URBAN CROSSROADS

Alhambra Mixed Use Development

TRAFFIC IMPACT ANALYSIS

PREPARED BY:

Aric Evatt, PTP
aevatt@urbanxroads.com
(949) 336-5978

Charlene So, P.E.
cso@urbanxroads.com
(949) 336-5982

NOVEMBER 7, 2016

TABLE OF CONTENTS

APPENDICES

APPENDIX 1.1: SITE ADJACENT QUEUES
APPENDIX 1.2: PARKING SURVEY
APPENDIX 3.1: EXISTING TRAFFIC COUNTS – APRIL 2016
APPENDIX 3.2: EXISTING (2016) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS
APPENDIX 3.3: EXISTING (2016) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS
APPENDIX 4.1: CUMULATIVE DEVELOPMENT RESEARCH
APPENDIX 5.1: E+P CONDITIONS INTERSECTION OPERATIONS ANALYSIS
APPENDIX 5.2:
E+P CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS
APPENDIX 6.1: OPENING YEAR CUMULATIVE (2018) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS
APPENDIX 6.2: OPENING YEAR CUMULATIVE (2018) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS
APPENDIX 6.3: OPENING YEAR CUMULATIVE (2018) WITHOUT PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS
APPENDIX 6.4: OPENING YEAR CUMULATIVE (2018) WITH PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS

This page intentionally left blank

LIST OF EXHIBITS

This page intentionally left blank

LIST OF TABLES

This page intentionally left blank

LIST OF ABBREVIATED TERMS

(1)	Reference
AASHTO	American Association of State Highway and Transportation Officials
ACT	Alhambra Community Transit
ADT	Average Daily Traffic
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
DIF	Development Impact Fee
E+P	Existing Plus Project
FHWA	Federal Highway Administration
HCM	Highway Capacity Manual
ICU	Intersection Capacity Utilization
ITE	Institute of Transportation Engineers
LA	Los Angeles
LOS	Level of Service
MTA	Metropolitan Transportation Authority
MUTCD	Manual on Uniform Traffic Control Devices
N/A	Not Applicable
NCHRP	National Cooperative Highway Research Program
PHF	Peak Hour Factor
Project	Alhambra Mixed Use Development
RSA	Regional Statistical Area
RTPA	Regional Transportation Planning Agency
TIA	Traffic Impact Analysis
v/c	Volume to Capacity
VPH	Vehicles Per Hour

This page intentionally left blank

1 INTRODUCTION

This report presents the results of the traffic impact analysis (TIA) for the proposed Alhambra Mixed Use Development ("Project"), which is located on the southwest corner of Benito Avenue and W. Valley Boulevard in the City of Alhambra, as shown on Exhibit 1-1.

The purpose of this traffic impact analysis is to evaluate the potential impacts to traffic and circulation associated with the development of the proposed Project, and to recommend improvements to mitigate impacts considered significant in comparison to established regulatory thresholds. The study follows the Los Angeles (LA) County Traffic Impact Analysis Report Guidelines. [1]

1.1 PROJECT OVERVIEW

It is our understanding that the Project is to consist of 126 condo/townhome units, 18,000 square feet of medical office use, and 12,490 square feet of general retail use. The site is currently occupied by a skilled nursing facility and Wellness Center. The site is also developed with independent living buildings, however, these buildings have been vacant since 2011. The existing skilled nursing facility and Wellness Center will be retained intact. All other on-site facilities will be demolished. Trips generated by the skilled nursing facility and Wellness Center are reflected in the existing conditions ground counts. Trips generated by new uses proposed under the Project are documented in this TIA. For the purposes of this analysis, it is assumed that the Project will be developed in a single phase with an Opening Year of 2018.

Trips anticipated to be generated by the Project have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) as presented in ITE's most current edition of the Trip Generation manual (9th Edition, 2012). [2] The Project is anticipated to generate a net total of approximately 1,783 trip-ends per day with 113 new AM peak hour trips and 166 PM peak hour trips. The assumptions and methods used to estimate the Proposed Project's trip generation characteristics are discussed in detail in Section 4.1 *Project Trip Generation* of this report.

1.2 ANALYSIS SCENARIOS

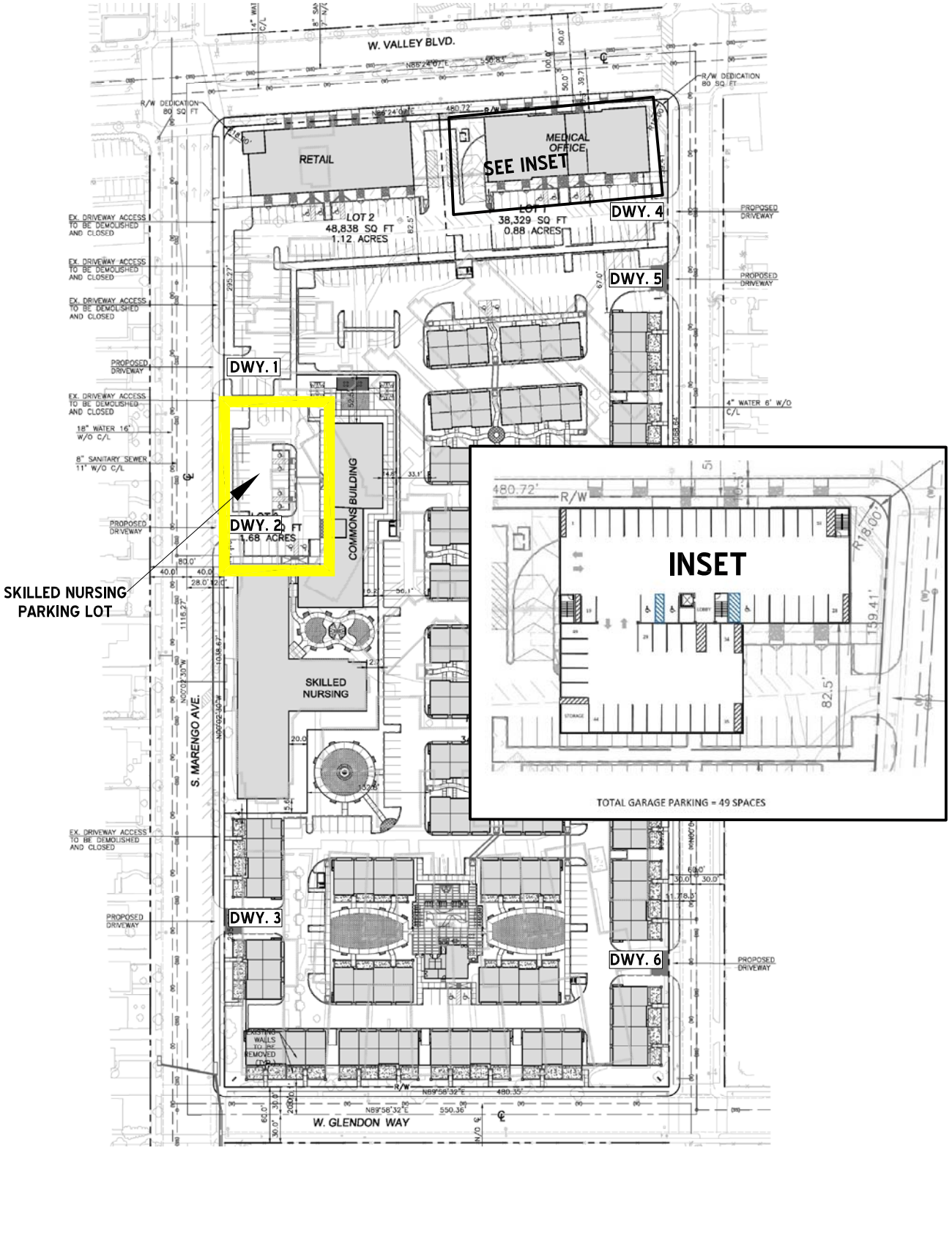
For the purposes of this traffic study, potential impacts to traffic and circulation have been assessed for each of the following scenarios:

- Existing (2016) Conditions
- Existing plus Project Conditions
- Opening Year (2018) Without Project
- Opening Year (2018) With Project

1.2.1 EXISTING (2016) CONDITIONS

Information for Existing conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared.

EXHIBIT 1-1: PRELIMINARY SITE PLAN



1.2.2 EXISTING PLUS PROJECT CONDITIONS

The Existing plus Project (E+P) analysis determines whether or not significant traffic impacts would occur on the existing roadway system with the addition of Project traffic. The E+P analysis is intended to identify the Project-specific impacts associated solely with the development of the proposed Project based on a comparison of the E+P traffic conditions to Existing conditions.

1.2.3 OPENING YEAR CUMULATIVE (2018) CONDITIONS

The Opening Year Cumulative conditions analysis determines the Project's contribution to near-term cumulative traffic impacts based on a comparison of the "With Project" traffic scenario to the "Without Project" traffic scenario. To account for background traffic growth, traffic associated with other known cumulative development projects in conjunction with an ambient growth from Existing (2016) conditions of 2.0 percent (1 percent per year, compounded over 2 years) is included for Opening Year Cumulative traffic conditions, as well as traffic generated by the Project.

The generalized growth factors provided in the 2010 LA County Congestion Management Program (CMP) indicates a growth factor of 1.082 for ten years (2010 to 2020) or 0.79% per year for the Regional Statistical Area (RSA) 25 in which the Project is located. [3] As such, the analysis is consistent with the CMP guidelines.

1.3 STUDY AREA

1.3.1 INTERSECTIONS

The potential impact study area was defined in coordination with the City of Alhambra staff and in conformance with the requirements of the CMP guidelines. Based on these guidelines, the minimum area to be studied shall include any intersections at which the proposed Project will add 50 or more peak hour trips.

To ensure that this TIA complies with the City's TIA preparation requirements, Urban Crossroads, Inc. prepared a Project Traffic Study Scoping Agreement for review and approval by City staff prior to the preparation of this TIA. The Agreement provides an outline of the Project study area, trip generation, trip distribution, and analysis methodology. The City staff reviewed the Agreement and accepted the TIA's proposed study area and methodology as meeting the City's TIA preparation guidelines.

Twelve study area intersection locations shown on Exhibit 1-2, and listed in Table 1-1 were selected for this TIA based on the City of Alhambra's traffic study requirements that require analysis of intersection locations in which a proposed Project is anticipated to contribute 50 or more peak-hour trips. It should be noted that none of the study area intersections are CMP locations.

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
1	Marengo Av. / Valley Bl.	Alhambra
2	Marengo Av. / Dwy. 1 – Future Intersection	Alhambra
3	Marengo Av. / Dwy. 2 – Future Intersection	Alhambra
4	Marengo Av. / Dwy. 3 – Future Intersection	Alhambra
5	Marengo Av. / Glendon Wy.	Alhambra
6	Benito Av. / Valley Bl.	Alhambra
7	Benito Av. / Dwy. 4 – Future Intersection	Alhambra
8	Benito Av. / Dwy. 5 – Future Intersection	Alhambra
9	Benito Av. / Dwy. 6 – Future Intersection	Alhambra
10	Benito Av. / Glendon Wy.	Alhambra
11	Marguerita Av. / Valley Bl.	Alhambra
12	Atlantic Bl. / Valley Bl.	Alhambra

1.4 ANALYSIS FINDINGS

This section provides a summary of the analysis results for Existing, E+P, and Opening Year Cumulative traffic conditions.

1.4.1 EXISTING (2016) CONDITIONS

For Existing traffic conditions, the study area intersections were found to operate at an acceptable level of service (LOS) based on the City's LOS standard, with the exception of the following intersection:

- Atlantic Bl. / Valley Bl. (#12) – LOS E PM peak hour only

1.4.2 PROJECT IMPACTS

The following study area intersection was evaluated to determine if the addition of Project traffic would result in a significant impact for E+P traffic conditions:

Potential Impact 1.1 – Atlantic Bl. / Valley Bl. (#12) – This intersection was found to operate at an unacceptable LOS (LOS E) during the PM peak hour only under Existing traffic conditions. The addition of Project traffic is not anticipated to increase the volume-to-capacity (v/c) beyond the City's significance threshold (e.g., increase to the v/c by less than0.01).

EXHIBIT 1-2: LOCATION MAP

LEGEND:

- ■ = EXISTING INTERSECTION ANALYSIS LOCATION
- = FUTURE INTERSECTION ANALYSIS LOCATION

N

1.4.3 CUMULATIVE IMPACTS

The following study area intersection was evaluated to determine if the addition of Project traffic would result in a cumulatively significant impact based on a comparison of Opening Year Cumulative (2018) Without and With Project traffic conditions:

Potential Cumulative Impact 1.2 – Atlantic Bl. / Valley Bl. (#12) – This intersection was found to operate at an unacceptable LOS (LOS E during the AM peak hour and LOS F during the PM peak hour) during the peak hours under Opening Year Cumulative (2018) Without Project traffic conditions. The addition of Project traffic is anticipated to result in a deficiency during the AM peak hour, however, it not anticipated to increase the v/c beyond the City's significance threshold (e.g., increase to the v/c by less than 0.01).

1.5 RECOMMENDED IMPROVEMENTS

No improvements have been recommended as the Project's impact (direct and cumulative) to the one deficient intersection listed above is less than significant.

1.6 ON-SITE ROADWAY AND SITE ACCESS IMPROVEMENTS

The Project would access Marengo Avenue via three stop controlled driveways, and Benito Avenue via three stop controlled driveways. All driveways are proposed to allow for full access. Regional access to the Project site will be primarily provided by the I-10 Freeway via S. Atlantic Boulevard.

The site adjacent roadway of Marengo Avenue, Valley Boulevard, Glendon Way, as well as Benito Avenue, are currently built to its ultimate number of travel lanes as indicated in the City of Alhambra General Plan Circulation Element.

1.6.1 SITE ACCESS IMPROVEMENTS

The recommended site access driveway improvements for the Project are described below. Exhibit 1-3 illustrates the on-site and site adjacent recommended roadway lane improvements. Construction of on-site and site adjacent improvements shall occur in conjunction with adjacent Project development activity or as needed for Project access purposes. The following intersection improvements consist of improvements to the Project egress/ingress driveways only, while lanes along Marengo Avenue and Benito Avenue remain consistent with existing conditions. The improvements listed below are incorporated in the Project and would be constructed by the Project Applicant prior to issuance of the first Certificate of Occupancy.

The Project will contribute to the safety of its housing residents by assisting the City in funding the repainting of existing crosswalks at adjacent intersections of Marengo Avenue at Glendon Way; Benito Avenue at Glendon Way; Marengo Avenue at Valley Boulevard; and Benito Avenue at Valley Boulevard.

Marengo Avenue / W. Valley Boulevard – Maintain the existing traffic signal control and construct the intersection with the following geometrics:

Northbound Approach: One left turn lane, one through lane, and one right turn lane. Modify the northbound left turn lane to provide 100-feet of storage.

Southbound Approach: One left turn lane and one shared through-right turn lane.

Eastbound Approach: One left turn lane, one through lane, and one shared through-right turn lane.

Westbound Approach: One left turn lane, one through lane, and one shared through-right turn lane.

Marengo Avenue / Driveway 1 – The Project should implement bulb-outs on either side of the driveway entrance to minimize the reduction to the existing on-street angled parking supply. Install a stop control on the westbound approach and construct the intersection with the following geometrics:

Northbound Approach: One shared through-right turn lane.

Southbound Approach: One shared left-through lane.

Eastbound Approach: Not Applicable (N/A)

Westbound Approach: One shared left-right turn lane.

Marengo Avenue / Driveway 2 – The Project should implement bulb-outs on either side of the driveway entrance to minimize the reduction to the existing on-street angled parking supply. Install a stop control on the westbound approach and construct the intersection with the following geometrics:

Northbound Approach: One shared through-right turn lane.

Southbound Approach: One shared left-through lane.

Eastbound Approach: N/A

Westbound Approach: One shared left-right turn lane.

Marengo Avenue / Driveway 3 – The Project should implement bulb-outs on either side of the driveway entrance to minimize the reduction to the existing on-street angled parking supply. Install a stop control on the westbound approach and construct the intersection with the following geometrics:

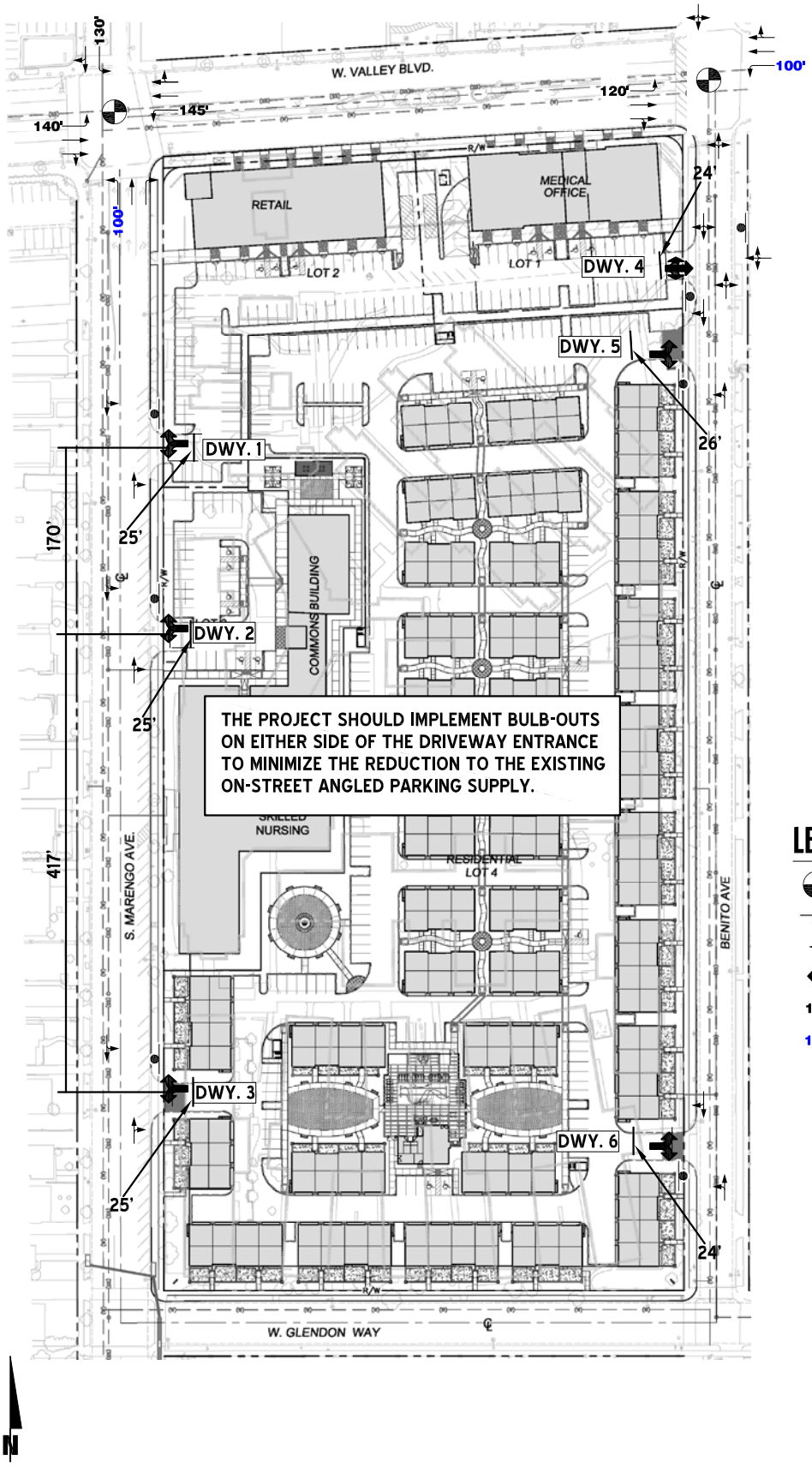
Northbound Approach: One shared through-right turn lane.

Southbound Approach: One shared left-through lane.

Eastbound Approach: N/A

Westbound Approach: One shared left-right turn lane.

EXHIBIT 1-3: SITE ACCESS RECOMMENDATIONS



LEGEND:

- = EXISTING TRAFFIC SIGNAL
- = STOP SIGN
- = EXISTING LANE
- = LANE IMPROVEMENT
- 100' = EXISTING TURN POCKET LENGTH
- 100' = TURN POCKET LENGTH IMPROVEMENT

Benito Avenue / W. Valley Boulevard – Maintain the existing traffic signal control and construct the intersection with the following geometrics:

Northbound Approach: One share left-through-right turn lane.

Southbound Approach: One share left-through-right turn lane.

Eastbound Approach: One left turn lane, one through lane, and one shared through-right turn lane.

Westbound Approach: One left turn lane, one through lane, and one shared through-right turn lane. Modify the westbound left turn lane to provide 100-feet of storage.

Benito Avenue / Driveway 4 – Install a stop control on the eastbound approach and construct the intersection with the following geometrics:

Northbound Approach: One shared left-through-right lane.

Southbound Approach: One shared left-through-right turn lane.

Eastbound Approach: One shared left-through-right turn lane.

Westbound Approach: One shared left-through-right turn lane.

Benito Avenue / Driveway 5 – Install a stop control on the eastbound approach and construct the intersection with the following geometrics:

Northbound Approach: One shared left-through lane.

Southbound Approach: One shared through-right turn lane.

Eastbound Approach: One shared left-right turn lane.

Westbound Approach: N/A

Benito Avenue / Driveway 6 – Install a stop control on the eastbound approach and construct the intersection with the following geometrics:

Northbound Approach: One shared left-through lane.

Southbound Approach: One shared through-right turn lane.

Eastbound Approach: One shared left-right turn lane.

Westbound Approach: N/A

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the Project site.

Sight distance at each project access point shall be designed to comply with standard Caltrans and City of Alhambra sight distance standards; compliance will be determined at the time of preparation of final grading, landscape and street improvement plans.

1.6.2 QUEUING ANALYSIS AT THE PROJECT DRIVEWAYS

A queuing analysis was conducted for the Project driveways along Marengo Avenue and Benito Avenue and the site adjacent intersections for Opening Year Cumulative (2018) With Project traffic conditions to determine the turn pocket lengths necessary to accommodate long-range 95th percentile queues. The analysis was conducted for the weekday AM and weekday PM peak hours. The 95th percentile queues for the intersection can be found in Appendix 1.1.

The traffic modeling and signal timing optimization software package Synchro/SimTraffic has been utilized to assess queues at the Project driveways and site adjacent intersections. Synchro is a macroscopic traffic software program that is based on the signalized and unsignalized intersection capacity analyses as specified in the Highway Capacity Manual (HCM). [4] Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections.

The 95th percentile queue has been utilized for purposes of determining the necessary turn pocket storage lengths and represents the maximum back of queue with 95th percentile traffic volumes during the peak hour. In other words, if traffic were observed for 100 cycles, the 95th percentile queue would be the queue experienced with the 95th busiest cycle (or 5% of the time). The 95th percentile queue is not necessarily ever observed; it is simply based on statistical calculations. However, many jurisdictions utilize the 95th percentile queues for design purposes.

The storage length recommendations for the turning movements at the Project driveways and site adjacent intersections were shown previously on Exhibit 1-3.

1.7 SIGHT DISTANCE ANALYSIS

The intersection stopping sight distance has been evaluated for each Project driveway on Marengo Avenue and Benito Avenue. As defined by the American Association of State Highway Transportation Officials (AASHTO), sight distance is the continuous length of highway ahead visible to the driver.

At unsignalized intersections, intersection sight distance must provide a substantially clear line of sight between the driver of the vehicle waiting on the minor road (driveway) and the driver of an approaching vehicle. For the purposes of this analysis, a 7 ½ second criterion has been applied to the outside travel lanes in either direction to provide the most conservative sight distance. The 7 ½ second criterion allows waiting vehicles to either cross all lanes of through traffic by turning left or cross the near lanes by turning right without requiring through traffic to radically alter their speed.

1.7.1 SIGHT DISTANCE STANDARDS

Marengo Avenue – As Marengo Avenue is an existing roadway; it has been assumed to be designed to meet sight distance requirements. However, the sight distance at the proposed Project driveways along Marengo Avenue have been assessed assuming the "object" in the road is another vehicle.

Benito Avenue – As Benito Avenue is an existing roadway; it has been assumed to be designed to meet sight distance requirements. However, the sight distance at the proposed Project driveways along Benito Avenue have been assessed assuming the "object" in the road is another vehicle.

Adequate visibility for vehicular and pedestrian traffic can be provided at each Project driveway by limiting sight obstructions within the limited use are. Any landscaping/hardscape within the limited use area should not exceed thirty inches in height. The limited use area should be kept clear of any landscaping or any other obstructions that may impede the visibility of the driver, including on-street parking. Minimum horizontal intersection sight distance for the Project driveways is illustrated on Exhibit 1-4.

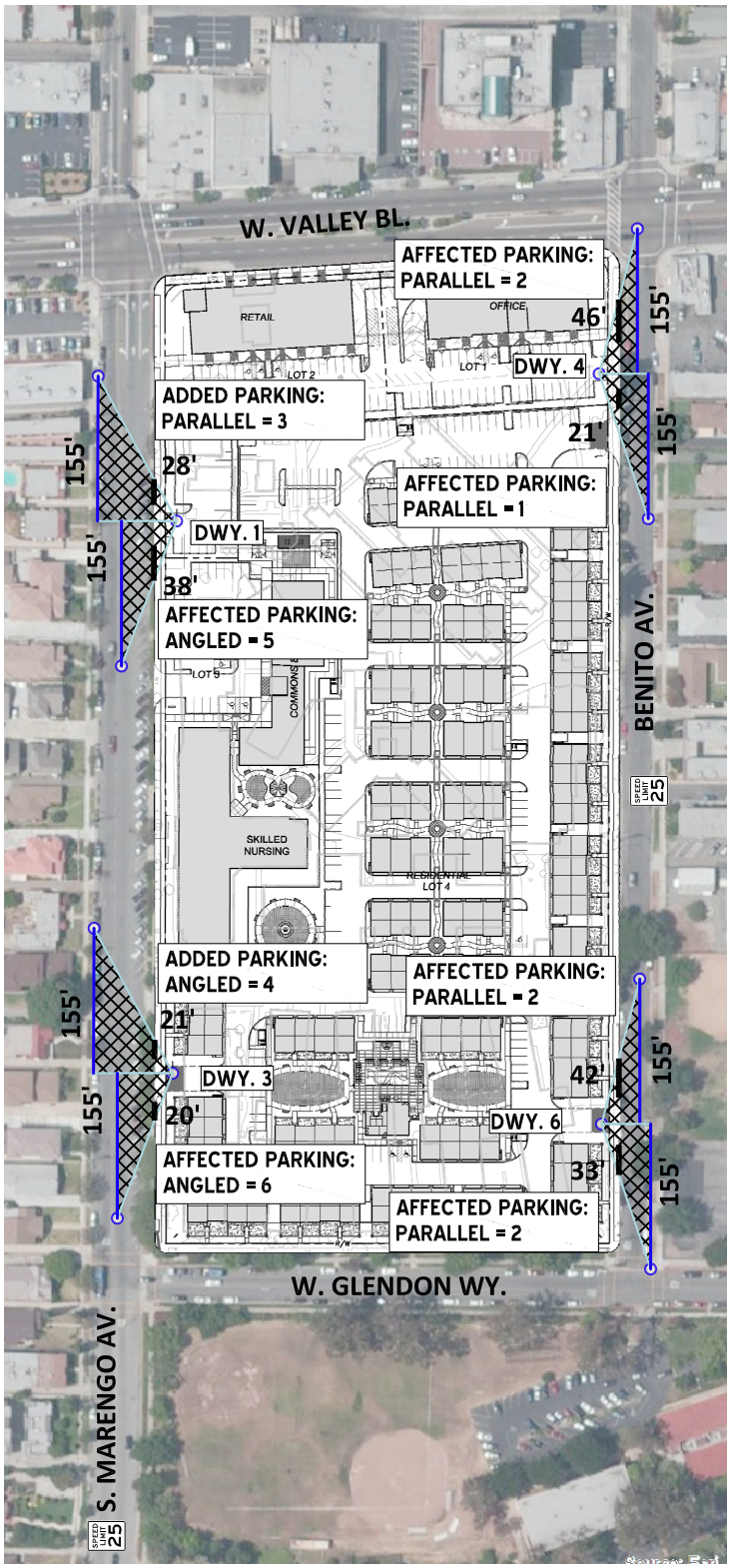
1.7.2 SIGHT DISTANCE AT PROJECT DRIVEWAYS ALONG MARENGO AVENUE

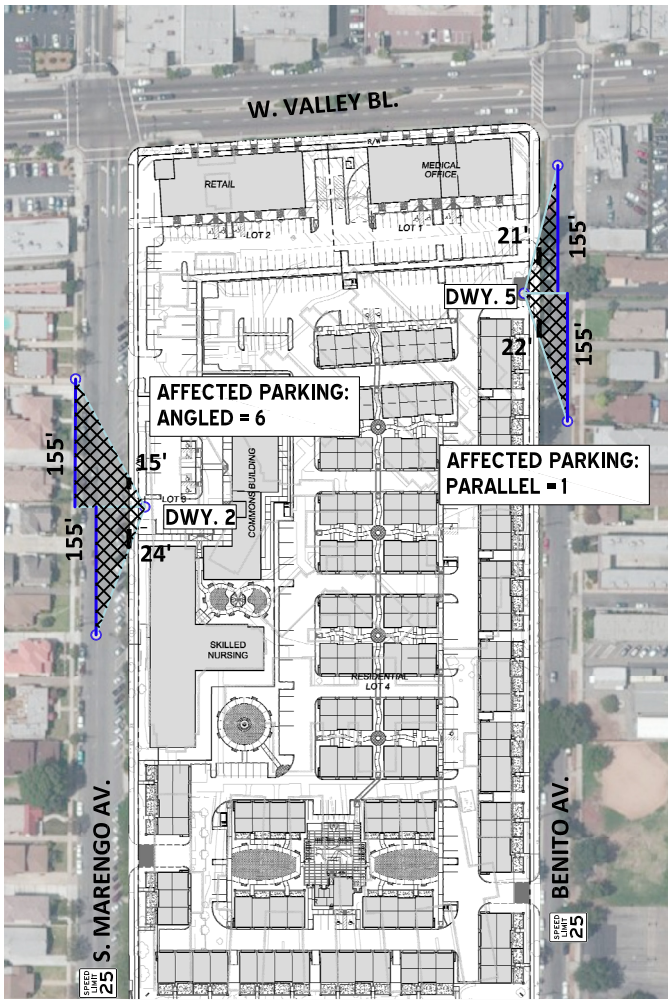
AASHTO states that the minimum intersection stopping sight distance on a roadway with a speed limit of 25 miles per hour is 155-feet. As shown on Exhibit 1-4, it is anticipated that the minimum 155-foot intersection sight distance could be accommodated on Marengo Avenue in both the northbound and southbound directions. However, it is anticipated that up to 17 existing angled parking spaces on the east side would be eliminated in order to accommodate adequate sight distance at the Project driveways. This results in approximately 29 parallel parking spaces along Marengo Avenue on the west side and 41 angled and 2 parallel parking spaces along the east side. Based on the parking survey, it appears that the remaining parking spaces would be sufficient to serve the existing surrounding residents. The proposed Project will provide adequate parking on-site and street parking will not be necessary to accommodate the Project's parking needs.

1.7.3 SIGHT DISTANCE AT PROJECT DRIVEWAYS ALONG BENITO AVENUE

AASHTO states that the minimum intersection stopping sight distance on a roadway with a speed limit of 25 miles per hour is 155-feet. As shown on Exhibit 1-4, it is anticipated that the minimum 155-foot intersection sight distance could be accommodated on Benito Avenue in both the northbound and southbound directions. Eight existing parallel parking spaces on the west side would be eliminated in order to accommodate adequate sight distance at the Project driveways. This results in approximately 25 parking spaces remaining on the west side of the existing 33 spaces, and the east side remains with 28 parallel parking spaces.

EXHIBIT 1-4: SIGHT DISTANCE





LEGEND:

- = MINIMUM SIGHT DISTANCE LINES
- = SIGHT DISTANCE CONSTRAINT
- = LIMITED USE AREA

10078 - sight distance.dwg

1.8 PARKING

1.8.1 PROJECT PARKING

Parking for the residential uses will include both garage and surface parking. Parking for the retail and medical office uses will include both surface and subterranean building parking. The subterranean parking is located under the medical office building with ramp access on the west side of the building. Approximately 49 spaces will be provided in the subterranean parking lot (see Exhibit 1-1). These spaces will primarily be for the medical office use, but may be utilized for the retail use as well. The ramp to the subterranean parking is approximately 24-feet wide and accommodates a 28-foot turning radius to meet the Fire Department's requirements. The parking spaces provided on-site meet the parking requirements to provide sufficient parking for employees, patrons, and residents. For the retail/office portion of the Project, the parking spaces are not specifically designated for employee or patron use.

Parking and circulation for the retail and medical uses will be separated from the residential uses. Table 1-2 provides a summary of the proposed parking and quantifies on-street parking that would remain subsequent to implementation of the Project. The Project would comply with City parking standards. No off-site (street) parking spaces are needed to meet the parking needs for the proposed Project.

TABLE 1-2: PROJECT PARKING SUMMARY

Land Use	Parking Spaces Proposed
Residential Use (both Residents and Guests)	429
Retail Use	63
Medial Office Use	90
Skilled Nursing Use	30
Total Parking Provided On-Site	**612**

1.8.2 EXISTING ON-STREET PARKING

At the City's request, the existing parking has been surveyed for the site adjacent roadways of Marengo Avenue (between Valley Boulevard and Glendon Way), Glendon Way (between Marengo Avenue and Benito Avenue), and Benito Avenue (between Valley Boulevard and Glendon Way). All on-street parking within the study area is available for public use. Parking surveys were conducted on April 6, 2016 during the morning (7-9 AM), mid-day (1:30-3:30 PM), and evening (4-6 PM) peak hours (see Appendix 1.2). Table 1-3 summarizes the existing number of parking spaces available on each of the surveyed streets.

TABLE 1-3: PARKING SUPPLY

Street	Existing Parking Spaces	Remaining Parking Spaces[1]
Marengo Avenue, west side	29 parallel	29 parallel
Marengo Avenue, east side	58 angled parking; 2 parallel	45 angled parking; 5 parallel
Glendon Way, north side	16 parallel	16 parallel
Glendon Way, south side	17 parallel	17 parallel
Benito Avenue, west side	33 parallel	25 parallel
Benito Avenue, east side	28 parallel	28 parallel
Total Existing Spaces	**183 spaces**	**165 spaces**

[1] Parking spaces remaining for public use after redevelopment of the Project. Existing parking spaces would be affected due to parking restrictions within the limited use areas (see Exhibit 1-5). Additional parking spaces also accounted for in front of existing driveways that will be eliminated.

The highest on-street parking demand was between 2:30 to 2:45 PM and 5:30 to 5:45 PM with 102 parking spaces occupied. Of the vehicles that arrived during these periods, their destinations were also observed (see Appendix 1.2). The majority of those parking headed towards the existing uses on-site, with the next highest headed towards existing residences along Marengo Avenue and Benito Avenue. There are 2 existing schools in proximate to the proposed Project (Marguerita Elementary School and Ramona Convent Secondary School). However, very few people parking on-street were headed towards one of the existing schools. The majority of school drop-off and pick-ups for these schools occurred on other streets (Marguerita Avenue for the Marguerita Elementary School, and Ramona Road for the Ramona Convent Secondary School). Table 1-4 shows the available parking spaces, the number of occupied parking spaces, and the resulting existing occupancy rate.

TABLE 1-4: EXISTING OCCUPANCY RATE

Street	Available Parking	Occupied Parking Spaces[1]	Occupancy Rate
Marengo Avenue, west side	29 parallel	18 spaces	0.62
Marengo Avenue, east side	58 angled parking; 2 parallel	42 spaces	0.70
Glendon Way, north side	16 parallel	1 space	0.06
Glendon Way, south side	17 parallel	4 spaces	0.24
Benito Avenue, west side	33 parallel	17 spaces	0.52
Benito Avenue, east side	28 parallel	14 spaces	0.50
Total Existing Spaces	**183 spaces**	**96 spaces**	**0.53**

[1] Parking spaces occupied at 1:30 PM (highest parking count) less those associated with the Project, as these will be parked on-site with the proposed redevelopment.

Parking demands of the Project would be accommodated within the Project boundaries. The Project would not add to or increase on-street parking demands.

2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are generally consistent with LA County traffic study guidelines. [1]

2.1 LEVEL OF SERVICE

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging 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.

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. LOS analysis was conducted to determine existing traffic conditions using the Intersection Capacity Utilization (ICU) methodology for signalized study intersections in the City of Alhambra. The 2010 Highway Capacity Manual (HCM) [4] methodology was used to determine LOS's for unsignalized intersections in those cities. In addition, in accordance with California Department of Transportation (Caltrans) guidelines, 2010 HCM methodology was used for all State study intersections.

The HCM 2010 methodology expresses the LOS at an intersection in terms of average control delay time for the various intersection approaches. The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The City of Alhambra requires signalized intersections to be evaluated through ICU analysis which compares the peak hour traffic volumes to intersection capacity. Lane capacities of 1,600 vehicles per hour of green time have been assumed for the ICU calculations. 0.10 of v/c assumed representing 10 seconds of delay for the yellow and all-red signal indication and inherent vehicle delay between cycles with an assumed signal cycle of 100 seconds. The ICU LOS definitions based on V/C ratio are presented in Table 2-1.

TABLE 2-1 INTERSECTION CAPACITY UTILIZATION (ICU) LOS DEFINITIONS

Level of Service	Critical Volume to Capacity Ratio
A	0.00 - 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

Source: 2010 LA County CMP

Signalized study area intersections have been evaluated using the software package Traffix (Version 8.0 R1, 2008).

The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15 minute volumes. Common practice for LOS analysis is to use a peak 15-mintue rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g. PHF = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for all analysis scenarios for HCM intersections. ICU intersections have assumed a PHF of 1.00 per the ICU methodology. Per Chapter 4 of the HCM 2010, PHF values over 0.95 often are indicative of high traffic volumes with capacity constraints on peak hour flows while lower PHF values are indicative of greater variability of flow during the peak hour. [4] As such, new intersections have been conservatively evaluated with a PHF of 0.92.

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Alhambra requires the operations of unsignalized intersections be evaluated using the methodology described in Chapter 19, Chapter 20, Chapter 32 of the HCM 2010. [4] The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay Per Vehicle (Seconds)	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Little or no delays.	0 to 10.00	A	F
Short traffic delays.	10.01 to 15.00	B	F
Average traffic delays.	15.01 to 25.00	C	F
Long traffic delays.	25.01 to 35.00	D	F
Very long traffic delays.	35.01 to 50.00	E	F
Extreme traffic delays with	> 50.00	F	F

Source: HCM 2010

At two-way or side-street stop-controlled intersections, The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole. For all-way stop controlled intersections, LOS is based solely on control delay for assessment of LOS at the approach and intersection levels.

Unsignalized intersections within the study area have been analyzed using the traffic modeling software package Synchro (Version 9 Build 904).

2.3 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TIA uses the signal warrant criteria presented in the latest edition of the Federal Highway Administration's (FHWA) *Manual on Uniform Traffic Control Devices (MUTCD)*, as amended by *the MUTCD 2014 California Supplement*, for all study area intersections. [5]

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. Both the FHWA's *MUTCD* and the *MUTCD 2014 California Supplement* indicate that the installation of a traffic signal should be considered if one or more of the signal warrants are met. [5] Specifically, this TIA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for Existing traffic conditions. Warrant 3 criteria are basically identical for both the FHWA's *MUTCD* and the *MUTCD 2014 California Supplement*. Warrant 3 is appropriate to use for this TIA because it 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). 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.

Future unsignalized intersections have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets. Traffic signal warrant analyses were performed for the following unsignalized study area intersection (see Table 2-3):

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
2	Marengo Av. / Dwy. 1	Alhambra
3	Marengo Av. / Dwy. 2	Alhambra
4	Marengo Av. / Dwy. 3	Alhambra
5	Marengo Av. / Glendon Wy.	Alhambra
7	Benito Av. / Dwy. 4	Alhambra
8	Benito Av. / Dwy. 5	Alhambra
9	Benito Av. / Dwy. 6	Alhambra
10	Benito Av. / Glendon Wy.	Alhambra

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. It should also be noted that signal warrants do not necessarily correlate with LOS. An intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

2.4 LOS CRITERIA

The definition of an intersection deficiency has been obtained from each of the applicable surrounding jurisdictions.

2.4.1 CITY OF ALHAMBRA

The City of Alhambra General Plan requires that LOS D or better be maintained on Arterial Streets with certain exceptions. As such, intersections operating at LOS E or F will be considered deficient.

2.4.2 LA COUNTY CMP

The CMP definition of deficiency is based on maintaining a level of service standard of LOS E or better. There are no CMP facilities identified by MTA in their "2010 Congestion Management Program" within the study area.

2.5 THRESHOLDS OF SIGNIFICANCE

To determine whether the addition of project-related traffic at a study intersection would result in a significant project-related impact, the following thresholds of significance consistent with Los Angeles County Traffic Study Guidelines will be utilized:

- A significant project-related impact occurs at a study intersection if the addition of project-generated trips reduces the peak hour level of service of the study intersection to change from acceptable "pre-project" operation (LOS A, B, C or D) to deficient operation (LOS E or F); and

- A significant project-related impact occurs at a study intersection if the addition of project-generated trips changes the pre-project v/c by the values shown below (see Table 2-4).

TABLE 2-4: CITY OF ALHAMBRA INTERSECTION LEVEL OF SERVICE STANDARD

Pre-Project LOS	Pre-Project v/c	Project Increase in v/c
C	0.71 to 0.80	0.04 or more
D	0.81 to 0.90	0.02 or more
E or F	0.91 or more	0.01 or more

This page intentionally left blank

3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the City of Alhambra General Plan Circulation Network, and a review of existing peak hour intersection operations and traffic signal warrants.

3.1 EXISTING CIRCULATION NETWORK

The study area includes a total of 12 existing and future intersections as shown previously on Exhibit 1-2. Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 CITY OF ALHAMBRA GENERAL PLAN

The City of Alhambra is currently updating their General Plan. The City's website indicates the final draft of the General Plan is anticipated to be published in the Fall of 2016.

3.3 TRANSIT SERVICE

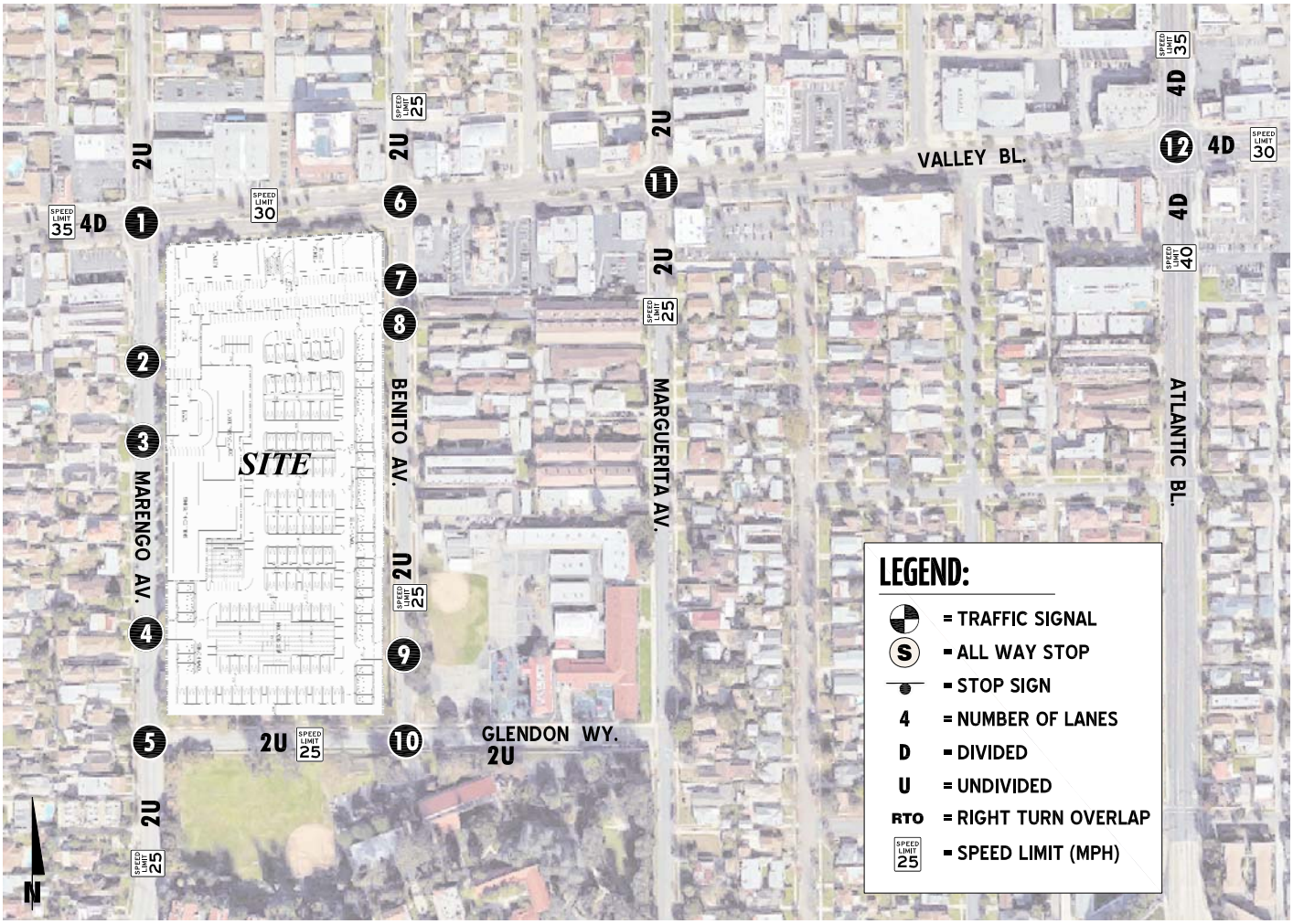
The study area is currently served by the Alhambra Community Transit (ACT), Montebello Transit, Metrolink, and the Los Angeles County Metropolitan Transportation Authority (MTA) bus lines. The existing transit routes serving the City of Alhambra is shown on Exhibit 3-2. The ACT Green line runs along Valley Boulevard through the study area. Metro Bus Lines also operate along Valley Boulevard and Metro Rapid Bus Lines run along Atlantic Boulevard.

3.4 BICYCLE & PEDESTRIAN FACILITIES

Class II bikeways, also referred to as "bike lanes," are intended to delineate the right-of-way assigned to bicyclists and motorists, and to provide for more predictable movements of each. Bike lane signs and pavement marking help define the bikeway. A more important reason for bike lanes is to better accommodate bicyclists through corridors where insufficient room exists for safe bicycling on existing streets. Class III bikeways are signed as bike routes, but are not typically striped and share the road with vehicles. As shown on Exhibit 3-3, there are proposed Class III bike lanes on Marengo Avenue north of Valley Boulevard, Class III bike lanes on Marguerita Avenue, and Class II bike lanes south of Valley Boulevard.

Field observations conducted in April 2016 and indicate pedestrian and bicycle activity within the study area. Existing pedestrian facilities (sidewalk and crosswalk) and bus stop locations within the study area are shown on Exhibit 3-4.

EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS



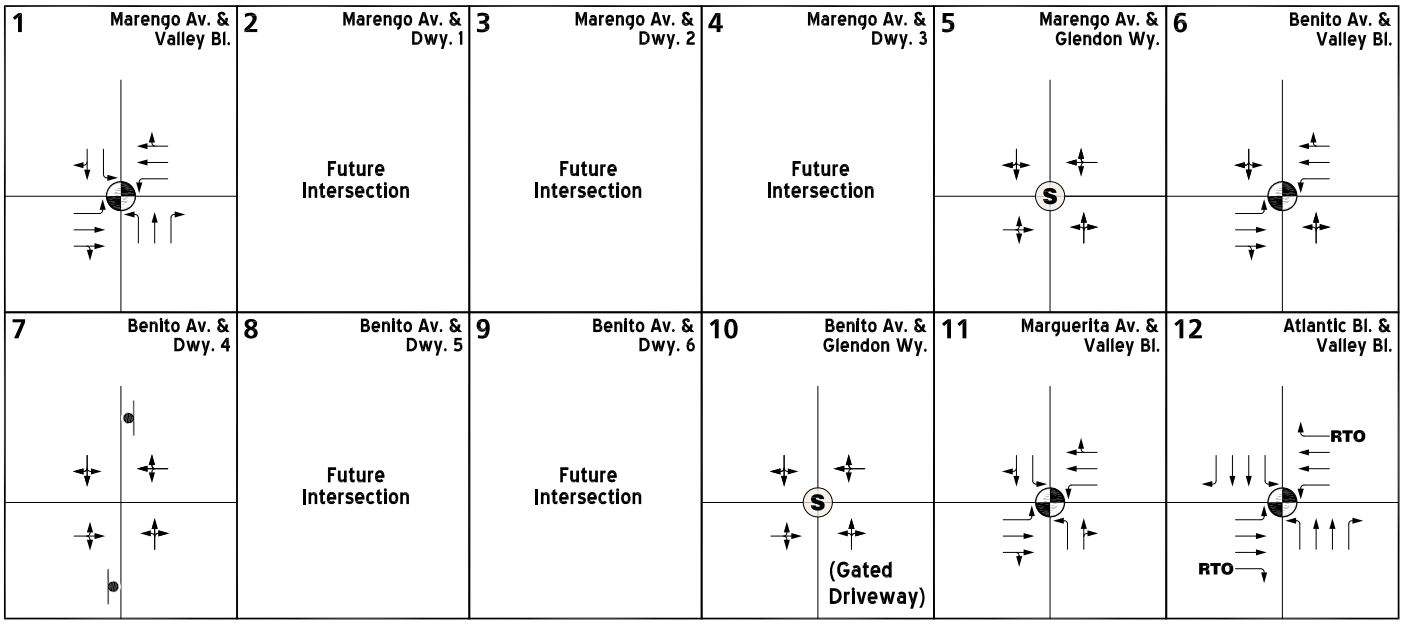
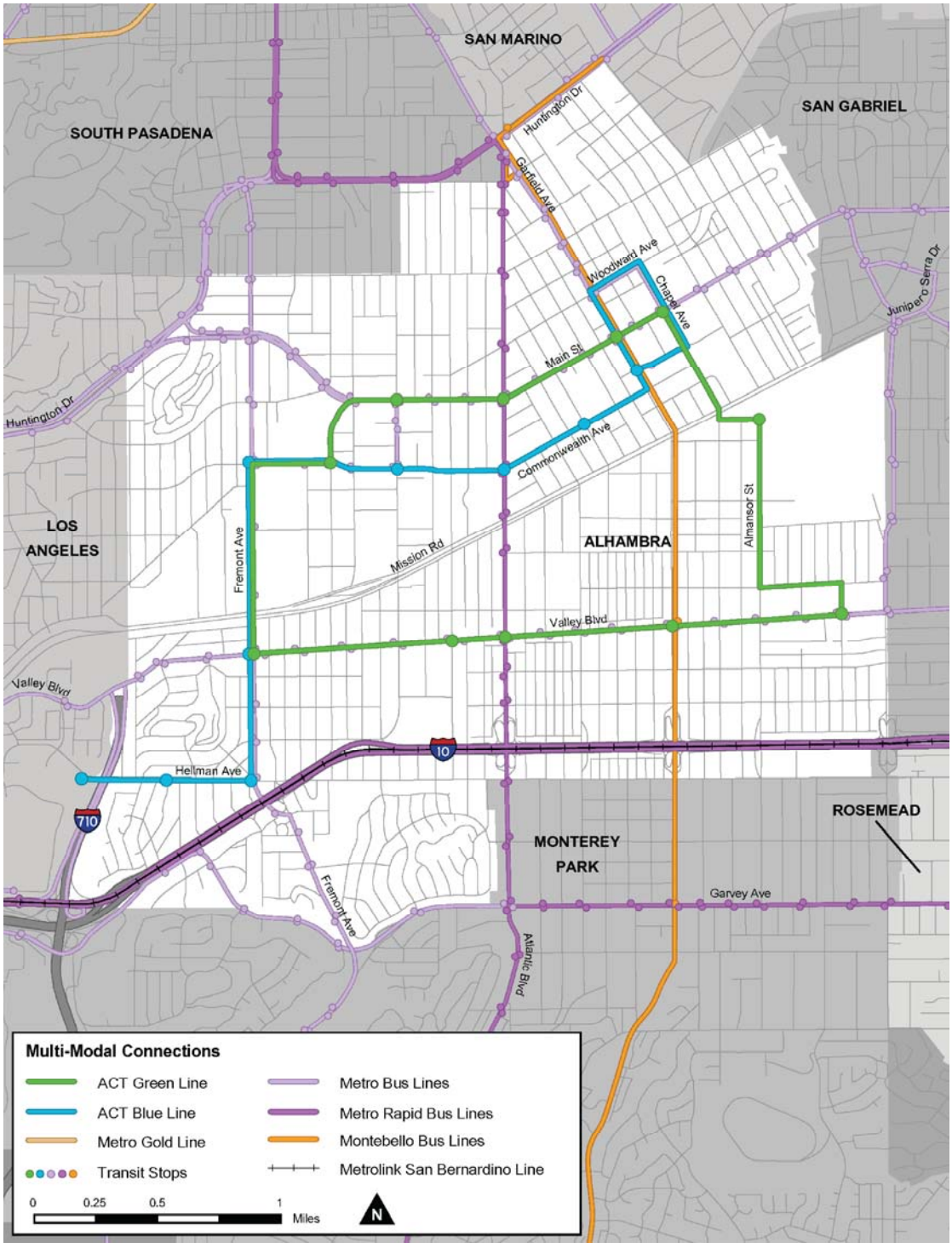
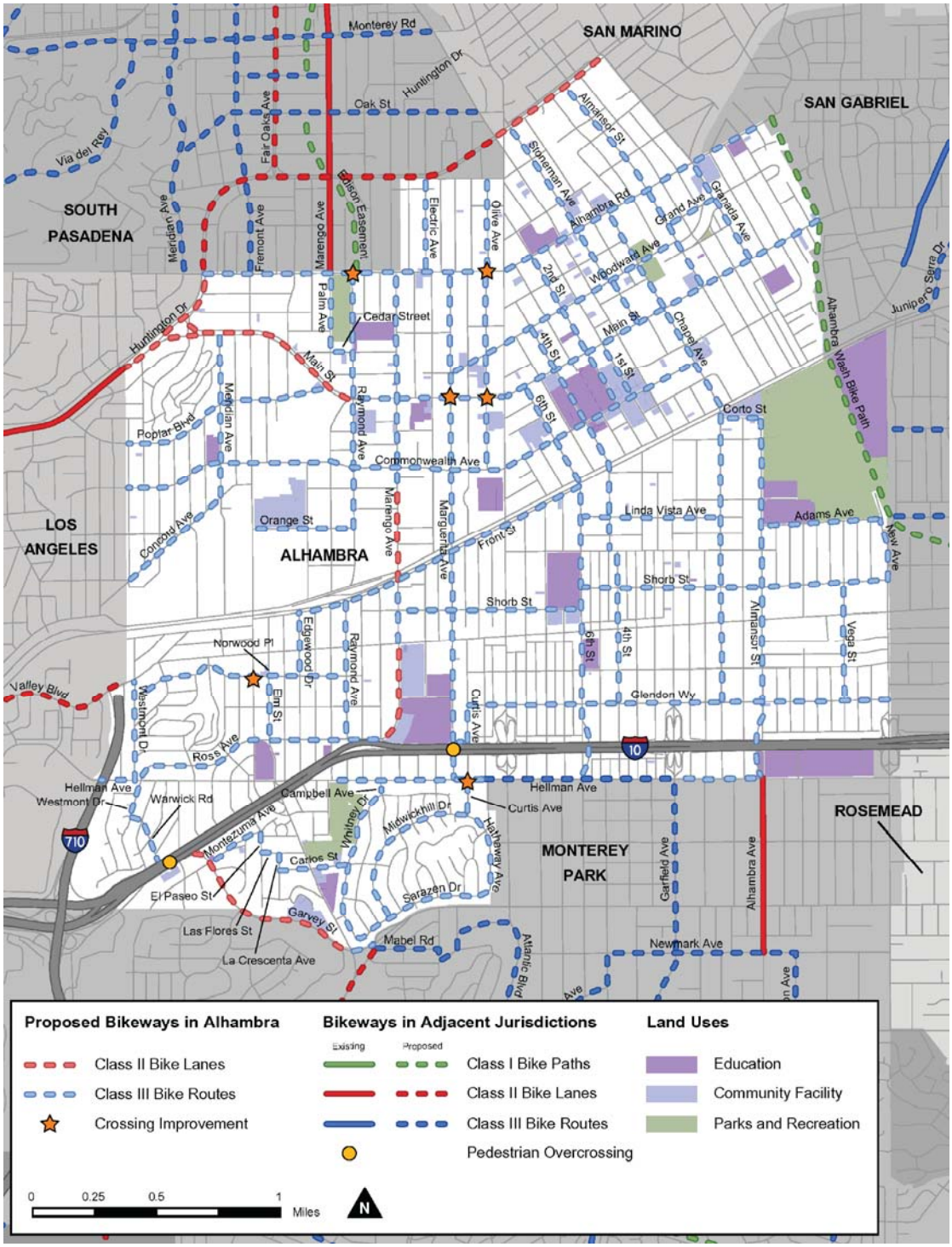


EXHIBIT 3-2: CITY OF ALHAMBRA MULTI-MODAL CONNECTIONS



Source: City of Alhambra Bycicle Master Plan

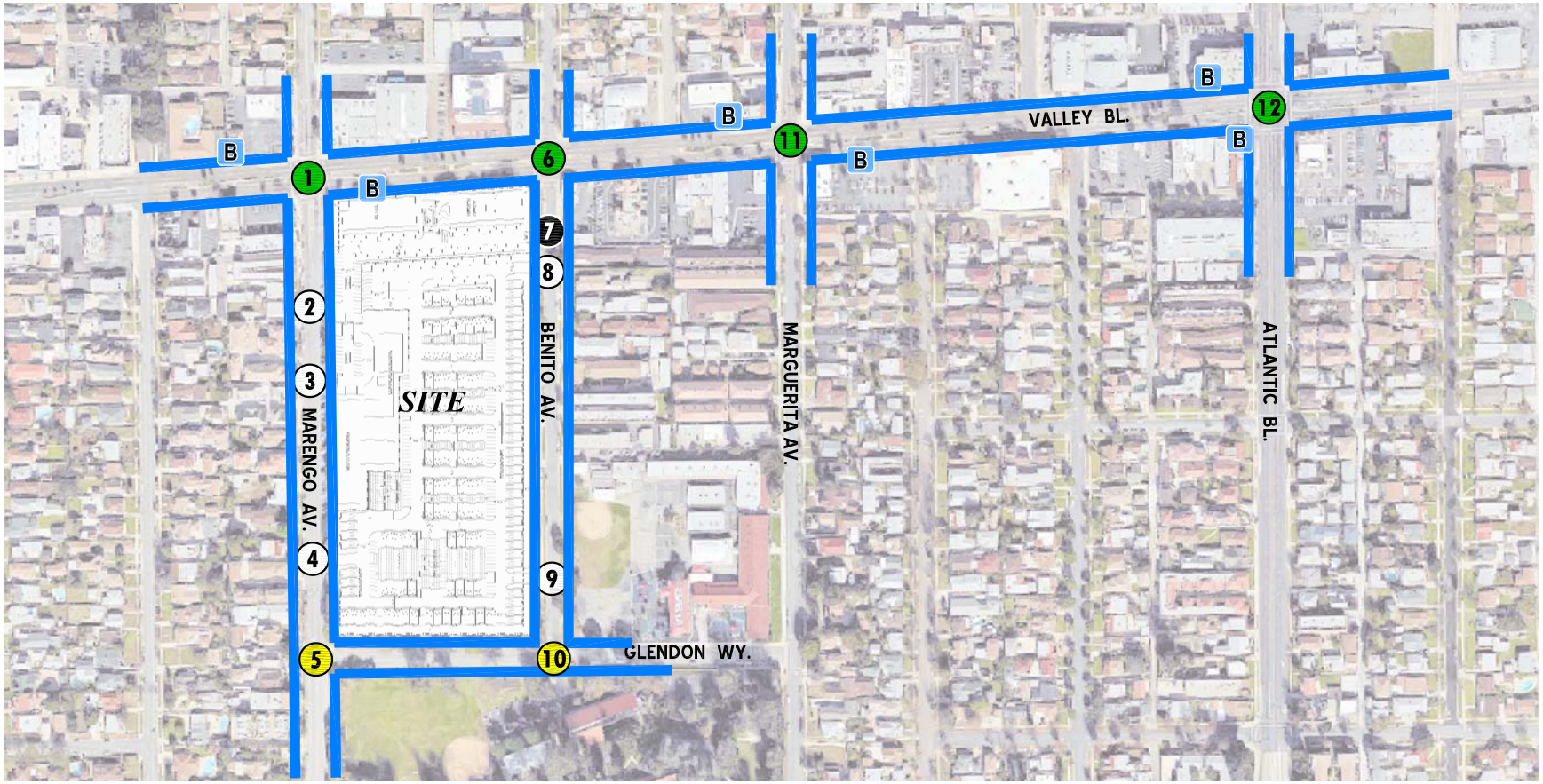
EXHIBIT 3-3: CITY OF ALHAMBRA RECOMMENDED BIKEWAYS



Source: City of Alhambra Bycicle Master Plan

10078 - bikeways.dwg

EXHIBIT 3-4: EXISTING PEDESTRIAN FACILITIES



LEGEND:

- = SIDEWALK
- = BIKE LANE
- B = BUS STOP
- 0 = NO CROSSWALK
- 0 = FUTURE INTERSECTION
- 0 = CROSSWALK ON ALL APPROACHES
- 0 = SCHOOL CROSSWALK ON THREE APPROACHES

N

3.5 PEDESTRIAN COUNTS

Due to the proximity of 2 existing schools to the Project site, pedestrians and bicycle counts at each study area intersection were collected during the peak hours. Both the Marguerita Elementary School and Ramona Convent Secondary School were in session and operating on normal bell schedules on the day the counts were conducted. Count worksheets are included in Appendix 3.1. In evaluating the drop-off/pick-up patterns of these 2 existing schools, it appears that there are nominal cars parking on the site adjacent roadways of Marengo Avenue, Glendon Avenue, and Benito Avenue during drop-off/pick-up times. Drop-off/pick-up primarily occurs along Marguerita Avenue for the Marguerita Elementary School, which fronts the school. Similarly, drop-off/pick-up primarily occurs along Ramona Road for the Ramona Convent Secondary School, which fronts the school.

Marengo Avenue and Glendon Way currently has some pedestrian activity during the morning and evening peak hours and is marked with a yellow (school) crosswalk on all three approaches. However, there were no bicyclists observed at this intersection during the morning and evening peak hours. There is a much higher number of pedestrians (school age children) utilizing the intersection of Benito Avenue and Glendon Way during the morning peak hour. The intersection is also marked with a yellow (school) crosswalk on all three approaches. However, there is nominal pedestrian activity at the intersection of Benito Avenue and Glendon Way during the evening peak hour (after school hours) and no bicycle activity during the morning or evening peak hours. It was observed that the pedestrians associated with the school were utilizing Benito Avenue to come from/head to the north (Valley Boulevard). It should be noted that a crossing guard was present at the intersection of Benito Avenue and Valle Boulevard, which also had higher pedestrian activity.

It should be noted that the southern leg of the intersection of Benito Avenue and Glendon Way provides access to a parking lot in the rear of the Ramona Convent Secondary School. However, it was observed that this driveway was gated and closed off during the morning and evening count periods.

3.6 EXISTING TRAFFIC COUNTS

Manual weekday AM and PM peak hour turning movement counts were conducted in April 2016, while area schools were in session. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1.

Existing average daily traffic (ADT) volumes on arterial highways throughout the study area are shown on Exhibit 3-5. Existing ADT volumes are based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 9.1623 = Leg Volume

A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 10.91 percent. As such, the above equation utilizing a factor of 9.1623 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 10.91 percent

(i.e., 1/0.1091 = 9.1623) and was assumed to sufficiently estimate average daily traffic (ADT) volumes for planning-level analyses. Existing AM and PM peak hour intersection volumes are also shown on Exhibit 3-5.

3.7 EXISTING CONDITIONS INTERSECTION OPERATIONS ANALYSIS

Existing peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 3-1 which indicates that all of the following study area intersections are currently operating at acceptable LOS during the peak hours, based on each applicable jurisdiction's LOS criteria, with the exception of the following:

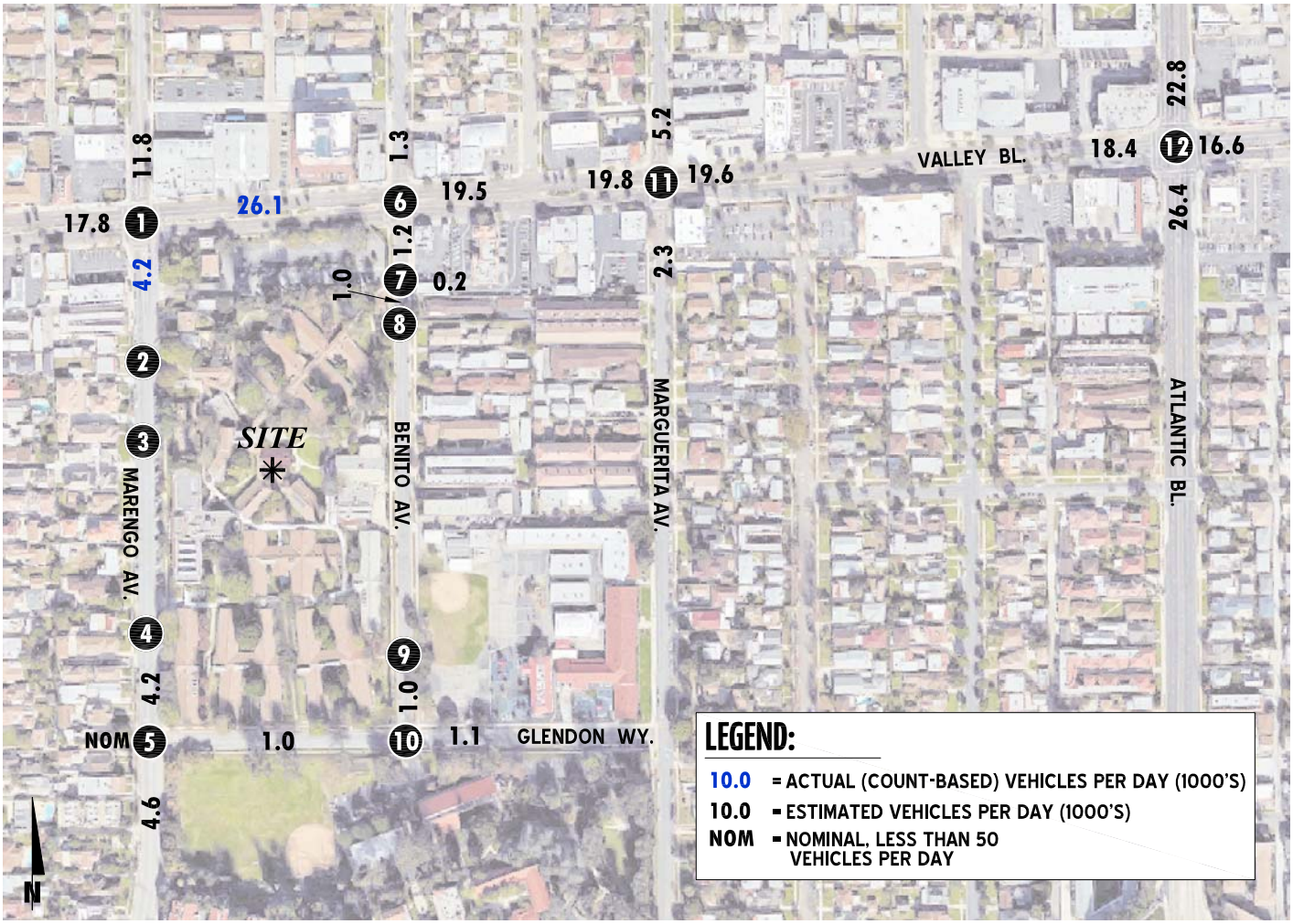
- Atlantic Bl. / Valley Bl. (#12) – LOS E PM peak hour only

Consistent with Table 3-1, a summary of the peak hour intersection LOS for Existing conditions are shown on Exhibit 3-6. The intersection operations analysis worksheets are included in Appendix 3.2 of this TIA.

3.8 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. There are no study area intersections that currently warrant a traffic signal under Existing traffic conditions. Existing conditions traffic signal warrant analysis worksheets are provided in Appendix 3.3.

EXHIBIT 3-5: EXISTING (2016) TRAFFIC VOLUMES



1 Marengo Av. & Valley Bl. 151(95) 159(165) 195(307) — 147(166) 963(537) 59(61) 202(331) 390(947) 14(16) — 17(19) 103(219) 62(94)	2 Marengo Av. & Dwy. 1 Future Intersection	3 Marengo Av. & Dwy. 2 Future Intersection	4 Marengo Av. & Dwy. 3 Future Intersection	5 Marengo Av. & Glendon Wy. 1(0) 197(173) 44(18) — 41(10) 1(1) 100(31) 2(0) 0(1) 0(0) — 0(1) 127(253) 82(45)	6 Benito Av. & Valley Bl. 46(26) 36(7) 36(34) — 16(23) 1135(710) 38(31) 9(38) 622(1290) 16(20) — 30(19) 35(9) 58(40)
7 Benito Av. & Dwy. 4 0(0) 88(55) 2(3) — 1(13) 0(0) 0(2) 0(0) 0(0) 0(0) — 0(0) 122(55) 0(0)	8 Benito Av. & Dwy. 5 Future Intersection	9 Benito Av. & Dwy. 6 Future Intersection	10 Benito Av. & Glendon Wy. 49(23) 0(0) 35(30) — 73(32) 102(20) 0(0) 58(25) 83(38) 0(0) — 0(0) 0(0) 0(0)	11 Marguerita Av. & Valley Bl. 100(73) 87(47) 158(146) — 82(75) 1026(669) 63(24) 76(147) 600(1195) 52(27) — 36(51) 57(75) 51(31)	12 Atlantic Bl. & Valley Bl. 153(89) 1013(1011) 44(89) — 47(82) 767(481) 193(189) 84(182) 339(786) 267(254) — 228(214) 1147(1035) 96(180)

EXHIBIT 3-6: EXISTING (2016) SUMMARY OF LOS

LEGEND:

- = AM PEAK HOUR ACCEPTABLE LOS
- = AM PEAK HOUR DEFICIENT LOS
- = PM PEAK HOUR ACCEPTABLE LOS
- = PM PEAK HOUR DEFICIENT LOS
- (NA) = NOT AN ANALYSIS LOCATION FOR THIS SCENARIO

N

Table 3-1

Intersection Analysis for Existing (2016) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												ICU (v/c) or Delay (secs.)[2]		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Marengo Av. / Valley Bl.	TS	1	1	1	1	1	0	1	2	0	1	2	0	0.749	0.847	C	D
2	Marengo Av. / Dwy. 1		Future Intersection															
3	Marengo Av. / Dwy. 2		Future Intersection															
4	Marengo Av. / Dwy. 3		Future Intersection															
5	Marengo Av. / Glendon Wy.	AWS	0	1	0	0	1	0	0	1	0	0	1	0	10.3	9.5	B	A
6	Benito Av. / Valley Bl.	TS	0	1	0	0	1	0	1	2	0	1	2	0	0.542	0.576	A	A
7	Benito Av. / Dwy. 4	CSS	0	1	0	0	1	0	0	1	0	0	1	0	9.3	8.8	A	A
8	Benito Av. / Dwy. 5		Future Intersection															
9	Benito Av. / Dwy. 6		Future Intersection															
10	Benito Av. / Glendon Wy.	AWS	0	1	0	0	1	0	0	1	0	0	1	0	9.6	7.4	A	A
11	Marguerita Av. / Valley Bl.	TS	1	1	0	1	1	0	1	2	0	1	2	0	0.639	0.644	B	B
12	Atlantic Bl. / Valley Bl.	TS	1	2	1	1	2	1	1	2	1>	1	2	1>	0.851	**0.933**	D	**E**

* **BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes

L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing

[2] ICU reported as a volume-to-capacity ratio and HCM delay reported in seconds. LOS calculated using Traffix Software.

Per the 2010 Highway Capacity Manual (HCM), overall average intersection delay and level of service are shown for all-way stop controlled intersections. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. LOS calculated using Synchro (Version 9.0).

[3] TS = Traffic Signal; AWS = All-Way Stop; CSS = Cross-Street Stop

4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment onto the study area roadway network.

The site is currently occupied by a skilled nursing facility and Wellness Center. The site is also developed with independent living buildings, however, these buildings have been vacant since 2011.

The proposed Project consists of 126 condo/townhome units, 18,000 square feet of medical office use, and 12,490 square feet of general retail use. The existing skilled nursing facility and Wellness Center will be retained intact. All other on-site facilities will be demolished. Trips generated by the skilled nursing facility and Wellness Center are reflected in the existing conditions ground counts. Trips generated by new uses proposed under the Project are documented in this TIA. The proposed Project is anticipated to have an Opening Year of 2018.

The Project is proposed to access Marengo Avenue via three stop controlled driveways, and Benito Avenue via three stop controlled driveways. All driveways are proposed to allow for full access. Regional access to the Project site will be primarily provided by the I-10 Freeway via S. Atlantic Boulevard.

4.1 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic that is attracted and produced by a development, and is based upon the specific land uses planned for a given project. Trip generation rates and summary for the Project are shown in Table 4-1. The trip generation rates used for this analysis are based upon information collected by the Institute of Transportation Engineers (ITE) as provided in their *Trip Generation* manual, 9th Edition, 2012 and the County of Los Angeles Traffic Study Guidelines. [1] [2]

4.1.1 EXISTING SITE TRIP GENERATION

The site is currently occupied by a skilled nursing facility and Wellness Center. The site is also developed with independent living buildings, however, these buildings have been vacant since 2011. Traffic counts have been conducted to account for the existing uses. As such, trip generation associated with the vacant land use has not been calculated and were not reduced off the proposed Project trip generation.

4.1.2 PROPOSED PROJECT TRIP GENERATION

ITE land use codes 720 (Medical-Dental Office) and 820 (Commercial Retail) and condominium/townhome rates from the County of Los Angeles Traffic Study Guidelines have been used to derive site specific trip generation estimates for the Proposed Project.

Table 4-1

Project Trip Generation Summary

Land Use	ITE LU Code	Units[2]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Rates[1]									
Condo/Townhome	--	DU	0.06	0.48	0.54	0.47	0.26	0.73	8.00
Medical-Dental Office	720	TSF	1.89	0.50	2.39	1.00	2.57	3.57	36.13
Commercial Retail	820	TSF	0.60	0.36	0.96	1.78	1.93	3.71	42.70

Land Use	Quantity	Units[2]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Summary									
Condo/Townhome	126	DU	8	60	68	59	33	92	1,008
Internal Capture[3]			*0*	*-2*	*-2*	*-7*	*-3*	*-10*	*-110*
Medical-Dental Office	18.000	TSF	34	9	43	18	46	64	650
Internal Capture[3]			*-2*	*-2*	*-4*	*-1*	*-3*	*-4*	*-41*
Commercial Retail	12.490	TSF	7	4	12	22	24	46	533
Internal Capture[3]			*-3*	*-1*	*-4*	*-4*	*-6*	*-10*	*-116*
Pass-By Reduction (34% - PM/Daily)[4]			--	--	--	*-6*	*-6*	*-12*	*-142*
Project Total:			**44**	**68**	**113**	**81**	**85**	**166**	**1,783**

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Ninth Edition (2012).

Condo/Townhome rates are from the County of Los Angeles Traffic Study Guidelines.

[2] DU = Dwelling Unit; TSF = Thousand Square Feet

[3] Internal capture calculated from NCHRP 684 Internal Trip Capture Estimation Tool.

[4] Pass-by reduction is per ITE Trip Generation Handbook.

As the trip generation for the site was conservatively estimated based on individual land uses, an internal capture reduction was applied to recognize the interactions that would occur between the various complimentary land uses. For example, residents may shop at the commercial retail, without leaving the site. Internal capture was calculated based on land uses from the National Cooperative Highway Research Program (NCHRP) 684 Internal Trip Capture Estimation Tool.

Internal capture is a percentage reduction that can be applied to the trip generation estimates for individual land uses to account for trips internal to the site. In other words, trips may be made between individual retail uses on-site and can be made either by walking or using internal roadways without using external streets. An internal capture reduction was applied to recognize the interactions that would occur between the various complimentary land uses. For example, residents may visit the commercial site without leaving the site and are therefore considered as vehicle trips that are internal to the site. The NCHRP 684 Internal Trip Capture Estimation Tool was used to compute internal capture reduction for residential-to-retail (and vice versa), residential-to-office (and vice versa), and retail-to-office (and vice versa).

Pass-by trips are defined as intermediate stops on the way from an origin to a primary trip destination without a route diversion. Pass-by trips are attracted from traffic passing the site on an adjacent street or roadway that offers direct access to the generator. These types of trips are many times associated with retail uses. As the Project is proposed to include retail use, pass-by percentages have been obtained and applied from Table F.9 from the ITE Trip Generation Handbook, 3rd Edition, August 2014.

As shown on Table 4-1, the proposed development is anticipated to generate a net total of approximately 1,783 net trip-ends per day on a typical weekday with 113 net vehicles per hour (VPH) during the weekday AM peak hour and 166 net VPH during the weekday PM peak.

4.2 PROJECT TRIP DISTRIBUTION

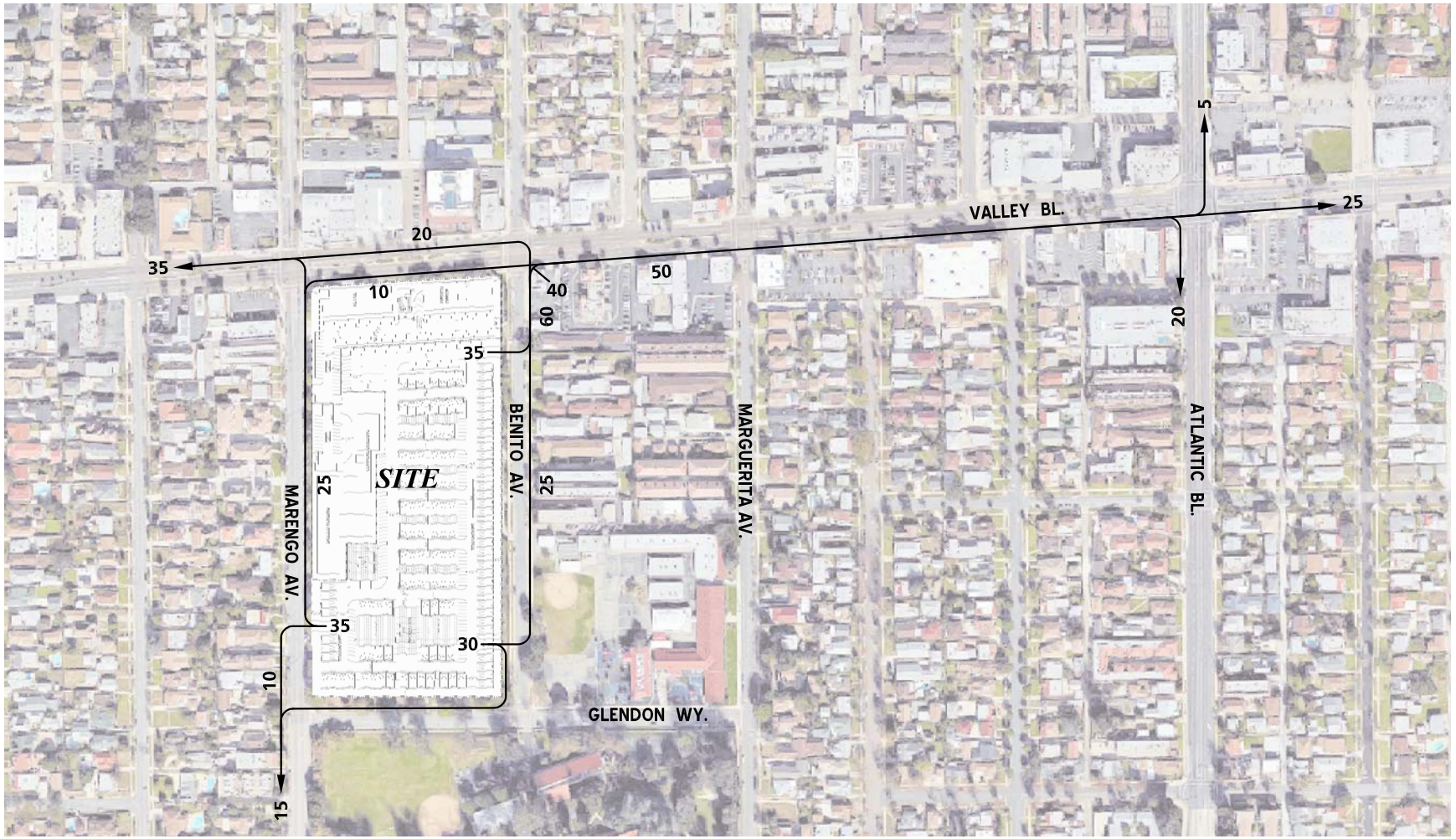
Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land use and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute. The Project trip distribution was developed based on anticipated travel patterns to and from the Project site. The existing roadway network and location of regional destinations such as the Port of Long Beach and the Port of Los Angeles have been reviewed to develop the Project trip distribution pattern.

Exhibit 4-1 illustrates the trip distribution patterns for the Project for residential uses and retail/office uses are shown on Exhibit 4-2.

4.3 MODAL SPLIT

The traffic reducing potential of public transit, walking or bicycling have not been considered in this TIA, because they are likely to be minimal.

EXHIBIT 4-1: PROJECT (RESIDENTIAL) TRIP DISTRIBUTION



LEGEND:

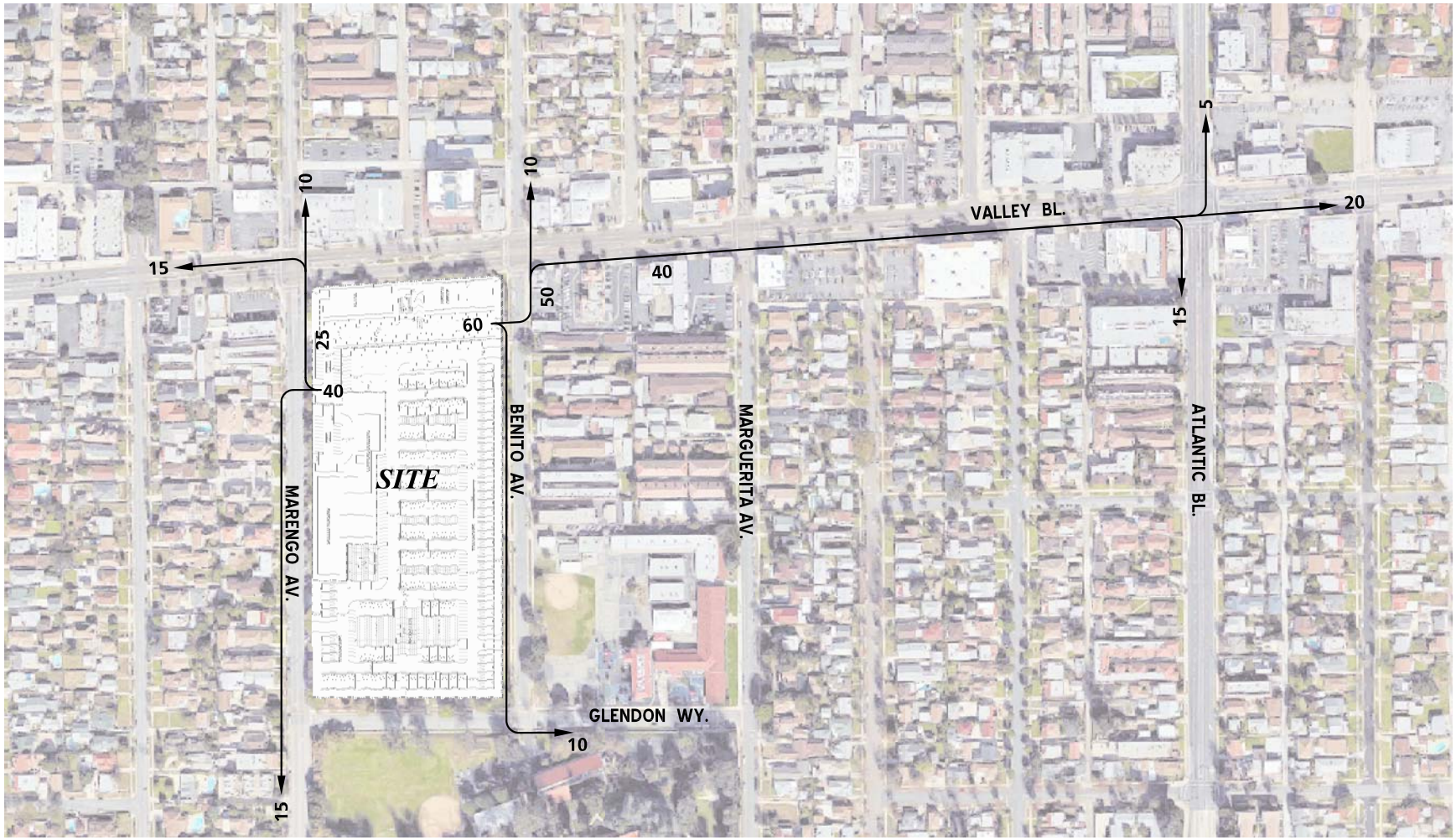
10 = PERCENT TO/FROM PROJECT

N

10078 - trips.dwg

URBAN CROSSROADS

EXHIBIT 4-2: PROJECT (RETAIL/OFFICE) TRIP DISTRIBUTION



LEGEND:

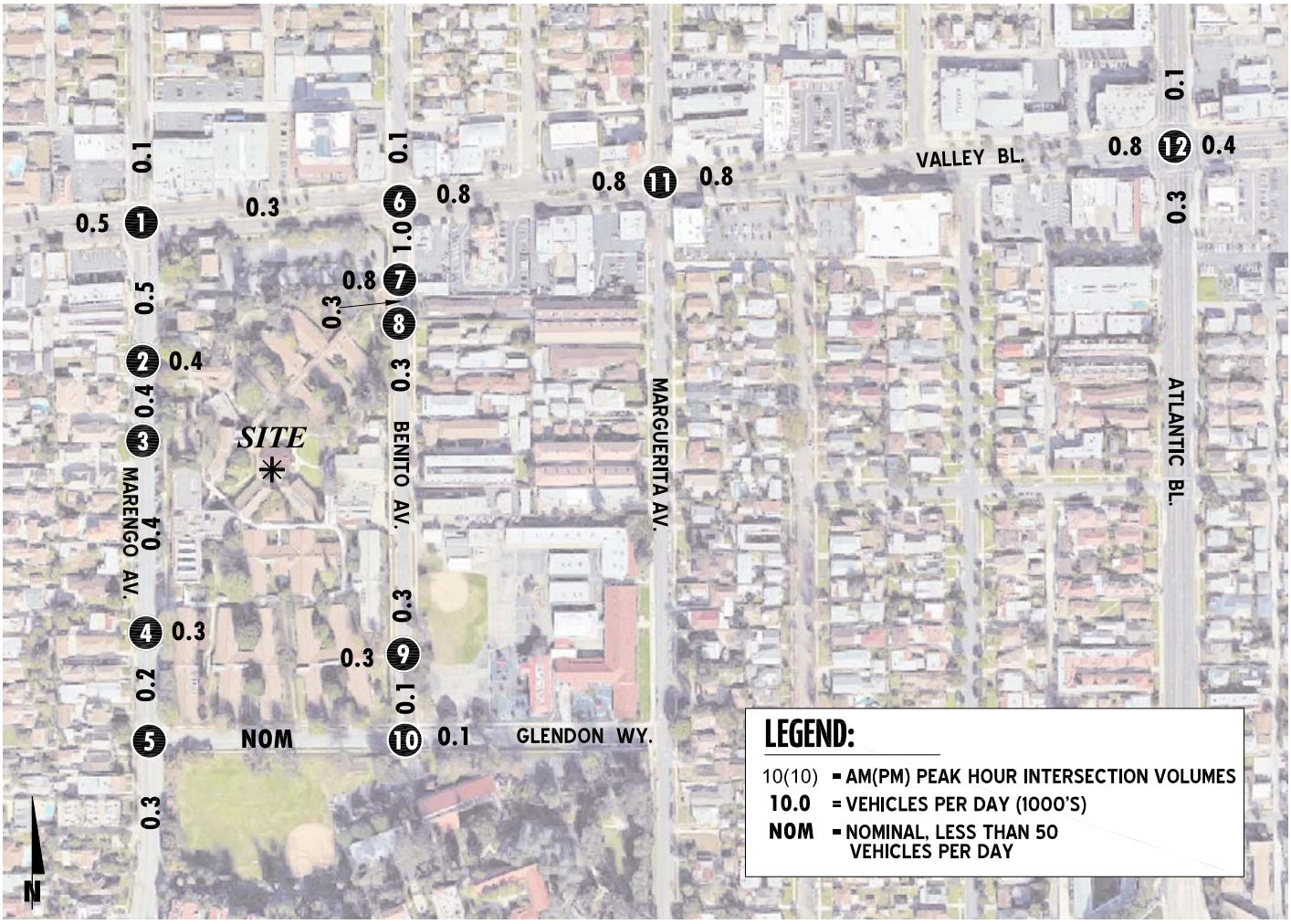
10 = PERCENT TO/FROM PROJECT

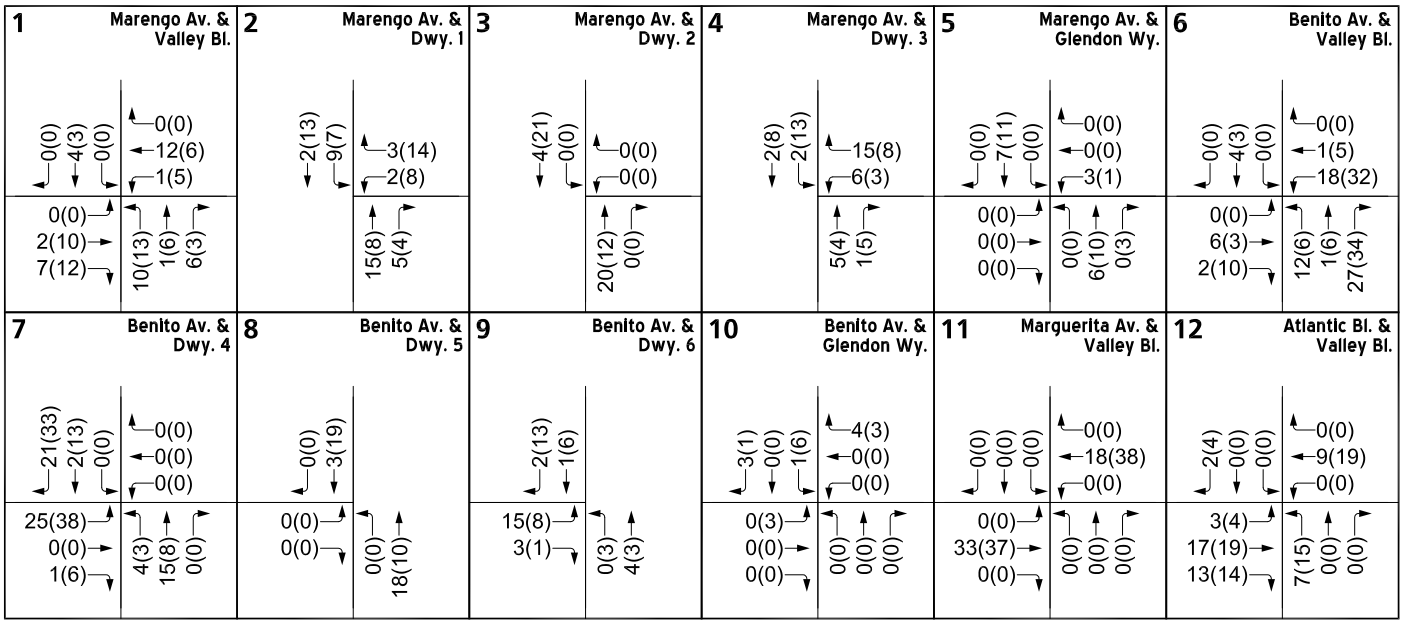
N

10078 - trips.dwg

URBAN CROSSROADS

EXHIBIT 4-3: PROJECT ONLY TRAFFIC VOLUMES





4.4 PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project ADT, AM and PM peak hour traffic volumes are shown on Exhibit 4-3.

4.5 CONSTRUCTION TRAFFIC

Traffic operations during the proposed construction phase of the project may potentially result in traffic deficiencies related to construction employees, export of materials, and import of construction materials, etc. It is anticipated that the following construction-related activities would generate traffic and may potentially result in construction-related traffic deficiencies:

- Employee trips
- Export of demolition/debris
- Use of heavy equipment

Each of the traffic generating activities listed above is discussed thoroughly in the subsequent sections. It has been assumed that construction activity will occur during the hours of 7:00 AM and 8:00 PM from Monday to Saturday, consistent with the City's Municipal Code.

The Applicant would be required to develop and implement a City-approved Construction Traffic Management Plan addressing potential construction-related traffic detours and disruptions. The Construction Traffic Management Plan would ensure that to the extent practical, construction traffic would access the Project site during off-peak hours; and that construction traffic would be routed to avoid travel through, or proximate to, sensitive land uses.

4.5.1 CONSTRUCTION WORKER TRIPS

Total construction worker traffic accessing the Project site is estimated at 226 trip-ends per day. Nominal volumes of construction worker traffic accessing the Project site would be indiscernible against background traffic conditions. Moreover, construction workers would typically commute to the job site during off-peak hours, and would not substantively affect the study area peak hour LOS operations.

4.5.2 EXPORT OF DEMOLITION MATERIALS

Construction materials will be moved to and from the site. Import of construction materials is anticipated to consist of the importation of raw building materials, building pad, concrete, parking lot base, asphalt, fill, concrete masonry unit, pipes, landscaping, road base, building equipment, steel, roofing, etc. Debris associated with the demolition of existing structures will be exported off-site.

In order to minimize the impact of construction truck traffic to the surrounding roadway network, it is recommended that trucks utilize the most direct route between the site and the I-10 Freeway via Valley Boulevard to Atlantic Boulevard. It is recommended that a construction traffic

management plan be implemented for the duration of the construction phase. As these measures will be imposed and the haul trips generated during the construction phase are anticipated to be less than 50 peak hour trips.

4.5.3 HEAVY EQUIPMENT

Heavy equipment to be utilized on-site during construction includes, but is not limited to: flat beds, dozers, scrapers, graders, track hoes, dump trucks, forklifts, cranes, cement trucks, pavers, rollers, water trucks, rolling container trucks and bobcats. Heavy equipment will be delivered and removed from the site throughout the construction phase. As most heavy equipment is typically not an authorized vehicle to be driven on a public roadway, most of the equipment will be delivered and removed from the site via large flatbed trucks. It is anticipated that delivery of heavy equipment would not occur on a daily basis, but rather periodically throughout the construction phase based on need.

The delivery and removal of heavy equipment is recommended to occur outside of the morning and evening peak hours in order to have nominal impacts to traffic and circulation near the vicinity of the Project. As this measure will be applied, it is anticipated that traffic impacts associated with the delivery and removal of heavy equipment are less-than-significant.

4.6 BACKGROUND TRAFFIC

The Opening Year Cumulative conditions analysis determines the Project's contribution to near-term cumulative traffic impacts based on a comparison of the "With Project" traffic scenario to the "Without Project" traffic scenario. To account for background traffic growth, traffic associated with other known cumulative development projects in conjunction with an ambient growth from Existing (2016) conditions of 2.0% (1 percent per year, compounded annually over 2 years) is included for Opening Year Cumulative traffic conditions, as well as traffic generated by cumulative projects that could affect the study area intersections.

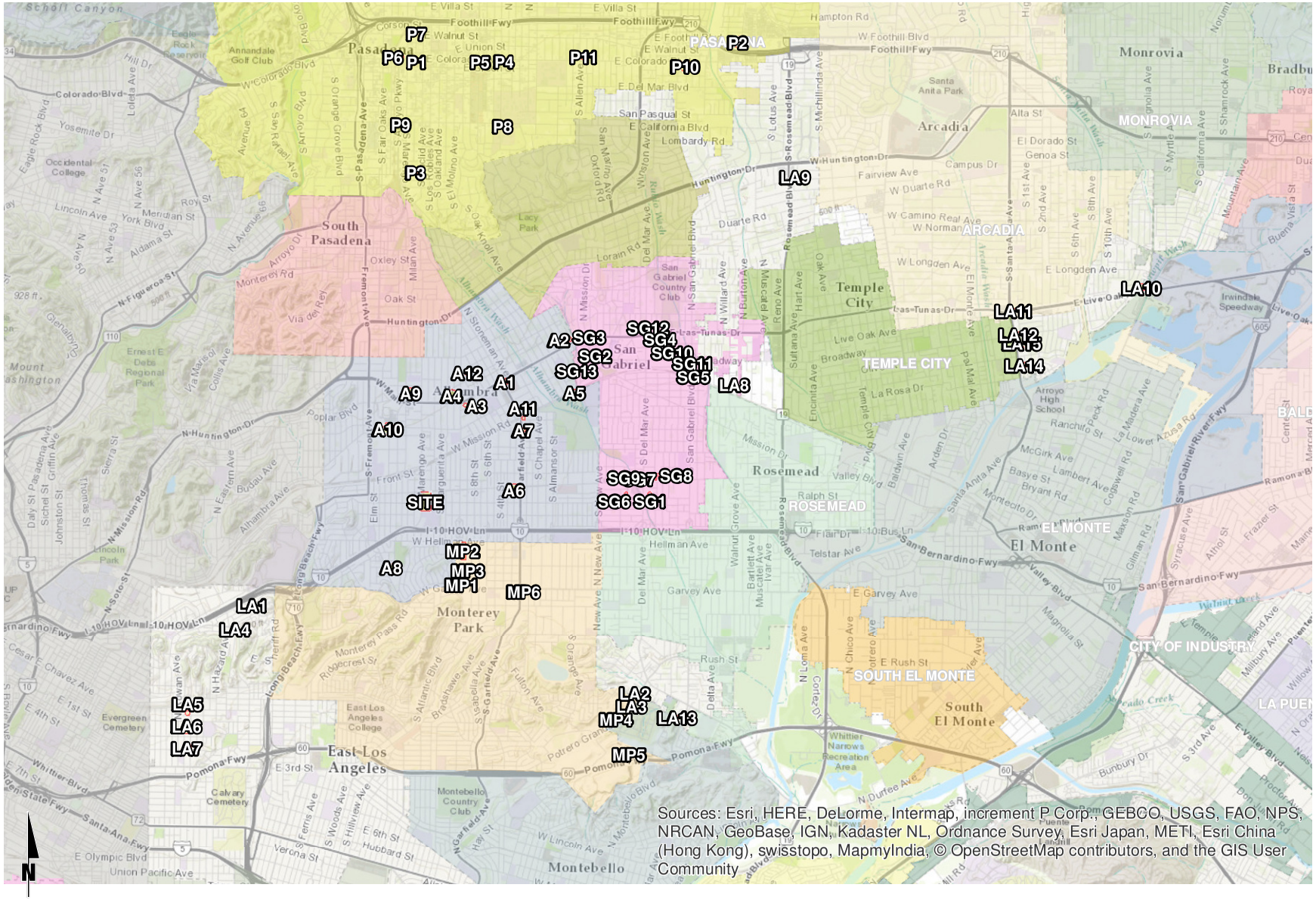
The generalized growth factors provided in the 2010 LA County CMP indicates a growth factor of 1.082 for ten years (2010 to 2020) or 0.79% per year for the RSA 25 in which the Project is located. [3] As such, the analysis is consistent with the CMP guidelines.

4.7 CUMULATIVE DEVELOPMENT TRAFFIC

California Environmental Quality Act (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. A cumulative project list was developed for the purposes of this analysis through consultation with planning and engineering staff from the City of Alhambra, City of San Gabriel, City of Pasadena, City of Monterey Park, and County of Los Angeles. Exhibit 4-4 illustrates the cumulative development location map. A summary of cumulative development projects and their proposed land uses are shown on Table 4-2. If applicable (i.e. if the cumulative projects are anticipated to contribute trips to study area intersections), the traffic generated by individual cumulative projects was manually added to the Opening Year Cumulative forecasts to ensure that traffic generated by the listed cumulative development projects in Table 4-2 are reflected as part of the background traffic. Traffic from other cumulative developments farther away from the study area are not anticipated to add significant traffic and are accounted for by the ambient growth rate applied to forecast the background traffic. See Table 4.1-1 in Appendix 4.1 for the summary of trip generation for cumulative development projects. The traffic associated with the cumulative developments was distributed based on their proposed land uses and logical routes to other destinations and freeways.

Based upon the trip generation and trip distribution for the cumulative development projects, the cumulative development project only ADT, AM and PM peak hour traffic volumes are shown on Exhibit 4-5.

EXHIBIT 4-4: CUMULATIVE DEVELOPMENT LOCATION MAP



URBAN CROSSROADS

EXHIBIT 4-5: CUMULATIVE ONLY TRAFFIC VOLUMES

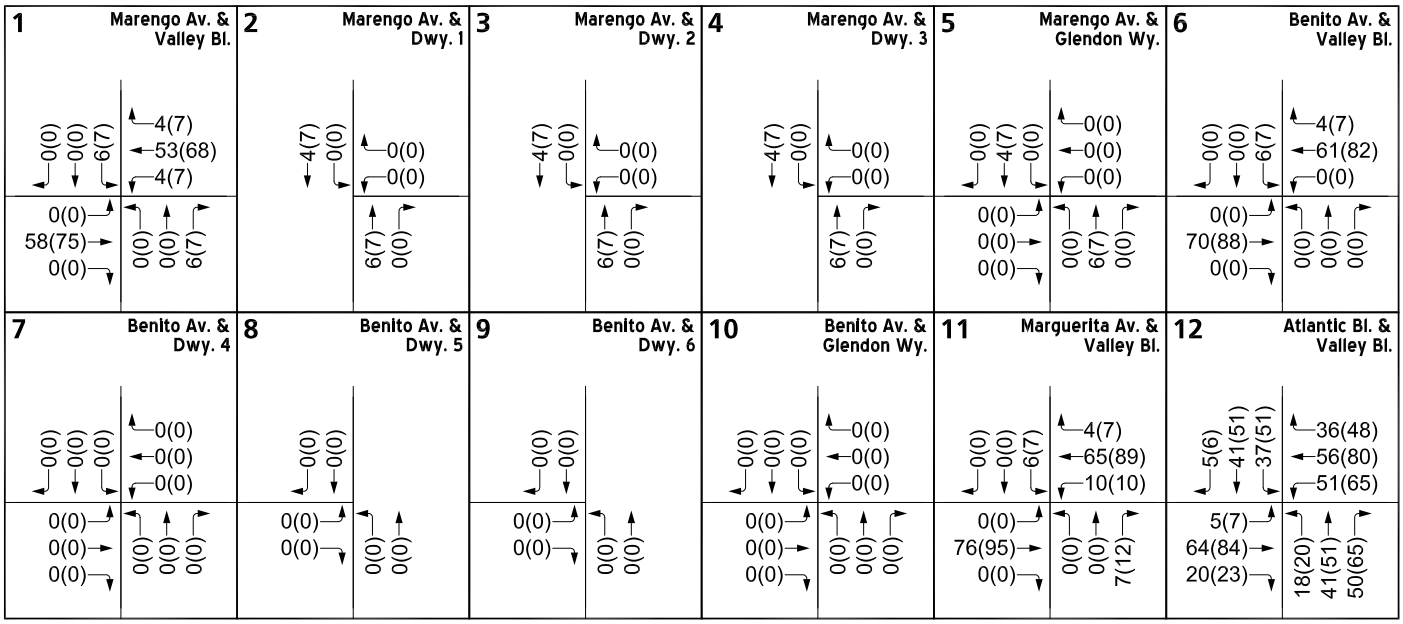


Table 4-2
Page 1 of 2

Cumulative Development Land Use Summary

TAZ	Project Name	Land Use[1]	Quantity	Units[2]
CITY OF ALHAMBRA				
A1	Alhambra Place	Apartment	260	DU
		Shopping Center	140.000	TSF
A2	Alhambra Nissan	New Car Sales	42.600	TSF
A3	Atherton Master Plan	Senior Living Detached	177	DU
A4	New Century BMW Expansion	Automobile Care Center	25.000	TSF
A5	El Molino Houses	SFDR	5	DU
A6	1411 South Garfield	Medical Office	17.800	TSF
		Fast Food w/o Drive-thru	0.819	TSF
		High Turnover Sit-down Restaurant	2.286	TSF
A7	768 South Stoneman	Condo/Townhomes	18	DU
A8	Midwick Collection	SFDR	37	DU
		Condo/Townhomes	28	DU
A9	Wondries Toyota	New Car Sales	81.281	TSF
A10	CFT Commonwealth	Shopping Center	7.423	TSF
		Fast Food w/ Drive-thru	3.915	TSF
		High Turnover Sit-down Restaurant	9.400	TSF
A11	Stoneman Terrace	Condo/Townhomes	10	DU
A12	Stoneman Terrace	Condo/Townhomes	14	DU
CITY OF SAN GABRIEL				
SG1	101 E. Valley Boulevard	Shopping Center	15.000	TSF
		Apartment	81	DU
SG2	130 S. Mission Drive	Shopping Center	5.300	TSF
		Condominium	11	DU
SG3	704-712 W. Las Tunas Drive	Shopping Center	6.250	TSF
		Condominium	35	DU
SG4	402 E. Las Tunas Drive	Medical Office	9.420	TSF
SG5	835 El Monte Avenue	Condominium	88	DU
SG6	Marshall Community Park	Active Park	2	AC
SG7	101-111 W. Valley Boulevard	Hotel	222	RM
		Shopping Center	55.000	TSF
		Condominium	87	DU
SG8	221 E. Valley Boulevard	Hotel	288	RM
		Restaurant (Sit-Down)	4.415	TSF
		Ballroom/Conference Room	11.553	TSF
SG9	400-420 W. Valley Boulevard	Shopping Center	50.495	TSF
		Apartment	127	DU
SG10	416 E. Las Tunas Drive	Condominium	33	DU
		Restaurant (Sit-Down)	6.200	TSF
		Shopping Center	3.100	TSF
SG11	201-217 S. San Gabriel Boulevard	Shopping Center	10.230	TSF
		Restaurant (Sit-Down)	6.319	TSF
		Condominium	159	DU
SG12	237 E. Las Tunas Drive	Medical Office	12.285	TSF
SG13	435 S. Arroyo Drive	Condominium	46	DU

Cumulative Development Land Use Summary

TAZ	Project Name	Land Use[1]	Quantity	Units[2]
CITY OF PASADENA				
P1	Crown City Medical Center, 550 E. Colorado Boulevard	Shopping Center	16.201	TSF
		Medical Office	95.051	TSF
P2	3100 E. Foothill Boulevard	Apartment	550	DU
P3	314 Alpine Street	SFDR	6	DU
P4	1336 & 1347 E. Colorado Boulevard	Shopping Center	35.000	TSF
		Hotel	525	RM
P5	922-936 E. Green Street	Shopping Center	14.791	TSF
		Condominium	45	DU
P6	YWCA/Kimpton 78 N. Marengo Avenue	Hotel	179	RM
		Restaurant (Sit-Down)	2.350	TSF
P7	Mirador, 262 N. Los Robles Avenue	Apartment	291	DU
P8	1030 E. California Boulevard	Private School (K-12)	80	STU
P9	704 S. Marengo Avenue	Condominium	8	DU
P10	76 Eastern Avenue	Condominium	4	DU
P11	92 N. Allen Avenue	Condominium	9	DU
CITY OF MONTEREY PARK				
MP1	AG Hotel, 808 Garney Avenue	Hotel	148	RM
		Apartment	98	DU
MP2	Courtyard by Marriott Hotel, 633 N. Atlantic Boulevard	Hotel	288	RM
MP3	Doubletree Hotel, 220 N. Atlantic Boulevard	Hotel	180	RM
MP4	Encanto Walk, 2015 Potrero Grande Drive	SFDR	80	DU
MP5	Monterey Park Market Place, 2300 Greenwood Avenue	Shopping Center	500.000	TSF
MP6	Monterey Park Towne Centre, 100 S. Garfield Avenue	Condominium	109	DU
		Shopping Center	71.366	TSF
COUNTY OF LOS ANGELES				
LA1	R2013-01515	Apartment	6	DU
LA2	R2015-03715	SFDR	7	DU
LA3	RPPL2016001085	Condominium	6	DU
LA4	RPPL2016001216	Shopping Center	4.000	TSF
LA5	R2013-01635	Pharmacy/Drugstore w/o Drive Thru	15.112	TSF
LA6	R2015-01120	Laundromat	5.634	TSF
		Shopping Center	1.018	TSF
LA7	RPPL2015000162	Apartment	61	DU
LA8	R2015-00158	Condominium	30	DU
LA9	R2013-03162	Medical Office	13.065	TSF
LA10	2016-000030	Condominium	15	DU
LA11	R2014-02459	Condominium	5	DU
LA12	R2014-03316	Condominium	6	DU
LA13	RAEM-TR061059-1	Condominium	5	DU
LA14	R2015-01015	Nursing Home	59	Beds
LA15	R2014-01598	Condominium	5	DU

[1] SFDR = Single Family Detached Residential

[2] DU = Dwelling Unit; RM = Room; TSF = Thousand Square Feet; AC = Acre; STU = Student

This page intentionally left blank

5 E+P TRAFFIC CONDITIONS

In an effort to satisfy the CEQA Guidelines section 15125(a), an analysis of existing traffic volumes plus traffic generated by the proposed Project (E+P) has been included in this analysis. This section discusses the traffic forecasts for E+P conditions and the resulting intersection operations and traffic signal warrants.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for E+P conditions are consistent with those shown previously on Exhibit 3-1, with the exception of Project driveways and those facilities assumed to be constructed by the Project to provide site access, which are also assumed to be in place for E+P conditions. In other words, no other off-site improvements are assumed beyond those that currently exist with the exception of the intersections and roadways that would be improved by the Project for access.

5.2 E+P TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus Project traffic. Exhibit 5-1 shows the ADT, AM and PM peak hour traffic volumes which can be expected for E+P traffic conditions.

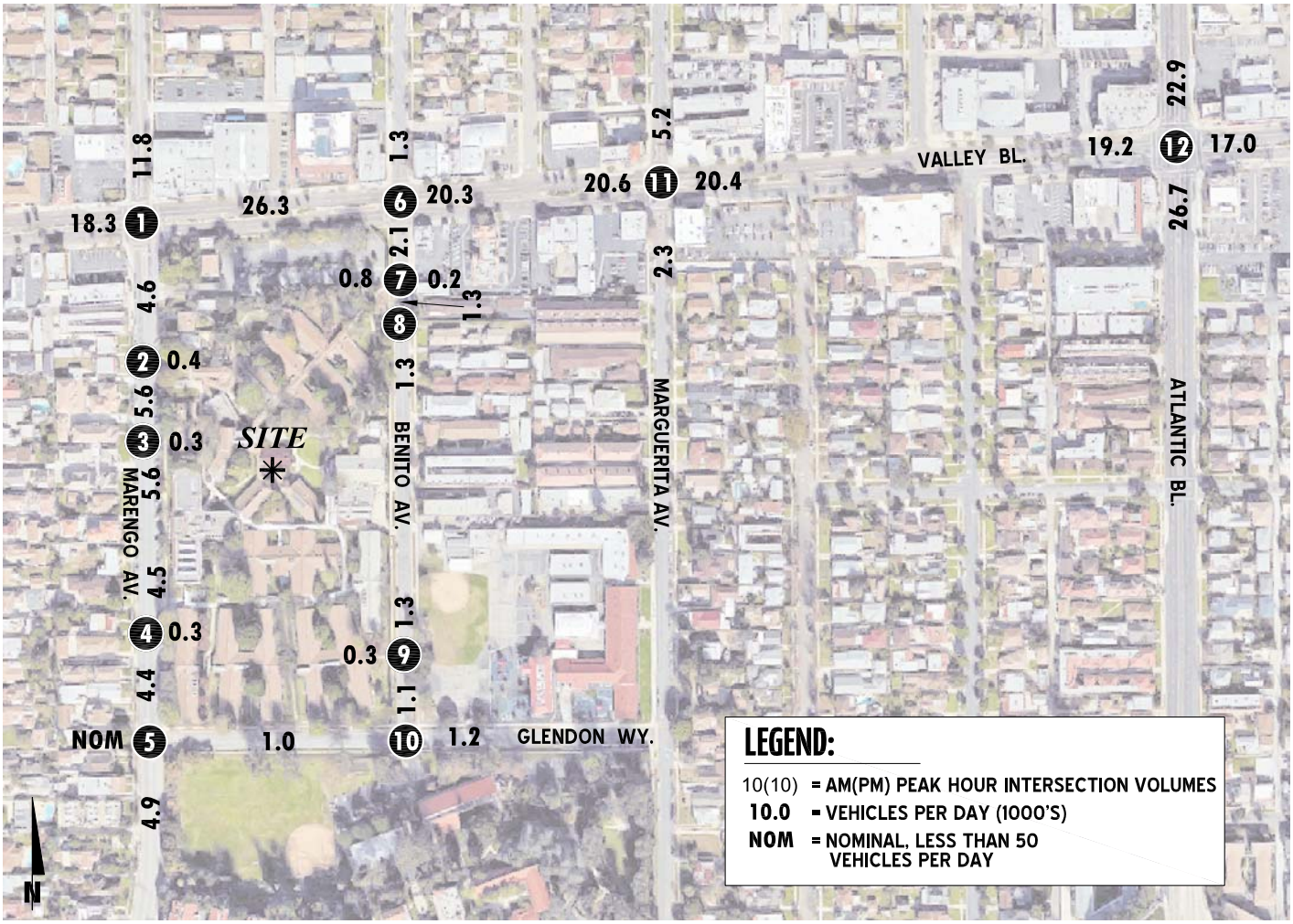
5.3 INTERSECTION OPERATIONS ANALYSIS

E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TIA. The intersection analysis results are summarized in Table 5-1, which indicates the addition of Project traffic is anticipated to contribute to the following existing deficiency:

- Atlantic Bl. / Valley Bl. (#12) – LOS E PM peak hour only

Consistent with Table 5-1, a summary of the peak hour intersection LOS for E+P conditions are shown on Exhibit 5-2. The intersection operations analysis worksheets for E+P traffic conditions are included in Appendix 5.1 of this TIA.

EXHIBIT 5-1: E+P TRAFFIC VOLUMES



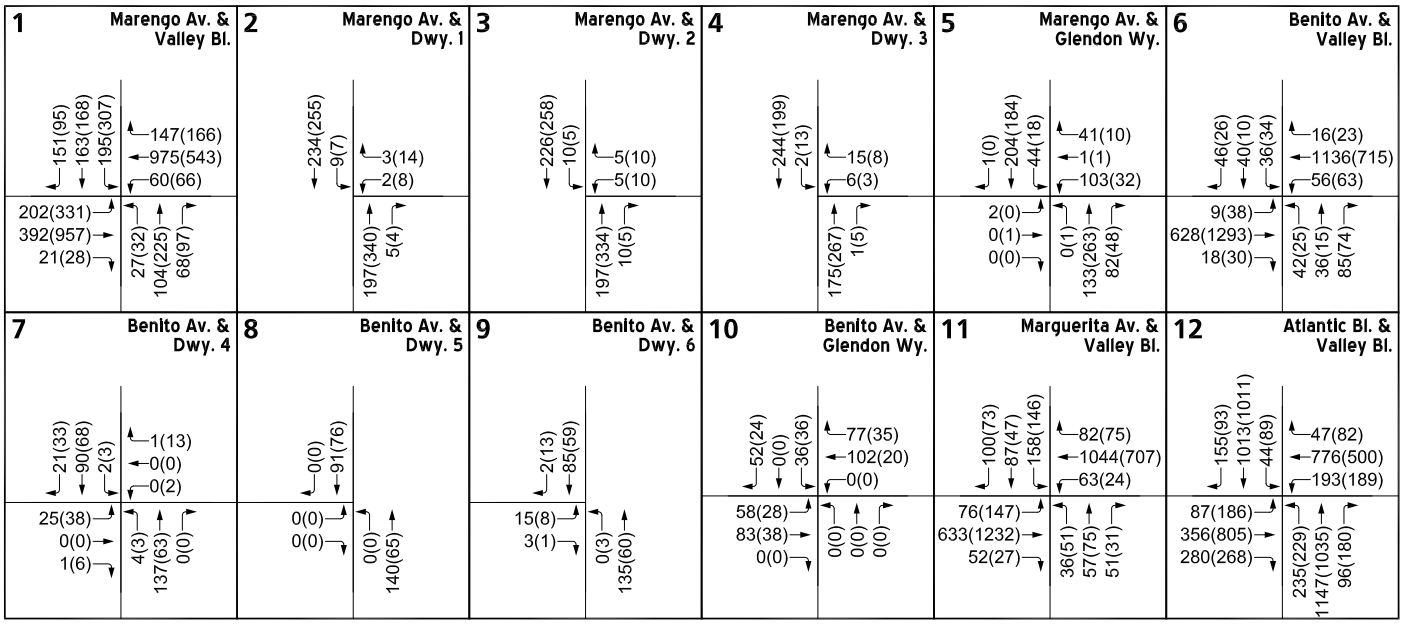


EXHIBIT 5-2: E+P SUMMARY OF LOS

LEGEND:

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

N

Table 5-1

Intersection Analysis for E+P Conditions

#	Intersection	Traffic Control[2]	Existing (2016) ICU (v/c) or Delay (secs.)[1] AM	Existing (2016) ICU (v/c) or Delay (secs.)[1] PM	Existing (2016) Level of Service AM	Existing (2016) Level of Service PM	E+P ICU (v/c) or Delay (secs.)[1] AM	E+P ICU (v/c) or Delay (secs.)[1] PM	E+P Level of Service AM	E+P Level of Service PM	Change in ICU AM	Change in ICU PM	Deficiency?[3]
1	Marengo Av. / Valley Bl.	TS	0.749	0.847	C	D	0.761	0.852	C	D	0.012	0.005	No
2	Marengo Av. / Dwy. 1	**CSS**	Future Intersection				10.1	11.6	B	B	Not Applicable		No
3	Marengo Av. / Dwy. 2	**CSS**	Future Intersection				10.4	11.9	B	B	Not Applicable		No
4	Marengo Av. / Dwy. 3	**CSS**	Future Intersection				10.0	10.6	B	B	Not Applicable		No
5	Marengo Av. / Glendon Wy.	AWS	10.3	9.5	B	A	10.5	9.7	B	A	Not Applicable		No
6	Benito Av. / Valley Bl.	TS	0.542	0.576	A	A	0.570	0.629	A	B	Not Applicable		No
7	Benito Av. / Dwy. 4	CSS	9.3	8.8	A	A	11.6	10.0	B	B	Not Applicable		No
8	Benito Av. / Dwy. 5	**CSS**	Future Intersection				0.0	0.0	A	A	Not Applicable		No
9	Benito Av. / Dwy. 6	**CSS**	Future Intersection				9.7	9.2	A	A	Not Applicable		No
10	Benito Av. / Glendon Wy.	AWS	9.6	7.4	A	A	9.7	7.5	A	A	Not Applicable		No
11	Marguerita Av. / Valley Bl.	TS	0.639	0.644	B	B	0.645	0.656	B	B	0.006	0.012	No
12	Atlantic Bl. / Valley Bl.	TS	0.851	0.933	D	E	0.870	0.939	D	E	0.019	0.006	No

* **BOLD** = Change in ICU is greater than the applicable jurisdictional threshold (i.e., > 0.01).

[1] ICU reported as a volume-to-capacity ratio and HCM delay reported in seconds. LOS calculated using Traffix Software.
Per the 2010 Highway Capacity Manual (HCM), overall average intersection delay and level of service are shown for all-way stop controlled intersections. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. LOS calculated using Synchro (Version 9.0).

[2] AWS = All-Way Stop; CSS = Cross-Street Stop; TS = Traffic Signal; **CSS** = Improvement

[3] To determine whether the addition of Project traffic at a study intersection results in LOS deficiencies, the following thresholds of significance consistent with the Los Angeles County CMP will be utilized:
- A deficiency occurs at a signalized intersection if the addition of Project trips to an intersection that is currently operating at an acceptable LOS (i.e., LOS C) causes the v/c to increase by 0.04 or more.
- A deficiency occurs at a signalized intersection if the addition of Project trips to an intersection that is currently operating at an acceptable LOS (i.e., LOS D causes the v/c to increase by 0.02 or more.
- A deficiency occurs at a signalized intersection if the addition of Project trips to an intersection that is currently operating at an unacceptable LOS (i.e., LOS E or F) causes the v/c to increase by 0.01 or more.
- A deficiency occur at an unsignalized intersection if the addition of Project rips causes the peak hour LOS to fall from an acceptable LOS to an unacceptable LOS.

5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

Consistent with Existing traffic conditions, no study area intersections are anticipated to meet traffic signal warrants for E+P traffic conditions (see Appendix 5.2).

5.5 E+P IMPACTS

The following study area intersection was evaluated to determine if the addition of Project traffic would result in a significant impact for E+P traffic conditions:

Potential Impact 1.1 – Atlantic Bl. / Valley Bl. (#12) – This intersection was found to operate at an unacceptable LOS (LOS E) during the PM peak hour only under Existing traffic conditions. The addition of Project traffic is not anticipated to increase the volume-to-capacity (v/c) beyond the City's significance threshold (e.g., increase to the v/c by less than0.01).

5.6 E+P RECOMMENDED IMPROVEMENTS

No improvements have been recommended as the Project's impact to the deficient intersection listed above is less than significant.

This page intentionally left blank

6 OPENING YEAR CUMULATIVE (2018) TRAFFIC CONDITIONS

This section discusses the methods used to develop Opening Year Cumulative Without and With Project traffic forecasts, and the resulting intersection operations and traffic signal warrants.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Opening Year Cumulative conditions are consistent with those shown previously on Exhibit 3-1, with the exception of Project driveways and those facilities assumed to be constructed by the Project to provide site access, which are anticipated to be in place for Opening Year Cumulative traffic conditions.

6.2 OPENING YEAR CUMULATIVE WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes, an ambient growth factor of 2.0%, and traffic from pending and approved but not yet constructed known development projects in the area. The weekday ADT, AM and PM peak hour volumes which can be expected for Opening Year Cumulative Without Project traffic conditions are shown on Exhibit 6-1.

6.3 OPENING YEAR CUMULATIVE WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes, an ambient growth factor of 2.0%, traffic from pending and approved but not yet constructed known development projects in the area, and the addition of Project traffic. The weekday ADT, AM and PM peak hour volumes which can be expected for Opening Year Cumulative With Project traffic conditions are shown on Exhibit 6-2.

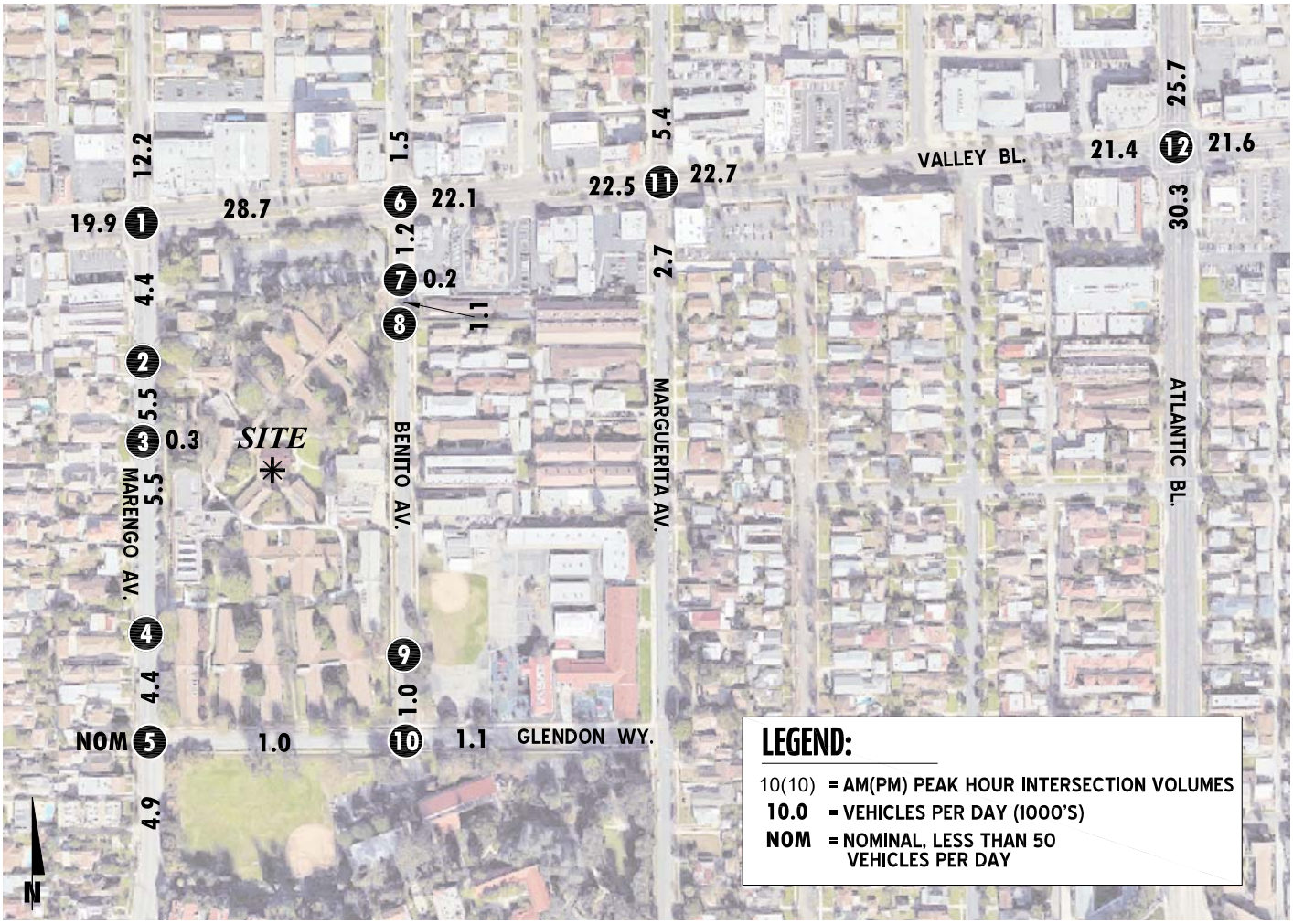
6.4 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under Opening Year Cumulative Without Project conditions, with roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown in Table 6-1 and Exhibit 6-3, the following study area intersection is anticipated to continue operate at unacceptable LOS:

- Atlantic Bl. / Valley Bl. (#12) – LOS E AM peak hour; LOS F PM peak hour

As shown on Table 6-1, the addition of Project traffic is not anticipated to cause any additional study area intersections to operate at an unacceptable LOS. A summary of the peak hour intersection LOS for Opening Year Cumulative Without and With Project conditions are shown on Exhibits 6-3 and 6-4. The intersection operations analysis worksheets for Opening Year Cumulative Without and With Project traffic conditions are included in Appendix 6.1 and Appendix 6.2 of this TIA, respectively.

EXHIBIT 6-1: OPENING YEAR CUMULATIVE (2018) WITHOUT PROJECT TRAFFIC VOLUMES



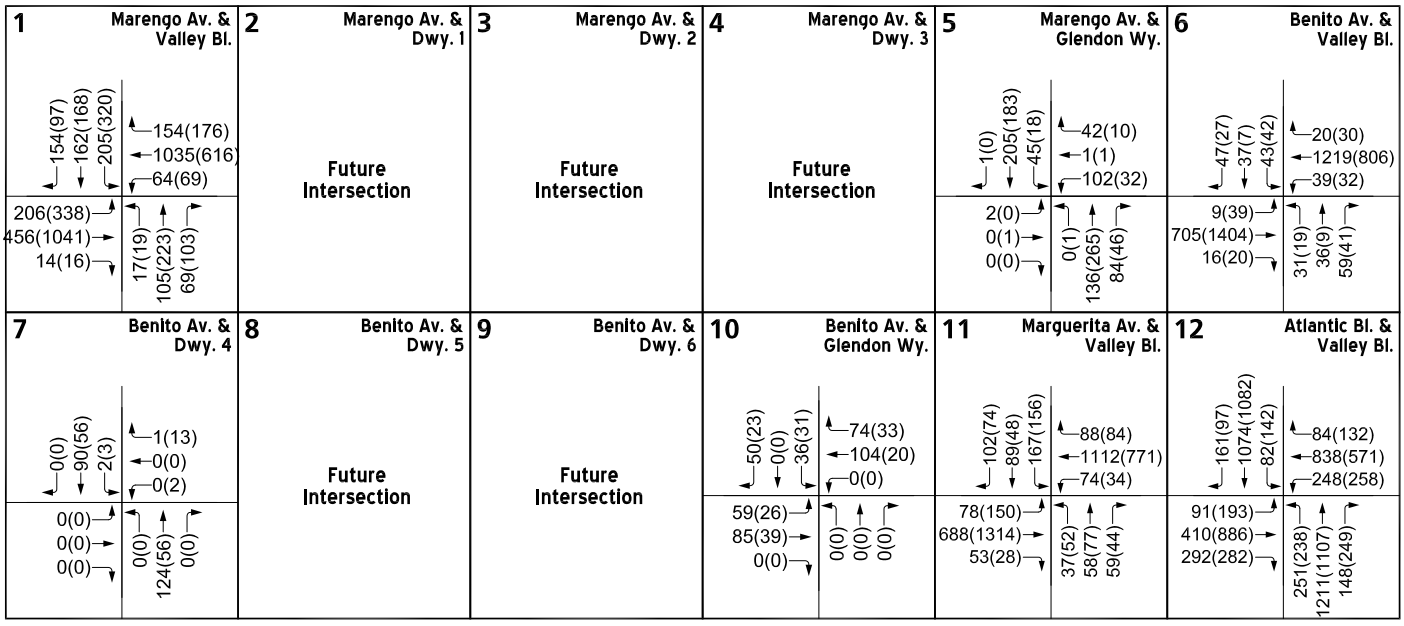
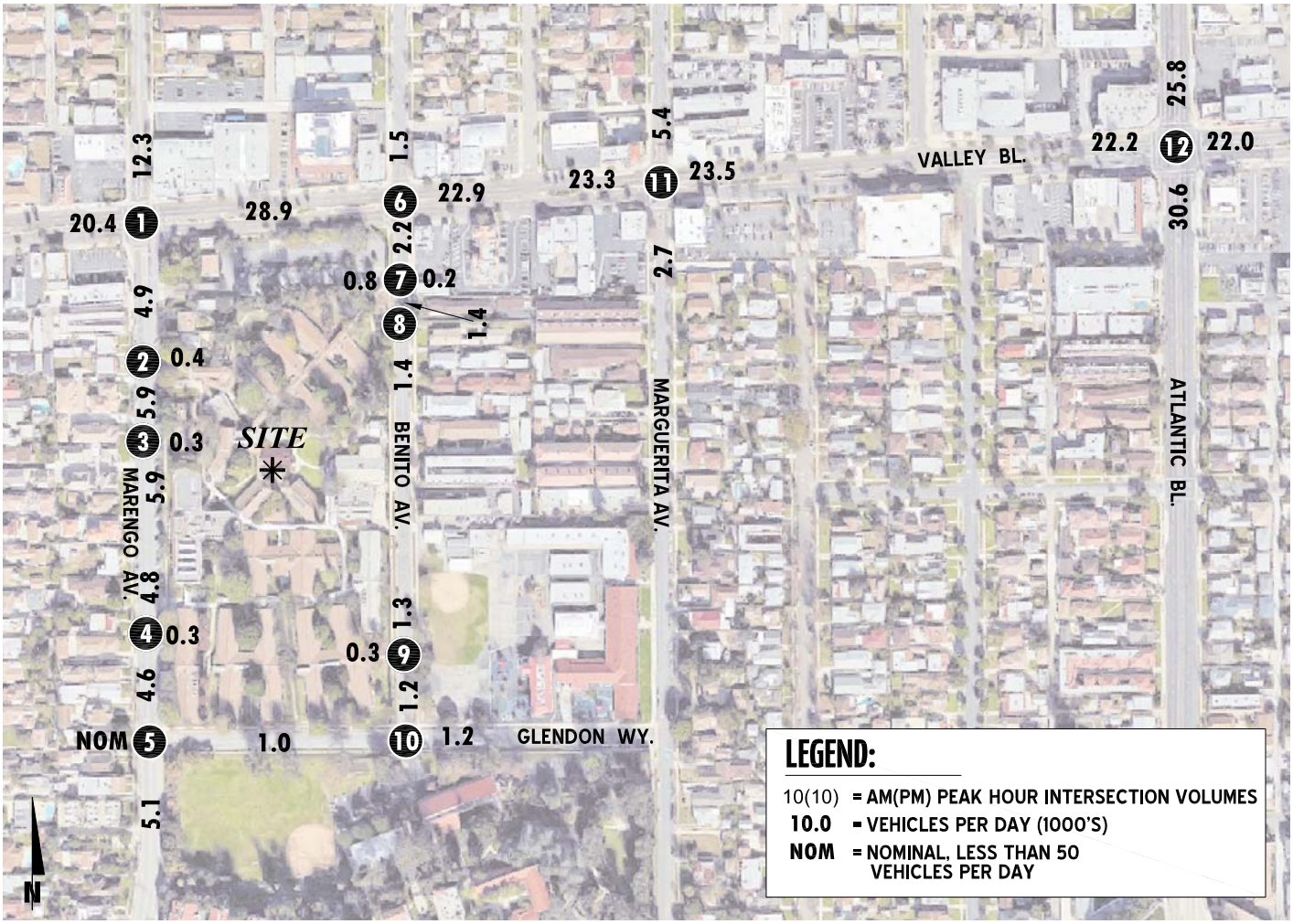


EXHIBIT 6-2: OPENING YEAR CUMULATIVE (2018) WITH PROJECT TRAFFIC VOLUMES



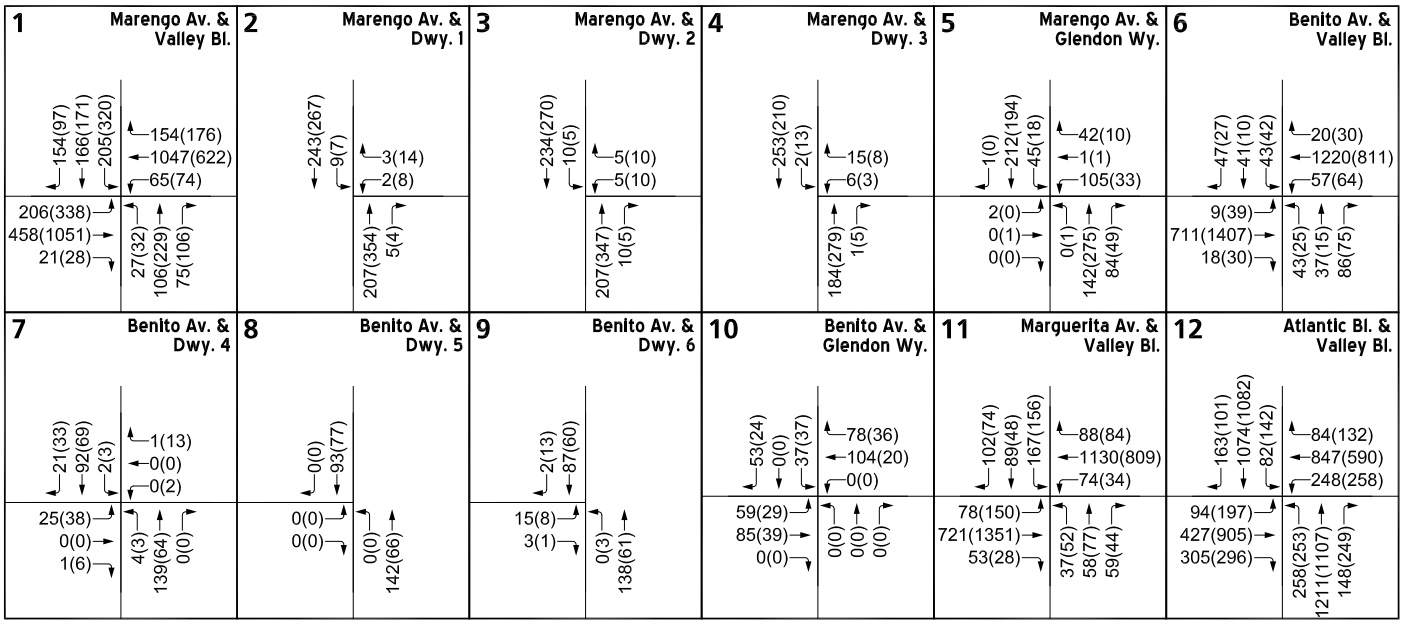


EXHIBIT 6-3: OPENING YEAR CUMULATIVE (2018) WITHOUT PROJECT SUMMARY OF LOS

LEGEND:

- = AM PEAK HOUR ACCEPTABLE LOS
- = AM PEAK HOUR DEFICIENT LOS
- = PM PEAK HOUR ACCEPTABLE LOS
- = PM PEAK HOUR DEFICIENT LOS
- (NA) = NOT AN ANALYSIS LOCATION FOR THIS SCENARIO

N

EXHIBIT 6-4: OPENING YEAR CUMULATIVE (2018) WITH PROJECT SUMMARY OF LOS

LEGEND:

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

N

Table 6-1

Intersection Analysis for Opening Year Cumulative (2018) Conditions

#	Intersection	Traffic Control[2]	2018 Without Project				2018 With Project				Change in ICU		Deficiency?[3]
			ICU (v/c) or Delay (secs.)[1]		Level of Service		ICU (v/c) or Delay (secs.)[1]		Level of Service				
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
1	Marengo Av. / Valley Bl.	TS	0.788	0.889	C	D	0.793	0.895	C	D	0.005	0.006	No
2	Marengo Av. / Dwy. 1	**CSS**	Future Intersection				10.2	11.8	B	B	Not Applicable		No
3	Marengo Av. / Dwy. 2	**CSS**	Future Intersection				10.4	12.1	B	B	Not Applicable		No
4	Marengo Av. / Dwy. 3	**CSS**	Future Intersection				10.1	10.7	B	B	Not Applicable		No
5	Marengo Av. / Glendon Wy.	AWS	10.6	9.7	B	A	10.7	10.0	B	A	Not Applicable		No
6	Benito Av. / Valley Bl.	TS	0.598	0.618	A	B	0.604	0.671	B	B	Not Applicable		No
7	Benito Av. / Dwy. 4	CSS	9.3	8.8	A	A	11.7	10.1	B	B	Not Applicable		No
8	Benito Av. / Dwy. 5	**CSS**	Future Intersection				0.0	0.0	A	A	Not Applicable		No
9	Benito Av. / Dwy. 6	**CSS**	Future Intersection				9.8	9.2	A	A	Not Applicable		No
10	Benito Av. / Glendon Wy.	AWS	9.7	7.5	A	A	9.8	7.5	A	A	Not Applicable		No
11	Marguerita Av. / Valley Bl.	TS	0.685	0.704	B	C	0.686	0.715	B	C	0.001	0.011	No
12	Atlantic Bl. / Valley Bl.	TS	0.921	1.045	E	F	0.930	1.050	E	F	0.009	0.005	No

* **BOLD** = Change in ICU is greater than the applicable jurisdictional threshold (i.e., > 0.01).

[1] ICU reported as a volume-to-capacity ratio and HCM delay reported in seconds. LOS calculated using Traffix Software.
Per the 2010 Highway Capacity Manual (HCM), overall average intersection delay and level of service are shown for all-way stop controlled intersections. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. LOS calculated using Synchro (Version 9.0).

[2] AWS = All-Way Stop; CSS = Cross-Street Stop; TS = Traffic Signal; **CSS** = Improvement

[3] To determine whether the addition of Project traffic at a study intersection results in LOS deficiencies, the following thresholds of significance consistent with the Los Angeles County CMP will be utilized:
- A deficiency occurs at a signalized intersection if the addition of Project trips to an intersection that is currently operating at an acceptable LOS (i.e., LOS C) causes the v/c to increase by 0.04 or more.
- A deficiency occurs at a signalized intersection if the addition of Project trips to an intersection that is currently operating at an acceptable LOS (i.e., LOS D causes the v/c to increase by 0.02 or more.
- A deficiency occurs at a signalized intersection if the addition of Project trips to an intersection that is currently operating at an unacceptable LOS (i.e., LOS E or F) causes the v/c to increase by 0.01 or more.
- A deficiency occur at an unsignalized intersection if the addition of Project rips causes the peak hour LOS to fall from an acceptable LOS to an unacceptable LOS.

6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

For Opening Year Cumulative conditions, there are no study area intersections anticipated to meet traffic signal warrants (see Appendix 6.3 and Appendix 6.4).

6.6 CUMULATIVE IMPACTS

The following study area intersection was evaluated to determine if the addition of Project traffic would result in a cumulatively significant impact based on a comparison of Opening Year Cumulative (2018) Without and With Project traffic conditions:

Potential Cumulative Impact 1.2 – Atlantic Bl. / Valley Bl. (#12) – This intersection was found to operate at an unacceptable LOS (LOS E during the AM peak hour and LOS F during the PM peak hour) during the peak hours under Opening Year Cumulative (2018) Without Project traffic conditions. The addition of Project traffic is anticipated to result in a deficiency during the AM peak hour, however, it not anticipated to increase the v/c beyond the City's significance threshold (e.g., increase to the v/c by less than 0.01).

6.7 OPENING YEAR CUMULATIVE RECOMMENDED IMPROVEMENTS

No improvements have been recommended as the Project's cumulative impact to the deficient intersection listed above is less than significant.

6.8 SUMMARY OF ROADWAY MEASURES TO IMPROVE PROJECT ACCESS AND RESIDENT SAFETY

The site adjacent recommended roadway lane improvements to be implemented by the Project are summarized below. Construction of on-site and site adjacent improvements shall occur in conjunction with adjacent Project development activity or as needed for Project access purposes.

Marengo Avenue / W. Valley Boulevard – Maintain the existing traffic signal control modify the northbound left turn lane to provide 100-feet of storage.

Benito Avenue / W. Valley Boulevard – Maintain the existing traffic signal control and modify the westbound left turn lane to provide 100-feet of storage.

This page intentionally left blank

7 REFERENCES

[1] C. o. L. A. D. o. P. Works, Traffic Impact Analysis Report Guidelines, Los Angeles County, January 1, 1997.

[2] Institute of Transportation Engineers, Trip Generation, 9th Edition ed., 2012.

[3] Los Angeles County Metropolitan Transportation Authority, Congestion Management Program, 2010.

[4] Transportation Research Board, Highway Capacity Manual (HCM), Washington, D.C.: National Academy of Sciences, 2010.

[5] Federal Highway Administration, "Manual on Uniform Traffic Control Devices (MUTCD)," in *California Manual on Uniform Traffic Control Devices (CAMUTCD)*, 2012.

This Page Intentionally Left Blank