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**HUNTINGTON BEACH WALMART
TRAFFIC IMPACT ANALYSIS
CITY OF HUNTINGTON BEACH, CALIFORNIA**

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TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1.0 EXECUTIVE SUMMARY	1
1.1 Project Traffic	
1.2 Existing Plus Project Conditions	
1.3 Existing Plus Ambient Growth Plus Project Plus Cumulative (2015) Conditions	
1.4 Site Access Recommendations	
1.5 Site Adjacent Roadway Recommendations	
2.0 INTRODUCTION	7
2.1 Study Purpose	
2.2 Study Area Intersections	
2.3 Report Organization	
2.4 Analysis Methods	
3.0 EXISTING CONDITIONS	21
3.1 Existing Roadway Network	
3.2 Transit Service	
3.3 Bicycle and Pedestrian Facilities	
3.4 Existing Intersection Traffic Volumes	
3.5 Existing Conditions Analysis	
3.6 Historical Accident Data	
4.0 PROJECTED FUTURE TRAFFIC.....	45
4.1 Project Description	
4.2 Background Traffic	
4.3 Cumulative Development Traffic	
5.0 EXISTING PLUS PROJECT CONDITIONS	61
5.1 E+P Traffic Volume Forecasts	
5.2 E+P Conditions Analysis	
6.0 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2015) CONDITIONS	73
6.1 EAPC (2015) Traffic Volume Forecasts	
6.2 EAPC (2015) Conditions Analysis	
7.0 EXISTING PLUS PROJECT SATURDAY PEAK PERIOD CONDITIONS	87
7.1 E+P Saturday Peak Period Traffic Volume Forecasts	
7.2 Trip Generation	
7.3 E+P Intersection Operations	

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
8.0 SITE ACCESS, ON-SITE CIRCULATION AND OFF-SITE MITIGATION RECOMMENDATIONS.....	95
8.1 Site Access Review and Recommendations	
8.2 Site Adjacent Roadway Recommendations	
8.3 Off-site Recommendations	
8.4 On-Site Deliveries	

APPENDICES

APPROVED SCOPING AGREEMENT 1.1

INTERSECTION EVALUATION CALCULATION WORKSHEETS 2.1

TRAFFIC SIGNAL WARRANT ANALYSIS..... 2.2

EXISTING (2010) TRAFFIC COUNT WORKSHEETS 3.1

EXISTING (2010) CONDITIONS INTERSECTION ANALYSIS ICU CALCULATION
WORKSHEETS 3.2

EXISTING (2010) SYNCHRO HCM CALCULATION WORKSHEETS 3.3

EXISTING (2010) CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS
HCS+ CALCULATION WORKSHEETS 3.4

EXISTING (2010) CONDITIONS RAMP JUNCTION MERGE/DIVERGE ANALYSIS
HCS+ CALCULATION WORKSHEETS 3.5

TRAFFIC COLLISION HISTORY REPORTS 3.6

CUMULATIVE DEVELOPMENT TRIP GENERATION SUMMARY 4.1

EXISTING PLUS PROJECT CONDITIONS INTERSECTION ANALYSIS ICU CALCULATION
WORKSHEETS 5.1

EXISTING PLUS PROJECT SYNCHRO HCM CALCULATION WORKSHEETS 5.2

EXISTING PLUS PROJECT CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS
HCS+ CALCULATION WORKSHEETS 5.3

EXISTING PLUS PROJECT CONDITIONS RAMP JUNCTION MERGE/DIVERGE ANALYSIS
HCS+ CALCULATION WORKSHEETS 5.4

EXISTING PLUS PROJECT PLUS AMBIENT GROWTH PLUS CUMULATIVE (2015) CONDITIONS
INTERSECTION ANALYSIS ICU CALCULATION WORKSHEETS 6.1

EXISTING PLUS PROJECT PLUS AMBIENT GROWTH PLUS CUMULATIVE (2015) SYNCHRO HCM
CALCULATION WORKSHEETS 6.2

EXISTING PLUS PROJECT PLUS AMBIENT GROWTH PLUS CUMULATIVE (2015) CONDITIONS
BASIC FREEWAY SEGMENT ANALYSIS HCS+ CALCULATION WORKSHEETS 6.3

EXISTING PLUS PROJECT PLUS AMBIENT GROWTH PLUS CUMULATIVE (2015) CONDITIONS
RAMP JUNCTION MERGE/DIVERGE ANALYSIS HCS+ CALCULATION WORKSHEETS 6.4

APPENDICES

EXISTING PLUS PROJECT SATURDAY PEAK PERIOD CONDITIONS
INTERSECTION ANALYSIS ICU CALCULATION WORKSHEETS 7.1

LIST OF EXHIBITS

<u>EXHIBIT</u>	<u>PAGE</u>
1-1 Site Plan.....	2
1-2 Goldenwest Street at Driveway 3 and Alternative Access	5
2-1 Regional Location Map	8
2-2 Study Area Location Map.....	10
3-1 Existing Lane Geometries and Intersection Controls	22
3-2 City of Huntington Beach Currently Adopted Circulation Plan	23
3-3 City of Huntington Beach General Plan Roadway Cross-Sections	24
3-4 Orange County Master Plan of Arterial Highways	25
3-5 Orange County Standard Street Sections	26
3-6 Orange County Bus System Map	29
3-7 City of Huntington Beach Bicycle Plan	31
3-8 Existing (2010) Average Daily Traffic (ADT)	32
3-9 Existing (2010) AM Peak Hour Intersection Volumes	33
3-10 Existing (2010) PM Peak Hour Intersection Volumes	34
3-11 Existing Peak Hour Intersection Level of Service (LOS).....	37
3-12 Existing (2010) Freeway Mainline Volumes	38
4-1 Project Trip Distribution	49
4-2 Project (2011) Average Daily Traffic (ADT)	50
4-3 Project (2011) AM Peak Hour Intersection Volumes.....	51
4-4 Project (2011) PM Peak Hour Intersection Volumes.....	52
4-5 Cumulative Development Location Map.....	56
4-6 Cumulative Development Average Daily Traffic (ADT)	58
4-7 Cumulative Development AM Peak Hour Intersection Volumes.....	59

LIST OF EXHIBITS (Continued)

<u>EXHIBIT</u>	<u>PAGE</u>
4-8 Cumulative Development PM Peak Hour Intersection Volumes.....	60
5-1 Existing Plus Project Average Daily Traffic (ADT).....	62
5-2 Existing Plus Project AM Peak Hour Intersection Volumes	63
5-3 Existing Plus Project PM Peak Hour Intersection Volumes).....	64
5-4 Existing Plus Project Peak Hour Intersection Level of Service (LOS)	67
5-5 Existing Plus Project Freeway Mainline Volumes	70
6-1 Existing Plus Ambient Growth Plus Project Plus Cumulative (2015) Average Daily Traffic (ADT)	74
6-2 Existing Plus Ambient Growth Plus Project Plus Cumulative (2015) AM Peak Hour Intersection Volumes.....	75
6-3 Existing Plus Ambient Growth Plus Project Plus Cumulative (2015) PM Peak Hour Intersection Volumes).....	76
6-4 Existing Plus Ambient Growth Plus Project Plus Cumulative (2015) Peak Hour Intersection Level of Service (LOS).....	79
6-5 Existing Plus Ambient Growth Plus Project Plus Cumulative (2015) Freeway Mainline Volumes	84
7-1 Existing Plus Project Saturday Average Daily Traffic (ADT).....	88
7-2 Existing Plus Project Saturday Peak Hour Intersection Volumes	89
8-1 Delivery Truck Access and Circulation	99

LIST OF TABLES

<u>TABLE</u>	<u>PAGE</u>
2-1 ICU Level of Service (LOS) Thresholds.....	14
2-2 HCM Unsignalized Intersection Level of Service (LOS) Thresholds	15
2-3 HCM Signalized Intersection Level of Service (LOS) Thresholds	17
2-4 Freeway Mainline Level of Service (LOS) Criteria.....	18
2-5 Merge and Diverge Area Level of Service (LOS) Thresholds.....	19
3-1 Intersection Analysis For Existing (2010) Conditions	35
3-2 Existing Peak Hour Intersection LOS	39
3-3 Existing (2010) Conditions Basic Freeway Segment Analysis	40
3-4 I-405 Freeway Ramp Merge/Diverge Analysis For Existing (2010) Conditions	42
3-5 Historical Crash Data 2000-2010.....	44
4-1 Project Trip Generation Rates.....	46
4-2 Project Trip Generation Summary	47
4-3 Cumulative Development Projects.....	54
5-1 Intersection Analysis For Existing Plus Project Conditions	65
5-2 Existing Plus Project Peak Hour Intersection LOS.....	68
5-3 Existing Plus Project Conditions Basic Freeway Segment Analysis.....	71
5-4 I-405 Freeway Ramp Merge/Diverge Analysis for Existing Plus Project Conditions.....	72
6-1 Intersection Analysis For Existing Plus Ambient Growth Plus Project Plus Cumulative (2015) Conditions.....	77
6-2 Existing Plus Ambient Growth Plus Project Plus Cumulative (2015) Peak Hour Intersection LOS	80
6-3 HCM Delay Summary with Proposed Improvements for Existing plus Ambient Growth Plus Project Plus Cumulative (2015) Conditions	82
6-4 Existing Plus Ambient Growth Plus Project Plus Cumulative (2015) Conditions Basic Freeway Segment Analysis	83

LIST OF TABLES (Continued)

<u>TABLE</u>		<u>PAGE</u>
6-5	I-405 Freeway Ramp Merge/Diverge Analysis for Existing plus Ambient Growth Plus Project Plus Cumulative (2015) Conditions	85
7-1	Project Trip Generation Rates.....	90
7-2	Project Trip Generation Summary	91
7-3	Intersection Analysis for Existing Plus Project Conditions	92
8-1	Average Weekly Delivery Schedule for Walmart Supercenters.....	98

**HUNTINGTON BEACH WALMART
TRAFFIC IMPACT ANALYSIS
CITY OF HUNTINGTON BEACH, CALIFORNIA**

1.0 EXECUTIVE SUMMARY

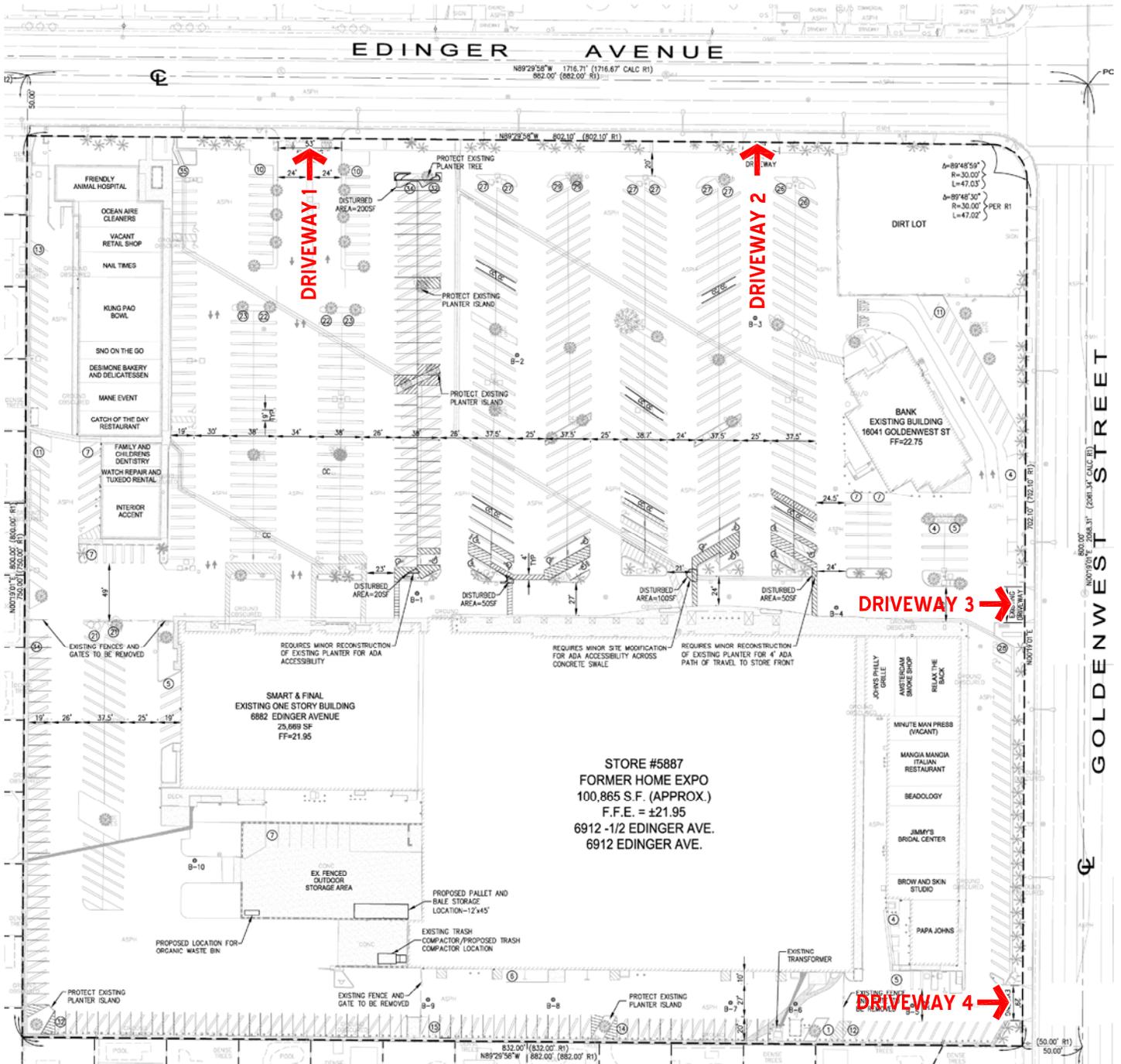
This report presents the results of the Traffic Impact Analysis (TIA) for the proposed Walmart store to be located within an existing retail shopping center at the southwest corner of Goldenwest Street and Edinger Avenue in the City of Huntington Beach. The project proposes to occupy an existing 100,865 square foot vacant retail building previously occupied by an Expo Design Center. The shopping center in which the building is located has commercial and office buildings occupied by a variety of uses including restaurants, a Smart & Final, dental offices and small specialty retail shops. For the purposes of this traffic impact analysis, it has been assumed that the project would be built and operational by 2011. Exhibit 1-1 illustrates the preliminary site plan for the project.

The purpose of this traffic impact analysis is to evaluate project traffic and compare it to the traffic identified in the *Beach Boulevard and Edinger Avenue Corridor Specific Plan Traffic Study* (Austin-Foust Associates, Inc., August 2009), adopted in 2010 (referred to as the “Specific Plan TIA”). The traffic impact analysis for the Specific Plan was based on 2005 traffic counts taken when the Expo Design Center was operating. The 2005 traffic data was compared to counts performed in October 2008. The comparison did not show substantial changes between the 2005/6 and the 2008 traffic data. This analysis will determine a traffic baseline (with the building vacant) and add project traffic based on the methodology discussed in Section 1.1 below, to identify opening year traffic conditions at project driveways, and whether project traffic is consistent with the Specific Plan TIA analysis. Cumulative traffic will be subjected to the same analysis. If the comparisons reveal any project-related traffic increases, those increases will be analyzed to determine whether the increase is significant based on the City’s approved thresholds, and additional mitigation will be assigned to mitigate new significant impacts (if any).

1.1 Project Traffic

Based on review of the *Beach Boulevard and Edinger Avenue Corridor Specific Plan* (referred to as the “Specific Plan”), the existing shopping center that contains the currently vacant 100,865 square

EXHIBIT 1-1 SITE PLAN



foot building was included as part of Traffic Analysis Zone #41. As such, the potential impacts to traffic and circulation resulting from the proposed project has already been identified and mitigation measures established to address those impacts within the context of the previously prepared Specific Plan environmental document. This report is instead focused on the more detailed project level analysis associated with site access and adjacent intersections.

Vehicle trips generated by the project have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 8th Edition, 2008. The project is estimated to generate a net total of approximately 5,359 trip-ends per day with approximately 168 AM peak hour trips and 465 PM peak hour trips.

1.2 Existing Plus Project Conditions

For existing plus project traffic conditions, all study area intersections were found to operate at the requisite level of service (LOS) threshold LOS “D” or better, with the exception of the intersection of Goldenwest Street and Driveway 3, an unsignalized intersection of a private driveway and Goldenwest Street. Consistent with the unsignalized intersection methodology for two-way stop controlled intersections (i.e., cross-street stop controlled) defined by the 2000 Highway Capacity Manual (HCM), the delay and associated LOS grade for the worst individual movement has been reported. In this case, the PM peak hour LOS deficiency identified at the intersection of Goldenwest Street / Driveway 3 occurs for the westbound shared left-through movement only (i.e., westbound left-turning vehicles exiting the private driveway on the east side of Goldenwest Street); all other movements including the private driveway on the west leg and the City maintained “street system” were found to operate at LOS “C” or better.

During peak hour traffic flows westbound left-turning vehicles at the intersection of Goldenwest Street / Driveway 3 who do not want to wait for sufficient gaps in traffic on the major street (Goldenwest Street) have the option to instead utilize the existing signalized access on Edinger Avenue to exit the shopping center.

It is for these reasons that the deficient westbound left-turn movement at the intersection of Goldenwest Street / Driveway 3 during the PM peak hour is less than significant. Exhibit 1-2 identifies the deficient turning movement at the unsignalized intersection of Goldenwest Street /

EXHIBIT 1-2
GOLDENWEST STREET AT DRIVEWAY 3 AND ALTERNATE ACCESS



Driveway 3 and the location of the alternative signalized access on Edinger Avenue for the adjacent shopping center.

1.3 Existing Plus Ambient Growth Plus Project Plus Cumulative (2015) Conditions

The Specific Plan TIA identified a deficient LOS at the intersection of Beach Boulevard and Edinger Avenue. Consistent with the results published in the Specific Plan, this traffic study also found the intersection of Beach Boulevard and Edinger Avenue to operate at deficient levels of service during the PM peak hour. The project will comply with the mitigation measures identified in the Specific Plan. As such, no additional mitigation is necessary.

The westbound left turn movement at the intersection of Goldenwest Street and Driveway 3 is anticipated to operate with an unacceptable level of service during the PM peak hour. However, the westbound vehicles exiting the shopping center located on the southeast corner of Goldenwest Street and Edinger Avenue and turning left to head southbound on Goldenwest Street may alternatively avoid high delays by exiting the signalized exit on Edinger Avenue to make a left at Goldenwest Street to head in the southbound direction. It is also important to note that all other movements, including the private driveway on the west leg and the City maintained “street system”, were found to operate at LOS “C” or better. It is for these reasons that the deficient westbound left-turn movement at the intersection of Goldenwest Street / Driveway 3 during the PM peak hour is less than significant.

1.4 Site Access Recommendations

As the project proposes to occupy an existing building within an existing shopping center, the site access driveways currently serving the shopping center will be maintained for access. Specifically, the project will have access from Edinger Avenue, via Driveways 1 and 2, and from Goldenwest Street, via Driveways 3 and 4. A detailed discussion of the project driveways and the site adjacent intersection of Goldenwest Street and Edinger Avenue has been provided in Chapter 8 of this report.

1.5 Site Adjacent Roadway Recommendations

Based on review of the Specific Plan TIA, City of Huntington Beach General Plan Circulation Element, and the Orange County Master Plan of Arterial Highways (MPAH), the site adjacent roadways of Edinger Avenue and Goldenwest Street appear to be constructed to their ultimate number of travel lanes. As such, no additional roadway widening is recommended.

2.0 INTRODUCTION

This report presents the results of the Traffic Impact Analysis (TIA) for the proposed Walmart store to be located in an existing building and retail shopping center at the southwest corner of Goldenwest Street and Edinger Avenue in the City of Huntington Beach. This chapter provides an overview of the analysis, the study area locations, report organization, analysis methods, and significance thresholds used to identify impacts.

2.1 Study Purpose

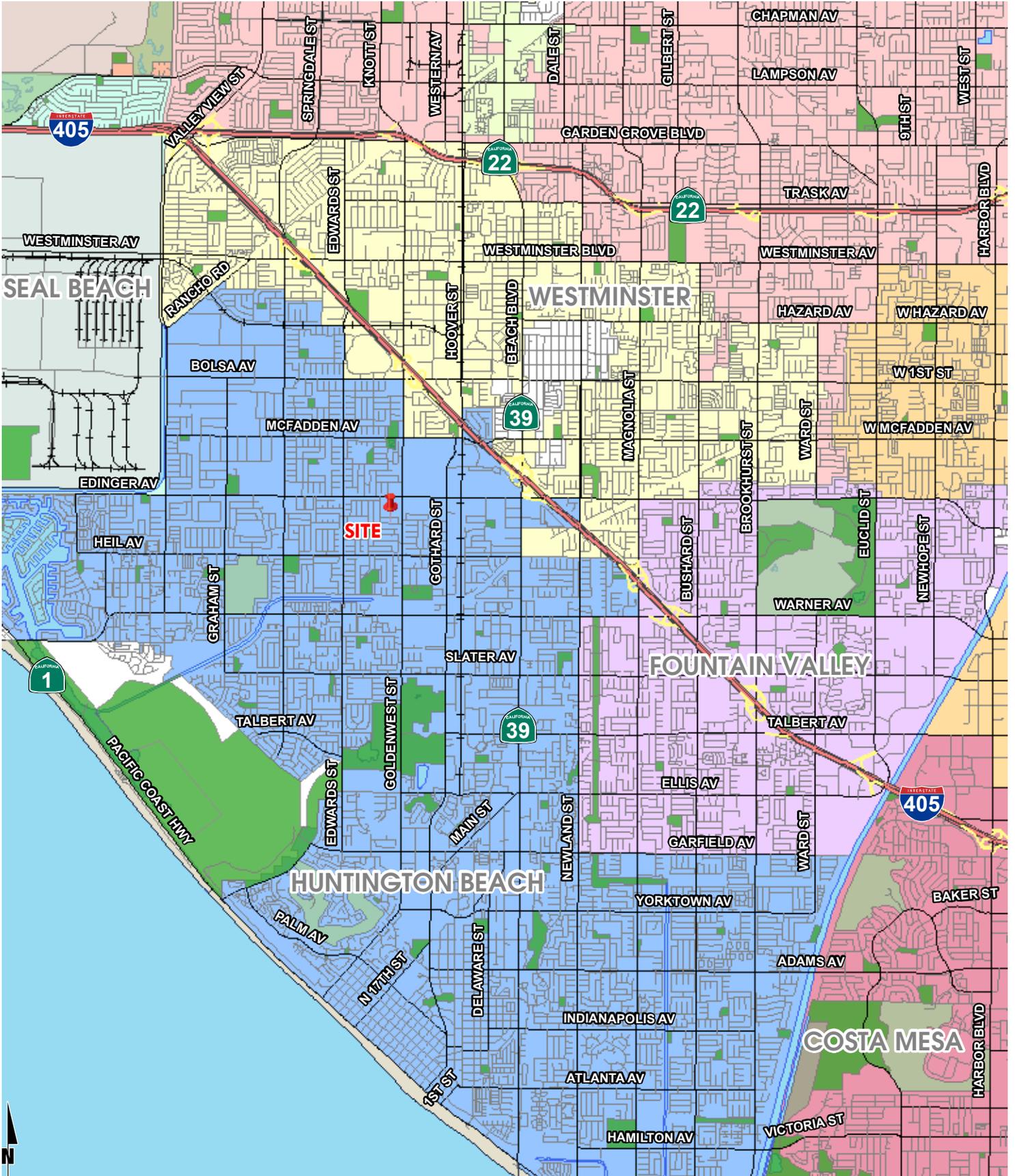
The project proposes to re-occupy an existing 100,865 square foot vacant retail building previously occupied by an Expo Design Center within an existing retail shopping center. The shopping center in which the building is located has commercial and office buildings occupied by a variety of uses including restaurants, a Smart & Final, dental offices and small specialty retail shops. The project is located at the southwest corner of Goldenwest Street and Edinger Avenue in the City of Huntington Beach as shown on Exhibit 2-1.

The prevailing planning document for the proposed project is the Specific Plan. Based on review of the *Beach Boulevard and Edinger Avenue Corridor Specific Plan* (referred to as the “Specific Plan”), the existing shopping center that contains the currently vacant 100,865 square foot building was included as part of Traffic Analysis Zone #41. As the project will occupy this vacant retail building and is not proposing to increase the square footage the proposed project land use is consistent with the land use analyzed in the Specific Plan TIA. However, because the Specific Plan TIA did not include a project-level analysis, this document evaluates the impact of project traffic at study intersections and at Driveways 1 through 4 in the project’s opening year (2011) (E+P traffic condition) and near-term cumulative traffic conditions (EAPC 2015).

2.2 Study Area Intersections

The project study area has been established through consultation with the lead agency (City of Huntington Beach) and based upon County of Orange Growth Management Project (GMP) Guidelines. These guidelines require the study area to include all facilities where peak hour intersection volume/capacity ratios increased by one percent (1%) or more as a result of the

EXHIBIT 2-1
REGIONAL LOCATION MAP



project. This is the impact threshold used in the traffic impact analysis for the Specific Plan and is thereby used in defining the study area for the purposes of this traffic impact analysis (see Appendix “2.1”).

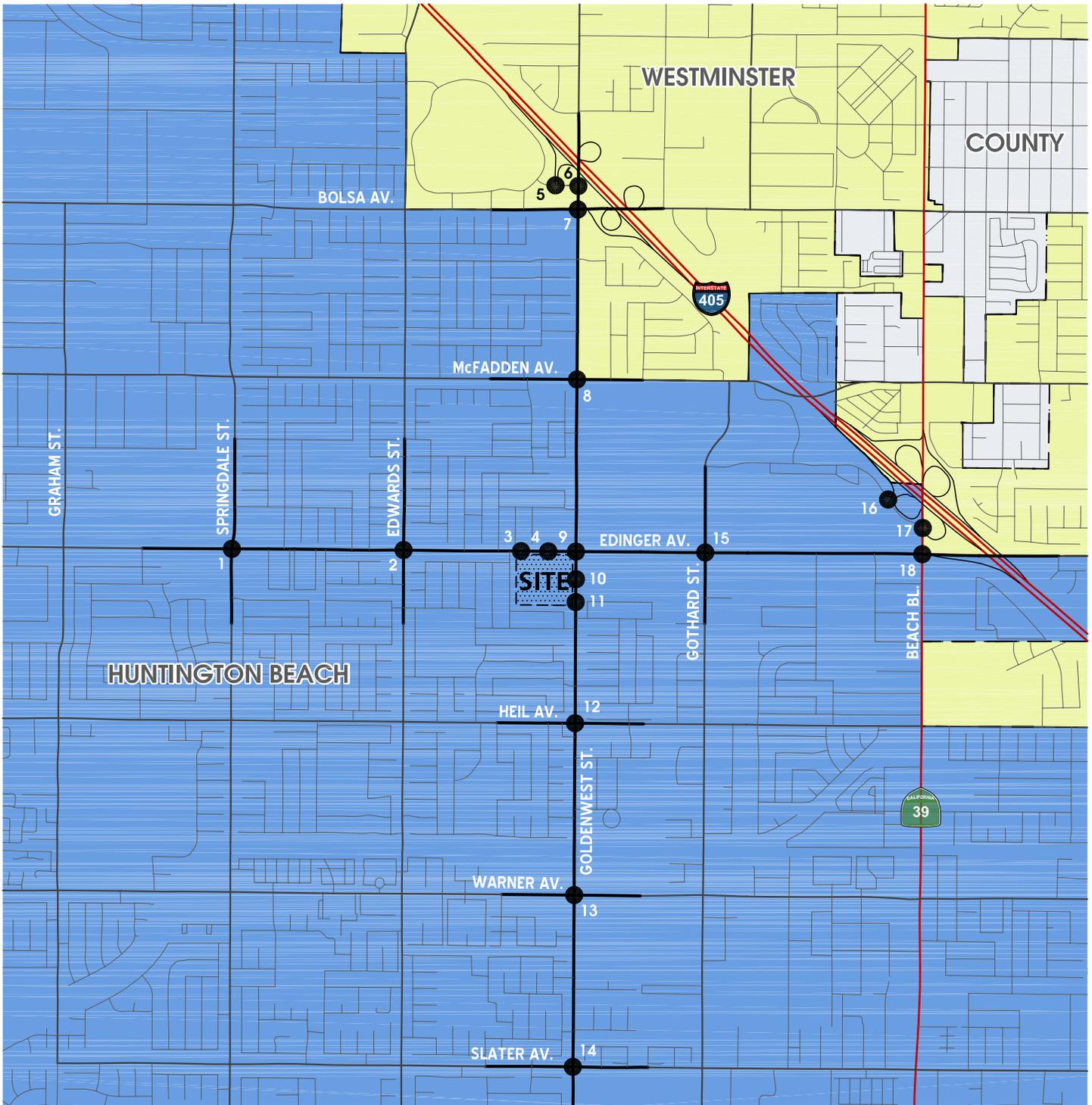
The 1% increase in the volume/capacity ratio is the criterion for selecting the intersections to be studied (see Appendix “2.1”). Based on this methodology, the project is deemed to contribute measureable traffic to the following intersections:

1. Springdale Street / Edinger Avenue
2. Edwards Street / Edinger Avenue
3. Driveway 1 / Edinger Avenue
4. Driveway 2 / Edinger Avenue
5. I-405 Southbound Ramp / Westminster Mall
6. Goldenwest Street / Westminster Mall
7. Goldenwest Street / Bolsa Avenue
8. Goldenwest Street / McFadden Avenue
9. Goldenwest Street / Edinger Avenue
10. Goldenwest Street / Driveway 3
11. Goldenwest Street / Driveway 4
12. Goldenwest Street / Heil Avenue
13. Goldenwest Street / Warner Avenue
14. Goldenwest Street / Slater Avenue
15. Gothard Street / Edinger Avenue
16. I-405 Southbound Ramp / Center Avenue
17. Beach Boulevard / Center Avenue
18. Beach Boulevard / Edinger Avenue

Analysis locations are illustrated on Exhibit 2-2.

It should be noted that all of the study area intersections listed above were also previously analyzed as part of the Specific Plan traffic report, with the exception of the project driveways and the intersections of I-405 Southbound Ramps / Westminster Mall and Goldenwest Street / Westminster Mall.

EXHIBIT 2-2
STUDY AREA LOCATION MAP



LEGEND:

- - INTERSECTION ANALYSIS LOCATION



The following freeway segments and ramp junctions are also analyzed herein:

- I-405 Southbound, north of Goldenwest Street
- I-405 Southbound, between Goldenwest Street Ramps
- I-405 Southbound, Bolsa Avenue to Beach Boulevard
- I-405 Southbound, Beach Boulevard to Edinger Avenue
- I-405 Southbound, south of Beach Boulevard
- I-405 Northbound, north of Goldenwest Street
- I-405 Northbound, Goldenwest Street to Bolsa Avenue
- I-405 Northbound, Bolsa Avenue to Beach Boulevard
- I-405 Northbound, between Beach Boulevard Ramps
- I-405 Northbound, south of Beach Boulevard
- I-405 at Goldenwest Street southbound off-ramp
- I-405 at Goldenwest Street southbound on-ramp
- I-405 at Beach Boulevard southbound off-ramp
- I-405 at Beach Boulevard southbound on-ramp upstream
- I-405 at Beach Boulevard southbound on-ramp downstream
- I-405 at Edinger Avenue southbound on-ramp
- I-405 at Goldenwest Street northbound loop on-ramp
- I-405 at Bolsa Avenue northbound loop off-ramp
- I-405 at Beach Boulevard northbound on-ramp
- I-405 at Beach Boulevard northbound off-ramp

Operation of these intersections has been analyzed for both AM and PM peak hour conditions for the following scenarios:

Scenario 1: Existing – Existing volumes obtained from recent (2010) traffic counts and existing lane configurations.

Scenario 2: Existing plus Project (E+P) – Existing volumes plus project traffic.

In addition, the project driveways and the site adjacent intersection of Goldenwest Street / Edinger Avenue have been analyzed during Saturday peak hour for existing plus project (E+P) conditions.

Scenario 3: Existing plus Ambient Growth plus Project plus Cumulative (2015) – Existing volumes plus five (5) years of ambient growth plus the new traffic generated by pending and approved, but not yet constructed developments in the area.

2.3 Report Organization

The traffic impact analysis is divided into the following eight (8) chapters:

Chapter 1: Executive Summary – identifies the potential impacts, proposed mitigation measures and site access recommendations.

Chapter 2: Introduction – includes the purpose of the traffic impact analysis and report organization, and discusses the various methodologies applied in the analysis of the study area intersection and freeway mainline operations.

Chapter 3: Existing Conditions – describes the existing transportation facilities and existing traffic operations in the area of the project, including intersection, freeway mainline and ramp operations, and discusses the transit facilities that currently exist in the project vicinity. It should be noted that the baseline volumes used for the purposes of this analysis have been compared to the 2008 count data utilized for the Specific Plan traffic impact analysis. Based on review, it appears that most of the 2010 turning movement volumes at the study area intersections are either comparable or lower than those collected in 2008.

Chapter 4: Projected Future Traffic – presents the trip generation estimates for the project, the distribution of project traffic and resulting assignment of project trips. Trip generation for cumulative development projects and resulting assignment of cumulative project trips is also presented.

Chapter 5: Existing plus Project (E+P) Conditions – presents E+P peak hour volumes and identifies potential project-related impacts to study area intersections and the I-405 Freeway.

Chapter 6: Existing plus Ambient Growth plus Project plus Cumulative (EAPC) (2015) Conditions – presents EAPC (2015) traffic conditions and identifies potential impacts at study area intersections and on the I-405 Freeway.

Chapter 7: Existing plus Project (E+P) Saturday Conditions – presents the E+P Saturday peak hour volumes at the project driveways and the site adjacent intersection of Goldenwest Street / Edinger Avenue. Although the Saturday peak hour was not assessed as part of the Specific Plan traffic impact analysis, it has been included for the purposes of this analysis to demonstrate acceptable Saturday peak hour operations at the project access points and site-adjacent intersection of Goldenwest Street/Edinger Avenue.

Chapter 8: Site-Access and On-Site Circulation – discusses site access and on-site circulation recommendations.

2.4 Analysis Methods

Traffic operations of roadway facilities are described with the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on such factors as speed, travel time, delay, and freedom to maneuver. Six levels are defined from LOS "A", representing completely free-flow conditions, to LOS "F", representing breakdown in flow resulting in stop-and-go conditions. LOS "E" represents operations at or near capacity, an unstable level, where vehicles are operating with the minimum spacing for maintaining uniform flow.

2.4.1 Level of Service Threshold

As noted on page III-CE-5 of the City of Huntington Beach Circulation Element, "the City's current policy for acceptable level of service is D at traffic-signal controlled intersections..." LOS "D" is also the limit of acceptable operations for signalized intersections in the City of Westminster. It should be noted that five of the study area

intersections are either wholly or partially located in the City of Westminster. Intersections that operate at LOS “E” or “F” are deemed to be operating at a deficient LOS.

However, LOS “E” is the applicable LOS threshold for Orange County Congestion Management Program (CMP) intersections. Within the project study area the intersection of Beach Boulevard / Edinger Avenue is identified as a CMP intersection. Although LOS “E” is considered acceptable for CMP purposes at this intersection, the LOS threshold of LOS “D” is typically used by the City of Huntington Beach for traffic impact analysis purposes. Therefore, LOS “D” has been considered to be the appropriate threshold for the purposes of this analysis unless the intersection is a CMP location, in which case LOS “E” has been utilized.

Finally, consistent with the CMP thresholds, LOS “E” is considered to be the limit of acceptable traffic operations for the I-405 Freeway mainline.

2.4.2 Intersection Capacity Utilization (ICU) Analysis – Signalized Intersections

The City of Huntington Beach requires study area intersections to be evaluated through ICU analysis which compares forecasts of peak hour traffic volumes to intersection capacity. Table 2-1 presents the ICU level of service thresholds utilized for this traffic study. A project is deemed to have a significant impact if the project results in deterioration of the LOS to an unacceptable LOS or an increase in the ICU value of 0.01 at an intersection that operates at LOS “E” or “F” without the project.

Table 2-1: ICU Level of Service (LOS) Thresholds

Level of Service	ICU
A	< 0.60
B	0.61 – 0.70
C	0.71 – 0.80
D	0.81 – 0.90
E	0.91 – 1.00
F	> 1.00

2.4.3 Highway Capacity Manual (HCM) Analysis - Unsignalized Intersections

The operations of unsignalized intersections have been evaluated using the methodology described in Chapter 17 of the HCM 2000, prepared by the Transportation Research Board. The level of service rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2). At two-way or side-street stop-controlled intersections, level of service is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. Per the HCM, the worst individual movement's delay and associated LOS grade are reported for side-street stop controlled intersections.

Based on field review, the unsignalized project driveways have signalized intersections at either end of the street segment which create large gaps in traffic on Edinger Avenue and Goldenwest Street. The large gaps in traffic flow on the major street allow for efficient ingress and egress to the project site. Furthermore, a painted two-way-left-turn-lane on Edinger Avenue provides a lane for exiting left-turn traffic at Driveways 1 and 2 to wait for a gap in westbound traffic (i.e., two-stage gap acceptance). To more accurately reflect existing conditions observed in the field, delay and LOS have been analyzed using Worksheets 1-10 from Chapter 17 of the HCM.

Table 2-2: HCM Unsignalized Intersection Level of Service (LOS) Thresholds

Level of Service	Intersection Delay (in seconds)
A	0 to 10.00
B	10.01 to 15.00
C	15.01 to 25.00
D	25.01 to 35.00
E	35.01 to 50.00
F	> 50.00

Source: HCM 2000

2.4.4 HCM Analysis – Signalized Intersections/Caltrans Intersections

The California Department of Transportation (Caltrans) requires signalized intersections to be analyzed based on the methodology described in Chapter 16 of the 2000 Highway Capacity Manual (HCM) by the Transportation Research Board. Intersection level of service operations are based on an intersection's average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Per the Caltrans *Guide for the Preparation of Traffic Impact Studies*, the traffic modeling and signal timing optimization software package Synchro (Version 7 Build 759) has been utilized to analyze signalized intersections under Caltrans' jurisdiction. Synchro is a macroscopic traffic software program based on the signalized intersection capacity analysis specified in Chapter 16 of the HCM. Macroscopic analyses measure each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network. Lane configurations and various other parameters such as signal timing were based on current operating characteristics determined from field review and from signal timing worksheets provided by Caltrans District 12.

Table 2-3 presents the signalized intersection delay and LOS standards based on the HCM. These LOS standards were also used for the analysis of Caltrans intersections throughout the study area. Each of the Caltrans intersections listed below have been assigned an intersection number which corresponds to Exhibit 3-1. The study area contains five (5) Caltrans intersections:

- I-405 Southbound Ramps / Westminster Mall (#5)
- Goldenwest Street / Westminster Mall (#6)
- I-405 Southbound Ramps / Center Avenue (#16)
- Beach Boulevard / Center Avenue (#17)
- Beach Boulevard / Edinger Avenue (#18)

Table 2-3: HCM Signalized Intersection Level of Service (LOS) Thresholds

Level of Service	Intersection Delay (in seconds)
A	0 to 10.00
B	10.01 to 20.00
C	20.01 to 35.00
D	35.01 to 55.00
E	55.01 to 80.00
F	80.01 and up

Source: HCM 2000

2.4.5 Freeway Mainline Analysis

The freeway system in the study area has been broken into segments defined by the freeway-to-arterial interchange locations. Each freeway mainline segment evaluation has been based upon peak hour directional volumes. The freeway mainline analysis is based on the methodology described in Chapter 23 of the HCM and performed using Highway Capacity Software (HCS+), developed by McTrans Center at the University of Florida. It is one of the software tools available for the analysis of freeway mainline segments and merge/diverge junctions. The analysis results (reported in passenger car/mile/lane) have been determined based on the number of travel lanes assumed to be in place during each future time horizon. Table 2-4 illustrates the freeway segment level of service thresholds for each density range utilized for this analysis.

Table 2-4: Freeway Mainline Level of Service (LOS) Criteria

Level of Service	Description	Density Range (pc/mi/ln) ¹
A	Free-flow operations in which vehicles are relatively unimpeded in their ability to maneuver within the traffic stream. Effects of incidents are easily absorbed.	0.0 – 11.0
B	Relative free-flow operations in which vehicle maneuvers within the traffic stream are slightly restricted. Effects of minor incidents are easily absorbed.	11.1 – 18.0
C	Travel is still at relative free-flow speeds, but freedom to maneuver within the traffic stream is noticeably restricted. Minor incidents may be absorbed, but local deterioration in service will be substantial. Queues begin to form behind significant blockages.	18.1 – 26.0
D	Speeds begin to decline slightly and flows and densities begin to increase more quickly. Freedom to maneuver is noticeably limited. Minor incidents can be expected to create queuing as the traffic stream has little space to absorb disruptions.	26.1 – 35.0
E	Operation at capacity. Vehicles are closely spaced with little room to maneuver. Any disruption in the traffic stream can establish a disruption wave that propagates throughout the upstream traffic flow. Any incident can be expected to produce a serious disruption in traffic flow and extensive queuing.	35.1 – 45.0
F	Breakdown in vehicle flow.	>45.0

¹ pc/mi/ln = passenger cars per mile per lane.
 Source: HCM 2000, Chapter 23

The number of lanes for existing conditions has been obtained from field observations.

2.4.6 Freeway Interchange Merge/Diverge

The freeway system in the study area has been broken into segments defined by freeway-to-arterial interchange locations resulting in up to ten (10) existing on and off ramp locations with the I-405 Freeway. The analysis presented in this traffic study has been performed at all on and off ramp locations from the I-405 Freeway with respect to the nearest on or off ramp at each interchange. Merge points are where the on-ramp

meets the mainline freeway. Diverge points are where the off-ramp meets the mainline freeway.

The merge/diverge analysis is based on the HCM Ramps and Ramp Junctions analysis method and performed using HCS+ software. The results (reported in passenger car/mile/lane) are calculated based on the existing number of travel lanes, number of lanes at the on and off ramps both at the analysis junction and at the adjacent ramp location and acceleration/deceleration lengths at each merge/diverge point. Table 2-5 presents the merge/diverge area level of service thresholds for each density range utilized for this analysis.

Table 2-5: Merge and Diverge Area Level of Service (LOS) Thresholds

Level of Service	Density Range (pc/mi/ln) ¹
A	0.0 – 10.0
B	10.1 – 20.0
C	20.1 – 28.0
D	28.1 – 35.0
E	> 35.0
F	Demand exceeds capacity
¹ pc/mi/ln = passenger cars per mile per lane. Source: HCM 2000, Chapter 25	

2.4.7 Traffic Signal Warrant Analysis

The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the need for installation of a traffic signal at an otherwise unsignalized intersection. This study uses the signal warrant criteria presented in the *California Manual on Uniform Traffic Control Devices (MUTCD)*, dated January 21, 2010, for all study area intersections.

The signal warrant criteria for existing conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The *California MUTCD* indicates that the installation of a traffic signal

should be considered if one or more of the signal warrants are met. Specifically, the study utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing traffic conditions. Since Warrant 3 provides specialized warrant criteria for intersections with rural characteristics (e.g. located in communities with populations of less than 10,000 persons or with adjacent major streets operating above 40 miles per hour), study intersections using this specialized criteria have been clearly identified. For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection. Urban warrants have been utilized where the major street has posted speeds of 40 miles per hour or less. Rural warrants have been utilized where the major street has posted speeds greater than 40 miles per hour.

Future unsignalized intersections have been assessed regarding the need for new traffic signals based on future average daily traffic (ADT) volumes, using the planning level ADT-based signal warrant analysis worksheets. It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified.

The traffic signal warrant analysis is provided in Appendix "2.2".

3.0 EXISTING CONDITIONS

This chapter describes the existing roadway, bicycle, pedestrian and transit facilities located within the study area and discusses existing intersection LOS operations.

3.1 Existing Roadway Network

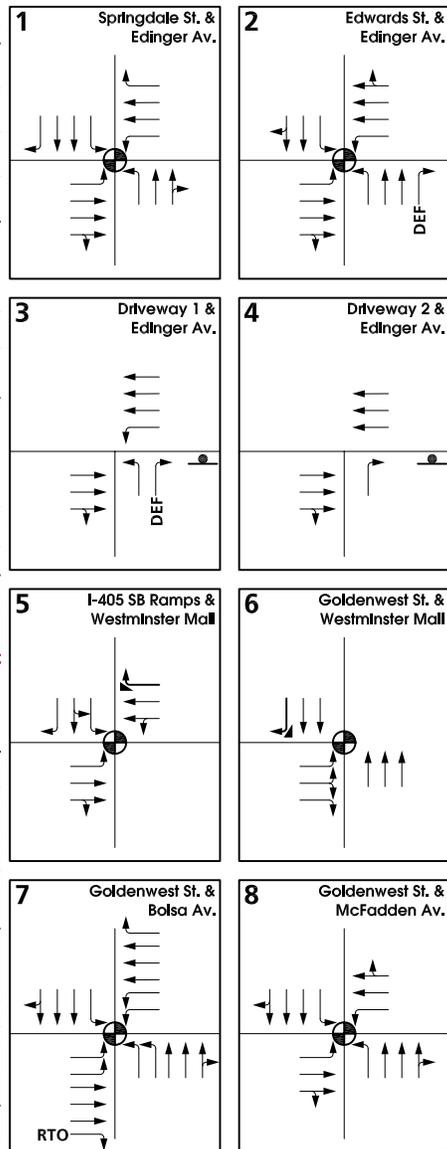
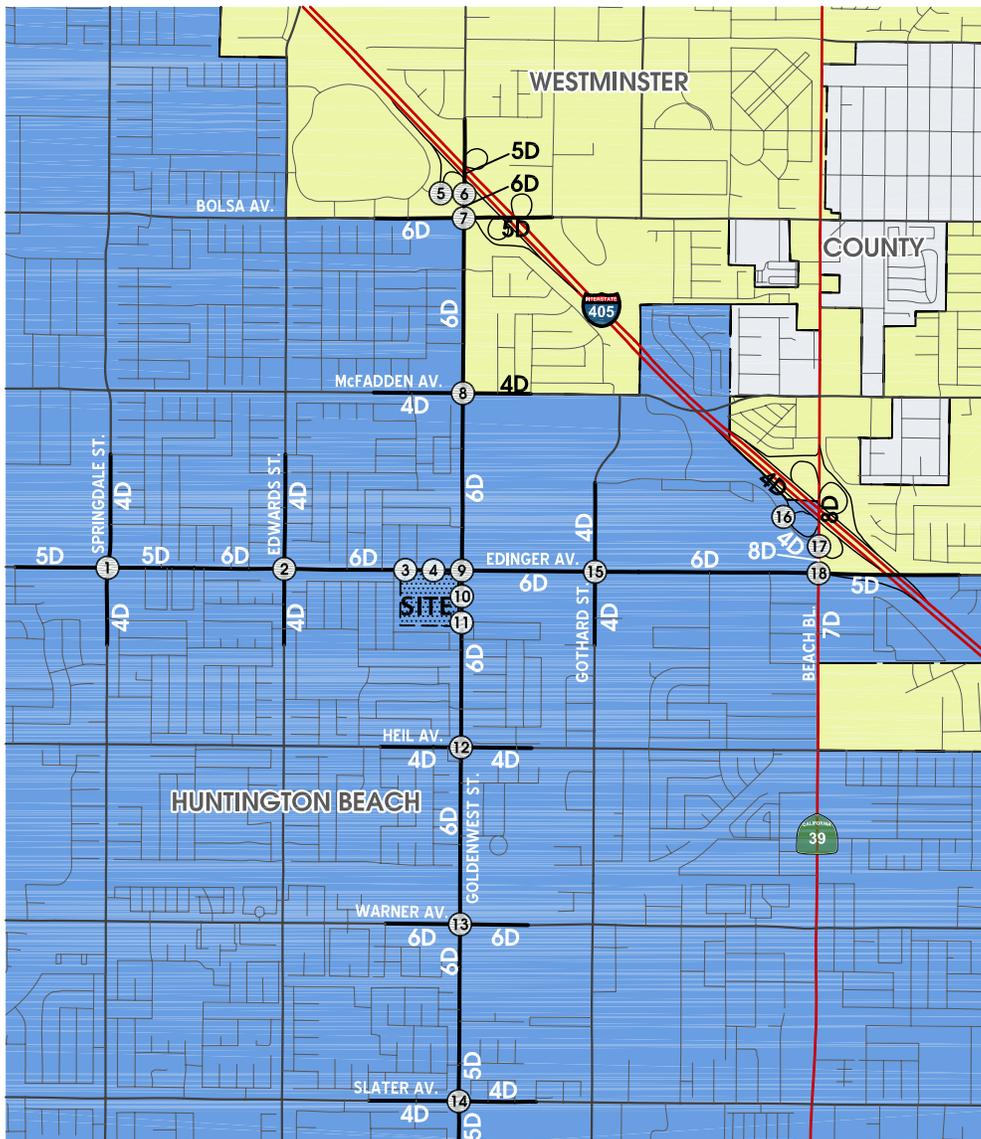
Regional access to the project site is provided primarily from the Goldenwest Street and Beach Boulevard interchanges with the I-405 Freeway. Site access is provided by Edinger Avenue and Goldenwest Street. This section describes the existing roadway network, which was previously illustrated on Exhibit 2-2. Exhibit 3-1 identifies the existing roadway conditions for study area roadways and intersections, the number of through traffic lanes for existing roadway and the existing intersection controls have been identified.

Exhibit 3-2 shows the currently adopted City of Huntington Beach General Plan Circulation Element. Exhibit 3-3 illustrates the City of Huntington Beach General Plan Roadway Cross-sections. Exhibit 3-4 shows the Orange County Master Plan of Arterial Highways and Exhibit 3-5 illustrates the Orange County Master Plan of Arterial Highways Cross-sections. The existing conditions and the proposed future improvements (as identified on the City of Huntington Beach General Plan Circulation Element and the Orange County Master Plan of Arterial Highways) of the General Plan roadways within the study area are described below:

Springdale Street is a four-lane divided roadway. Springdale Street is designated as a Primary Arterial Street (100-foot-right-of-way) on the City of Huntington Beach General Plan as well as on the Orange County Master Plan of Arterial Highways. The roadway cross-section for a Primary Arterial Street consists of four travel lanes in each direction.

Edwards Street is a four-lane divided roadway. Edwards Street is designated as a Secondary Arterial Street (80-foot-right-of-way) on the City of Huntington Beach General Plan as well as on the Orange County Master Plan of Arterial Highways. The roadway cross-section for a Secondary Arterial Street consists of four travel lanes in each direction.

EXISTING LANE GEOMETRIES AND INTERSECTION CONTROLS

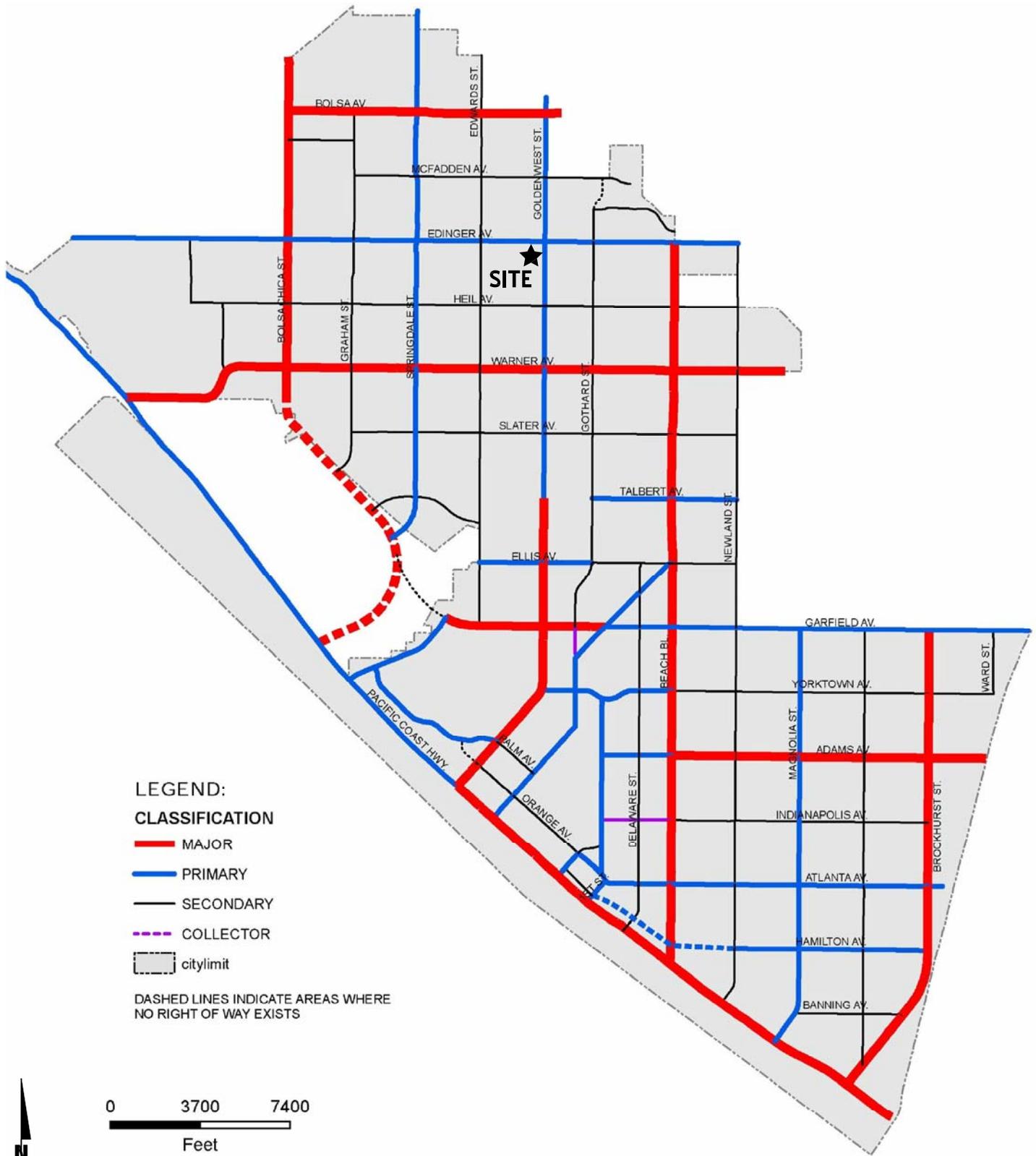


LEGEND:

- = TRAFFIC SIGNAL
- = STOP SIGN
- 4** = NUMBER OF LANES
- D** = DIVIDED
- U** = UNDIVIDED
- = FREE RIGHT TURN
- RTO** = RIGHT TURN OVERLAP
- DEF** = DEFACTO RIGHT TURN LANE



CITY OF HUNTINGTON BEACH CURRENTLY ADOPTED CIRCULATION PLAN



CITY OF HUNTINGTON BEACH GENERAL PLAN ROADWAY CROSS-SECTIONS

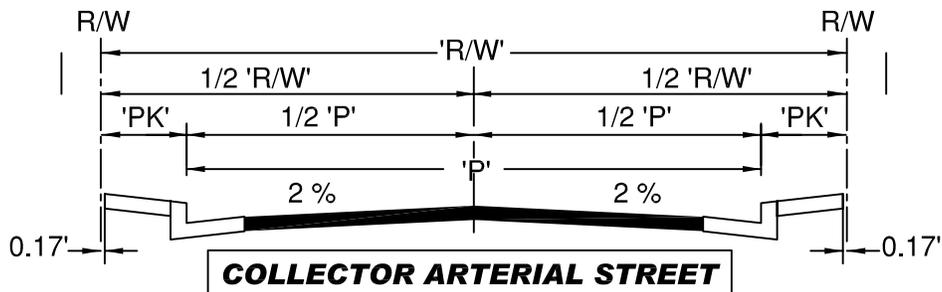
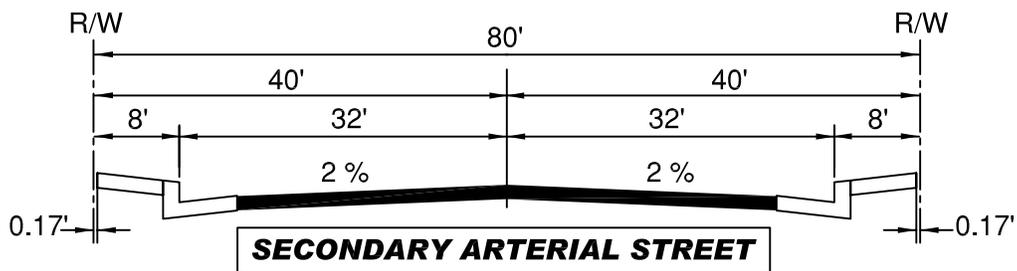
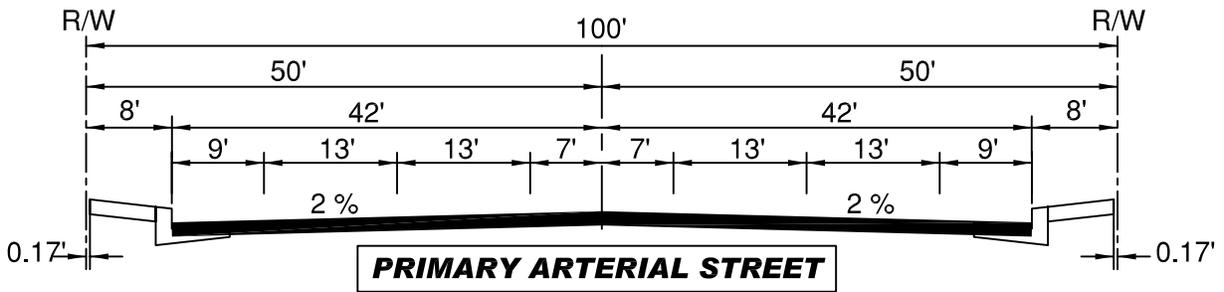
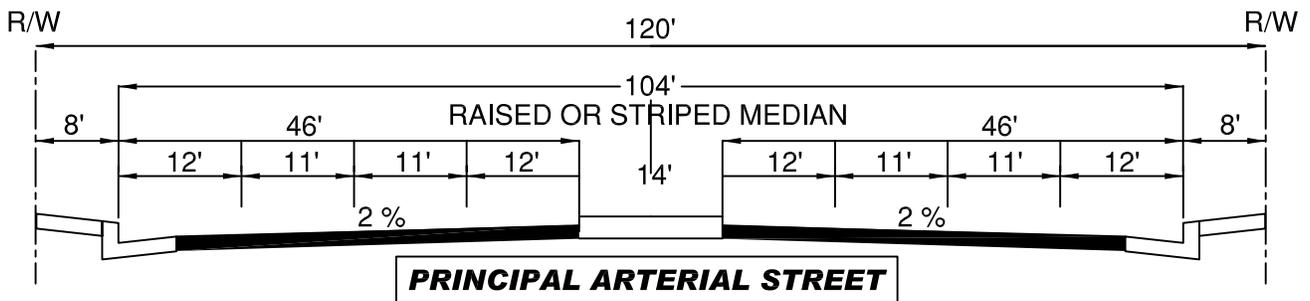
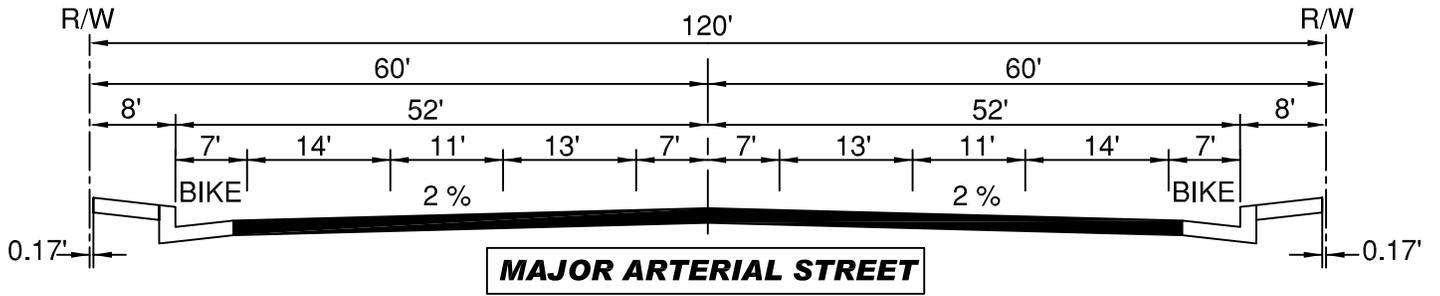
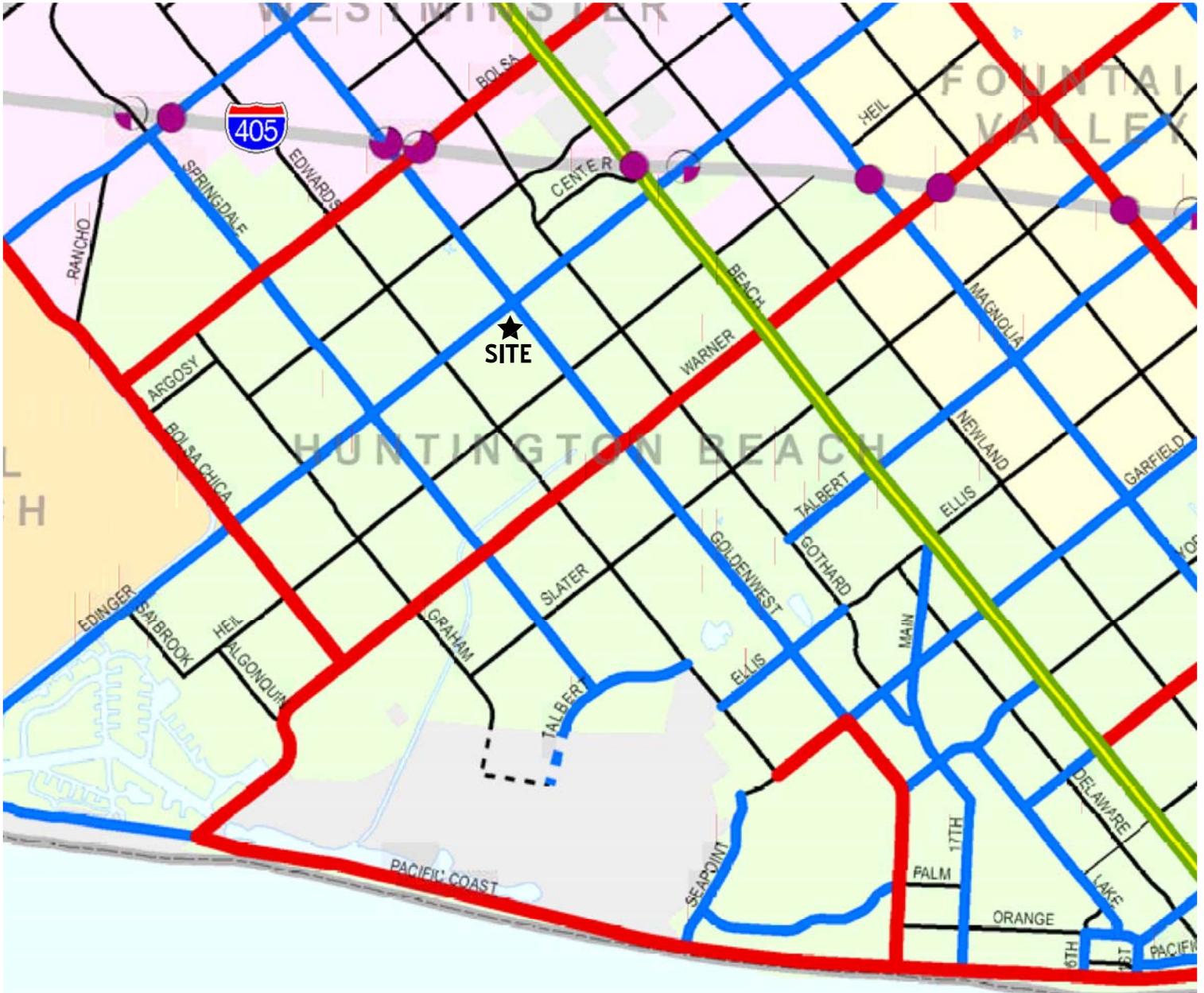


EXHIBIT 3-4
**ORANGE COUNTY MASTER PLAN
 OF ARTERIAL HIGHWAYS**



LEGEND:

ESTABLISHED ALIGNMENT	PROPOSED ALIGNMENT			
		PRINCIPAL		FREEWAY
		MAJOR		TRANSPORTATION CORRIDOR
		PRIMARY		SMART STREET 8 LANE
		SECONDARY		SMART STREET 6 LANE
		COLLECTOR		SMART STREET 4 LANE
				ROADS OUTSIDE OF OC SHOWN FOR CONTINUITY
				EXISTING INTERCHANGE
				PROPOSED INTERCHANGE
				RIGHT-OF-WAY RESERVE

SOURCE: ORANGE COUNTY TRANSPORTATION AUTHORITY (OCTA)

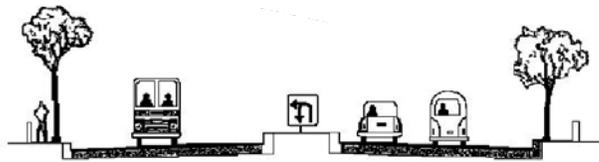
EXHIBIT 3-5
**ORANGE COUNTY
STANDARD STREET SECTIONS**



COLLECTOR - 56'
(2 LANES UNDIVIDED)



SECONDARY - 80'
(4 LANES UNDIVIDED)



PRIMARY - 100'
(4 LANES DIVIDED)



MAJOR - 120'
(6 LANES DIVIDED)



PRINCIPAL - 144'
(8 LANES DIVIDED)

Goldenwest Street is a six-lane divided roadway that narrows to a five-lane divided roadway north of Westminster Mall and between Warner Avenue and Slater Avenue to the south. Goldenwest Street is designated as a Primary Arterial Street (100-foot-right-of-way) on the City of Huntington Beach General Plan as well as on the Orange County Master Plan of Arterial Highways. The roadway cross-section for a Primary Arterial Street consists of four travel lanes in each direction.

Gothard Street is a four-lane divided roadway. Gothard Street is designated as a Secondary Arterial Street (80-foot-right-of-way) on the City of Huntington Beach General Plan as well as on the Orange County Master Plan of Arterial Highways. The roadway cross-section for a Secondary Arterial Street consists of four travel lanes in each direction.

Beach Boulevard is an eight-lane divided roadway that narrows to a 7-lane divided roadway just north and south of Edinger Avenue. Beach Boulevard is designated as a Major Arterial Street (120-foot-right-of-way) on the City of Huntington Beach General Plan, consisting of six travel lanes in each direction. Beach Boulevard is designated as a Smart Street (144-foot-right-of-way) on the Orange County Master Plan of Arterial Highways, consisting of eight lanes in each direction.

Bolsa Avenue is a six-lane divided roadway that narrows to a five-lane divided roadway east of Goldenwest Avenue then narrows to a four-lane divided roadway east of the I-405 northbound on-ramp. Bolsa Avenue is designated as a Major Arterial Street (120-foot-right-of-way) on the City of Huntington Beach General Plan as well as on the Orange County Master Plan of Arterial Highways. The roadway cross-section for a Major Arterial Street consists of six travel lanes in each direction.

McFadden Avenue is a four-lane divided roadway. McFadden Avenue is designated as a Secondary Arterial Street (80-foot-right-of-way) on the City of Huntington Beach General Plan as well as on the Orange County Master Plan of Arterial Highways. The roadway cross-section for a Secondary Arterial Street consists of four travel lanes in each direction.

Edinger Avenue is a six-lane divided roadway that narrows to a five-lane divided roadway between Springdale Street and Edwards Street to the west and narrows to a five-lane divided

roadway east of Beach Boulevard then narrows to a four-lane divided roadway east of the I-405 northbound on-ramp. Edinger Avenue is designated as a Primary Arterial Street (100-foot-right-of-way) on the City of Huntington Beach General Plan as well as on the Orange County Master Plan of Arterial Highways. The roadway cross-section for a Primary Arterial Street consists of four travel lanes in each direction.

Heil Avenue is a four-lane divided roadway. Heil Avenue is designated as a Secondary Arterial Street (80-foot-right-of-way) on the City of Huntington Beach General Plan as well as on the Orange County Master Plan of Arterial Highways. The roadway cross-section for a Secondary Arterial Street consists of four travel lanes in each direction.

Warner Avenue is a six-lane divided roadway. Warner Avenue is designated as a Major Arterial Street (120-foot-right-of-way) on the City of Huntington Beach General Plan as well as on the Orange County Master Plan of Arterial Highways. The roadway cross-section for a Major Arterial Street consists of six travel lanes in each direction.

Slater Avenue is a four-lane divided roadway. Heil Avenue is designated as a Secondary Arterial Street (80-foot-right-of-way) on the City of Huntington Beach General Plan as well as on the Orange County Master Plan of Arterial Highways. The roadway cross-section for a Secondary Arterial Street consists of four travel lanes in each direction.

3.2 Transit Service

The project area is currently served by the Orange County Transportation Authority (OCTA) with bus service along Edwards Street, Goldenwest Street, Beach Boulevard, Bolsa Avenue, McFadden Avenue, Edinger Avenue, Warner Avenue and Slater Avenue through various routes (Routes 25, 29, 64, 66, 70, 72 and 76). Route 25 stops at Goldenwest Street and Edinger Avenue, and provides the most direct service to the proposed project. The existing bus routes provided in the area by OCTA are shown on Exhibit 3-6.

ORANGE COUNTY BUS SYSTEM MAP



SOURCE: ORANGE COUNTY TRANSPORTATION AUTHORITY (OCTA)

3.3 Bicycle and Pedestrian Facilities

The City of Huntington Beach General Plan Bicycle Plan, illustrated on Exhibit 3-7, identifies existing and proposed Class I and Class II trails (off-road and on-road striped lanes). There are existing Class I trails connecting to Slater Avenue between Goldenwest Street and Gothard Street that tread southwest. Class II trails exist on McFadden Avenue, Edinger Avenue, Heil Avenue, Slater Street, Edwards Street, Goldenwest Street, Gothard Street and Beach Boulevard. The Class II trail proposed on Goldenwest Street south of Warner Avenue currently exists south of Betty Drive (between Warner Avenue and Slater Avenue).

3.4 Existing Intersection Traffic Volumes

AM and PM peak hour intersection counts were conducted in September 2010. Traffic count worksheets are included in Appendix "3.1". Existing (2010) average daily traffic (ADT) volumes on arterial highways throughout the study are shown on Exhibit 3-8. Existing (2010) ADT volumes have been approximated and are based upon factored intersection peak hour counts using the following formula for each intersection leg:

$$\text{Peak Hour (Approach Volume + Exit Volume)} \times 12 = \text{Leg Volume}$$

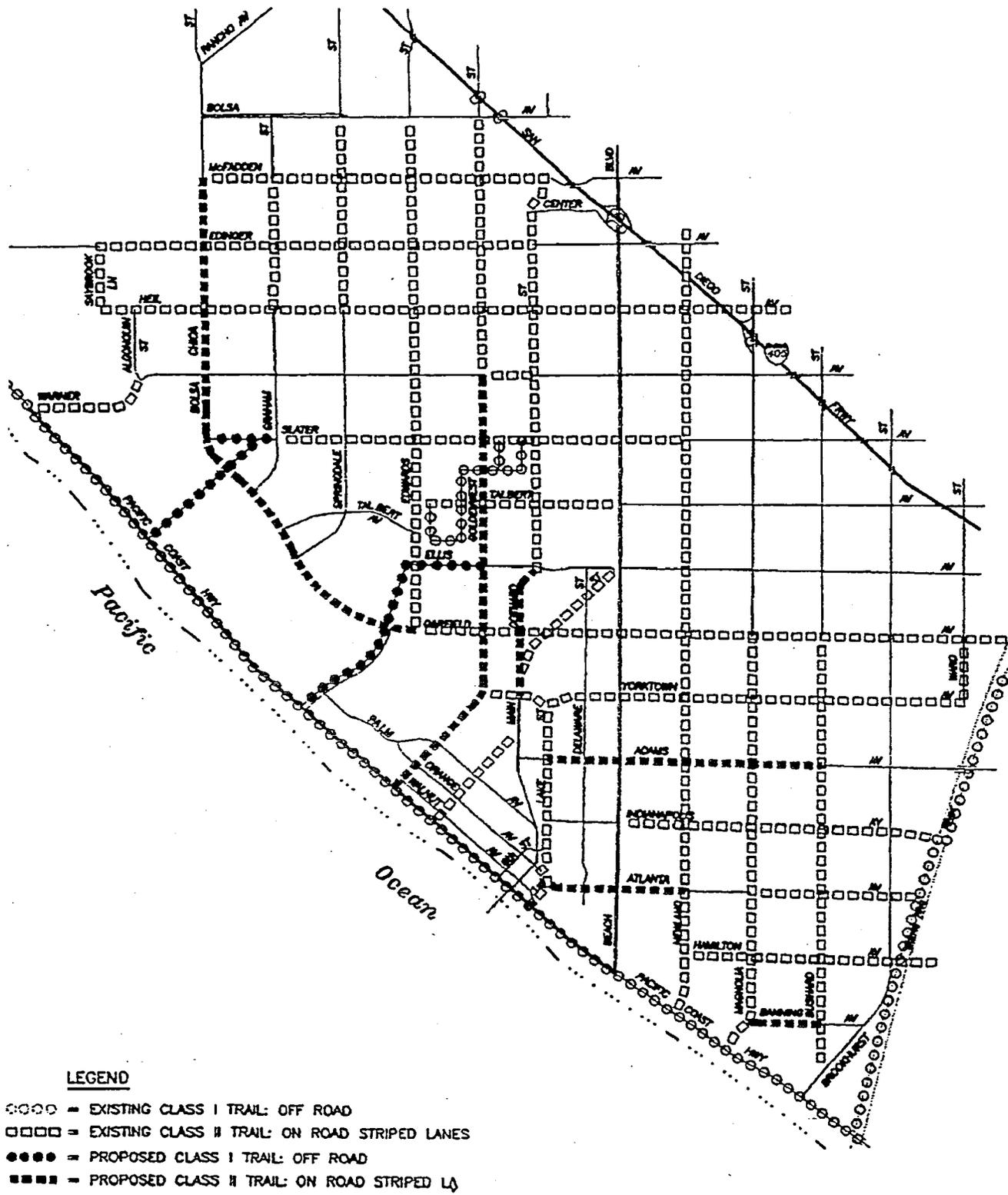
This formula approximates daily traffic volumes based upon a peak-to-daily relationship of approximately eight (8) percent. An eight (8) percent peak-to-daily ratio is a conservative and common approach for estimating daily traffic volumes from known peak hour traffic volumes. Existing (2010) intersection level of service calculations are based upon manual AM and PM peak hour turning movement counts illustrated on Exhibits 3-9 and Exhibit 3-10. It should be noted that traffic counts were conducted when all schools in the vicinity of the project were in session.

3.5 Existing Conditions Analysis

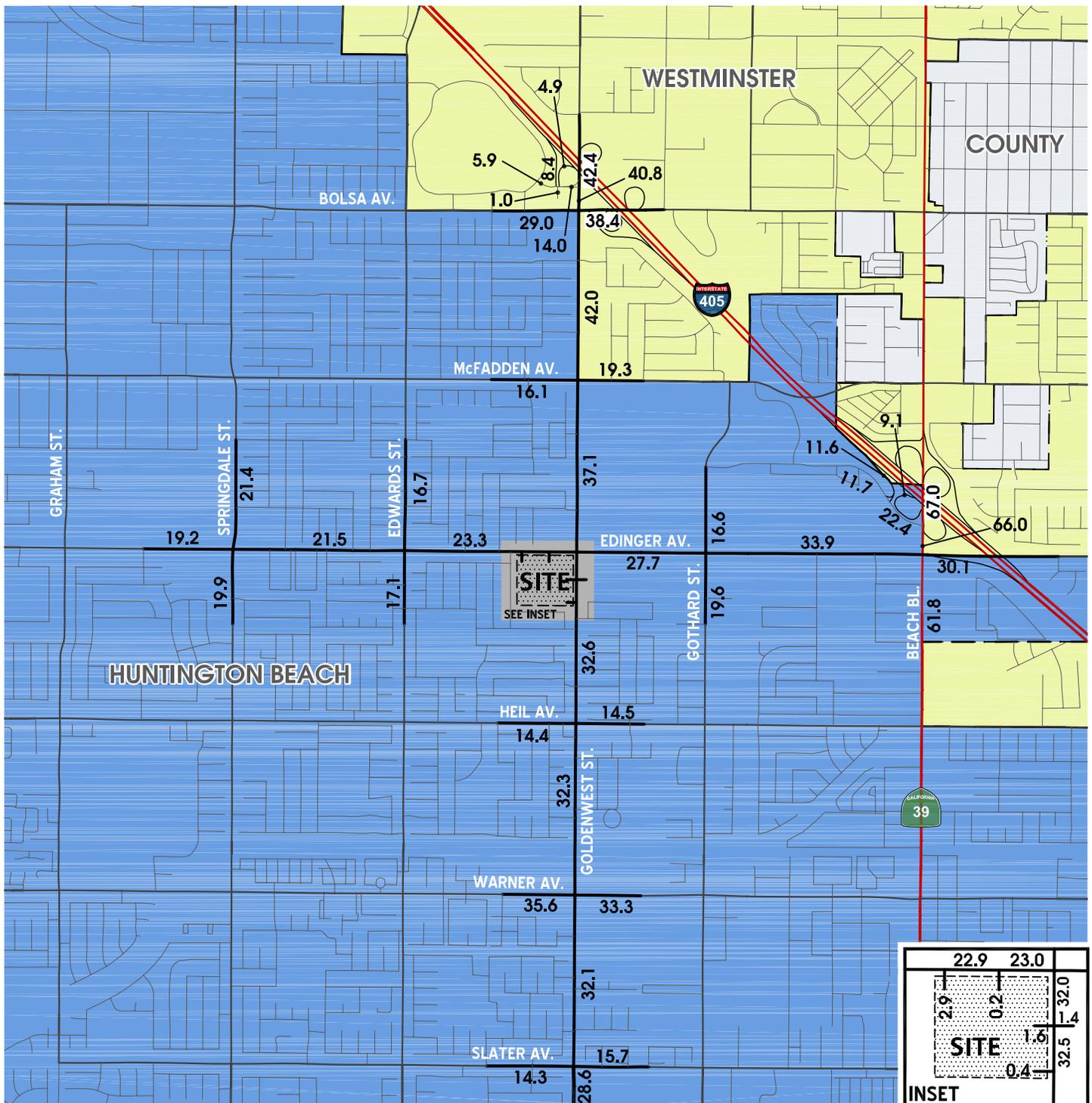
3.5.1 Intersection Operations

Level of service calculations were conducted for the study area intersections to evaluate their operations under existing (2010) conditions. Table 3-1 presents the LOS results for

EXHIBIT 3-7
**CITY OF HUNTINGTON BEACH
 BICYCLE PLAN**



EXISTING (2010) AVERAGE DAILY TRAFFIC (ADT)

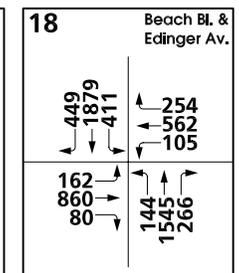
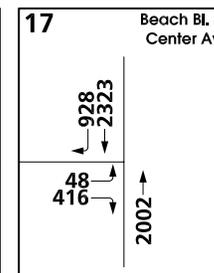
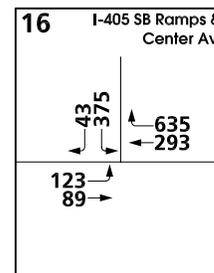
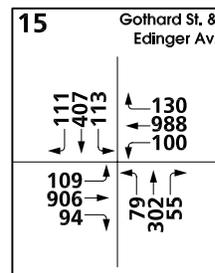
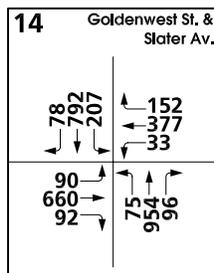
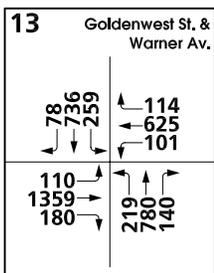
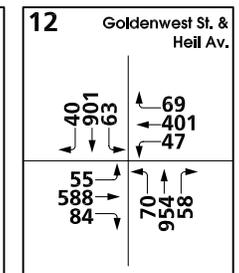
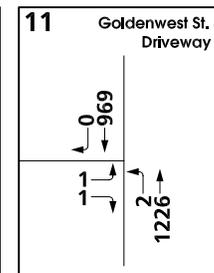
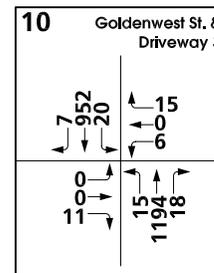
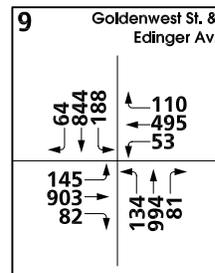
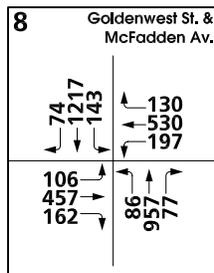
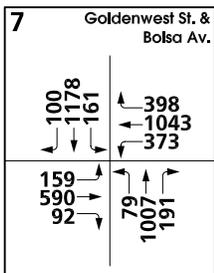
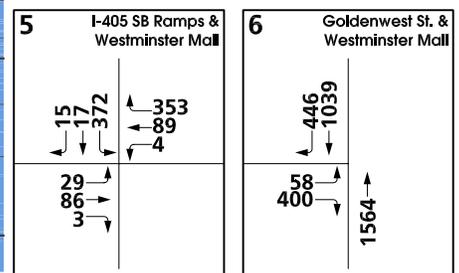
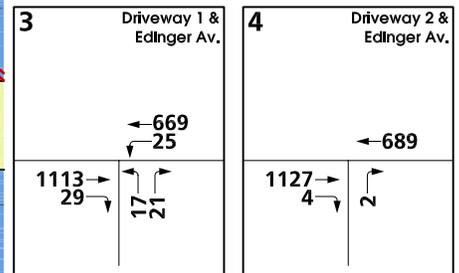
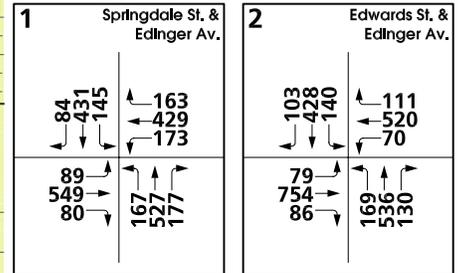
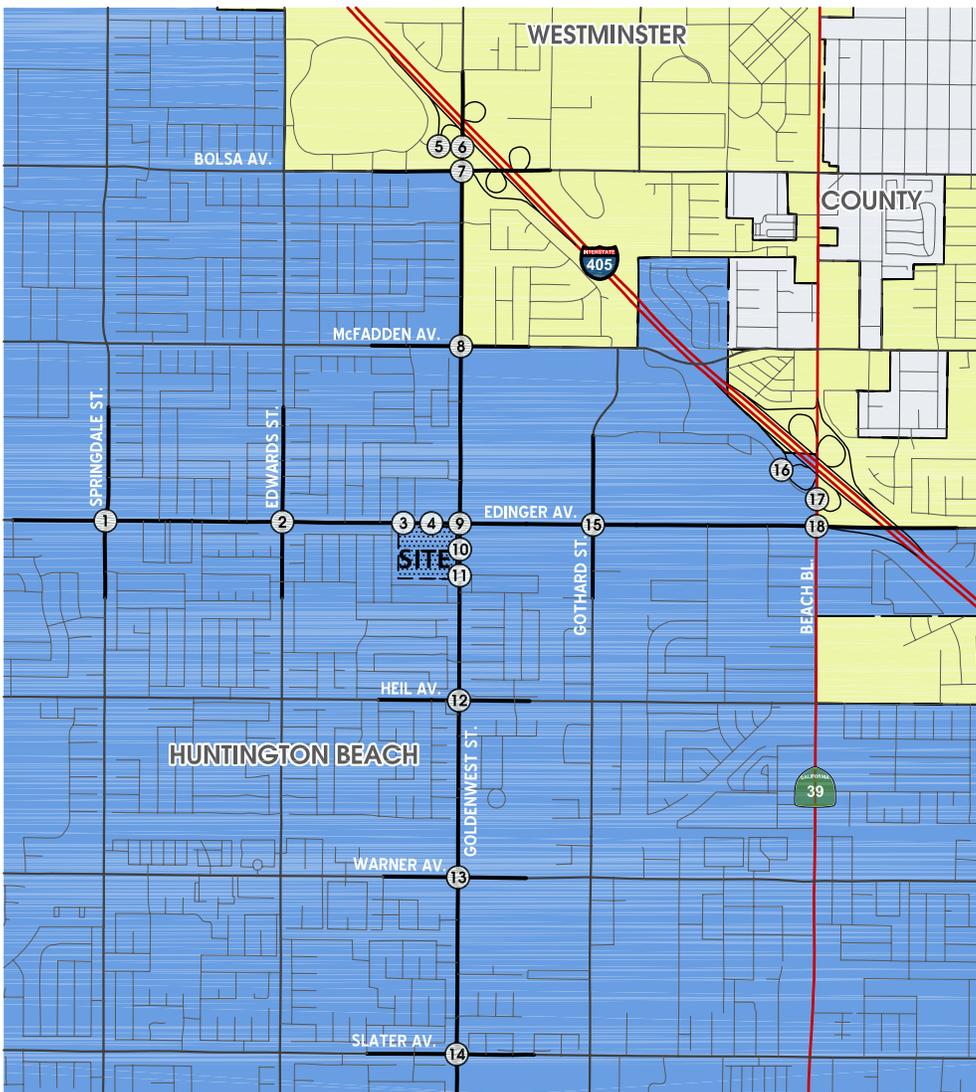


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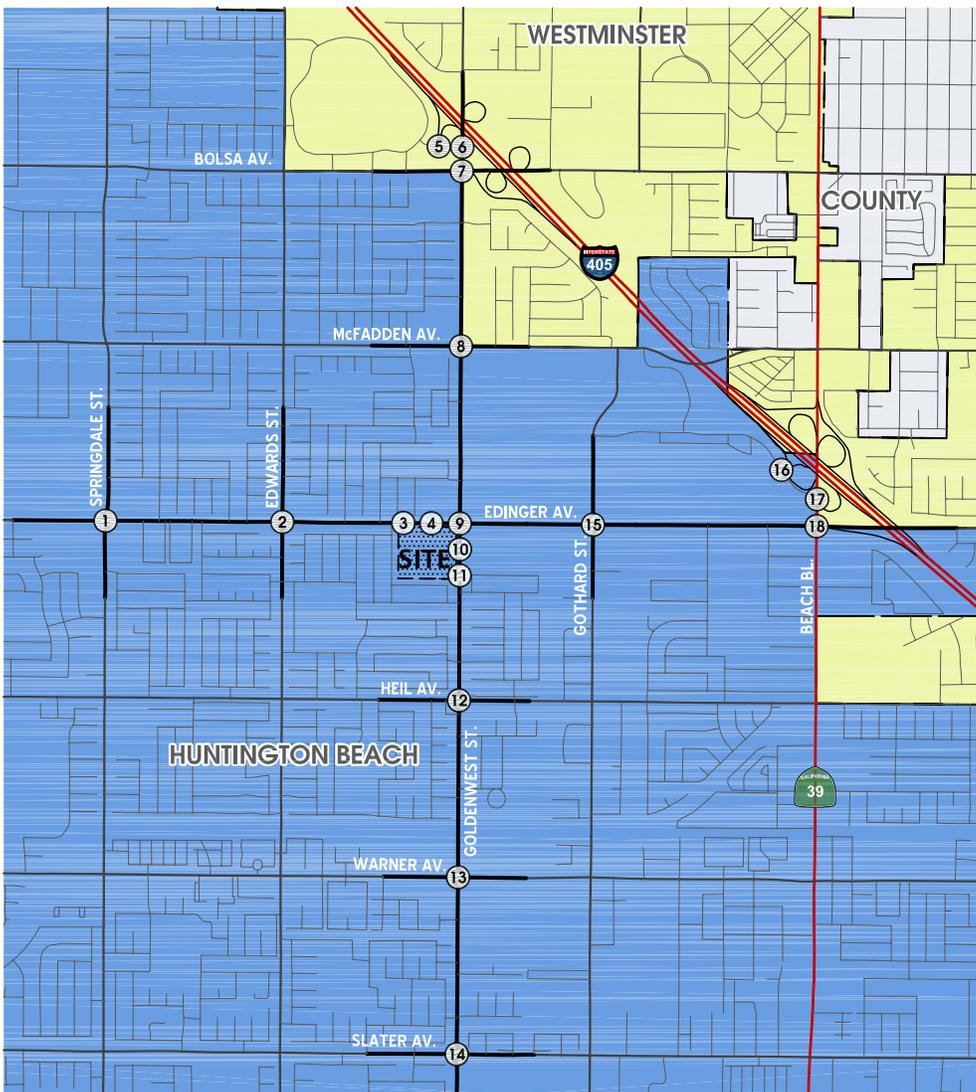
10.0 = VEHICLES PER DAY (1000'S)



EXISTING (2010) AM PEAK HOUR INTERSECTION VOLUMES



EXISTING (2010) PM PEAK HOUR INTERSECTION VOLUMES



<p>1 Springdale St. & Edinger Av.</p> <table border="1"> <tr> <td>125</td> <td>157</td> </tr> <tr> <td>720</td> <td>490</td> </tr> <tr> <td>156</td> <td>205</td> </tr> <tr> <td>170</td> <td>75</td> </tr> <tr> <td>657</td> <td>452</td> </tr> <tr> <td>79</td> <td>127</td> </tr> </table>	125	157	720	490	156	205	170	75	657	452	79	127	<p>2 Edwards St. & Edinger Av.</p> <table border="1"> <tr> <td>97</td> <td>111</td> </tr> <tr> <td>576</td> <td>748</td> </tr> <tr> <td>111</td> <td>93</td> </tr> <tr> <td>66</td> <td>106</td> </tr> <tr> <td>80</td> <td>415</td> </tr> <tr> <td>99</td> <td>135</td> </tr> </table>	97	111	576	748	111	93	66	106	80	415	99	135
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<p>3 Driveway 1 & Edinger Av.</p> <table border="1"> <tr> <td>915</td> </tr> <tr> <td>48</td> </tr> <tr> <td>889</td> </tr> <tr> <td>70</td> </tr> <tr> <td>71</td> </tr> <tr> <td>55</td> </tr> </table>	915	48	889	70	71	55	<p>4 Driveway 2 & Edinger Av.</p> <table border="1"> <tr> <td>951</td> </tr> <tr> <td>942</td> </tr> <tr> <td>2</td> </tr> <tr> <td>14</td> </tr> </table>	951	942	2	14
915											
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<p>5 I-405 SB Ramps & Westminster Mall</p> <table border="1"> <tr> <td>85</td> <td>305</td> </tr> <tr> <td>556</td> <td>102</td> </tr> <tr> <td>556</td> <td>13</td> </tr> <tr> <td>105</td> <td></td> </tr> <tr> <td>191</td> <td></td> </tr> <tr> <td>11</td> <td></td> </tr> </table>	85	305	556	102	556	13	105		191		11		<p>6 Goldenwest St. & Westminster Mall</p> <table border="1"> <tr> <td>420</td> </tr> <tr> <td>858</td> </tr> <tr> <td>232</td> </tr> <tr> <td>515</td> </tr> <tr> <td>2027</td> </tr> </table>	420	858	232	515	2027
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420																		
858																		
232																		
515																		
2027																		

7 Goldenwest St. & Bolsa Av.

79	556
1174	733
120	452
182	181
882	1289
155	247

8 Goldenwest St. & McFadden Av.

92	243
1295	426
170	201
120	90
466	1246
151	105

9 Goldenwest St. & Edinger Av.

96	244
1049	726
157	143
134	136
657	1094
168	76

10 Goldenwest St. & Driveway 3

40	21
1285	0
35	20
2	37
50	1283
	36

11 Goldenwest St. & Driveway 4

4	1351
9	
14	
7	1347

12 Goldenwest St. & Heil Av.

74	89
1156	435
94	96
90	98
400	1144
105	93

13 Goldenwest St. & Warner Av.

153	176
882	1225
215	166
196	307
890	1028
193	102

14 Goldenwest St. & Slater Av.

68	192
958	561
110	58
50	117
296	1066
99	89

15 Gothard St. & Edinger Av.

121	67
399	839
109	167
101	126
1021	587
100	254

16 I-405 SB Ramps & Center Av.

136	475
831	302
279	
256	

17 Beach Bl. & Center Av.

777	2197
197	
890	
	2414

18 Beach Bl. & Edinger Av.

580	186
2181	475
326	185
305	323
896	1772
244	443



TABLE 3-1

INTERSECTION ANALYSIS FOR EXISTING (2010) CONDITIONS¹

#	INTERSECTION	CONTROL ²	JURISDICTION	AM PEAK HOUR		PM PEAK HOUR	
				ICU/DELAY	LOS	ICU/DELAY	LOS
1	Springdale Street / Edinger Avenue	TS	Huntington Beach	0.57	A	0.58	A
2	Edwards Street / Edinger Avenue	TS	Huntington Beach	0.51	A	0.53	A
3	Driveway 1 / Edinger Avenue	CSS	Huntington Beach	10.7	B	11.1	B
4	Driveway 2 / Edinger Avenue	CSS	Huntington Beach	8.2	A	8.1	A
5	I-405 Southbound Ramps / Westminster Mall	TS	Westminster	0.21	A	0.33	A
6	Goldenwest Street / Westminster Mall	TS	Westminster	0.47	A	0.60	A
7	Goldenwest Street / Bolsa Avenue	TS	Westminster	0.63	B	0.77	C
8	Goldenwest Street / McFadden Avenue	TS	Huntington Beach	0.65	B	0.72	C
9	Goldenwest Street / Edinger Avenue	TS	Huntington Beach	0.60	A	0.64	B
10	Goldenwest Street / Driveway 3	CSS	Huntington Beach	19.2	C	28.2	D
11	Goldenwest Street / Driveway 4	CSS	Huntington Beach	11.9	B	14.4	B
12	Goldenwest Street / Heil Avenue	TS	Huntington Beach	0.51	A	0.55	A
13	Goldenwest Street / Warner Avenue	TS	Huntington Beach	0.61	B	0.68	B
14	Goldenwest Street / Slater Avenue	TS	Huntington Beach	0.69	B	0.68	B
15	Gothard Street / Edinger Avenue	TS	Huntington Beach	0.53	A	0.68	B
16	I-405 Southbound Ramps / Center Avenue	TS	Huntington Beach	0.42	A	0.60	A
17	Beach Boulevard / Center Avenue	TS	Huntington Beach	0.51	A	0.67	B
18	Beach Boulevard / Edinger Avenue	TS	Huntington Beach	0.69	B	0.72	C

¹ Volume/Capacity and level of service calculated using the following analysis software:
 Traffix (Version 8.0 R1, 2008) for signalized and unsignalized intersections. The signalized intersections have been analyzed using ICU methodology. Unsignalized intersections have been analyzed using HCM methodology and level of service is based on average control delay (seconds).

² TS = Traffic Signal; CSS = Cross Street Stop

* **BOLD** = Unsatisfactory level of service.

the study area intersections under existing (2010) conditions during the AM and PM peak hours.

For existing (2010) traffic conditions, the study area intersections operate at acceptable levels of service during the peak hours.

Worksheets for existing (2010) conditions ICU calculations are provided in Appendix “3.2”.

There are no intersections that appear to currently warrant a traffic signal based on the peak hour volume warrant analysis (see Appendix “2.2”).

Exhibit 3-11 summarizes study area intersection LOS under weekday AM and PM peak hour existing conditions.

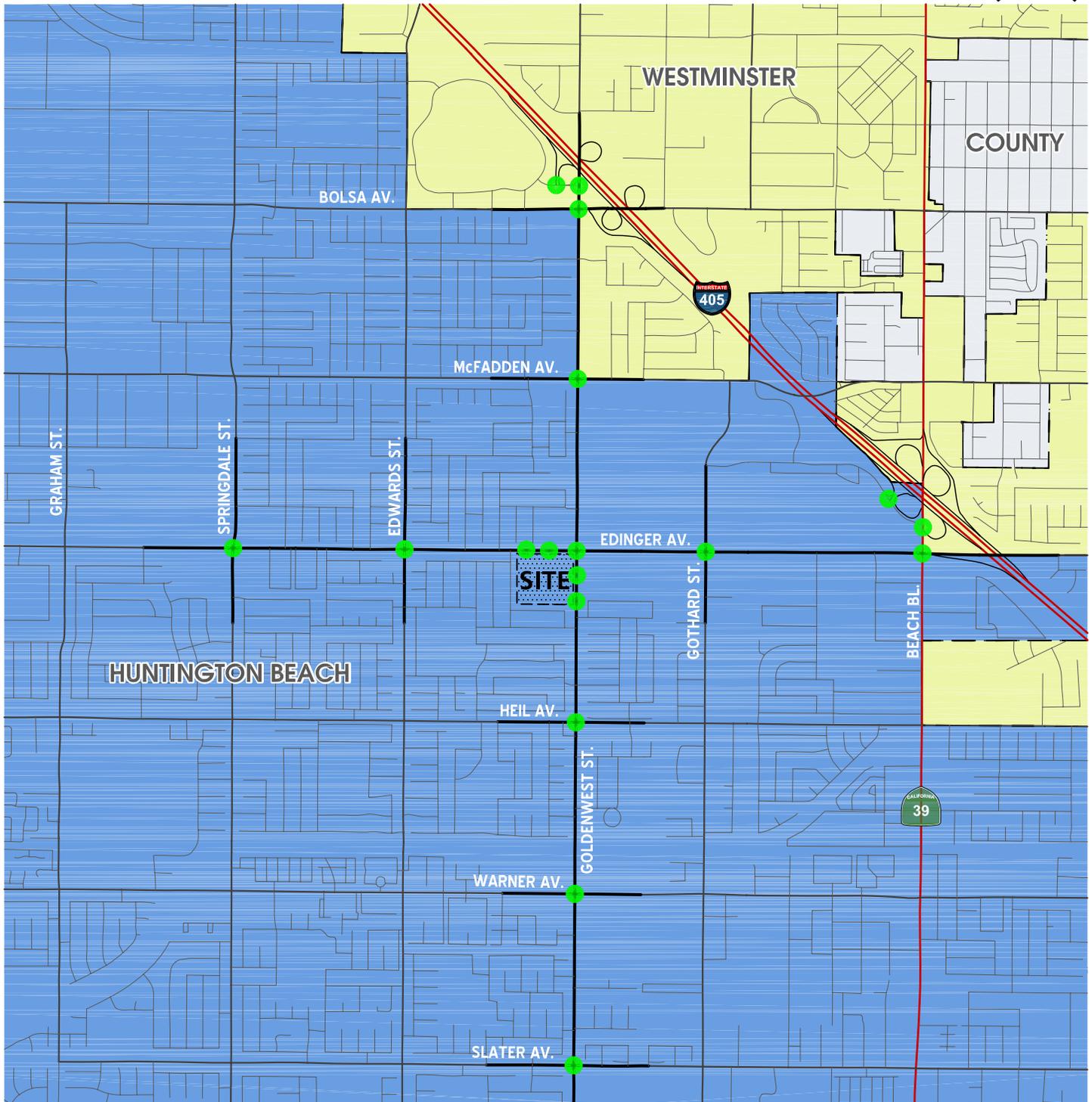
3.5.2 Caltrans Intersection Operations

Table 3-2 presents the HCM analysis results of peak hour delays and LOS for Caltrans operated facilities under existing conditions. Detailed Synchro analysis worksheets are included in Appendix “3.3”. The analysis indicates that all Caltrans operated intersections within the study area currently operate at acceptable LOS in both the AM and PM peak hours. It should be noted that factors such as signal timing, frequency and volume of pedestrians and traffic signal coordination with adjacent intersections can result in increases to average delay that are not accounted for with the ICU methodology.

3.5.3 Freeway Mainline Operations

Existing (2010) mainline directional volumes for the AM and PM peak hours are provided on Exhibit 3-12. Segment analysis results for the weekday AM and PM peak hours are summarized on Table 3-2. As shown on Table 3-3, the segments along the I-405 Freeway operate at acceptable levels of service (LOS “E” or better) during the peak hours under existing (2010) traffic conditions. Existing (2010) freeway segment analysis worksheets are provided in Appendix “3.4”.

EXISTING PEAK HOUR INTERSECTION LEVEL OF SERVICE (LOS)



LEGEND:

-  = AM PEAK HOUR ACCEPTABLE LOS
-  = AM PEAK HOUR DEFICIENT LOS
-  = PM PEAK HOUR ACCEPTABLE LOS
-  = PM PEAK HOUR DEFICIENT LOS



EXISTING (2010) FREEWAY MAINLINE VOLUMES



TABLE 3-2

EXISTING PEAK HOUR INTERSECTION LOS¹

#	INTERSECTION	JURISDICTION	CONTROL ²	AM PEAK HOUR		PM PEAK HOUR	
				DELAY	LOS	DELAY	LOS
5	I-405 Southbound Ramps / Westminster Mall	Westminster	TS	5.2	A	7.1	A
6	Goldenwest Street / Westminster Mall	Westminster	TS	17.6	B	30.1	C
16	I-405 Southbound Ramps / Center Avenue	Huntington Beach	TS	13.7	B	25.0	C
17	Beach Boulevard / Center Avenue	Huntington Beach	TS	12.4	B	27.5	C
18	Beach Boulevard / Edinger Avenue	Huntington Beach	TS	43.3	D	45.8	D

¹ Delay and level of service calculated using SYNCHRO 7.

² TS = Traffic Signal

TABLE 3-3

EXISTING (2010) CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS

DIRECTION	MAINLINE SEGMENT	VOLUME		TRUCK %		LANES ¹	DENSITY ²		LOS	
		AM	PM	AM	PM		AM	PM	AM	PM
I-405 Southbound	North of Goldenwest Street	5,211	6,859	2%	3%	4	22.0	30.0	C	D
	Between Goldenwest Street Ramps	4,644	6,030	0%	1%	4	19.4	25.4	C	C
	Bolsa Avenue/ Beach Boulevard	5,332	7,246	4%	5%	4	22.7	33.0	C	D
	Between Beach Boulevard Ramps	4,573	6,128	2%	4%	4	19.3	26.3	C	D
	Beach Boulevard / Edinger Avenue	5,631	6,882	5%	8%	5	19.3	24.0	C	C
	South of Beach Boulevard	6,213	7,464	9%	12%	5	21.7	26.1	C	D
I-405 Northbound	North of Goldenwest Street	5,627	6,689	2%	4%	4	23.8	29.2	C	D
	Goldenwest Street / Bolsa Avenue	5,016	5,896	2%	4%	4	21.2	25.2	C	C
	Bolsa Avenue/ Beach Boulevard	6,108	6,804	3%	6%	4	26.1	30.3	D	D
	Between Beach Boulevard Ramps	5,159	5,673	3%	7%	4	21.9	24.6	C	C
	South of Beach Boulevard	6,322	6,493	9%	13%	5	22.1	23.1	C	C

¹ Number of lanes are in the specified direction and is based on existing conditions.

² Density is measured by passenger cars per mile per lane (pc/mi/ln).

3.5.4 Freeway Ramp Operations

Ramp merge and diverge operations were also evaluated for existing (2010) conditions and are presented in Table 3-4. The I-405 Freeway ramp merge and diverge areas operate at acceptable service levels (LOS “E” or better) during the AM and PM peak hours under existing (2010) traffic conditions. Existing (2010) freeway ramp operations analysis worksheets for AM and PM peak hour are provided in Appendix “3.5”.

3.6 Historical Accident Data

A traffic collision history report for the roadway segments of Edinger Avenue and Goldenwest Street adjacent to the project site were obtained from the City of Huntington Beach Traffic Engineering Department. The reports contain crash history statistics for 2000-2010 along the project-adjacent roadway segments. A collision rate has been calculated at each of the existing project driveways using existing count data and the accident history provided by the City. It should be noted that the calculated collision rate is conservatively higher since the existing entering ADT volumes do not include the traffic generated by the vacant Expo Center. The calculated collision rate was then compared to the state-wide average collision rates for similar types of intersections. The state-wide average collision rates were obtained from the *Collision Data on California State Highways*, published by the California Department of Transportation (Caltrans). It should be noted that the latest publication provides average values from 2007. The state-wide average collision rates published are provided for various types of intersections and are often utilized for comparative purposes.

The roadway segment of Edinger Avenue between Marjan Lane and Goldenwest Street is approximately 1,020 feet in length (0.19 miles) and carries an average of approximately 23,000 vehicles per day. Over the ten-year period reviewed, there were a total of 33 collisions of which 32 occurred in close proximity to one of the existing project driveways on Edinger Avenue. Of the 32 collisions that occurred at either of the existing project driveways on Edinger Avenue, ten (10) resulted in injuries. The majority of these collisions were reported to have occurred as a result of right-of-way violations (i.e., turning vehicles failing to yield right-of-way to through traffic).

TABLE 3-4

I-405 FREEWAY RAMP MERGE/DIVERGE ANALYSIS FOR EXISTING (2010) CONDITIONS

FREEWAY	DIRECTION	RAMP OR SEGMENT ¹	LANES ON FREEWAY	AM		PM	
				Density ²	LOS	Density ²	LOS
I-405 Freeway	Southbound	Off-Ramp at Goldenwest Street	4	26.8	C	35.2	E
		On-Ramp at Goldenwest Street	4	23.0	C	32.4	D
		Off-Ramp at Beach Boulevard	4	26.7	C	38.6	E
		On-Ramp at Beach Boulevard - Upstream	4	28.0	D	23.9	C
		On-Ramp at Beach Boulevard - Downstream	4	28.0	D	23.9	C
		On-Ramp at Edinger Avenue	5	22.3	C	25.1	C
I-405 Freeway	Northbound	Loop On-Ramp at Goldenwest Street	4	26.4	C	30.6	D
		Loop Off-Ramp at Bolsa Avenue	4	33.6	D	36.2	E
		On-Ramp at Beach Boulevard	4	26.6	C	30.2	D
		Off-Ramp at Beach Boulevard	4	24.7	C	23.0	C

¹ Merge/Diverge analysis has been conducted twice where near-by ramps exist both upstream and downstream.

² Density is measured by passenger cars per mile per lane (pc/mi/ln).

The roadway segment of Goldenwest Street between Edinger Avenue and Stonewood Drive is approximately 1,028 feet in length (0.19 miles) and carries an average of approximately 32,500 vehicles per day. Over the ten-year period reviewed, there were a total of 63 collisions of which 47 occurred in close proximity to one of the existing project driveways on Goldenwest Street. Of the 47 collisions that occurred at either of the existing project driveways on Goldenwest Street, 15 resulted in injuries. The majority of these collisions occurred as a result of right-of-way violations (i.e., turning vehicles failing to yield right-of-way to through traffic).

Over the ten-year period, the collisions which occurred at the project's existing driveways were primarily attributable to right-of-way violations. These violations consisted of either left or right turning vehicles failing to yield the right-of-way to through traffic or vehicles switching lanes that did not yield the right-of-way to through traffic. Historical crash data for each of the project access driveways has been provided on Table 3-5. As shown on Table 3-5, the calculated collision rate at Driveways 1 and 2 on Edinger Avenue were 0.09 and 0.28 c/mve (collisions per million vehicles entering), respectively, and are each below the state-wide average for similar intersections. The calculated collision rate at Driveways 3 and 4 on Goldenwest Street were 0.30 and 0.08 c/mve, respectively, and are each below the state-wide average for similar intersections (see Table 3-5).

The traffic collision history reports provided by the City of Huntington Beach have been provided in Appendix "3.6".

TABLE 3-5

HISTORICAL CRASH DATA 2000-2010¹

SEGMENT	SEVERITY OF CRASH		ENTERING ADT	COLLISION RATE ³	STATE-WIDE COLLISION RATE ⁴	TYPE OF CRASH						SIGNIFICANT?		
	PDO ²	INJURY				TOTAL CRASHES	BROAD-SIDE	SIDE-SWIPE	HEAD-ON	REAR-END	OVER-TURNED		PEDESTRIAN	BICYCLE
Edinger Avenue at Driveway 1	5	3	8	24,576	0.09	0.19	5	0	0	3	0	0	0	No
Edinger Avenue at Driveway 2	17	7	24	23,172	0.28	0.34	10	7	0	7	0	0	0	No
Goldenwest Street at Driveway 3	23	14	37	33,720	0.30	0.34	23	6	1	5	1	0	1	No
Goldenwest Street at Driveway 4	9	1	10	32,784	0.08	0.19	4	2	1	1	0	1	1	No
TOTAL	54	25	79				42	15	2	16	1	1	2	

¹ Source: City of Huntington Beach Traffic Engineering Department, Traffic Collision History Report

² Property Damage Only

³ Collision rate in units of collisions per million entering vehicles. (Collision * 1,000,000) / (Entering ADT * 365 * Years)

⁴ The state-wide collision rate for suburban unsignalized T-intersections is 0.19. The state-wide collision rate for suburban unsignalized four-leg intersections is 0.34.



4.0 PROJECTED FUTURE TRAFFIC

This chapter describes the procedures used to estimate future project-related traffic and cumulative traffic. The results are used to evaluate potential project-related impacts and cumulative traffic impacts.

The amount of traffic added to the roadway system by both the project and known cumulative development projects is estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. The first step estimates the amount of traffic which is attracted and produced by a project. The second step estimates directional orientation of traffic to and from the project. The last step includes the assignment of traffic from the site to the adjoining roadway system. This step is based upon the site's trip generation, trip distribution pattern, and proposed arterial highway and local street systems assumed to be in place by the time of initial occupancy of the site.

4.1 Project Description

The project is located at the southwest corner of Goldenwest Street and Edinger Avenue in the City of Huntington Beach. The project proposes to occupy an existing 100,865 square foot vacant retail building within an existing shopping center. The shopping center in which the building is located has commercial and office buildings occupied by a variety of uses including restaurants, a Smart & Final, dental offices and small specialty retail shops.

For purposes of this traffic analysis, the project opening year is assumed to be 2011.

The proposed project will utilize the existing site access driveways currently serving the shopping center. Specifically, the project will have access from Edinger Avenue, via Driveways 1 and 2, and from Goldenwest Street, via Driveways 3 and 4.

4.1.1 Trip Generation

Trip generation rates for this project are shown in Table 4-1 and a summary of project trip generation is shown in Table 4-2. The trip generation rates are based upon data collected by the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 8th Edition, 2008. The project is estimated to generate a total of approximately 5,359 trip-ends per day. The project is anticipated to generate a total of approximately 168 AM peak hour trips and 465 PM peak hour trips.

TABLE 4-1

PROJECT TRIP GENERATION RATES¹

LAND USE	ITE CODE	UNITS ²	AM PEAK HOUR			PM PEAK HOUR			DAILY
			IN	OUT	TOTAL	IN	OUT	TOTAL	
Free Standing Discount Superstore	813	TSF	0.94	0.73	1.67	2.26	2.35	4.61	53.13

¹ Source: ITE (Institute of Transportation Engineers) Trip Generation Manual, 8th Edition, 2008.

² TSF = Thousand Square Feet

TABLE 4-2

PROJECT TRIP GENERATION SUMMARY

LAND USE	QUANTITY	UNITS ¹	AM PEAK HOUR			PM PEAK HOUR			DAILY
			IN	OUT	TOTAL	IN	OUT	TOTAL	
Free-Standing Discount Superstore	100.865	TSF	95	74	168	228	237	465	5,359

¹ TSF = Thousand Square Feet

The traffic generated by the project is assumed to have been included in the existing and long-range traffic forecasts used to conduct the Specific Plan traffic study. The existing shopping center that contains the currently vacant 100,865 square foot building, proposed to be occupied by Walmart, was included as part of Traffic Analysis Zone #41.

4.1.2 Trip Distribution and Assignment

A “select zone” run from the Huntington Beach Traffic Model (HBTM) for the traffic analysis zone (TAZ) containing the project site was utilized in determining the initial trip distribution patterns for the project. In addition, the directional orientation of traffic has been refined by evaluating existing and proposed land uses in the area, highways and freeways within the vicinity of the project along with existing traffic patterns understood from current traffic counts. The project distribution pattern is graphically depicted on Exhibit 4-1.

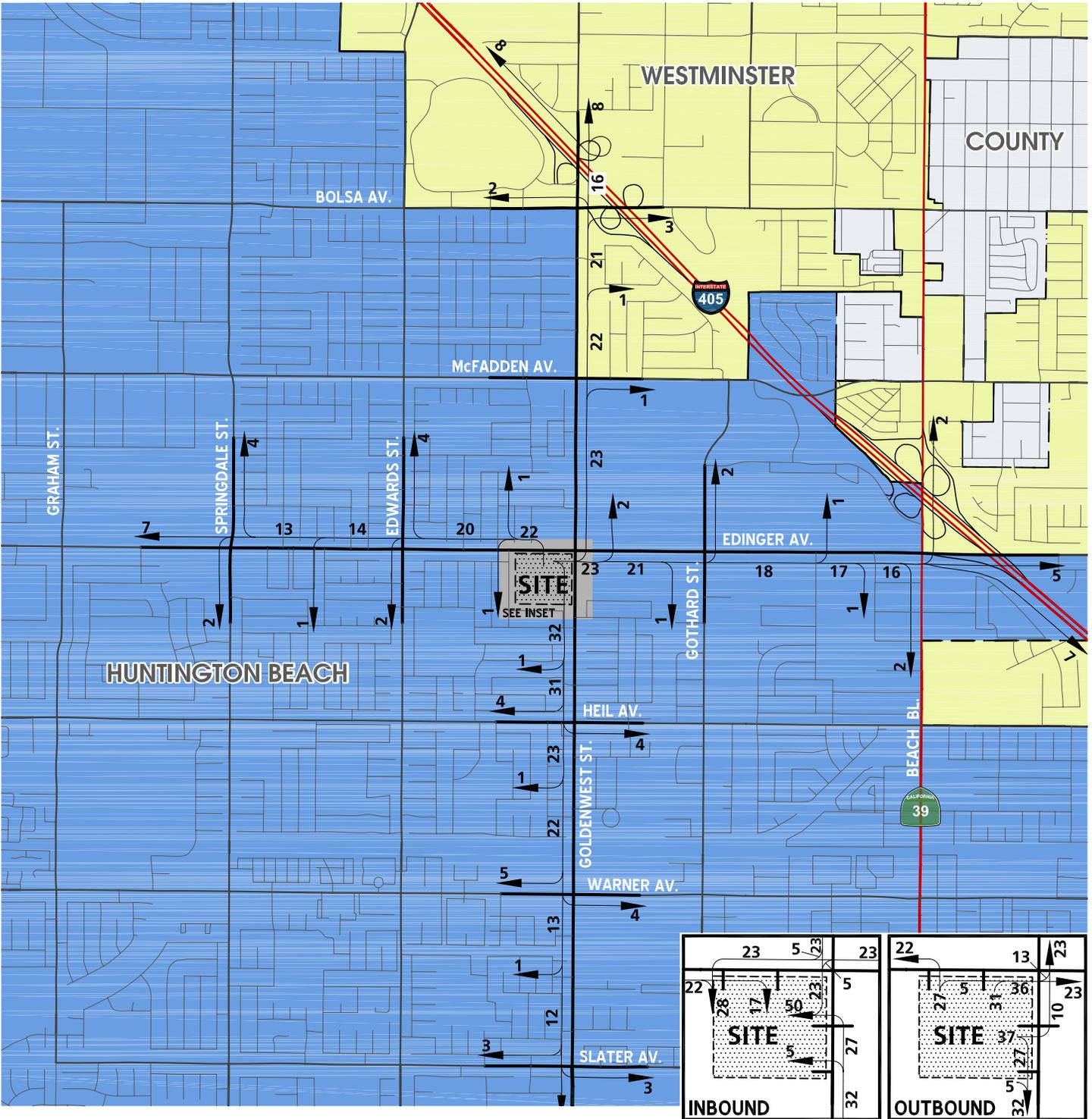
The assignment of traffic from the site to the adjoining roadway system has been based upon the site's trip generation, trip distribution patterns, and proposed arterial highway and local street systems, which would be in place by the time of initial occupancy of the site.

Based on the identified project traffic generation and trip distribution patterns, project average daily traffic (ADT) volumes are shown on Exhibits 4-2. Project AM and PM peak hour volumes are shown on Exhibits 4-3 and 4-4.

4.2 Background Traffic

To assess future traffic conditions, background (ambient) growth has been added to existing traffic. As directed by City of Huntington Beach staff, existing plus ambient growth plus project plus cumulative development projects (EAPC) (2015) traffic forecasts have been based upon five (5) years of background (ambient) growth at 1% per year, or an ambient growth rate of 5.0% for 2015 conditions. This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated by the project. The remaining growth is anticipated to be accounted for by development of future projects in the study area that have been approved and/or are being processed concurrently.

EXHIBIT 4-1
PROJECT TRIP DISTRIBUTION

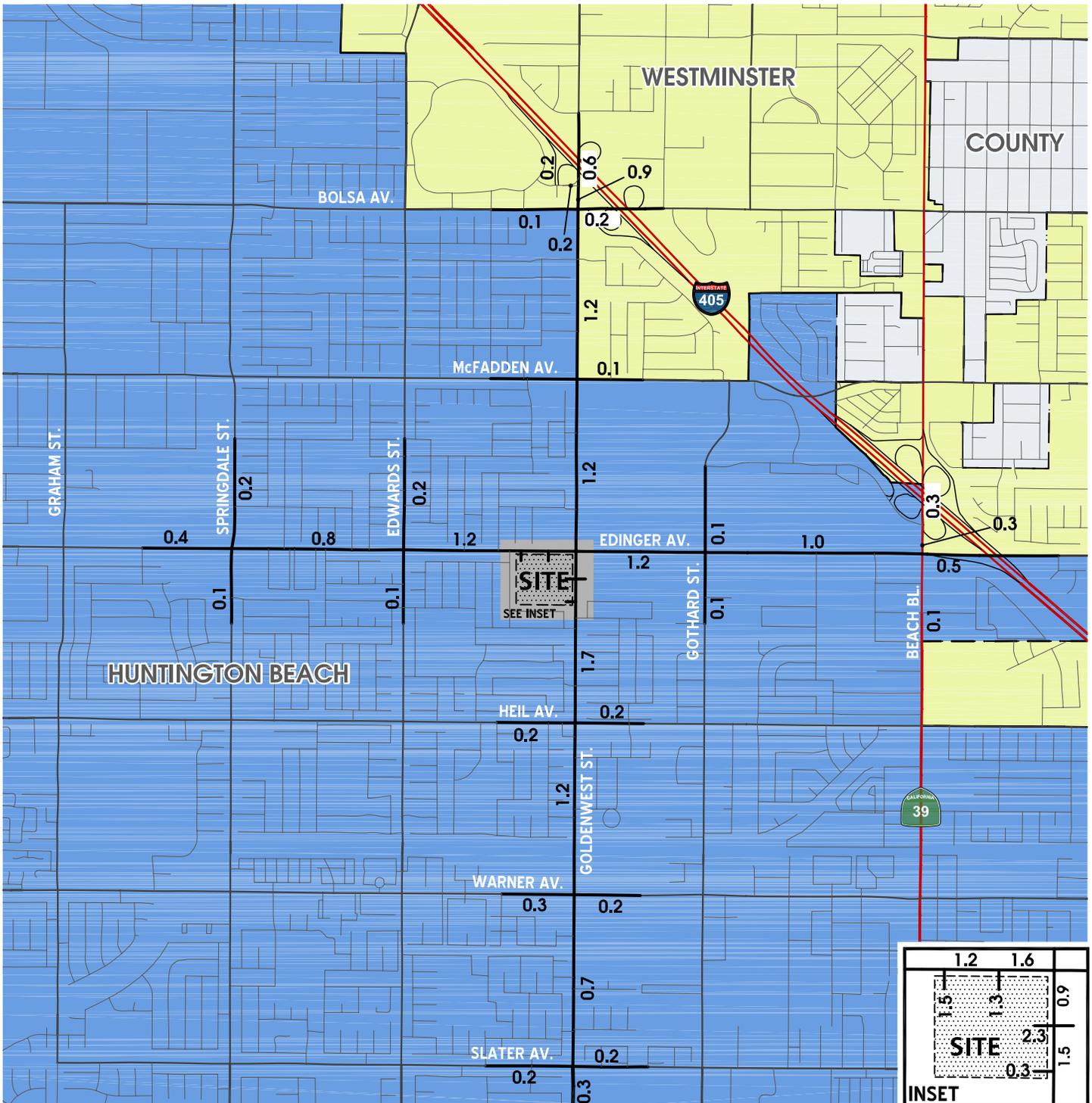


LEGEND:

10 = PERCENT TO/FROM PROJECT



PROJECT (2011) AVERAGE DAILY TRAFFIC (ADT)

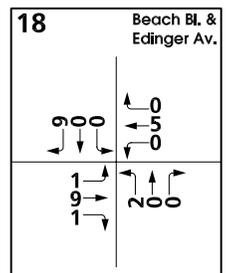
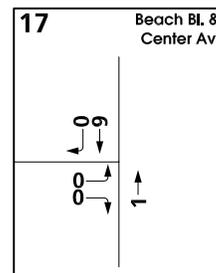
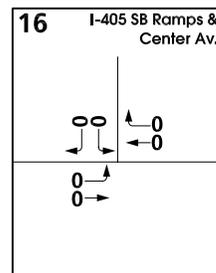
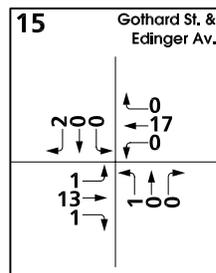
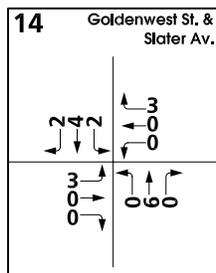
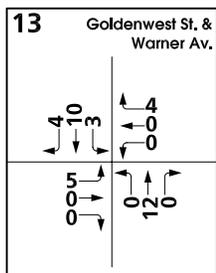
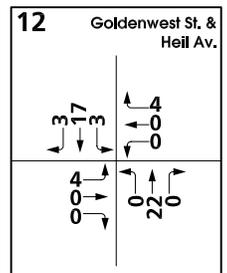
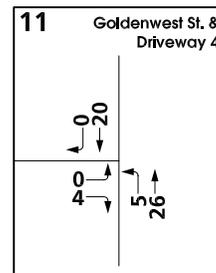
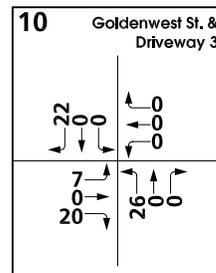
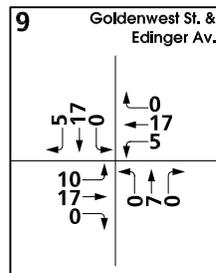
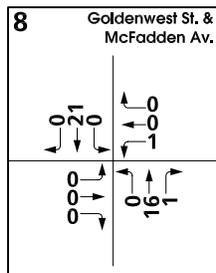
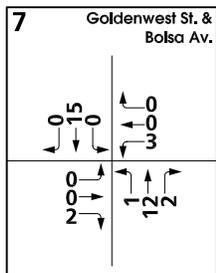
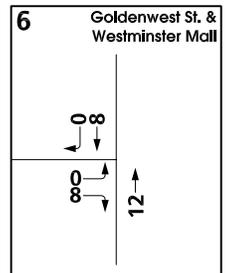
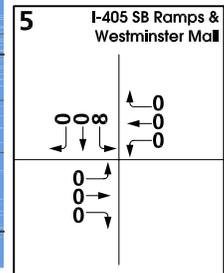
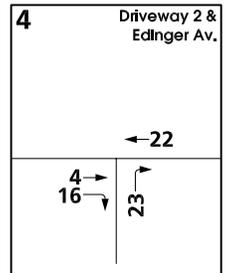
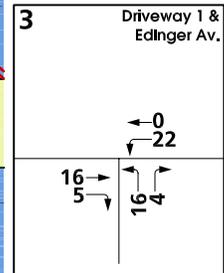
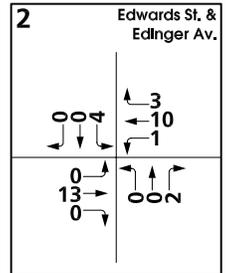
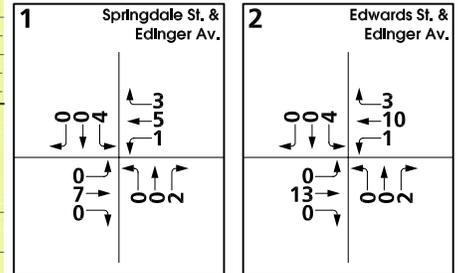
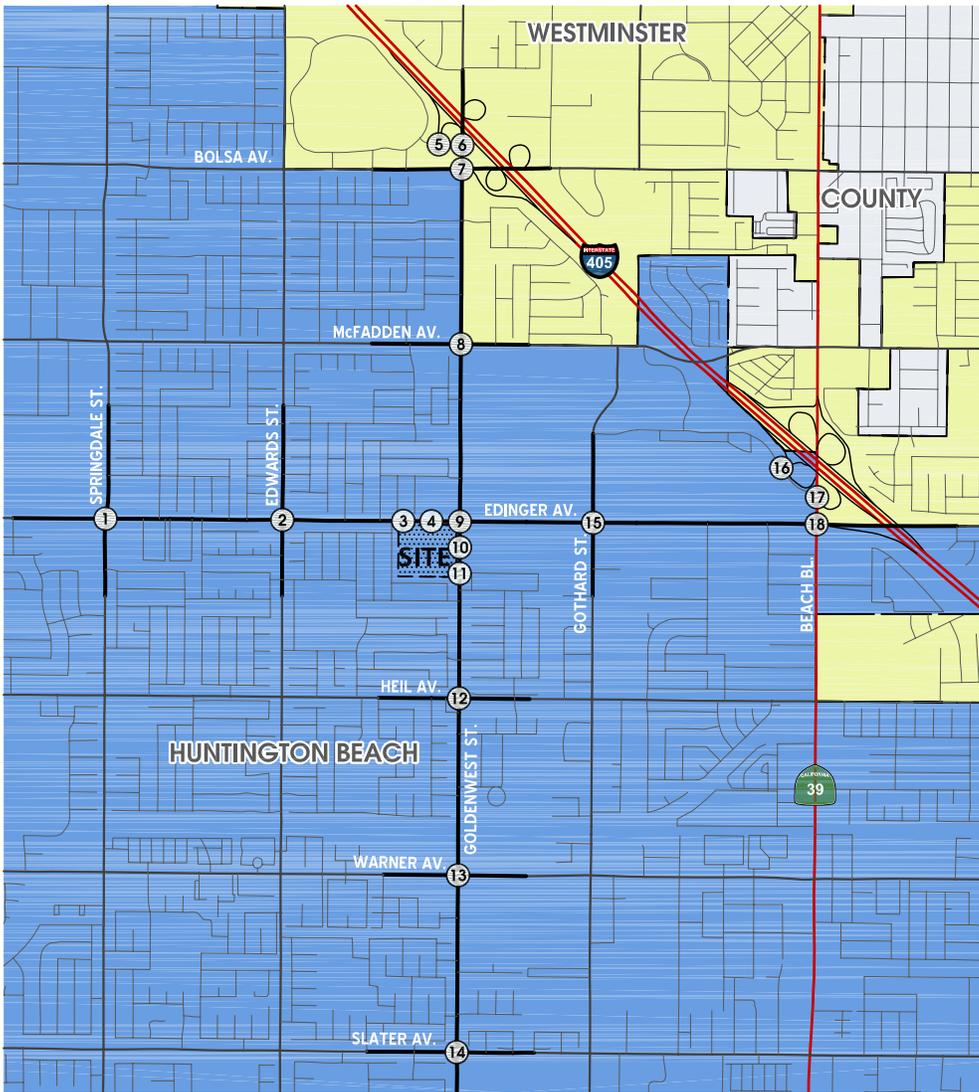


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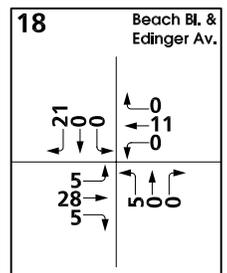
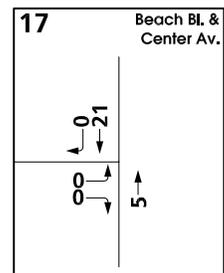
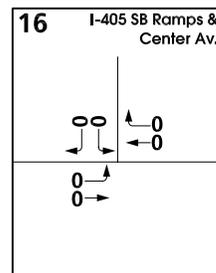
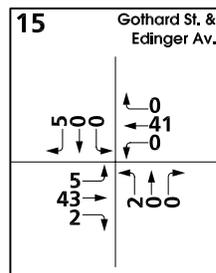
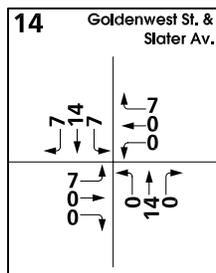
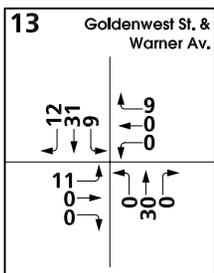
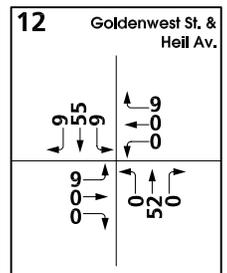
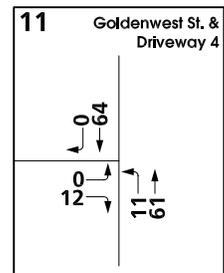
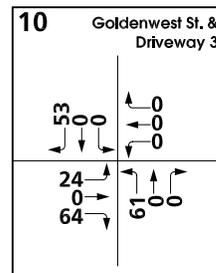
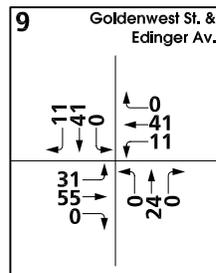
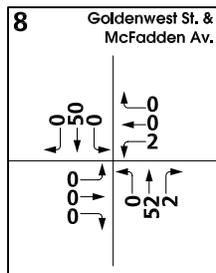
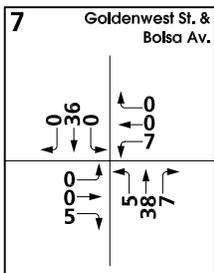
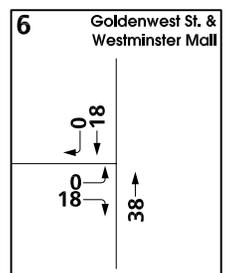
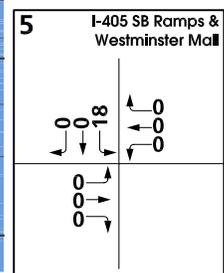
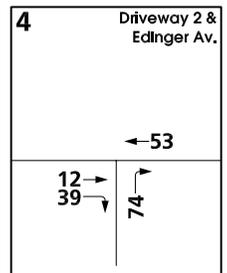
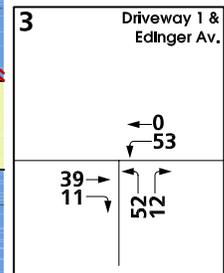
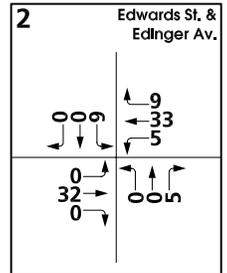
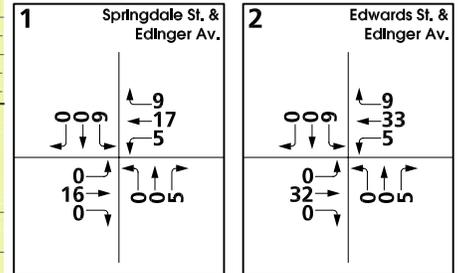
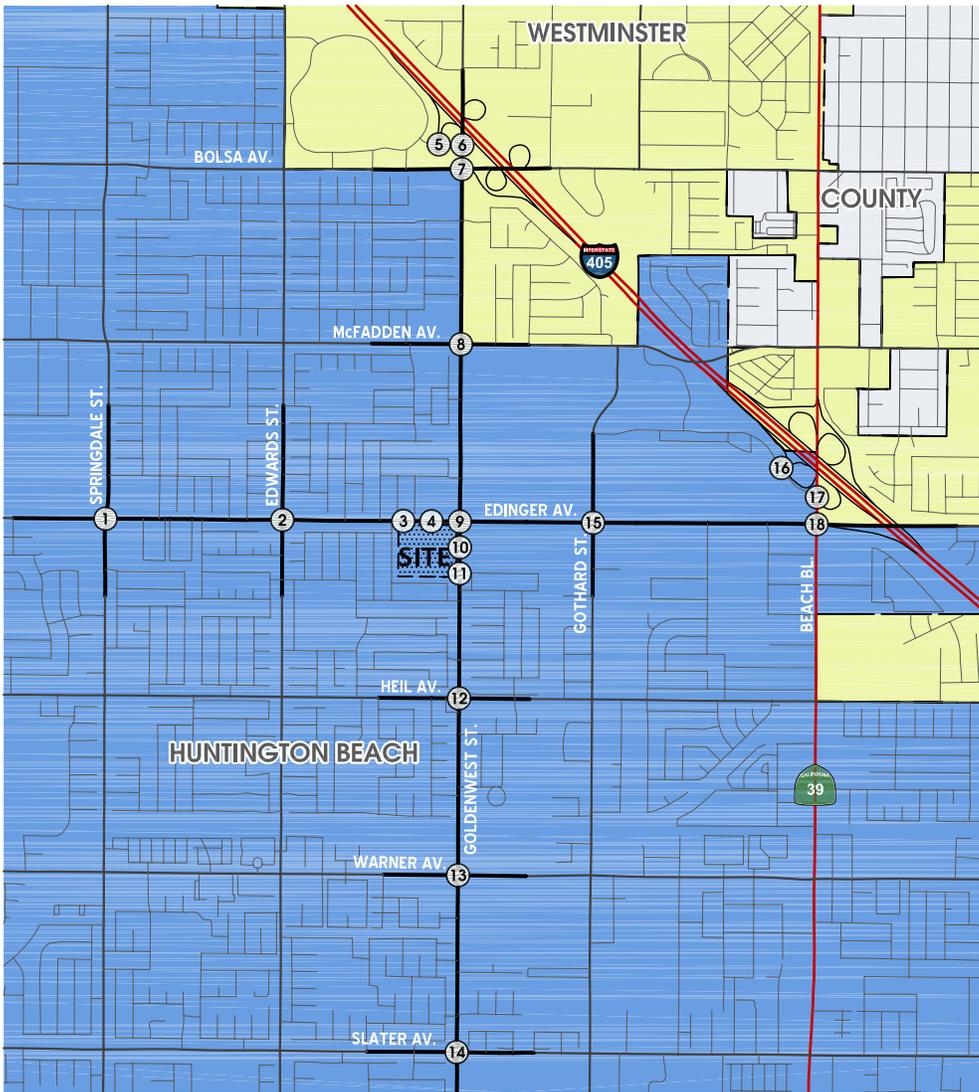
10.0 = VEHICLES PER DAY (1000'S)



PROJECT (2011) AM PEAK HOUR INTERSECTION VOLUMES



PROJECT (2011) PM PEAK HOUR INTERSECTION VOLUMES



4.3 Cumulative Development Traffic

CEQA guidelines require that other reasonably foreseeable development projects which are either approved or being processed concurrently in the study area also be included as part of a cumulative analysis scenario.

4.3.1 Trip Generation

The cumulative development projects, as listed in Table 4-3 and illustrated on Exhibit 4-5, have been compiled through consultation with both the City of Huntington Beach (lead agency) and the nearby City of Westminster. Due to the comprehensive nature of this list, and in consideration of the current economic conditions, it would seem highly unlikely that each of the identified projects could be built and occupied within the near-term cumulative time horizon of 2015. As such, the traffic analysis assumes 100% absorption of the cumulative development projects located near the project site. These projects are graphically represented on Exhibit 4-5 by the orange highlight. The study assumes that the traffic generated by the more remotely located projects (indicated in yellow) are addressed through the application of the ambient growth rate. Based on these assumptions, the cumulative project list and associated future year traffic forecasts would appear to likely overstate as opposed to understate future year (2015) traffic volumes.

In addition, to ensure that the derived future year 2015 traffic forecasts adequately accounted for the anticipated traffic growth in the area, the future year 2015 traffic forecasts developed for this traffic study were also compared to both the 2016 and 2030 traffic forecasts included in the Specific Plan TIA, the applicable overarching planning document for the project area. This comparison revealed that the manually derived traffic forecasts utilized for this traffic analysis are as high or higher in some cases than the forecasts for the same locations used for the traffic study in support of the Specific Plan document.

4.3.2 Trip Distribution and Assignment

Based on the identified trip distribution patterns for the cumulative development projects on arterial highways throughout the study area for future conditions, cumulative development average daily traffic (ADT) volumes are shown on Exhibit 4-6. Cumulative development AM

TABLE 4-3 (Page 1 of 2)

CUMULATIVE DEVELOPMENT PROJECTS

#	PROJECT/LOCATION	LAND USE	QUANTITY	UNITS ¹
CITY OF HUNTINGTON BEACH				
1	Brightwater Annexation	Low Density Residential	349	TSF
2	Amstar/Red Oak Project (formerly RipCurl)	Mixed Use Residential	440	DU
		Mixed Use Commercial	10.000	TSF
3	Murphy Commons	Mixed Use Residential	1,268	DU
		Mixed Use Commercial	60.000	TSF
4	Seawind Village Apartments	High Density Residential	10	DU
5	The Village at Bella Terra	Apartments ²	467	DU
		Costco	154.113	TSF
		Gas Station	16	VFP
		Mixed Use Commercial	30.000	TSF
6	Edinger Hotel	Hotel	144	RMS
7	Bayview/Harmony GRE Residential	Medium High Density Residential	15	DU
8	Plaza Buccella and Pearce St. Subdivision	Medium Density Residential	19	DU
9	17032 Bolsa Chica	Commercial General	4.630	TSF
10	Beach-Warner Mixed Use	Mixed Use Residential	272	DU
		Mixed Use Commercial	257.000	TSF
11	Parkside Estates	Low Density Residential	111	DU
12	Senior Center	Senior Center	45.000	TSF
13	Long Drugs, Fein Medical Office, Ocean Breeze Plaza and Master Plan	Commercial General	24.820	TSF
14	Beach-Ellis Mixed Use	Mixed Use Residential	120	DU
		Mixed Use Commercial	71.000	TSF
15	Lamb School Site	Low Density Residential	61	DU
16	Wardlow School Site	Low Density Residential	42	TSF
17	Blue Canvas Residential	Medium Density Residential	201	DU
18	Pacific City Mixed Use	High Density Residential	516	DU
19	Pacific City Mixed Use	Hotel	250	RMS
		Commercial Visitor	191.100	TSF
20	Waterfront 3rd Hotel	Hotel	250	RMS
21	Magnolia Specific Plan	Medium Density Residential	502	DU
22	424 Main Street	Mixed Use Residential	121	DU
		Mixed Use Commercial	8.270	TSF

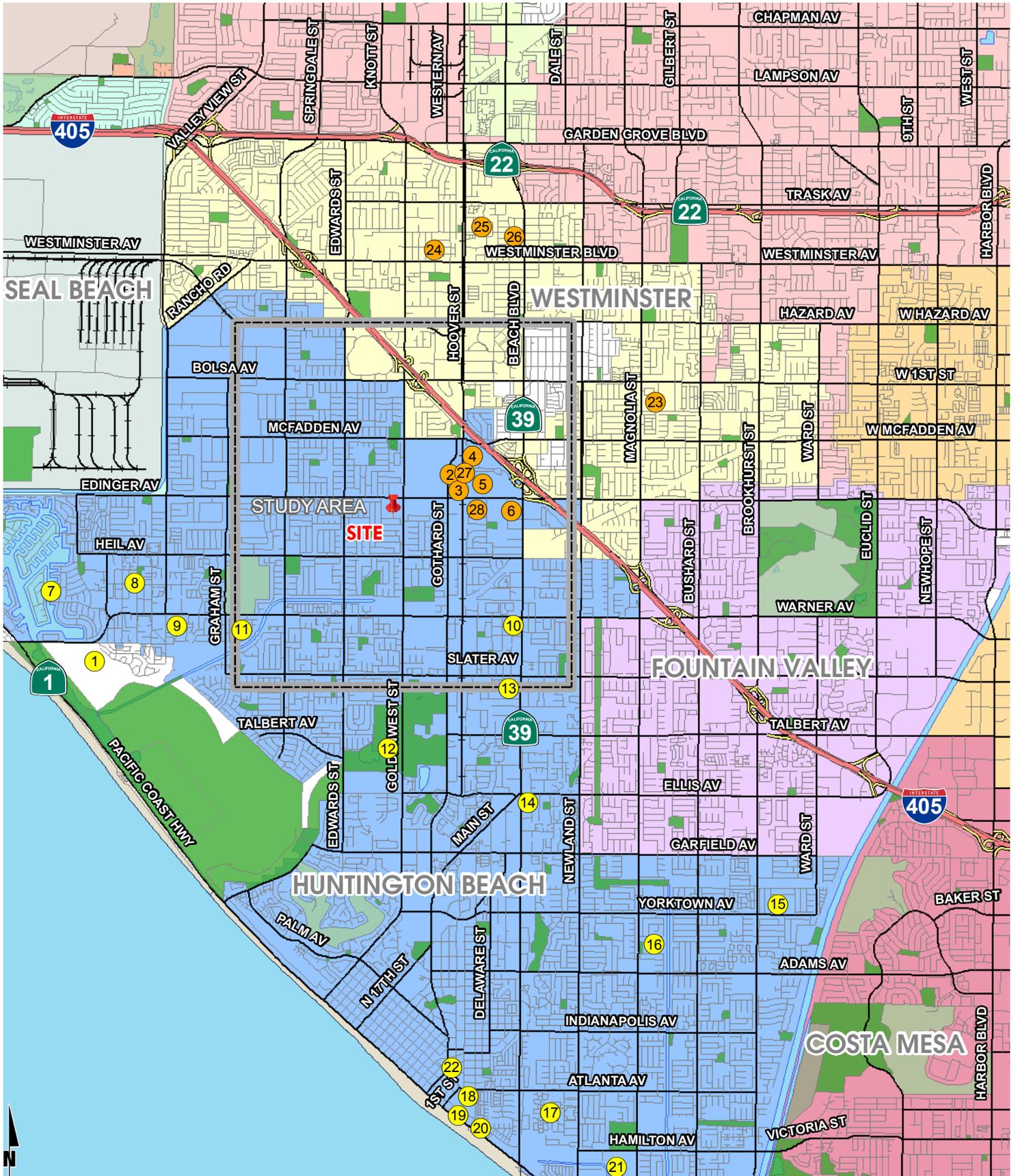
TABLE 4-3 (Page 2 of 2)

#	PROJECT/LOCATION	LAND USE	QUANTITY	UNITS ¹
27	Center Ave. Skate Park	Skate Park	45.000	TSF
28	Michael's Center Remodel/Expansion	Retail	29.246	TSF
CITY OF WESTMINSTER				
23	Moran Senior Condos	Medium Density Residential	149	DU
24	7201 Westminster Blvd.	Condo/Townhomes	22	DU
25	280 Hospital Circle	Apartments	36	DU
26	13822 Manor Drive	General Office	8.000	TSF

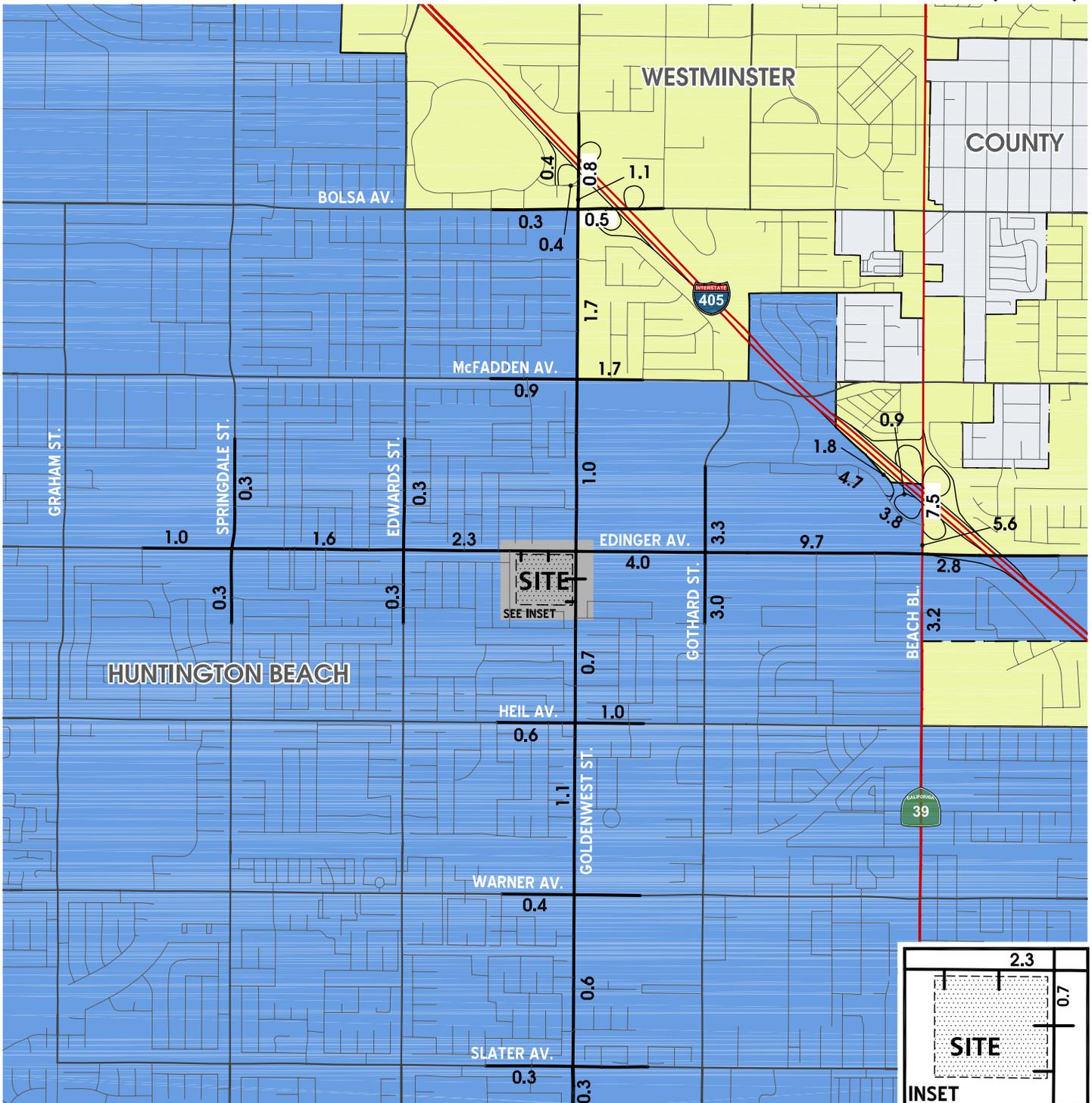
¹ DU = Dwelling Units; TSF = Thousand Square Feet; AC = Acres; VFP = Vehicle Fueling Positions

² The residential dwelling units of The Village at Bella Terra are currently proposed as apartments but may be sold as condominiums in the future. Apartments generate more vehicle trip rates than condominiums so the more conservative trip rates were used

CUMULATIVE DEVELOPMENT LOCATION MAP



CUMULATIVE DEVELOPMENT AVERAGE DAILY TRAFFIC (ADT)



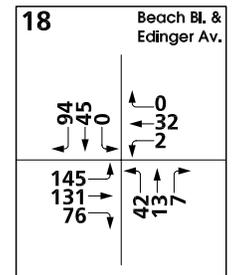
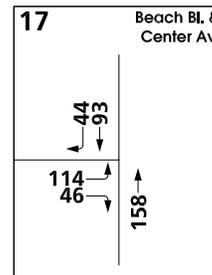
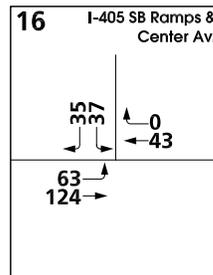
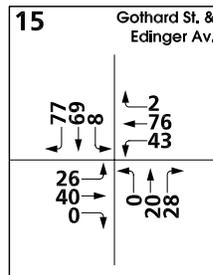
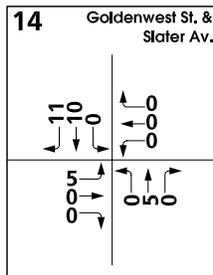
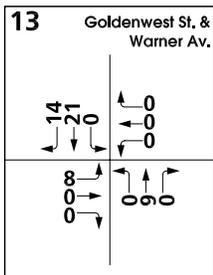
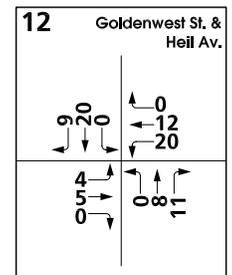
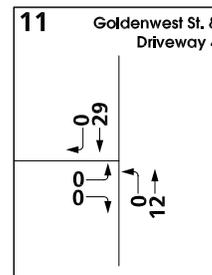
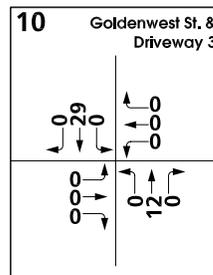
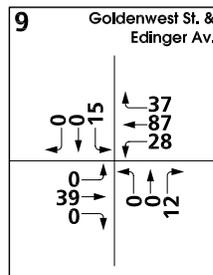
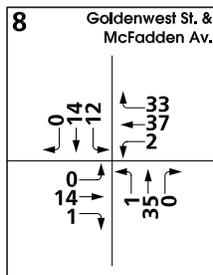
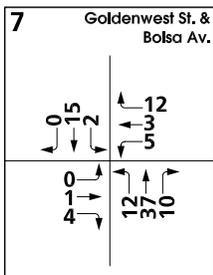
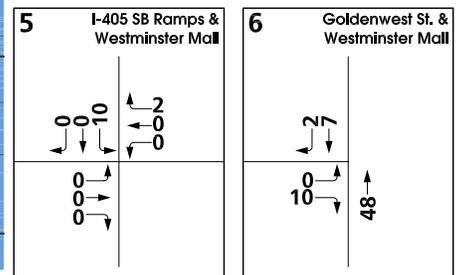
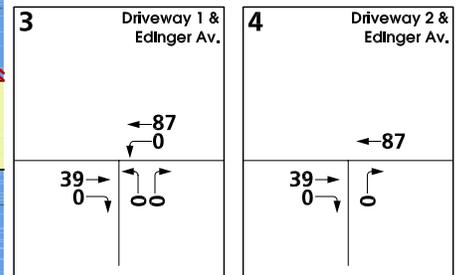
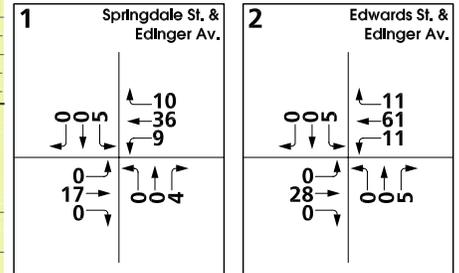
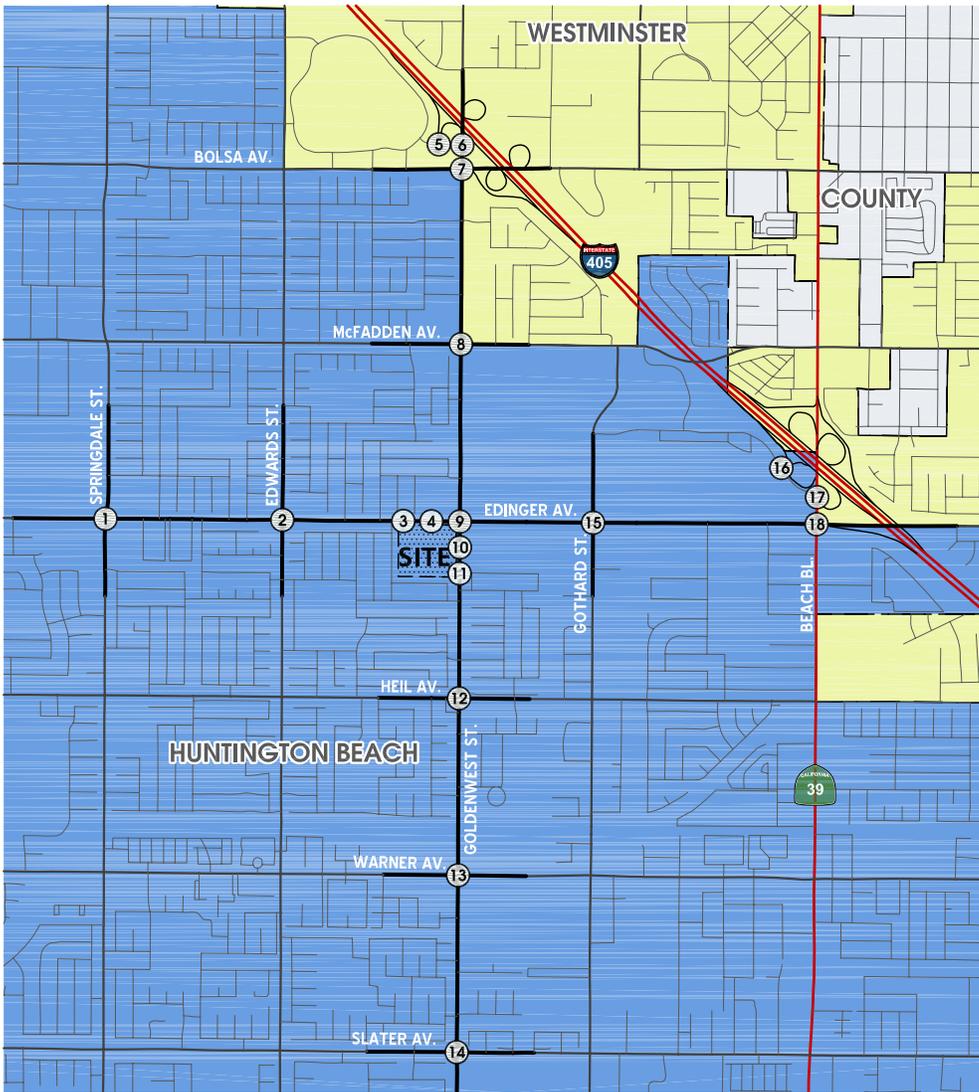
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10.0 = VEHICLES PER DAY (1000'S)

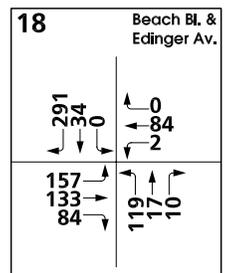
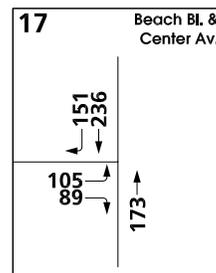
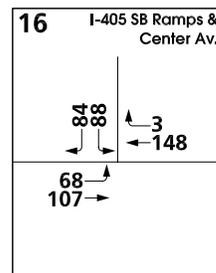
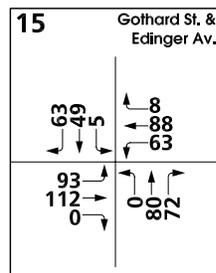
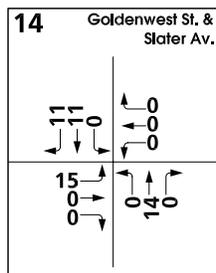
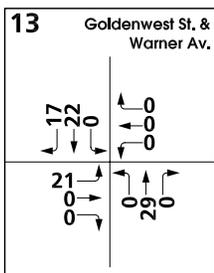
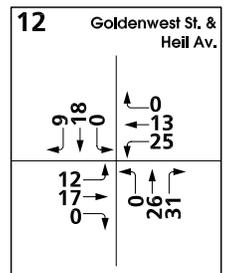
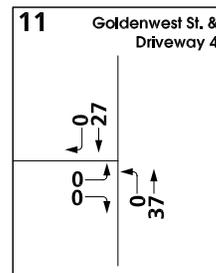
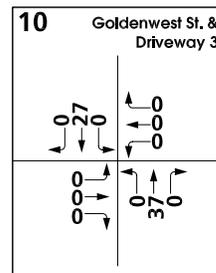
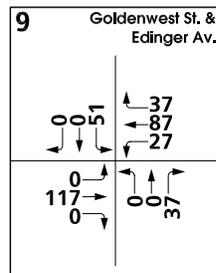
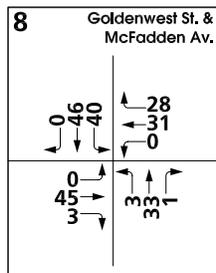
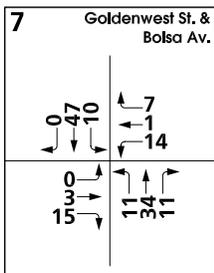
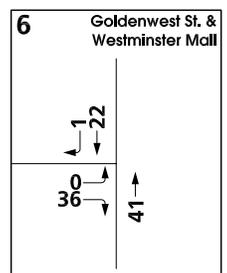
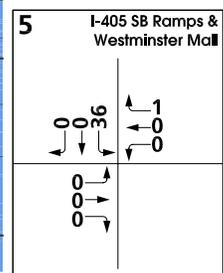
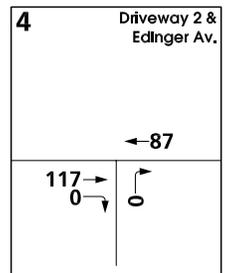
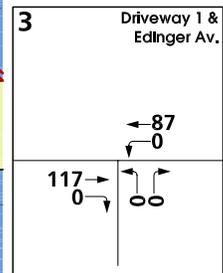
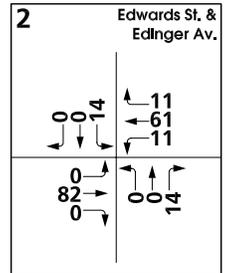
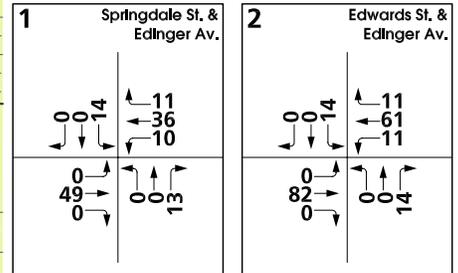
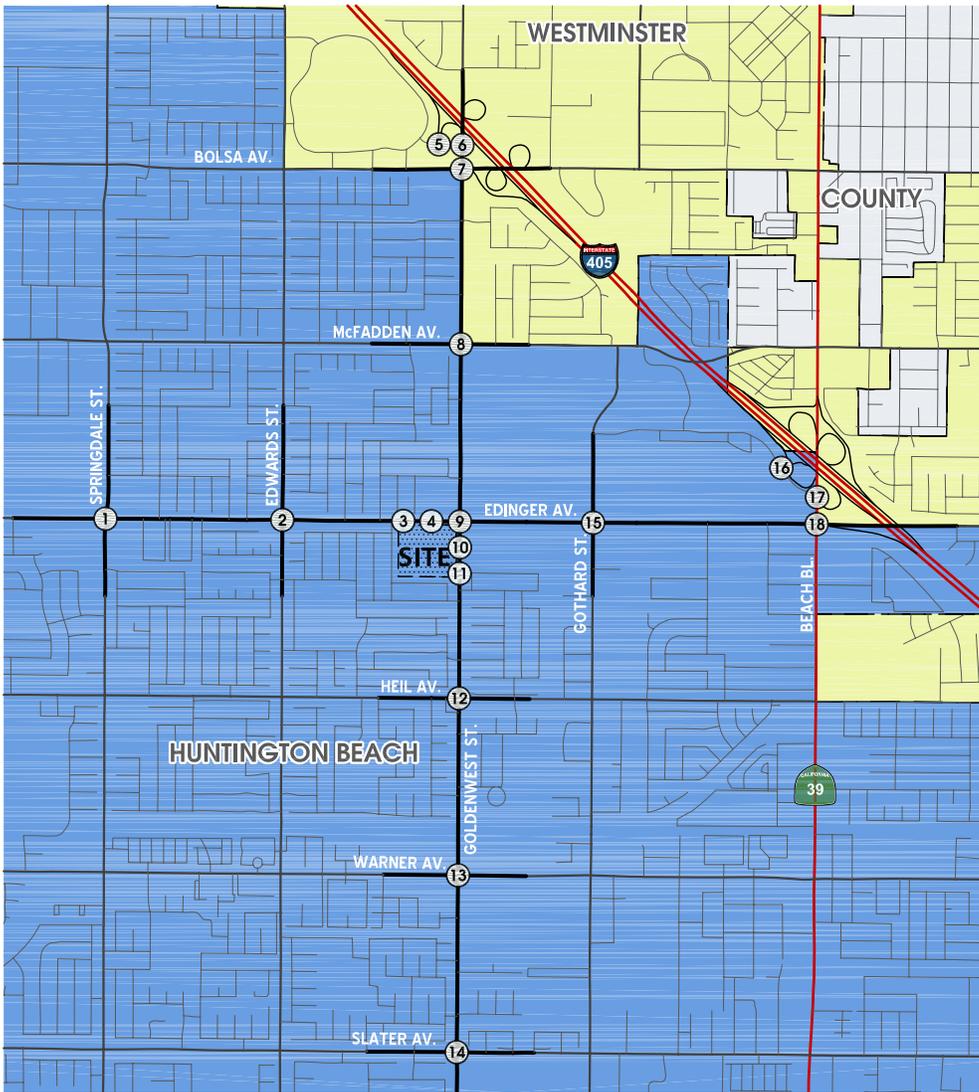


and PM peak hour intersection turning movement volumes are shown on Exhibits 4-7 and 4-8.

CUMULATIVE DEVELOPMENT AM PEAK HOUR INTERSECTION VOLUMES



CUMULATIVE DEVELOPMENT PM PEAK HOUR INTERSECTION VOLUMES



5.0 EXISTING PLUS PROJECT CONDITIONS

This chapter discusses the traffic forecasts for existing plus project (E+P) conditions and the resulting intersection and freeway mainline operations.

5.1 E+P Traffic Volume Forecasts

This scenario includes existing (2010) traffic volumes plus project traffic. Exhibit 5-1 shows the ADT volumes which can be expected for E+P traffic conditions. E+P AM and PM peak hour intersection turning movement volumes are shown on Exhibits 5-2 and 5-3, respectively.

5.2 E+P Conditions Analysis

5.2.1 Intersection Operations

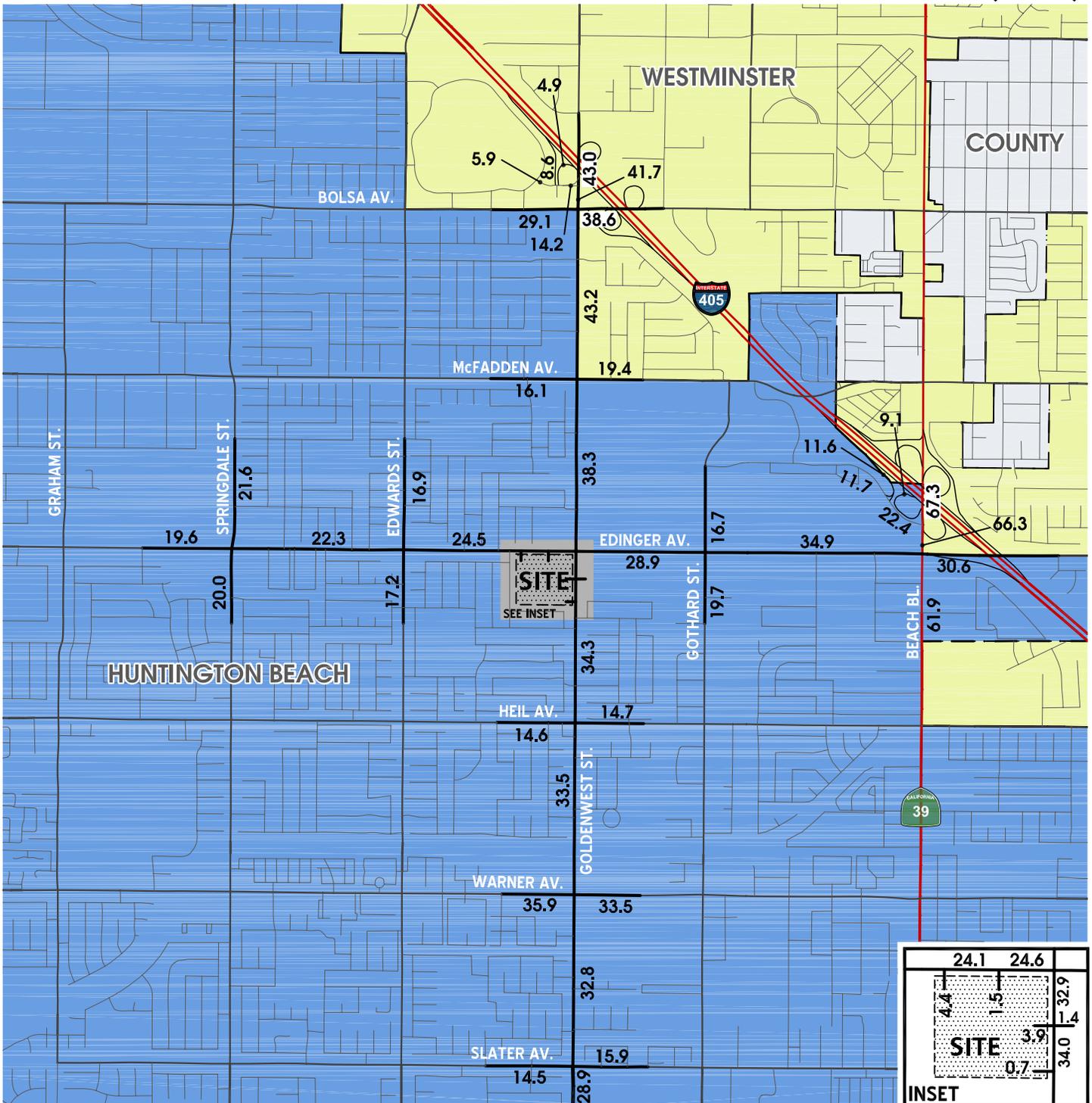
E+P intersection delay and ICU values along with the associated LOS letter grade are reported in Table 5-1.

For E+P traffic conditions, the study area intersections were found to operate at acceptable levels of service during the peak hours, with the exception of the following site access driveway:

- Goldenwest Street / Driveway 3 (LOS “E” – PM peak hour)

Consistent with the methodology defined by the 2000 Highway Capacity Manual (HCM) for unsignalized intersections, the delay and associated LOS grade for the worst individual movement is reported at cross-street stop controlled intersections. The PM peak hour level of service deficiency identified at the intersection of Goldenwest Street / Driveway 3 occurs for the westbound shared left-through movement only (i.e., traffic exiting the shopping center on the southeast corner of Goldenwest Street / Edinger Avenue and turning left to head southbound on Goldenwest Street); all other movements were found to each operate at LOS “C” or better.

EXISTING PLUS PROJECT AVERAGE DAILY TRAFFIC (ADT)

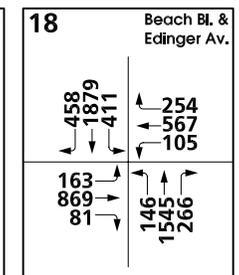
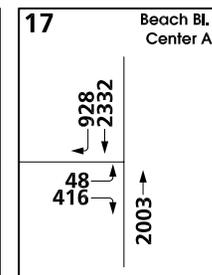
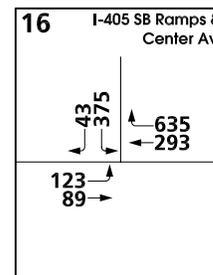
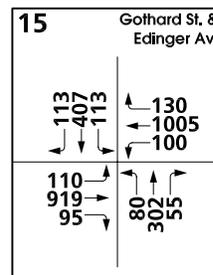
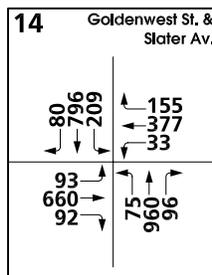
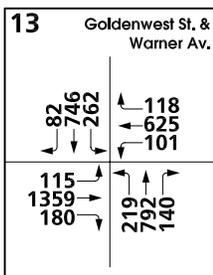
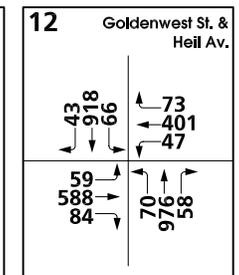
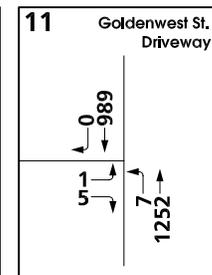
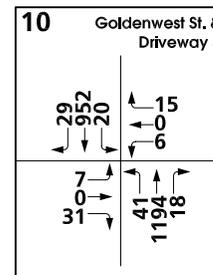
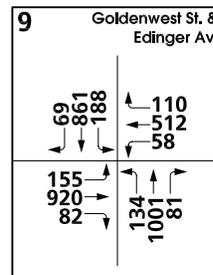
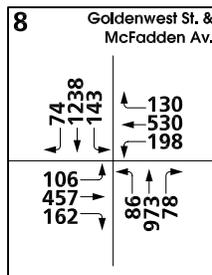
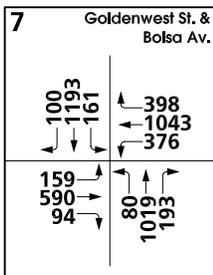
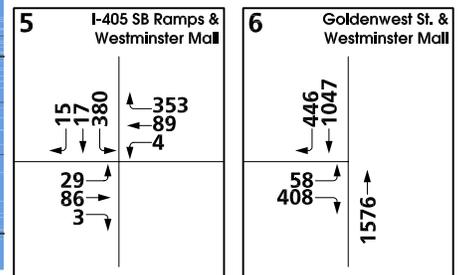
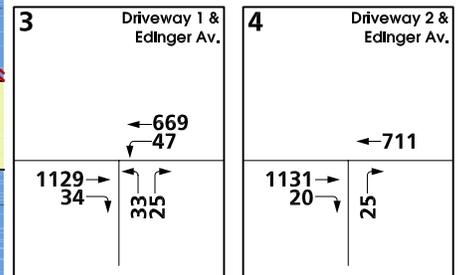
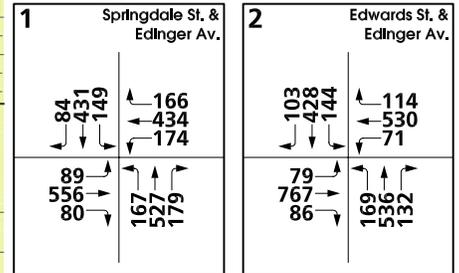
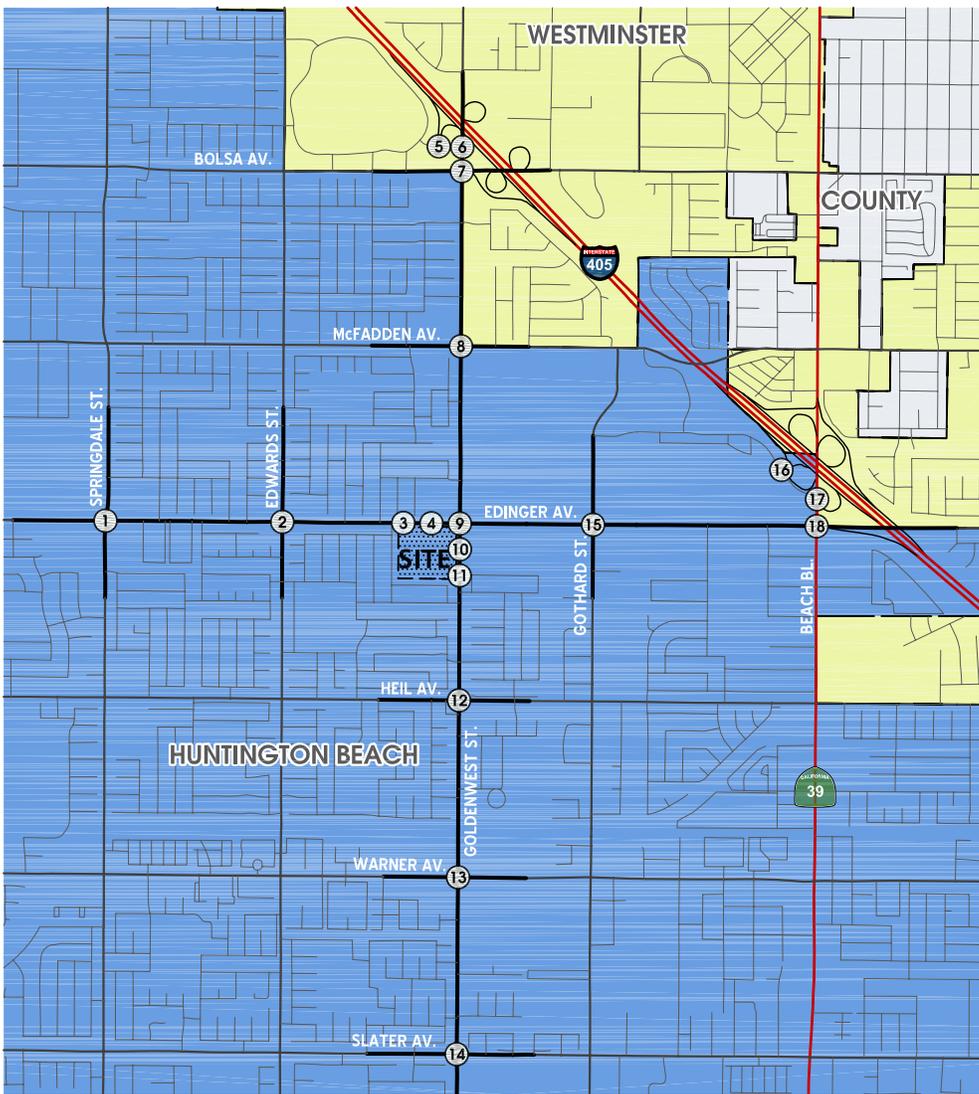


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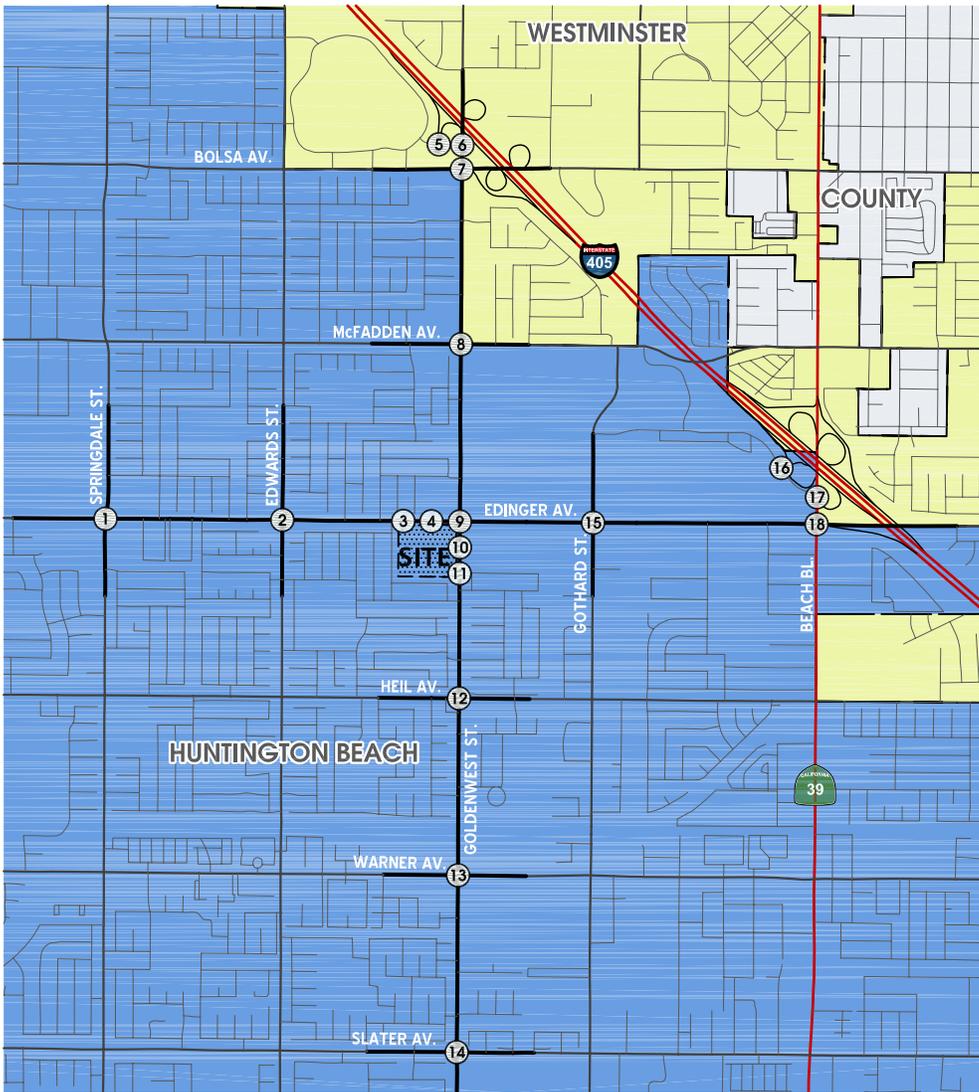
10.0 = VEHICLES PER DAY (1000'S)



EXISTING PLUS PROJECT AM PEAK HOUR INTERSECTION VOLUMES



EXISTING PLUS PROJECT PM PEAK HOUR INTERSECTION VOLUMES



<p>1 Springdale St. & Edinger Av.</p> <table border="1"> <tr> <td>125</td> <td>166</td> </tr> <tr> <td>720</td> <td>507</td> </tr> <tr> <td>165</td> <td>210</td> </tr> <tr> <td>170</td> <td>75</td> </tr> <tr> <td>673</td> <td>452</td> </tr> <tr> <td>79</td> <td>132</td> </tr> </table>	125	166	720	507	165	210	170	75	673	452	79	132	<p>2 Edwards St. & Edinger Av.</p> <table border="1"> <tr> <td>97</td> <td>120</td> </tr> <tr> <td>576</td> <td>781</td> </tr> <tr> <td>120</td> <td>98</td> </tr> <tr> <td>69</td> <td>106</td> </tr> <tr> <td>80</td> <td>415</td> </tr> <tr> <td>95</td> <td>140</td> </tr> <tr> <td>99</td> <td></td> </tr> </table>	97	120	576	781	120	98	69	106	80	415	95	140	99	
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<p>3 Driveway 1 & Edinger Av.</p> <table border="1"> <tr> <td></td> <td>915</td> </tr> <tr> <td></td> <td>101</td> </tr> <tr> <td>928</td> <td>123</td> </tr> <tr> <td>81</td> <td>67</td> </tr> </table>		915		101	928	123	81	67	<p>4 Driveway 2 & Edinger Av.</p> <table border="1"> <tr> <td></td> <td>1004</td> </tr> <tr> <td>954</td> <td>88</td> </tr> <tr> <td>41</td> <td></td> </tr> </table>		1004	954	88	41	
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<p>5 I-405 SB Ramps & Westminster Mall</p> <table border="1"> <tr> <td>85</td> <td>305</td> </tr> <tr> <td>555</td> <td>102</td> </tr> <tr> <td>574</td> <td>13</td> </tr> <tr> <td>105</td> <td></td> </tr> <tr> <td>191</td> <td></td> </tr> <tr> <td>11</td> <td></td> </tr> </table>	85	305	555	102	574	13	105		191		11		<p>6 Goldenwest St. & Westminster Mall</p> <table border="1"> <tr> <td></td> <td>420</td> </tr> <tr> <td></td> <td>876</td> </tr> <tr> <td>232</td> <td></td> </tr> <tr> <td>533</td> <td></td> </tr> <tr> <td></td> <td>2065</td> </tr> </table>		420		876	232		533			2065
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533																							
	2065																						

7 Goldenwest St. & Bolsa Av.

79	556
1210	733
120	459
182	186
88	1327
160	254

8 Goldenwest St. & McFadden Av.

92	243
1345	426
170	203
120	90
466	1298
151	107

9 Goldenwest St. & Edinger Av.

109	244
1098	775
157	156
171	136
723	1123
168	76

10 Goldenwest St. & Driveway 3

93	21
1285	0
35	20
26	98
114	1283
	36

11 Goldenwest St. & Driveway 4

	1415
4	
26	18
9	1408

12 Goldenwest St. & Heil Av.

83	98
1211	435
103	96
99	98
400	1196
105	93

13 Goldenwest St. & Warner Av.

165	185
913	1225
224	166
207	307
890	1058
193	102

14 Goldenwest St. & Slater Av.

75	199
972	567
117	58
57	117
296	1080
99	89

15 Gothard St. & Edinger Av.

126	67
399	880
109	167
106	128
1064	587
102	254

16 I-405 SB Ramps & Center Av.

136	475
831	302
279	
256	

17 Beach Bl. & Center Av.

	2218
777	
197	
890	
	2419

18 Beach Bl. & Edinger Av.

601	186
2181	486
326	185
310	328
924	1772
249	443



TABLE 5-1

INTERSECTION ANALYSIS FOR EXISTING PLUS PROJECT CONDITIONS¹

#	INTERSECTION	CONTROL ²	JURISDICTION	AM PEAK HOUR		PM PEAK HOUR	
				ICU/DELAY	LOS	ICU/DELAY	LOS
1	Springdale Street / Edinger Avenue	TS	Huntington Beach	0.57	A	0.59	A
2	Edwards Street / Edinger Avenue	TS	Huntington Beach	0.52	A	0.53	A
3	Driveway 1 / Edinger Avenue	CSS	Huntington Beach	11.8	B	12.8	B
4	Driveway 2 / Edinger Avenue	CSS	Huntington Beach	8.3	A	8.3	A
5	I-405 Southbound Ramps / Westminster Mall	TS	Westminster	0.21	A	0.33	A
6	Goldenwest Street / Westminster Mall	TS	Westminster	0.48	A	0.61	B
7	Goldenwest Street / Bolsa Avenue	TS	Westminster	0.63	B	0.78	C
8	Goldenwest Street / McFadden Avenue	TS	Huntington Beach	0.66	B	0.73	C
9	Goldenwest Street / Edinger Avenue	TS	Huntington Beach	0.60	B	0.67	B
10	Goldenwest Street / Driveway 3	CSS	Huntington Beach	20.6	C	36.1	E³
11	Goldenwest Street / Driveway 4	CSS	Huntington Beach	9.4	A	13.3	B
12	Goldenwest Street / Heil Avenue	TS	Huntington Beach	0.52	A	0.58	A
13	Goldenwest Street / Warner Avenue	TS	Huntington Beach	0.61	B	0.69	B
14	Goldenwest Street / Slater Avenue	TS	Huntington Beach	0.70	B	0.69	B
15	Gothard Street / Edinger Avenue	TS	Huntington Beach	0.54	A	0.69	B
16	I-405 Southbound Ramps / Center Avenue	TS	Huntington Beach	0.60	A	0.60	A
17	Beach Boulevard / Center Avenue	TS	Huntington Beach	0.52	A	0.67	B
18	Beach Boulevard / Edinger Avenue	TS	Huntington Beach	0.69	B	0.73	C

¹ Volume/Capacity and level of service calculated using the following analysis software: Traffix (Version 8.0 R1, 2008) for signalized and unsignalized intersections. The signalized intersections have been analyzed using ICU methodology. Unsignalized intersections have been analyzed using HCM methodology and level of service is based on average control delay (seconds).

² TS = Traffic Signal; CSS = Cross Street Stop

³ The deficient LOS reported is for the single worst movement at the intersection. However, all other movements including those on the City street system and the private driveway located west of Goldenwest Street are each projected to operate at acceptable levels of service during the peak hour, as shown on the analysis worksheets provided in Appendix "5.1".

* **BOLD** = Unsatisfactory level of service.

Because the City's Circulation Element distinguishes between streets that are part of the street system and streets that provide access to land uses (driveways) and specifically states that the LOS concept applies to the street system, the Circulation Element does not call for the analysis of Driveway 3 using the LOS standard. Also, although the westbound shared left-through movement is deficient in the PM peak hour, this deficiency does not impact Goldenwest Street. In addition, westbound left-turning vehicles at Driveway 3 who do not want to wait for sufficient gaps on Goldenwest Street have the option to instead exit the site at the existing signalized access on Edinger Avenue. Because the deficient LOS at Driveway 3 in the PM peak hour effects land use access only, does not affect the street system, and can be avoided by using the signalized driveway on Edinger Avenue, the LOS deficiency at Driveway 3 during the PM peak hour is less than significant.

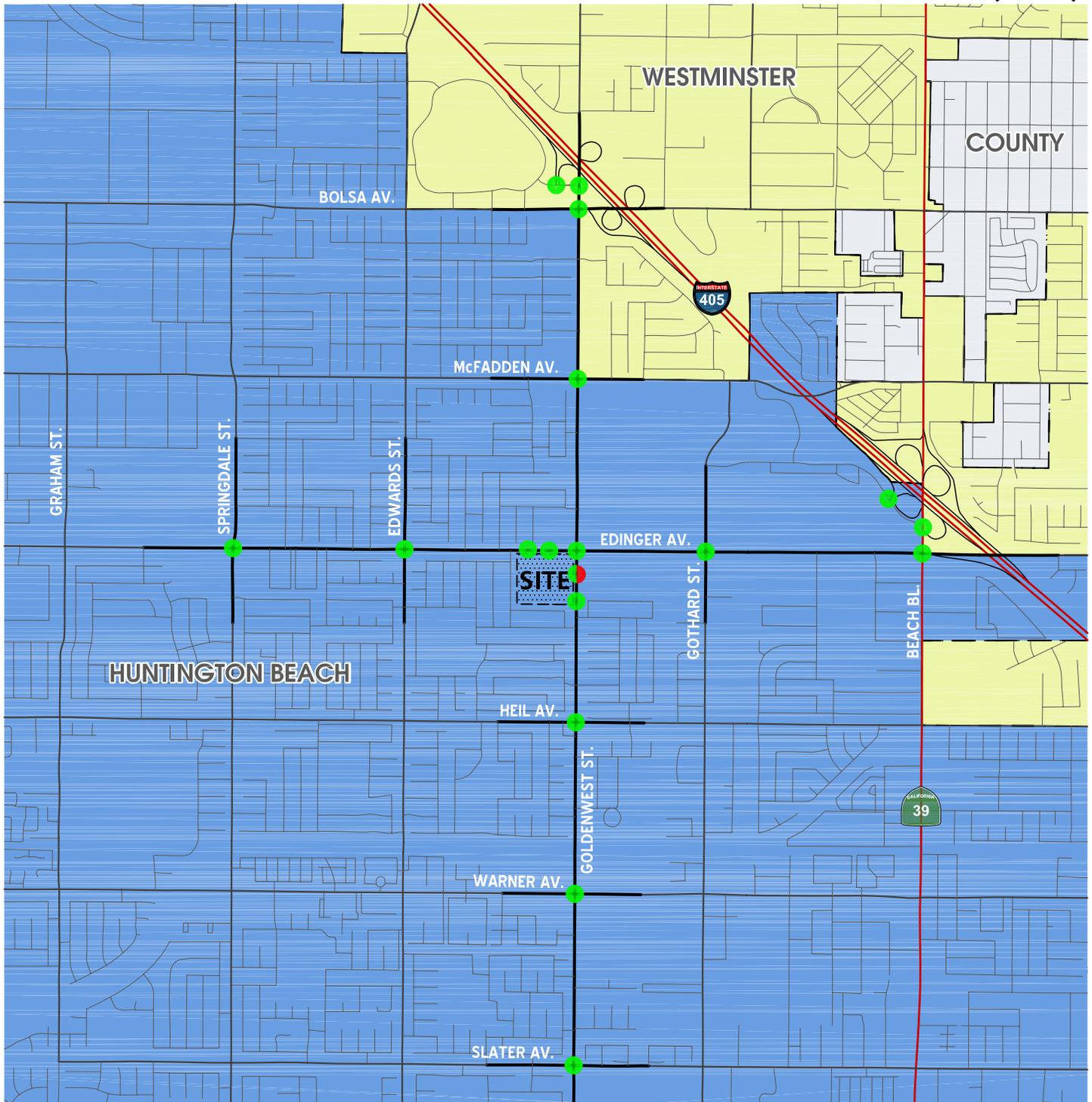
Exhibit 5-4 summarizes study area intersection LOS under AM and PM peak hour for E+P conditions. Worksheets for E+P conditions delay and ICU calculations are provided in Appendix "5.1".

A traffic signal appears to be warranted at the intersection of Goldenwest Street / Driveway 3 based on the planning level daily volume warrant (see Appendix "2.2"). It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic control signal might be warranted. Meeting this threshold does not require that a traffic signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified, such as the proximity of these locations to the signalized intersection of Goldenwest Street / Edinger Avenue.

5.2.2 Caltrans Intersection Analysis

Table 5-2 presents the HCM analysis results for peak hour delays and LOS for Caltrans operated facilities under E+P conditions. Detailed Synchro analysis worksheets are included in Appendix "5.2". The analysis indicates that all Caltrans operated intersections operate at acceptable LOS in both the AM and PM peak hours. LOS letter grades for intersections analyzed based on the ICU methodology may be different than

EXISTING PLUS PROJECT PEAK HOUR INTERSECTION LEVEL OF SERVICE (LOS)



LEGEND:

-  = AM PEAK HOUR ACCEPTABLE LOS
-  = AM PEAK HOUR DEFICIENT LOS
-  = PM PEAK HOUR ACCEPTABLE LOS
-  = PM PEAK HOUR DEFICIENT LOS



TABLE 5-2

EXISTING PLUS PROJECT PEAK HOUR INTERSECTION LOS¹

#	INTERSECTION	JURISDICTION	CONTROL ²	AM PEAK HOUR		PM PEAK HOUR	
				DELAY	LOS	DELAY	LOS
5	I-405 Southbound Ramps / Westminster Mall	Westminster	TS	5.1	A	7.1	A
6	Goldenwest Street / Westminster Mall	Westminster	TS	17.8	B	33.5	C
16	I-405 Southbound Ramps / Center Avenue	Huntington Beach	TS	13.7	B	27.8	C
17	Beach Boulevard / Center Avenue	Huntington Beach	TS	12.4	B	25.4	C
18	Beach Boulevard / Edinger Avenue	Huntington Beach	TS	43.4	D	46.2	D

¹ Delay and level of service calculated using SYNCHRO 7.

² TS = Traffic Signal

the LOS letter grade assigned based on HCM methodology. Factors such as signal timing, pedestrian activity and traffic signal coordination with adjacent intersections can result in increases to average control delay that are not accounted for with the ICU methodology.

5.2.3 Freeway Mainline Operations

E+P mainline directional volumes for the AM and PM peak hours are provided on Exhibit 5-5. The E+P freeway analysis assumes the existing mixed-flow lanes only and do not include any future mainline improvements. Segment analysis results for the weekday AM and PM peak hours are summarized on Table 5-3. As shown on Table 5-3, the segments are anticipated to operate at acceptable service levels. E+P freeway mainline level of service analysis worksheets are provided in Appendix “5.3”.

5.2.4 Freeway Ramp Operations

Ramp merge and diverge operations were evaluated under E+P conditions for the Goldenwest Street and Beach Boulevard interchanges, as presented in Table 5-4. As also shown on Table 5-4, the ramp junctions along the I-405 Freeway are anticipated to operate at acceptable service levels. E+P freeway ramp operations analysis worksheets are provided in Appendix “5.4”.

EXISTING PLUS PROJECT FREEWAY MAINLINE VOLUMES



LEGEND:

165(250) = AM VOLUME (PM VOLUME)



TABLE 5-3

EXISTING PLUS PROJECT CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS

DIRECTION	MAINLINE SEGMENT	VOLUME		TRUCK %		LANES ¹	DENSITY ²		LOS	
		AM	PM	AM	PM		AM	PM	AM	PM
I-405 Southbound	North of Goldenwest Street	5,219	6,877	2%	3%	4	22.0	30.1	C	D
	Between Goldenwest Street Ramps	4,644	6,030	0%	1%	4	19.4	25.4	C	C
	Bolsa Avenue/ Beach Boulevard	5,332	7,246	4%	5%	4	22.7	33.0	C	D
	Between Beach Boulevard Ramps	4,873	6,128	2%	3%	4	20.6	26.2	C	D
	Beach Boulevard / Edinger Avenue	5,631	6,882	5%	8%	5	19.3	24.0	C	C
	South of Beach Boulevard	6,218	7,481	9%	12%	5	21.7	26.8	C	D
I-405 Northbound	North of Goldenwest Street	5,633	6,708	2%	4%	4	23.8	29.3	C	D
	Goldenwest Street / Bolsa Avenue	5,016	5,896	2%	4%	4	21.2	25.2	C	C
	Bolsa Avenue/ Beach Boulevard	6,108	6,804	3%	6%	4	26.1	30.3	D	D
	Between Beach Boulevard Ramps	5,159	5,673	3%	7%	4	21.9	24.6	C	C
	South of Beach Boulevard	6,329	6,509	9%	12%	5	22.1	23.1	C	C

¹ Number of lanes are in the specified direction and is based on existing conditions.

² Density is measured by passenger cars per mile per lane (pc/mi/ln).

TABLE 5-4

I-405 FREEWAY RAMP MERGE/DIVERGE ANALYSIS FOR EXISTING PLUS PROJECT CONDITIONS

FREEWAY	DIRECTION	RAMP OR SEGMENT ¹	LANES ON FREEWAY	AM		PM	
				Density ²	LOS	Density ²	LOS
I-405 Freeway	Southbound	Off-Ramp at Goldenwest Street	4	26.9	C	35.3	E
		On-Ramp at Goldenwest Street	4	23.0	C	32.4	D
		Off-Ramp at Beach Boulevard	4	26.7	C	38.6	E
		On-Ramp at Beach Boulevard - Upstream	4	29.1	D	23.6	C
		On-Ramp at Beach Boulevard - Downstream	4	29.1	D	23.6	C
		On-Ramp at Edinger Avenue	5	22.3	C	25.2	C
I-405 Freeway	Northbound	Loop On-Ramp at Goldenwest Street	4	26.4	C	30.6	D
		Loop Off-Ramp at Bolsa Avenue	4	33.6	D	36.2	E
		On-Ramp at Beach Boulevard	4	26.6	C	30.2	D
		Off-Ramp at Beach Boulevard	4	24.7	C	23.0	C

¹ Merge/Diverge analysis has been conducted twice where near-by ramps exist both upstream and downstream.

² Density is measured by passenger cars per mile per lane (pc/mi/ln).

6.0 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2015) CONDITIONS

This chapter discusses the methods used to develop traffic forecasts for existing plus ambient growth plus project plus cumulative (EAPC) (2015) conditions and the resulting intersection and freeway mainline operations.

6.1 EAPC (2015) Traffic Volume Forecasts

This scenario includes existing (2010) traffic volumes plus five (5) years of ambient growth plus the new traffic generated by pending and approved, but not yet constructed and occupied developments in the area along with project-related traffic. Exhibit 6-1 shows the ADT volumes which can be expected for EAPC (2015) traffic conditions. EAPC (2015) AM and PM peak hour intersection turning movement volumes are shown on Exhibits 6-2 and 6-3, respectively.

6.2 EAPC (2015) Conditions Analysis

6.2.1 Intersection Operations

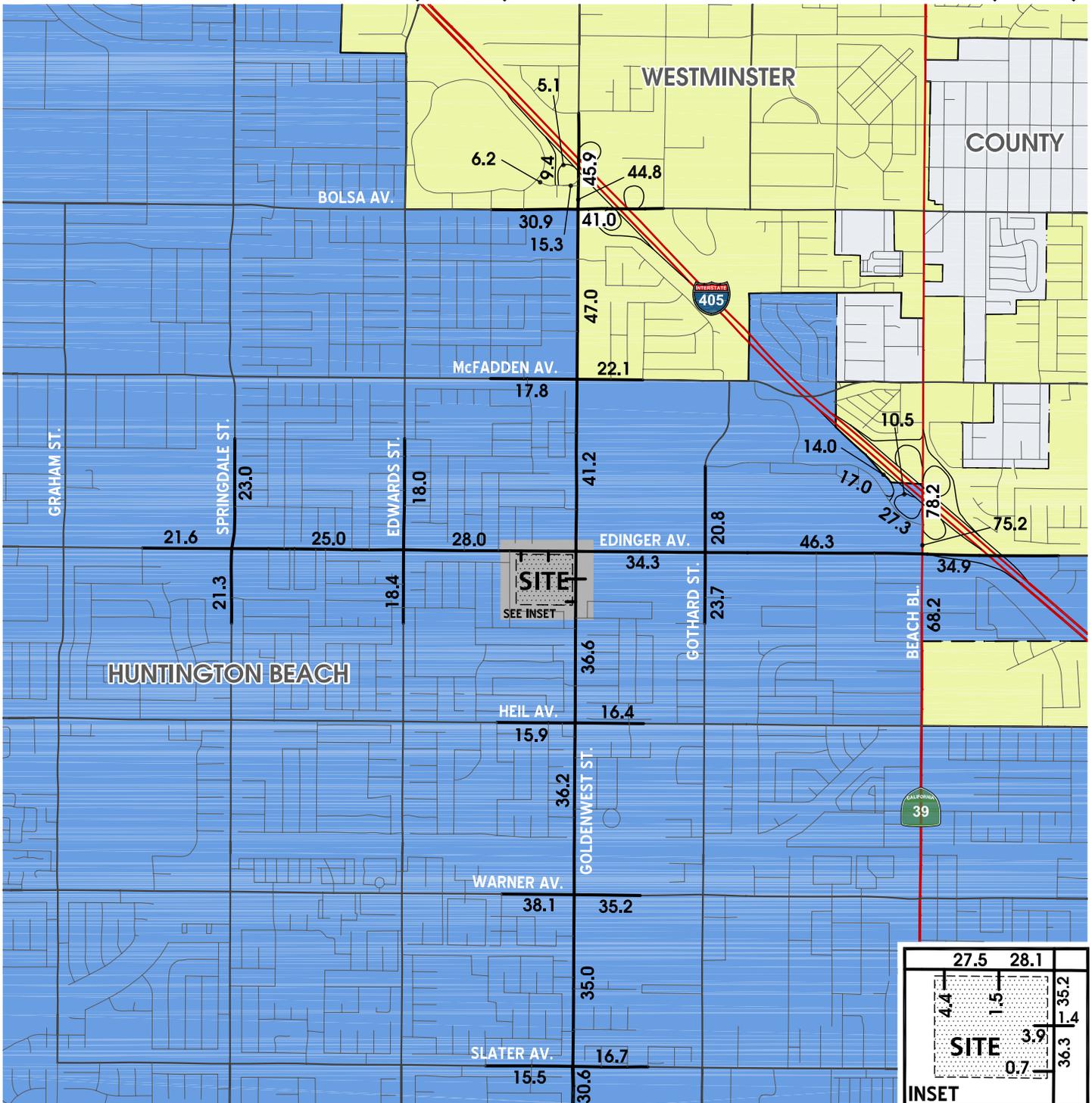
EAPC (2015) intersection delay and ICU volumes along with associated levels of service letter grades are reported in Table 6-1.

For EAPC (2015) traffic conditions, the study area intersections were found to operate at acceptable levels of service during the peak hours, with the exception of the following site access driveway:

- Goldenwest Street at Driveway 3 (LOS "E" – PM peak hour)

For the reasons discussed previously in Section 5.2.1, the deficient westbound left-turn movement at the intersection of Goldenwest Street / Driveway 3 during the PM peak hour is less than significant.

EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2015) AVERAGE DAILY TRAFFIC (ADT)

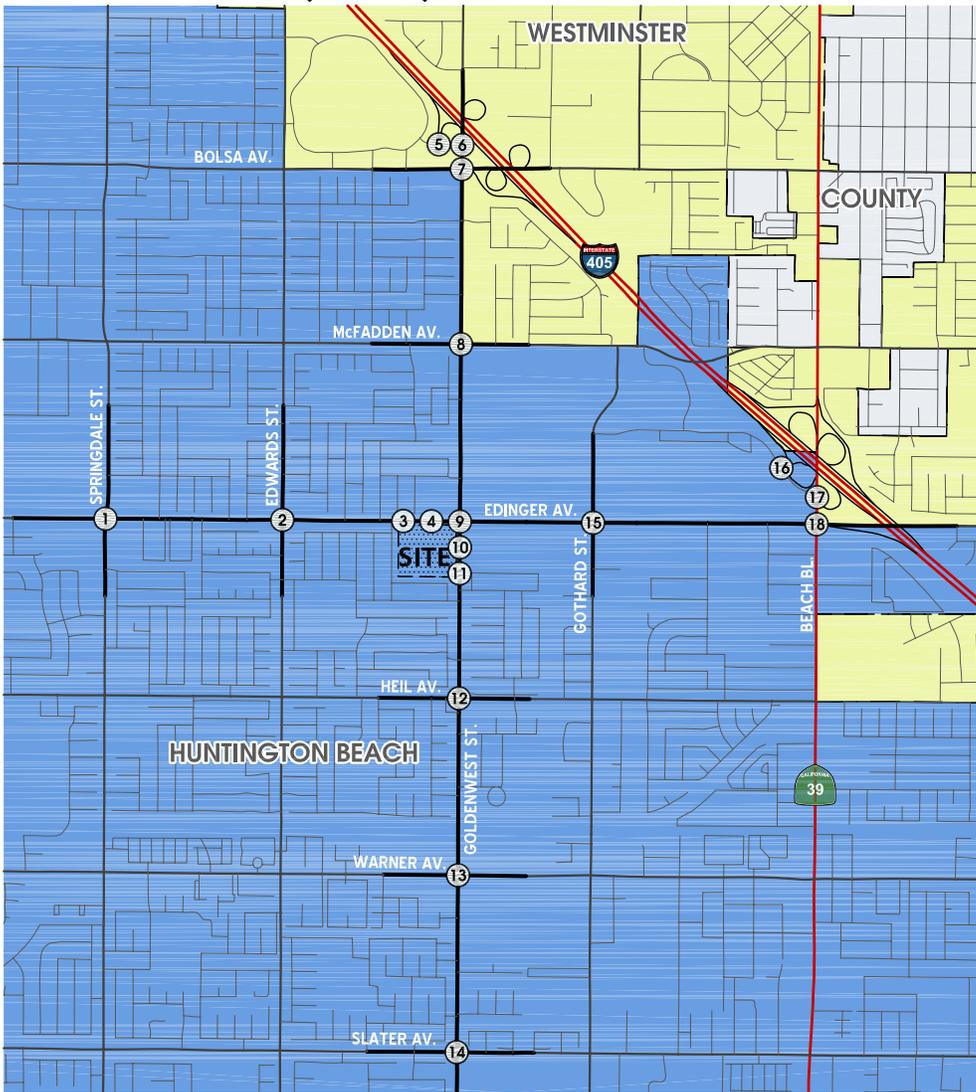


LEGEND:

10.0 = VEHICLES PER DAY (1000'S)



EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2015) AM PEAK HOUR INTERSECTION VOLUMES



<p>1 Springdale St. & Edingger Av.</p> <table border="1"> <tr> <td>88</td> <td>184</td> </tr> <tr> <td>453</td> <td>491</td> </tr> <tr> <td>160</td> <td>192</td> </tr> <tr> <td>93</td> <td>175</td> </tr> <tr> <td>600</td> <td>553</td> </tr> <tr> <td>84</td> <td>192</td> </tr> </table>	88	184	453	491	160	192	93	175	600	553	84	192	<p>2 Edwards St. & Edingger Av.</p> <table border="1"> <tr> <td>108</td> <td>130</td> </tr> <tr> <td>449</td> <td>617</td> </tr> <tr> <td>155</td> <td>86</td> </tr> <tr> <td>83</td> <td>177</td> </tr> <tr> <td>93</td> <td>563</td> </tr> <tr> <td>90</td> <td>144</td> </tr> </table>	108	130	449	617	155	86	83	177	93	563	90	144
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30	61																	
90	437																	
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470																		
1106																		
61																		
437																		
1702																		

7 Goldenwest St. & Bolsa Av.

105	430
1267	1098
171	399
167	97
621	1106
103	214

8 Goldenwest St. & McFadden Av.

78	170
1312	594
162	210
111	91
494	1036
171	82

9 Goldenwest St. & Edingger Av.

72	153
903	624
212	89
162	141
1004	1051
86	97

10 Goldenwest St. & Driveway 3

29	15
1029	6
20	15
7	41
31	1266
0	18

11 Goldenwest St. & Driveway 4

0
1066
5
1
7
1325

12 Goldenwest St. & Heil Av.

54	76
983	433
69	69
66	74
88	1032
72	72

13 Goldenwest St. & Warner Av.

100	124
804	656
275	106
128	230
1427	841
189	147

14 Goldenwest St. & Slater Av.

95	163
847	396
219	35
103	79
693	1012
97	101

15 Gothard St. & Edingger Av.

195	139
495	1130
127	148
142	84
1004	337
100	86

16 I-405 SB Ramps & Center Av.

80	667
431	351
192	
217	

17 Beach Bl. & Center Av.

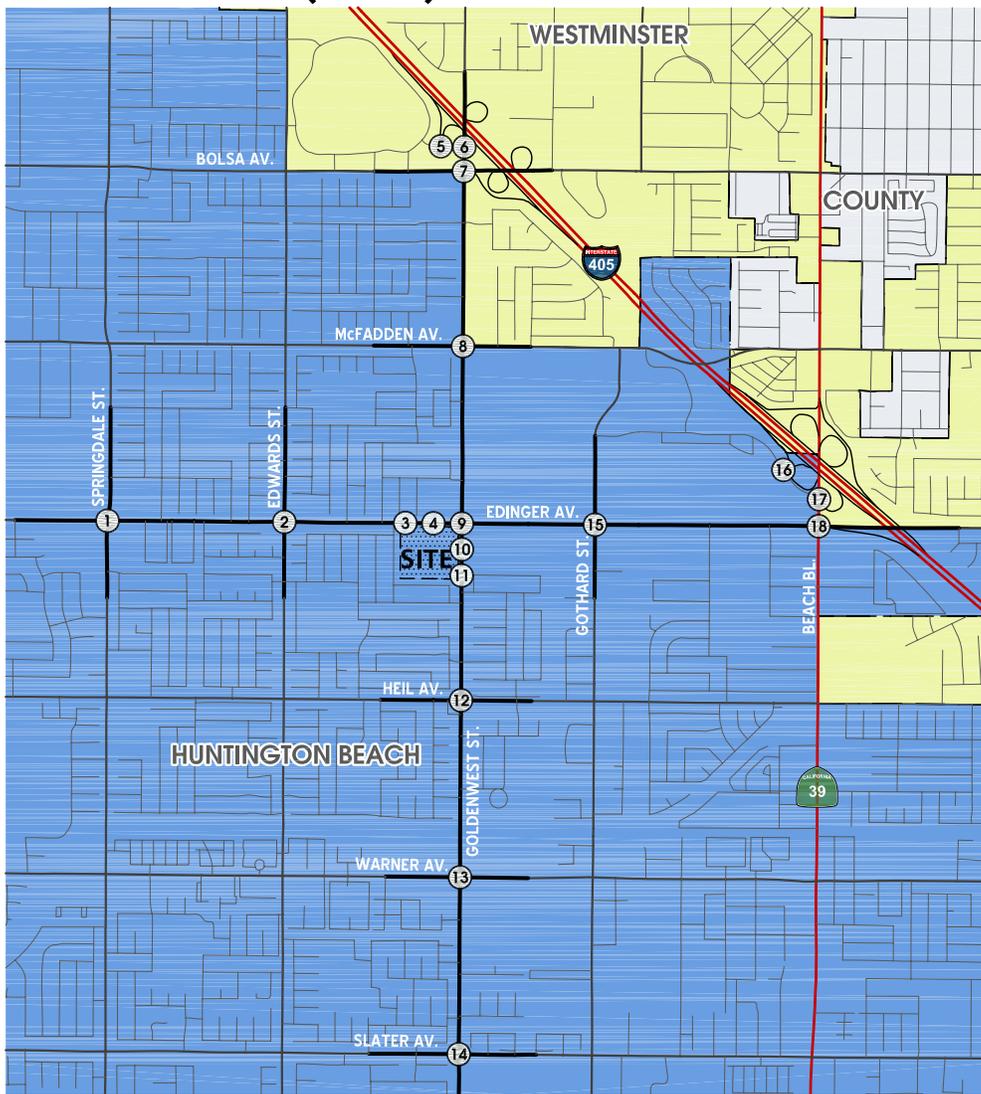
1018
2541
164
483
2262

18 Beach Bl. & Edingger Av.

573	267
2018	627
432	112
317	195
1042	1635
161	286



EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2015) PM PEAK HOUR INTERSECTION VOLUMES



<p>1 Springdale St. & Edinger Av.</p> <table border="1"> <tr> <td>131</td> <td>185</td> </tr> <tr> <td>756</td> <td>568</td> </tr> <tr> <td>187</td> <td>230</td> </tr> <tr> <td>179</td> <td>79</td> </tr> <tr> <td>754</td> <td>475</td> </tr> <tr> <td>83</td> <td>150</td> </tr> </table>	131	185	756	568	187	230	179	79	754	475	83	150	<p>2 Edwards St. & Edinger Av.</p> <table border="1"> <tr> <td>102</td> <td>137</td> </tr> <tr> <td>605</td> <td>880</td> </tr> <tr> <td>140</td> <td>113</td> </tr> <tr> <td>84</td> <td>111</td> </tr> <tr> <td>810</td> <td>436</td> </tr> <tr> <td>104</td> <td>161</td> </tr> </table>	102	137	605	880	140	113	84	111	810	436	104	161
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104	161																								

<p>3 Driveway 1 & Edinger Av.</p> <table border="1"> <tr> <td>1048</td> </tr> <tr> <td>102</td> </tr> <tr> <td>1088</td> </tr> <tr> <td>85</td> </tr> <tr> <td>127</td> </tr> <tr> <td>70</td> </tr> </table>	1048	102	1088	85	127	70	<p>4 Driveway 2 & Edinger Av.</p> <table border="1"> <tr> <td>1138</td> </tr> <tr> <td>41</td> </tr> <tr> <td>88</td> </tr> </table>	1138	41	88
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<p>5 I-405 SB Ramps & Westminster Mall</p> <table border="1"> <tr> <td>89</td> <td>321</td> </tr> <tr> <td>588</td> <td>107</td> </tr> <tr> <td>638</td> <td>14</td> </tr> <tr> <td>110</td> <td></td> </tr> <tr> <td>201</td> <td></td> </tr> <tr> <td>12</td> <td></td> </tr> </table>	89	321	588	107	638	14	110		201		12		<p>6 Goldenwest St. & Westminster Mall</p> <table border="1"> <tr> <td>442</td> </tr> <tr> <td>941</td> </tr> <tr> <td>244</td> </tr> <tr> <td>595</td> </tr> <tr> <td>2207</td> </tr> </table>	442	941	244	595	2207
89	321																	
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201																		
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442																		
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2207																		

7 Goldenwest St. & Bolsa Av.

83	591
1317	771
136	496
191	206
1445	1425
183	277

8 Goldenwest St. & McFadden Av.

97	283
1457	478
219	214
126	98
534	1393
162	114

9 Goldenwest St. & Edinger Av.

112	293
1142	890
216	189
172	143
861	1173
176	117

10 Goldenwest St. & Driveway 3

94	22
1376	0
37	21
26	101
117	1384
	38

11 Goldenwest St. & Driveway 4

4	1510
27	18
9	1513

12 Goldenwest St. & Heil Av.

96	102
1287	470
109	126
116	103
437	1279
110	129

13 Goldenwest St. & Warner Av.

190	194
978	1286
235	174
238	322
935	1137
203	107

14 Goldenwest St. & Slater Av.

89	209
1031	589
123	6
74	123
311	1147
104	93

15 Gothard St. & Edinger Av.

194	78
468	1010
119	238
204	134
1226	696
107	339

16 I-405 SB Ramps & Center Av.

227	502
961	465
361	
376	

17 Beach Bl. & Center Av.

967	2713
2563	
312	
1024	

18 Beach Bl. & Edinger Av.

920	195
2324	594
342	196
482	463
1103	1878
345	475

TABLE 6-1

**INTERSECTION ANALYSIS FOR EXISTING PLUS AMBIENT GROWTH PLUS PROJECT
PLUS CUMULATIVE (2015) CONDITIONS¹**

#	INTERSECTION	CONTROL ²	JURISDICTION	AM PEAK HOUR		PM PEAK HOUR	
				ICU/DELAY	LOS	ICU/DELAY	LOS
1	Springdale Street / Edinger Avenue	TS	Huntington Beach	0.61	B	0.64	B
2	Edwards Street / Edinger Avenue	TS	Huntington Beach	0.55	A	0.57	A
3	Driveway 1 / Edinger Avenue	CSS	Huntington Beach	12.5	B	14.8	B
4	Driveway 2 / Edinger Avenue	CSS	Huntington Beach	8.4	A	8.5	A
5	I-405 Southbound Ramps / Westminster	TS	Westminster	0.22	A	0.36	A
6	Goldenwest Street / Westminster Mall	TS	Westminster	0.50	A	0.66	B
7	Goldenwest Street / Bolsa Avenue	TS	Westminster	0.67	B	0.83	D
8	Goldenwest Street / McFadden Avenue	TS	Huntington Beach	0.69	B	0.81	D
9	Goldenwest Street / Edinger Avenue	TS	Huntington Beach	0.67	B	0.76	C
10	Goldenwest Street / Driveway 3	CSS	Huntington Beach	22.5	C	43.9	E³
11	Goldenwest Street / Driveway 4	CSS	Huntington Beach	9.7	A	14.2	B
12	Goldenwest Street / Heil Avenue	TS	Huntington Beach	0.56	A	0.63	B
13	Goldenwest Street / Warner Avenue	TS	Huntington Beach	0.64	B	0.73	C
14	Goldenwest Street / Slater Avenue	TS	Huntington Beach	0.73	C	0.74	C
15	Gothard Street / Edinger Avenue	TS	Huntington Beach	0.64	B	0.83	D
16	I-405 Southbound Ramps / Center Avenue	TS	Huntington Beach	0.49	A	0.69	B
17	Beach Boulevard / Center Avenue	TS	Huntington Beach	0.57	A	0.75	C
18	Beach Boulevard / Edinger Avenue	TS	Huntington Beach	0.78	C	0.84	D

¹ Volume/Capacity and level of service calculated using the following analysis software:
 Traffix (Version 8.0 R1, 2008) for signalized and unsignalized intersections. The signalized intersections have been analyzed using ICU methodology. Unsignalized intersections have been analyzed using HCM methodology and level of service is based on average control delay (seconds).

² TS = Traffic Signal; CSS = Cross Street Stop

³ The deficient LOS reported is for the single worst movement at the intersection. However, all other movements including those on the City street system and the private driveway located west of Goldenwest Street are each projected to operate at acceptable levels of service during the peak hour, as shown on the analysis worksheets provided in Appendix "6.1".

* **BOLD** = Unsatisfactory level of service.

Exhibit 6-4 summarizes study area intersection LOS under AM and PM peak hour for EAPC (2015) conditions. Worksheets for EAPC (2015) conditions ICU calculations are provided in Appendix “6.1”. There are no additional study area intersections that are anticipated to warrant a traffic signal under EAPC (2015) traffic conditions (Appendix “2.2”).

6.2.2 Caltrans Intersection Analysis

Table 6-2 presents the HCM analysis results for peak hour delays and LOS for Caltrans operated facilities under EAPC (2015) conditions. It should be noted that factors such as signal timing, pedestrian activity and traffic signal coordination with adjacent intersections can result in increases to average control delay that are not accounted for with the ICU methodology. Detailed Synchro analysis worksheets are included in Appendix “6.2”. The analysis indicates that Caltrans operated intersections were found to operate at acceptable levels of service during the peak hours with the exception of the following intersection:

- Beach Boulevard / Edinger Avenue (LOS “E” – PM Peak Hour)

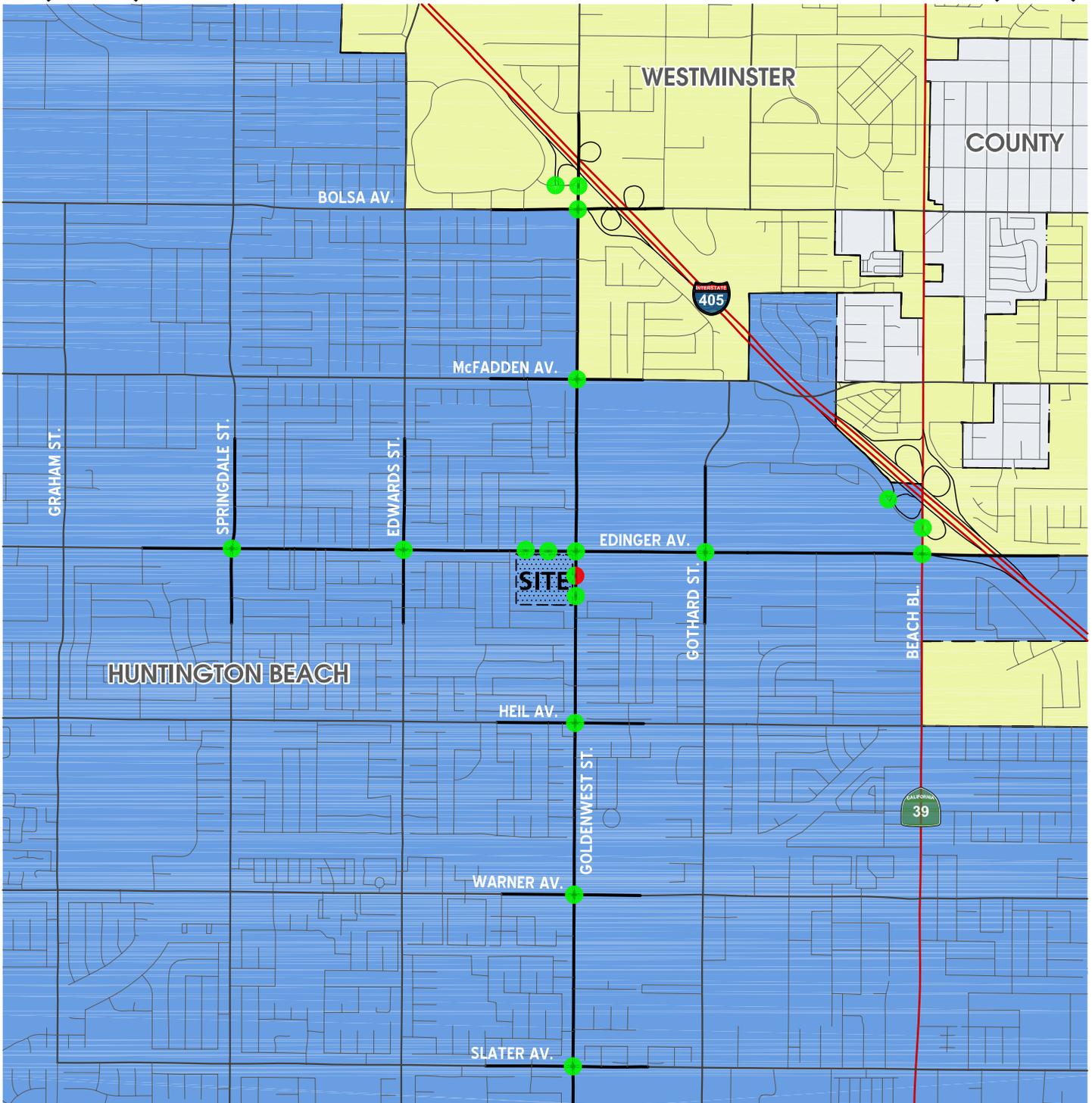
While the intersection of Beach Boulevard / Edinger Avenue receives a LOS “D” letter grade in the PM peak hour based upon the ICU methodology, it receives a deficient LOS “E” letter grade based on the HCM 2000 methodology. This finding is consistent with the findings published in the Specific Plan TIA.

The Specific Plan requires mitigation for this impact. Consistent with the mitigation measures, the resulting HCM delay results are summarized in Table 6-3. The Synchro analysis worksheets, with improvements, are included in Appendix “6.2”.

6.2.3 Freeway Mainline Operations

EAPC (2015) mainline directional volumes for the AM and PM peak hours are provided on Exhibit 6-5. The EAPC (2015) freeway analysis assumes the existing mixed-flow lanes only and do not include any future mainline improvements. Segment analysis results for the weekday AM and PM peak hours are summarized on Table 6-4. As

EXISTING PLUS AMBIENT PLUS PROJECT PLUS CUMULATIVE (2015) PEAK HOUR INTERSECTION LEVEL OF SERVICE (LOS)

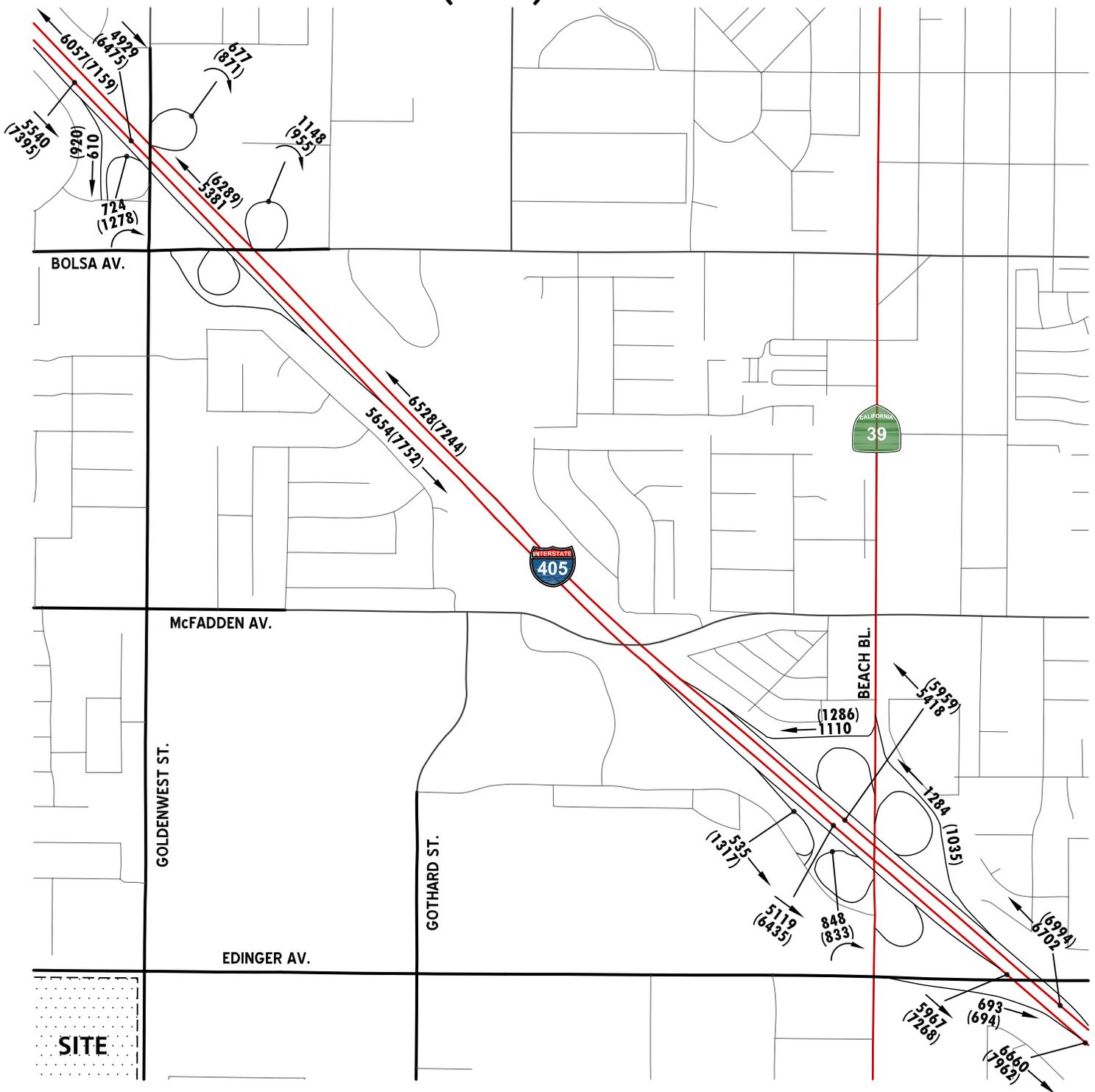


LEGEND:

- = AM PEAK HOUR ACCEPTABLE LOS
- = AM PEAK HOUR DEFICIENT LOS
- = PM PEAK HOUR ACCEPTABLE LOS
- = PM PEAK HOUR DEFICIENT LOS



EXISTING PLUS AMBIENT PLUS PROJECT PLUS CUMULATIVE (2015) FREEWAY MAINLINE VOLUMES



LEGEND:

165(250) = AM VOLUME (PM VOLUME)



TABLE 6-2

EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2015)
PEAK HOUR INTERSECTION LOS¹

#	INTERSECTION	JURISDICTION	CONTROL ²	AM PEAK HOUR		PM PEAK HOUR	
				DELAY	LOS	DELAY	LOS
5	I-405 Southbound Ramps / Westminster Mall	Westminster	TS	5.1	A	7.2	A
6	Goldenwest Street / Westminster Mall	Westminster	TS	17.3	B	45.4	D
16	I-405 Southbound Ramps / Center Avenue	Huntington Beach	TS	16.8	B	35.3	C
17	Beach Boulevard / Center Avenue	Huntington Beach	TS	13.6	B	36.3	D
18	Beach Boulevard / Edinger Avenue	Huntington Beach	TS	48.9	D	68.5	E

¹ Delay and level of service calculated using SYNCHRO 7.

² TS = Traffic Signal

* **BOLD** = Unsatisfactory level of service.

TABLE 6-3

**HCM DELAY SUMMARY WITH PROPOSED IMPROVEMENTS FOR
EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2015) CONDITIONS¹**

#	INTERSECTION	PEAK HOUR	WITHOUT IMPROVEMENTS		WITH IMPROVEMENTS		MITIGATION MEASURES
			DELAY	LOS	DELAY	LOS	
18	Beach Boulevard / Edinger Avenue	PM	68.5	E	52.4	D	Add 4th northbound through lane Add 3rd westbound through lane

TABLE 6-4

**EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2015)
CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS**

DIRECTION	MAINLINE SEGMENT	VOLUME		TRUCK %		LANES ¹	DENSITY ²		LOS	
		AM	PM	AM	PM		AM	PM	AM	PM
I-405 Southbound	North of Goldenwest Street	5,562	7,428	2%	3%	4	23.5	33.8	C	D
	Between Goldenwest Street Ramps	4,948	6,504	0%	1%	4	20.7	27.7	C	D
	Bolsa Avenue/ Beach Boulevard	5,673	7,781	4%	5%	4	24.2	37.4	C	E
	Between Beach Boulevard Ramps	5,119	6,435	2%	3%	4	21.6	27.7	C	D
	Beach Boulevard / Edinger Avenue	5,978	7,298	5%	8%	5	20.5	25.5	C	C
	South of Beach Boulevard	6,673	7,999	8%	11%	5	23.2	28.9	C	D
I-405 Northbound	North of Goldenwest Street	6,071	7,198	2%	4%	4	25.8	32.4	C	D
	Goldenwest Street / Bolsa Avenue	5,393	6,324	2%	4%	4	22.8	27.3	C	D
	Bolsa Avenue/ Beach Boulevard	6,540	7,279	3%	6%	4	28.2	33.5	D	D
	Between Beach Boulevard Ramps	5,418	5,959	3%	7%	4	23.0	25.9	C	C
	South of Beach Boulevard	6,722	7,024	9%	12%	5	23.5	25.0	C	C

¹ Number of lanes are in the specified direction and is based on existing conditions.

² Density is measured by passenger cars per mile per lane (pc/mi/ln).

shown on Table 6-4, the segments are anticipated to operate at acceptable service levels. EAPC (2015) freeway mainline level of service analysis worksheets are provided in Appendix "6.3".

6.2.4 Freeway Ramp Operations

Ramp merge and diverge operations were evaluated under EAPC (2015) conditions for the Goldenwest Street and Beach Boulevard interchanges, as presented in Table 6-5. As also shown on Table 6-5, the ramp junctions along the I-405 Freeway are anticipated to operate at acceptable service levels. EAPC (2015) freeway ramp operations analysis worksheets are provided in Appendix "6.4".

TABLE 6-5

I-405 FREEWAY RAMP MERGE/DIVERGE ANALYSIS FOR EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2015) CONDITIONS

FREEWAY	DIRECTION	RAMP OR SEGMENT ¹	LANES ON FREEWAY	AM		PM	
				Density ²	LOS	Density ²	LOS
I-405 Freeway	Southbound	Off-Ramp at Goldenwest Street	4	28.5	D	38.0	E
		On-Ramp at Goldenwest Street	4	24.3	C	34.6	D
		Off-Ramp at Beach Boulevard	4	28.7	D	42.0	E
		On-Ramp at Beach Boulevard - Upstream	4	30.8	D	27.3	C
		On-Ramp at Beach Boulevard - Downstream	4	30.8	D	27.3	C
		On-Ramp at Edinger Avenue	5	23.5	C	27.2	C
I-405 Freeway	Northbound	Loop On-Ramp at Goldenwest Street	4	28.1	D	32.3	D
		Loop Off-Ramp at Bolsa Avenue	4	35.7	E	38.5	E
		On-Ramp at Beach Boulevard	4	28.9	D	32.7	D
		Off-Ramp at Beach Boulevard	4	26.5	C	25.7	C

¹ Merge/Diverge analysis has been conducted twice where near-by ramps exist both upstream and downstream.

² Density is measured by passenger cars per mile per lane (pc/mi/ln).

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7.0 EXISTING PLUS PROJECT SATURDAY PEAK PERIOD CONDITIONS

This chapter includes a Saturday peak period level of service analysis which has been performed at the project driveways only for E+P conditions. The Saturday peak hour was determined through the assessment of traffic count data collected for Urban Crossroads, Inc. on Saturday October 16th, 2010 from 12:00 P.M. – 4:00 P.M. at the project driveways and the site adjacent intersection. The volumes have been flow conserved and checked for reasonableness. Traffic count worksheets are included in Appendix “3.1”.

7.1 E+P Saturday Peak Period Traffic Volume Forecasts

This scenario includes existing (2010) Saturday peak period traffic volumes plus project traffic. Saturday peak hour intersection counts were conducted in October 2010. Traffic count worksheets are included in Appendix “3.1”. Exhibit 7-1 shows the ADT volumes which can be expected for E+P Saturday traffic conditions. E+P Saturday peak hour intersection turning movement volumes are shown on Exhibit 7-2.

7.2 Trip Generation

Saturday peak hour trip generation rates for the proposed project are shown in Table 7-1 and a summary of project trip generation is shown in Table 7-2. The trip generation rates are based upon data collected by the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 8th Edition, 2008.

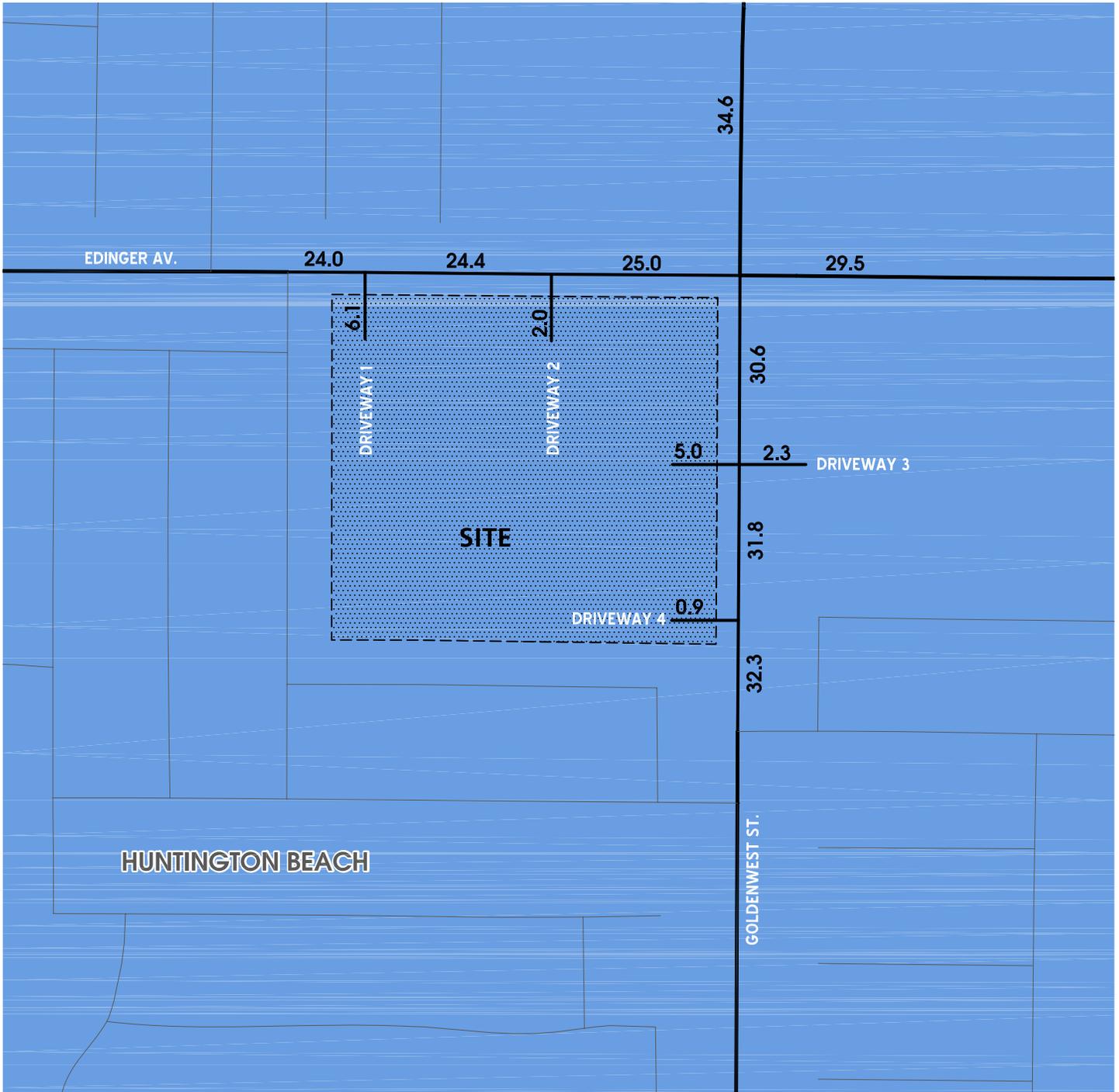
The proposed project is projected to generate a total of approximately 6,462 trip-ends per day on a typical Saturday. The project is anticipated to generate a total of approximately 568 Saturday peak hour trips.

7.3 E+P Intersection Operations

E+P Saturday peak hour intersection levels of service at the project driveways using the existing roadway network is shown in Table 7-3.

EXHIBIT 7-1

EXISTING PLUS PROJECT SATURDAY AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)



TABLE 7-1

PROJECT TRIP GENERATION RATES¹

LAND USE	ITE CODE	UNITS ²	SATURDAY PEAK HOUR			
			IN	OUT	TOTAL	DAILY
Free Standing Discount Superstore	813	TSF	2.82	2.82	5.64	64.07

¹ Source: ITE (Institute of Transportation Engineers) Trip Generation Manual, 8th Edition, 2008.

² TSF = Thousand Square Feet

EXISTING PLUS PROJECT SATURDAY PEAK HOUR INTERSECTION VOLUMES

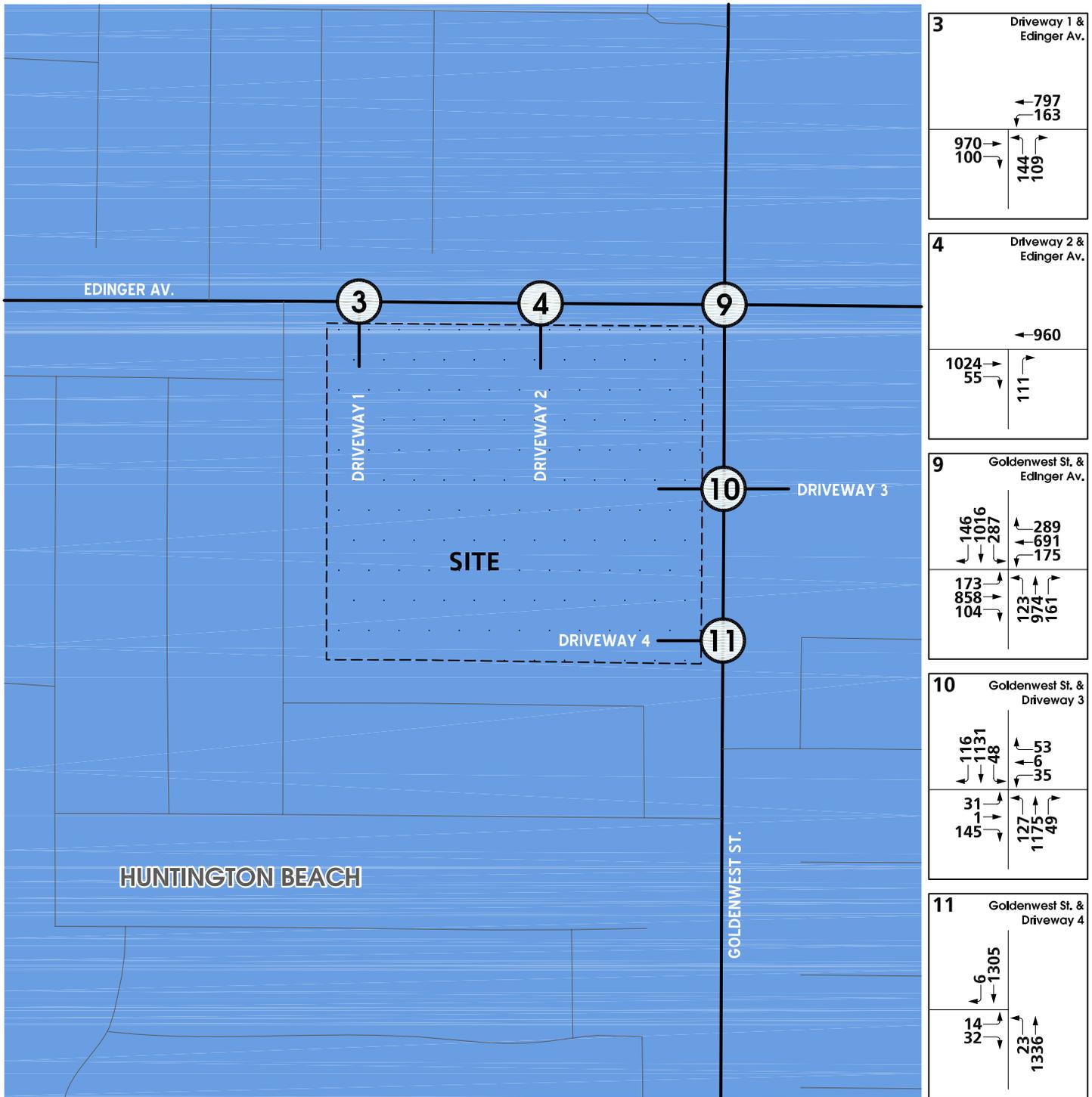


TABLE 7-2

PROJECT TRIP GENERATION SUMMARY

LAND USE	QUANTITY	UNITS ¹	SATURDAY PEAK HOUR			
			IN	OUT	TOTAL	DAILY
Free-Standing Discount Superstore	100.865	TSF	284	284	568	6,462
Total Trips			284	284	568	6,462

¹ TSF = Thousand Square Feet

TABLE 7-3

INTERSECTION ANALYSIS FOR EXISTING PLUS PROJECT CONDITIONS¹

#	INTERSECTION	CONTROL ²	JURISDICTION	SATURDAY PEAK HOUR	
				ICU/DELAY	LOS
3	Driveway 1 / Edinger Avenue	CSS	Huntington Beach	13.9	B
4	Driveway 2 / Edinger Avenue	CSS	Huntington Beach	8.5	A
9	Goldenwest Street / Edinger Avenue	TS	Huntington Beach	0.74	C
10	Goldenwest Street / Driveway 3	CSS	Huntington Beach	44.9	E³
11	Goldenwest Street / Driveway 4	CSS	Huntington Beach	13.4	B

¹ Volume/Capacity and level of service calculated using the following analysis software: Traffic (Version 8.0 R1, 2008) for signalized and unsignalized intersections. The signalized intersections have been analyzed using ICU methodology. Unsignalized intersections have been analyzed using HCM methodology and level of service is based on average control delay (seconds).

² TS = Traffic Signal; CSS = Cross Street Stop

³ The deficient LOS reported is for the single worst movement at the intersection. However, all other movements including those on the City street system and the private driveway located west of Goldenwest Street are each projected to operate at acceptable levels of service during the peak hour, as shown on the analysis worksheets provided in Appendix "7.1".

* **BOLD** = Unsatisfactory level of service.

For E+P Saturday peak hour traffic conditions, the site access driveways and site adjacent intersection Goldenwest Street / Edinger Avenue were found to operate at acceptable levels of service during the peak hours with the exception of the following site access driveway:

- Goldenwest Street at Driveway 3 (LOS “E” – Saturday peak hour)

A detailed discussion of the LOS deficiency at this project driveway was thoroughly discussed in Chapters 5 and 6. As the westbound left turn movement operates at acceptable levels of service during non-peak hours, all other movements at the intersection including the private driveway on the west leg and the City maintained “street system” were found to operate at LOS “C” or better, and an existing traffic signal on Edinger Avenue provides for an alternative egress point during congested peak traffic conditions for the commercial site on the southeast corner of Goldenwest Street / Edinger Avenue. It is for these reasons that the deficient westbound left-turn movement at the intersection of Goldenwest Street / Driveway 3 during the PM peak hour is less than significant.

Worksheets for E+P Saturday peak hour ICU/HCM calculations are provided in Appendix “7.1”.

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8.0 SITE ACCESS, ON-SITE CIRCULATION AND OFF-SITE RECOMMENDATIONS

Chapter 8 summarizes project site access and on-site circulation recommendations.

8.1 Site Access Review and Recommendations

As the proposed project will occupy an existing building within an existing shopping center, each of the site driveways were reviewed to ensure they could adequately accommodate future with project traffic flows.

Driveway 1 / Edinger Avenue – The intersection currently has the following existing geometrics: one northbound left turn lane and one defacto northbound right turn lane with approximately 110-feet of storage, two eastbound through lanes, an eastbound shared through-right turn lane, one westbound left turn lane and three westbound through lanes. Edinger Avenue has a two-way left-turn lane striped median that acts as the left turn lane. There is currently a stop sign for the northbound direction, while traffic flow on Edinger Avenue is uncontrolled. The westbound two-way left-turn lane has approximately 120-feet of storage available before potentially conflicting with the access for the existing church across the street from the project, however, and additional 225-feet of storage is available beyond the driveway into the church before conflicting with the eastbound left turn pocket at the intersection of Goldenwest Street / Edinger Avenue. It is anticipated that the available storage would be sufficient to serve the westbound left turning vehicles into the project site.

Driveway 2 / Edinger Avenue – The intersection currently has the following existing geometrics: one northbound right turn lane with approximately 165-feet of storage, two eastbound through lanes, an eastbound shared through-right turn lane and three westbound through lanes. There is currently a stop sign for the northbound direction, while the traffic flow on Edinger Avenue is uncontrolled.

Goldenwest Street / Edinger Avenue – The intersection is currently signalized has the following existing geometrics: one northbound left turn lane with approximately 128-feet of storage, two northbound through lanes, one northbound shared through-right turn lane, one southbound left turn

lane with approximately 200-feet of storage, two southbound through lanes, one southbound shared through-right turn lane, one eastbound left turn lane with approximately 300-feet of storage, two eastbound through lanes, one eastbound shared through-right turn lane, one westbound left turn lane with approximately 233-feet of storage, two westbound through lanes and one westbound shared through-right turn lane. The storage for the northbound left turn lane is limited by the length of the storage provided for the southbound left turn lane at the intersection of Goldenwest Street / Driveway 3. Any potential queuing for the northbound left turn movement would result in vehicles spilling back into the No. 1 northbound through lane. The southbound left turn lane is provided within the painted median on Goldenwest Street and allows for vehicles to queue within the median for up to approximately 425-feet north of the intersection at which point the left turn meets the northbound left turn pocket into Breeland Drive. Spillback into the southbound through lanes is not anticipated. Similarly, there are no queuing issues anticipated for the eastbound left turn lane. As such, the 300-feet of storage provided is anticipated to adequately serve the 95th percentile queues. The storage for the westbound left turn lane is limited by the length of the storage provided for the eastbound left turn lane at the intersection of Goldenwest College and Edinger Avenue. However, it appears that there is approximately an addition 100-feet of storage available for westbound left turning queued vehicles within the painted transition/median. Spillback of the westbound left turning vehicles into the westbound through lanes is not anticipated. No additional lane geometrics are recommended at this location.

Goldenwest Street / Driveway 3 –The intersection currently has the following existing geometrics: one northbound left turn lane with approximately 100-feet of storage, two northbound through lanes, one northbound shared through-right turn lane, one southbound left turn lane with approximately 100-feet of storage, two southbound through lanes, one southbound shared through-right turn lane, one eastbound shared left-through-right turn lane with approximately 220-feet of storage, a westbound shared through-left turn lane and westbound right turn lane with approximately 137-feet of storage. There is currently a stop sign for the eastbound direction, while the traffic flow on Goldenwest Street is uncontrolled.

Goldenwest Street / Driveway 4 –The intersection currently has the following existing geometrics: one northbound left turn lane with approximately 65-feet of storage, three northbound through lanes, two southbound through lanes, one southbound shared through-right turn lane, one

eastbound shared left-right turn lane with approximately 30-feet of storage. There is currently a stop sign for the eastbound direction, while the traffic flow on Goldenwest Street is uncontrolled.

8.2 Site Adjacent Roadway Recommendations

The proposed project will occupy a vacant building in an existing shopping center. No changes to the footprint of the building are proposed. The project will comply with all applicable provision of the Specific Plan and all associated mitigation measures.

8.3 Off-Site Recommendations

Consistent with the findings in the Specific Plan TIA, the intersection of Beach Boulevard / Edinger Avenue is anticipated to operate at unacceptable levels of service during the PM peak hour under EAPC (2015) traffic conditions. The project will comply with the mitigation measures identified in the Specific Plan. All other off-site intersection findings in this analysis are consistent with the Specific Plan TIA. As such, no additional mitigation measures are recommended.

8.4 On-Site Deliveries

Delivery of frozen food, dairy/deli products and meats/produce typically occur in the early afternoon (1 pm to 4 pm). These products are transported to the site via semi-trucks (WB-67) with a transportation refrigerator unit (TRU). Delivery of general merchandise, dry groceries and McLanes and pick-up of trash, grocery compost and customer returns also typically occur in the early afternoon (1pm to 4pm). These products are transported to the site via semi-trucks (without TRU). Direct service deliveries (DSD) are transported via 2-axle trucks (with the exception of the Coke and Pepsi semi trucks) and typically arrive during the late morning (9 am to 11 am).

Table 8-1 summarizes the average weekly delivery schedule for typical Walmart Supercenters. Truck traffic is limited to deliveries which typically occur during the off-peak hours. As such, truck traffic generated by the Project during the peak hours is anticipated to be nominal and therefore have not been included in this analysis. Exhibit 8-1 illustrates delivery truck access to the site and circulation behind the store.

TABLE 8-1

AVERAGE WEEKLY DELIVERY SCHEDULE FOR WALMART SUPERCENTERS

	Semi-Truck w/ Refrigeration Unit (TRU) ¹		Semi-Truck w/o TRU ²				2-Axle (plus Coke and Pepsi Semis)	Total Average Trucks Per Week
	Frozen/Dairy/Deli	Meats/ Produce	General Merchandise	Dry Groceries	McLanes	Operations ³		
Supercenter	7	7	10	8	4	4	47 (45+2)	Semi-Trucks = 42 2-Axle Trucks = 45

¹ Merchandise is unloaded on pallets and is stored in the walk-in refrigerator; it takes approximately 30 minutes to unload the truck.

TRU semis typically deliver merchandise between 1 pm and 4 pm.

² Merchandise is unloaded on pallets and is stored in the walk-in refrigerator; it takes approximately 30 minutes to unload the truck.

Semi-trucks typically deliver merchandise between 1 pm and 4 pm.

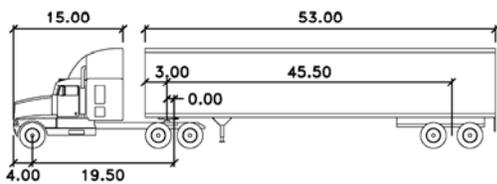
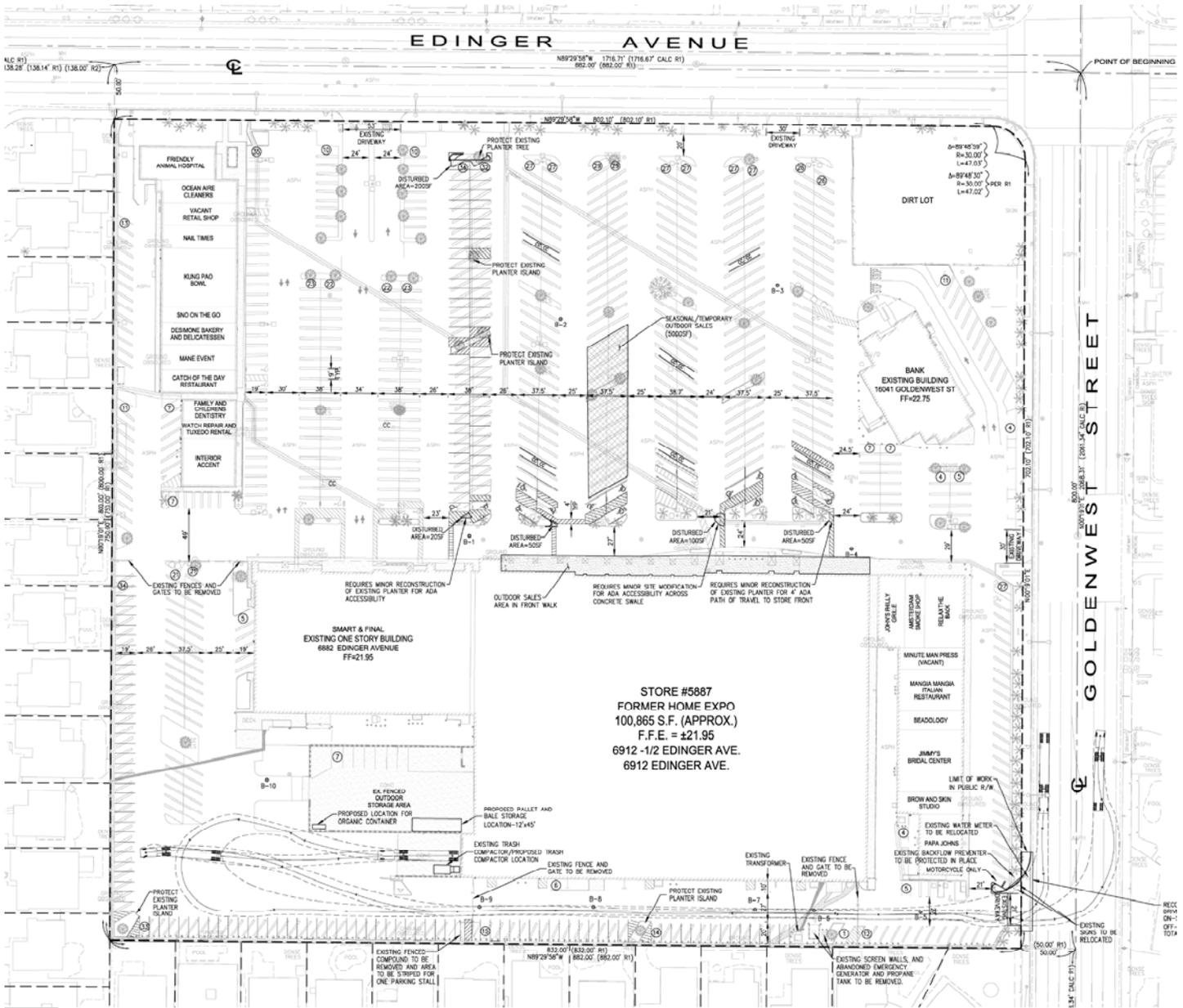
³ Pick-up of contents of trash compactor, cardboard bailer, grocery compost and customer returns typically occur between 10 am and 4 pm.

⁴ DSD = Direct Service Delivery. 2-axle trucks (or Coke/Pepsi semi-trucks) are unloaded using a dolly, merchandise on dolly enters store through DSD door (located inside the outdoor storage area). Trucks/semis typically delivery between 9 am and 11 am and unload only the dolly behind the store. Once unloaded, the driver moves the truck to a parking space behind the store, and then transports the merchandise on the dolly into the store through the DSD door.



EXHIBIT 8-1

DELIVERY TRUCK ACCESS AND CIRCULATION



WB-67	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

NOT TO SCALE