peak period. (SANDAG, 2002. Footnote S)
f. 5% daily trip reduction for land uses with transit access or near transit stations accessible within ¼ mile. (SANDAG, 2002. Footnote T[1]).



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Date: 09/16/16

Figure 7-1

Project Traffic Distribution

MELROSE + OCEANSIDE

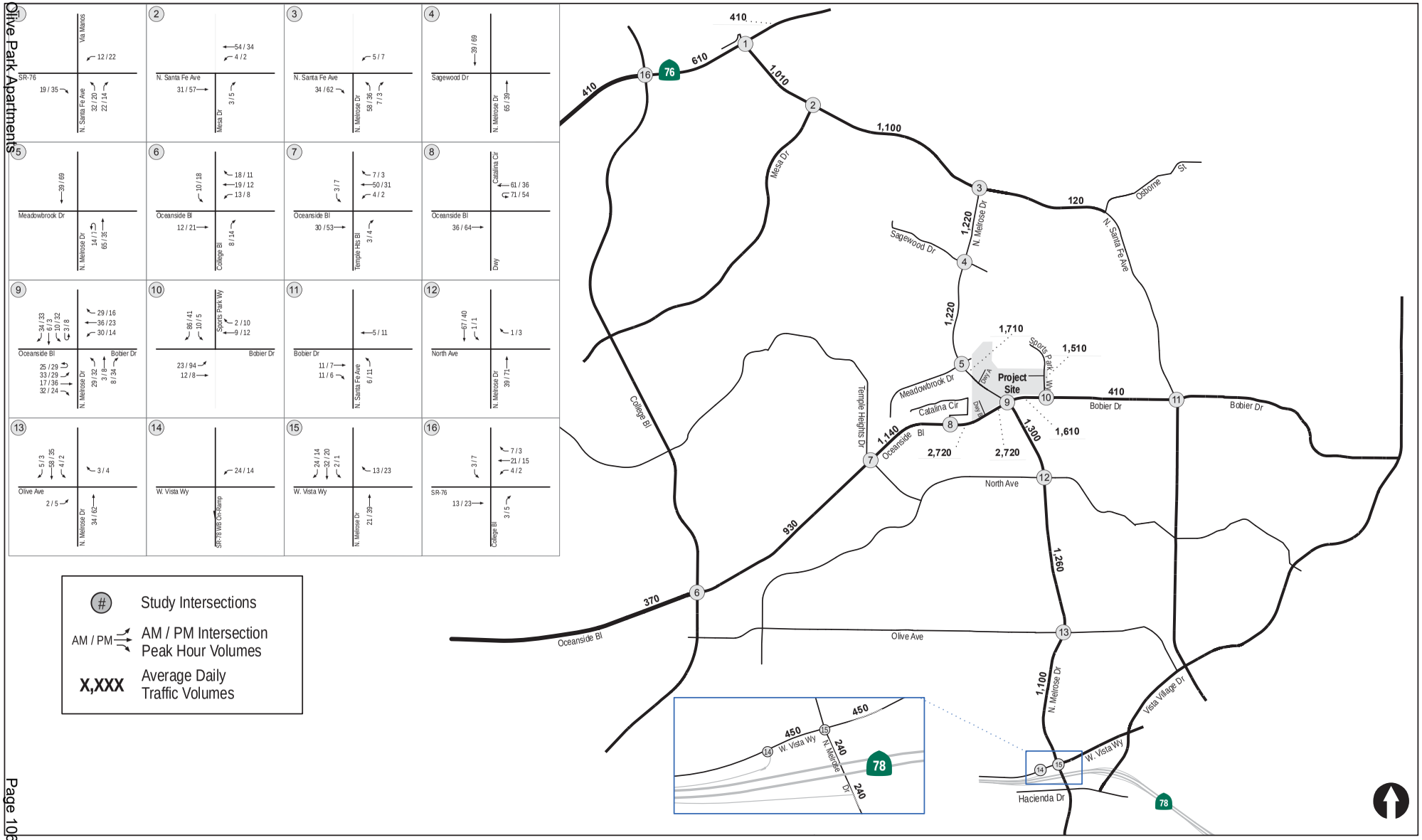

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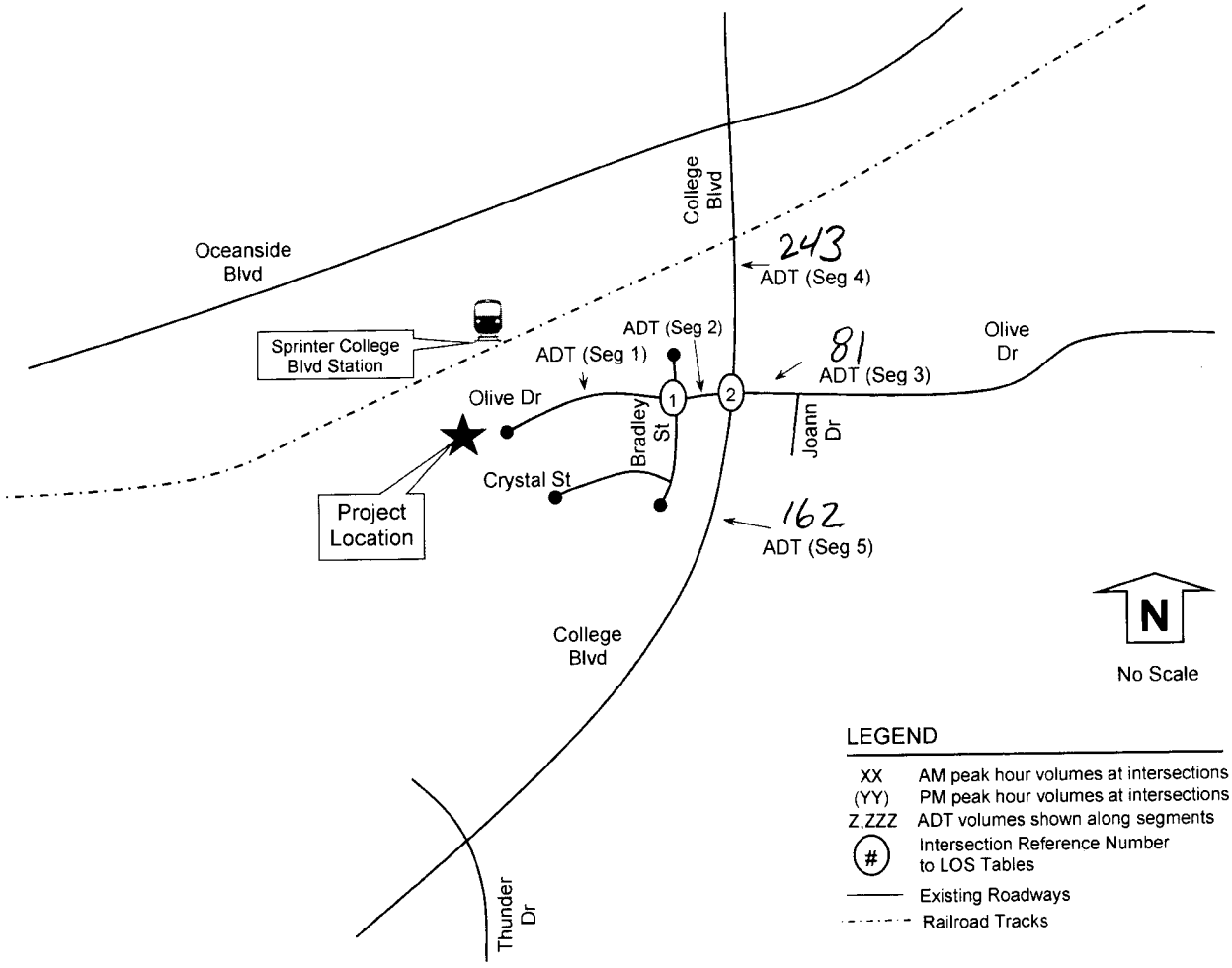
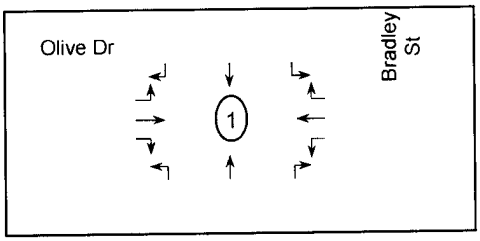
Figure 7-2

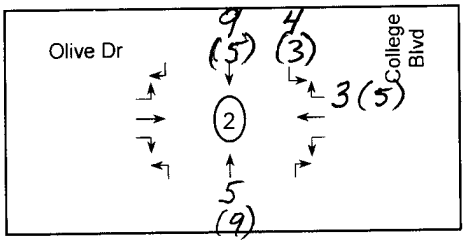
Project Traffic Volumes

MELROSE + OCEANSIDE

MELROSE HEIGHTS







Modera Melrose

LINSCOTT LAW & GREENSPAN engineers

LOCAL TRANSPORTATION STUDY

MODERA MELROSE

Oceanside, California
October 10, 2022

LLG Ref. 3-21-3419

Prepared by:
Narasimha Prasad
Senior Transportation Engineer

Under the Supervision of:
John Boarman, P. E.
Principal

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TABLE 7–1
PROJECT TRIP GENERATION

Use	Quantity	Daily Trip Ends (ADT)[a]		AM Peak Hour					PM Peak Hour				
		Rate [b]	Volume	% of ADT	In:Out Split	Volume			% of ADT	In:Out Split	Volume		
						In	Out	Total			In	Out	Total
Apartments	324 DU	6/ DU[c]	1,944	8%	2:8	31	125	156	9%	7:3	123	52	175
Retail [c]	2,338 SF	40/ KSF[d]	94	3%	6:4	2	1	3	9%	5:5	4	4	8
Total			**2,038**			**33**	**126**	**159**			**127**	**56**	**183**

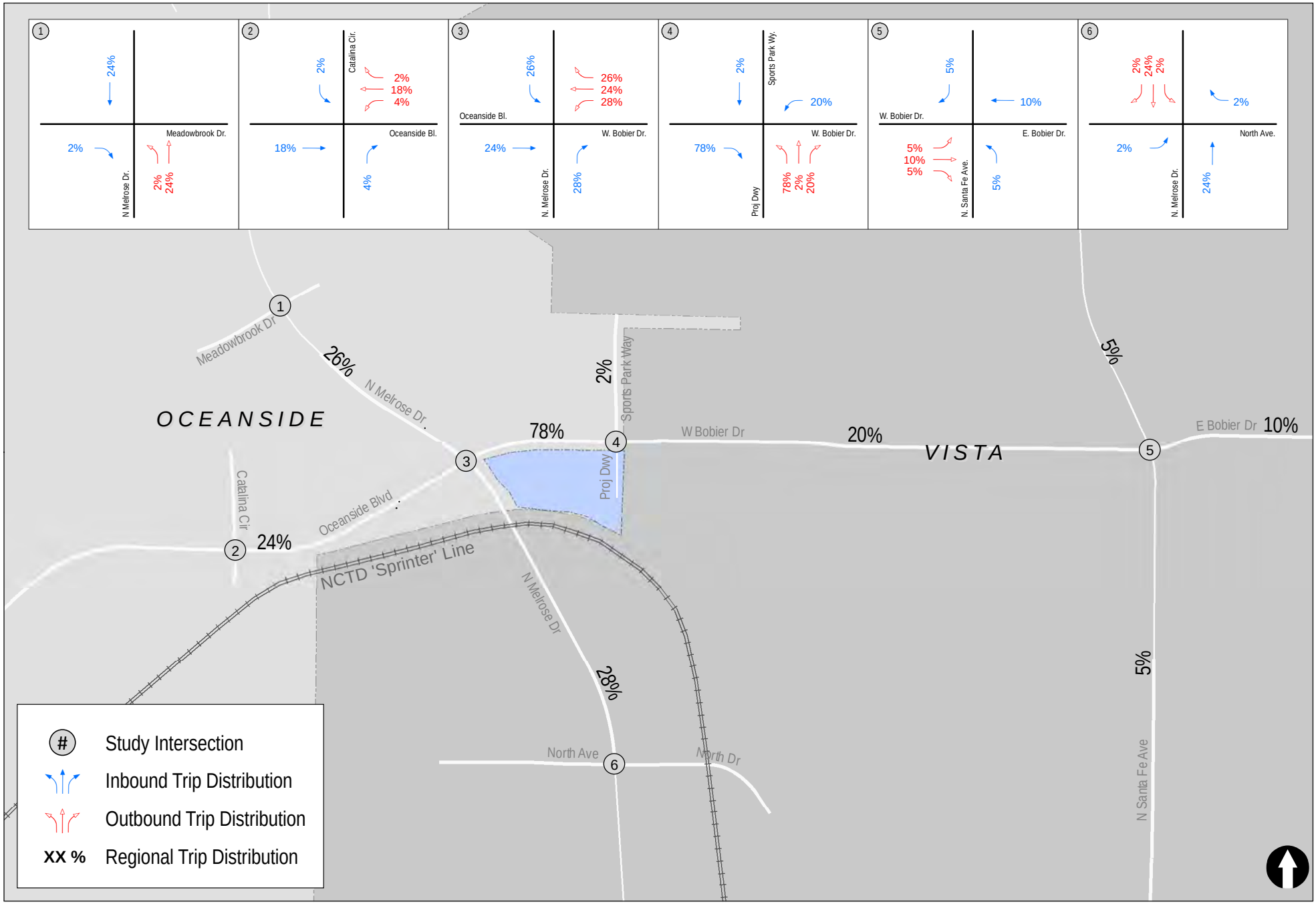
Footnotes:

a Average Daily Trips

b Trip Generation Rate from the SANDAG's *Not So Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, 2002.

c Trip rates for Apartments used.

d Trip rates for Strip Commercial used.



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Time: 9:27 AM

Figure 7-1

Project Traffic Distribution

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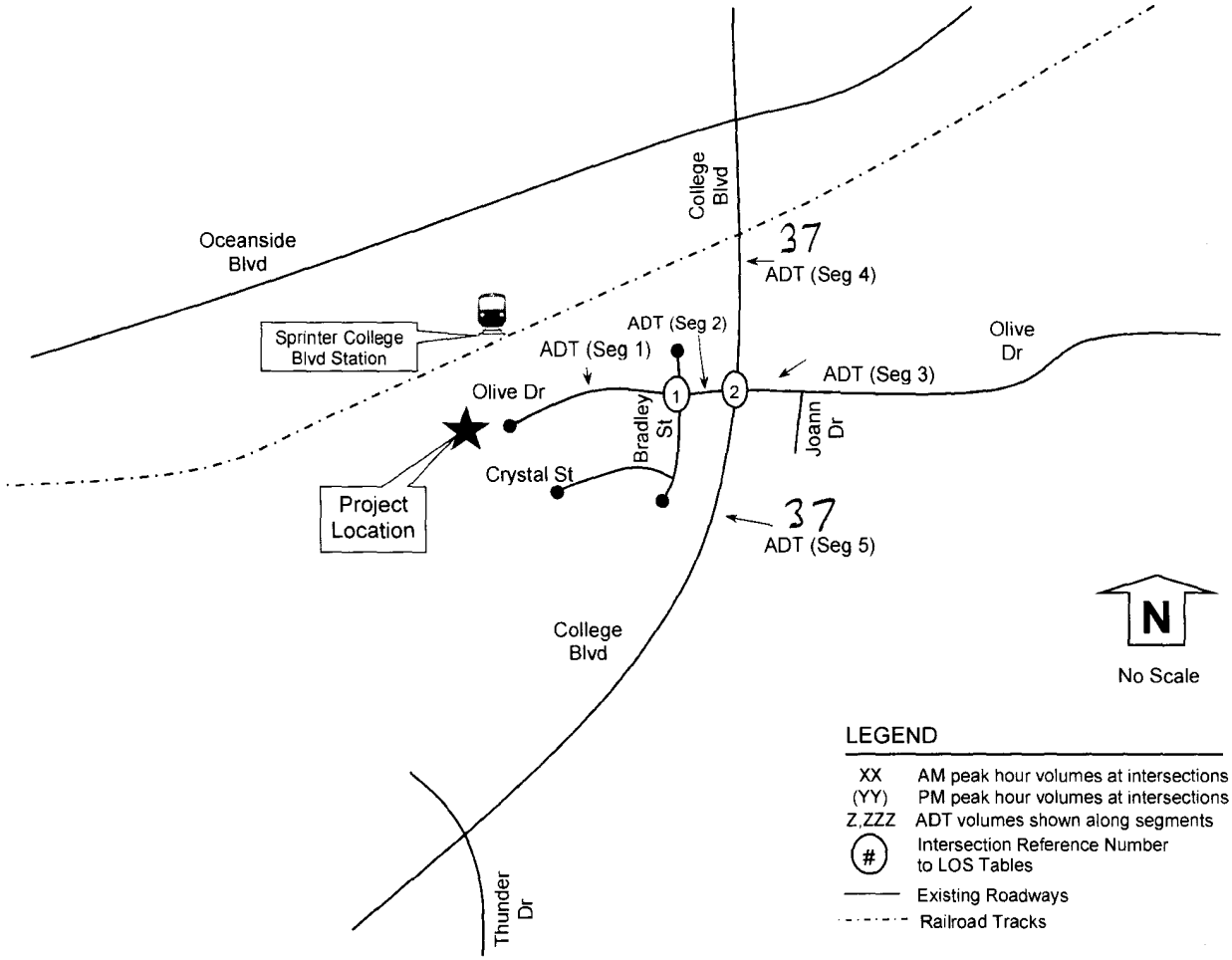
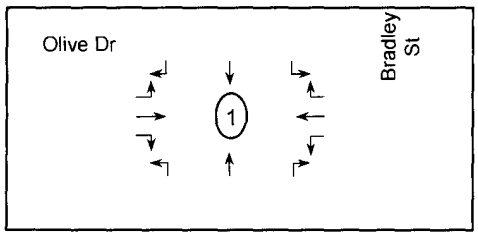
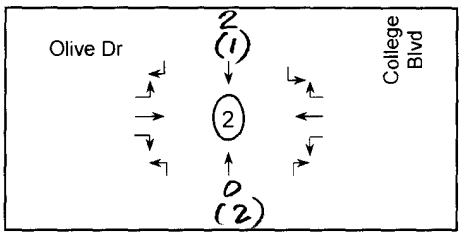
Figure 7-2

Project Traffic Volumes

MODEZA MELROSE







North River Farms

LINSCOTT LAW & GREENSPAN engineers

TRANSPORTATION IMPACT ANALYSIS
NORTH RIVER FARMS

Oceanside, California
July 23, 2018

LLG Ref. 3-16-2596

Linscott, Law & Greenspan, Engineers
4542 Ruffner Street
Suite 100
San Diego, CA 92111
858.300.8800 T
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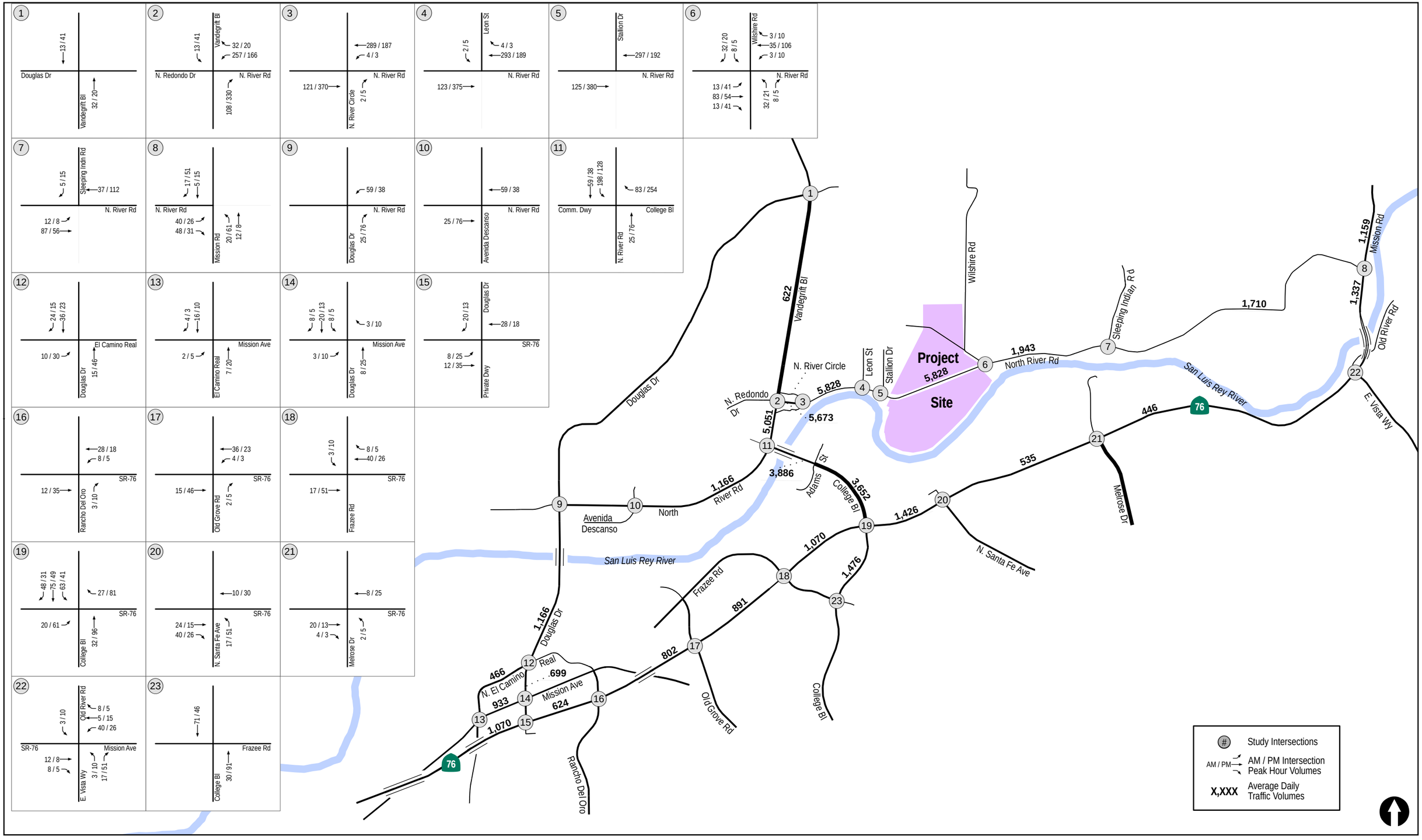
TABLE 7–1
PROJECT TRIP GENERATION

	Land Use	Size	Daily Trip Ends (ADTs)		AM Peak Hour						PM Peak Hour					
			Rate [a]	Volume	% of ADT [a]	In:Out Split		Volume In	Volume Out	Volume Total	% of ADT [a]	In:Out Split		Volume In	Volume Out	Volume Total
–	**RESIDENTIAL TRIPS**															
–	**UNIT TYPE**															
–	Single-Family Detached and Multi-Family Attached (≥ 20 DU per acre)	130 DU	6 /DU	780	8%	20%	80%	12	50	62	9%	70%	30%	49	21	70
–	Single-Family Detached (≤ 20 DU per acre)	250 DU	8 /DU	2,000	8%	20%	80%	32	128	160	10%	70%	30%	140	60	200
–	Single-Family Detached (≤ 6 DU per acre)	309 DU	10 /DU	3,090	8%	30%	70%	74	173	247	10%	70%	30%	216	93	309
A	**RESIDENTIAL TRIP GENERATION**	**689 DU**	**—**	**5,870**	—	—	—	**118**	**351**	**469**	—	—	—	**405**	**174**	**579**
–	**NON-RESIDENTIAL COMPONENT**															
B	Commercial (C + D)	25 KSF	40 /KSF	1,000	3%	60%	40%	18	12	30	9%	50%	50%	45	45	90
C	Primary External Trips [d]	90%	—	900	—	—	—	18	12	30	9%	50%	50%	40	40	80
D	*Pass-by External Trips [d]*	*10%*	—	*100*	—	—	—	—	—	—	*9%*	*50%*	*50%*	*5*	*5*	*10*
E	Restaurant [b] (F + G)	5 KSF	100 /KSF	500	1%	60%	40%	3	2	5	8%	70%	30%	28	12	40
F	Primary External Trips [d]	90%	—	450	—	—	—	3	2	5	8%	70%	30%	25	11	36
G	*Pass-by External Trips [d]*	*10%*	—	*50*	—	—	—	—	—	—	*8%*	*70%*	*30%*	*3*	*1*	*4*
H	Farm [c]	30 acres	2 /acre	60	0.26	43%	57%	7	9	16	0.45	57%	43%	15	12	27
I	Hotel [e]	100 rooms	9 /room	900	8%	40%	60%	29	43	72	9%	60%	40%	49	32	81
J	**Subtotal Primary Trips (Residential + Primary Commercial Trips + Hotel Trips) (A + C + F + H + I)**			**8,180**	—	—	—	**175**	**417**	**592**	—	—	—	**534**	**269**	**803**
K	*Mixed Use Reduction [d] (J x 5%)*	*5%*	—	*(409)*	—	—	—	*(9)*	*(21)*	*(30)*	—	—	—	*(27)*	*(13)*	*(40)*
L	**TOTAL PRIMARY TRIPS (J – K)**			**7,771**	—	—	—	**166**	**396**	**562**	—	—	—	**507**	**256**	**763**
M	**TOTAL DRIVEWAY TRIPS (A + B + E + H + I) – K**			**7,921**	—	—	—	**166**	**396**	**562**	—	—	—	**515**	**262**	**777**

Footnotes:

a. Rates based on SANDAG's *(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002
b. Restaurant uses "Quality Restaurant" rate from SANDAG.
c. For Farm, SANDAG "agriculture" rate applied. For peak splits, ITE 818 "Nursery (Wholesale)" rate applied.
d. Primary trips, pass-by trips, and mixed-use credit percentages sourced to SANDAG.
e. For Hotel, SANDAG "hotel" rate reduced from 10 ADT/room to 9 ADT/room since the "hotel" rate includes trips generated by convention facilities, which are not proposed by the Project.



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LINSCOTT LAW & GREENSPAN engineers

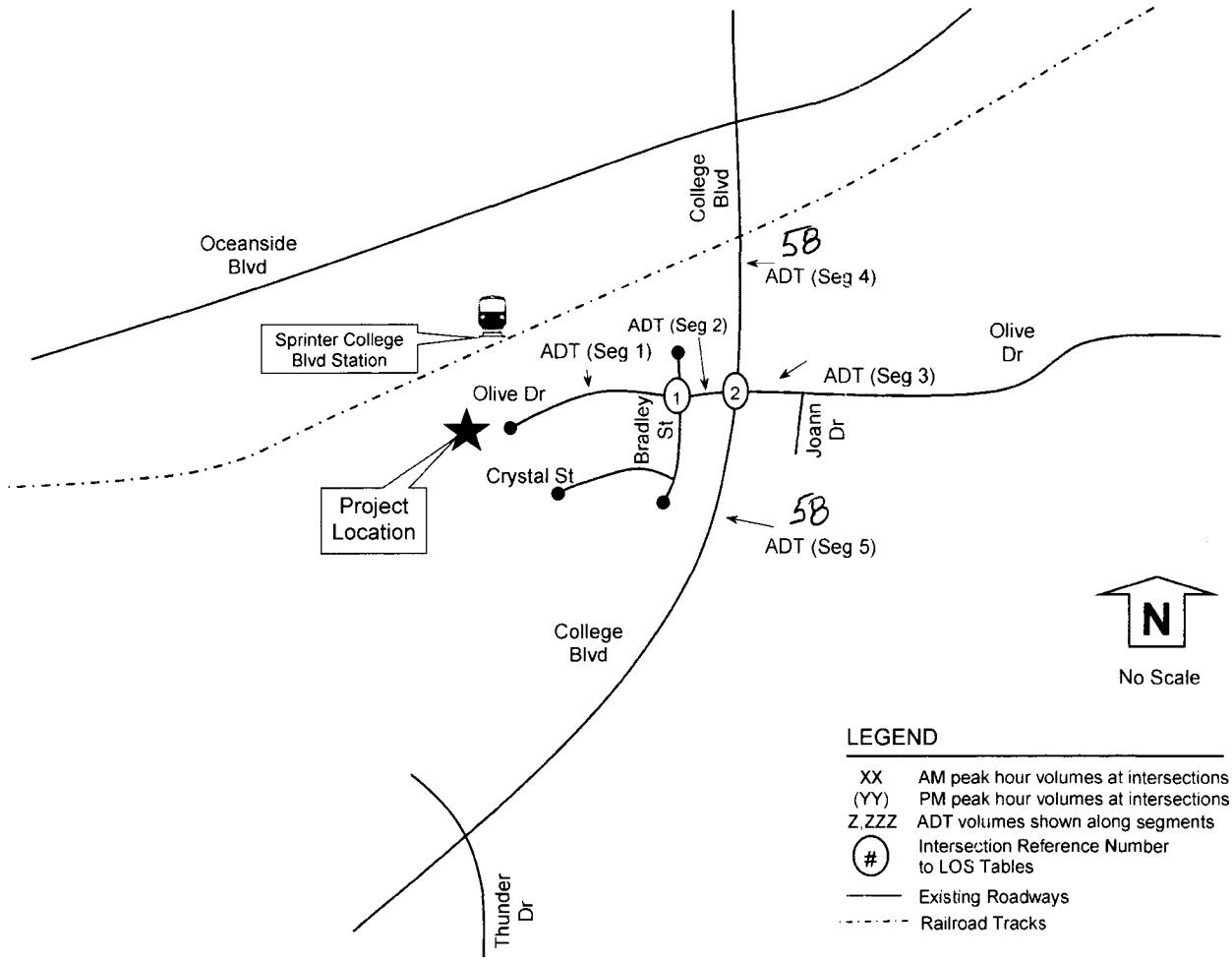
Park Apartments

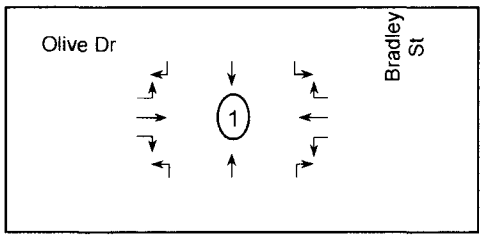
Figure 7-2

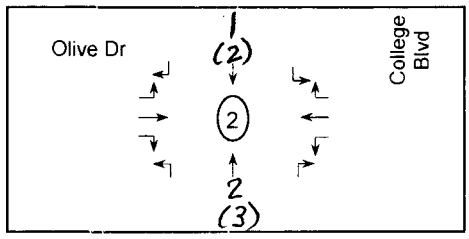
Project Traffic Volumes

NORTH RIVER FARMS

N. RIVER FARMS







Tierra Norte

Tierra Norte Residential Development Plan

Southside of N. River Rd btw Ave Descanso and Calle Montecito

City of Oceanside

February 4, 2022

Local Transportation Study

Prepared for:

The Lightfoot Planning Group
5900 Pasteur Court, Suite 110
Carlsbad, CA 92008

Prepared by Justin Rasas (RCE 60690) with:

LOS Engineering, Inc.
11622 El Camino Real Suite100 San Diego, CA 92130
Phone 619-890-1253

Job #1533

3.4 Project Traffic Generation

The project is a Plan Block Development Plan that will require a General Plan Amendment and rezone from light industrial uses to residential on two parcels for a total of 25.6 acres (Kawano parcel 9.7 acres and Nagata parcel 15.9 acres). A maximum of 400 dwelling units is proposed for a density of 15.6 units per acre (400 units / 25.6 acres).

The site has historically been used for agricultural, packing, and shipping uses. A trip credit was not applied because the previous uses were not in operation when off-site traffic data was collected.

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. Based on the project acreage of 25.6 acres and proposed 400 dwelling units, the density is 15.6 units per acre. The SANDAG trip rate is 8 daily trips per dwelling unit for densities between 6 and 20 units per acre.

Using SANDAG traffic generation rates, the project is calculated to generate 3,200 daily trips, 256 AM peak hour trips (51 inbound and 205 outbound), and 320 PM peak hour trips (224 inbound and 96 outbound) as shown in **Table 8**.

TABLE 8: PROJECT TRAFFIC GENERATION

Proposed								AM					PM	
Land Use	Rate	Size & Units	ADT	%	Split		IN	OUT	%	Split		IN	OUT
Residential (density 6-20 du/ac)	8 /DU	400 DU	**3,200**	8%	0.2	0.8	51	205	10%	0.7	0.3	224	96
					Peak hour totals:		**256**					**320**	

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

The final product may have a mix of small lot single family and multi-family units; therefore, the trip generation levels (ADT, AM & PM) as analyzed within this report will define the upper limit of traffic that can be generated by the final project type and unit count.

The proposed rezone will replace the existing industrial use with a proposed residential use. The existing industrial zoning could generate a range of traffic based on the type of industrial use. SANDAG trip rates document a range of 200 ADT/acre for an Industrial/Business Park (commercial included) to 90 ADT/acre for an Industrial/Business Park (no commercial). For the project site of 25.6 acres, the industrial trips could range from 5,120 ADT (Industrial/Business Park with commercial) to 2,304 ADT (Industrial/Business Park without commercial). The existing land use has the potential to generate more traffic than the proposed residential land use. However, this is a ground to plan analysis; therefore, a trip credit was not applied for the potential industrial land uses.

3.5 Project Access

Primary project access is proposed by constructing a south leg at the intersection of N. River Road/ Riverview Way. The project applicant proposed to signalize this intersection based on Signal Warrant Condition B "Interruption of Continuous Traffic", which is satisfied with the addition of project traffic. Signal warrant calculations for the project driveway and lane configurations are described within Section 3.16.2 of this report.

Figure 9: Project Distribution

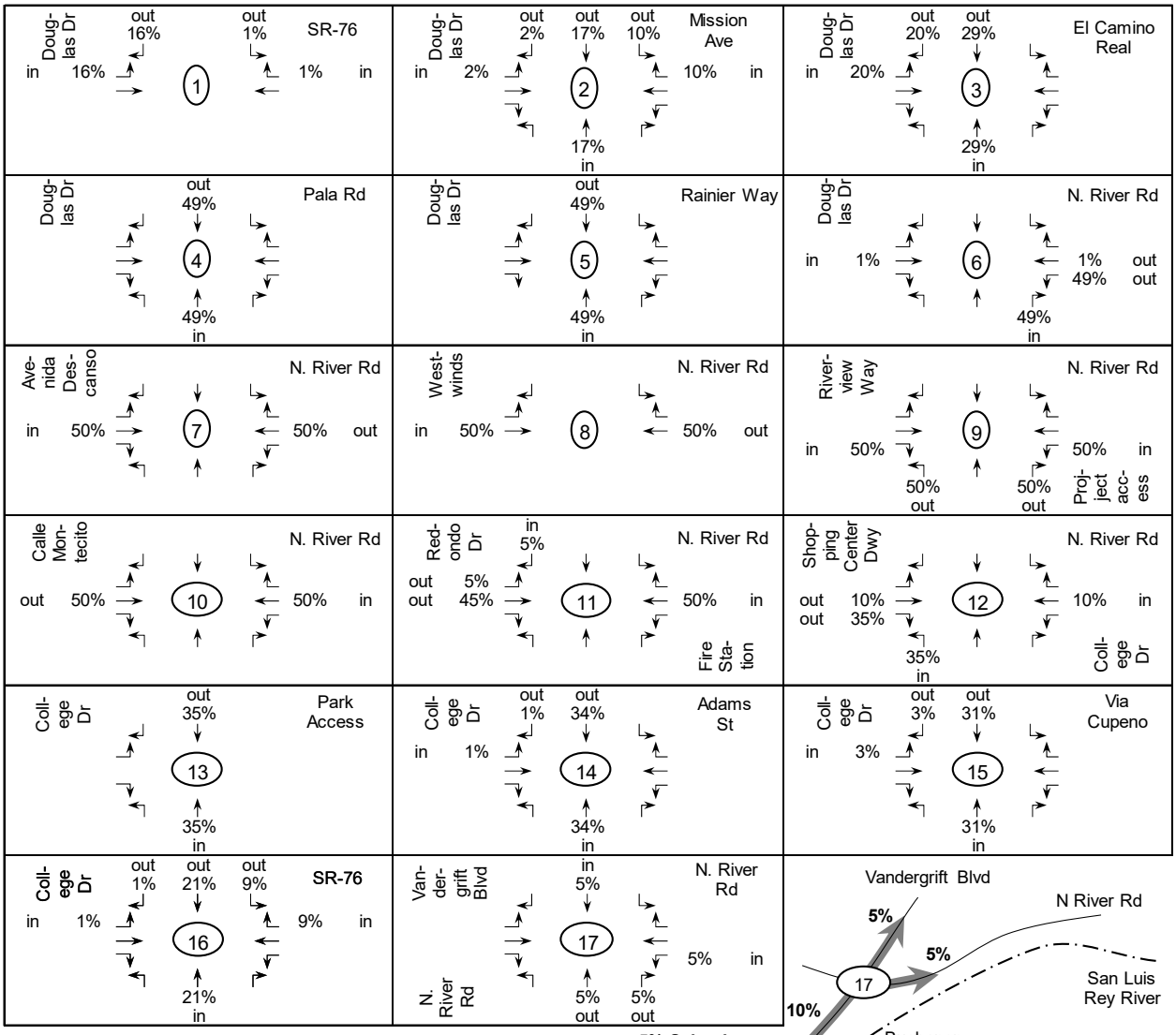
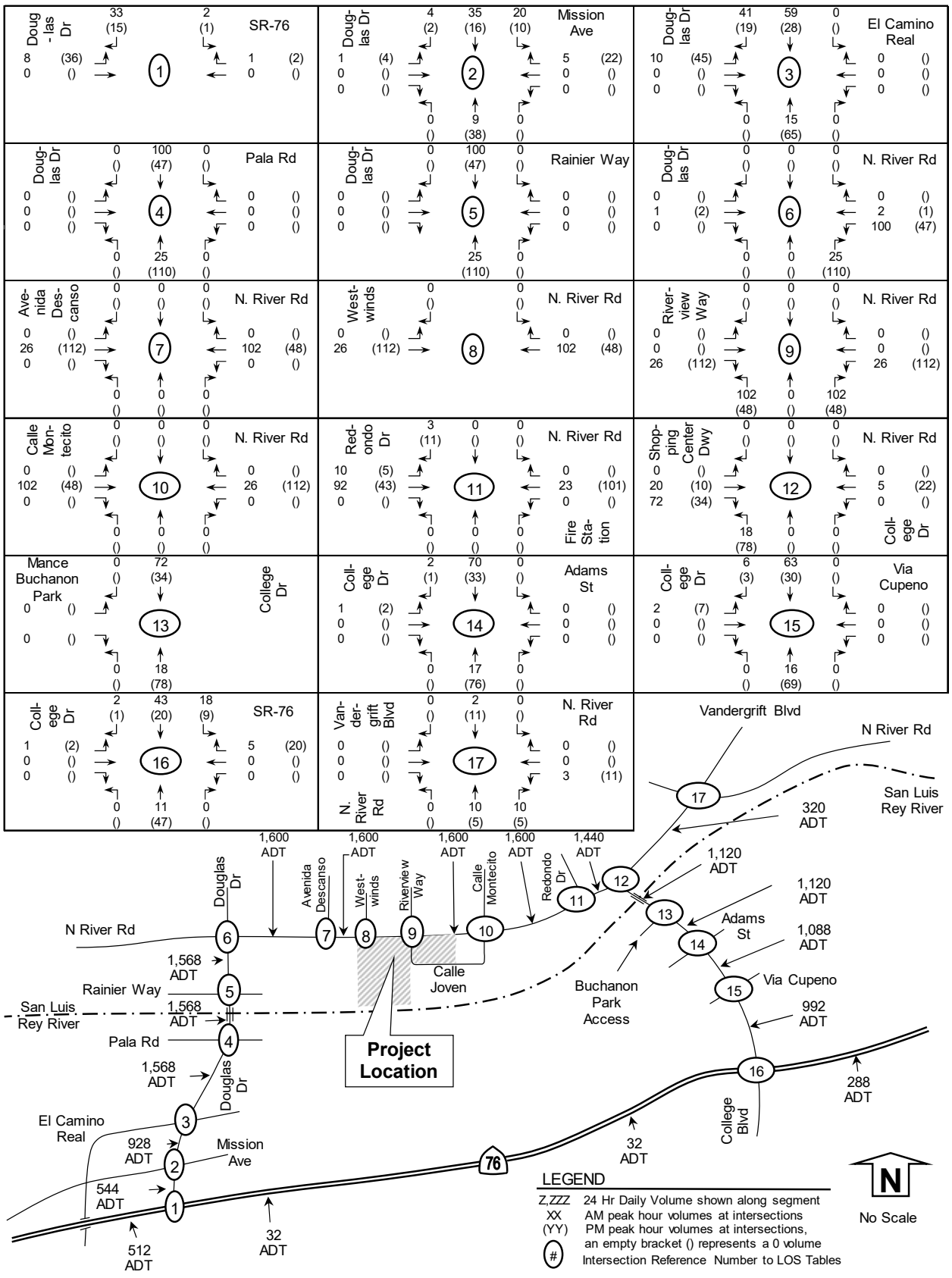


Figure 10: Project Volumes



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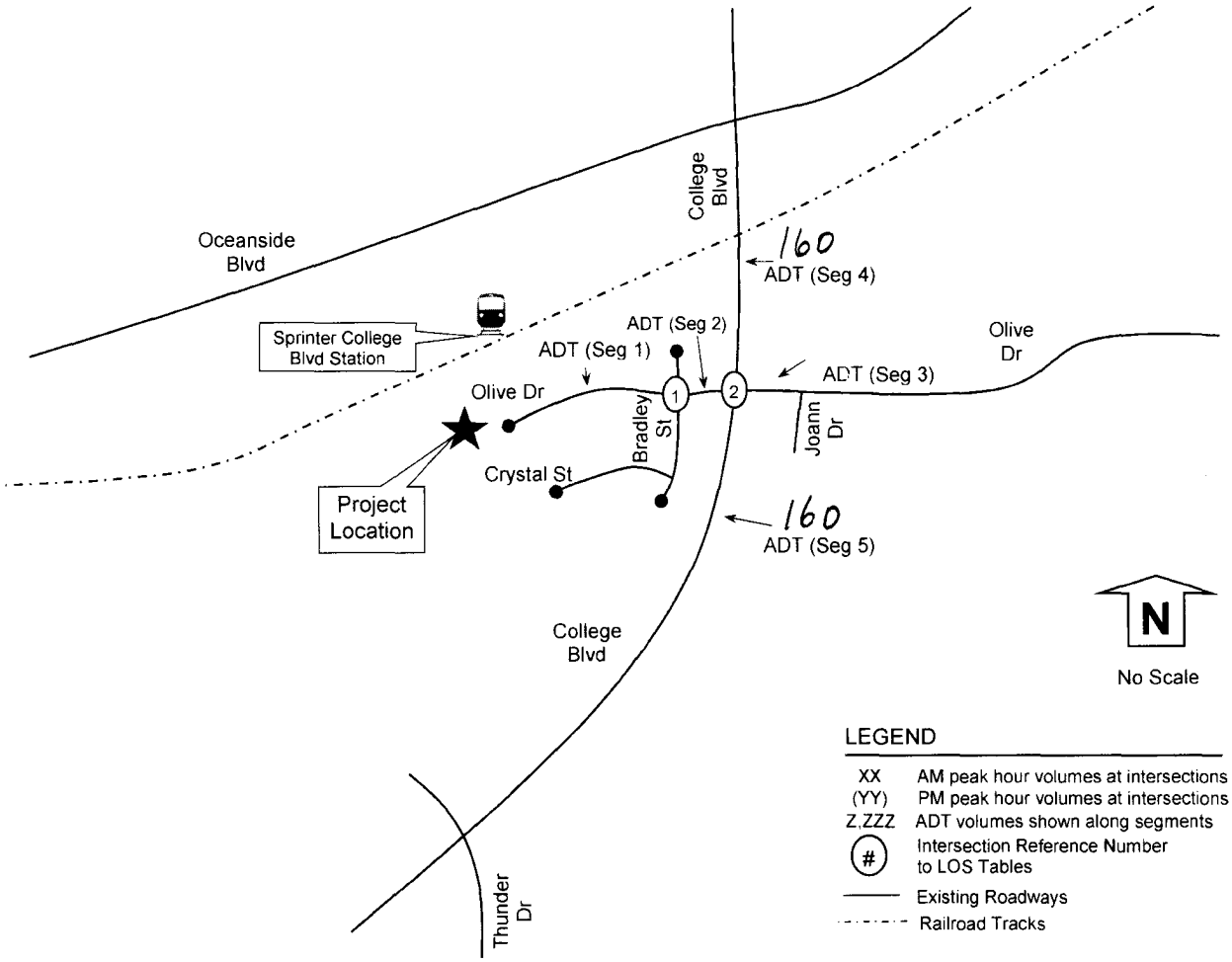
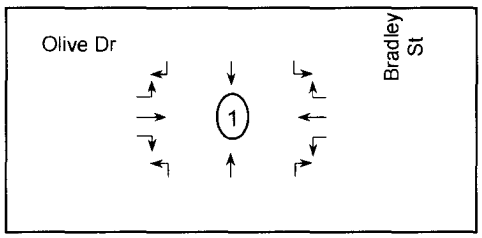
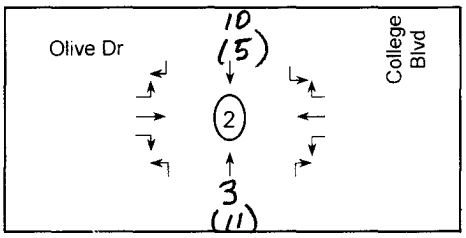






Ord Way

Local Transportation Assessment

Ord Way Industrial Building

JUNE 2023

Prepared for:

IDS REAL ESTATE GROUP
785 J. Street
San Diego, California 92101
Contact: Shane Isdaner

Prepared by:

DUDEK

605 Third Street
Encinitas, California 92024
Contact: Sabita Tewani, AICP, PTP
Transportation Specialist

3 Project Traffic

This section documents the trip generation, distribution, and assignment of project traffic in the study area.

3.1 Trip Generation

The project would include construction of a 72,544 sf industrial building with approximately 3,164 sf of mezzanine space and up to 16 dock high doors. The building could be used for warehousing and distribution, light manufacturing, research and development, and related office uses. Using the trip rate for an Industrial Park contained in the SANDAG (2002) Brief Guide of Vehicular Trip Generation Rates for the San Diego Region, the project's daily, AM peak hour, and PM peak hour trips were estimated. As shown in Table 4, the proposed project would generate approximately 580 daily trips, 64 AM peak hour trips (58 inbound and 6 outbound), and 70 PM peak hour trips (14 inbound and 56 outbound).

Additionally, to provide an estimate of truck trips, the warehouse truck fleet mix from the South Coast Air Quality Management District's (SCAQMD) Warehouse Truck Trip Study Data Results and Usage (SCAQMD 2014) was used to estimate project-related truck traffic. Based on the SCAQMD data, passenger cars would account for 72.5% trips of the total trips generated by a warehouse facility, and truck trips would account for approximately 27.5% of the total trips. The total percentage of truck trips were further divided by 2-axle, 3-axle, and 4+ axle trucks per the SCAQMD study. These truck trips generated by the project were then converted to PCE trips by using the recommended PCE factors. PCE factors consistent with the standard practice were used to estimate the total PCE trips for the project. Applying the PCE factor, the project would generate approximately 826 daily PCE trips, 92 AM PCE peak hour trips (82 inbound and 10 outbound) and 100 PM PCE peak hour trips (20 inbound and 80 outbound). To provide a conservative analysis, PCE trips were used in the traffic analysis of the proposed project.

3.2 Trip Distribution and Assignment

Project trip distribution percentages are based on logical travel paths to and from the project site, review of traffic studies conducted for nearby projects, and consideration of the traffic distribution patterns in the area. Figure 4A and 4B illustrate the proposed project trip distributions and assignments for non-PCE and PCE peak hour trips.

As shown in the figures, the passenger cars would use both Ord Way/Oceanside Boulevard and Peacock Boulevard/Oceanside Boulevard to access the project site. The project trucks would use Ord Way and would access the site via the Ord Way/Oceanside Boulevard intersection.

Table 4. Project Trip Generation Summary

Land Use	Daily Trip Rate/Unit	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Trip Rates and Trip Generation								
Industrial Park (no commercial)[1]	8 Trips/TSF	8	90%	10%	11%	20%	80%	12%
Land Use	**Units**							
Proposed Project	72.544 TSF	580	58	6	64	14	56	70

Table 4. Project Trip Generation Summary

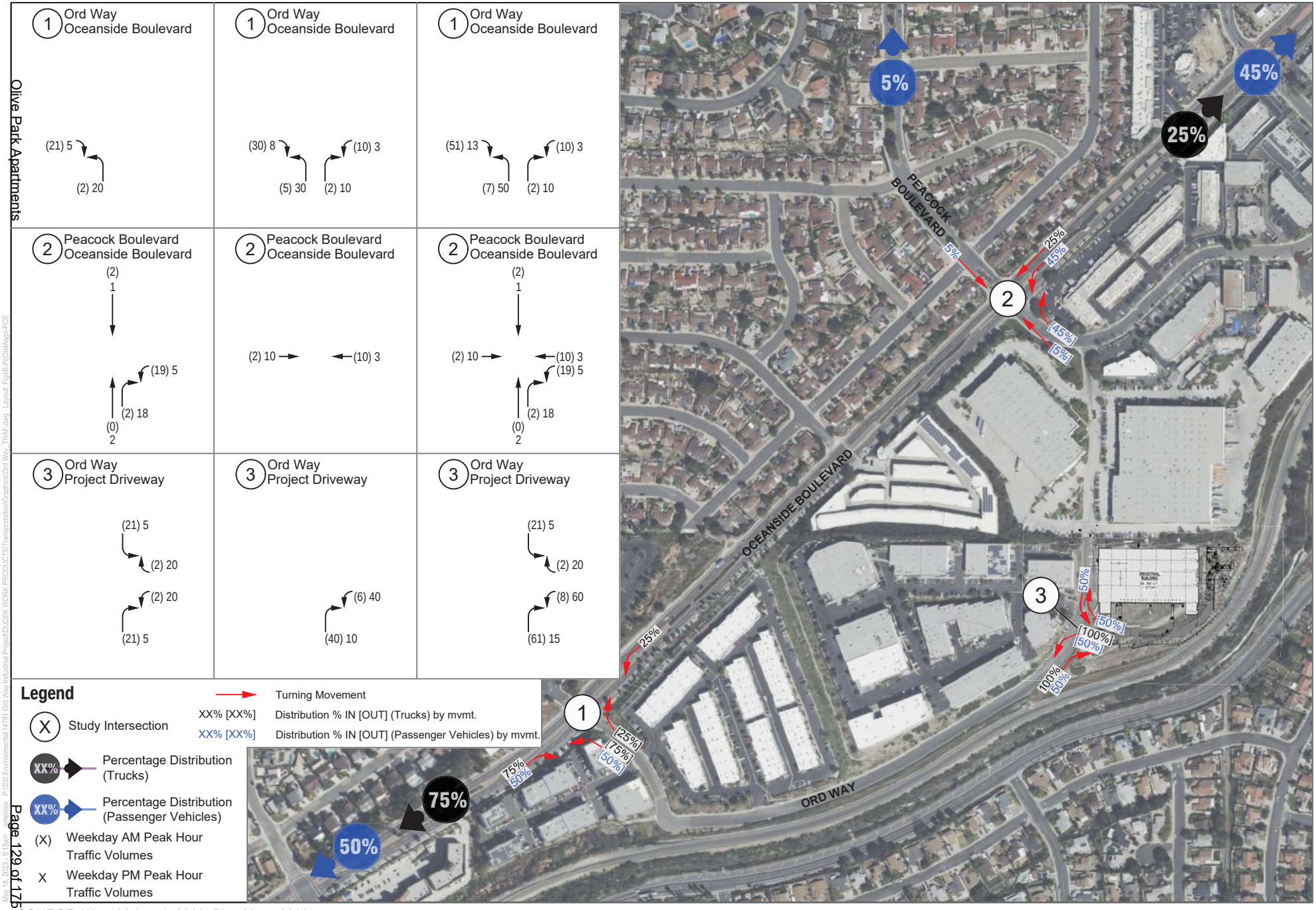
Land Use	Daily Trip Rate/Unit	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Trip Generation (Non-PCE)								
Vehicle Mix[2] and PCE Trips	Passenger Cars (72.5%)	420	42	4	46	10	40	50
	2-axle Trucks (4.6%)	27	3	0	3	1	3	4
	3-axle Trucks (5.7%)	33	3	0	3	1	3	4
	4+axle Trucks (17.2%)	100	10	2	12	2	10	12
	Non - PCE Trips	**580**	**58**	**6**	**64**	**14**	**56**	**70**
Trip Generation (PCE)								
PCE Factor[3] and PCE Trips	Passenger Cars (72.5%)	420	42	4	46	10	40	50
	2-axle Trucks (4.6%)	40	4	0	4	2	4	6
	3-axle Trucks (5.7%)	66	6	0	6	2	6	8
	4+axle Trucks (17.2%)	300	30	6	36	6	30	36
	PCE Trips	**826**	*82*	*10*	*92*	*20*	*80*	*100*

Notes: TSF = thousand square feet, PCE = passenger car equivalent Some of the totals may not match exactly due to rounding.

1 Trip rates from the SANDAG (2002) Brief Guide of Vehicular Trip Generation Rates for the San Diego Region.

2 Vehicle Mix from the SCAQMD 2014

3 Passenger Car Equivalent (PCE) factors are assumed to be 1.0 for passenger vehicles, 1.5 for 2-axle trucks, 2.0 for 3-axle trucks, and 3.0 for 4-axle trucks.



SOURCE: Ware Malcomb 2023; Bing Maps 2023

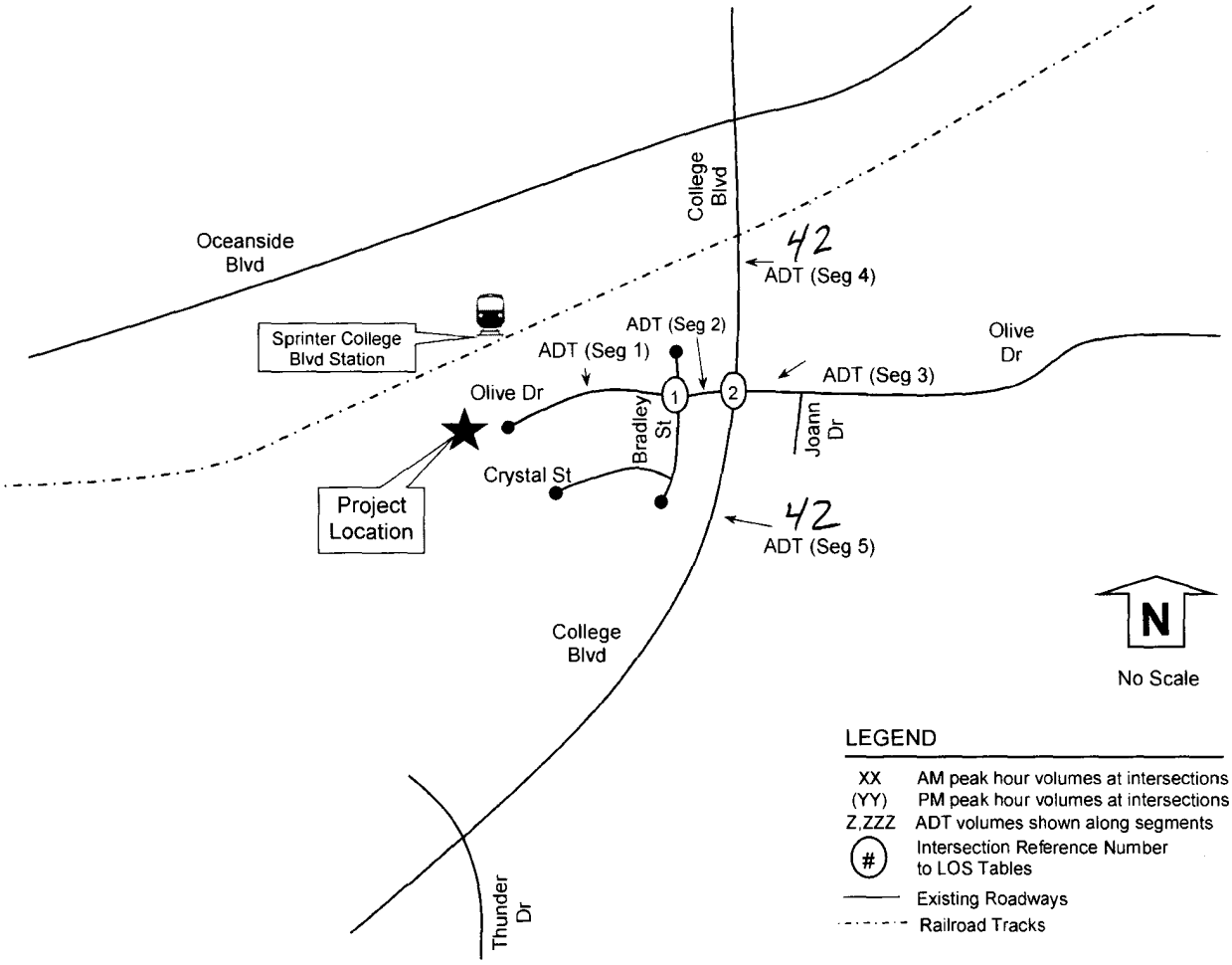
FIGURE 4B

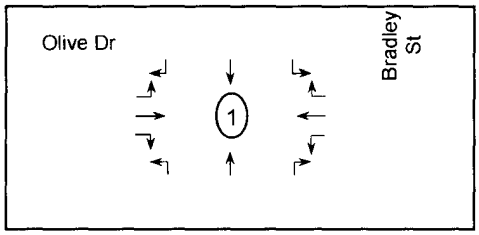
Project Trip Distribution and Assignment (PCE)

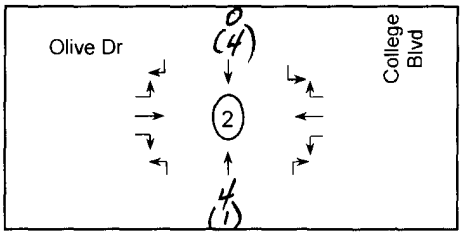
DUDEK NOT TO SCALE

Ord Way Industrial Building

OLD WAY INDUSTRIAL







Vista Pacific

VISTA PACIFIC OCEANSIDE INDUSTRIAL LOCAL TRANSPORTATION ASSESSMENT

City of Oceanside

June 3, 2022

prepared by

Giancarlo Ganddini, PE, PTP

GANDDINI GROUP, INC.
555 Parkcenter Drive, Suite 225
Santa Ana, California 92705
(714) 795-3100 | ganddini.com

Project No. 19361

Table 1
Project Trip Generation

Land Use: Warehousing
Size: 49.538 TSF

TRIP GENERATION RATES PER TSF[1]								
		AM Peak Hour			PM Peak Hour			
Vehicle Type	Source[2]	In	Out	Rate	In	Out	Rate	Daily Rate
All Vehicles	SANDAG	70%	30%	0.650	40%	60%	0.750	5.000
Passenger Cars (87.0% AM, 85.0% PM, 73.0% Daily)	TGMS 150	0.396	0.170	0.566	0.255	0.383	0.638	3.650
Trucks (13.0% AM, 15.0% PM, 27.0% Daily)	TGMS 150	0.059	0.025	0.084	0.045	0.068	0.113	1.350
Truck Mix:	SCAQMD							
2-Axle Trucks (16.7%)		0.010	0.004	0.014	0.008	0.011	0.019	0.225
3-Axle Trucks (20.7%)		0.012	0.005	0.017	0.009	0.014	0.023	0.279
4+ Axle Trucks (62.6%)		0.037	0.016	0.053	0.028	0.042	0.070	0.845

VEHICLE TRIPS GENERATED							
	AM Peak Hour			PM Peak Hour			
Vehicle Type	In	Out	Total	In	Out	Total	Daily
Passenger Cars	20	8	28	13	19	32	181
Trucks							
2-Axle Trucks	0	0	0	0	1	1	11
3-Axle Trucks	1	0	1	0	1	1	14
4+ Axle Trucks	2	1	3	1	2	3	42
Subtotal	3	1	4	1	4	5	67
Total Vehicle Trips Generated	**23**	**9**	**32**	**14**	**23**	**37**	**248**

PCE[3] TRIPS GENERATED								
		AM Peak Hour			PM Peak Hour			
Vehicle Type	PCE Factor[4]	In	Out	Total	In	Out	Total	Daily
Passenger Cars	1.0	20	8	28	13	19	32	181
Trucks								
2-Axle Trucks	1.5	0	0	0	0	2	2	17
3-Axle Trucks	2.0	2	0	2	0	2	2	28
4+ Axle Trucks	3.0	6	3	9	3	6	9	126
Subtotal		8	3	11	3	10	13	171
Total PCE Trips Generated		**28**	**11**	**39**	**16**	**29**	**45**	**352**

Notes:
(1) TSF = Thousand Square Feet

(2) SANDAG = San Diego Association of Governments (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (2002).
TGMS = ITE Trip Generation Manual Supplement (10th Edition, February 2020); ### = ITE Land Use Code.
SCAQMD = South Coast Air Quality Management District recommendations for non-cold storage high-cube warehouse.

(3) PCE = Passenger Car Equivalent

(4) Source: San Bernardino County Congestion Management Program (2016), Appendix B.

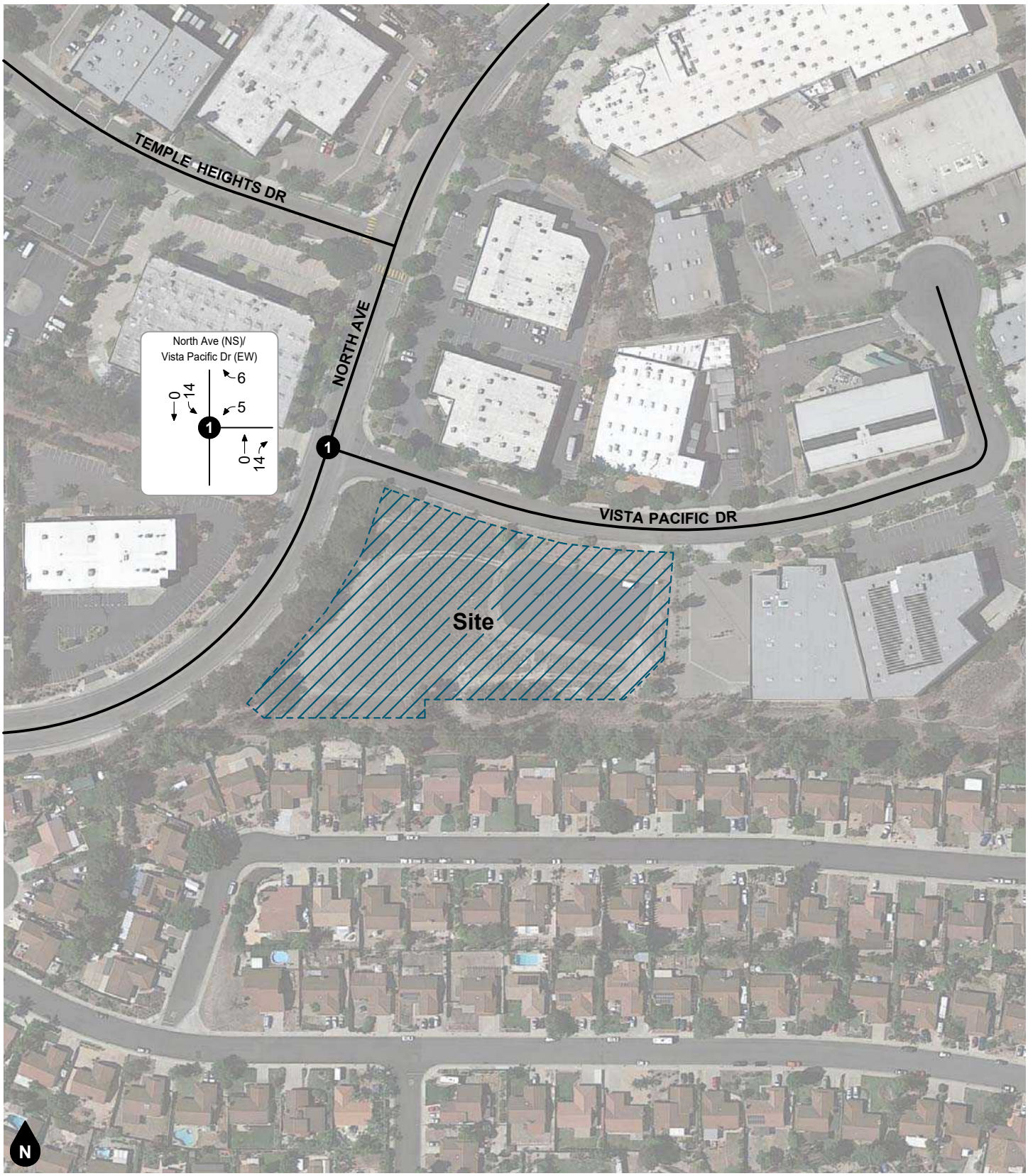
Legend

10% Percent From Project

10% Percent To Project

Study Intersection

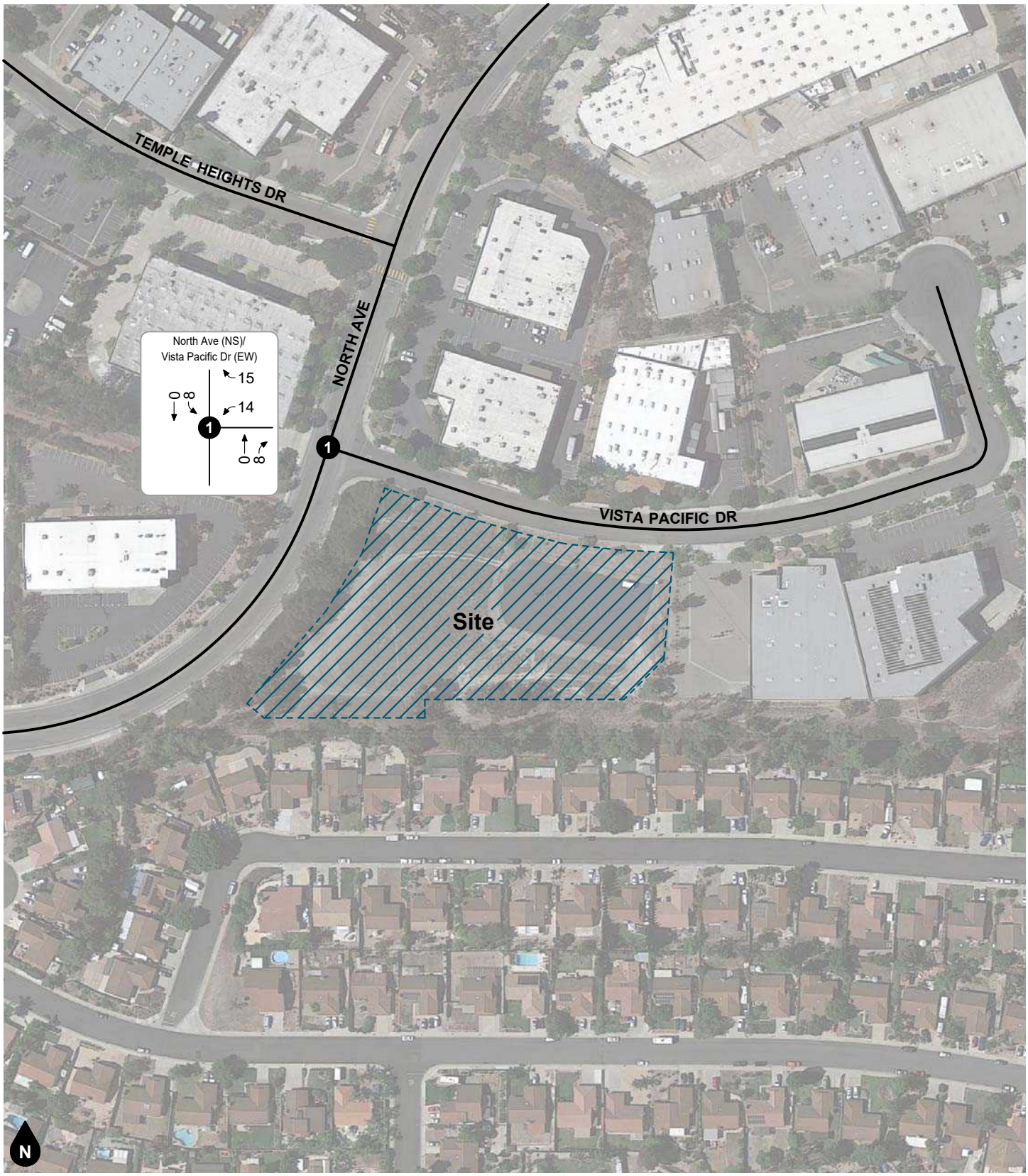
Figure 3
Project Trip Distribution



Legend

(#) Study Intersection

Figure 4
Project AM Peak Hour Intersection Turning Movement Volumes

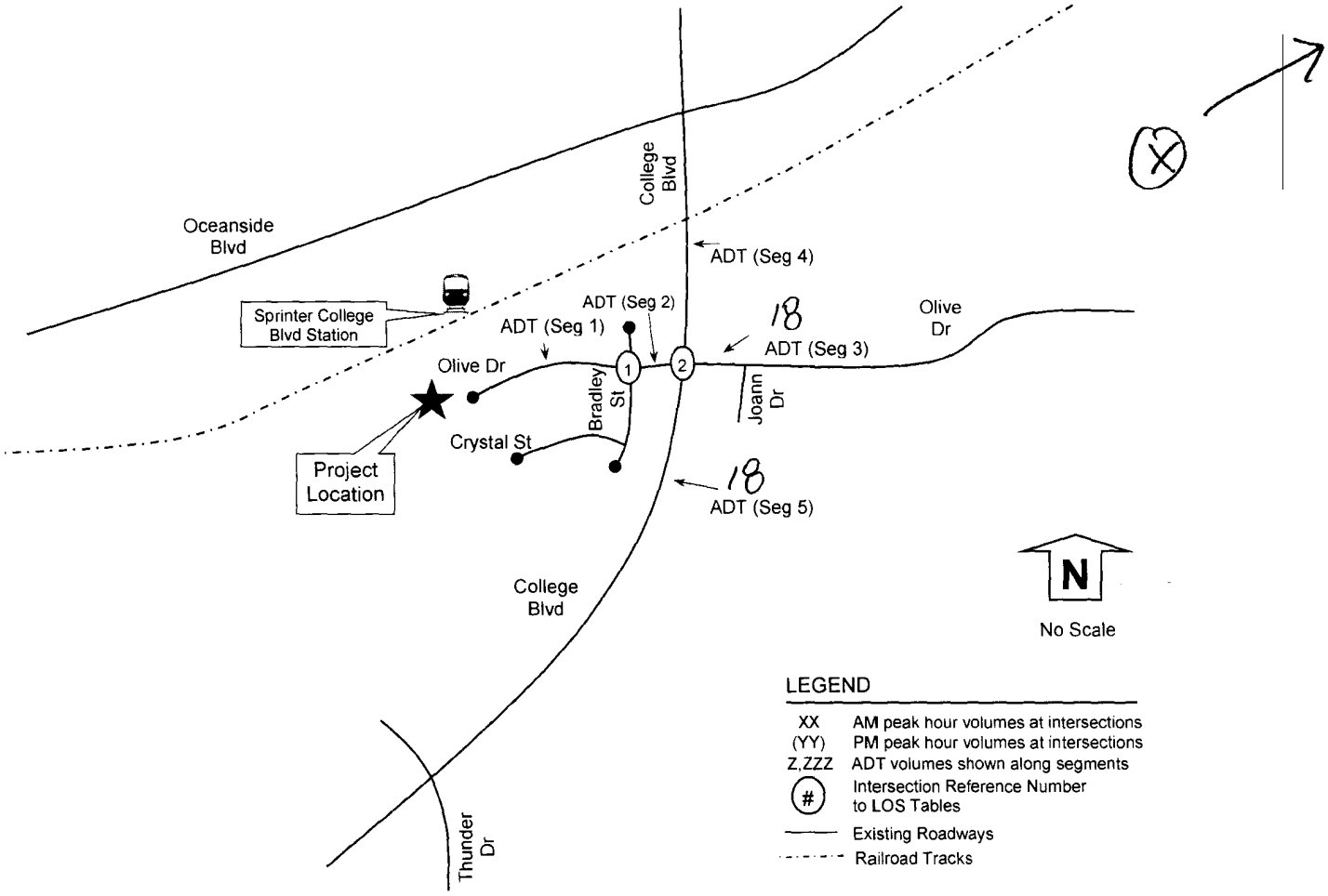


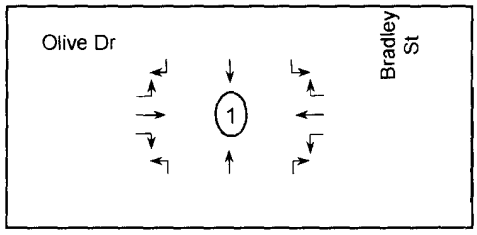
Legend

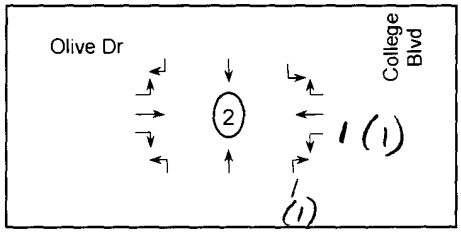
(#) Study Intersection

Figure 5
Project PM Peak Hour Intersection Turning Movement Volumes

VISTA PACIFICA

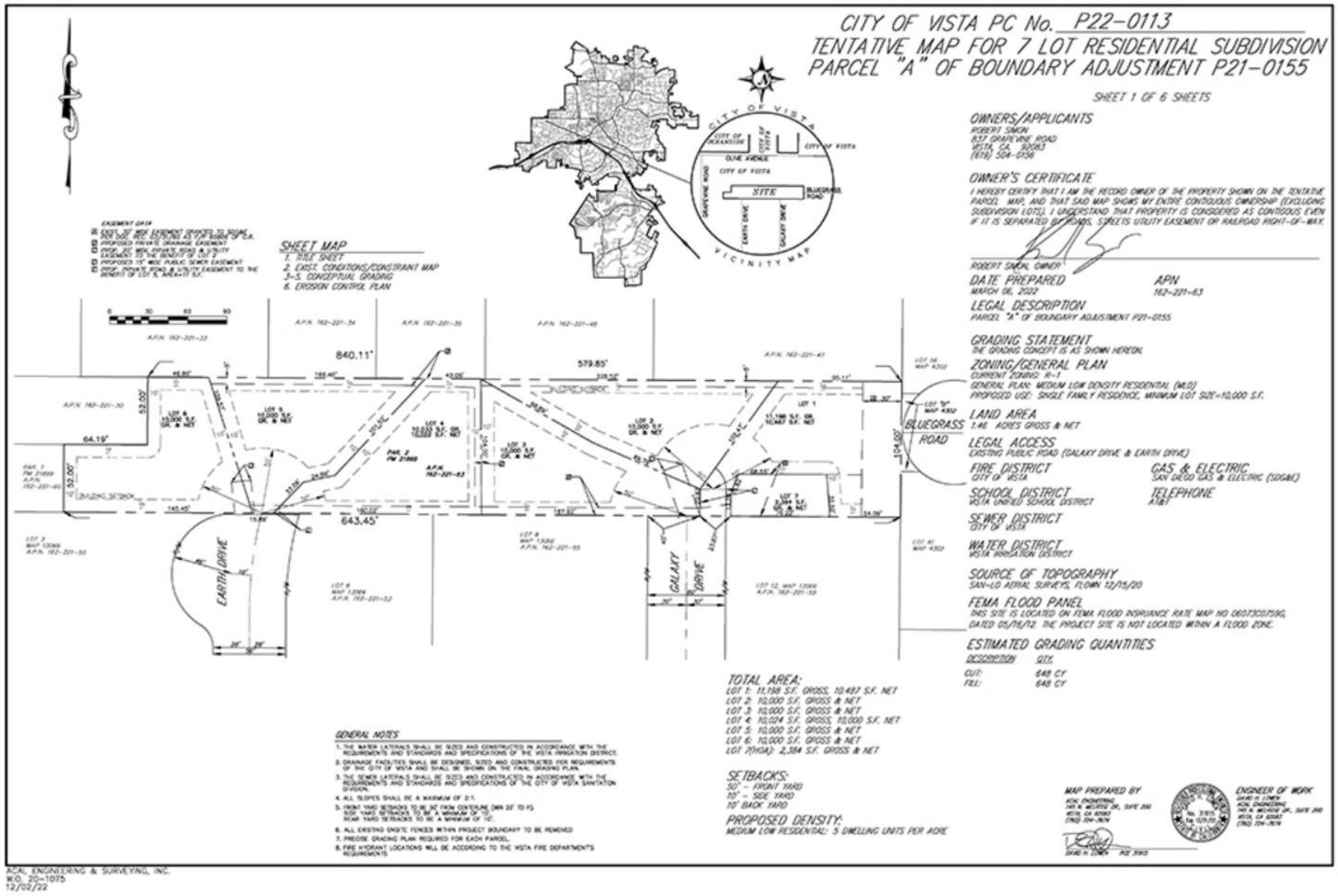




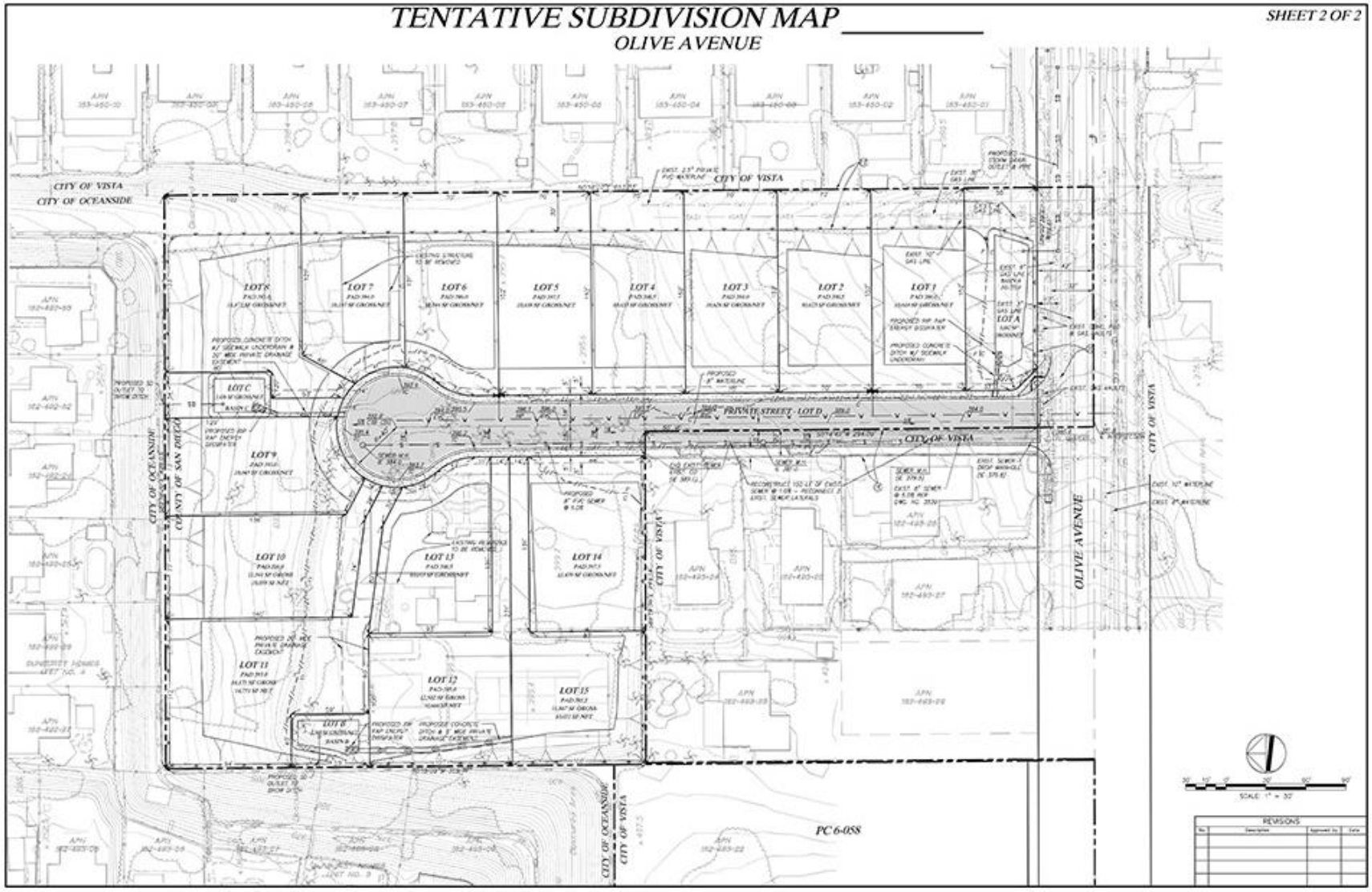


Earth Dr, 1436 Olive Dr, and 1505 Olive Dr

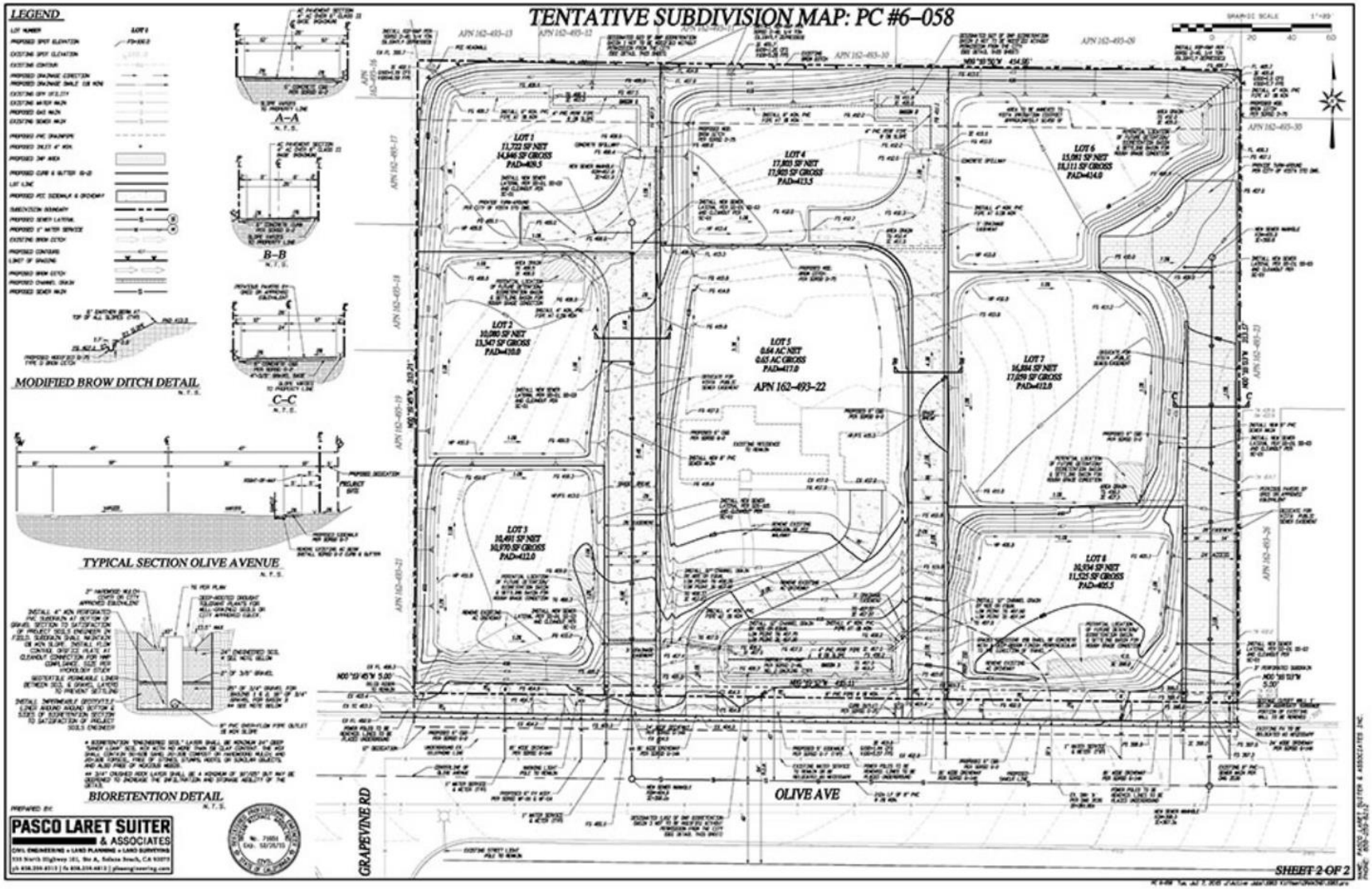
Earth Dr and Galaxy Dr 7 single family lots



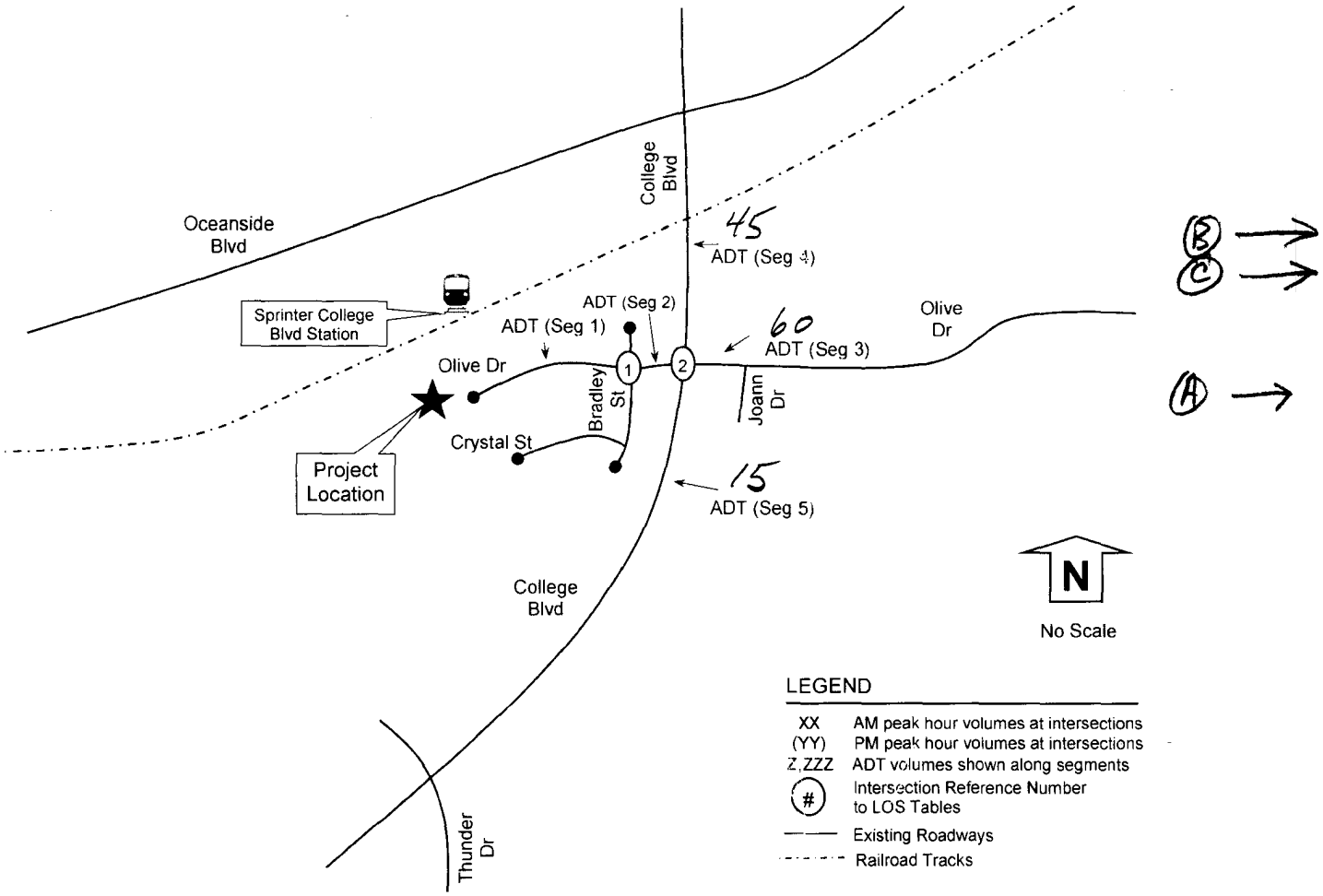
1435 Olive Ave 15 single family lots

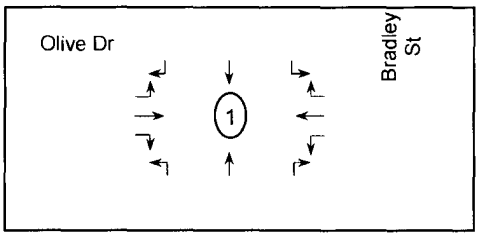


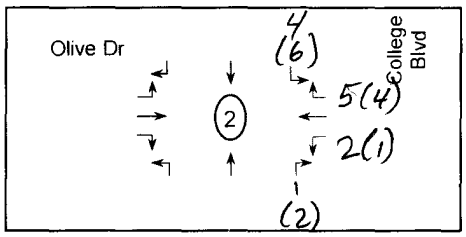
1505 Olive Dr 8 single family lots



(A) EARTH DR 7 LOTS
(B) 1435 OLIVE DR 15 LOTS
(C) 1505 OLIVE DR 8 LOTS







Appendix K

Existing + Cumulative Intersection LOS Worksheets

Intersection												
Int Delay, s/veh	4.9											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	6	0	4	5	3	0	0	10	6	0	0
Future Vol, veh/h	0	6	0	4	5	3	0	0	10	6	0	0
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #		0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	8	0	6	7	4	0	0	14	8	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	16	0	0	13	0	0	37	41	18	39	39	19
Stage 1	-	-	-	-	-	-	13	13	-	25	25	-
Stage 2	-	-	-	-	-	-	23	28	-	13	13	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1601	-	-	1605	-	-	969	851	1060	966	853	1059
Stage 1	-	-	-	-	-	-	1007	884	-	992	874	-
Stage 2	-	-	-	-	-	-	995	872	-	1007	884	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1594	-	-	1598	-	-	957	841	1051	941	843	1050
Mov Cap-2 Maneuver	-	-	-	-	-	-	957	841	-	941	843	-
Stage 1	-	-	-	-	-	-	1003	881	-	985	867	-
Stage 2	-	-	-	-	-	-	987	865	-	989	881	-

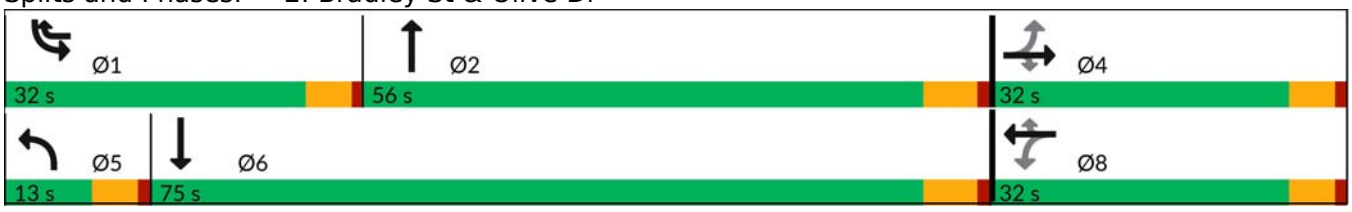
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	2.42	8.47	8.86
HCM LOS			A	A

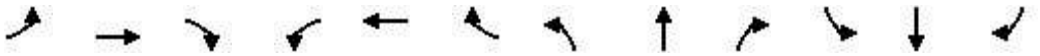
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1051	1594	-	-	558	-	-	941
HCM Lane V/C Ratio	0.013	-	-	-	0.004	-	-	0.009
HCM Control Delay (s/veh)	8.5	0	-	-	7.3	0	-	8.9
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	6	8	7	153	2	810	3	958	491	1511
Future Volume (vph)	6	8	7	153	2	810	3	958	491	1511
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases		4			8	1	5	2	1	6
Permitted Phases	4		4	8		8				
Detector Phase	4	4	4	8	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	31.1	31.1	31.1	31.1	31.1	10.1	10.1	30.8	10.1	23.8
Total Split (s)	32.0	32.0	32.0	32.0	32.0	32.0	13.0	56.0	32.0	75.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%	26.7%	10.8%	46.7%	26.7%	62.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.8	4.1	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1		5.1	5.1	5.1	5.8	5.1	5.8
Lead/Lag						Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	Min	Min	Min	Min	None	None	Min	None	Min
Act Effct Green (s)		17.2	17.2		17.2	38.7	6.1	37.0	21.5	62.1
Actuated g/C Ratio		0.19	0.19		0.19	0.42	0.07	0.40	0.23	0.67
v/c Ratio		0.04	0.01		0.65	0.70	0.02	0.78	0.64	0.66
Control Delay (s/veh)		35.7	0.1		51.0	21.6	51.6	29.5	38.3	12.1
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		35.7	0.1		51.0	21.6	51.6	29.5	38.3	12.1
LOS		D	A		D	C	D	C	D	B
Approach Delay (s/veh)		23.9			26.4			29.6		18.5
Approach LOS		C			C			C		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 92.6	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay (s/veh): 23.3	Intersection LOS: C
Intersection Capacity Utilization 80.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Bradley St & Olive Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	8	7	153	2	810	3	958	95	491	1511	4
Future Volume (veh/h)	6	8	7	153	2	810	3	958	95	491	1511	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	6	8	7	159	2	844	3	998	99	511	1574	4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	52	438	75	0	1258	7	1209	120	617	1984	5
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.37	0.37	0.18	0.55	0.55
Sat Flow, veh/h	0	185	1552	0	2	2692	1781	3259	323	3456	3636	9
Grp Volume(v), veh/h	14	0	7	161	0	844	3	544	553	511	769	809
Grp Sat Flow(s),veh/h/ln	185	0	1552	2	0	1346	1781	1777	1805	1728	1777	1868
Q Serve(g_s), s	0.0	0.0	0.3	0.0	0.0	23.4	0.2	26.4	26.5	13.6	33.0	33.1
Cycle Q Clear(g_c), s	26.9	0.0	0.3	26.9	0.0	23.4	0.2	26.4	26.5	13.6	33.0	33.1
Prop In Lane	0.43		1.00	0.99		1.00	1.00		0.18	1.00		0.00
Lane Grp Cap(c), veh/h	106	0	438	76	0	1258	7	659	669	617	969	1019
V/C Ratio(X)	0.13	0.00	0.02	2.13	0.00	0.67	0.42	0.83	0.83	0.83	0.79	0.79
Avail Cap(c_a), veh/h	106	0	438	76	0	1258	148	937	951	976	1291	1358
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.8	0.0	24.6	47.4	0.0	20.1	47.3	27.2	27.2	37.7	17.3	17.3
Incr Delay (d2), s/veh	0.6	0.0	0.0	549.5	0.0	1.4	34.9	4.2	4.2	3.4	2.5	2.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.1	13.3	0.0	7.1	0.1	11.0	11.2	5.7	12.1	12.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.3	0.0	24.6	596.9	0.0	21.5	82.2	31.4	31.3	41.1	19.9	19.8
LnGrp LOS	C		C	F		C	F	C	C	D	B	B
Approach Vol, veh/h		21			1005			1100			2089	
Approach Delay, s/veh		27.1			113.7			31.5			25.0	
Approach LOS		C			F			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.1	41.1		32.0	5.5	57.8		32.0				
Change Period (Y+Rc), s	5.1	5.8		5.1	5.1	5.8		5.1				
Max Green Setting (Gmax), s	26.9	50.2		26.9	7.9	69.2		26.9				
Max Q Clear Time (g_c+I1), s	15.6	28.5		28.9	2.2	35.1		28.9				
Green Ext Time (p_c), s	1.4	6.9		0.0	0.0	13.7		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	47.9
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	5	2	18	11	6	1	0	13	4	1	0
Future Vol, veh/h	0	5	2	18	11	6	1	0	13	4	1	0
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #		0	-	-	0	-	-	0	-	-	0	-
Grade, %		0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	6	2	21	13	7	1	0	15	5	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	25	0	0	13	0	0	73	79	17	75	77	26
Stage 1	-	-	-	-	-	-	12	12	-	64	64	-
Stage 2	-	-	-	-	-	-	61	67	-	11	13	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1589	-	-	1605	-	-	918	811	1062	915	813	1049
Stage 1	-	-	-	-	-	-	1008	885	-	947	842	-
Stage 2	-	-	-	-	-	-	950	839	-	1010	884	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1583	-	-	1599	-	-	897	793	1053	883	796	1040
Mov Cap-2 Maneuver	-	-	-	-	-	-	897	793	-	883	796	-
Stage 1	-	-	-	-	-	-	1004	882	-	930	827	-
Stage 2	-	-	-	-	-	-	932	824	-	991	881	-

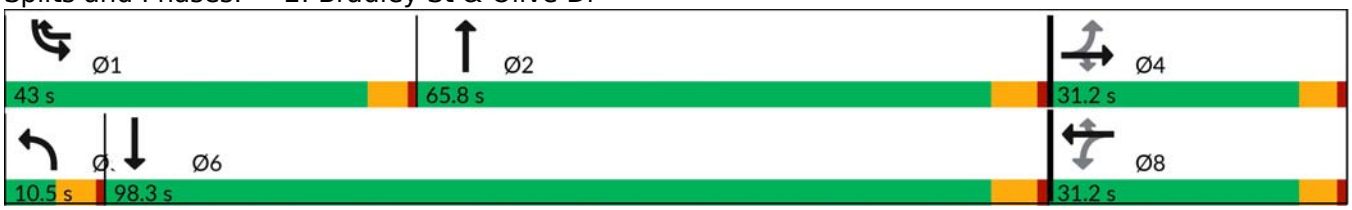
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	3.75	8.52	9.2
HCM LOS			A	A

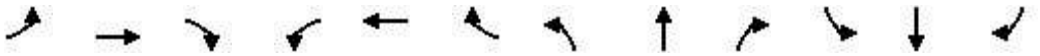
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1040	1583	-	-	865	-	-	864
HCM Lane V/C Ratio	0.016	-	-	-	0.013	-	-	0.007
HCM Control Delay (s/veh)	8.5	0	-	-	7.3	0	-	9.2
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	5	7	13	75	6	765	13	1192	763	1153
Future Volume (vph)	5	7	13	75	6	765	13	1192	763	1153
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases		4			8	1	5	2	1	6
Permitted Phases	4		4	8		8				
Detector Phase	4	4	4	8	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	31.1	31.1	31.1	31.1	31.1	10.1	10.1	30.8	10.1	23.8
Total Split (s)	31.2	31.2	31.2	31.2	31.2	43.0	10.5	65.8	43.0	98.3
Total Split (%)	22.3%	22.3%	22.3%	22.3%	22.3%	30.7%	7.5%	47.0%	30.7%	70.2%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.8	4.1	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1		5.1	5.1	5.1	5.8	5.1	5.8
Lead/Lag						Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	Min	Min	Min	Min	None	None	Min	None	Min
Act Effct Green (s)		15.9	15.9		15.9	49.4	5.6	51.3	33.5	86.5
Actuated g/C Ratio		0.14	0.14		0.14	0.42	0.05	0.44	0.29	0.74
v/c Ratio		0.05	0.04		0.45	0.66	0.15	0.86	0.79	0.45
Control Delay (s/veh)		47.7	0.3		57.6	26.8	67.2	37.8	47.5	8.3
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		47.7	0.3		57.6	26.8	67.2	37.8	47.5	8.3
LOS		D	A		E	C	E	D	D	A
Approach Delay (s/veh)		23.1			29.8			38.2		23.8
Approach LOS		C			C			D		C

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 117.3	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay (s/veh): 29.6	Intersection LOS: C
Intersection Capacity Utilization 85.9%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 2: Bradley St & Olive Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	7	13	75	6	765	13	1192	104	763	1153	18
Future Volume (veh/h)	5	7	13	75	6	765	13	1192	104	763	1153	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	7	13	77	6	781	13	1216	106	779	1177	18
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	41	42	321	55	2	1253	26	1372	119	865	2332	36
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.01	0.42	0.42	0.25	0.65	0.65
Sat Flow, veh/h	0	200	1546	0	11	2676	1781	3302	287	3456	3581	55
Grp Volume(v), veh/h	12	0	13	83	0	781	13	653	669	779	584	611
Grp Sat Flow(s),veh/h/ln	200	0	1546	11	0	1338	1781	1777	1812	1728	1777	1859
Q Serve(g_s), s	0.0	0.0	0.8	0.0	0.0	26.1	0.9	42.8	43.1	27.5	21.5	21.5
Cycle Q Clear(g_c), s	26.1	0.0	0.8	26.1	0.0	26.1	0.9	42.8	43.1	27.5	21.5	21.5
Prop In Lane	0.42		1.00	0.93		1.00	1.00		0.16	1.00		0.03
Lane Grp Cap(c), veh/h	82	0	321	57	0	1253	26	738	753	865	1157	1210
V/C Ratio(X)	0.15	0.00	0.04	1.45	0.00	0.62	0.50	0.88	0.89	0.90	0.50	0.50
Avail Cap(c_a), veh/h	82	0	321	57	0	1253	76	847	864	1040	1305	1366
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.0	0.0	39.9	61.9	0.0	26.2	61.6	34.0	34.1	45.7	11.4	11.4
Incr Delay (d2), s/veh	0.8	0.0	0.1	274.5	0.0	1.0	14.3	10.1	10.2	9.5	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	6.2	0.0	8.9	0.5	19.5	20.0	12.5	7.6	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.8	0.0	39.9	336.4	0.0	27.1	75.9	44.1	44.3	55.2	11.8	11.7
LnGrp LOS	D		D	F		C	E	D	D	E	B	B
Approach Vol, veh/h		25			864			1335			1974	
Approach Delay, s/veh		41.3			56.8			44.5			28.9	
Approach LOS		D			E			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	36.6	58.1		31.2	6.9	87.8		31.2				
Change Period (Y+Rc), s	5.1	5.8		5.1	5.1	5.8		5.1				
Max Green Setting (Gmax), s	31.9	60.0		26.1	5.4	92.5		26.1				
Max Q Clear Time (g_c+I1), s	29.5	45.1		28.1	2.9	23.5		28.1				
Green Ext Time (p_c), s	2.0	7.3		0.0	0.0	9.4		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	39.7
HCM 7th LOS	D

Appendix L

Existing + Cumulative + Project Intersection LOS Worksheets

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	47	0	4	57	3	0	0	10	6	0	0
Future Vol, veh/h	0	47	0	4	57	3	0	0	10	6	0	0
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #		0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	66	0	6	80	4	0	0	14	8	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	90	0	0	71	0	0	168	172	76	170	170	92
Stage 1	-	-	-	-	-	-	71	71	-	99	99	-
Stage 2	-	-	-	-	-	-	97	101	-	71	71	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1506	-	-	1529	-	-	796	721	985	794	723	965
Stage 1	-	-	-	-	-	-	939	836	-	908	813	-
Stage 2	-	-	-	-	-	-	910	812	-	939	836	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1500	-	-	1523	-	-	787	712	977	773	714	957
Mov Cap-2 Maneuver	-	-	-	-	-	-	787	712	-	773	714	-
Stage 1	-	-	-	-	-	-	935	832	-	900	807	-
Stage 2	-	-	-	-	-	-	903	805	-	921	832	-

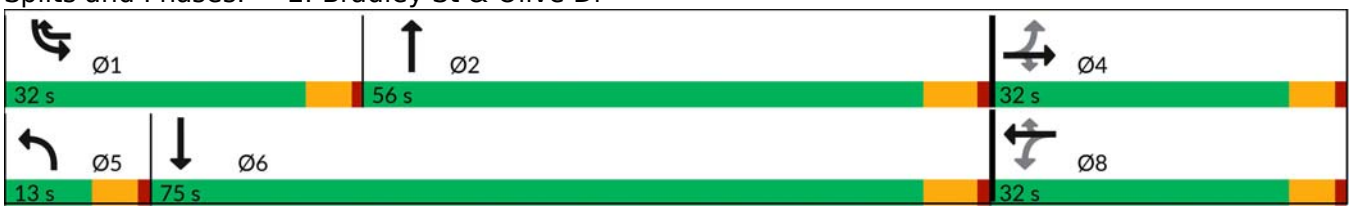
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.46	8.74	9.71
HCM LOS			A	A

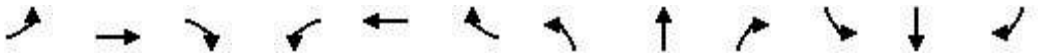
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	977	1500	-	-	111	-	-	773
HCM Lane V/C Ratio	0.014	-	-	-	0.004	-	-	0.011
HCM Control Delay (s/veh)	8.7	0	-	-	7.4	0	-	9.7
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	20	18	24	153	15	810	24	958	491	1511
Future Volume (vph)	20	18	24	153	15	810	24	958	491	1511
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases		4			8	1	5	2	1	6
Permitted Phases	4		4	8		8				
Detector Phase	4	4	4	8	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	31.1	31.1	31.1	31.1	31.1	10.1	10.1	30.8	10.1	23.8
Total Split (s)	32.0	32.0	32.0	32.0	32.0	32.0	13.0	56.0	32.0	75.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%	26.7%	10.8%	46.7%	26.7%	62.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.8	4.1	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1		5.1	5.1	5.1	5.8	5.1	5.8
Lead/Lag						Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	Min	Min	Min	Min	None	None	Min	None	Min
Act Effct Green (s)		18.1	18.1		18.1	39.6	7.0	37.4	21.5	60.1
Actuated g/C Ratio		0.19	0.19		0.19	0.42	0.07	0.40	0.23	0.64
v/c Ratio		0.13	0.06		0.68	0.70	0.19	0.78	0.65	0.70
Control Delay (s/veh)		36.5	0.2		52.6	21.4	52.5	30.0	39.2	15.3
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		36.5	0.2		52.6	21.4	52.5	30.0	39.2	15.3
LOS		D	A		D	C	D	C	D	B
Approach Delay (s/veh)		22.6			26.8			30.6		21.1
Approach LOS		C			C			C		C

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 93.9	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay (s/veh): 25.0	Intersection LOS: C
Intersection Capacity Utilization 80.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Bradley St & Olive Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	18	24	153	15	810	24	958	95	491	1511	22
Future Volume (veh/h)	20	18	24	153	15	810	24	958	95	491	1511	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	21	19	25	159	16	844	25	998	99	511	1574	23
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	57	35	432	71	4	1247	45	1230	122	615	1900	28
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.03	0.38	0.38	0.18	0.53	0.53
Sat Flow, veh/h	0	126	1551	0	14	2691	1781	3259	323	3456	3584	52
Grp Volume(v), veh/h	40	0	25	175	0	844	25	544	553	511	779	818
Grp Sat Flow(s),veh/h/ln	126	0	1551	14	0	1346	1781	1777	1805	1728	1777	1859
Q Serve(g_s), s	0.0	0.0	1.1	0.0	0.0	24.0	1.3	26.5	26.5	13.8	35.4	35.6
Cycle Q Clear(g_c), s	26.9	0.0	1.1	26.9	0.0	24.0	1.3	26.5	26.5	13.8	35.4	35.6
Prop In Lane	0.52		1.00	0.91		1.00	1.00		0.18	1.00		0.03
Lane Grp Cap(c), veh/h	92	0	432	75	0	1247	45	671	681	615	942	986
V/C Ratio(X)	0.44	0.00	0.06	2.33	0.00	0.68	0.55	0.81	0.81	0.83	0.83	0.83
Avail Cap(c_a), veh/h	92	0	432	75	0	1247	146	924	939	963	1274	1333
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.9	0.0	25.5	46.9	0.0	20.7	46.5	27.0	27.0	38.3	19.0	19.0
Incr Delay (d2), s/veh	3.2	0.0	0.1	638.2	0.0	1.5	10.2	3.9	3.9	3.6	3.4	3.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.4	15.1	0.0	7.3	0.7	11.0	11.2	5.8	13.4	14.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.1	0.0	25.6	685.0	0.0	22.2	56.7	30.9	30.8	41.9	22.4	22.4
LnGrp LOS	C		C	F		C	E	C	C	D	C	C
Approach Vol, veh/h		65			1019			1122			2108	
Approach Delay, s/veh		29.6			136.1			31.4			27.1	
Approach LOS		C			F			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.3	42.2		32.0	7.5	57.0		32.0				
Change Period (Y+Rc), s	5.1	5.8		5.1	5.1	5.8		5.1				
Max Green Setting (Gmax), s	26.9	50.2		26.9	7.9	69.2		26.9				
Max Q Clear Time (g_c+I1), s	15.8	28.5		28.9	3.3	37.6		28.9				
Green Ext Time (p_c), s	1.4	6.9		0.0	0.0	13.6		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	54.0
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	53	2	18	47	6	1	0	13	4	1	0
Future Vol, veh/h	0	53	2	18	47	6	1	0	13	4	1	0
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #		0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	62	2	21	55	7	1	0	15	5	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	67	0	0	70	0	0	172	178	74	174	176	69
Stage 1	-	-	-	-	-	-	69	69	-	106	106	-
Stage 2	-	-	-	-	-	-	103	110	-	67	70	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1534	-	-	1531	-	-	791	715	988	789	718	994
Stage 1	-	-	-	-	-	-	942	838	-	899	807	-
Stage 2	-	-	-	-	-	-	903	805	-	943	837	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1528	-	-	1525	-	-	772	699	980	759	701	986
Mov Cap-2 Maneuver	-	-	-	-	-	-	772	699	-	759	701	-
Stage 1	-	-	-	-	-	-	938	834	-	883	792	-
Stage 2	-	-	-	-	-	-	885	790	-	924	833	-

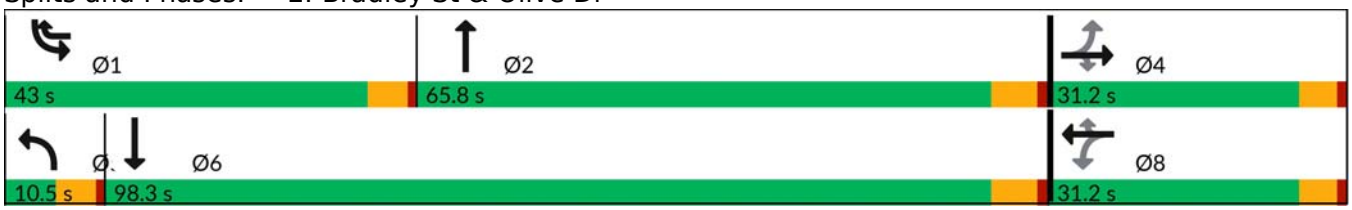
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	1.87	8.81	9.86
HCM LOS			A	A

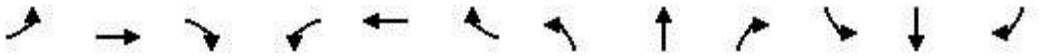
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	962	1528	-	-	446	-	-	747
HCM Lane V/C Ratio	0.017	-	-	-	0.014	-	-	0.008
HCM Control Delay (s/veh)	8.8	0	-	-	7.4	0	-	9.9
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	22	19	32	75	15	766	27	1193	763	1153
Future Volume (vph)	22	19	32	75	15	766	27	1193	763	1153
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases		4			8	1	5	2	1	6
Permitted Phases	4		4	8		8				
Detector Phase	4	4	4	8	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	31.1	31.1	31.1	31.1	31.1	10.1	10.1	30.8	10.1	23.8
Total Split (s)	31.2	31.2	31.2	31.2	31.2	43.0	10.5	65.8	43.0	98.3
Total Split (%)	22.3%	22.3%	22.3%	22.3%	22.3%	30.7%	7.5%	47.0%	30.7%	70.2%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.8	4.1	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1		5.1	5.1	5.1	5.8	5.1	5.8
Lead/Lag						Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	Min	Min	Min	Min	None	None	Min	None	Min
Act Effct Green (s)		16.2	16.2		16.2	49.8	5.6	51.6	33.6	84.9
Actuated g/C Ratio		0.14	0.14		0.14	0.42	0.05	0.44	0.28	0.72
v/c Ratio		0.19	0.11		0.49	0.66	0.33	0.86	0.79	0.47
Control Delay (s/veh)		50.2	0.7		59.1	26.8	73.4	38.1	47.9	9.2
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		50.2	0.7		59.1	26.8	73.4	38.1	47.9	9.2
LOS		D	A		E	C	E	D	D	A
Approach Delay (s/veh)		28.2			30.3			38.9		24.4
Approach LOS		C			C			D		C

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 118	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay (s/veh): 30.2	Intersection LOS: C
Intersection Capacity Utilization 86.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 2: Bradley St & Olive Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	19	32	75	15	766	27	1193	104	763	1153	31
Future Volume (veh/h)	22	19	32	75	15	766	27	1193	104	763	1153	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	19	33	77	15	782	28	1217	106	779	1177	32
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	44	26	320	52	6	1252	44	1372	119	865	2263	62
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.02	0.42	0.42	0.25	0.64	0.64
Sat Flow, veh/h	0	124	1546	0	28	2676	1781	3302	287	3456	3531	96
Grp Volume(v), veh/h	41	0	33	92	0	782	28	654	669	779	592	617
Grp Sat Flow(s),veh/h/ln	124	0	1546	28	0	1338	1781	1777	1812	1728	1777	1850
Q Serve(g_s), s	0.0	0.0	2.2	0.0	0.0	26.1	2.0	42.8	43.1	27.5	22.6	22.6
Cycle Q Clear(g_c), s	26.1	0.0	2.2	26.1	0.0	26.1	2.0	42.8	43.1	27.5	22.6	22.6
Prop In Lane	0.54		1.00	0.84		1.00	1.00		0.16	1.00		0.05
Lane Grp Cap(c), veh/h	70	0	320	58	0	1252	44	738	753	865	1139	1186
V/C Ratio(X)	0.59	0.00	0.10	1.58	0.00	0.62	0.63	0.89	0.89	0.90	0.52	0.52
Avail Cap(c_a), veh/h	70	0	320	58	0	1252	76	846	863	1040	1305	1358
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.2	0.0	40.4	60.4	0.0	26.2	60.9	34.0	34.1	45.7	12.2	12.2
Incr Delay (d2), s/veh	12.4	0.0	0.1	327.3	0.0	1.0	14.1	10.1	10.3	9.5	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.8	7.2	0.0	8.9	1.0	19.5	20.1	12.5	8.1	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.6	0.0	40.6	387.7	0.0	27.2	74.9	44.1	44.4	55.2	12.5	12.5
LnGrp LOS	E		D	F		C	E	D	D	E	B	B
Approach Vol, veh/h		74			874			1351			1988	
Approach Delay, s/veh		51.1			65.1			44.9			29.3	
Approach LOS		D			E			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	36.6	58.2		31.2	8.2	86.5		31.2				
Change Period (Y+Rc), s	5.1	5.8		5.1	5.1	5.8		5.1				
Max Green Setting (Gmax), s	31.9	60.0		26.1	5.4	92.5		26.1				
Max Q Clear Time (g_c+I1), s	29.5	45.1		28.1	4.0	24.6		28.1				
Green Ext Time (p_c), s	2.0	7.2		0.0	0.0	9.6		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	41.9
HCM 7th LOS	D

Appendix M

City Provided Year 2050 Segment Volumes

City of Oceanside
Preferred 2050 Rerun

8/15/2023

City Boundaries

Hwycov

Functional Classification

- Freeway
- Prime
- Major
- Collector
- Local Collector
- Rural Collector
- Local
- Freeway Ramp
- Local Ramp
- 10

- Average Daily Traffic (ADT)

N

C+R

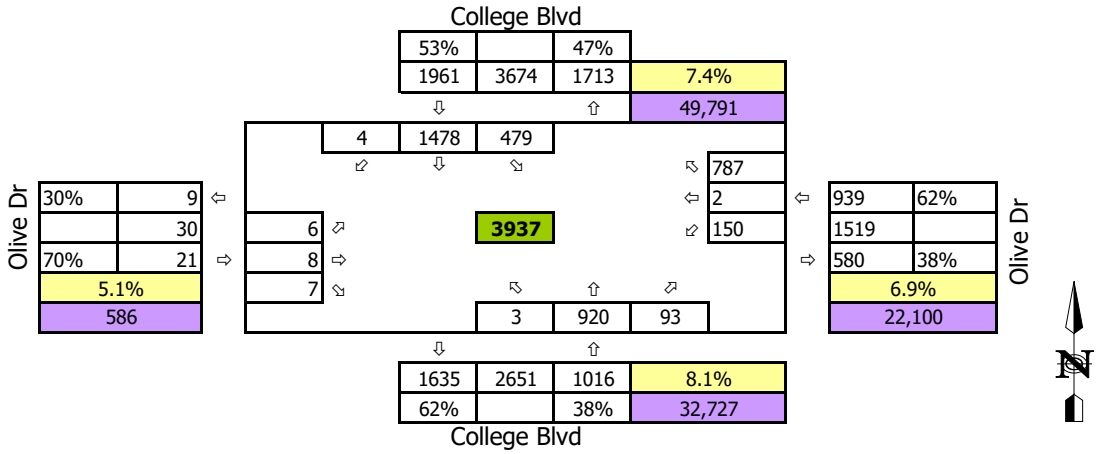
0 0.13 0.25 0.5 0.75 1 Miles

Appendix N

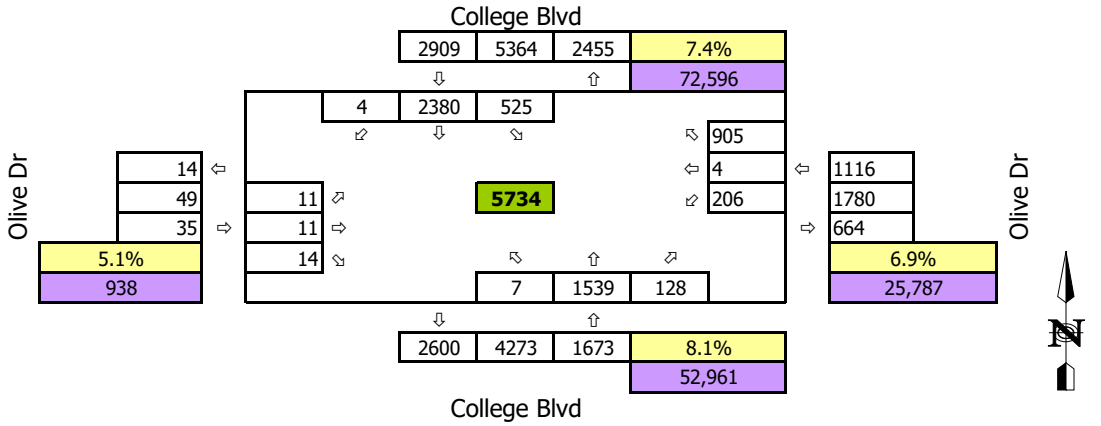
NCHRP Intersection Volume Forecasting Worksheets

AM Peak Volumes

Scenario:	**Existing (2024)**
N/S Street:	**College Blvd**
E/W Street:	**Olive Dr**
Intersection #:	**1**



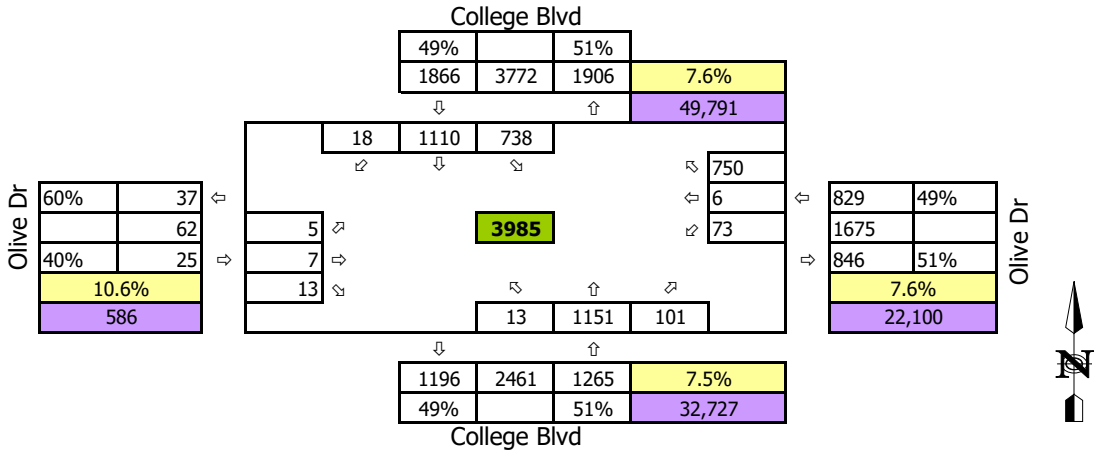
Scenario:	**Future Year 2050**
N/S Street:	**College Blvd**
E/W Street:	**Olive Dr**



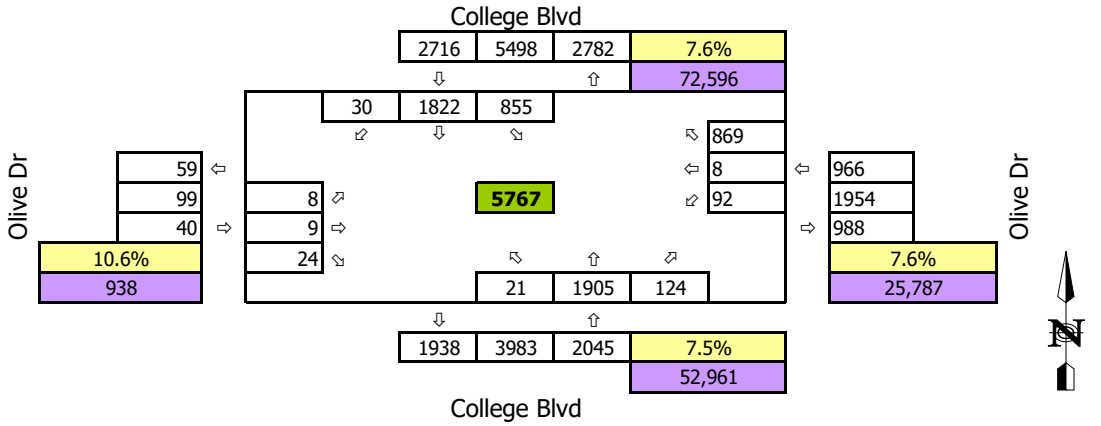
LEGEND	
Existing K-Factor	xx%
ADT Volume	xx
Total Entering Volume	**xx**

PM Peak Volumes

Scenario:	**Existing (2024)**
N/S Street:	**College Blvd**
E/W Street:	**Olive Dr**
Intersection #:	**1**



Scenario:	**Future Year 2050**
N/S Street:	**College Blvd**
E/W Street:	**Olive Dr**



LEGEND	
Existing K-Factor	xx%
ADT Volume	xx
Total Entering Volume	**xx**

Appendix O

Buildout Year 2050 Intersection LOS Worksheets

Intersection												
Int Delay, s/veh	4.9											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	10	0	6	8	5	0	0	16	10	0	0
Future Vol, veh/h	0	10	0	6	8	5	0	0	16	10	0	0
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #		0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	14	0	8	11	7	0	0	23	14	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	23	0	0	19	0	0	52	59	24	56	56	25
Stage 1	-	-	-	-	-	-	19	19	-	37	37	-
Stage 2	-	-	-	-	-	-	33	40	-	19	19	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1592	-	-	1597	-	-	947	832	1052	942	835	1051
Stage 1	-	-	-	-	-	-	1000	879	-	979	864	-
Stage 2	-	-	-	-	-	-	983	861	-	1000	879	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1585	-	-	1591	-	-	934	820	1044	909	824	1043
Mov Cap-2 Maneuver	-	-	-	-	-	-	934	820	-	909	824	-
Stage 1	-	-	-	-	-	-	996	876	-	969	856	-
Stage 2	-	-	-	-	-	-	974	853	-	974	876	-

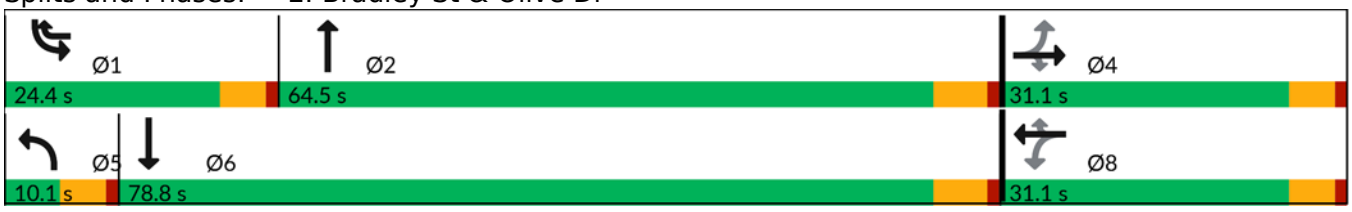
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	2.3	8.53	9.02
HCM LOS			A	A

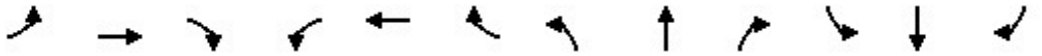
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1044	1585	-	-	528	-	-	909
HCM Lane V/C Ratio	0.022	-	-	-	0.005	-	-	0.015
HCM Control Delay (s/veh)	8.5	0	-	-	7.3	0	-	9
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	11	11	14	206	4	905	7	1539	525	2380
Future Volume (vph)	11	11	14	206	4	905	7	1539	525	2380
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases		4			8	1	5	2	1	6
Permitted Phases	4		4	8		8				
Detector Phase	4	4	4	8	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	31.1	31.1	31.1	31.1	31.1	10.1	10.1	30.8	10.1	23.8
Total Split (s)	31.1	31.1	31.1	31.1	31.1	24.4	10.1	64.5	24.4	78.8
Total Split (%)	25.9%	25.9%	25.9%	25.9%	25.9%	20.3%	8.4%	53.8%	20.3%	65.7%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.8	4.1	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1		5.1	5.1	5.1	5.8	5.1	5.8
Lead/Lag						Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	Min	Min	Min	Min	None	None	Min	None	Min
Act Effct Green (s)		22.8	22.8		22.8	42.1	5.0	58.8	19.3	81.2
Actuated g/C Ratio		0.20	0.20		0.20	0.36	0.04	0.50	0.17	0.69
v/c Ratio		0.07	0.03		0.85	0.94	0.09	0.98	0.96	1.00
Control Delay (s/veh)		38.3	0.2		74.0	50.6	58.1	47.6	79.2	39.8
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		38.3	0.2		74.0	50.6	58.1	47.6	79.2	39.8
LOS		D	A		E	D	E	D	E	D
Approach Delay (s/veh)		22.9			55.0			47.7		47.0
Approach LOS		C			E			D		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 116.9	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.01	
Intersection Signal Delay (s/veh): 48.6	Intersection LOS: D
Intersection Capacity Utilization 102.2%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 2: Bradley St & Olive Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	11	14	206	4	905	7	1539	128	525	2380	4
Future Volume (veh/h)	11	11	14	206	4	905	7	1539	128	525	2380	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	11	15	215	4	943	7	1603	133	547	2479	4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	45	31	335	59	0	1029	15	1624	133	556	2334	4
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.01	0.82	0.49	0.27	1.00	0.64
Sat Flow, veh/h	0	144	1547	0	0	2679	1781	3320	273	3456	3640	6
Grp Volume(v), veh/h	22	0	15	219	0	943	7	851	885	547	1210	1273
Grp Sat Flow(s),veh/h/ln	144	0	1547	0	0	1339	1781	1777	1816	1728	1777	1869
Q Serve(g_s), s	0.0	0.0	0.9	0.0	0.0	26.0	0.5	52.5	57.9	18.9	77.0	77.0
Cycle Q Clear(g_c), s	26.0	0.0	0.9	26.0	0.0	26.0	0.5	52.5	57.9	18.9	77.0	77.0
Prop In Lane	0.50		1.00	0.98		1.00	1.00		0.15	1.00		0.00
Lane Grp Cap(c), veh/h	76	0	335	59	0	1029	15	869	888	556	1140	1199
V/C Ratio(X)	0.29	0.00	0.04	3.68	0.00	0.92	0.45	0.98	1.00	0.98	1.06	1.06
Avail Cap(c_a), veh/h	76	0	335	59	0	1029	74	869	888	556	1140	1199
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.00	1.67	1.67	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.7	0.0	37.2	60.0	0.0	35.8	59.2	10.4	13.8	43.7	0.0	0.1
Incr Delay (d2), s/veh	2.1	0.0	0.1	1247.9	0.0	12.5	19.3	25.3	29.4	34.0	44.6	44.2
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	0.6	0.0	0.4	22.4	0.0	14.5	0.3	11.1	15.4	9.5	14.1	14.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.7	0.0	37.2	1307.9	0.0	48.3	78.5	35.7	43.2	77.7	44.6	44.3
LnGrp LOS	D		D	F		D	E	D	D	E	F	F
Approach Vol, veh/h		37			1162			1743			3030	
Approach Delay, s/veh		39.9			285.7			39.7			50.5	
Approach LOS		D			F			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	24.4	64.5		31.1	6.1	82.8		31.1				
Change Period (Y+Rc), s	5.1	5.8		5.1	5.1	5.8		5.1				
Max Green Setting (Gmax), s	19.3	58.7		26.0	5.0	73.0		26.0				
Max Q Clear Time (g_c+I1), s	20.0	59.9		28.0	2.5	79.0		28.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	93.0
HCM 7th LOS	F

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	8	3	29	18	10	2	0	21	6	2	0
Future Vol, veh/h	0	8	3	29	18	10	2	0	21	6	2	0
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	9	4	34	21	12	2	0	25	7	2	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	38	0	0	18	0	0	112	122	21	115	118	37
Stage 1	-	-	-	-	-	-	16	16	-	100	100	-
Stage 2	-	-	-	-	-	-	96	106	-	14	18	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1572	-	-	1599	-	-	866	768	1056	862	772	1035
Stage 1	-	-	-	-	-	-	1003	882	-	906	812	-
Stage 2	-	-	-	-	-	-	911	807	-	1006	880	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1566	-	-	1592	-	-	837	745	1047	817	749	1027
Mov Cap-2 Maneuver	-	-	-	-	-	-	837	745	-	817	749	-
Stage 1	-	-	-	-	-	-	999	878	-	882	791	-
Stage 2	-	-	-	-	-	-	885	786	-	978	877	-

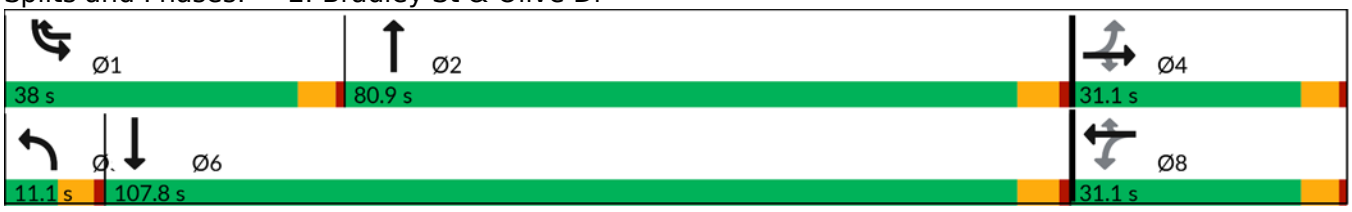
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	3.72	8.61	9.56
HCM LOS			A	A

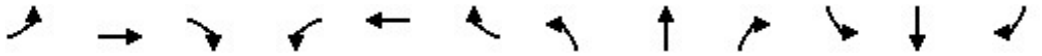
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1025	1566	-	-	855	-	-	799
HCM Lane V/C Ratio	0.026	-	-	-	0.021	-	-	0.012
HCM Control Delay (s/veh)	8.6	0	-	-	7.3	0	-	9.6
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	8	9	24	92	8	869	21	1905	855	1822
Future Volume (vph)	8	9	24	92	8	869	21	1905	855	1822
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases		4			8	1	5	2	1	6
Permitted Phases	4		4	8		8				
Detector Phase	4	4	4	8	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	31.1	31.1	31.1	31.1	31.1	10.1	10.1	30.8	10.1	23.8
Total Split (s)	31.1	31.1	31.1	31.1	31.1	38.0	11.1	80.9	38.0	107.8
Total Split (%)	20.7%	20.7%	20.7%	20.7%	20.7%	25.3%	7.4%	53.9%	25.3%	71.9%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.8	4.1	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1		5.1	5.1	5.1	5.8	5.1	5.8
Lead/Lag						Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	Min	Min	Min	Min	None	None	Min	None	Min
Act Effct Green (s)		17.7	17.7		17.7	50.7	5.9	75.3	33.0	106.9
Actuated g/C Ratio		0.12	0.12		0.12	0.36	0.04	0.53	0.23	0.75
v/c Ratio		0.08	0.08		0.60	0.89	0.28	1.11	1.09	0.71
Control Delay (s/veh)		54.0	0.6		73.6	52.5	78.7	91.6	110.9	13.4
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		54.0	0.6		73.6	52.5	78.7	91.6	110.9	13.4
LOS		D	A		E	D	E	F	F	B
Approach Delay (s/veh)		22.8			54.7			91.6		44.2
Approach LOS		C			D			F		D

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 142	
Natural Cycle: 150	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.11	
Intersection Signal Delay (s/veh): 62.6	Intersection LOS: E
Intersection Capacity Utilization 109.9%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 2: Bradley St & Olive Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	9	24	92	8	869	21	1905	124	855	1822	30
Future Volume (veh/h)	8	9	24	92	8	869	21	1905	124	855	1822	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	8	9	24	94	8	887	21	1944	127	872	1859	31
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	35	28	267	46	2	1074	35	1695	109	758	2505	42
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.02	0.84	0.50	0.37	1.00	0.70
Sat Flow, veh/h	0	162	1543	0	12	2665	1781	3385	218	3456	3575	59
Grp Volume(v), veh/h	17	0	24	102	0	887	21	1009	1062	872	921	969
Grp Sat Flow(s),veh/h/ln	162	0	1543	12	0	1333	1781	1777	1827	1728	1777	1858
Q Serve(g_s), s	0.0	0.0	2.0	0.0	0.0	26.0	1.8	75.1	75.1	32.9	0.0	2.9
Cycle Q Clear(g_c), s	26.0	0.0	2.0	26.0	0.0	26.0	1.8	75.1	75.1	32.9	0.0	2.9
Prop In Lane	0.47		1.00	0.92		1.00	1.00		0.12	1.00		0.03
Lane Grp Cap(c), veh/h	63	0	267	48	0	1074	35	890	914	758	1245	1301
V/C Ratio(X)	0.27	0.00	0.09	2.11	0.00	0.83	0.61	1.13	1.16	1.15	0.74	0.74
Avail Cap(c_a), veh/h	63	0	267	48	0	1074	71	890	914	758	1245	1301
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.00	1.67	1.67	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.6	0.0	52.1	73.9	0.0	41.3	73.0	12.3	15.3	47.5	0.0	0.2
Incr Delay (d2), s/veh	2.2	0.0	0.1	564.4	0.0	5.4	15.9	74.3	84.7	82.6	2.4	2.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.8	9.4	0.0	15.4	0.9	24.4	34.3	20.9	0.8	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	55.8	0.0	52.2	638.3	0.0	46.7	88.9	86.6	100.0	130.1	2.4	2.6
LnGrp LOS	E		D	F		D	F	F	F	F	A	A
Approach Vol, veh/h		41			989			2092			2762	
Approach Delay, s/veh		53.7			107.7			93.4			42.8	
Approach LOS		D			F			F			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	38.0	80.9		31.1	8.0	110.9		31.1				
Change Period (Y+Rc), s	5.1	5.8		5.1	5.1	5.8		5.1				
Max Green Setting (Gmax), s	32.9	75.1		26.0	6.0	102.0		26.0				
Max Q Clear Time (g_c+I1), s	34.0	77.1		28.0	3.8	4.9		28.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	26.6		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	71.8
HCM 7th LOS	E

Appendix P

Buildout Year 2050 + Project Intersection LOS Worksheets

Intersection												
Int Delay, s/veh	1.9											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	51	0	6	60	5	0	0	16	10	0	0
Future Vol, veh/h	0	51	0	6	60	5	0	0	16	10	0	0
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	72	0	8	85	7	0	0	23	14	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	97	0	0	77	0	0	183	190	82	187	187	98
Stage 1	-	-	-	-	-	-	77	77	-	110	110	-
Stage 2	-	-	-	-	-	-	106	113	-	77	77	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1497	-	-	1522	-	-	778	705	978	774	708	958
Stage 1	-	-	-	-	-	-	932	831	-	895	804	-
Stage 2	-	-	-	-	-	-	899	802	-	932	831	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1491	-	-	1516	-	-	767	695	970	745	698	950
Mov Cap-2 Maneuver	-	-	-	-	-	-	767	695	-	745	698	-
Stage 1	-	-	-	-	-	-	928	828	-	886	796	-
Stage 2	-	-	-	-	-	-	890	794	-	907	828	-

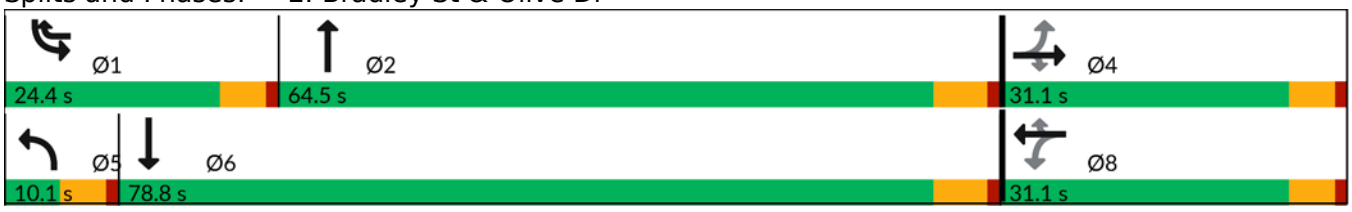
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.62	8.8	9.92
HCM LOS			A	A

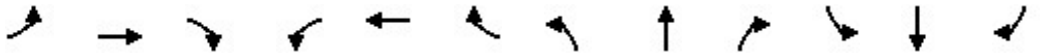
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	970	1491	-	-	150	-	-	745
HCM Lane V/C Ratio	0.023	-	-	-	0.006	-	-	0.019
HCM Control Delay (s/veh)	8.8	0	-	-	7.4	0	-	9.9
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	25	21	31	206	17	905	28	1539	525	2380
Future Volume (vph)	25	21	31	206	17	905	28	1539	525	2380
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases		4			8	1	5	2	1	6
Permitted Phases	4		4	8		8				
Detector Phase	4	4	4	8	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	31.1	31.1	31.1	31.1	31.1	10.1	10.1	30.8	10.1	23.8
Total Split (s)	31.1	31.1	31.1	31.1	31.1	24.4	10.1	64.5	24.4	78.8
Total Split (%)	25.9%	25.9%	25.9%	25.9%	25.9%	20.3%	8.4%	53.8%	20.3%	65.7%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.8	4.1	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1		5.1	5.1	5.1	5.8	5.1	5.8
Lead/Lag						Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	Min	Min	Min	Min	None	None	Min	None	Min
Act Effct Green (s)		23.7	23.7		23.7	43.0	5.0	58.8	19.3	77.2
Actuated g/C Ratio		0.20	0.20		0.20	0.37	0.04	0.50	0.16	0.66
v/c Ratio		0.19	0.07		0.88	0.93	0.38	0.99	0.97	1.07
Control Delay (s/veh)		40.7	0.3		78.4	48.4	71.1	49.8	81.2	66.6
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		40.7	0.3		78.4	48.4	71.1	49.8	81.2	66.6
LOS		D	A		E	D	E	D	F	E
Approach Delay (s/veh)		24.6			54.4			50.2		69.2
Approach LOS		C			D			D		E

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 117.8	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay (s/veh): 60.3	Intersection LOS: E
Intersection Capacity Utilization 103.4%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 2: Bradley St & Olive Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	21	31	206	17	905	28	1539	128	525	2380	22
Future Volume (veh/h)	25	21	31	206	17	905	28	1539	128	525	2380	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	26	22	32	215	18	943	29	1603	133	547	2479	23
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	46	26	335	58	0	1029	46	1624	133	556	2251	21
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.03	0.82	0.49	0.27	1.00	0.62
Sat Flow, veh/h	0	122	1547	0	0	2679	1781	3320	273	3456	3607	33
Grp Volume(v), veh/h	48	0	32	233	0	943	29	851	885	547	1219	1283
Grp Sat Flow(s),veh/h/ln	122	0	1547	0	0	1339	1781	1777	1816	1728	1777	1863
Q Serve(g_s), s	0.0	0.0	2.0	0.0	0.0	26.0	1.9	52.5	57.9	18.9	74.9	74.9
Cycle Q Clear(g_c), s	26.0	0.0	2.0	26.0	0.0	26.0	1.9	52.5	57.9	18.9	74.9	74.9
Prop In Lane	0.54		1.00	0.92		1.00	1.00		0.15	1.00		0.02
Lane Grp Cap(c), veh/h	73	0	335	58	0	1029	46	869	888	556	1109	1163
V/C Ratio(X)	0.66	0.00	0.10	4.04	0.00	0.92	0.63	0.98	1.00	0.98	1.10	1.10
Avail Cap(c_a), veh/h	73	0	335	58	0	1029	74	869	888	556	1109	1163
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.00	1.67	1.67	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.2	0.0	37.6	60.0	0.0	35.8	57.9	10.4	13.8	43.7	0.0	0.4
Incr Delay (d2), s/veh	20.0	0.0	0.1	1408.0	0.0	12.5	13.4	25.3	29.4	34.0	58.3	59.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.8	24.3	0.0	14.5	1.0	11.1	15.4	9.5	18.0	19.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	66.2	0.0	37.7	1468.0	0.0	48.3	71.2	35.7	43.2	77.7	58.3	59.8
LnGrp LOS	E		D	F		D	E	D	D	E	F	F
Approach Vol, veh/h		80			1176			1765			3049	
Approach Delay, s/veh		54.8			329.6			40.1			62.4	
Approach LOS		D			F			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	24.4	64.5		31.1	8.2	80.7		31.1				
Change Period (Y+Rc), s	5.1	5.8		5.1	5.1	5.8		5.1				
Max Green Setting (Gmax), s	19.3	58.7		26.0	5.0	73.0		26.0				
Max Q Clear Time (g_c+I1), s	20.9	59.9		28.0	3.9	76.9		28.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	107.6
HCM 7th LOS	F

Intersection												
Int Delay, s/veh	2.7											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	56	3	29	54	10	2	0	21	6	2	0
Future Vol, veh/h	0	56	3	29	54	10	2	0	21	6	2	0
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #		0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	66	4	34	64	12	2	0	25	7	2	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	80	0	0	74	0	0	211	221	78	214	217	79
Stage 1	-	-	-	-	-	-	73	73	-	143	143	-
Stage 2	-	-	-	-	-	-	138	149	-	71	74	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1518	-	-	1525	-	-	747	677	983	743	681	981
Stage 1	-	-	-	-	-	-	937	834	-	860	779	-
Stage 2	-	-	-	-	-	-	865	774	-	939	833	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1511	-	-	1519	-	-	720	656	975	702	659	973
Mov Cap-2 Maneuver	-	-	-	-	-	-	720	656	-	702	659	-
Stage 1	-	-	-	-	-	-	933	831	-	837	757	-
Stage 2	-	-	-	-	-	-	839	753	-	911	830	-

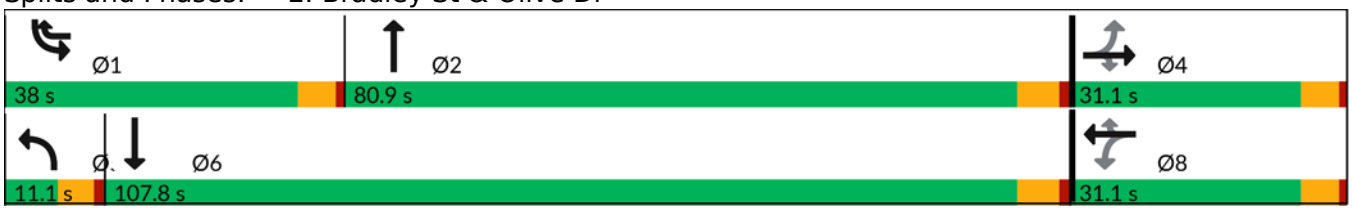
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	2.32	8.92	10.29
HCM LOS			A	B

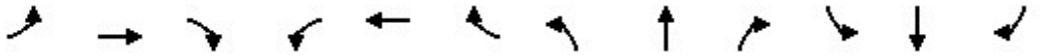
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	946	1511	-	-	544	-	-	690
HCM Lane V/C Ratio	0.029	-	-	-	0.022	-	-	0.014
HCM Control Delay (s/veh)	8.9	0	-	-	7.4	0	-	10.3
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	25	21	43	92	17	869	35	1905	855	1822
Future Volume (vph)	25	21	43	92	17	869	35	1905	855	1822
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases		4			8	1	5	2	1	6
Permitted Phases	4		4	8		8				
Detector Phase	4	4	4	8	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	31.1	31.1	31.1	31.1	31.1	10.1	10.1	30.8	10.1	23.8
Total Split (s)	31.1	31.1	31.1	31.1	31.1	38.0	11.1	80.9	38.0	107.8
Total Split (%)	20.7%	20.7%	20.7%	20.7%	20.7%	25.3%	7.4%	53.9%	25.3%	71.9%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.8	4.1	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1		5.1	5.1	5.1	5.8	5.1	5.8
Lead/Lag						Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	Min	Min	Min	Min	None	None	Min	None	Min
Act Effct Green (s)		18.2	18.2		18.2	51.2	5.9	75.3	33.0	104.6
Actuated g/C Ratio		0.13	0.13		0.13	0.36	0.04	0.53	0.23	0.73
v/c Ratio		0.24	0.15		0.64	0.88	0.49	1.11	1.09	0.73
Control Delay (s/veh)		58.1	1.2		76.1	51.8	91.4	93.6	112.3	14.8
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		58.1	1.2		76.1	51.8	91.4	93.6	112.3	14.8
LOS		E	A		E	D	F	F	F	B
Approach Delay (s/veh)		30.3			54.5			93.6		45.5
Approach LOS		C			D			F		D

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 142.5	
Natural Cycle: 150	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay (s/veh): 63.8	Intersection LOS: E
Intersection Capacity Utilization 109.9%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 2: Bradley St & Olive Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	21	43	92	17	869	35	1905	124	855	1822	43
Future Volume (veh/h)	25	21	43	92	17	869	35	1905	124	855	1822	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	25	21	44	94	17	887	36	1944	127	872	1859	44
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	37	21	267	44	5	1074	46	1695	109	758	2461	58
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.03	0.84	0.50	0.37	1.00	0.69
Sat Flow, veh/h	0	121	1543	0	26	2665	1781	3385	218	3456	3546	84
Grp Volume(v), veh/h	46	0	44	111	0	887	36	1009	1062	872	927	976
Grp Sat Flow(s),veh/h/ln	121	0	1543	26	0	1333	1781	1777	1827	1728	1777	1853
Q Serve(g_s), s	0.0	0.0	3.6	0.0	0.0	26.0	3.0	75.1	75.1	32.9	0.0	4.3
Cycle Q Clear(g_c), s	26.0	0.0	3.6	26.0	0.0	26.0	3.0	75.1	75.1	32.9	0.0	4.3
Prop In Lane	0.54		1.00	0.85		1.00	1.00		0.12	1.00		0.05
Lane Grp Cap(c), veh/h	58	0	267	49	0	1074	46	890	914	758	1233	1286
V/C Ratio(X)	0.79	0.00	0.16	2.27	0.00	0.83	0.78	1.13	1.16	1.15	0.75	0.76
Avail Cap(c_a), veh/h	58	0	267	49	0	1074	71	890	914	758	1233	1286
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.00	1.67	1.67	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.5	0.0	52.8	72.6	0.0	41.3	72.6	12.3	15.3	47.5	0.0	0.3
Incr Delay (d2), s/veh	51.7	0.0	0.3	632.5	0.0	5.4	24.5	74.3	84.7	82.6	2.6	2.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	1.4	10.5	0.0	15.4	1.7	24.4	34.3	20.9	0.9	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	115.3	0.0	53.0	705.1	0.0	46.7	97.1	86.6	100.0	130.1	2.6	3.0
LnGrp LOS	F		D	F		D	F	F	F	F	A	A
Approach Vol, veh/h		90			998			2107			2775	
Approach Delay, s/veh		84.8			119.9			93.5			42.8	
Approach LOS		F			F			F			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	38.0	80.9		31.1	9.0	109.9		31.1				
Change Period (Y+Rc), s	5.1	5.8		5.1	5.1	5.8		5.1				
Max Green Setting (Gmax), s	32.9	75.1		26.0	6.0	102.0		26.0				
Max Q Clear Time (g_c+I1), s	34.0	77.1		28.0	5.0	6.3		28.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	27.1		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	74.3
HCM 7th LOS	E