LINSCOTT LAW & GREENSPAN engineers

REVISED TRAFFIC IMPACT ANALYSIS

THE UPTOWN

Long Beach, California
September 17, 2018
(Original Dated May 25, 2018)

Prepared for:

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LLG Ref. 2-18-3973-1

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Project Description

- The project site is located south of Harding Street, north of 61st Street, east of Linden Avenue and west of Atlantic Avenue and addressed at 6141-6191 Atlantic Avenue in the City of Long Beach, California. The subject property is a rectangular-shaped 2.58± parcel of land, with the northern half of the site developed as a local retail center with a 2,162 SF fast food restaurant with drive-through, a 1,009 SF restaurant, and 10,900 SF of retail. The southern half of the subject property is currently vacant. Vehicular access to the northern half of the subject property is currently provided by a driveway on Atlantic Avenue and a driveway on Harding Street, service access is provided via a gated driveway on Linden Avenue.

- The proposed Project plans to expand and re-brand the existing retail center. Site modifications include the demolition of 3,337 SF of floor area within one building and construction of four new buildings with a total floor area of 19,688 SF for a net increase of 16,351 SF. Upon completion of the project, The Uptown will have a total floor area of 30,422 SF, which includes 4,177 SF of fast food restaurant with drive-through window, 9,889 SF of restaurant, and 14,356 SF of retail, plus 2,000 SF of storage space.

- Vehicular access to the northern half of the project site will continue to be provided via the existing full access driveways on Atlantic Avenue and Harding Street. The existing gated driveway located along Linden Avenue is proposed to have the gates removed and allow ingress only. In addition to the existing driveways, one (1) full access driveway and one (1) egress only driveway are proposed on 61st Street.

- The proposed Project is forecast to generate approximately 1,669 "net" daily trips, with 123 "net" trips (67 inbound, 56 outbound) produced in the AM peak hour and 87 "net" trips (51 inbound, 36 outbound) produced in the PM peak hour on a "typical" weekday.

Study Area

- The eight (8) key study intersections selected for evaluation in this report provide local access within the project study area. They consist of the following:

    1. Atlantic Avenue at Artesia Boulevard (Signalized)
    2. Linden Avenue at Harding Street (Unsignalized)
    3. Atlantic Avenue at Harding Street (Signalized)
    4. Myrtle Avenue at Harding Street (Unsignalized)
    5. Orange Avenue at Harding Street (Signalized)
    6. Linden Avenue at 61st Street (Unsignalized)

7. Atlantic Avenue at 61st Street (Unsignalized)
8. Atlantic Avenue at South Street (Signalized)

Related Projects Description

- The four (4) cumulative projects are expected to generate a combined total of 1,915 daily trips, 115 AM peak hour trips (92 inbound and 23 outbound) and 173 PM peak hour trips (57 inbound and 116 outbound) on a typical weekday.

Traffic Impact Analysis

Existing Traffic Conditions

- All eight (8) key study intersections currently operate at LOS D or better during the weekday AM and PM peak hours.

Existing With Project Traffic Conditions

- The proposed Project will impact one (1) of the eight key study intersections, when compared to the LOS standards and significant impact criteria specified in this report. The intersection of Atlantic Avenue/Artesia Boulevard is forecast to operate at unacceptable LOS E in the PM peak hour with the Project, although the Project's ICU increase of 0.004 is less than 0.020 and thus the Project's impact at this location could be considered nominal.

Year 2021 Cumulative Traffic Conditions

- The addition of ambient traffic growth and cumulative project traffic will cumulatively impact one (1) of the eight study intersections. The intersection of Atlantic Avenue/Artesia Boulevard is forecast to operate at unacceptable LOS E during the PM peak hour. The remaining intersections forecast to operate at acceptable LOS D or better during the AM and PM peak hours.

Year 2021 Cumulative Plus Project Traffic Conditions

- The traffic associated with the proposed Project will not directly impact any of the eight (8) key study intersections, when compared to the LOS standards and significant impact criteria specified in this report. Although the intersection of Atlantic Avenue/Artesia Boulevard is forecast to operate at LOS E during the PM peak hour, the project increment adds less than 0.020 to the ICU value and hence the Project's impact is considered insignificant.

Recommended Improvements

Existing Plus Project Traffic Conditions

- The proposed Project will not significantly impact any of the eight (8) key study intersections under "Existing Plus Project" traffic conditions. Given that there are no significant project impacts, no improvements are required under this traffic scenario.

Year 2021 Cumulative Plus Project Traffic Conditions

- The proposed Project will not significantly impact any of the eight (8) key study intersections under the "Year 2021 Cumulative Plus Project" traffic scenario. Given that there are no significant project impacts, no improvements are required under this traffic scenario.

Transportation Improvement Fee

- Based on the "net" increase in Project development of 16,351 SF of retail/restaurant space, the proposed Project can be expected to pay up **to $73,579.50** in Transportation Improvement Fees. The precise fee will be determined by the City upon issuance of project building permits.

Site Access Evaluation

- The proposed driveways are forecast to operate at acceptable LOS C or better during both the AM and PM peak hours.

Congestion Management Program Compliance Assessment

- Based on the proposed Project's trip generation potential, trip distribution and trip assignment, the Project will not add more than 50 at the identified CMP intersections during the weekday AM peak hour or PM peak hour. Therefore a CMP intersection traffic impact analysis is not required and impacts would be less than significant.
- Based on the project's trip generation potential and distribution pattern, the proposed Project will not add more than 150 trips during the AM or PM peak hour at this CMP mainline freeway-monitoring location. Therefore, a CMP freeway traffic impact analysis is not required and impacts would be less than significant.

Transit Impact Review

- The proposed Project is forecast to generate an additional 12 transit trips (7 inbound and 5 outbound) during the AM peak hour and 9 transit trips (5 inbound and 4 outbound) during the PM peak hour. Over a 24-hour period the proposed Project is forecasted to generate an additional 164 daily weekday transit trips.

REVISED TRAFFIC IMPACT ANALYSIS

THE UPTOWN

Long Beach, California
September 17, 2018
(Original Dated May 25, 2018)

1.0 INTRODUCTION

This Traffic Impact Analysis report addresses the potential traffic impacts and circulation needs associated with The Uptown Project (hereinafter referred to as Project). The Project site is located south of Harding Street, north of 61st Street, east of Linden Avenue, and west of Atlantic Avenue at 6141-6191 Atlantic Avenue in the City of Long Beach, California. The Project includes the expansion and rebranding of an existing retail center to The Uptown. The proposed Project site is anticipated to have a development total of 27,601 SF consisting of 4,178 square feet (SF) of fast food restaurant with drive-through window, 9,067 SF of high turnover sit-down restaurant, and 14,356 SF of retail.

1.1 Scope of Work

This report documents the findings and recommendations of a traffic impact analysis, conducted by Linscott, Law & Greenspan, Engineers (LLG) to determine the potential impacts associated with the proposed Project. The traffic analysis evaluates the existing operating conditions at eight (8) key study intersections within the project vicinity, estimates the trip generation potential of the proposed Project, and forecasts future operating conditions without and with the Project. Where necessary, intersection improvements/mitigation measures are identified to offset the impact of the proposed Project. ***Appendix A*** contains the traffic impact analysis Scope of Work.

This traffic report satisfies the traffic impact study requirements of the City of Long Beach and is consistent with the requirements and procedures outlined in the most current *Congestion Management Program (CMP) for Los Angeles County.*

The Project site has been visited by LLG and an inventory of adjacent area roadways and intersections was performed. Existing peak hour traffic information has been collected at the eight (8) key study locations on a "typical" weekday for use in the preparation of intersection level of service calculations. Information concerning cumulative projects (planned and/or approved) in the vicinity of the project has been researched at the City of Long Beach. Based on our research, four (4) cumulative projects were considered in the cumulative traffic analysis for this project.

Based on City of Long Beach requirements, this traffic report analyzes existing and future (near-term) weekday AM and PM peak hour traffic conditions for existing and Year 2021 traffic conditions without and with the proposed Project. Peak hour traffic forecasts for the Year 2021 horizon year have been projected by increasing existing traffic volumes by an annual growth rate of one percent (1.0%) per year and adding traffic volumes generated by the four (4) cumulative projects.

1.2 Study Area

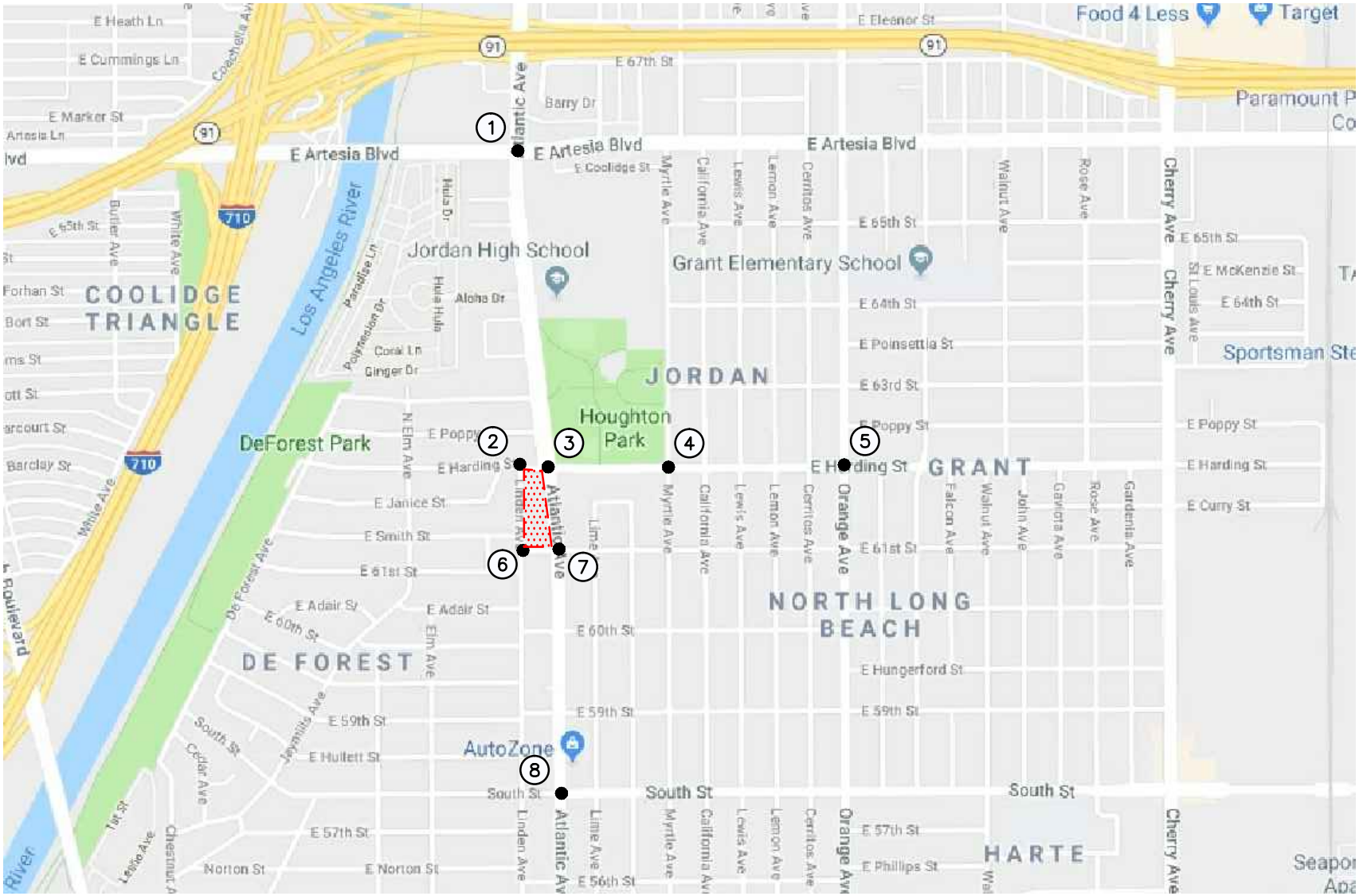
The eight (8) key study intersections selected for evaluation in this report provide local access within the project study area. They consist of the following:

1. Atlantic Avenue at Artesia Boulevard (Signalized)
2. Linden Avenue at Harding Street (Unsignalized)
3. Atlantic Avenue at Harding Street (Signalized)
4. Myrtle Avenue at Harding Street (Unsignalized)
5. Orange Avenue at Harding Street (Signalized)
6. Linden Avenue at 61st Street (Unsignalized)
7. Atlantic Avenue at 61st Street (Unsignalized)
8. Atlantic Avenue at South Street (Signalized)

Figure 1-1 presents a Vicinity Map, which illustrates the general location of the Project and depicts the study locations and surrounding street system. The Volume-Capacity (V/C) and Level of Service (LOS) investigations at these key locations were used to evaluate the potential traffic-related impacts associated with the proposed Project.

Included in this traffic study report are:

- Existing traffic counts;
- Estimated project traffic generation/distribution/assignment;
- Estimated cumulative project traffic generation/distribution/assignment;
- AM and PM peak hour capacity analyses for existing conditions;
- AM and PM peak hour capacity analyses for existing plus project conditions;
- AM and PM peak hour capacity analyses for future (Year 2021) conditions without and with project traffic;
- Recommended Improvements;
- Site Access, Internal Circulation Evaluation and Sight Distance Evaluation; and
- Congestion Management Program Compliance Assessment



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N NO SCALE

SOURCE: GOOGLE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 1-1

VICINITY MAP

THE UPTOWN, LONG BEACH

2.0 PROJECT DESCRIPTION

The project site is located south of Harding Street, north of 61st Street, east of Linden Avenue and west of Atlantic Avenue and addressed at 6141-6191 Atlantic Avenue in the City of Long Beach, California. The subject property is a rectangular-shaped 2.58± parcel of land, with the northern half of the site developed as a local retail center with a 2,162 SF fast food restaurant with drive-through, a 1,009 SF restaurant, and 10,900 SF of retail. The southern half of the subject property is currently vacant. Vehicular access to the northern half of the subject property is currently provided by a driveway on Atlantic Avenue and a driveway on Harding Street, service access is provided via a gated driveway on Linden Avenue. ***Figure 2-1*** displays the existing site aerial.

The proposed Project plans to expand and re-brand the existing retail center. Site modifications include the demolition of 3,337 SF of floor area within one building and construction of four new buildings with a total floor area of 19,688 SF, inclusive of 2,000 SF of floor area that is dedicated to storage space/mezzanine space, for a net increase of 16,351 SF. Upon completion of the project, The Uptown will have a total floor area of 30,422 SF, which includes 4,177 SF of fast food restaurant with drive-through window, 9,889 SF of restaurant, and 14,356 SF of retail, plus 2,000 SF of storage space. ***Table 2-1*** summarizes the proposed Project development totals for the site. On-site parking will be provided by a total of 134 parking spaces, inclusive of five (5) handicap accessible spaces, of which one (1) space is van accessible. ***Figure 2-2*** presents the Project's proposed site plan, prepared by Westland Real Estate Group dated August 21, 2018.

2.1 Site Access

Vehicular access to the northern half of the project site will continue to be provided via the existing full access driveways on Atlantic Avenue and Harding Street. The existing gated driveway located along Linden Avenue is proposed to have the gates removed and allow ingress only. In addition to the existing driveways, one (1) full access driveway and one (1) egress only driveway are proposed on 61st Street.

2.2 Pedestrian Circulation

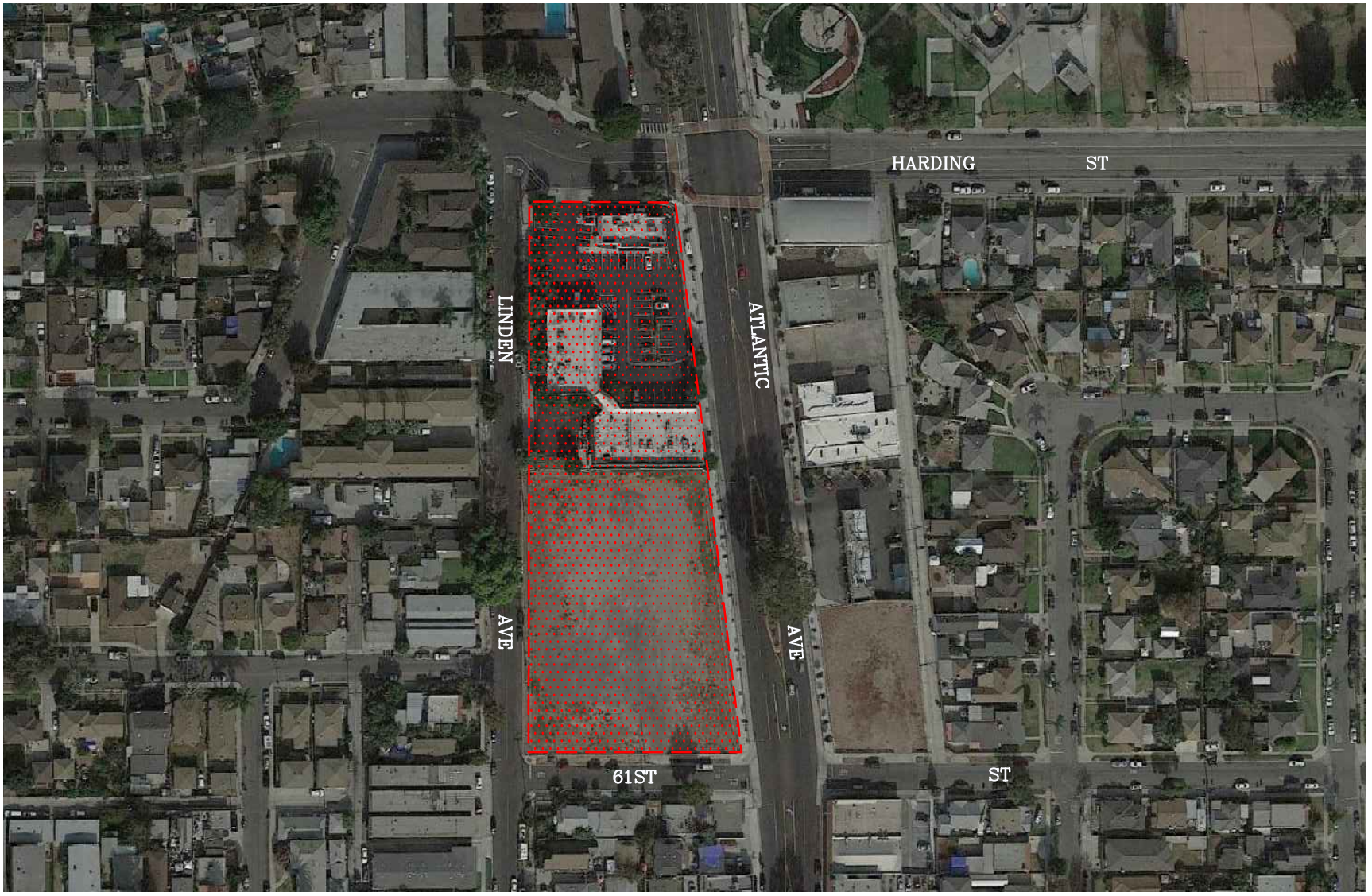
Pedestrian circulation would be provided via existing public sidewalks along Atlantic Avenue and Harding Street and Linden Avenue within the vicinity of the project frontage, which will connect to the proposed improvements along the frontage of the vacant property. The proposed Project will protect the existing sidewalk along project frontage and if necessary repair or reconstruct sidewalks along the project frontage per the City's request. As a project enhancement curb bulb-outs are proposed along Atlantic Avenue to provide approximately 8 feet of parklet area. These parklets are proposed along Atlantic Avenue at the southern edge of the property adjacent to 61st Street and midblock at the project driveway. Existing pedestrian facilities within the project area are adequate. Sidewalks are generally provided throughout the City along with crosswalks at most major intersections. In close proximity to the site, Katella Avenue provides pedestrians connectivity via the existing sidewalks linking the project site to the surrounding community. In close proximity to the site, crosswalks are provided at the signalized intersection of Atlantic Avenue and Harding Street.

TABLE 2-1

PROJECT DEVELOPMENT SUMMARY[1]

Land Use / Project Description	Existing Development Totals	Demolish Existing Square-Footage	Proposed Project Development Total	Total Project Development Square-Footage
▪ Fast Food Restaurant with Drive-Thru	2,162 SF	--	2,015 SF	4,177 SF
▪ Restaurant	1,009 SF	--	8,880 SF	9,889 SF
▪ Retail (include 2,000 SF of storage)	10,900 SF	-3,337 SF	8,793 SF	16,356 SF
Total	**14,071 SF**	**-3,337 SF**	**19,688 SF**	**30,422 SF**

[1] Source: Westland Real Estate Group, Site Plan dated August 21, 2018.



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SOURCE: GOOGLE

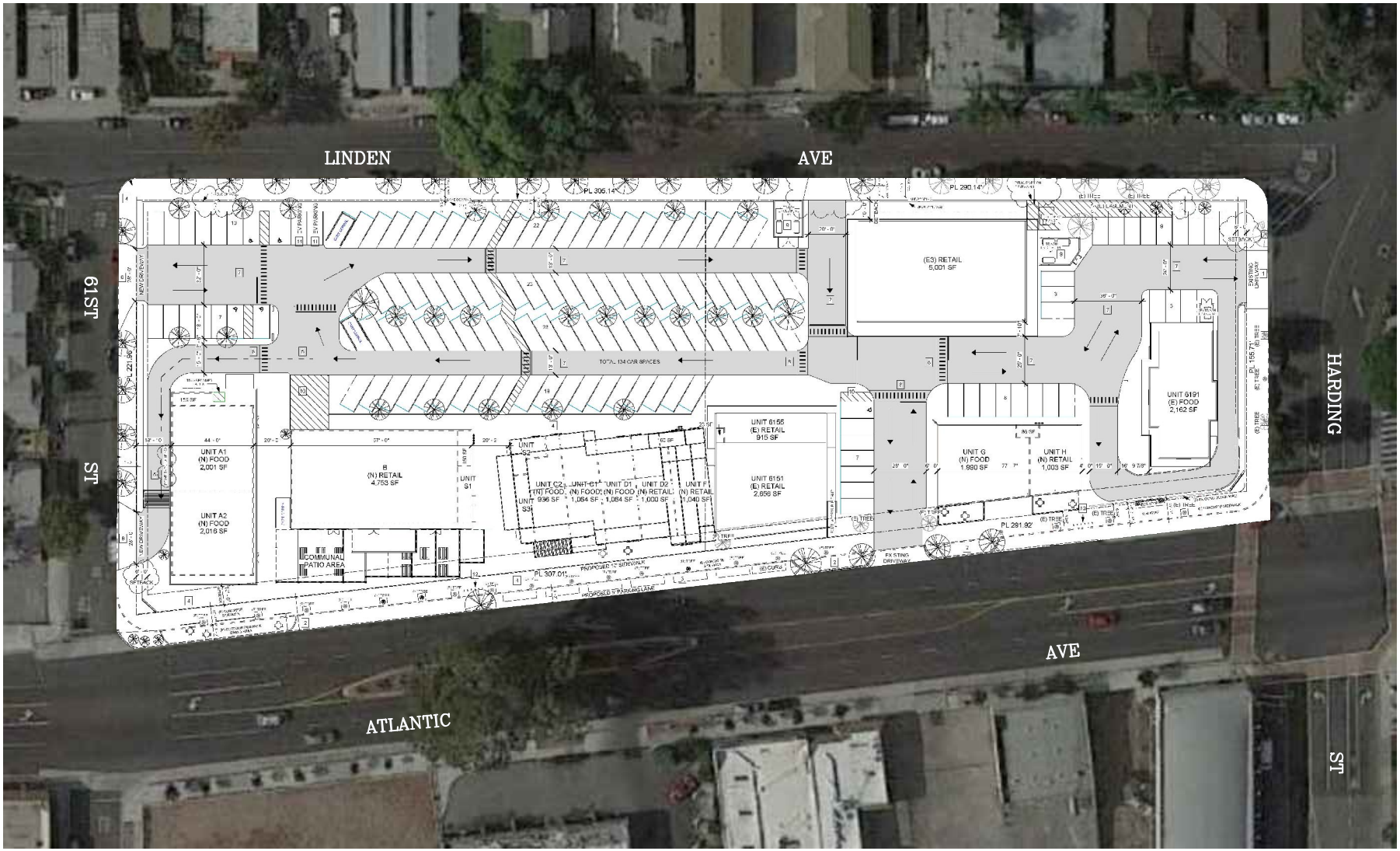
KEY

= PROJECT SITE

FIGURE 2-1

EXISTING AERIAL

THE UPTOWN, LONG BEACH



LINSCOTT LAW & GREENSPAN engineers

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NO SCALE

SOURCE: WESTLAND REAL ESTATE GROUP

FIGURE 2-2

PROPOSED SITE PLAN

THE UPTOWN, LONG BEACH

3.0 EXISTING CONDITIONS

3.1 Existing Street System

The principal local network of streets serving the project site includes Atlantic Avenue, Artesia Boulevard, Harding Street, and South Street. The following discussion provides a brief synopsis of these key area streets. The descriptions are based on an inventory of existing roadway conditions.

Atlantic Avenue is a four-lane, divided roadway oriented in the north-south direction. The posted speed limit is 35 miles per hour (mph). Parking is generally not permitted on either side of the roadway north of 61st Street, but is permitted on both sides of the roadway south of 61st Street within the vicinity of the project. Traffic signals control the study intersections of Atlantic Avenue at Artesia Boulevard, Harding Street, and South Street.

Artesia Boulevard is a four-lane, divided roadway oriented in the east-west direction. The posted speed limit is 35 mph. Parking is generally not permitted on either side of the roadway within the vicinity of the project. A traffic signal controls the study intersection of Atlantic Avenue at Artesia Boulevard.

Harding Street is a two-lane undivided roadway west of Atlantic Avenue, and a divided roadway east of Atlantic Avenue, oriented in the east-west direction. The posted speed limit is 30 mph. Parking is generally permitted on both sides of the roadway within the vicinity of the project. Traffic signals control the study intersections of Harding Street at Atlantic Avenue and Orange Avenue.

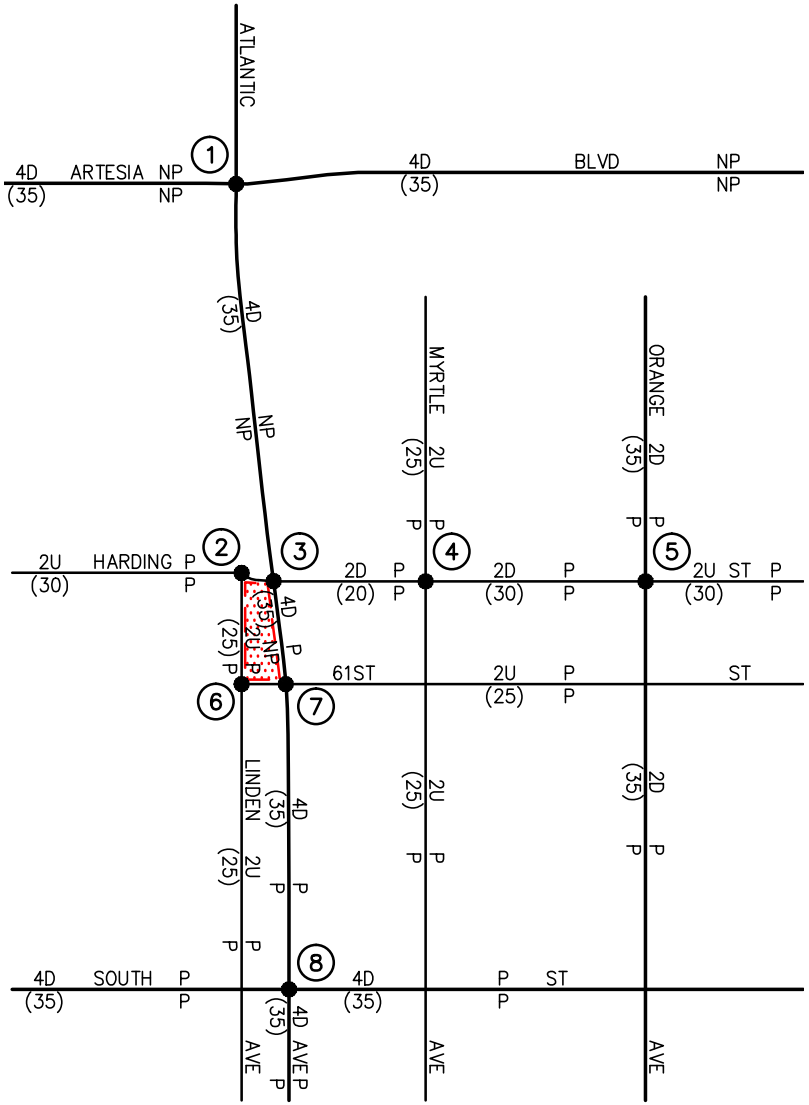
South Street is a four-lane, divided roadway oriented in the east-west direction. The posted speed limit is 35 mph. Parking is generally permitted on both sides of the roadway within the vicinity of the project. A traffic signal controls the study intersection of South Street at Atlantic Avenue.

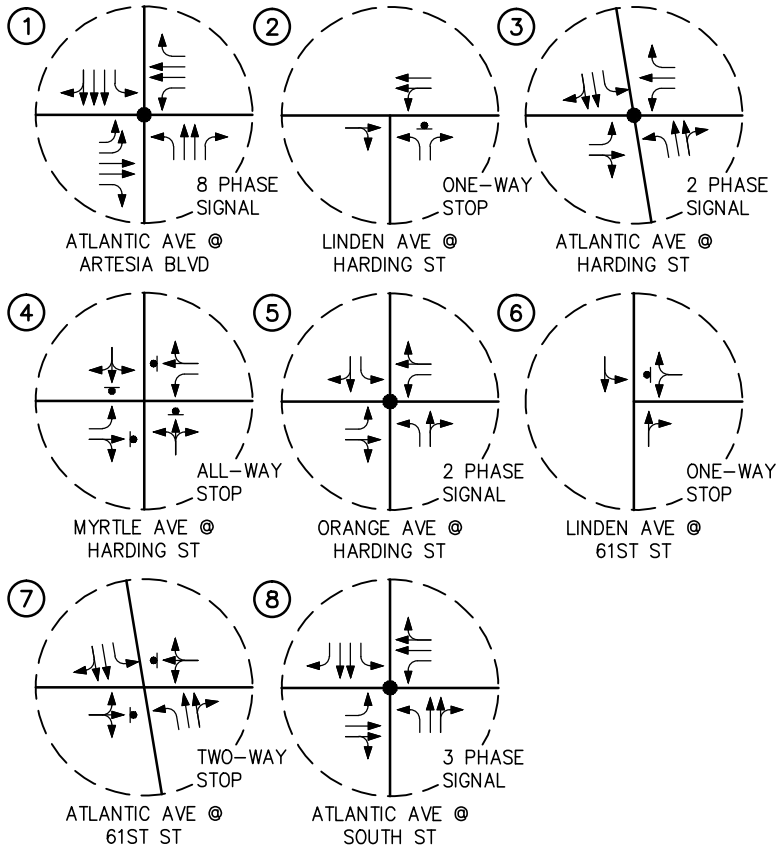
Figure 3-1 presents an inventory of the existing roadway conditions for the arterials and intersections evaluated in this report. The number of travel lanes and intersection controls for the key area intersections are identified.

3.2 Existing Traffic Volumes

Eight (8) key study intersections have been identified as the locations at which to evaluate existing and future traffic operating conditions. Some portion of potential project-related traffic will pass through each of these intersections, and their analysis will reveal the expected impact associated with the proposed Project.

Existing weekday peak hour traffic volumes for the eight (8) key study intersections evaluated in this report were obtained from manual turning movement counts conducted by National Data and Surveying Services in April 2018. ***Figures 3-2*** and ***3-3*** illustrate the existing weekday AM and PM peak hour traffic volumes at the eight (8) key study intersections evaluated in this report, respectively. ***Appendix B*** contains the detailed peak hour count sheets for the key intersections evaluated in this report.





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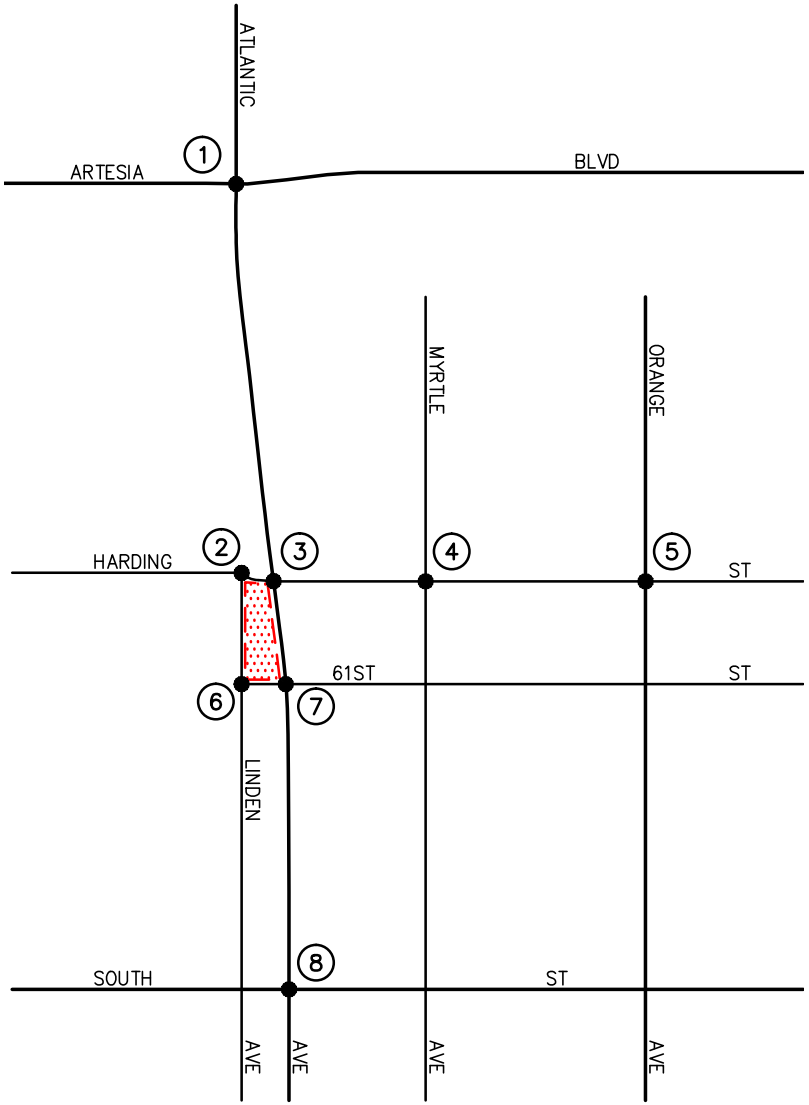
KEY

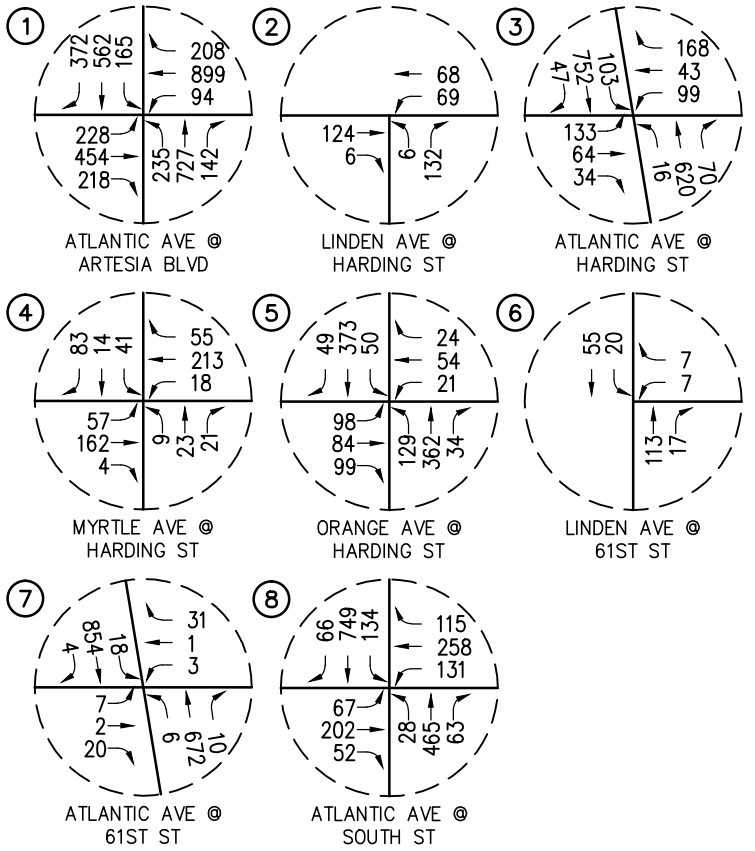
- ← = APPROACH LANE ASSIGNMENT
- ● = TRAFFIC SIGNAL, ⊥ = STOP SIGN
- P = PARKING, NP = NO PARKING
- U = UNDIVIDED, D = DIVIDED
- 2 = NUMBER OF TRAVEL LANES
- (XX) = POSTED SPEED LIMIT (MPH)
- ▭ = PROJECT SITE

FIGURE 3-1

EXISTING ROADWAY CONDITIONS AND INTERSECTION CONTROLS

THE UPTOWN, LONG BEACH





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KEY

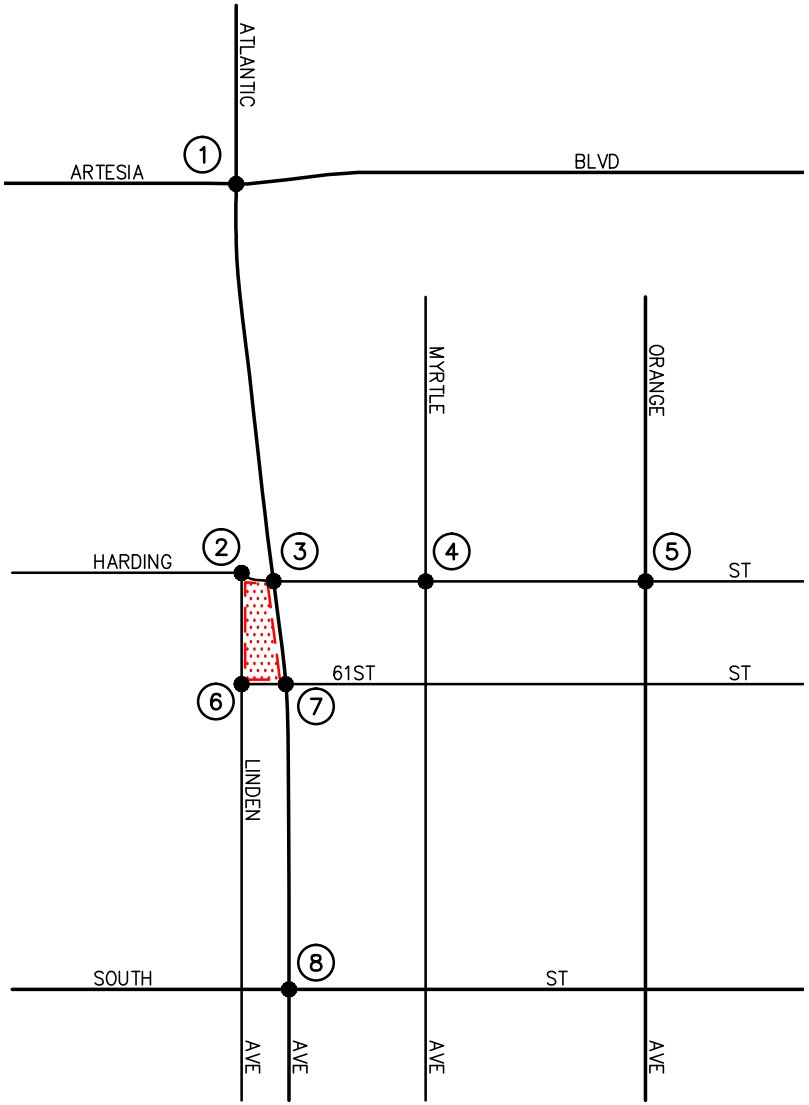
(#) = STUDY INTERSECTION

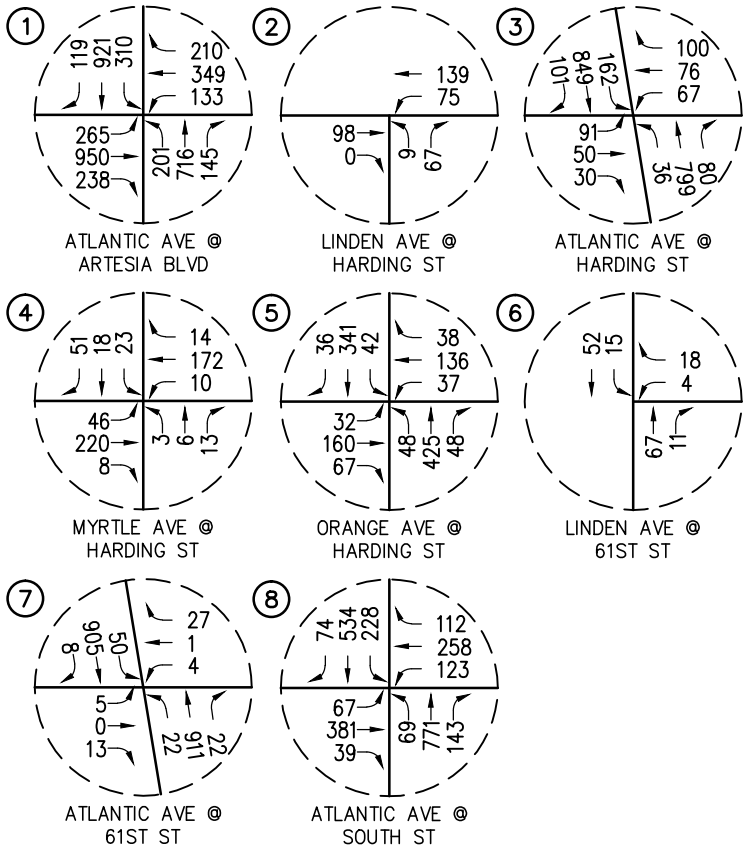
= PROJECT SITE

FIGURE 3-2

EXISTING AM PEAK HOUR TRAFFIC VOLUMES

THE UPTOWN, LONG BEACH





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N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 3-3

EXISTING PM PEAK HOUR TRAFFIC VOLUMES

THE UPTOWN, LONG BEACH

3.3 Existing Public Transit

The Los Angeles County Metropolitan Transportation Authority and Long Beach Transit (LBT) provide public transit services in the vicinity of the proposed Project. In the vicinity of the Project, the Metro Line 762 currently serves Artesia Boulevard. LBT Routes 61, 130 and 260 currently serve Atlantic Avenue. LBT Route 192 currently serves South Street. LBT Route 71 currently serves Orange Avenue. LBT Route 72 currently serves Artesia Boulevard and Orange Avenue. ***Figure 3-4*** graphically illustrates the transit routes of Long Beach Transit within the vicinity of the Project site. ***Figure 3-5*** identifies the location of the existing bus stops in proximity to the Project site.

3.4 Existing Bicycle Master Plan

The City of Long Beach promotes bicycling as a means of mobility and a way in which to improve the quality of life within its community. The Bicycle Master Plan recognizes the needs of bicycle users and aims to create a complete and safe bicycle network throughout the City. The City of Long Beach Bicycle Facilities in the vicinity of the Project site (existing and proposed) is shown on ***Figure 3-6***.

In close proximity to the site a Class II bike path is provided along the eastside and westside of Atlantic Avenue, between Harding Street and Artesia Boulevard, and on Harding Street, east of Atlantic Avenue. At Artesia Boulevard, a Class II bike path is provided both east and west of Atlantic Avenue. To the west on Harding Street, a Class III bike route is provided. The bikeways in this section of Long Beach are discontinuous.

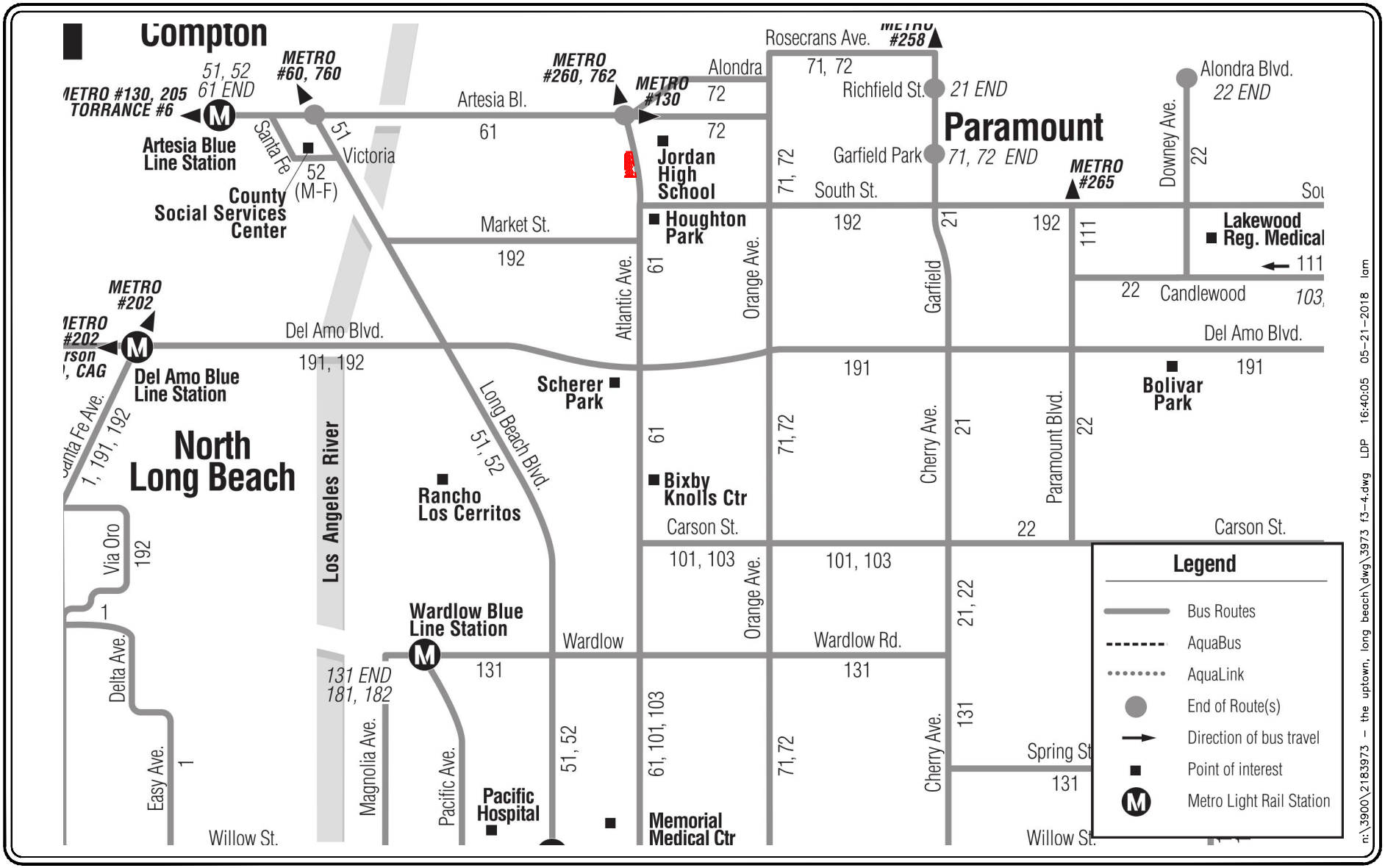
3.5 Existing Intersection Conditions

Existing AM and PM peak hour operating conditions for the key signalized study intersections were evaluated using the *Intersection Capacity Utilization* (ICU) methodology for signalized intersections and the *Highway Capacity Manual* (HCM) methodology for unsignalized intersections.

3.5.1 *Intersection Capacity Utilization (ICU) Method of Analysis*

In conformance with City of Long Beach and LA County CMP requirements, existing weekday peak hour operating conditions for the key signalized study intersections were evaluated using the Intersection Capacity Utilization (ICU) method. The ICU technique is intended for signalized intersection analysis and estimates the volume to capacity (V/C) relationship for an intersection based on the individual V/C ratios for key conflicting traffic movements. The ICU numerical value represents the percent signal (green) time, and thus capacity, required by existing and/or future traffic. It should be noted that the ICU methodology assumes uniform traffic distribution per intersection approach lane and optimal signal timing.

Per LA County CMP requirements, the ICU calculations use a lane capacity of 1,600 vehicles per hour (vph) for left-turn, through, and right-turn lanes, and dual left turn capacity of 2,880 vph. A clearance interval is also added to each Level of Service calculation. Per City of Long Beach requirements, a clearance interval of 0.10 is also added to each Level of Service calculation.



SOURCE: LONG BEACH TRANSIT

KEY

= PROJECT SITE

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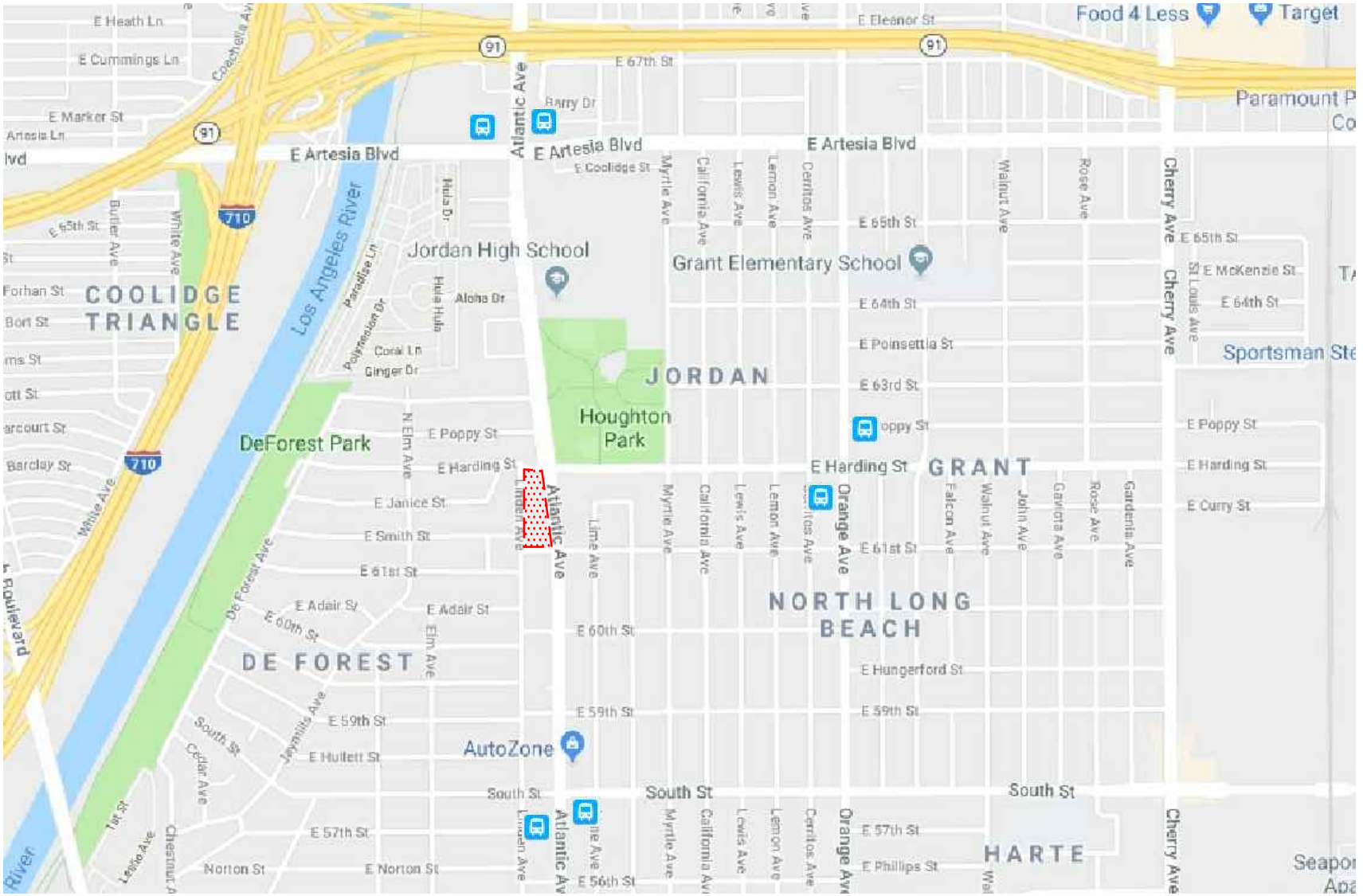
FIGURE 3-4

LONG BEACH TRANSIT MAP

THE UPTOWN, LONG BEACH



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SOURCE: GOOGLE

KEY

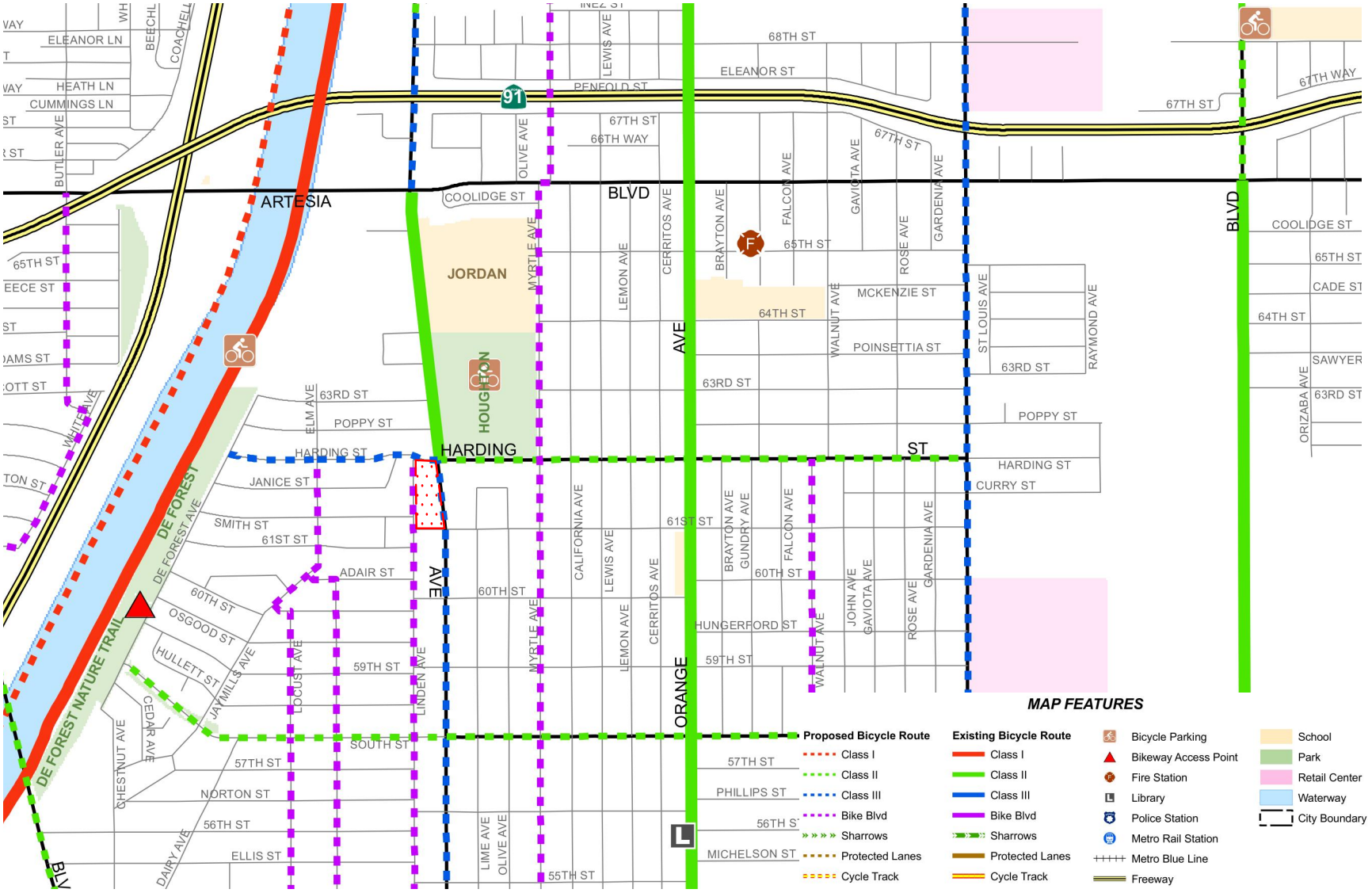
= PROJECT SITE

= TRANSIT STOP

FIGURE 3-5

TRANSIT STOP LOCATIONS

THE UPTOWN, LONG BEACH



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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: CITY OF LONG BEACH

KEY

= PROJECT SITE

FIGURE 3-6

LONG BEACH BIKEWAYS FACILITIES

THE UPTOWN, LONG BEACH

The ICU value translates to a Level of Service (LOS) estimate, which is a relative measure of the intersection performance. The six qualitative categories of Level of Service have been defined along with the corresponding ICU value range and are shown in ***Table 3-1***. The ICU value is the sum of the critical volume to capacity ratios at an intersection; it is not intended to be indicative of the LOS of each of the individual turning movements.

3.5.1 *Highway Capacity Manual (HCM) Method of Analysis (Unsignalized Intersections)*

The HCM unsignalized methodology for stop-controlled intersections was utilized for the analysis of the unsignalized intersections. This methodology estimates the average control delay for each of the subject movements and determines the level of service for each movement. For all-way stop controlled intersections, the overall average control delay measured in seconds per vehicle, and level of service is then calculated for the entire intersection. For one-way and two-way stop-controlled (minor street stop-controlled) intersections, this methodology estimates the worst side street delay, measured in seconds per vehicle and determines the level of service for that approach. The HCM control delay value translates to a Level of Service (LOS) estimate, which is a relative measure of the intersection performance. The six qualitative categories of Level of Service have been defined along with the corresponding HCM control delay value range, as shown in ***Table 3-2***.

3.5.2 *Level of Service Criteria*

According to the City of Long Beach, LOS D is the minimum acceptable condition that should be maintained during the peak commute hours, or the current LOS if the existing LOS is worse than LOS D (i.e. LOS E of F).

3.6 Existing Level of Service Results

Table 3-3 summarizes the existing peak hour service level calculations for the eight (8) key study intersections based on existing traffic volumes and current street geometrics. Review of *Table 3-3* indicates that all eight (8) key study intersections currently operate at LOS D or better during the weekday AM and PM peak hours.

Appendix C contains the detailed peak hour level of service worksheets for the key intersections evaluated in this report

TABLE 3-1

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (ICU) [2]

Level of Service (LOS)	Intersection Capacity Utilization Value (V/C)	Level of Service Description
A	≤ 0.600	EXCELLENT. No vehicle waits longer than one red light, and no approach phase is fully used.
B	0.601 – 0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 – 0.800	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 – 0.900	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 – 1.000	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.000	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Potentially very long delays with continuously increasing queue lengths.

[2] Source: *Transportation Research Board Circular 212 - Interim Materials on Highway Capacity.*

TABLE 3-2

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM)[3]

Level of Service (LOS)	Highway Capacity Manual Delay Value (sec/veh)	Level of Service Description
A	≤ 10.0	Little or no delay
B	> 10.0 and ≤ 15.0	Short traffic delays
C	> 15.0 and ≤ 25.0	Average traffic delays
D	> 25.0 and ≤ 35.0	Long traffic delays
E	> 35.0 and ≤ 50.0	Very long traffic delays
F	> 50.0	Severe congestion

[3] Source: *Highway Capacity Manual 6th Edition*, Chapter 20 (Two-Way Stop Control).

TABLE 3-3

EXISTING (YEAR 2018) PEAK HOUR INTERSECTION CAPACITY ANALYSIS

	Key Intersection	Time Period	Control Type	ICU/HCM	LOS
1.	Atlantic Avenue at Artesia Boulevard	AM	8∅ Traffic Signal	0.802	D
		PM		0.898	D
2.	Linden Avenue at Harding Street	AM	One-Way Stop	9.6 s/v	A
		PM		9.3 s/v	A
3.	Atlantic Avenue at Harding Street	AM	2∅ Traffic Signal	0.568	A
		PM		0.595	A
4.	Myrtle Avenue at Harding Street	AM	All-Way Stop	9.9 s/v	A
		PM		9.4 s/v	A
5.	Orange Avenue at Harding Street	AM	2∅ Traffic Signal	0.572	A
		PM		0.587	A
6.	Linden Avenue at 61st Street	AM	One-Way Stop	9.4 s/v	A
		PM		8.9 s/v	A
7.	Atlantic Avenue at 61st Street	AM	Two-Way Stop	20.6 s/v	C
		PM		25.5 s/v	D
8.	Atlantic Avenue at South Street	AM	3∅ Traffic Signal	0.513	A
		PM		0.736	C

Notes:

- ICU = Intersection Capacity Utilization
- LOS = Level of Service, please refer to *Table 3-1* and *3-2* for the LOS definitions
- ∅ = Phase
- s/v = seconds per vehicle (delay)

4.0 TRAFFIC FORECASTING METHODOLOGY

In order to estimate the traffic impact characteristics of the proposed Project, a multi-step process has been utilized. The first step is traffic generation, which estimates the total arriving and departing traffic on a peak hour and daily basis. The traffic generation potential is forecast by applying the appropriate vehicle trip generation equations or rates to the project development tabulation.

The second step of the forecasting process is traffic distribution, which identifies the origins and destinations of inbound and outbound project traffic. These origins and destinations are typically based on demographics and existing/expected future travel patterns in the study area.

The third step is traffic assignment, which involves the allocation of project traffic to study area streets and intersections. Traffic assignment is typically based on minimization of travel time, which may or may not involve the shortest route, depending on prevailing operating conditions and travel speeds. Traffic distribution patterns are indicated by general percentage orientation, while traffic assignment allocates specific volume forecasts to individual roadway links and intersection turning movements throughout the study area.

With the forecasting process complete and project traffic assignments developed, the impact of the project is isolated by comparing operational (LOS) conditions at selected key intersections using expected future traffic volumes with and without forecast project traffic. The need for site-specific and/or cumulative local area traffic improvements can then be evaluated.

5.0 PROJECT TRAFFIC CHARACTERISTICS

5.1 Project Traffic Generation

Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Generation equations and/or rates used in the traffic forecasting procedure are found in the 10th Edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE) [Washington D.C., 2017].

Table 5-1 presents the trip generation forecast for the proposed Project and existing land use and summarizes the trip generation rates used in forecasting the vehicular trips generated by the proposed Project and also presents the project's forecast peak hour and daily traffic volumes.

As shown in the upper portion of *Table 5-1*, ITE Land Use 820: Shopping Center, ITE Land Us 932: High Turnover Sit Down Restaurant, and ITE Land Use 934: Fast Food Restaurant with Drive-Through Window were used to forecast the trip generation potential of the proposed Project and existing land uses. To provide a conservative assessment, the Project's proposed storage floor area was included and assumed in the total added retail floor area.

A review of the middle portion of *Table 5-1* indicates that the proposed Project is forecast to generate approximately 2,627 daily trips, with 184 trips (99 inbound, 85 outbound) produced in the AM peak hour and 137 trips (76 inbound, 61 outbound) produced in the PM peak hour on a "typical" weekday.

A review of the lower portion of *Table 5-1* indicates that the existing land uses currently generate approximately 958 daily trips, with 61 trips (32 inbound, 29 outbound) produced in the AM peak hour and 50 trips (25 inbound, 25 outbound) produced in the PM peak hour on a "typical" weekday.

A comparison of the Project trips to the existing land use trips indicates that the Project will only generate approximately 1,669 "net" daily trips, with 123 "net" trips (67 inbound, 56 outbound) produced in the AM peak hour and 87 "net" trips (51 inbound, 36 outbound) produced in the PM peak hour on a "typical" weekday. The net trip generation is analyzed in this report.

TABLE 5-1

PROJECT TRIP GENERATION FORECAST[4]

Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Trip Generation Rates:							
▪ 820: Shopping Center (TE/1000 SF)	37.75	62%	38%	0.94	48%	52%	3.81
▪ 932: High Turnover Sit Down Restaurant (TE/1000 SF)	112.18	55%	45%	9.94	62%	38%	9.77
▪ 934: Fast Food Restaurant with Drive Through Window (TE/1000 SF)	470.95	51%	49%	40.19	52%	48%	32.67
Project Trip Generation Forecast:							
▪ Fast Food Restaurant with Drive-Through Window (4,177 SF)	1,968	86	82	168	71	65	136
Internal Capture[5]	*-73*	*0*	*0*	*0*	*-3*	*-4*	*-7*
subtotal	1,895	86	82	168	68	61	129
Pass-by (25% Daily, 49% AM, 50% PM)	*-474*	*-42*	*-40*	*-82*	*-34*	*-31*	*-65*
Total Fast Food with Drive-Through Window Trips	***1,421***	***44***	***42***	***86***	***34***	***30***	***64***
▪ High Turnover Sit Down Restaurant (9,889 SF)	1,109	54	44	98	60	37	97
Internal Capture[5]	*-171*	*-1*	*-1*	*-2*	*-6*	*-11*	*-17*
subtotal	938	53	43	96	54	26	80
Pass-by (10% Daily, 10% AM, 43% PM)	*-94*	*-5*	*-5*	*-10*	*-23*	*-11*	*-34*
Total High Turnover Sit Down Restaurant Trips	***844***	***48***	***38***	***86***	***31***	***15***	***46***
▪ Retail (14,356 SF plus 2,000 SF for a total of 16,356 SF)	617	9	6	15	30	32	62
Internal Capture[5]	*-215*	*-1*	*-1*	*-2*	*-13*	*-8*	*-21*
subtotal	402	8	5	13	17	24	41
Pass-by (10% Daily, 10% AM, 34% PM)	*-40*	*-1*	*0*	*-1*	*-6*	*-8*	*-14*
Total Shopping Center Trips	***362***	***7***	***5***	***12***	***11***	***16***	***27***
Total Project Trips [A]	**2,627**	**99**	**85**	**184**	**76**	**61**	**137**
Existing Land Use Trip Generation Forecast:							
▪ Fast Food Restaurant with Drive-Through Window (2,162 SF)	1,018	44	43	87	37	34	71
Internal Capture[5]	-111	-1	0	-1	-4	-7	-11
subtotal	907	43	43	86	33	27	60
Pass-by (25% Daily, 49% AM, 50% PM)	-227	-21	-21	-42	-17	-13	-30
Total Fast Food with Drive-Through Window Trips	***680***	***22***	***22***	***44***	***16***	***14***	***30***
▪ High Turnover Sit Down Restaurant (1,009 SF)	113	6	4	10	6	4	10
Internal Capture[5]	-52	0	0	0	-2	-3	-5
subtotal	61	6	4	10	4	1	5
Pass-by (10% Daily, 10% AM, 43% PM)	-6	-1	0	-1	-2	0	-2
Total High Turnover Sit Down Restaurant Trips	***55***	***5***	***4***	***9***	***2***	***1***	***3***
▪ Retail (10,900 SF)	411	6	4	10	20	22	42
Internal Capture[5]	-163	0	-1	-1	-10	-6	-16
subtotal	248	6	3	9	10	16	26
Pass-by (10% Daily, 10% AM, 34% PM)	-25	-1	0	-1	-3	-6	-9
Total Shopping Center Trips	***223***	***5***	***3***	***8***	***7***	***10***	***17***
Total Existing Land Use Trips [B]	**958**	**32**	**29**	**61**	**25**	**25**	**50**
Total Net Project Trips ([A] – [B])	**1,669**	**67**	**56**	**123**	**51**	**36**	**87**

Notes:
TE/1000 SF = Trip end per 1,000 SF

4 Source: *Trip Generation, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017).*

5 Consistent with the *Trip Generation Handbook*, published by ITE (2014). Project trip generation was adjusted to account for internal capture between the apartment buildings and the retail components of the Project.

5.2 Project Traffic Distribution and Assignment

Figure 5-1 illustrates the general, directional traffic distribution pattern for the proposed Project. Project traffic volumes both entering and exiting the project site have been distributed and assigned to the adjacent street system based on the following considerations:

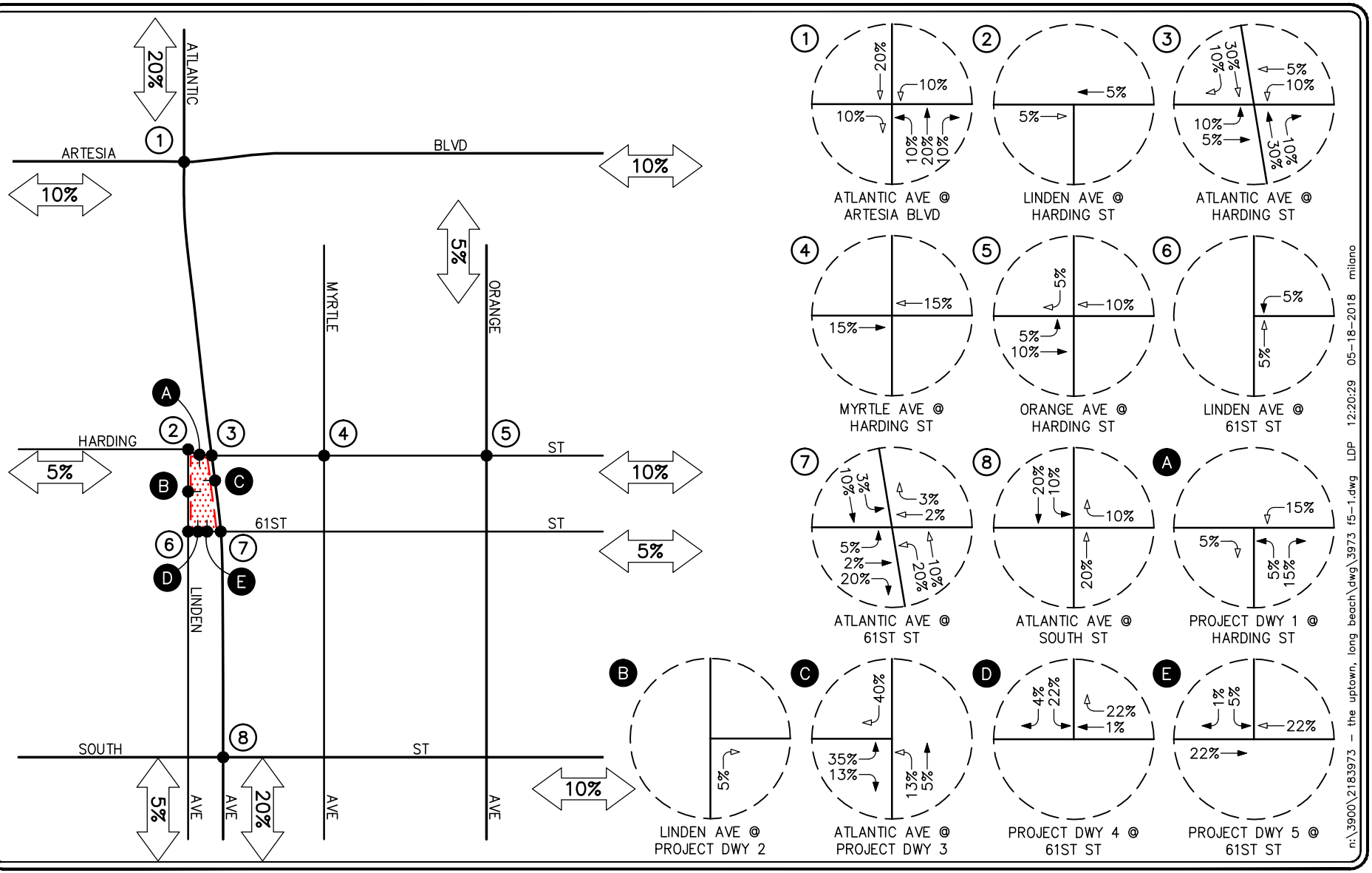
- the site's proximity to major traffic carriers and regional access routes;
- physical characteristics of the circulation system such as lane channelization and presence of traffic signals that affect travel patterns;
- presence of traffic congestion in the surrounding vicinity; and
- ingress/egress availability at the Project site, plus parking layout and allocation within the subject property

The anticipated AM and PM peak hour traffic volumes associated with the proposed Project are presented in ***Figures 5-2*** and ***5-3***, respectively. The traffic volume assignments presented in *Figures 5-2* and *5-3* reflect the traffic distribution characteristics shown in *Figure 5-1* and the traffic generation forecast presented in the upper portion of *Table 5-1*. Please note that the net project trips were distributed to the eight (8) key study intersections while forecasting the full buildout of the project at the five (5) project driveways.

5.3 Existing Plus Project Traffic Conditions

The existing plus project traffic conditions have been generated based upon existing conditions and the estimated project traffic. These forecast traffic conditions have been prepared pursuant to the California Environmental Quality Act (CEQA), which require that the potential impacts of a Project be evaluated upon the circulation system as it currently exists. This traffic volume scenario and the related intersection capacity analyses will identify the roadway improvements necessary to mitigate the direct traffic impacts of the Project, if any.

Figures 5-4 and ***5-5*** present projected AM and PM peak hour traffic volumes at the eight (8) key study intersections with the addition of the trips generated by the proposed Project to existing traffic volumes, respectively.



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N NO SCALE

KEY

(#) = STUDY INTERSECTION

⟵ = INBOUND PERCENTAGE

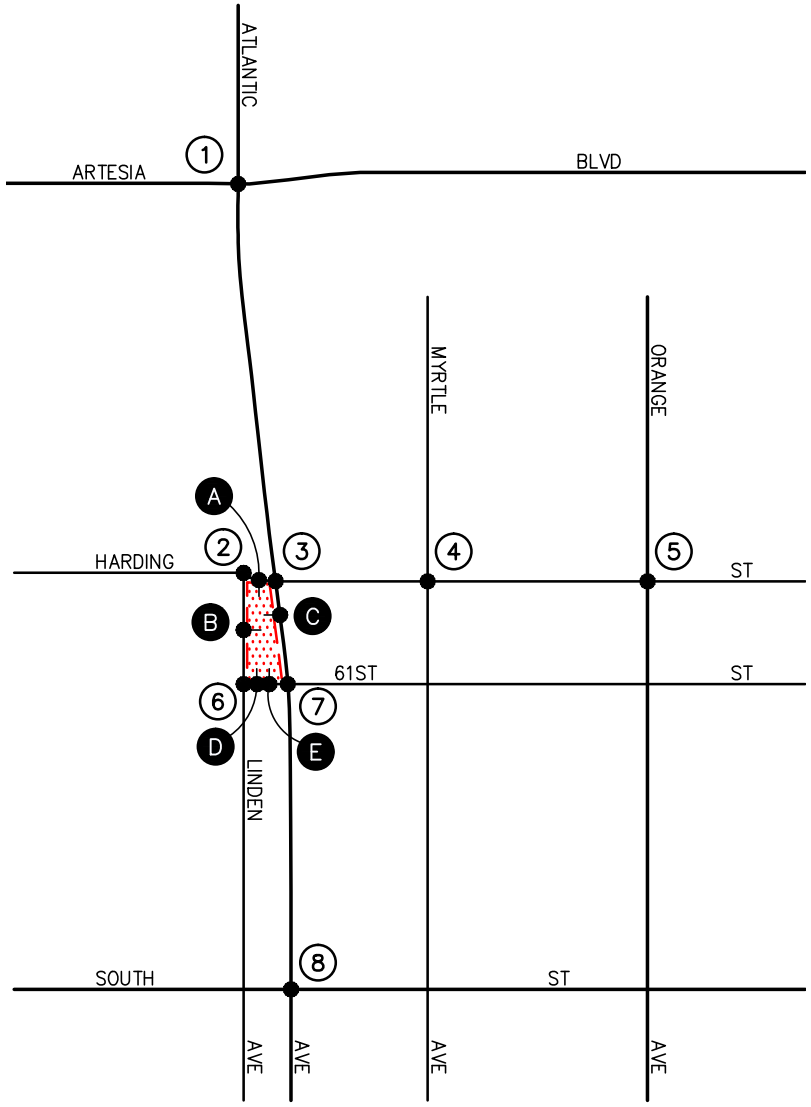
⟵ = OUTBOUND PERCENTAGE

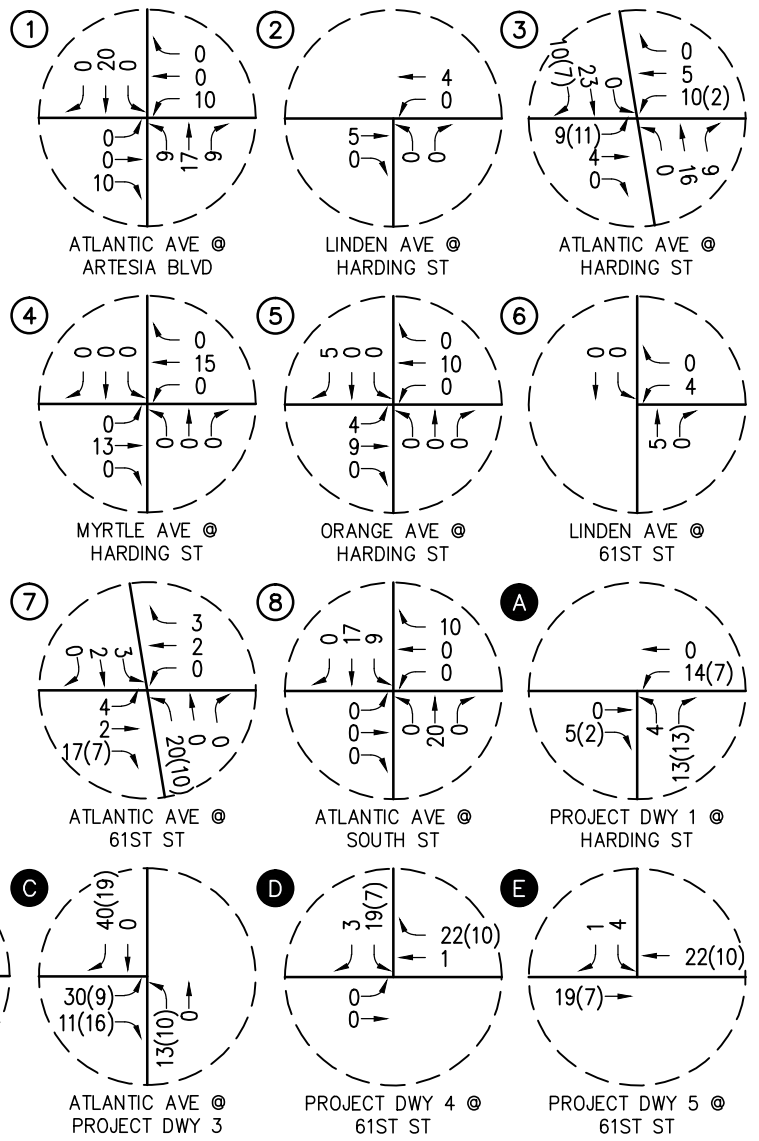
= PROJECT SITE

FIGURE 5-1

PROJECT TRAFFIC DISTRIBUTION PATTERN

THE UPTOWN, LONG BEACH





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N NO SCALE

KEY

(#) = STUDY INTERSECTION

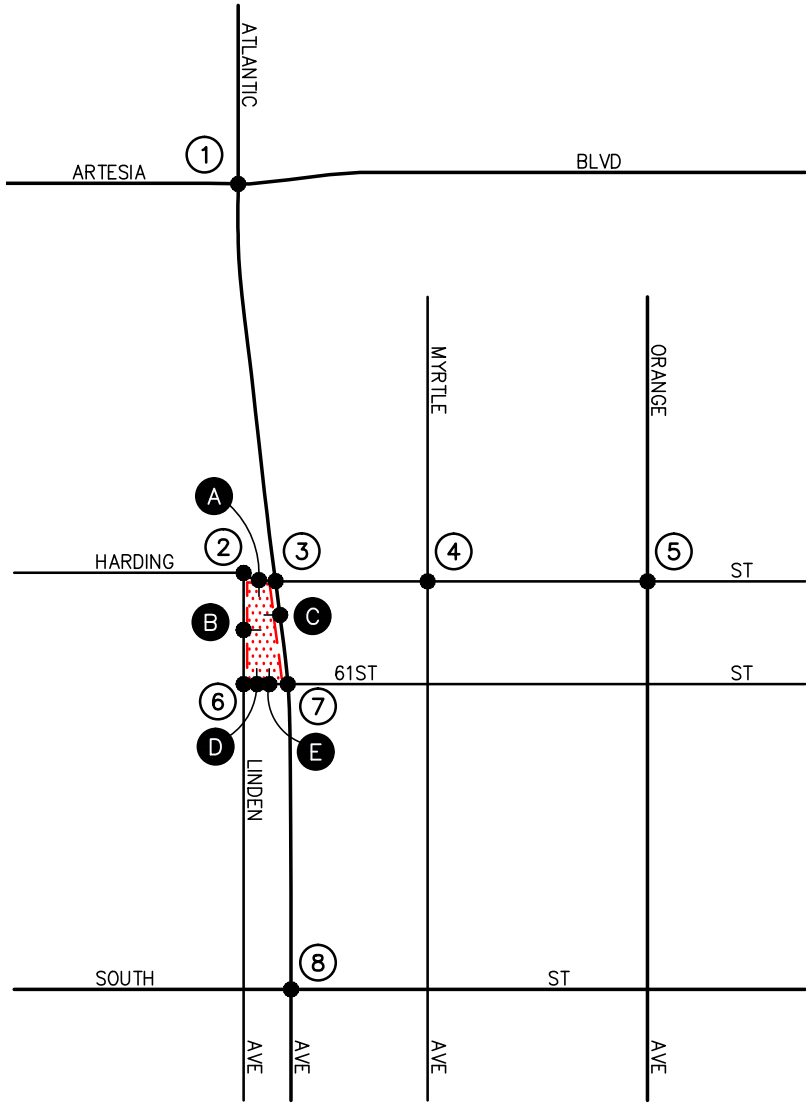
= PROJECT SITE

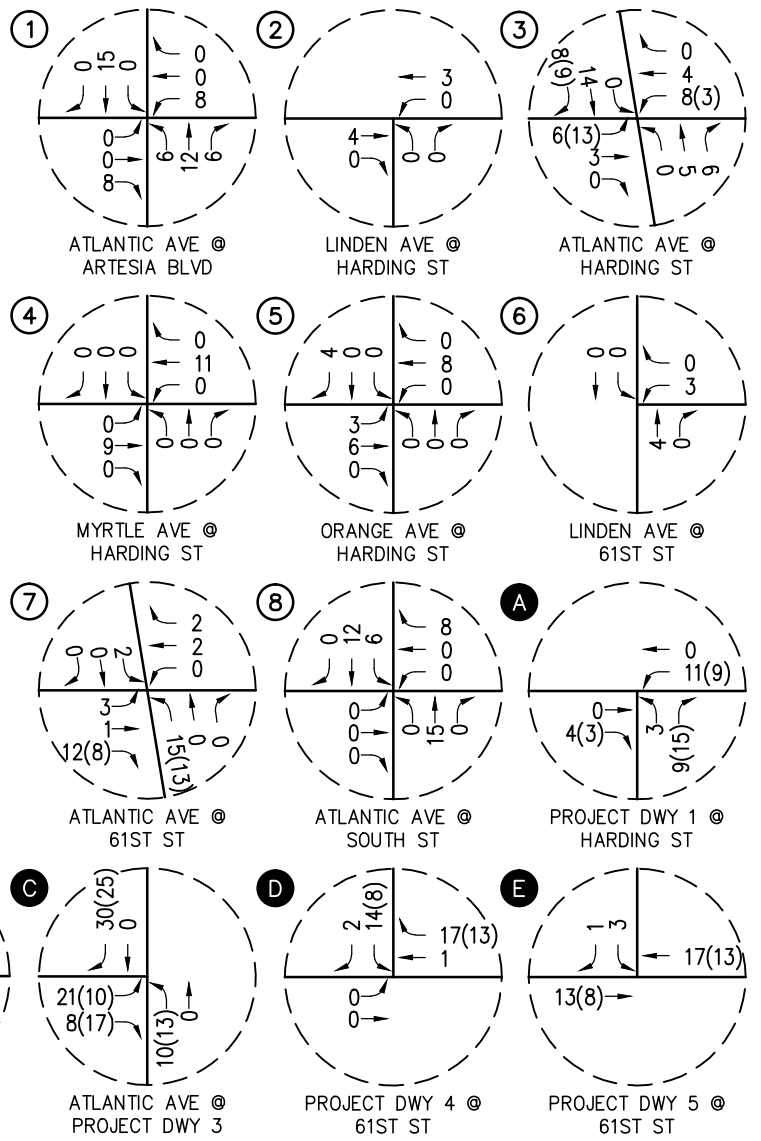
(XX) = PASS-BY TRIPS

FIGURE 5-2

AM PEAK HOUR PROJECT TRAFFIC VOLUMES

THE UPTOWN, LONG BEACH





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N NO SCALE

KEY

(#) = STUDY INTERSECTION

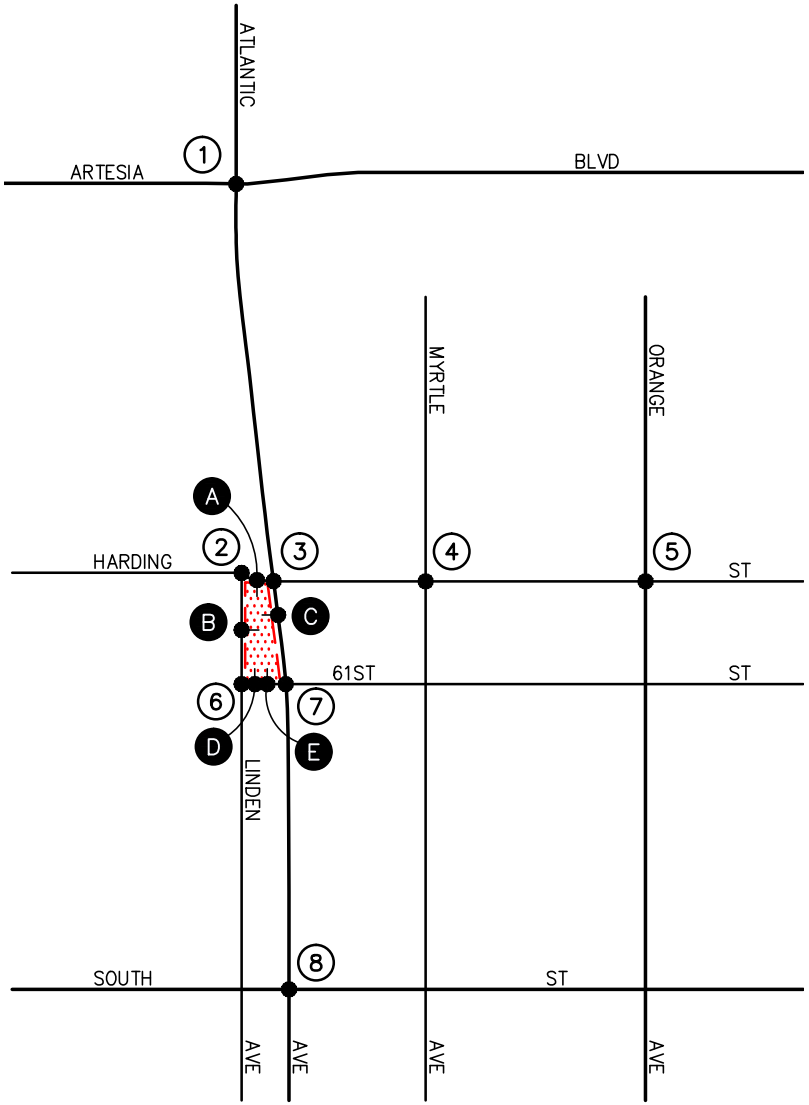
= PROJECT SITE

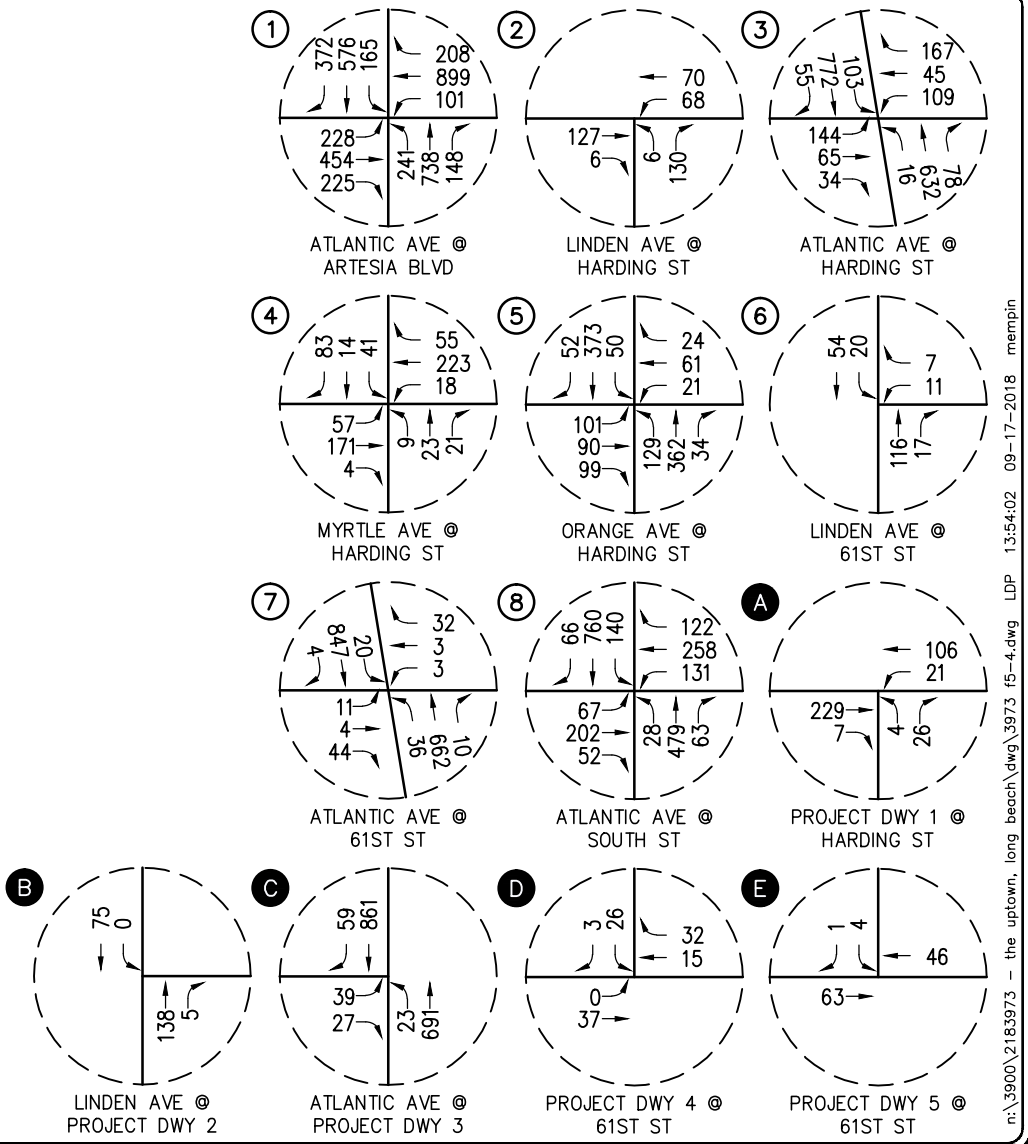
(XX) = PASS-BY TRIPS

FIGURE 5-3

PM PEAK HOUR PROJECT TRAFFIC VOLUMES

THE UPTOWN, LONG BEACH





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N NO SCALE

KEY

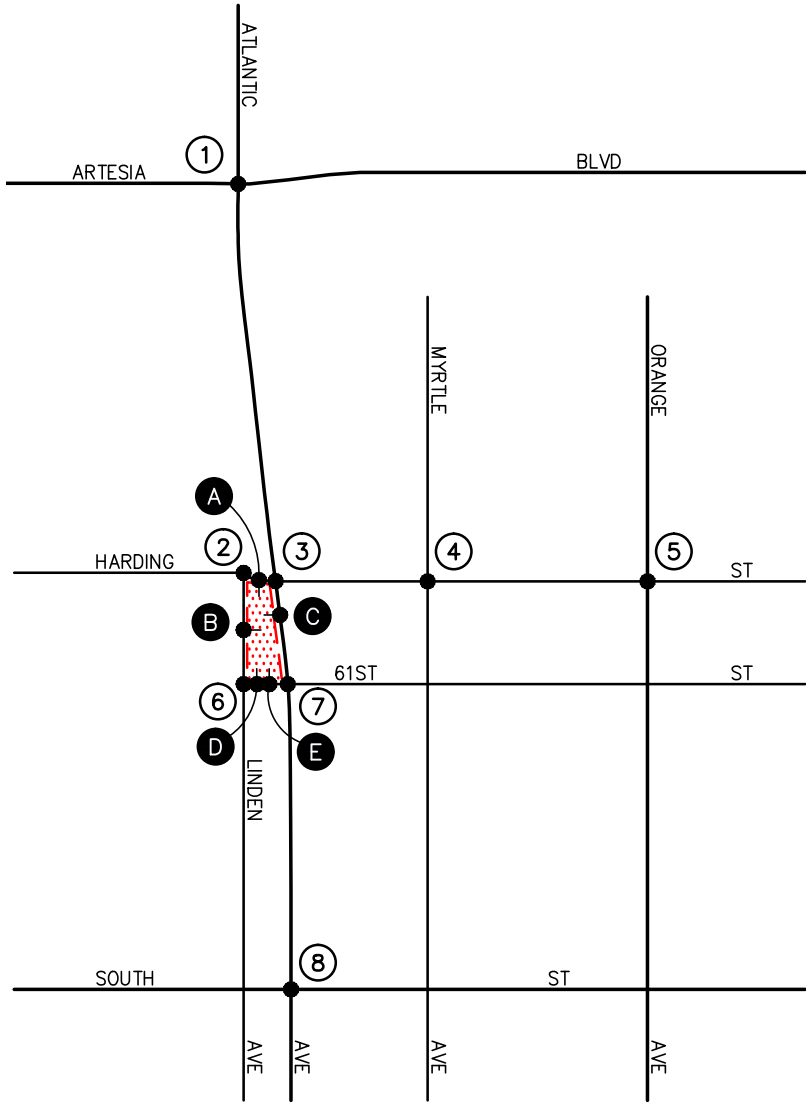
(#) = STUDY INTERSECTION

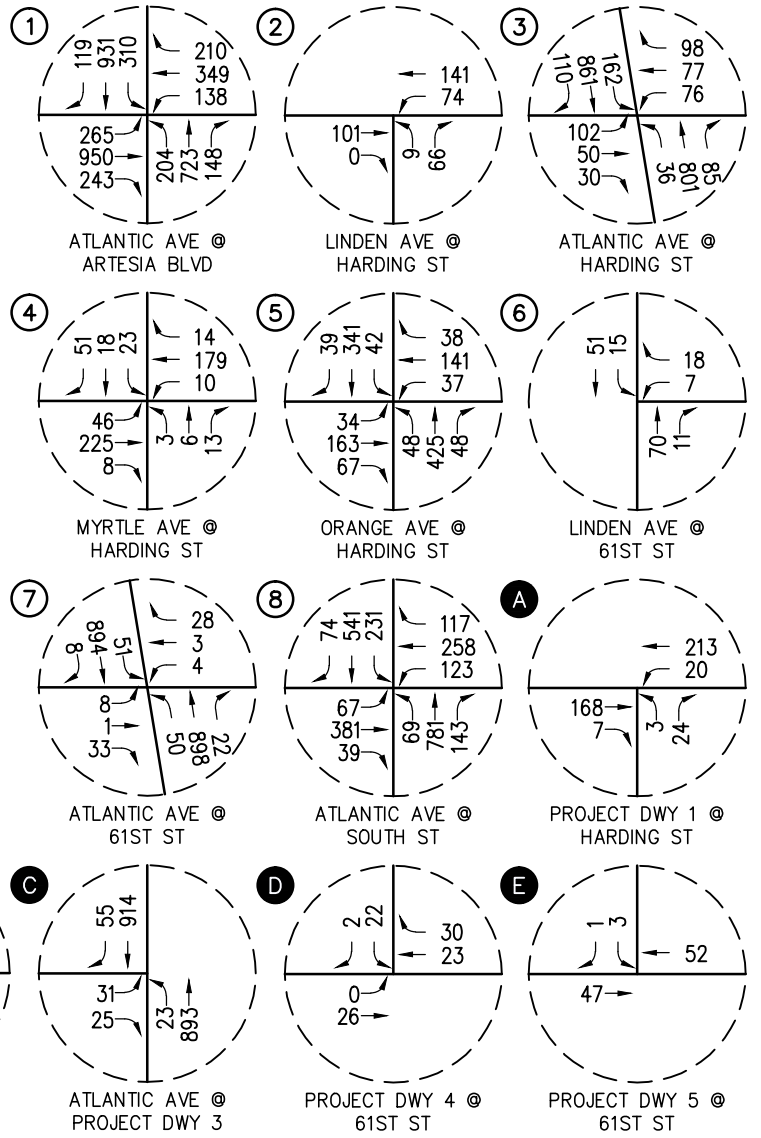
= PROJECT SITE

FIGURE 5-4

EXISTING PLUS PROJECT AM PEAK HOUR TRAFFIC VOLUMES

THE UPTOWN, LONG BEACH





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N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 5-5

EXISTING PLUS PROJECT PM PEAK HOUR TRAFFIC VOLUMES

THE UPTOWN, LONG BEACH

6.0 FUTURE TRAFFIC CONDITIONS

6.1 Ambient Traffic Growth

Cumulative traffic growth estimates have been calculated using an ambient growth factor. The ambient traffic growth factor is intended to include unknown and future cumulative projects in the study area, as well as account for regular growth in traffic volumes due to the development of projects outside the study area. The future growth in traffic volumes has been calculated at one percent (1%) per year. Applied to existing Year 2018 traffic volumes results in a three percent (3%) increase of growth in existing volumes to horizon year 2021.

Please note that the recommended ambient growth factor is generally consistent with the background traffic growth estimates contained in the most current *Congestion Management Program for Los Angeles County*. It should be further noted that the 1.0% per year ambient growth factor was approved by City of Long Beach staff.

6.2 Cumulative Projects Traffic Characteristics

The City of Long Beach identified four (4) cumulative projects within the Project study area. Cumulative projects, as defined by Section 15355 of the CEQA Guidelines, are "closely related past, present and reasonably foreseeable probable future projects". The Traffic Impact Analysis assumes that all of these cumulative projects will be developed at their proposed size and density and operational when the proposed Project is operational. This is the most conservative, worst-case approach, since the exact timing of each cumulative project is uncertain. In addition, impacts for these cumulative projects would likely be, or have been, subject to mitigation measures and/or reduced in size, which could reduce potential impacts. Under this analysis, however, those mitigation measures and/or reduction are not considered. With this information, the potential impact of the proposed Project can be evaluated within the context of the cumulative impact of all ongoing development. These four (4) cumulative projects have been included as part of the cumulative background setting.

Table 6-1 provides the location and a brief description for each of the four (4) cumulative projects. ***Figure 6-1*** graphically illustrates the location of the cumulative projects. These cumulative projects are expected to generate vehicular traffic, which may affect the operating conditions of the key study intersections.

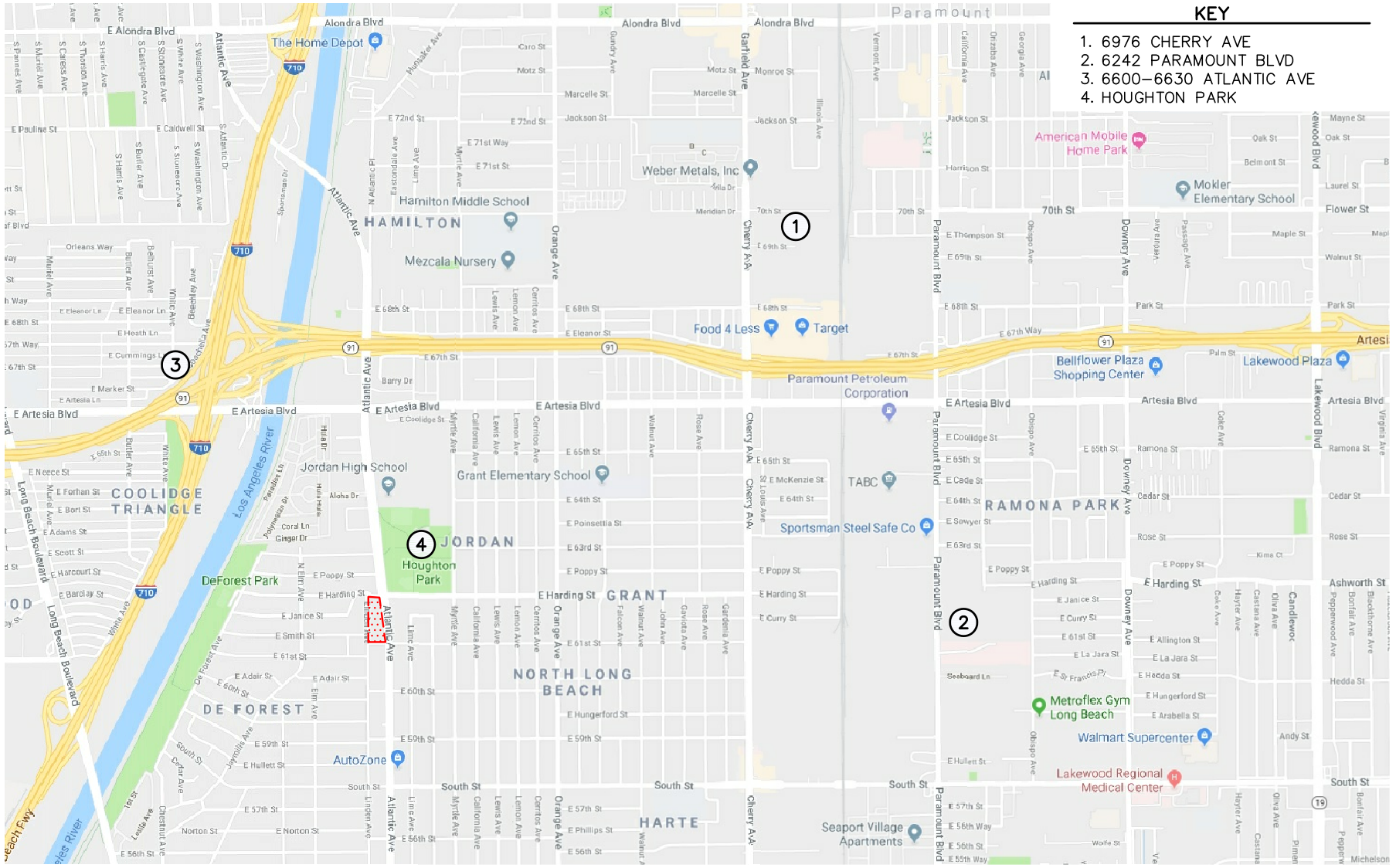
Table 6-2 presents the development totals and resultant trip generation for the four (4) cumulative projects. As shown in *Table 6-2*, the four (4) cumulative projects are expected to generate a combined total of 1,915 daily trips, 115 AM peak hour trips (92 inbound and 23 outbound) and 173 PM peak hour trips (57 inbound and 116 outbound) on a typical weekday. The AM and PM peak hour traffic volumes associated with the four (4) cumulative projects are presented in ***Figures 6-2*** and ***6-3*** respectively.

TABLE 6-1
LOCATION AND DESCRIPTION OF CUMULATIVE PROJECTS[6]

No.	Cumulative Project	Location/Address	Description
City of Long Beach			
1.	6976 Cherry Avenue	6976 Cherry Avenue	115,000 SF industrial building
2.	6242 Paramount Boulevard	6242 Paramount Boulevard	26,400 SF retail
3.	6600 – 6630 Atlantic Avenue	6600 – 6630 Atlantic Avenue	12,600 SF retail
4.	Houghton Park	6301 Myrtle Avenue	Demolish 5,886 SF of existing community center and build 6,480 SF of new community center

Notes:
- SF = Square-feet

6 Source: City of Long Beach Planning Department.



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SOURCE: GOOGLE

KEY

(#) = LOCATION OF CUMULATIVE PROJECTS

= PROJECT SITE

N NO SCALE

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FIGURE 6–1

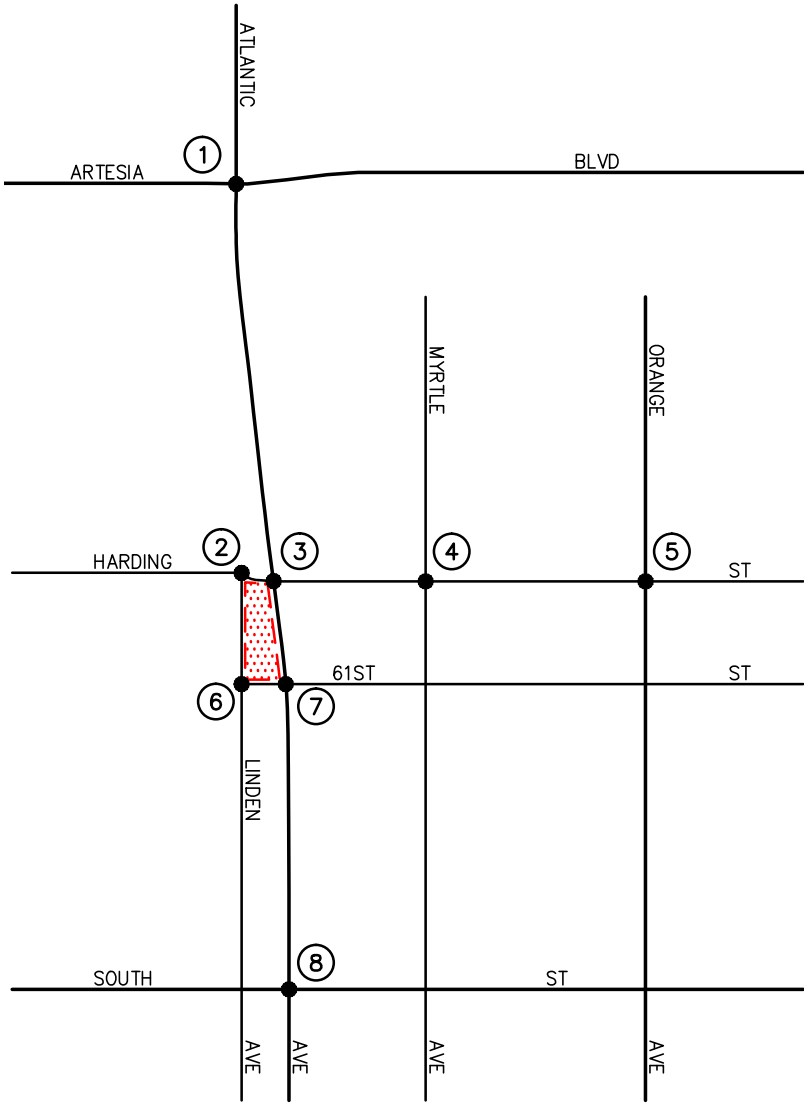
LOCATION OF CUMULATIVE PROJECTS

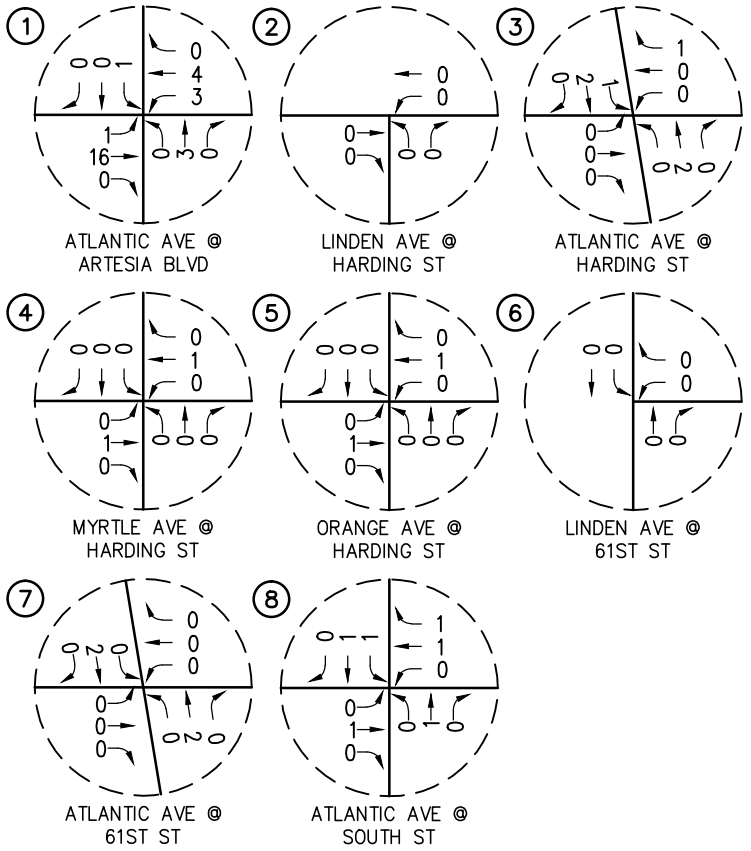
THE UPTOWN, LONG BEACH

TABLE 6-2
CUMULATIVE PROJECTS TRAFFIC GENERATION FORECAST[7]

Cumulative Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
1. 6976 Cherry Avenue	570	71	10	81	9	63	72
2. 6242 Paramount Boulevard	897	14	8	22	32	35	67
3. 6600 – 6630 Atlantic Avenue	428	6	5	11	15	17	32
4. Houghton Park	20	1	0	1	1	1	2
Cumulative Projects Trip Generation Forecast	**1,915**	**92**	**23**	**115**	**57**	**116**	**173**

[7] Unless otherwise noted, Source: *Trip Generation*, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017).





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N NO SCALE

KEY

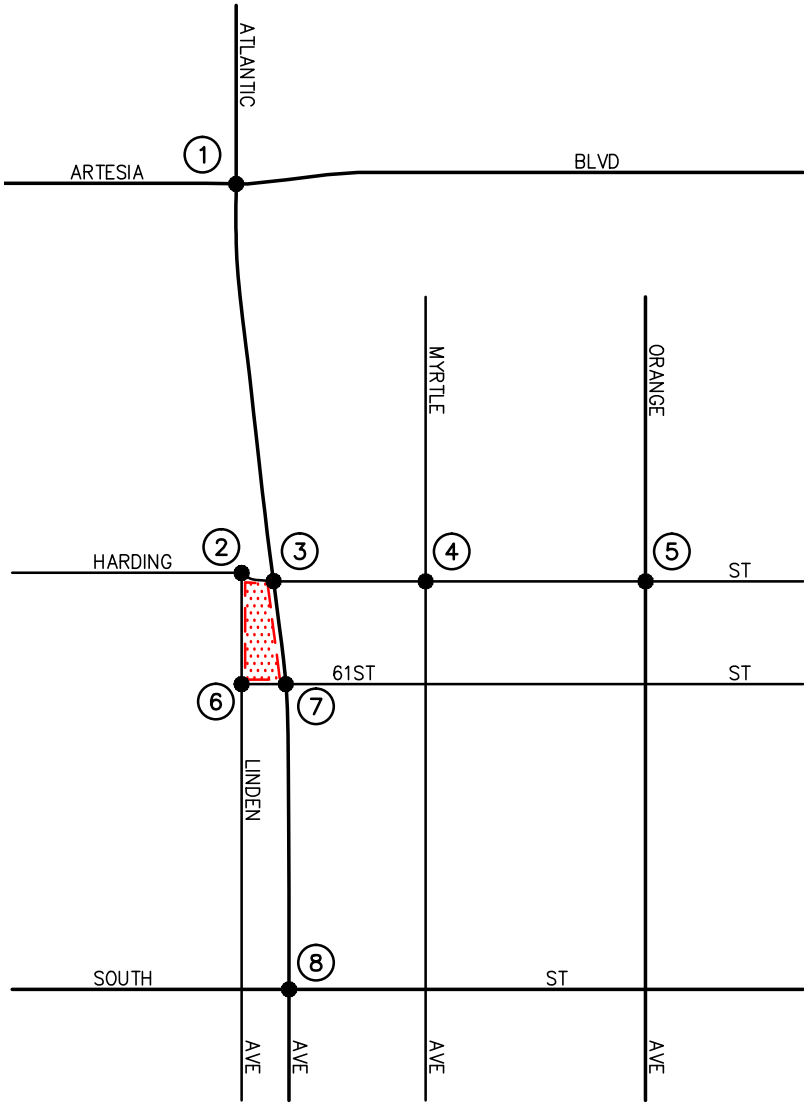
(#) = STUDY INTERSECTION

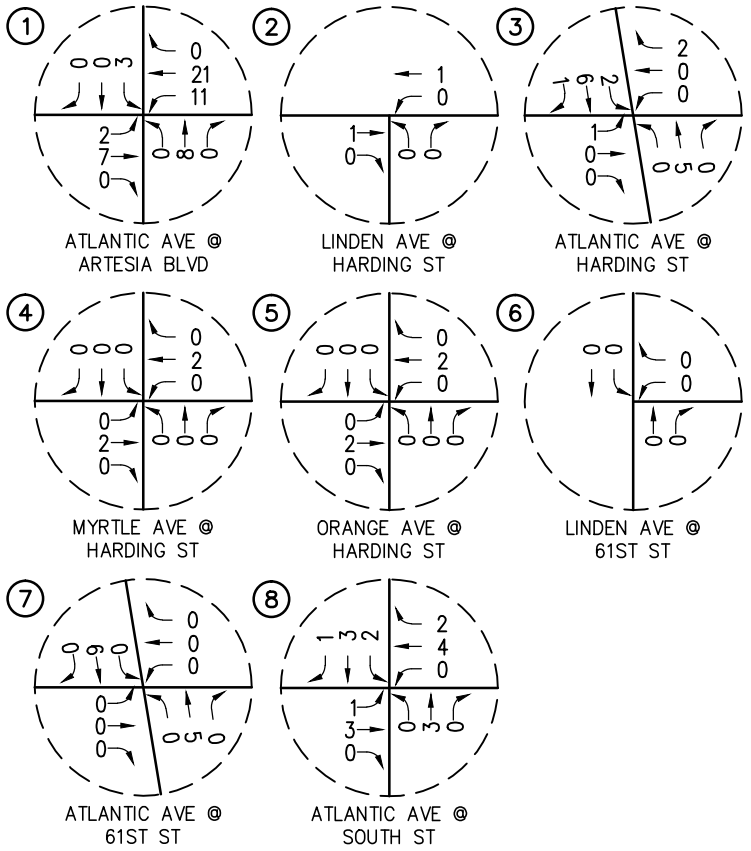
= PROJECT SITE

FIGURE 6-2

AM PEAK HOUR CUMULATIVE PROJECT TRAFFIC VOLUMES

THE UPTOWN, LONG BEACH





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N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 6-3

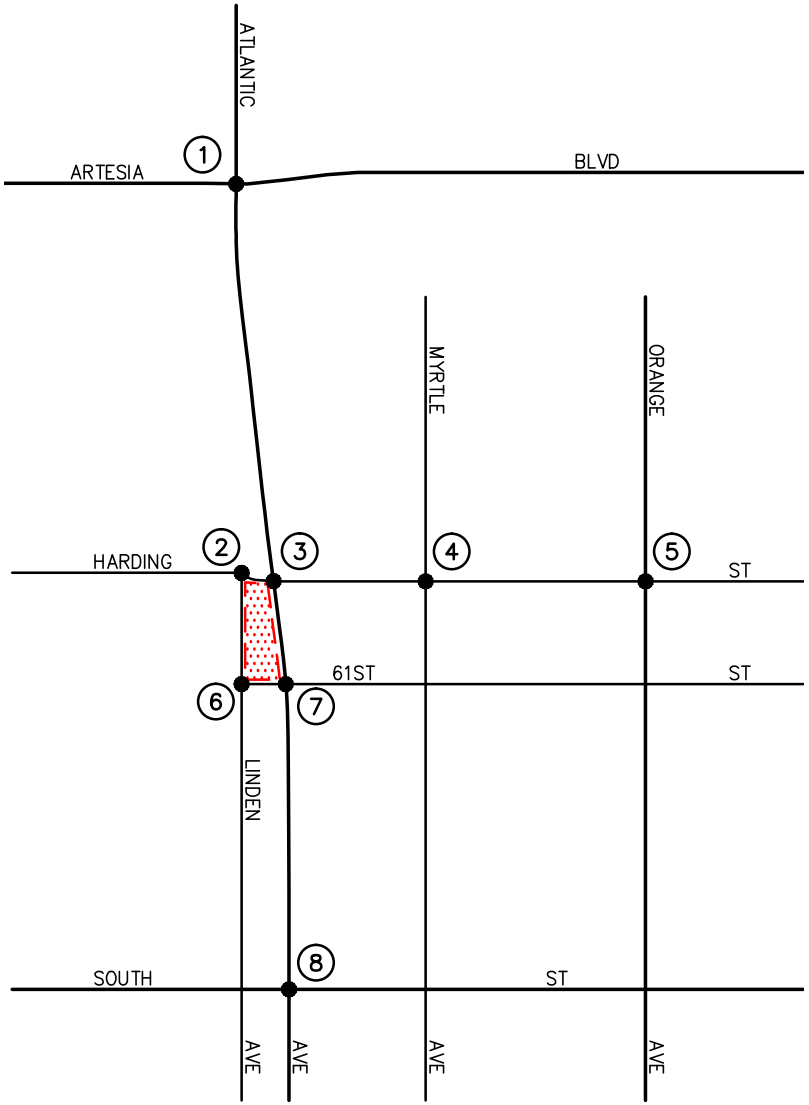
PM PEAK HOUR CUMULATIVE PROJECT TRAFFIC VOLUMES

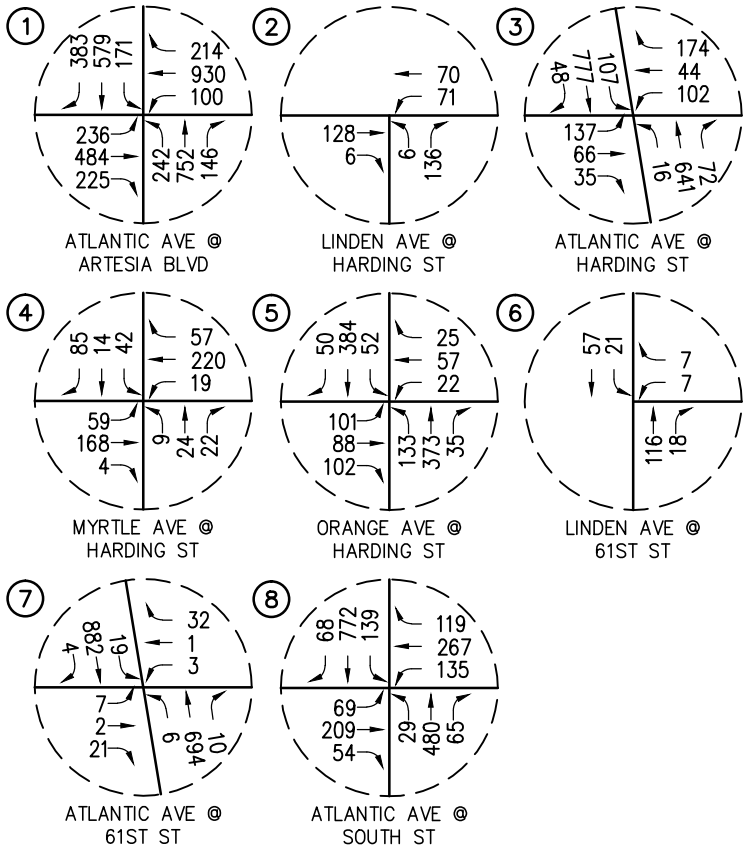
THE UPTOWN, LONG BEACH

6.3 Year 2021 Traffic Volumes

Figures 6-4 and ***6-5*** present future AM and PM peak hour cumulative traffic volumes at the eight (8) key study intersections for the Year 2021, respectively. Please note that the cumulative traffic volumes represent the accumulation of existing traffic, ambient growth traffic and cumulative projects traffic.

Figures 6-6 and ***6-7*** illustrate Year 2021 forecast AM and PM peak hour traffic volumes with the inclusion of the trips generated by the proposed Project, respectively.





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N NO SCALE

KEY

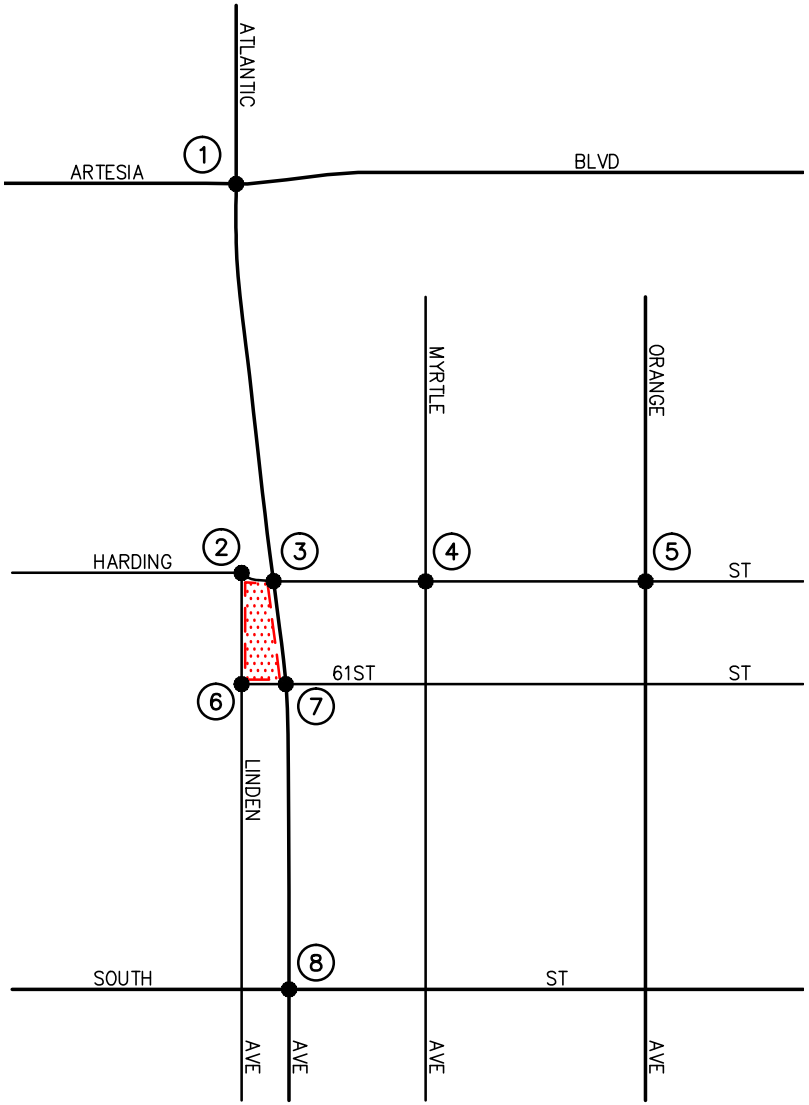
(#) = STUDY INTERSECTION

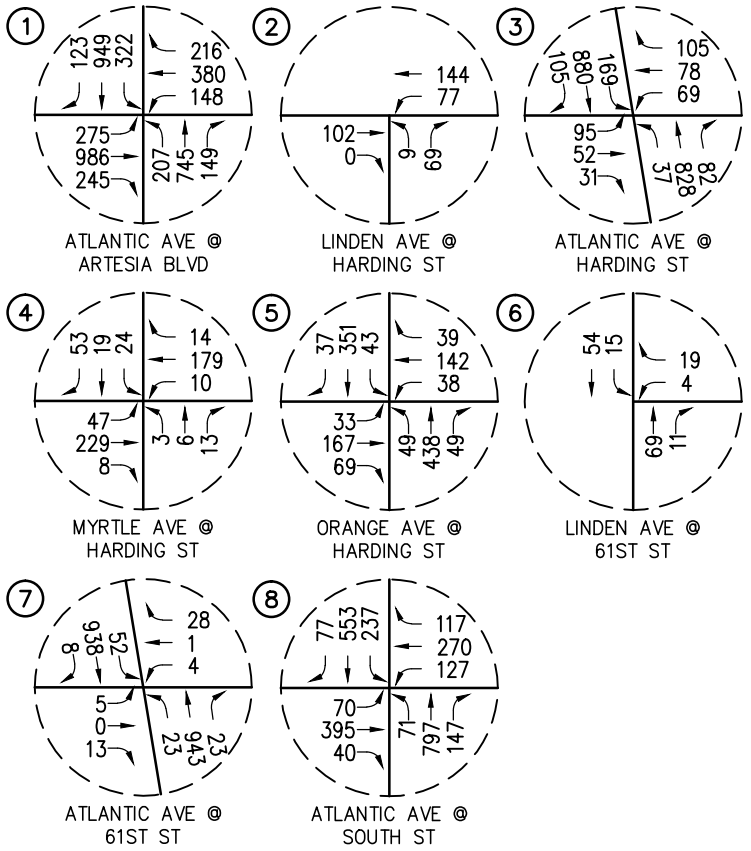
= PROJECT SITE

FIGURE 6-4

YEAR 2021 CUMULATIVE AM PEAK HOUR TRAFFIC VOLUMES

THE UPTOWN, LONG BEACH





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KEY

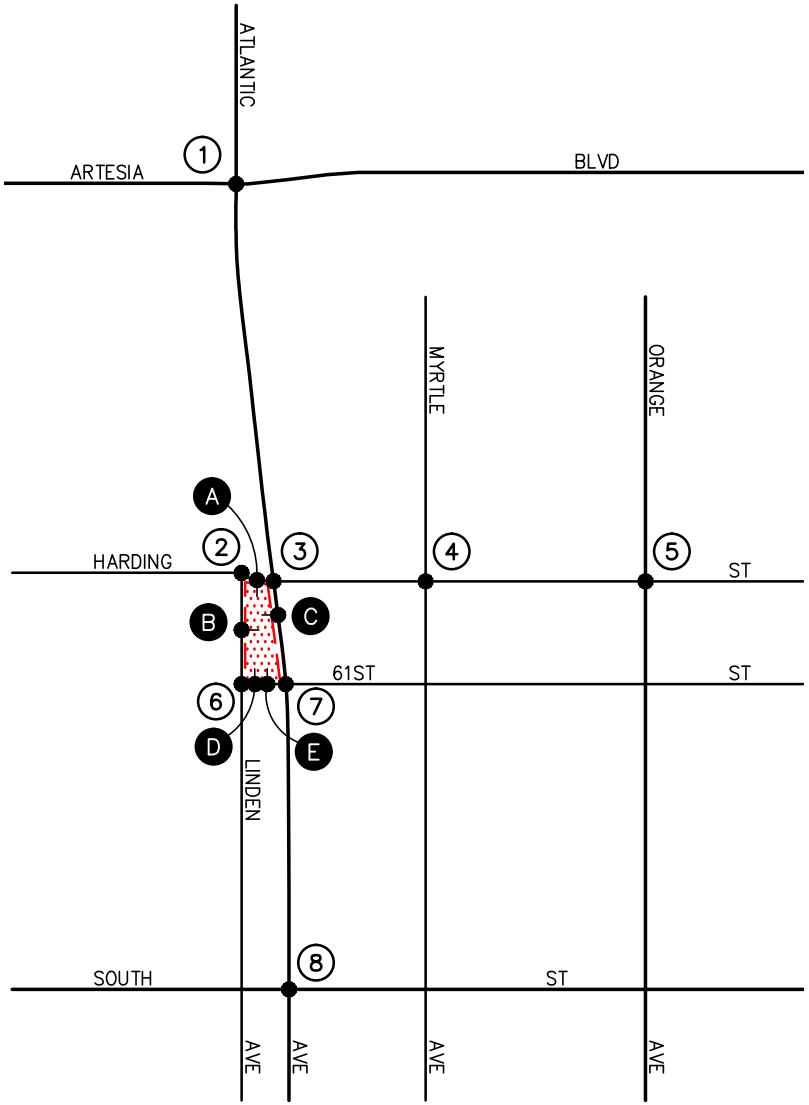
(#) = STUDY INTERSECTION

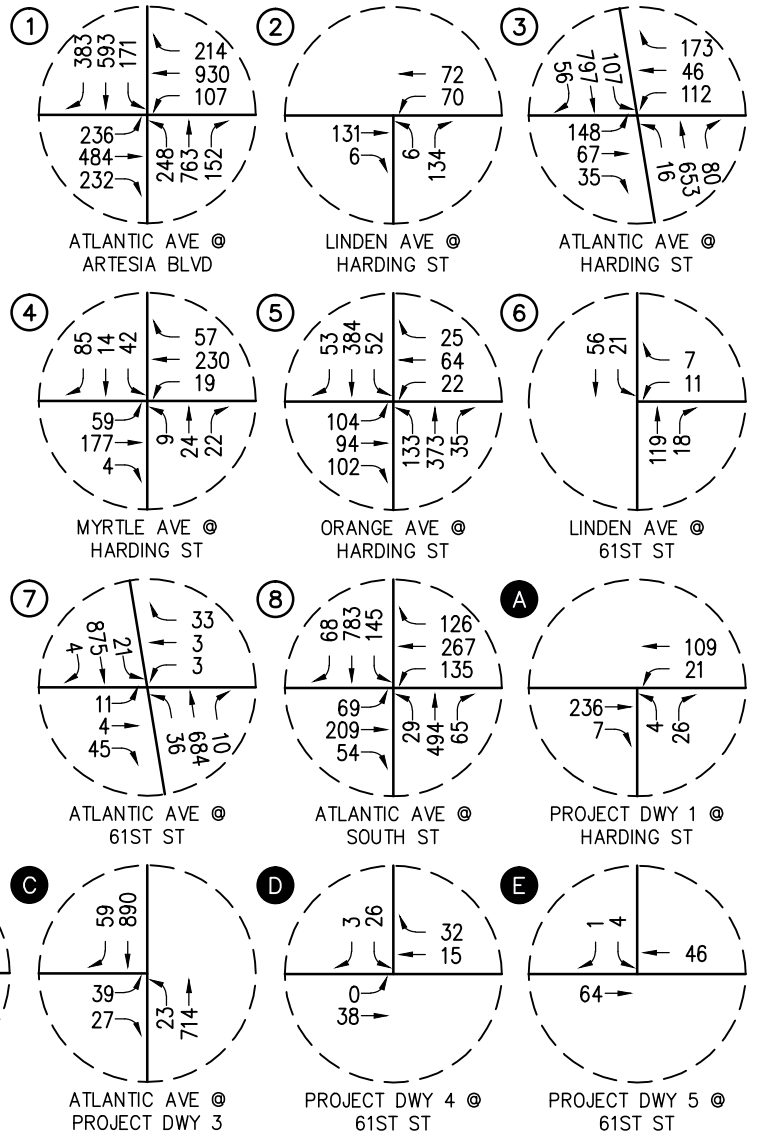
= PROJECT SITE

FIGURE 6-5

YEAR 2021 CUMULATIVE PM PEAK HOUR TRAFFIC VOLUMES

THE UPTOWN, LONG BEACH





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N NO SCALE

KEY

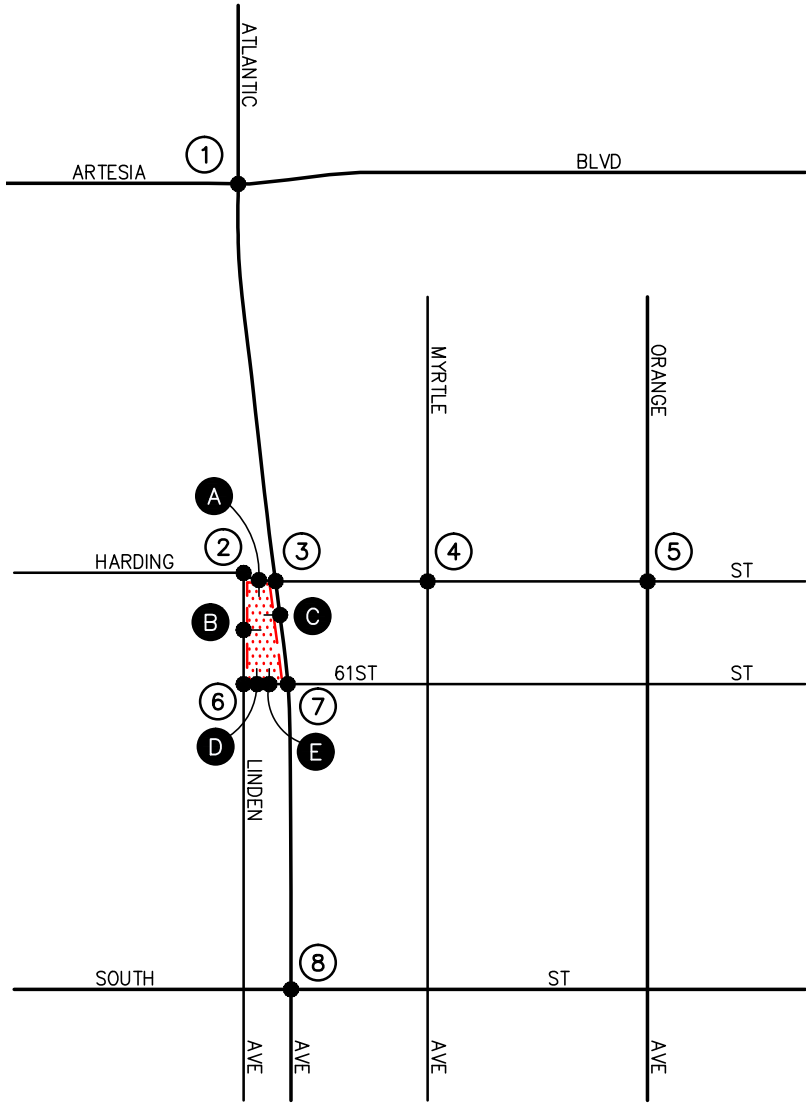
(#) = STUDY INTERSECTION

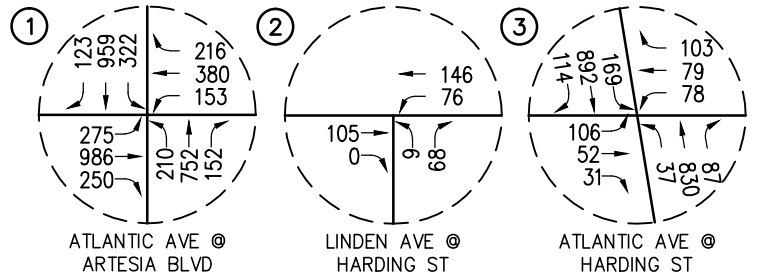
= PROJECT SITE

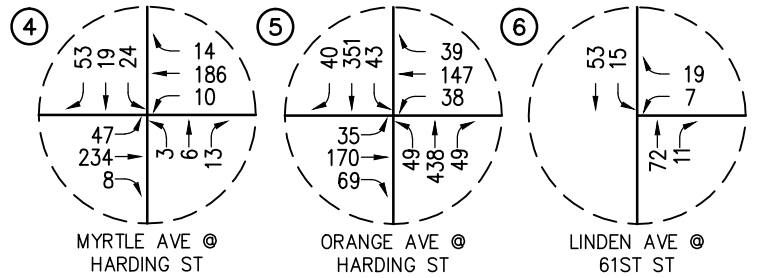
FIGURE 6-6

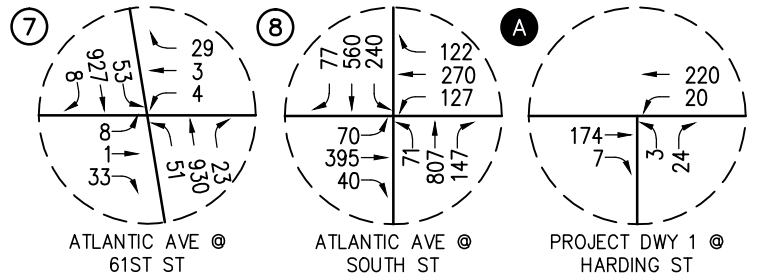
YEAR 2021 CUMULATIVE PLUS PROJECT AM PEAK HOUR TRAFFIC VOLUMES

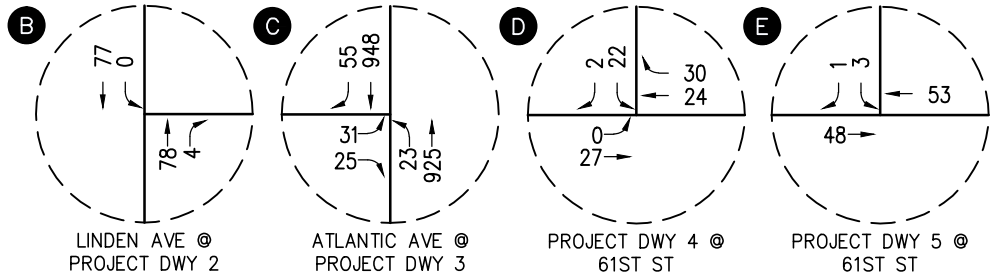
THE UPTOWN, LONG BEACH











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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 6-7

YEAR 2021 CUMULATIVE PLUS PROJECT PM PEAK HOUR TRAFFIC VOLUMES

THE UPTOWN, LONG BEACH

7.0 TRAFFIC IMPACT ANALYSIS METHODOLOGY

7.1 Impact Criteria and Thresholds

The potential impact of the added project traffic volumes generated by the proposed Project during the weekday peak hours was evaluated based on analysis of future operating conditions at the eight (8) key study intersections, without, then with, the proposed Project. The previously discussed capacity analysis procedures were utilized to investigate the future volume-to-capacity relationships and service level characteristics at each study intersection. The significance of the potential impacts of the project at each key intersection was then evaluated using the following traffic impact criteria.

7.1.1 *City of Long Beach*

Impacts to local and regional transportation systems are considered significant if:

- The project causes a study intersection to deteriorate from Level of Service (LOS) D to LOS E or F. The City of Long Beach considers LOS D (ICU = 0.801 - 0.900) to be the minimum acceptable LOS for all intersections; or

- The project increases traffic demand at the study intersection by 2% of capacity (ICU increase ≥ 0.020), causing or worsening LOS E or F (ICU > 0.901) when an intersection is operating at LOS E or F in the baseline condition.

- At unsignalized intersections, an impact is considered to be significant if the project causes an intersection operating at LOS D or better to degrade to LOS E or F, and the traffic signal warrant analysis determines that a traffic signal is justified.

7.2 Traffic Impact Analysis Scenarios

The following scenarios are those for which volume/capacity calculations have been performed using the ICU/HCM methodologies:

A. Existing Traffic Conditions;
B. Existing Plus Project Traffic Conditions;
C. Scenario (B) with Improvements, if necessary;
D. Year 2021 Cumulative Traffic Conditions;
E. Year 2021 Cumulative Plus Project Traffic Conditions; and
F. Scenario (E) with Improvements, if necessary.

8.0 PEAK HOUR INTERSECTION CAPACITY ANALYSIS

8.1 Existing Plus Project Traffic Conditions

Table 8-1 summarizes the peak hour Level of Service results at the eight (8) key study intersections for existing plus project traffic conditions. The first column (1) of ICU/LOS values in *Table 8-1* presents a summary of existing AM and PM peak hour traffic conditions (which were also presented in *Table 3-3*). The second column (2) lists existing plus project traffic conditions with current intersection geometry/lane configurations. The third column (3) shows the increase in ICU value due to the added peak hour project trips and indicates whether the traffic associated with the Project will have a significant impact based on the significant impact criteria defined in this report. The fourth column (4) indicates the anticipated level of service with improvements, if any.

8.1.1 *Existing Traffic Conditions*

As previously presented in *Table 3-3*, all eight (8) key study intersections currently operate at LOS D or better during the weekday AM and PM peak hours.

8.1.2 *Existing Plus Project Traffic Conditions*

Review of columns 2 and 3 of *Table 8-1* indicates that the traffic associated with the proposed Project will impact one (1) of the eight key study intersections, when compared to the LOS standards and significant impact criteria specified in this report. The intersection of Atlantic Avenue/Artesia Boulevard is forecast to operate at unacceptable LOS E in the PM peak hour with the Project, although the Project's ICU increase of 0.004 is less than 0.020 and thus the Project's impact at this location could be considered nominal and insignificant[8].

The remaining intersections forecast to operate at acceptable LOS D or better during the AM and PM peak hours. However, review of column 4 indicates that the implementation of recommended improvements will offset the project increment to an acceptable level of service. The recommended improvements are discussed in Section 9.0 of this report.

Appendix C presents the existing plus project weekday ICU/LOS calculations for the eight (8) key study intersections.

[8] Based on coordination efforts with the City, City Traffic Engineering Staff concurs with this finding given the degradation to LOS E in opening year (Year 2021) with project is not a result of the project trips because the opening year without project results in LOS E and the change in V/C is well below the City's threshold for a significant impact (See *Table 8-2*).

TABLE 8-1

EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Significant Impact		(4) Existing Plus Project Traffic Conditions with Improvements	
		ICU/HCM	LOS	ICU/HCM	LOS	Increase	Yes/No	ICU/HCM	LOS
1. Atlantic Avenue at Artesia Boulevard	AM	0.802	D	0.843	D	0.041	No	--	--
	PM	0.898	D	0.903	E	0.005	No	--	--
2. Linden Avenue at Harding Street	AM	9.6 s/v	A	9.6 s/v	A	0.0 s/v	No	--	--
	PM	9.3 s/v	A	9.3 s/v	A	0.0 s/v	No	--	--
3. Atlantic Avenue at Harding Street	AM	0.568	A	0.581	A	0.013	No	--	--
	PM	0.595	A	0.603	B	0.008	No	--	--
4. Myrtle Avenue at Harding Street	AM	9.9 s/v	A	10.1 s/v	B	0.2 s/v	No	--	--
	PM	9.4 s/v	A	9.4 s/v	A	0.0 s/v	No	--	--
5. Orange Avenue at Harding Street	AM	0.572	A	0.578	A	0.006	No	--	--
	PM	0.587	A	0.589	A	0.002	No	--	--
6. Linden Avenue at 61st Street	AM	9.4 s/v	A	9.5 s/v	A	0.1 s/v	No	--	--
	PM	8.9 s/v	A	9.0 s/v	A	0.1 s/v	No	--	--
7. Atlantic Avenue at 61st Street	AM	20.6 s/v	C	22.5 s/v	C	1.9 s/v	No	--	--
	PM	25.5 s/v	D	27.2 s/v	D	1.7 s/v	No	--	--
8. Atlantic Avenue at South Street	AM	0.513	A	0.518	A	0.005	No	--	--
	PM	0.736	C	0.741	C	0.005	No	--	--

Notes:

- LOS = Level of Service, please refer to *Tables 3-1 and 3-2* for the LOS definitions
- s/v = seconds per vehicle (delay)

8.2 Year 2021 Traffic Conditions

Table 8-2 summarizes the peak hour Level of Service results at the eight (8) key study intersections for the Year 2021 horizon year. The first column (1) of ICU/LOS values in *Table 8-2* presents a summary of existing AM and PM peak hour traffic conditions (which were also presented in *Table 3-3*). The second column (2) lists future Year 2021 cumulative traffic conditions (existing plus ambient growth traffic plus cumulative projects traffic), without any traffic generated by the proposed Project. The third column (3) presents future forecast traffic conditions with the addition of traffic generated by the proposed Project. The fourth column (4) shows the increase in ICU value due to the added peak hour project trips and indicates whether the traffic associated with the Project will have a significant impact based on the LOS standards and significant impact criteria defined in this report. The fifth column (5) indicates the anticipated level of service with improvements, if any.

8.2.1 *Year 2021 Cumulative Traffic Conditions*

Review of Column 2 of *Table 8-2* indicates that the addition of ambient traffic growth and cumulative project traffic will cumulatively impact one (1) of the eight study intersections. The intersection of Atlantic Avenue/Artesia Boulevard is forecast to operate at unacceptable LOS E during the PM peak hour. The remaining intersections forecast to operate at acceptable LOS D or better during the AM and PM peak hours.

8.2.2 *Year 2021 Cumulative Plus Project Conditions*

Review of columns 3 and 4 of *Table 8-2* indicates that the traffic associated with the proposed Project will not directly impact any of the eight (8) key study intersections, when compared to the LOS standards and significant impact criteria specified in this report. Although the intersection of Atlantic Avenue/Artesia Boulevard is forecast to operate at LOS E during the PM peak hour, the project increment adds less than 0.020 to the ICU value and hence the Project's impact is considered insignificant based on the City's LOS standards and significance criteria.

Appendix C presents the Year 2021 ICU/LOS calculations for the eight (8) key study intersections.

TABLE 8-2

YEAR 2021 CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Year 2021 Cumulative Traffic Conditions		(3) Year 2021 Cumulative Plus Project Traffic Conditions		(4) Significant Impact		(5) Year 2021 Cumulative Plus Project Traffic Conditions with Improvements	
		ICU/HCM	LOS	ICU/HCM	LOS	ICU/HCM	LOS	Increase	Yes/No	ICU/HCM	LOS
1. Atlantic Avenue at Artesia Boulevard	AM	0.802	D	0.824	D	0.831	D	0.007	No	--	--
	PM	0.898	D	**0.935**	**E**	**0.940**	**E**	0.005	No	--	--
2. Linden Avenue at Harding Street	AM	9.6 s/v	A	9.7 s/v	A	9.7 s/v	A	0.0 s/v	No	--	--
	PM	9.3 s/v	A	9.3 s/v	A	9.4 s/v	A	0.1 s/v	No	--	--
3. Atlantic Avenue at Harding Street	AM	0.568	A	0.584	A	0.597	A	0.013	No	--	--
	PM	0.595	A	0.615	B	0.623	B	0.008	No	--	--
4. Myrtle Avenue at Harding Street	AM	9.9 s/v	A	10.1 s/v	B	10.3 s/v	B	0.2 s/v	No	--	--
	PM	9.4 s/v	A	9.5 s/v	A	9.6 s/v	A	0.1 s/v	No	--	--
5. Orange Avenue at Harding Street	AM	0.572	A	0.587	A	0.593	A	0.006	No	--	--
	PM	0.587	A	0.603	B	0.604	B	0.001	No	--	--
6. Linden Avenue at 61st Street	AM	9.4 s/v	A	9.4 s/v	A	9.6 s/v	A	0.2 s/v	No	--	--
	PM	8.9 s/v	A	8.9 s/v	A	9.0 s/v	A	0.1 s/v	No	--	--
7. Atlantic Avenue at 61st Street	AM	20.6 s/v	C	21.4 s/v	C	23.7 s/v	C	2.3 s/v	No	--	--
	PM	25.5 s/v	D	27.5 s/v	D	29.8 s/v	D	2.3 s/v	No	--	--
8. Atlantic Avenue at South Street	AM	0.513	A	0.526	A	0.532	A	0.006	No	--	--
	PM	0.736	C	0.758	C	0.763	C	0.005	No	--	--

Notes:

- LOS = Level of Service, please refer to *Tables 3-1 and 3-2* for the LOS definitions
- s/v = seconds per vehicle (delay)

9.0 AREA-WIDE TRAFFIC IMPROVEMENTS

9.1 Recommended Improvements

For those intersections where projected traffic volumes are expected to result in poor operating conditions, this report identifies roadway improvements that are expected to:

- Mitigate the impact of existing traffic, Project traffic and future non-project (ambient growth and cumulative project) traffic; and
- Improve Levels of Service to an acceptable range and/or to pre-project conditions.

9.1.1 *Existing Plus Project Traffic Conditions*

The results of the intersection capacity analysis presented previously in *Table 8-1* shows that the proposed Project will not impact any of the eight key study intersections under the "Existing Plus Project" traffic scenario. Given that there are no significant project impacts, no improvements are required under this traffic scenario.

9.1.2 *Year 2021 Cumulative Plus Project Traffic Conditions*

The results of the intersection capacity analysis presented previously in *Table 8-2* shows that the proposed Project will not significantly impact any of the eight (8) key study intersections under the "Year 2021 Cumulative Plus Project" traffic scenario. Given that there are no significant project impacts, no improvements are required under this traffic scenario.

9.2 Transportation Improvement Fee

Pursuant to the requirements of the City of Long Beach Municipal Code, Transportation Improvement Frees will be required of the Project. The Transportation Improvement Fee, based on the size of all new commercial development in the City of Long Beach, is assessed as shown below:

- Retail (City-wide): $4.50 per square-foot

Based on the "net" increase in Project development of 16,351 SF of retail/restaurant space, the proposed Project can be expected to pay up to **$73,579.50** in Transportation Improvement Fees. The precise fee will be determined by the City upon issuance of project building permits.

10.0 SITE ACCESS EVALUATION

10.1 Site Access

Vehicular access to the northern half of the project site will continue to be provided via the existing full access driveways on Atlantic Avenue and Harding Street. The existing gated driveway located along Linden Avenue is proposed to have the gates removed and allow ingress only. In addition to the existing driveways, one (1) full access driveway and one (1) egress only driveway are proposed on 61st Street.

Table 10-1 summarizes the intersection operations at the proposed driveways for Year 2021 Cumulative plus Project traffic conditions upon completion and full occupancy of the proposed Project. The operations analysis for the project driveway is based on the *Highway Capacity Manual* (HCM 6th Edition) methodology.

A review of *Table 10-1* indicates that the proposed driveways are forecast to operate at acceptable LOS C or better during both the AM and PM peak hours. Therefore, project site access is considered adequate. Please note that Project Driveway 2 is considered uncontrolled (ingress only) and therefore no delays are expected.

Appendix D presents the level of service calculation worksheets for the proposed Project driveways.

10.2 Sight Distance Evaluation

At intersections and/or project driveways, a substantially clear line of sight should be maintained between the driver of a vehicle waiting at the crossroad and the driver of an approaching vehicle. Adequate time must be provided for the waiting vehicle to either cross all lanes of through traffic, cross the near lanes and turn left, or turn right, without requiring through traffic to radically alter their speed. The Sight Distance Evaluation prepared for the proposed Project Driveways was based on the criteria and procedures set forth by the California Department of Transportation (Caltrans) in the State's *Highway Design Manual (HDM)* for "Private Road Intersections".

The Caltrans HDM, in Section 405.1(2)(c), page 400-17, indicates that for Private Road Intersections, "The minimum corner sight distance shall be equal to the stopping sight distance as given in Table 201.1...", where stopping sight distance is defined as the distance required by the driver of a vehicle, traveling at a given speed, to bring his vehicle to a stop after an object on the road becomes visible. Stopping sight distance is measured from the driver's eyes, which are assumed to be 3.5 feet above the pavement surface, to an object 0.5-foot high on the roadway.

The speed used in determining stopping sight distance is defined as the "critical speed" or 85th percentile speed which is the speed at which 85% of the vehicles are traveling at or less. The critical speed is the single most important factor in determining stopping sight distance. Table 201.1 in the HDM is used in determining stopping sight distance based on the critical speed of vehicles on the affected roadway.

For this analysis, a design speed of 30 mph along Harding Street was utilized with a minimum stopping sight distance of 200 feet is required for Project Driveway 1. However, Project Driveway 3 has a posted speed limit of 35 mph along Atlantic Avenue with a stopping sight distance of 250 feet is required. Lastly, with a posted speed limit of 25 mph along 61st Street with a stopping sight distance of 150 feet is required for Project Driveways 4 and 5.

Figures 10-1 and ***10-2*** presents the results of the sight distance evaluation for the Project driveways based on the application of the stopping sight distance criteria. The figures illustrate the limited use areas. As shown, the sight lines at the proposed Project driveways are expected to be adequate as long as obstructions within the sight triangles are minimized.

10.3 Internal Circulation

Atlantic Avenue will provide access for fire trucks and small service/delivery trucks (i.e. UPS, FedEx, and trash trucks) and passenger vehicles for the Project site. Our evaluation of the on-site circulation shown on the Project site plan was performed using the *Turning Vehicle Templates*, developed by Jack E. Leisch & Associates and *AutoTURN for AutoCAD* computer software that simulates turning maneuvers for various types of vehicles.

Figure 10-3 illustrates the turning movements required of an SU-30 as it accesses the site from Atlantic Avenue and Harding Street. Review of *Figure 10-3* shows that access to and from the site via an SU-30 truck is considered adequate pending modifications to the curb returns along Atlantic Avenue are implemented. Based on the turning templets, curb radii should be modified to accommodate a 15-foot radius. ***Figure 10-4*** illustrates a fire truck as it accesses the site from Atlantic Avenue and Harding Street. Review of *Figure 10-4* shows that access to and from the site via a fire truck is considered adequate. ***Figure 10-5*** illustrates a trash truck as it accesses the site from Atlantic Avenue, Harding Street, 61st Street, and Linden Avenue. Review of *Figure 10-5* shows that access to and from the site via a trash truck is considered adequate.

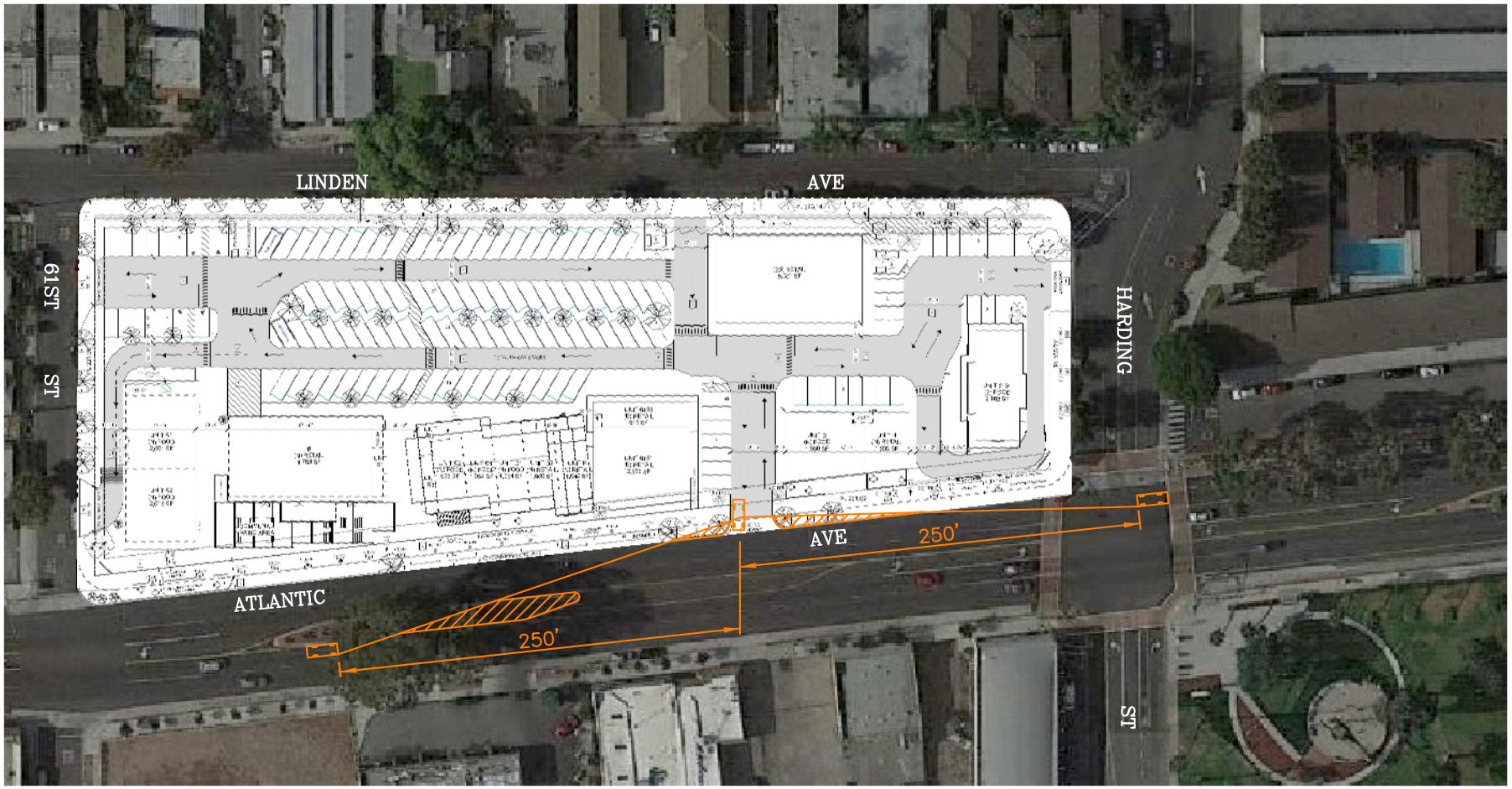
TABLE 10-1

PROJECT DRIVEWAY PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Project Driveway		Time Period	Intersection Control	(1) Year 2021 Cumulative Plus Project Traffic Conditions	
				Delay	LOS
A.	Project Driveway 1 at Harding Street	AM	One-Way Stop	9.9 s/v	A
		PM		9.6 s/v	A
B.	Linden Avenue at Project Driveway 2	AM	Uncontrolled (Ingress Only)	--	--
		PM		--	--
C.	Atlantic Avenue at Project Driveway 3	AM	One-Way Stop	18.6 s/v	C
		PM		19.2 s/v	C
D.	Project Driveway 4 at 61st Street	AM	One-Way Stop	8.9 s/v	A
		PM		8.9 s/v	A
E.	Project Driveway 5 at 61st Street	AM	One-Way Stop (Egress Only)	9.0 s/v	A
		PM		8.9 s/v	A

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Table 3-2* for the LOS definitions



STOPPING SIGHT DISTANCE

DESIGN SPEED LIMIT:	35 MPH
REQUIRED STOPPING SIGHT DISTANCE:	250 FEET

LEGEND

LIMITED USE AREA: TO ENSURE ADEQUATE SIGHT DISTANCE, HARDSCAPE AND/OR LANDSCAPE SHALL NOT BE HIGHER THAN 30 INCHES. NO FENCES OR WALLS IN LIMITED USE AREA.

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SCALE: 1"=100'

SOURCE: WESTLAND REAL ESTATE GROUP

FIGURE 10-1

SIGHT DISTANCE ANALYSIS
ATLANTIC AVENUE

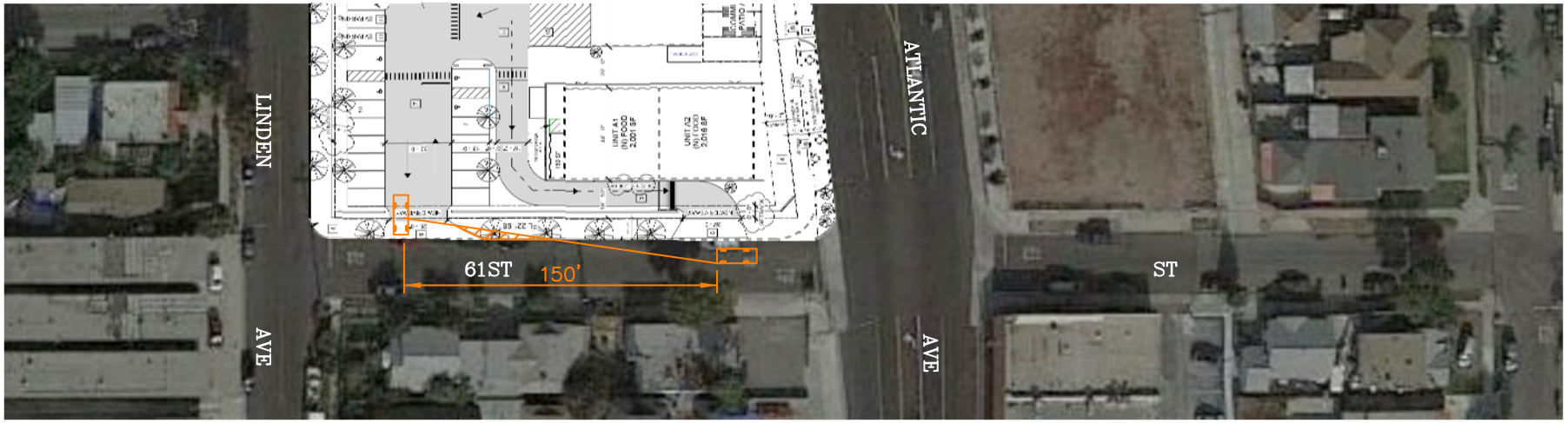
THE UPTOWN, LONG BEACH

STOPPING SIGHT DISTANCE

DESIGN SPEED LIMIT:	25 MPH	30 MPH
REQUIRED STOPPING SIGHT DISTANCE:	150 FEET	200 FEET

LEGEND

LIMITED USE AREA: TO ENSURE ADEQUATE SIGHT DISTANCE, HARDSCAPE AND/OR LANDSCAPE SHALL NOT BE HIGHER THAN 30 INCHES. NO FENCES OR WALLS IN LIMITED USE AREA.



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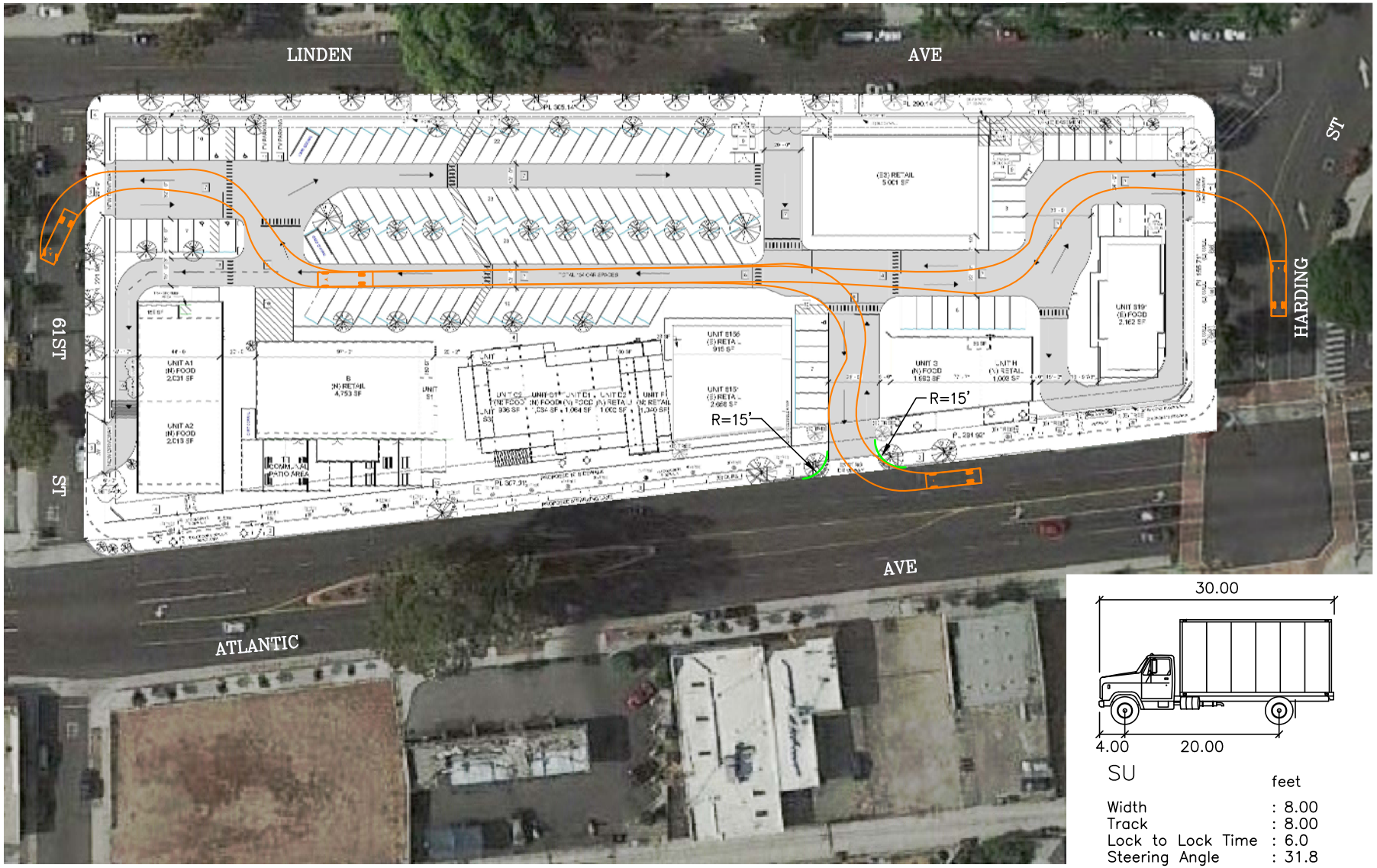
SCALE: 1"=80'

SOURCE: WESTLAND REAL ESTATE GROUP

FIGURE 10-2

SIGHT DISTANCE ANALYSIS
HARDING STREET AND 61ST STREET

THE UPTOWN, LONG BEACH



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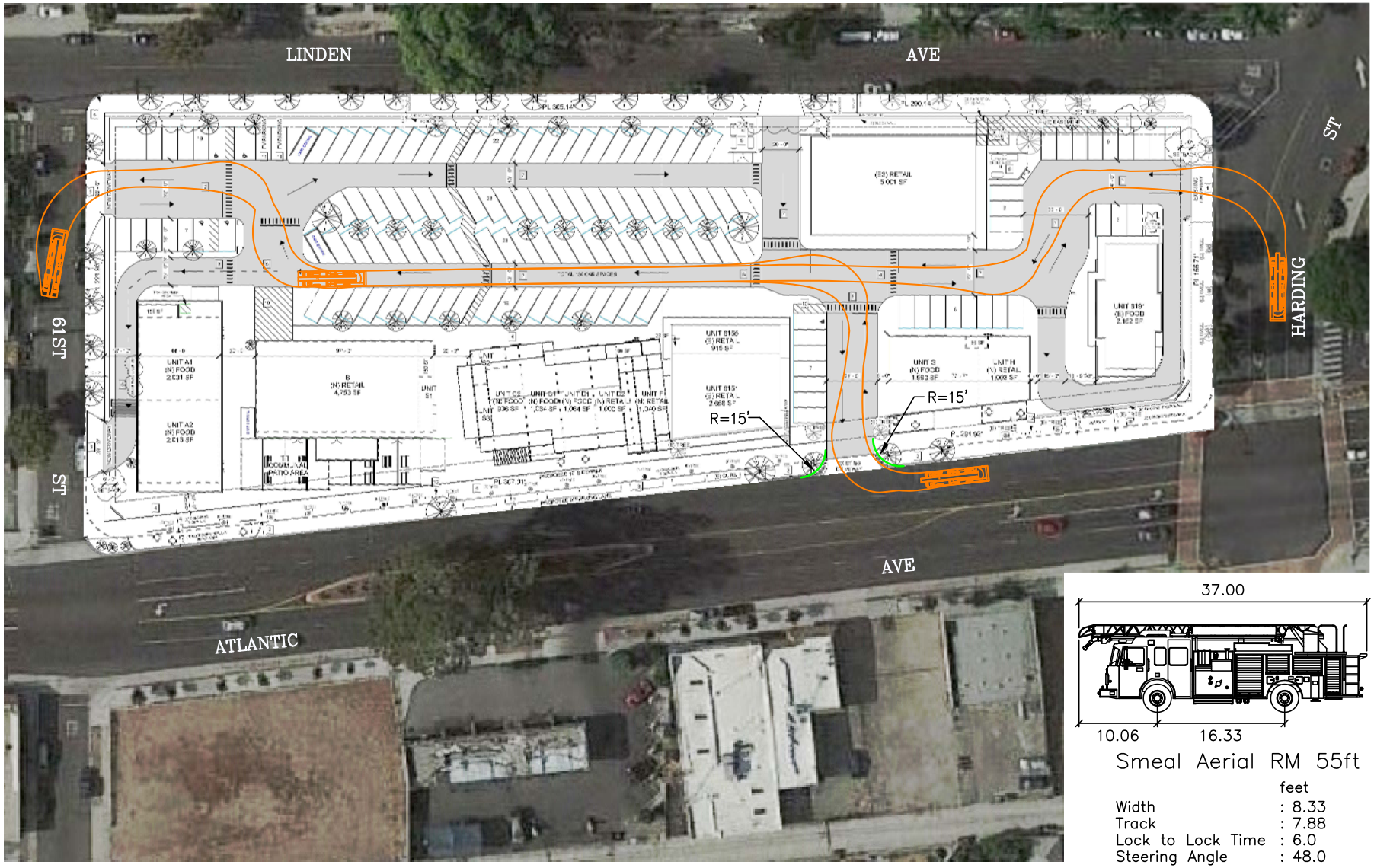
SOURCE: WESTLAND REAL ESTATE GROUP

SCALE: 1"=80'

FIGURE 10-3

SU-30 TRUCK TURNING ANALYSIS

THE UPTOWN, LONG BEACH



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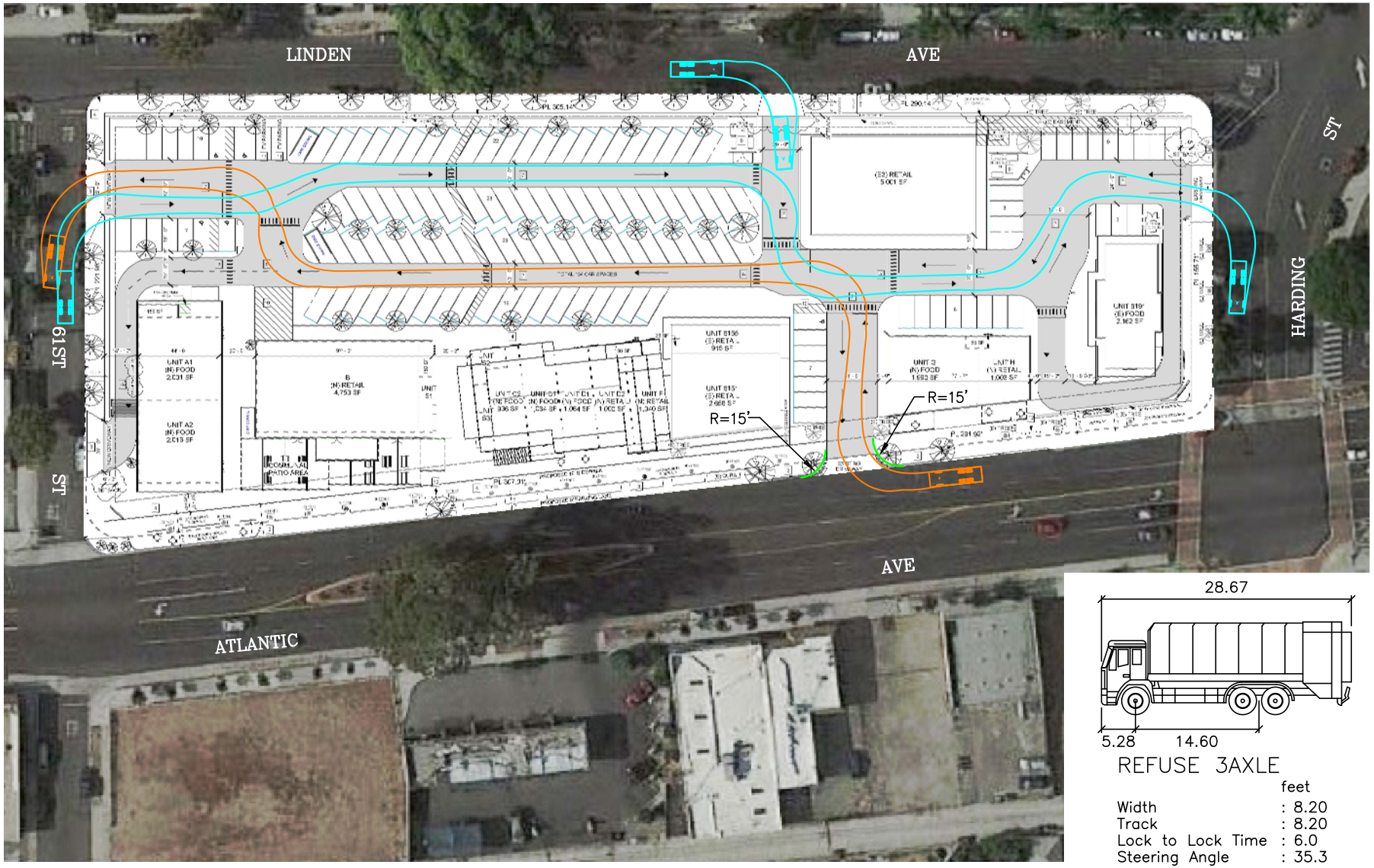
SCALE: 1"=80'

SOURCE: WESTLAND REAL ESTATE GROUP

FIGURE 10-4

FIRE TRUCK TURNING ANALYSIS

THE UPTOWN, LONG BEACH



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LINSCOTT LAW & GREENSPAN engineers

SOURCE: WESTLAND REAL ESTATE GROUP

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SCALE: 1"=80'

FIGURE 10-5

REFUSE TRUCK TURNING ANALYSIS

THE UPTOWN, LONG BEACH

11.0 CONGESTION MANAGEMENT PROGRAM COMPLIANCE ASSESSMENT

The Congestion Management Program (CMP) was created statewide as a result of Proposition 111 and has been implemented locally by the Los Angeles County Metropolitan Transportation Authority (LACMTA). The CMP for Los Angeles County requires that the traffic impact of individual development projects of potential regional significance be analyzed. A specific system of arterial roadways plus all freeways comprise the CMP system.

For purposes of the CMP, a significant impact occurs when the proposed Project increases traffic demand on a CMP facility by two percent of capacity ($V/C \geq 0.02$), causing LOS F ($V/C > 1.00$). If the facility is already at LOS F, a significant impact occurs when the proposed Project increases traffic demand on a CMP facility by two percent of capacity ($V/C \geq 0.02$).

11.1 Traffic Impact Review

As required by the current *Congestion Management Program for Los Angeles County*, a review has been made of designated monitoring locations on the CMP highway system for potential impact analysis. Per CMP TIA criteria, the geographic area examined in the TIA must include the following, at a minimum:

- All CMP arterial monitoring intersections, including freeway on and off-ramp intersections, where the project will add 50 or more trips during either the AM or PM weekday peak hours.

- Mainline freeway-monitoring stations where the project will add 150 or more trips, in either direction, during the AM or PM weekday peak hours.

11.1.1 *Intersections*

The following CMP intersection monitoring locations in the project vicinity have been identified:

CMP Station	Intersection/Jurisdiction
No. 34	Lakewood Boulevard at Carson Street

As stated earlier, the CMP guidelines require that arterial monitoring intersection locations must be examined if the proposed Project will add 50 or more trips during either the AM or PM weekday peak hours (of adjacent street traffic) at CMP monitoring intersections. Based on the proposed Project's trip generation potential, trip distribution and trip assignment, the Project will not add more than 50 at the identified CMP intersections during the weekday AM peak hour or PM peak hour. Therefore a CMP intersection traffic impact analysis is not required.

11.1.2 *Freeways*

The following CMP freeway monitoring location in the project vicinity has been identified:

CMP Station	Intersection/Jurisdiction
No. 1034	SR-91, east of Cherry Avenue

As stated earlier, the CMP TIA guidelines require that freeway monitoring locations must be examined if the proposed Project will add 150 or more trips (in either direction) during either the AM or PM weekday peak periods. Based on the project's trip generation potential and distribution pattern, the proposed Project will not add more than 150 trips during the AM or PM peak hour at this CMP mainline freeway-monitoring location. Therefore, a CMP freeway traffic impact analysis is not required.

11.2 Transit Impact Review

As required by the current *Congestion Management Program for Los Angeles County*, a review has been made of the potential impacts of the project on transit service. As previously discussed and shown in *Figure 3-4*, a number of transit services exist in the project area, necessitating the following transit impact review.

The project trip generation, as shown in *Table 5-1*, was adjusted by values set forth in the CMP (i.e. person trips equal 1.4 times vehicle trips, and transit trips equal 7 percent of the total person trips) to estimate project-related transit trip generation. Pursuant to the CMP guidelines, the proposed Project is forecast to generate an additional 12 transit trips (7 inbound and 5 outbound) during the AM peak hour and 9 transit trips (5 inbound and 4 outbound) during the PM peak hour. Over a 24-hour period the proposed Project is forecasted to generate an additional 164 daily weekday transit trips.

It is anticipated that the existing transit service in the project area would be able to accommodate the project generated transit trips. Therefore, given the number of transit trips generated by the project and the existing transit routes in the project vicinity, it is concluded that the existing public transit system would not be significantly impacted by the proposed Project.