4.6 TRANSPORTATION AND TRAFFIC

This section analyzes the potential for the proposed project to cause significant impacts to the existing traffic and transportation facilities in the City of Long Beach. The analysis in this section is based on a Traffic Impact Analysis (TIA) prepared for the project by Linscott, Law & Greenspan, Engineers (LLG), in July 2015. The full TIA is provided in Appendix E.

4.6.1 Setting

a. Existing Street System. The principal local network of streets serving the project site includes Third Street, Broadway, Ocean Boulevard, First Street, Magnolia Avenue, Chestnut Avenue, Cedar Avenue, and Pacific Avenue. The following discussion provides a brief synopsis of these streets. The descriptions are based on an inventory of existing roadway conditions.

Third Street. Third Street is a two-lane, one-way roadway (westbound travel only) oriented in the east-west direction. Parking is generally permitted on both sides of the roadway, except for a segment between Chestnut Avenue and Cedar Avenue. A separated/protected bike lane is also present on Third Street and limits parking on the street. The posted speed limit is 25 miles per hour (mph). A bike The intersection of Third Street and Pacific Avenue is controlled by a traffic signal.

Broadway. Broadway is a two-lane, one-way divided roadway (eastbound travel only) oriented in the east-west direction. West of Magnolia Avenue, parking is restricted on both the north and south side of the roadway. West of Pine Avenue, parking is generally permitted on the north side of the roadway and restricted on the south side. East of Pine Avenue, parking is permitted on both sides of the roadway. A separated/protected bike lane is also present on Broadway and limits parking on the street. The posted speed limit on Broadway is 30 mph. The intersections of Broadway at Magnolia Avenue, Chestnut Avenue, Cedar Avenue, and Pacific Avenue are controlled by traffic signals.

Ocean Boulevard. Ocean Boulevard is primarily a six-lane, divided roadway oriented in the east-west direction. West of Magnolia Avenue, Ocean Boulevard is a seven-lane, divided roadway, with three travel lanes in the eastbound direction and four travel lanes in the westbound direction. Parking is permitted on both sides of the roadway. The posted speed limit on Ocean Boulevard is 30 mph. The intersections of Ocean Boulevard at Magnolia Avenue, Chestnut Avenue, and Pacific Avenue are controlled by traffic signals. The intersection of Ocean Boulevard at Cedar Avenue is controlled by a one-way stop.

First Street. First Street is primarily a two-lane, divided roadway oriented in the east-west direction. Parking is not permitted on both sides of the roadway. The posted speed limit on First Street is 25 mph. The intersection of Pacific Avenue at First Street is controlled by a traffic signal.

Magnolia Avenue. Magnolia Avenue is primarily a four-lane, divided roadway oriented in the north-south direction. South of Ocean Boulevard, Magnolia Avenue is a six-lane, divided roadway. North of Third Street, Magnolia Avenue is a two-lane, divided roadway. Parking is permitted on both sides of the roadway north of Broadway. South of Broadway, parking is

generally not permitted on both sides of the roadway, except for a segment between Broadway and Ocean Avenue where parking is permitted on the west side of the roadway. North of Ocean Boulevard, the posted speed limit is 25 mph; south of Ocean Boulevard, the posted speed limit is 45 mph. The intersections of Magnolia Avenue at Broadway and Ocean Boulevard are controlled by traffic signals.

Chestnut Avenue. Chestnut Avenue is primarily a two-lane, undivided roadway oriented in the north-south direction. Between Third Street and Broadway, Chestnut is a two-lane, divided roadway. Between Broadway and Ocean Boulevard, Chestnut is a three-lane, undivided roadway. Parking is permitted on both sides of the roadway, north of Ocean Boulevard. Parking is not permitted on both sides of the roadway south of Ocean Boulevard. The posted speed limit on Chestnut Avenue is 25 mph. The intersections of Chestnut Avenue at Broadway and Ocean Boulevard are controlled by traffic signals.

Cedar Avenue. Cedar Avenue is a primarily two-lane, undivided roadway oriented in the north-south direction. South of Broadway and north of Ocean Boulevard, Cedar Avenue is a two-lane, divided roadway. Parking is permitted on both sides of the roadway, north of Broadway. Parking is not permitted on both sides of the roadway, south of Broadway. The posted speed limit on Cedar Avenue is 25 mph. The intersection of Cedar Avenue at Broadway is controlled by a traffic signal. The intersection of Cedar Avenue at Ocean Boulevard is controlled by a one-way stop.

Pacific Avenue. Pacific Avenue is primarily a four-lane, divided roadway oriented in the north-south direction. South of Ocean Boulevard, Pacific Avenue is a two-lane, undivided roadway. Parking is not permitted on either side of the roadway within the vicinity of the project site. The posted speed limit on Pacific Avenue is 25 mph. The intersections of Pacific Avenue at Third Street, Broadway, First Street and Ocean Boulevard are controlled by traffic signals.

b. 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 Blue Line currently serves Pacific Avenue. The Los Angeles Department of Transportation (LADOT) Commuter Express 142 currently serves Ocean Boulevard. In addition to the Metro routes, LBT Route 151 serves Broadway, Third Street, and Pacific Avenue; Route 121 serves Ocean Boulevard and Pacific Avenue; LBT Route 181, 191 and 192 serve Broadway, Third Street, and Magnolia Avenue; LBT Route 21, 22, 61, and Passport serve Pacific Avenue. LBT bus stops are located throughout Downtown and include the downtown Long Beach Transit Mall on First Street between Pacific Avenue and Long Beach Boulevard, in proximity to the project site. From the westerly edge of the project site, the Long Beach Transit Mall is located directly east of the civic center block across Pacific Avenue. The TIA in Appendix E contains figures that illustrate Long Beach Transit routes and bus stops within the vicinity of the project site.

c. Existing Bicycle Master Plan and Bicycle Facilities. 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. Existing and proposed City of Long Beach Bicycle Facilities in the vicinity of the project site are shown in the TIA in Appendix E.

d. Existing Intersection Conditions. Existing a.m. and p.m. peak hour operating conditions for the key signalized study intersections were evaluated using the Intersection Capacity Utilization (ICU) methodology for signalized intersections.

Intersection Capacity Utilization (ICU) Method of Analysis. In conformance with City of Long Beach and Los Angeles County Congestion Management Program (CMP) requirements, existing weekday peak hour operating conditions for the key signalized study intersections were evaluated using the 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. The ICU methodology assumes uniform traffic distribution per intersection approach lane and optimal signal timing.

Per Los Angeles 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 (LOS) calculation. Per City of Long Beach requirements, clearance intervals are based on the number of phases in the intersection and whether the left turning movements are all fully protected or whether some of them are permitted with other left-turn movements being protected. Table 4.6-1 shows the clearance intervals used in the analysis of the key study intersections within the City of Long Beach.

Table 4.6-1
City of Long Beach Clearance Intervals

Number of Signal Phases	Left-turn Phasing Type	Clearance Interval (Percent)
2	Permitted	10%
3	Protected and Permitted	12%
3	Fully Protected	15%
4	Protected and Permitted	14%
4	Fully Protected	18%

Source: Linscott, Law and Greenspan, July 2015; see Appendix E for full TIA report.

The ICU value translates to a LOS estimate, which is a relative measure of the intersection performance. The six qualitative categories of LOS have been defined along with the corresponding ICU value range and are shown in Table 4.6-2. 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.

Table 4.6-2
Level of Service Criteria for Signalized Intersections

Level of Service (LOS)	Intersection Capacity Utilization Value (V/C)	LOS 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.

Source: Linscott, Law and Greenspan, July 2015; see Appendix E for full TIA report.

Highway Capacity Manual (HCM) Method of Analysis (Unsignalized Intersections). The 2000 HCM unsignalized methodology for stop-controlled intersections was utilized for the analysis of the key 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 is 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 LOS estimate, which is a relative measure of the intersection performance. The six qualitative categories of LOS have been defined along with the corresponding HCM control delay value range, as shown in Table 4.6-3.

Table 4.6-3
Level of Service Criteria for Unsignalized Intersections

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

Source: Linscott, Law and Greenspan, July 2015; see Appendix E for full TIA report.

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 or F).

Existing Traffic Volumes. The ten key study intersections selected for evaluation in the TIA provide local access to the project study area. They include the following:

1. *Magnolia Avenue at Broadway*
2. *Chestnut Avenue at Broadway*
3. *Cedar Avenue at Broadway*
4. *Pacific Avenue at Broadway*
5. *Magnolia Avenue at Ocean Boulevard*
6. *Chestnut Avenue at Ocean Boulevard*
7. *Cedar Avenue at Ocean Boulevard*
8. *Pacific Avenue at Ocean Boulevard*
9. *Pacific Avenue at Third Street*
10. *Pacific Avenue at First Street*

These ten 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 ten key study intersections evaluated in the TIA were obtained from manual turning movement counts conducted by National Data and Surveying Services (NDS) in March 2015.

Figures 4.6-1a and 4.6-1b illustrate the existing weekday a.m. and p.m. peak hour traffic volumes at the ten key study intersections evaluated in the TIA, respectively. Figures 4.6-2a and 4.6-2b show a.m. and p.m. peak hour traffic volumes associated with the current Civic Center land uses.

Existing Level of Service Results. Table 4.6-4 summarizes the existing peak hour service level calculations for the ten (10) key study intersections based on existing traffic volumes and current street geometrics. Review of Table 4.6-4 indicates that all ten (10) key study intersections currently operate at LOS C or better during the weekday a.m. and p.m. peak hours.

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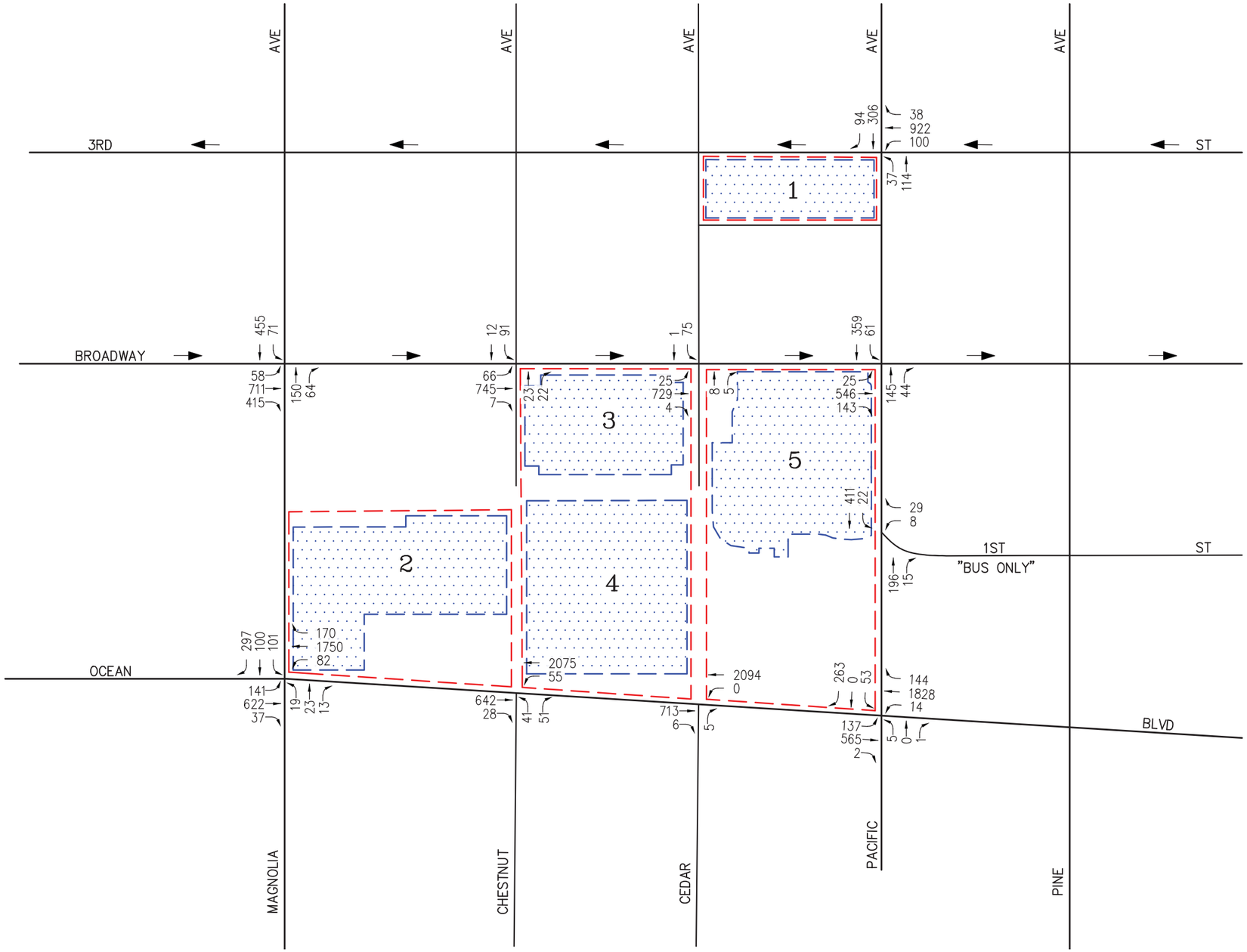


KEY

= PROJECT AREA
= PARKING LOCATIONS

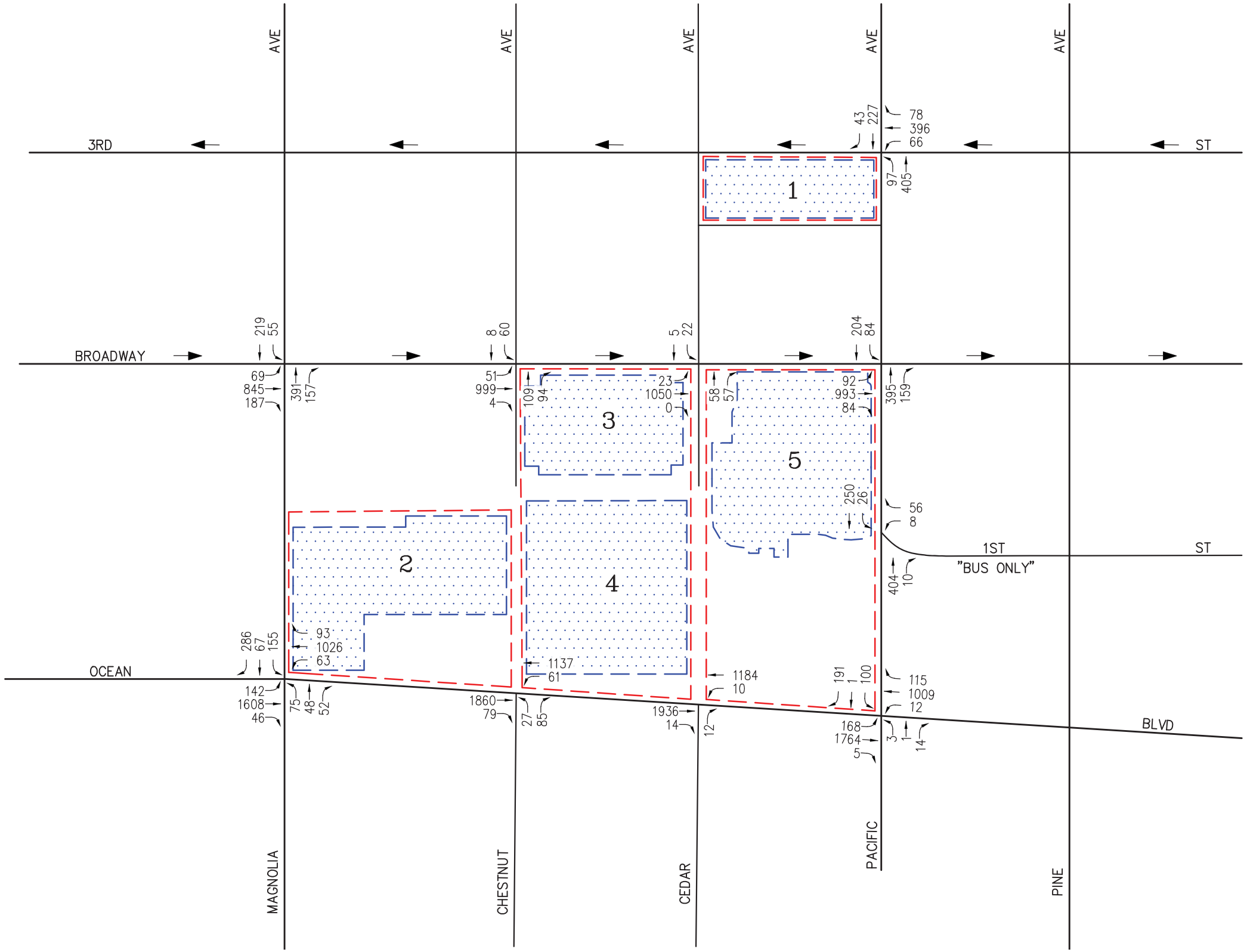
1 = THIRD & PACIFIC BLOCK RESIDENTIAL PARKING
2 = CIVIC CENTER BLOCK PARKING
3 = CENTER BLOCK BROADWAY PARKING GARAGE
4 = CENTER BLOCK COMMERCIAL PARKING GARAGE
5 = LINCOLN PARK BLOCK PARKING GARAGE

N

Existing A.M. Peak Hour Traffic Volumes

Source: Linscott, Law & Greenspan, 2015

Figure 4.6-1a



KEY

= PROJECT AREA
= PARKING LOCATIONS

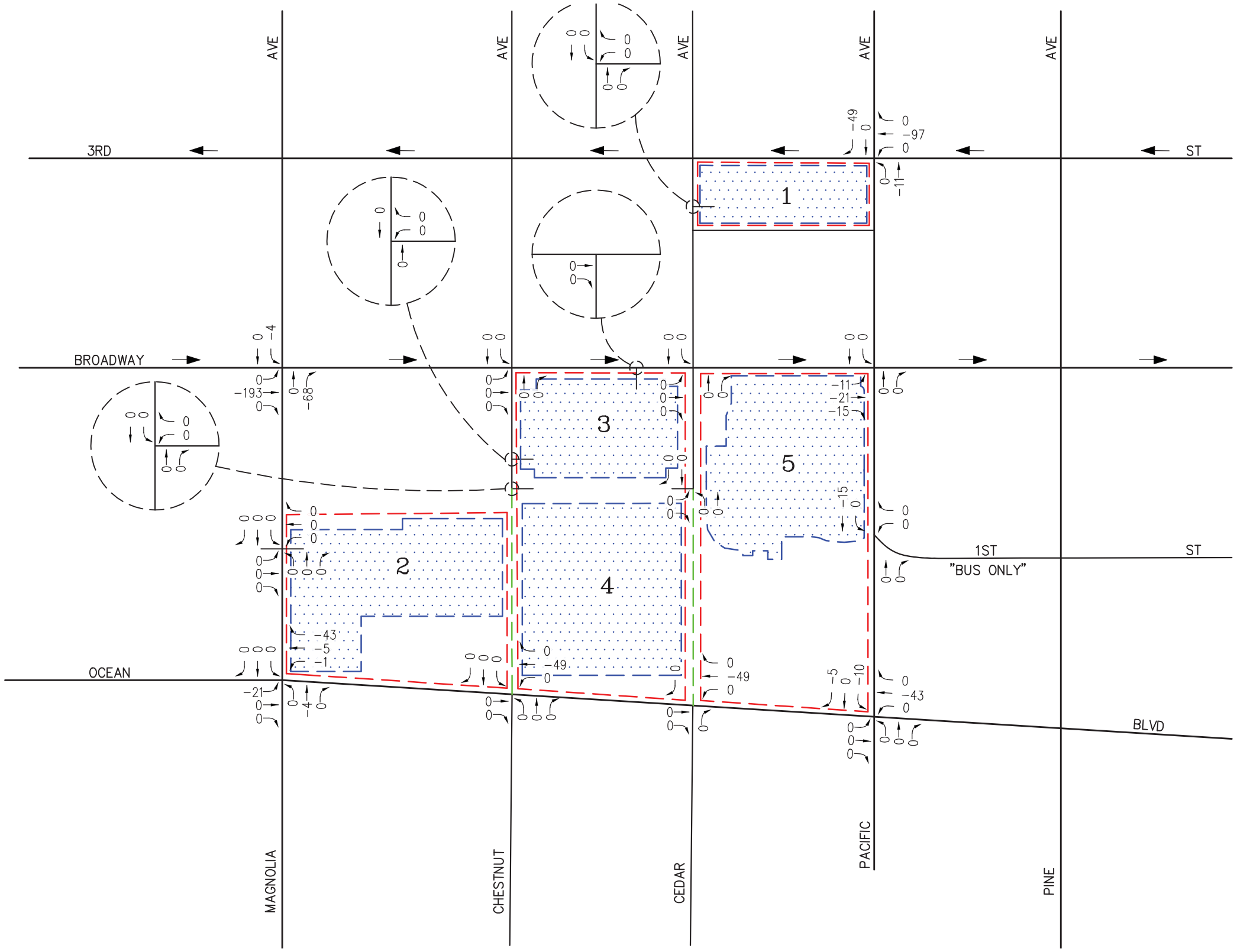
1 = THIRD & PACIFIC BLOCK RESIDENTIAL PARKING
2 = CIVIC CENTER BLOCK PARKING
3 = CENTER BLOCK BROADWAY PARKING GARAGE
4 = CENTER BLOCK COMMERCIAL PARKING GARAGE
5 = LINCOLN PARK BLOCK PARKING GARAGE

N

Existing P.M. Peak Hour Traffic Volumes

Source: Linscott, Law & Greenspan, 2015

Figure 4.6-1b



KEY

= PROJECT AREA
= PARKING LOCATIONS
= FUTURE ROAD

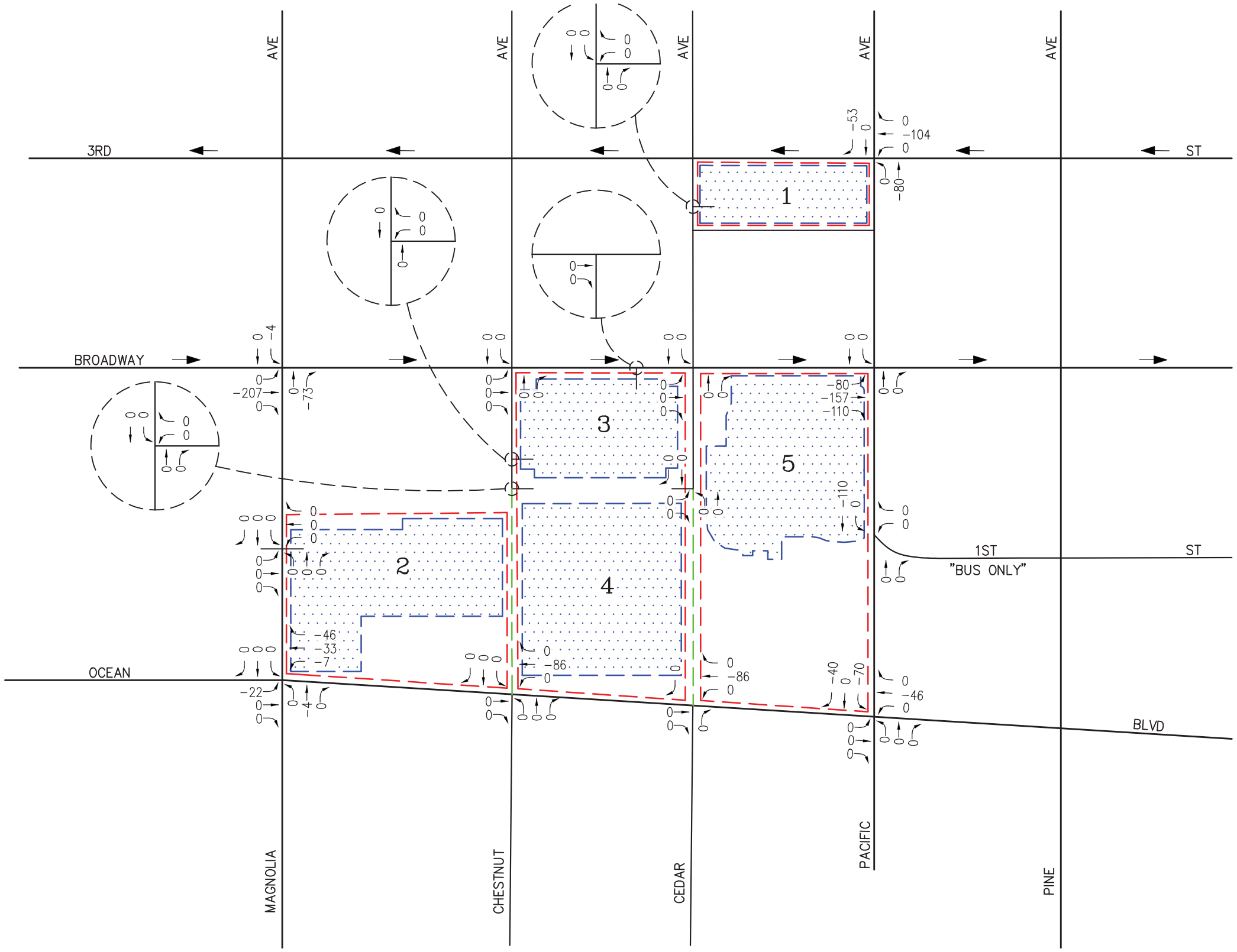
1 = THIRD & PACIFIC BLOCK RESIDENTIAL PARKING
2 = CIVIC CENTER BLOCK PARKING
3 = CENTER BLOCK BROADWAY PARKING GARAGE
4 = CENTER BLOCK COMMERCIAL PARKING GARAGE
5 = LINCOLN PARK BLOCK PARKING GARAGE

N

A.M. Peak Hour Existing
Civic Center Traffic Volumes

Figure 4.6-2a

Source: Linscott, Law & Greenspan, 2015



KEY

= PROJECT AREA
= PARKING LOCATIONS
= FUTURE ROAD

1 = THIRD & PACIFIC BLOCK RESIDENTIAL PARKING
2 = CIVIC CENTER BLOCK PARKING
3 = CENTER BLOCK BROADWAY PARKING GARAGE
4 = CENTER BLOCK COMMERCIAL PARKING GARAGE
5 = LINCOLN PARK BLOCK PARKING GARAGE

N

P.M. Peak Hour Existing
Civic Center Traffic Volumes

Figure 4.6-2b

Source: Linscott, Law & Greenspan, 2015

Table 4.6-4
Existing Peak Hour Levels of Service

Key Intersection	Control Type	Time Period	ICU/HCM	LOS
1. Magnolia Avenue at Broadway	2-Phase Traffic Signal	a.m. p.m.	0.502 0.570	A A
2. Chestnut Avenue at Broadway	3-Phase Traffic Signal	a.m. p.m.	0.432 0.553	A A
3. Cedar Avenue at Broadway	3-Phase Traffic Signal	a.m. p.m.	0.432 0.531	A A
4. Pacific Avenue at Broadway	3-Phase Traffic Signal	a.m. p.m.	0.478 0.663	A B
5. Magnolia Avenue at Ocean Boulevard	3-Phase Traffic Signal	a.m. p.m.	0.770 0.730	C C
6. Chestnut Avenue at Ocean Boulevard	2-Phase Traffic Signal	a.m. p.m.	0.564 0.595	A A
7. Cedar Avenue at Ocean Boulevard	One-Way Stop	a.m. p.m.	9.7 s/v 17.2 s/v	A C
8. Pacific Avenue at Ocean Boulevard	6-Phase Traffic Signal	a.m. p.m.	0.689 0.559	B A
9. Pacific Avenue at Third Street	3-Phase Traffic Signal	a.m. p.m.	0.569 0.430	A A
10. Pacific Avenue at First Street	3-Phase Traffic Signal	a.m. p.m.	0.302 0.336	A A

Source: Linscott, Law and Greenspan, July 2015; see Appendix E for full TIA report.
Notes:
ICU = Intersection Capacity Utilization
s/v = seconds per vehicle (delay)
LOS = Level of Service, please refer to Table 4.6-2 and Table 4.6-3 for the LOS definitions

e. Regulatory Setting.

Congestion Management Program (CMP). In Los Angeles County, the CMP uses ICU intersection analysis methodology to analyze its operations. In June 1990, the passage of the Proposition 111 gas tax increase required urbanized areas in the State with a population of 50,000 or more to adopt a CMP. Metro is the Congestion Management Agency (CMA) for the County. Metro has been charged with the development, monitoring, and biennial updating of Los Angeles County's CMP. The Los Angeles County CMP is intended to address the impact of local growth on the regional transportation system. The CMP Highway System includes specific roadways, including State highways, and CMP arterial monitoring locations/intersections. The CMP is also the vehicle for proposing transportation projects that are eligible to compete for the State gas tax funds.

City of Long Beach General Plan. It is the stated goal of the City to maintain or improve the current ability to move people and goods to and from activity centers while reinforcing the quality of life in their neighborhoods. This goal is supported by the objectives to: (1) maintain traffic and transportation LOS at LOS D, (2) accommodate reasonable, balanced growth, and (3) maintain or enhance our quality of life. The following specific Mobility of People (MOP) policies are included in the Mobility Element of the General Plan.

MOP Policy 1-1	*To improve the performance and visual appearance of Long Beach's streets, design streets holistically using the "complete streets approach" which considers walking, those with mobility constraints, bicyclists, public transit users, and various other modes of mobility in parallel.*
MOP Policy 1-9	*Increase mode shift of transit, pedestrians, and bicycles.*
MOP Policy 1-18	*Focus development densities for residential and nonresidential uses around the eight Metro Blue Line stations within City boundaries.*
MOP Policy 4-1	*Consider effects on overall mobility and various travel modes when evaluating transportation impacts of new developments or infrastructure projects.*
MOP Policy 15-3	*Consider pickup and delivery activities associated with various land uses when approving new development, implementing projects, and improving highways, streets, and bridges.*

Long Beach Municipal Code. Chapter 21.41, Off-Street Parking and Loading requirements of the Long Beach Municipal Code (LBMC) provides parking requirements for development projects within the City. Since the proposed project involves development of new residential uses within the City, which will require adequate parking, the proposed project is subject to the requirements of Chapter 21.41 of the LBMC.

4.6.2 Previous Environmental Review

The Long Beach Downtown Plan EIR (the "Downtown Plan EIR") examined traffic impacts associated with buildout of the Downtown Plan. The Downtown Plan EIR determined that the Downtown Plan would result in significant impacts at 16 intersections and would result in a significant and unavoidable impact. The Downtown Plan EIR determined that the Downtown Plan would not result in any significant impacts related to design hazards or emergency access. For comparison purposes, the project's trip generation potential was compared to the traffic forecast associated with the development potential of the Civic Center area as evaluated in the Downtown Plan EIR Traffic Impact Analysis, dated February 4, 2010. Up to 800 residential units, 460,000 square feet (sf) of office/commercial floor area, 64,000 sf of retail space and 16,000 sf of restaurant uses were assumed and assessed for the Civic Center area in the Downtown Plan EIR traffic analysis.

The project includes the demolition of the former Long Beach Courthouse. The Long Beach Courthouse Demolition Project was studied in a Draft EIR (SCH# 2014051003) that was circulated in October and November of 2014, but was not certified. The Long Beach Courthouse Demolition Project Draft EIR determined that impacts related to conflicts with applicable plans would be less than significant with implementation of mitigation involving the development of a Construction Management Plan.

4.6.3 Impact Analysis

a. Methodology and Significance Thresholds.

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 estimating traffic generation, which includes 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 or expected future travel patterns in the study area. The analysis assumes the future year scenario does not include roadway changes or improvements beyond those proposed by the project.

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.

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 Ninth Edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE).

Trip generation rates/equations for ITE Land Use 230: Residential Condominium/Townhouse, ITE Land Use 310: Hotel, ITE Land Use 411: City Park, ITE Land Use 590: Library, ITE Land Use 710: General Office Building, ITE Land Use 820: Shopping Center and ITE Land Use 932: High-Turnover (Sit Down) Restaurant have been applied appropriately to the existing development and proposed project uses.

As shown in Table 4.6-5, the proposed project is forecast to generate 18,582 daily trips, including 1,185 trips (795 inbound, 390 outbound) produced in the a.m. peak hour and 1,668 trips (693 inbound, 975 outbound) produced in the p.m. peak hour on a typical weekday.

For the existing land use, Table 4.6-5 shows that the existing trip generation potential of the current civic center (i.e., City Hall office tower, Main Library and Lincoln Park) totals 7,659 daily trips, with 514 trips (418 inbound, 96 outbound) produced in the a.m. peak hour and 1,116 trips (446 inbound, 670 outbound) produced in the p.m. peak hour.

Comparison of the trips generated by the proposed project to the trip generation potential of existing land uses shows that the implementation of the proposed project would result in an additional 10,923 daily trips, including 671 net a.m. peak hour trips and 552 net p.m. peak hour trips.

Table 4.6-5
Project Trip Generation Forecast

Land Use	Daily	A.M. Peak Hour			P.M. Peak Hour		
		Inbound	Outbound	Total	Inbound	Outbound	Total
Proposed Project Trip Generation							
Third and Pacific Block							
Residential	1,176	11	56	67	53	25	78
Civic Block							
City Hall and Port Building	5,347	527	72	599	92	447	539
Lincoln Park and New Library Block							
Main Library and Lincoln Park	3,644	90	40	130	277	298	575
Center Block							
Residential	2,821	25	123	148	119	59	178
Hotel	1,552	60	41	101	58	56	114
Retail	3,076	46	28	74	63	69	132
Restaurant	966	36	30	66	31	21	52
Total Proposed Project Trips	**18,582**	**795**	**390**	**1,185**	**693**	**975**	**1,668**
Total Existing Land Use Trips	**7,659**	**418**	**96**	**514**	**446**	**670**	**1,116**
Net Project Trips (Project – Existing)	**10,923**	**377**	**294**	**671**	**247**	**305**	**552**

Source: Linscott, Law and Greenspan July 2015; see Appendix E for full TIA report. Trip calculations include reductions for transit, internal capture, mixed-use, and pass by trips, where applicable.

Project Traffic Distribution and Assignment. Figures 4.6-3a illustrates the general, directional traffic distribution pattern for the existing civic center uses, whereas Figures 4.6-3b through 4.6-3f present the trip distribution patterns for various components of 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:

- *Location of site access points in relation to the surrounding street system*
- *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*
- *Ingress/egress availability at the project's parking structures, including turn restrictions to and from Ocean Boulevard*

The a.m. and p.m. peak hour traffic volumes associated with the current civic center uses are presented in Figures 4.6-2a and 4.6-2b, respectively. The anticipated a.m. and p.m. peak hour project traffic volumes associated with the proposed project are presented in Figures 4.6-4a and 4.6-4b, respectively. The traffic volume assignments presented in Figures 4.6-2a and 4.6-2b above reflect the traffic distribution characteristics for the existing development and the traffic generation potential presented in Table 4.6-5.

The project's traffic volume forecasts illustrated in Figures 4.6-4a and 4.6-4b reflect the traffic distribution characteristics of the proposed project as shown in Figures 4.6-3b through 4.6-3f below and the project traffic generation potential presented in Table 4.6-5.

Figures 4.6-5a and 4.6-5b present projected a.m. and p.m. peak hour traffic volumes at the ten key study intersections with the addition of the trips generated by the proposed project to existing traffic volumes, respectively.

Future Traffic Conditions.

Ambient Traffic Growth. Cumulative traffic growth estimates were 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 per year. Applying this factor to existing Year 2015 traffic volumes results in a five percent increase of growth in existing volumes in horizon year 2020.

The ambient growth factor is generally consistent with the background traffic growth estimates contained in the most current Congestion Management Program for Los Angeles County. In addition, the one percent per year ambient growth factor was approved by City of Long Beach staff.

Cumulative Projects Traffic Characteristics. In order to make a realistic estimate of future on-street conditions prior to implementation of the proposed project, the status of other known development projects (cumulative projects) in the area has been researched. With this information, the potential impact of the proposed project can be evaluated within the context of the cumulative impact of all ongoing development. There are twelve cumulative projects within a two-mile radius of the project site that are located in the City of Long Beach. These cumulative projects have either been built, but not yet fully occupied, or are being processed for approval and have been included as part of the cumulative background setting. These cumulative projects are described in Section 3, *Environmental Setting.*

Table 4.6-6 presents the development totals and resultant trip generation for the twelve cumulative projects. As shown in Table 4.6-6, the twelve cumulative projects are expected to generate a combined total of 13,513 daily trips, including 891 a.m. peak hour trips (251 inbound and 640 outbound) and 1,306 p.m. peak hour trips (761 inbound and 545 outbound) on a typical weekday.

Table 4.6-6
Cumulative Projects Traffic Generation Forecast[1]

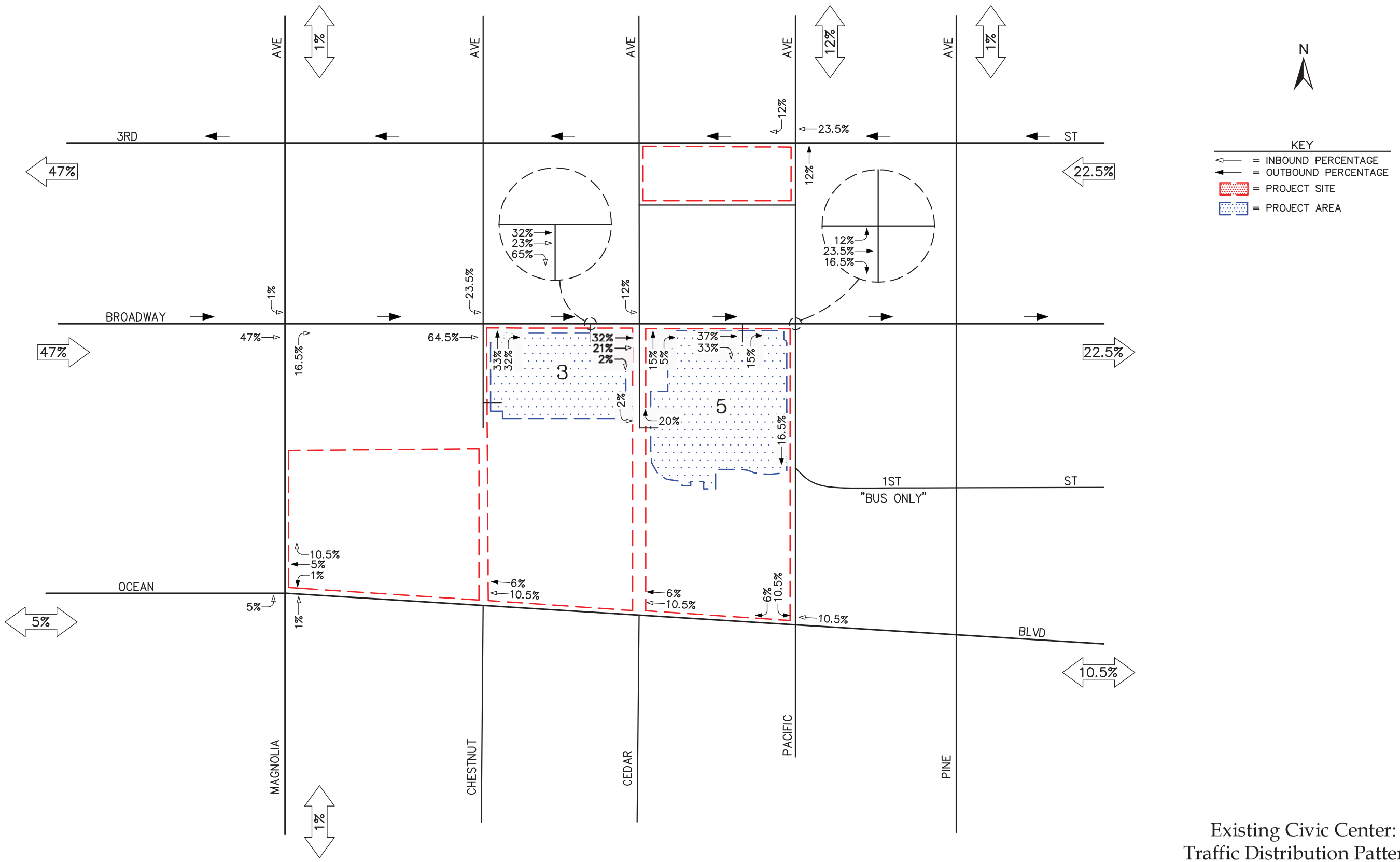
#	Cumulative Project Description	Daily 2-way	A.M. Peak Hour			P.M. Peak Hour		
			In	Out	Total	In	Out	Total
1	207 East Seaside Way Apartments[2]	751	11	47	58	45	25	70
2	Silversands	652	16	30	46	31	22	53
3	Mixed-Use Project	220	4	10	14	12	9	21
4	City Hall East	1,192	18	65	83	69	41	110
5	Ocean Center Building Reuse	1,247	41	59	100	60	38	98
6	Oceanaire Residential Project[3]	1,436	22	89	111	86	48	134
7	The Pike Outlet Conversion Project	2,266	41	22	63	85	124	209
8	442 West Ocean Boulevard Apratments[4]	632	10	38	48	38	21	59
9	SRG 1st Alamitos Development	922	13	52	65	52	28	80
10	200 W. Ocean Boulevard	801	12	40	52	43	26	69
11	City Ventures Development	232	3	15	18	14	7	21
12	Shoreline Gateway[5]	4,381	60	173	233	226	156	382
Total Cumulative Projects Trip Generation Potential		**14,732**	**251**	**640**	**891**	**761**	**545**	**1,306**

Source: LLG, TIA, July 2015.
[1]Source: Trip Generation, 9th Edition, Institute of Transportation Engineers (ITE).
[2]Source: 207 East Seaside Way Apartments Project Traffic Impact Analysis, prepared by LLG Irvine.
[3]Source: Oceanaire Apartments Traffic Impact Analysis, prepared by Michael Baker International.
[4]Source: 442 West Ocean Boulevard Apartments Project Traffic Impact Analysis, prepared by LLG Irvine.
[5]Trip Generation forecast based on the approach published in the City of Long Beach Shoreline Gateway EIR Traffic Impact Study, June 2006, prepared by MMA. Project Development Totals based on information provided by the City of Long Beach.

The a.m. and p.m. peak hour traffic volumes associated with the twelve cumulative projects are presented in Figures 4.6-6a and 4.6-6b above, respectively.

Year 2020 Traffic Volumes. Figures 4.6-7a and 4.6-7b present future a.m. and p.m. peak hour cumulative traffic volumes at the ten (10) key study intersections for the Year 2020, respectively. The cumulative traffic volumes represent the accumulation of existing traffic, ambient growth traffic and cumulative projects traffic.

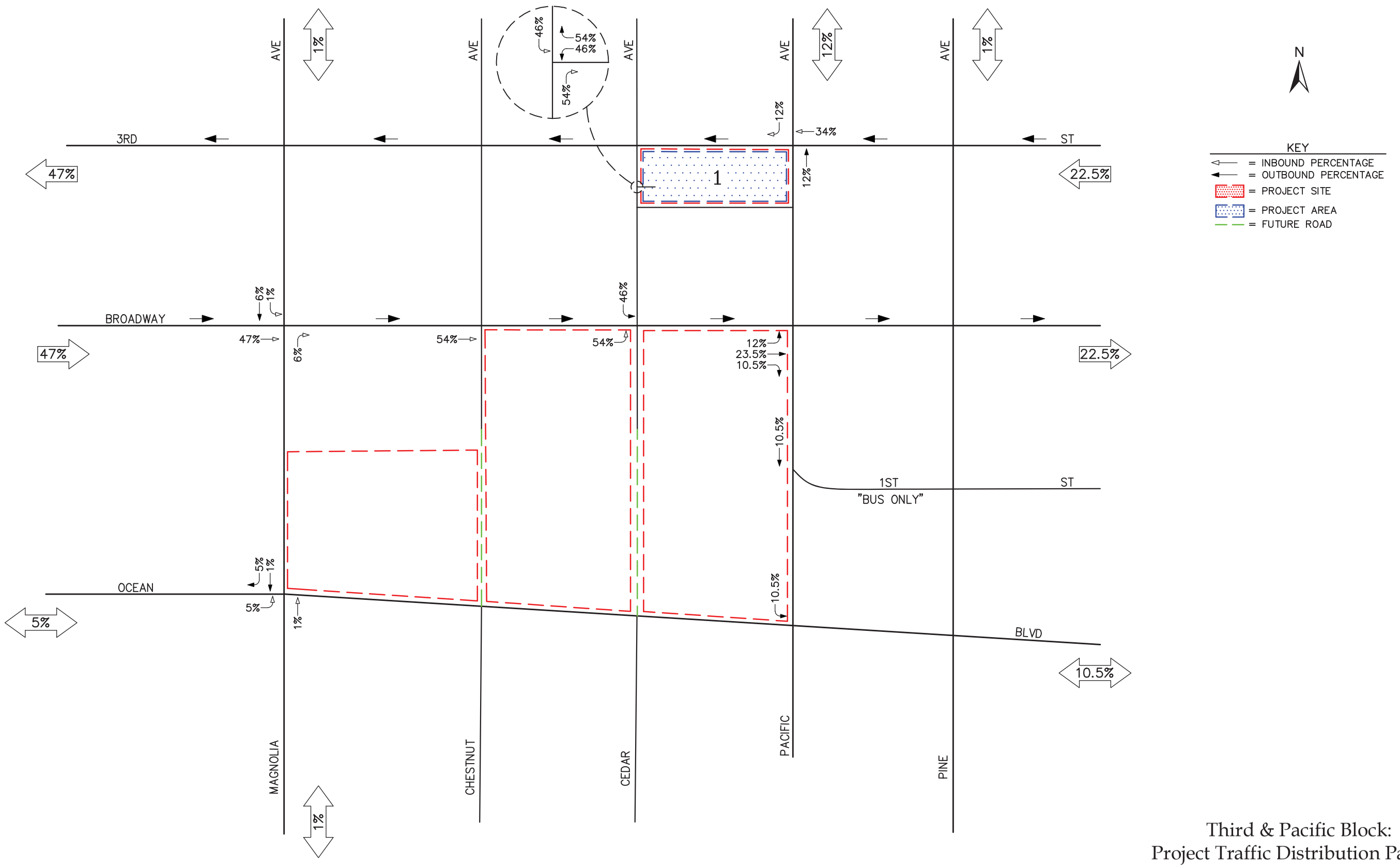
Figures 4.6-8a and 4.6-8b illustrate Year 2020 forecast a.m. and p.m. peak hour traffic volumes with the inclusion of the trips generated by the proposed project.



Existing Civic Center:
Traffic Distribution Patterns

Source: Linscott, Law & Greenspan, 2015

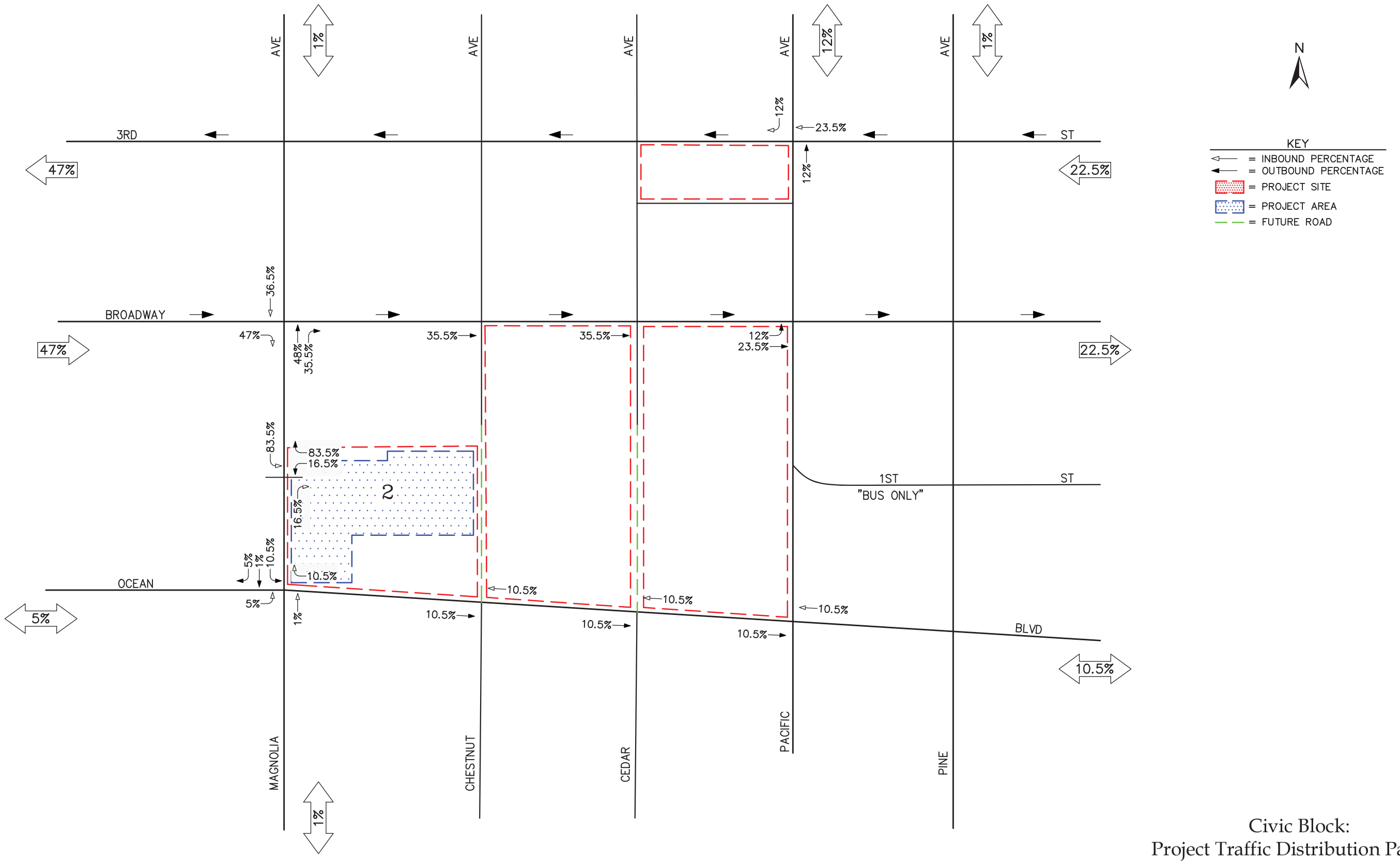
Figure 4.6-3a



Third & Pacific Block:
Project Traffic Distribution Pattern

Figure 4.6-3b

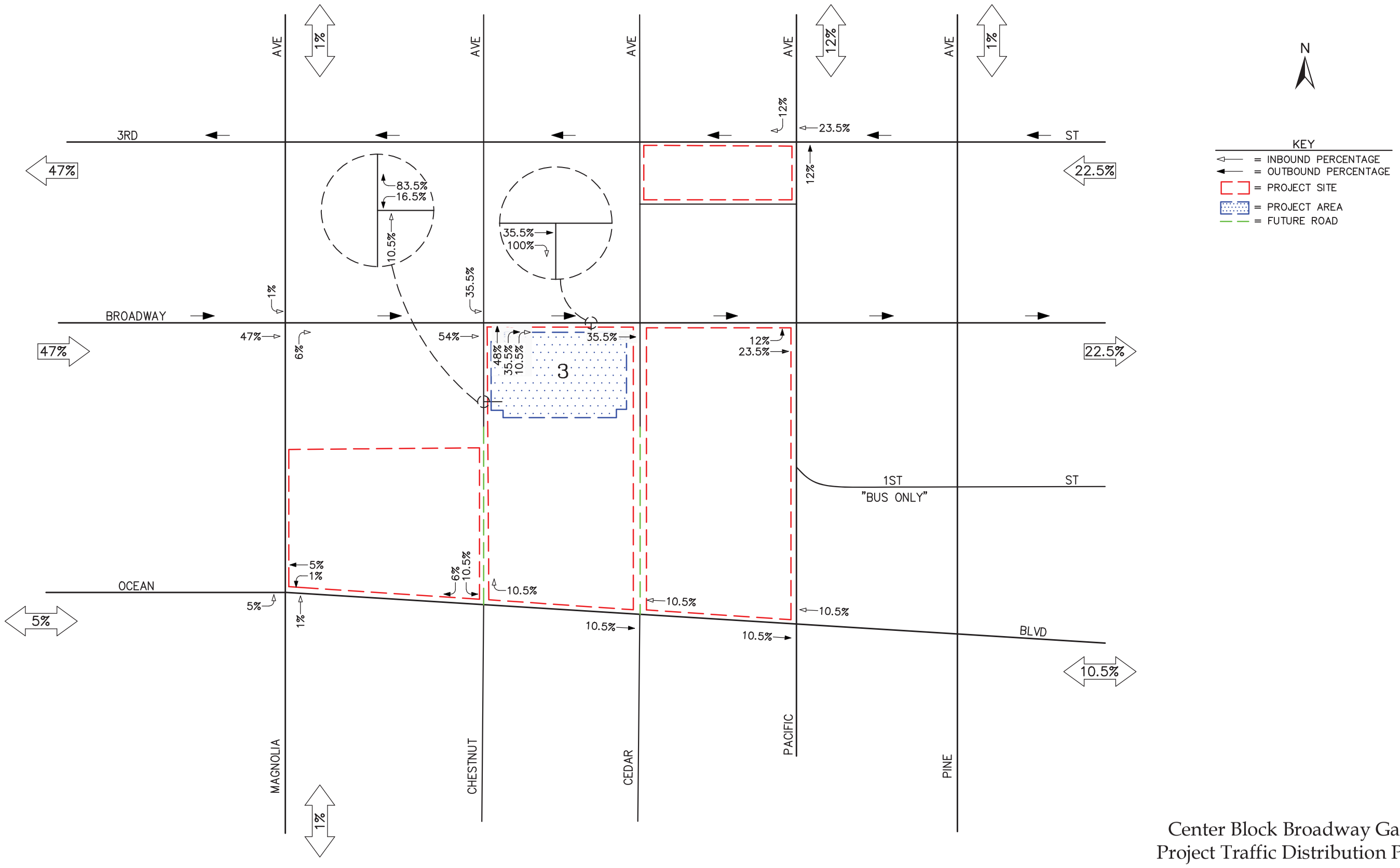
Source: Linscott, Law & Greenspan, 2015



Civic Block:
Project Traffic Distribution Pattern

Source: Linscott, Law & Greenspan, 2015

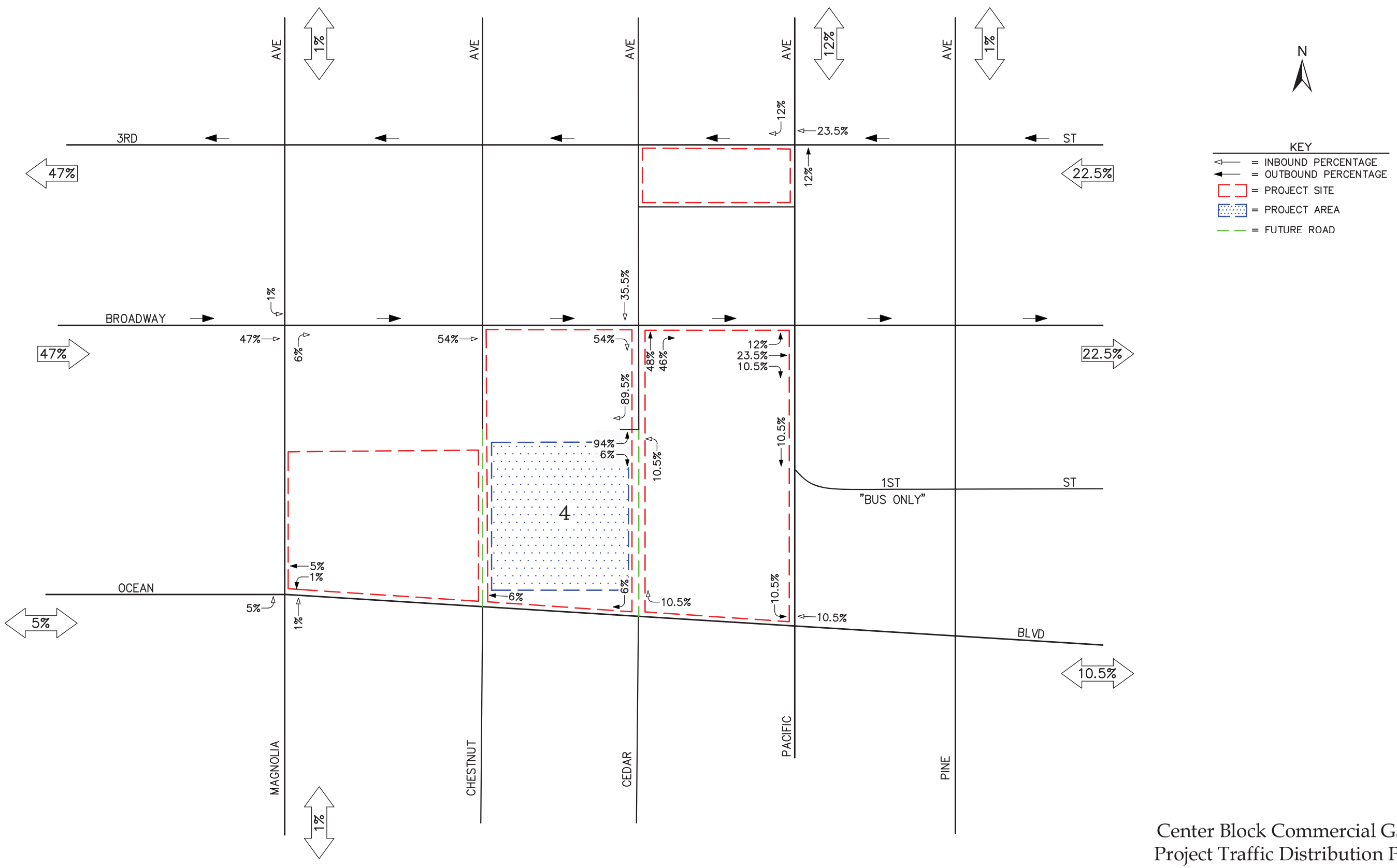
Figure 4.6-3c



Center Block Broadway Garage:
Project Traffic Distribution Pattern

Source: Linscott, Law & Greenspan, 2015

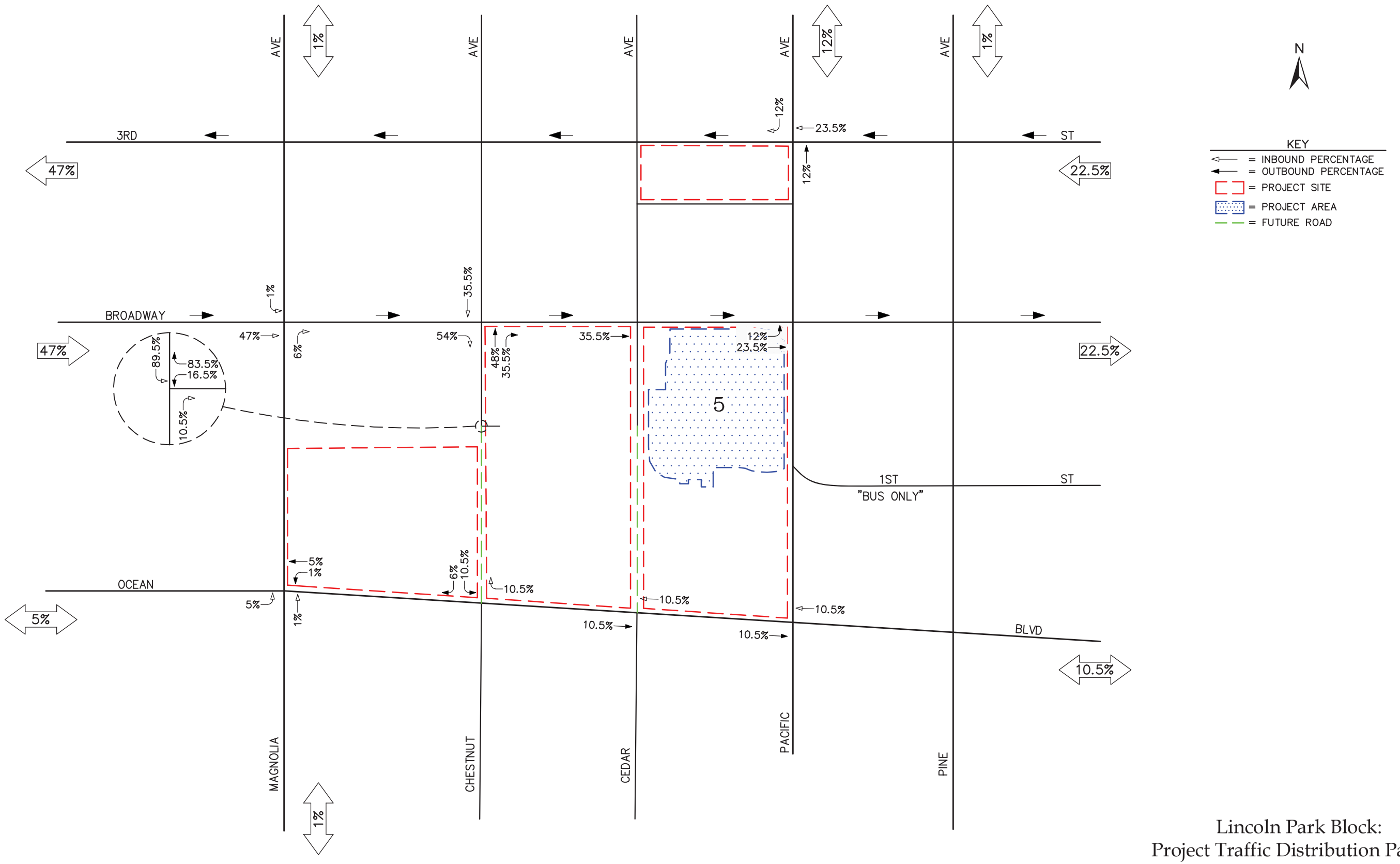
Figure 4.6-3d



Center Block Commercial Garage:
Project Traffic Distribution Pattern

Source: Linscott, Law & Greenspan, 2015

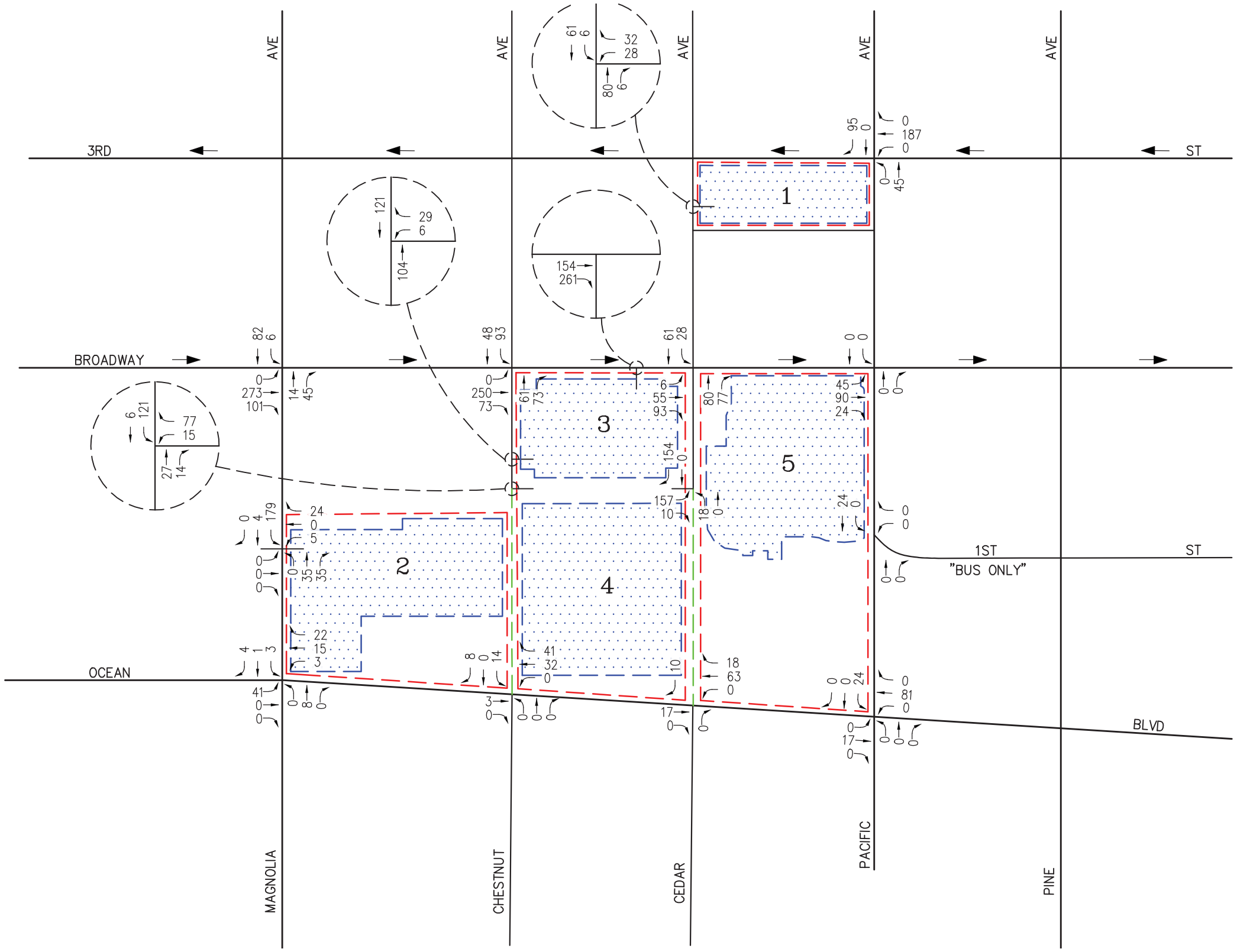
Figure 4.6-3e



Lincoln Park Block:
Project Traffic Distribution Pattern

Source: Linscott, Law & Greenspan, 2015

Figure 4.6-3f



KEY

= PROJECT AREA
= PARKING LOCATIONS
= FUTURE ROAD

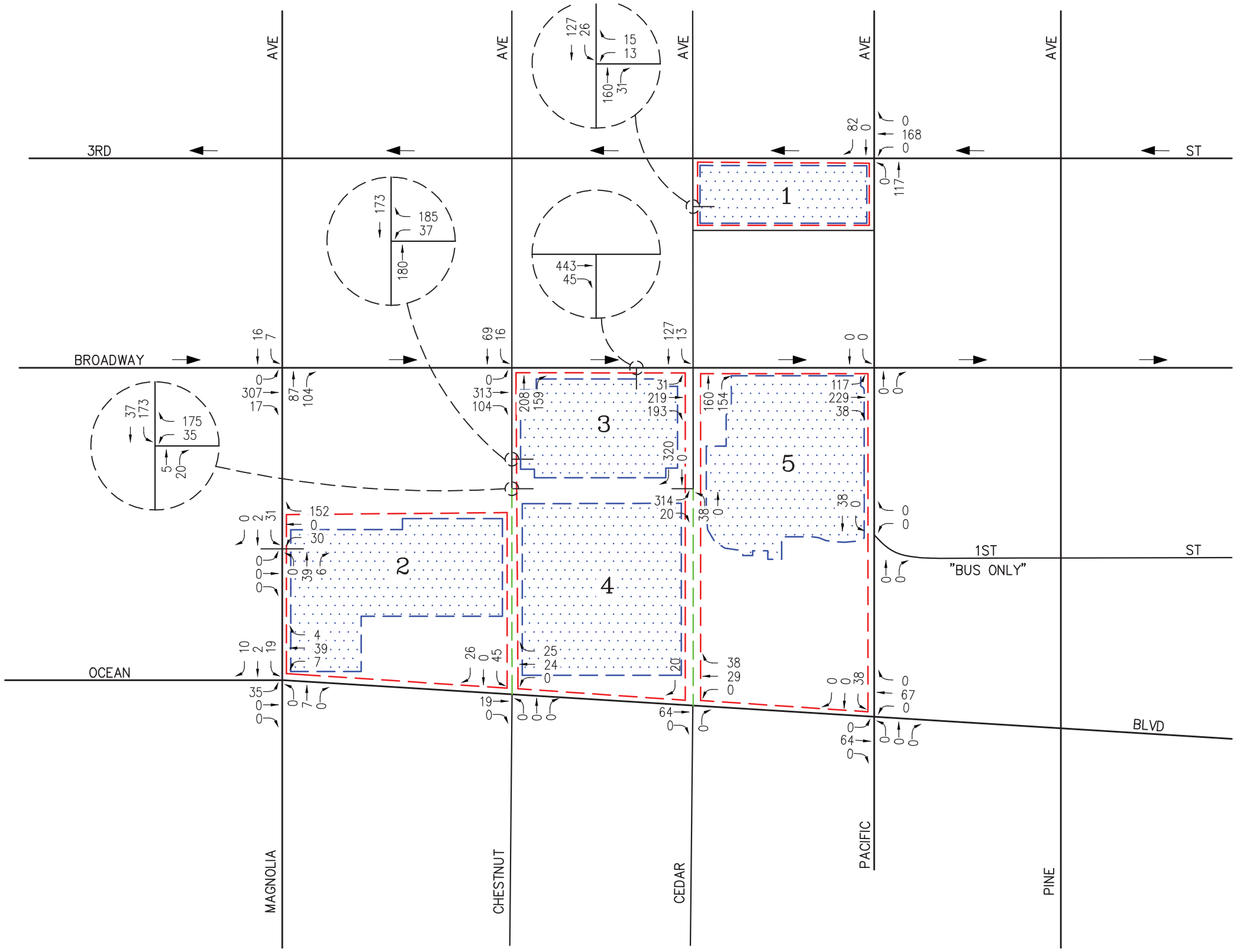
1 = THIRD & PACIFIC BLOCK RESIDENTIAL PARKING
2 = CIVIC CENTER BLOCK PARKING
3 = CENTER BLOCK BROADWAY PARKING GARAGE
4 = CENTER BLOCK COMMERCIAL PARKING GARAGE
5 = LINCOLN PARK BLOCK PARKING GARAGE

N

A.M. Peak Hour Project Traffic Volumes

Source: Linscott, Law & Greenspan, 2015

Figure 4.6-4a



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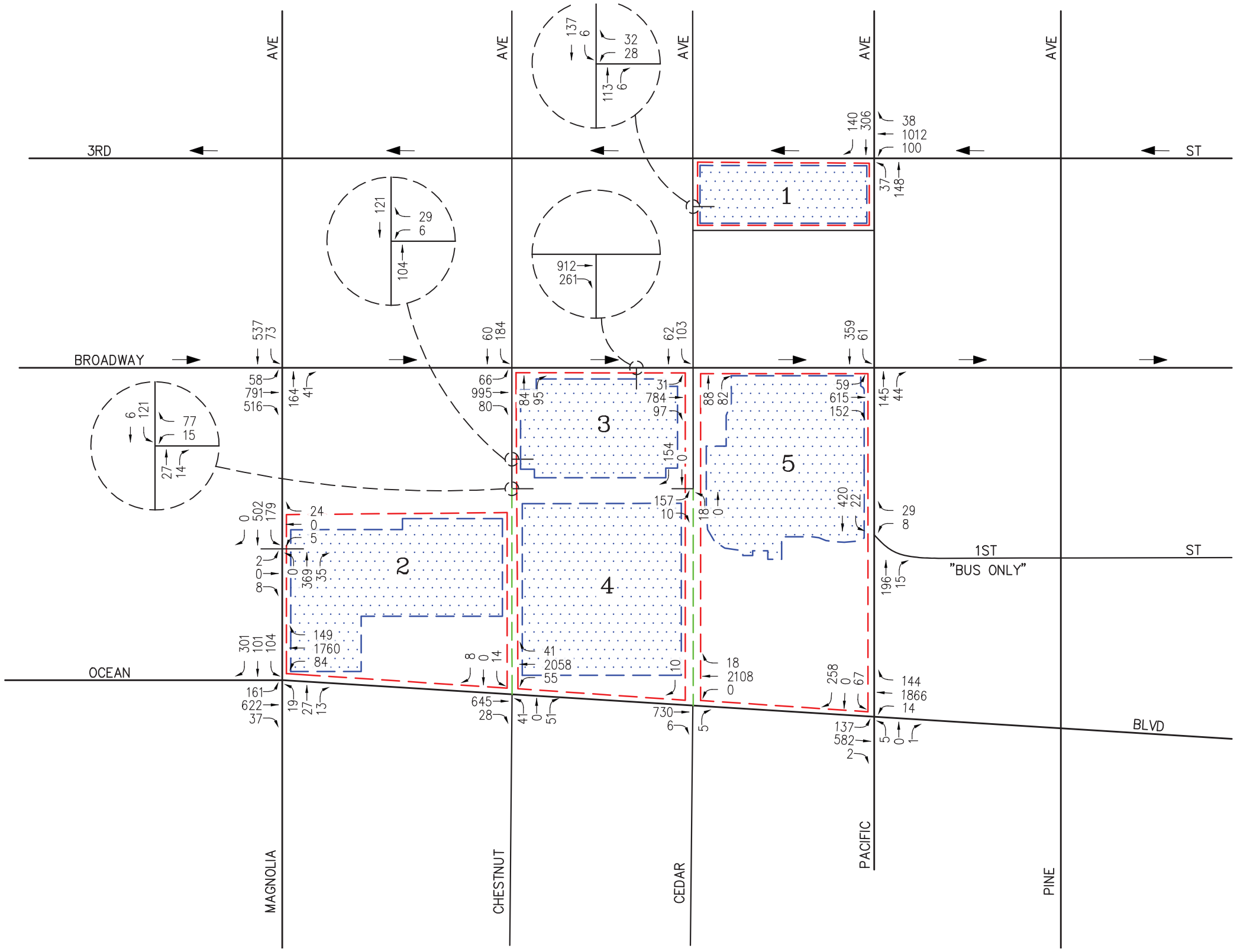
N

P.M. Peak Hour Project Traffic Volumes

Figure 4.6-4b

Source: Linscott, Law & Greenspan, 2015



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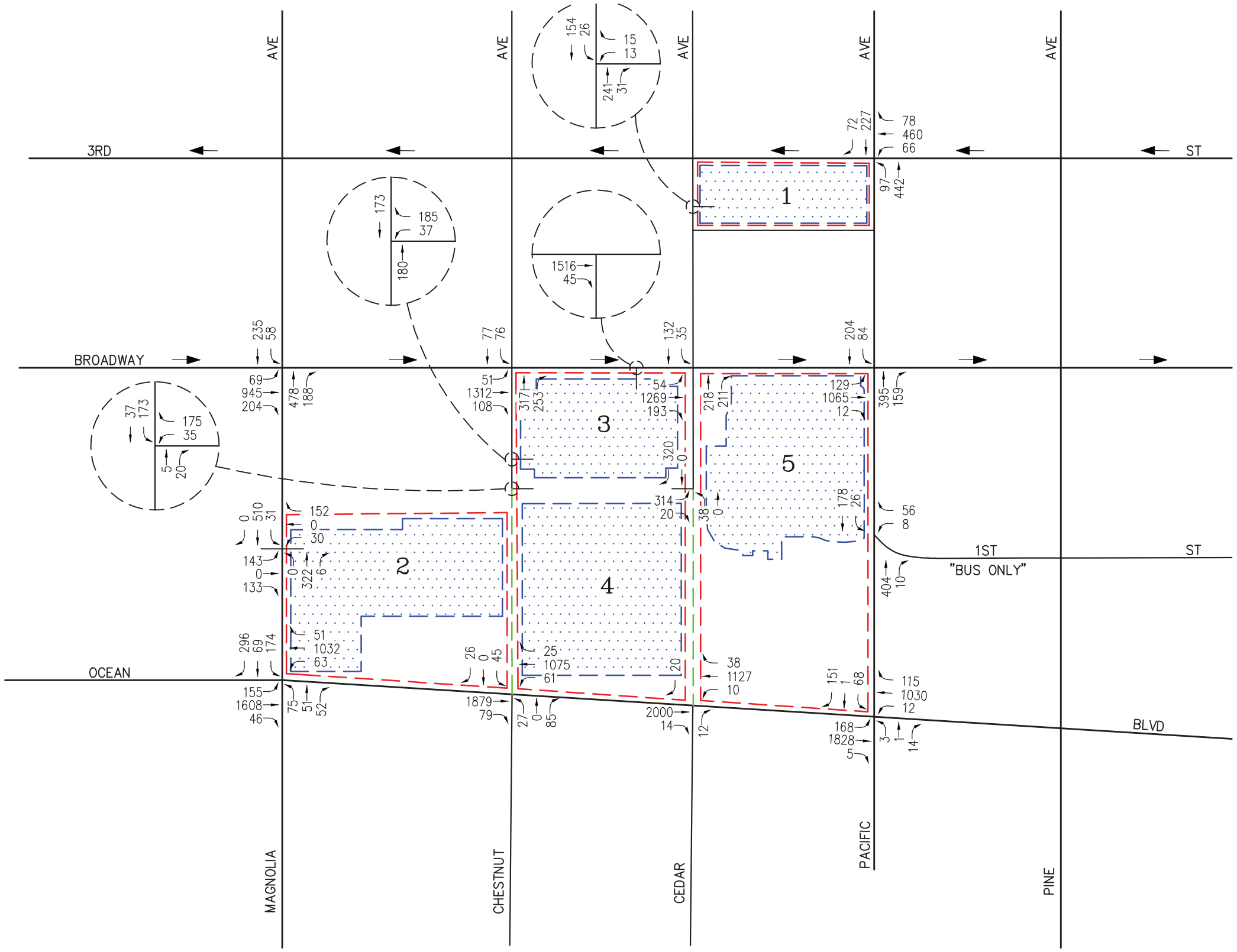
N

Existing Plus Project A.M. Peak Hour Traffic Volumes

Source: Linscott, Law & Greenspan, 2015

Figure 4.6-5a



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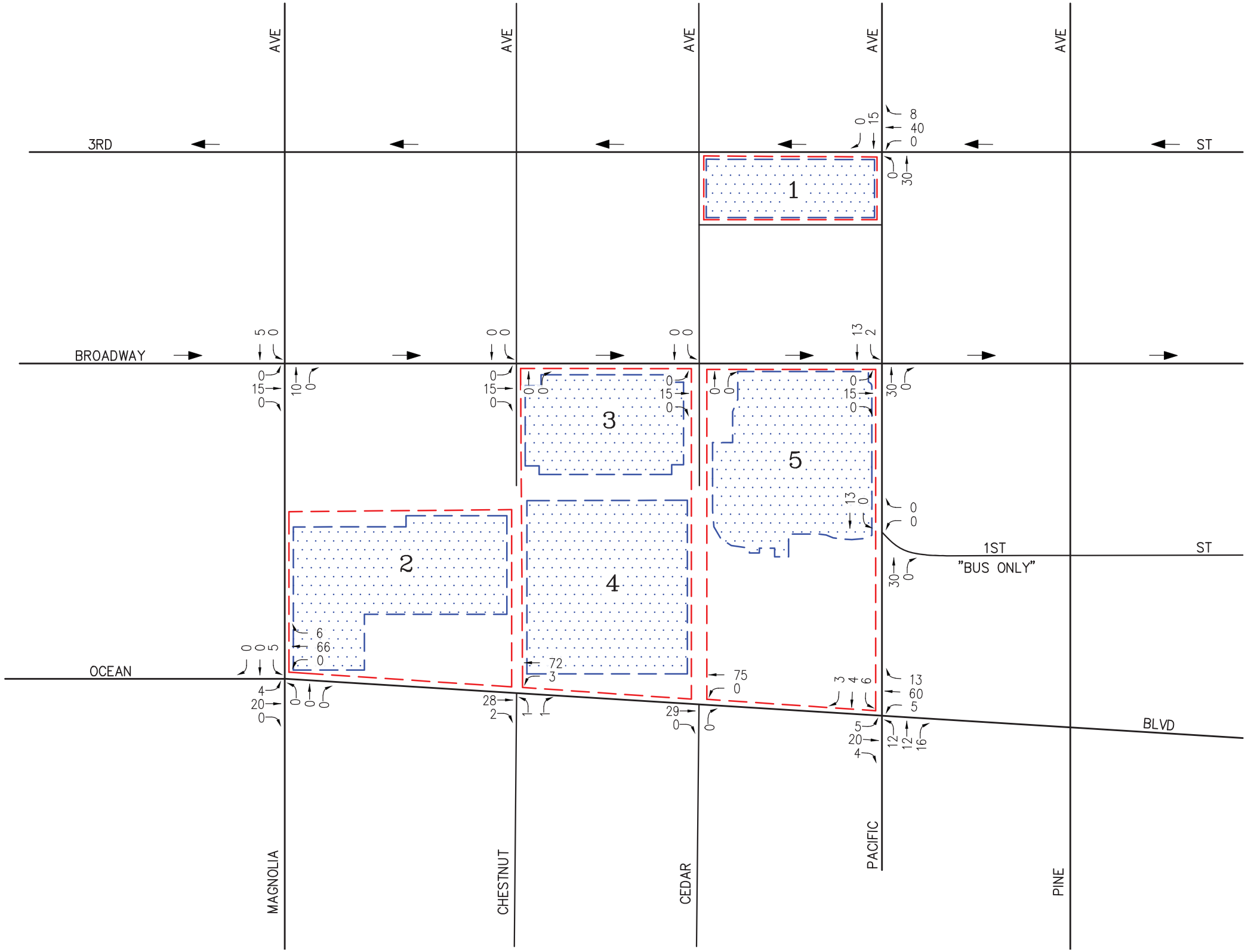
Existing Plus Project P.M. Peak Hour Traffic Volumes

Figure 4.6-5b

Source: Linscott, Law & Greenspan, 2015



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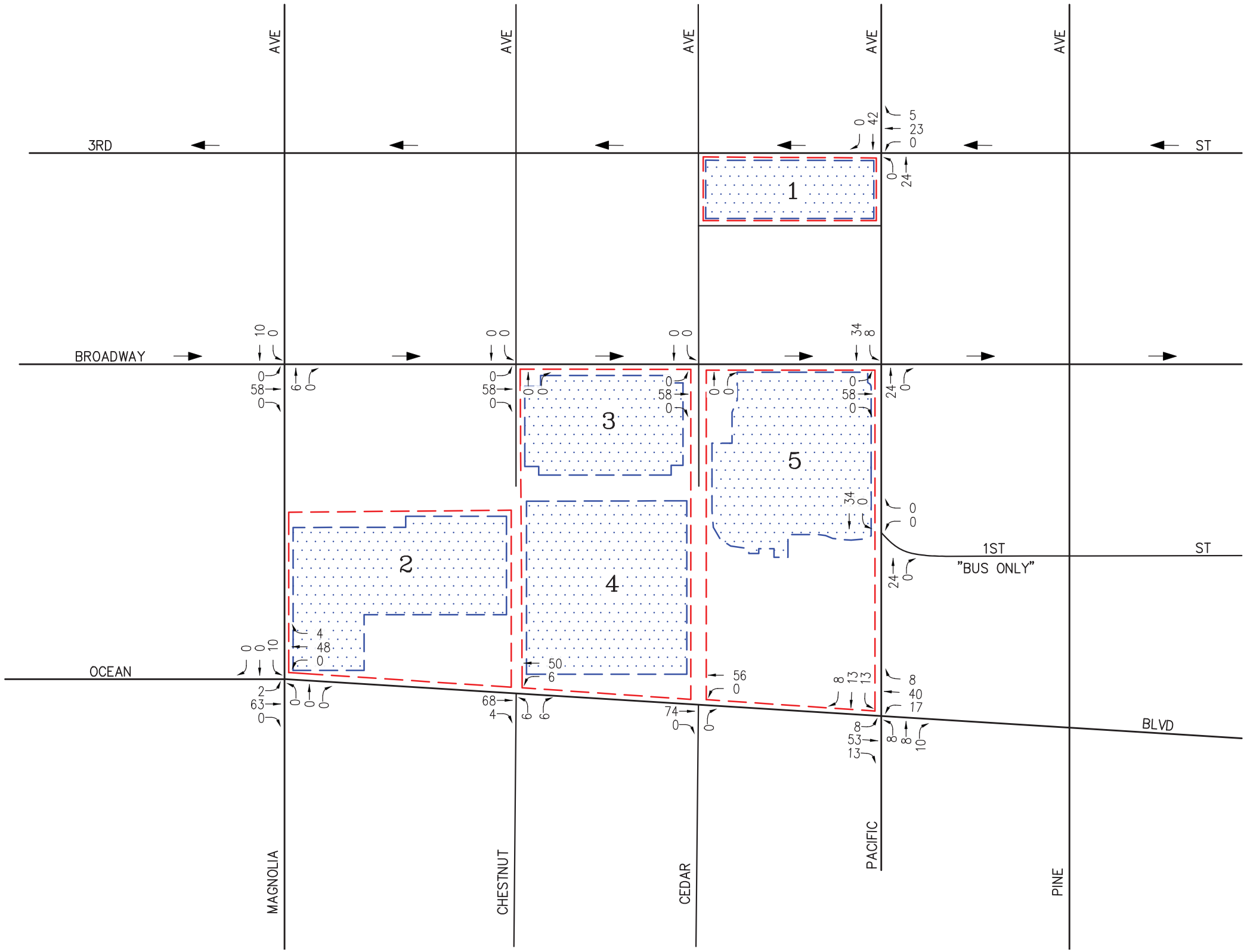
A.M. Peak Hour Cumulative Traffic Volumes

Source: Linscott, Law & Greenspan, 2015

Figure 4.6-6a



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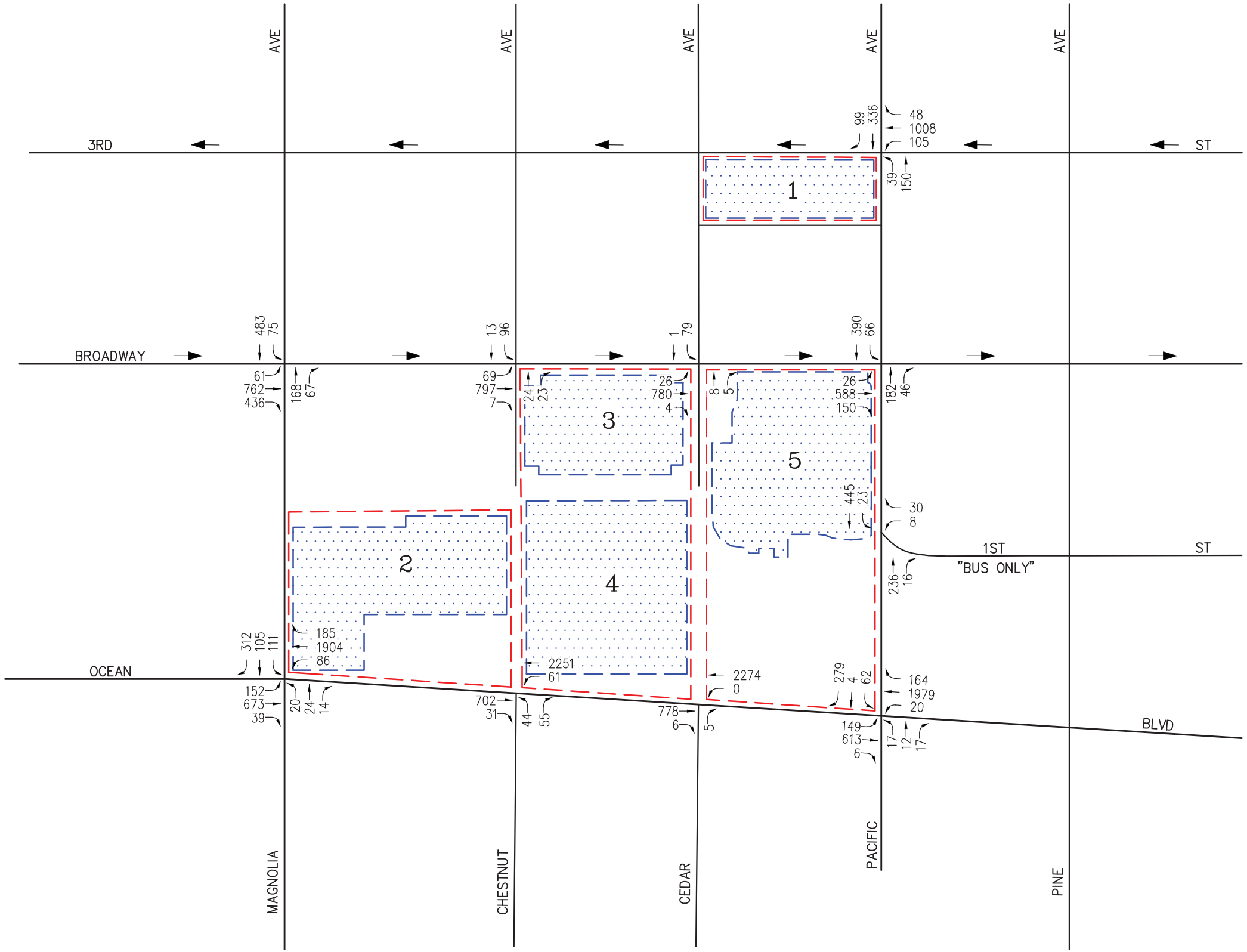
P.M. Peak Hour Cumulative Traffic Volumes

Source: Linscott, Law & Greenspan, 2015

Figure 4.6-6b



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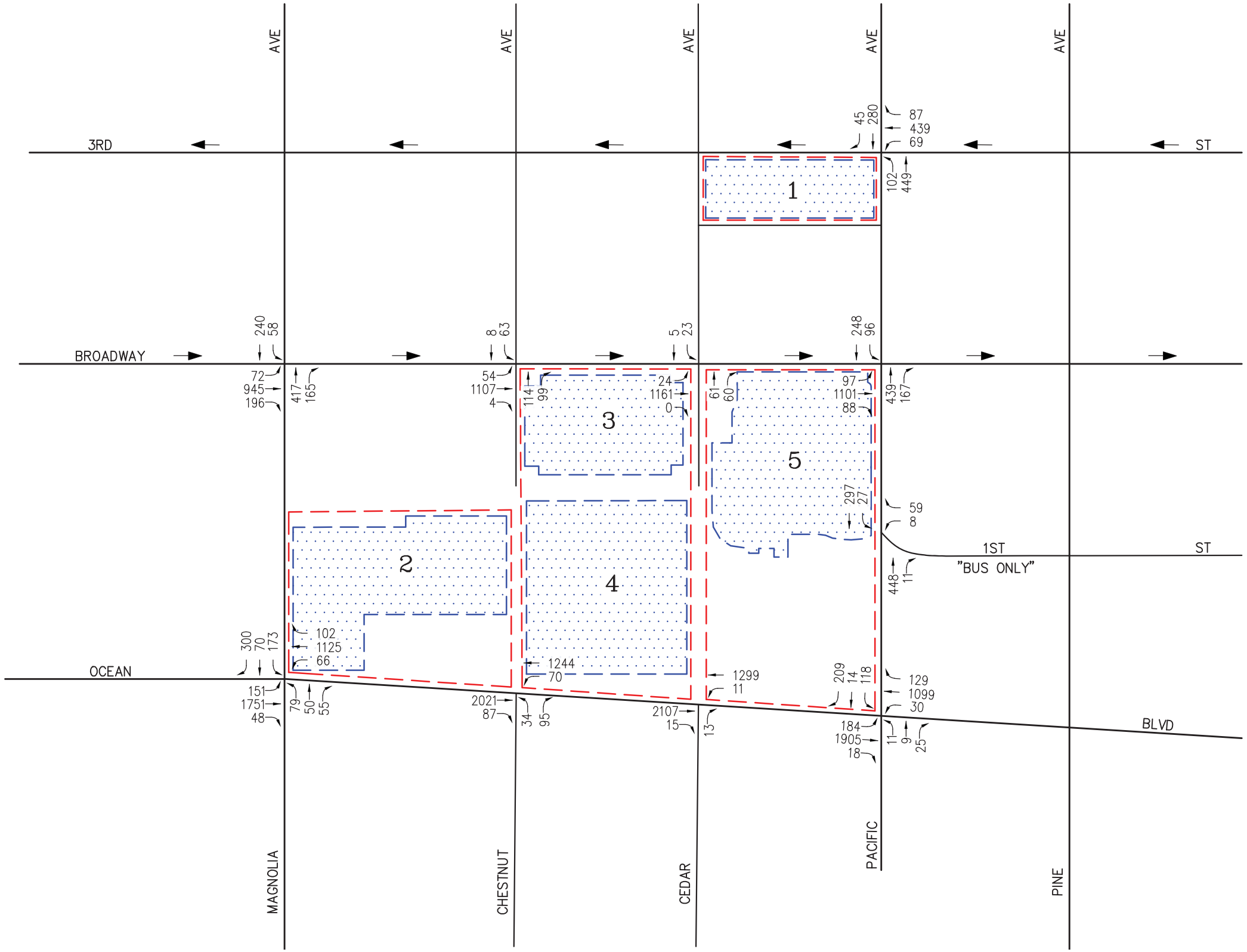
N

Year 2020 Cumulative
A.M. Peak Hour Traffic Volumes

Figure 4.6-7a

Source: Linscott, Law & Greenspan, 2015



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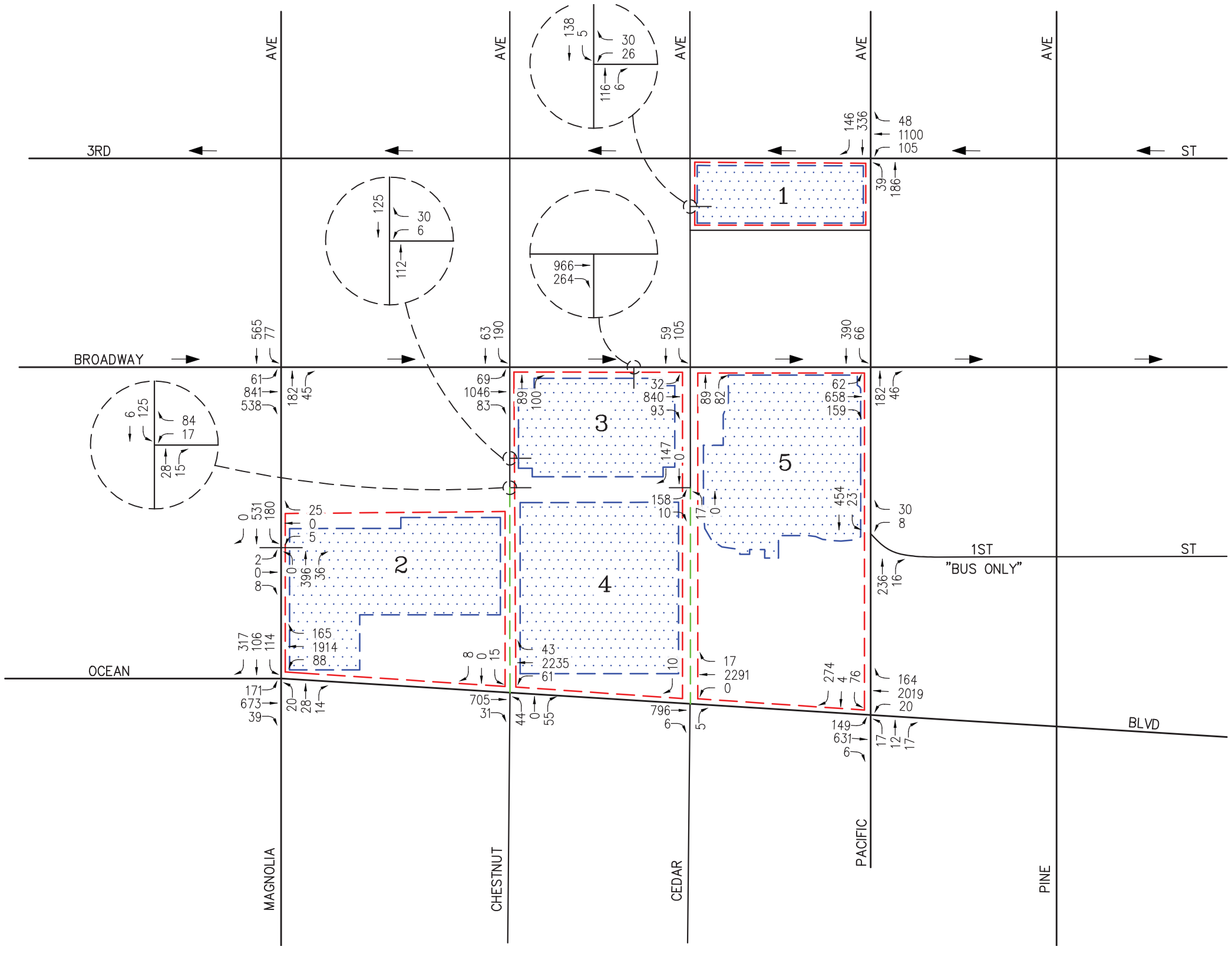
N

Year 2020 Cumulative
P.M. Peak Hour Traffic Volumes

Figure 4.6-7b

Source: Linscott, Law & Greenspan, 2015



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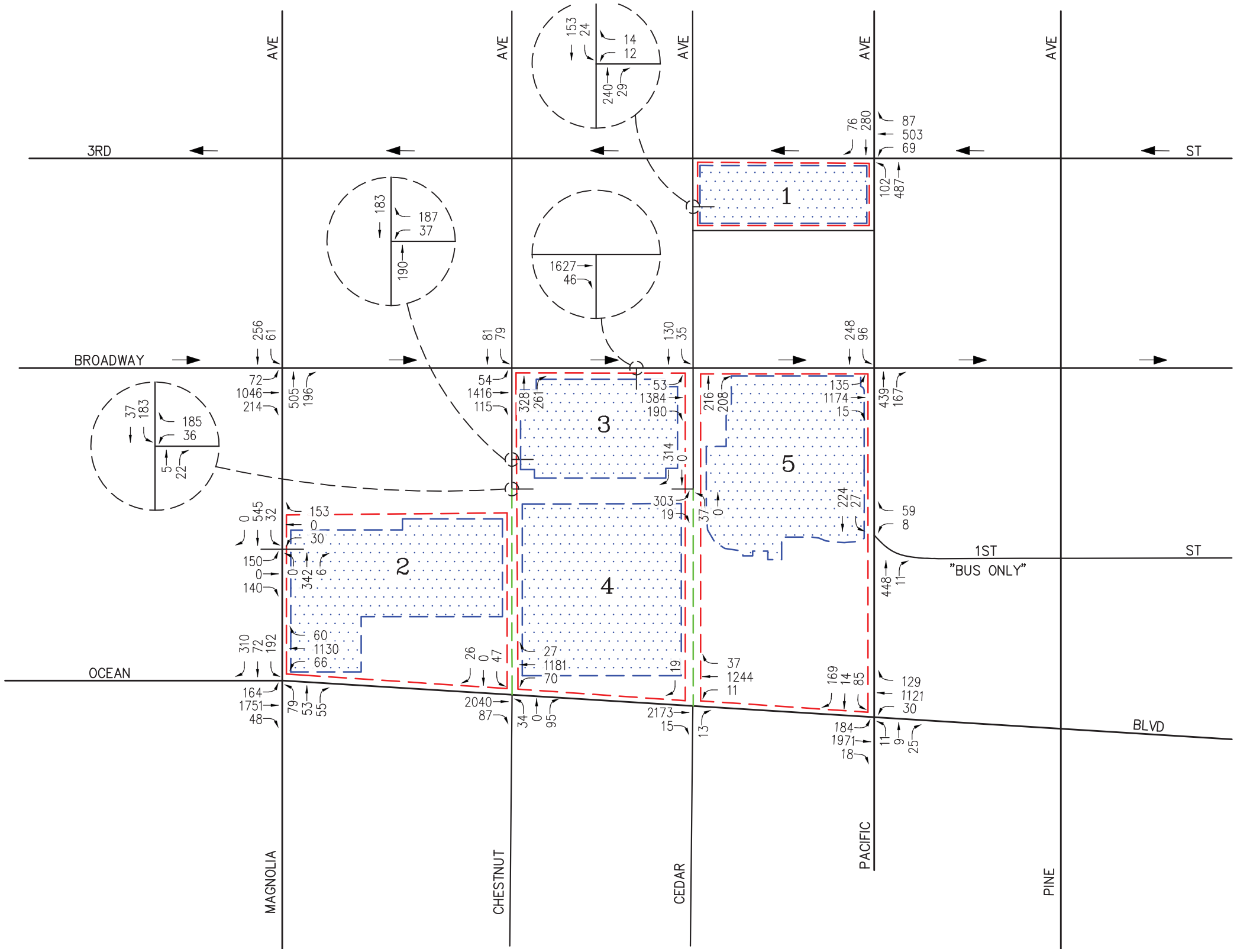
N

Year 2020 Cumulative Plus Project
A.M. Peak Hour Traffic Volumes

Figure 4.6-8a

Source: Linscott, Law & Greenspan, 2015



Year 2020 Cumulative Plus Project
P.M. Peak Hour Traffic Volumes

Figure 4.6-8b

Source: Linscott, Law & Greenspan, 2015

Significance Thresholds. Impacts related to transportation and circulation would be potentially significant if development facilitated by the proposed project would:

- *Conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of a circulation system, taking into account all modes of transportation, including mass transit and nonmotorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways, and freeways, pedestrian and bicycle paths, and mass transit*
- *Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways*
- *Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks*
- *Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*
- *Result in inadequate emergency access*
- *Conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decrease the performance or safety of such facilities*

The intersections of Alamitos Avenue with Seventh Street and with Ocean Boulevard are the only Downtown Plan Area intersections that are CMP arterial monitoring locations (Los Angeles County Metropolitan Transportation Authority, 2010). Both CMP arterial monitoring locations within the Downtown Plan Area are outside the project study area. The Downtown Plan Final EIR identified unavoidably significant impacts at both locations, but traffic generated by the proposed project is less than what was considered in the Downtown Plan Final EIR. Therefore, the proposed project would not create any new impact related to the Los Angeles County CMP beyond what was identified in the Downtown Plan Final EIR.

According the City of Long Beach, impacts to intersections are considered significant if:

- *An unacceptable peak hour Level of Service (LOS) (i.e. LOS E or F) at any of the intersections is projected. The City of Long Beach considers LOS D (ICU = 0.801 - 0.900) to be the minimum acceptable LOS for all intersections. For the City of Long Beach, the current LOS, if worse than LOS D (i.e. LOS E or F), should also be maintained; and*
- *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). At unsignalized intersections, a "significant" adverse traffic impact is defined as a project that: adds 2% or more traffic delay (seconds per vehicle) at an intersection operating LOS E or F.*

The Initial Study for the proposed project (Appendix A) determined that the following issues are less than significant and, therefore, thresholds related to these topics are not discussed further in this SEIR:

- *Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks*
- *Result in inadequate emergency access*
- *Conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decrease the performance or safety of such facilities*

Regarding adopted alternative transportation plans, the Downtown Plan EIR determined that the Downtown Plan would have no impact with regard to alternative transportation. The proposed project is within the parameters of the Downtown Plan. Therefore, the Civic Center Project would not result in any new significant impacts to alternative transportation plans or increase the severity of significant impacts to alternative transportation plans beyond those identified in the Downtown Plan EIR.

Traffic Impact Analysis Scenarios. The following scenarios are those for which V/C calculations have been performed using the ICU/HCM methodologies:

1. *Existing Traffic Conditions;*
2. *Existing Plus Project Traffic Conditions;*
3. *Existing Plus Project Traffic Conditions with Improvements, if necessary;*
4. *Year 2020 Cumulative Traffic Conditions;*
5. *Year 2020 Cumulative Plus Project Traffic Conditions; and*
6. *Year 2020 Cumulative Plus Project Traffic Conditions with Improvements, if necessary.*

b. Project Impacts and Mitigation Measures.

Threshold	*Conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of a circulation system, taking into account all modes of transportation, including mass transit and nonmotorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways, and freeways, pedestrian and bicycle paths, and mass transit;*
Quantitative Threshold	*An unacceptable peak hour Level of Service (LOS) (i.e. LOS E or F) at any of the intersections is projected. The City of Long Beach considers LOS D (ICU = 0.801 - 0.900) to be the minimum acceptable LOS for all intersections. For the City of Long Beach, the current LOS, if worse than LOS D (i.e. LOS E or F), should also be maintained*
Quantitative Threshold	*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). At unsignalized intersections, a "significant" adverse traffic impact is defined as a project that: adds 2% or more traffic delay (seconds per vehicle) at an intersection operating LOS E or F.*

Impact T-1 **Implementation of the proposed project would increase traffic on the surrounding street network. The Downtown Plan EIR determined that buildout of the Downtown Plan would result in Class I, significant and unavoidable traffic impacts. The proposed project would contribute to this impact; however, project-generated traffic would not cause any intersection to exceed City standards under existing plus project traffic conditions. Impacts associated with the proposed project would be Class III, *less than significant*.**

Table 4.6-7 summarizes the peak hour LOS results at the study intersections for existing plus project traffic conditions. Under existing conditions, all ten intersections operate at acceptable LOS C or better during the a.m. and p.m. peak hours. As shown in Table 4.6-7, traffic associated with the proposed project would not significantly impact any of the ten intersections, as all ten intersections would continue to operate at acceptable LOS D or better during the a.m. and p.m. peak hours with the addition of project generated traffic to existing traffic. Therefore, the impacts to local intersections would be less than significant under existing plus project traffic conditions.

Table 4.6-7
Existing Plus Project Conditions for Study Intersections

Key Intersection	Time Period	Existing Traffic Conditions		Existing Plus Project Traffic Conditions			
		ICU/HCM	LOS	ICU/HCM	LOS	Increase	Significant Impact?[1] (<LOS D)
1. Magnolia Avenue at Broadway	a.m.	0.502	A	0.591	A	0.089	No
	p.m.	0.570	A	0.640	B	0.070	No
2. Chestnut Avenue at Broadway	a.m.	0.432	A	0.626	B	0.194	No
	p.m.	0.553	A	0.847	D	0.294	No
3. Cedar Avenue at Broadway	a.m.	0.432	A	0.581	A	0.149	No
	p.m.	0.531	A	0.843	D	0.312	No
4. Pacific Avenue at Broadway	a.m.	0.478	A	0.502	A	0.024	No
	p.m.	0.663	B	0.663	B	0.000	No
5. Magnolia Avenue at Ocean Boulevard	a.m.	0.770	C	0.787	C	0.017	No
	p.m.	0.730	C	0.736	C	0.006	No
6. Chestnut Avenue at Ocean Boulevard	a.m.	0.564	A	0.584	A	0.020	No
	p.m.	0.595	A	0.645	B	0.050	No
7. Cedar Avenue at Ocean Boulevard	a.m.	9.7 s/v	A	14.7 s/v	B	5.0 s/v	No
	p.m.	17.2 s/v	C	18.0 s/v	C	0.8 s/v	No
8. Pacific Avenue at Ocean Boulevard	a.m.	0.689	B	0.694	B	0.005	No
	p.m.	0.559	A	0.562	A	0.003	No
9. Pacific Avenue at Third Street	a.m.	0.569	A	0.598	A	0.029	No
	p.m.	0.430	A	0.457	A	0.027	No
10. Pacific Avenue at First Street	a.m.	0.302	A	0.304	A	0.002	No
	p.m.	0.336	A	0.336	A	0.000	No

Source: LLG, July 2015; see Appendix E for full TIA report.

s/v = seconds per vehicle, LOS = Level of Service

[1] According the City of Long Beach, impacts to intersections are considered significant if an unacceptable peak hour Level of Service (LOS) (i.e. LOS E or F) at any of the intersections is projected. The City of Long Beach considers LOS D (ICU = 0.801 - 0.900) to be the minimum acceptable LOS for all intersections. For the City of Long Beach, the current LOS, if worse than LOS D (i.e. LOS E or F), should also be maintained.

Mitigation Measures. Mitigation would not be required.

Significance After Mitigation. Impacts would be less than significant without mitigation. Nonetheless, Downtown Plan EIR Mitigation Measure Traf-1(a) includes implementing transit facilities and programs to encourage public transit usage and development of Transportation Demand Management Policies. Downtown Plan EIR Mitigation Measures AQ-2(a) includes measures to require commercial development to promote a ride-share program for employees, and secure bicycle parking areas, which would apply to the proposed project. These measures would further reduce the project's traffic generation.

Threshold	*Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*

Impact T-2 The proposed project does not include any hazardous design features. Impacts associated with the proposed project would be Class III, *less than significant*.

Access to the project site could result in hazardous design features, if project driveways operate at LOS that would prevent motorists from entering and exiting the project site safely. The proposed project will provide three new parking garages which also includes a new

subterranean garage below the proposed City Hall and Port Building. Vehicular access for the proposed project includes the following:

- ***Civic Block:*** *Primary access to the Civic Block subterranean parking structure will be provided from Magnolia Avenue (Project Driveway F). Access to the existing Broadway garage will continue to be provided by an ingress-only driveway on Broadway (Project Driveway B) as well as an egress-only driveway along Chestnut (Project Driveway C).*
- ***Center Block:*** *A new subterranean parking structure will be constructed, with primary vehicular access provided by the future extension of Cedar Avenue between Broadway and Ocean Boulevard (Project Driveway E).*
- ***Lincoln Park and New Library Block:*** *Access to the existing Lincoln garage will continue to be provided from the Cedar Avenue and Pacific Avenue access ramps in the interim, but will ultimately be served by the "Lincoln Alley" (Project Driveway D).*
- ***Third and Pacific Block:*** *Access to the site's parking garage will be provided from Cedar Avenue (Project Driveway A).*

Table 4.6-8 summarizes the Year 2020 cumulative plus peak hour level of service results for the six project driveways. The project driveways are forecast to operate at an acceptable LOS C or better during the a.m. and p.m. peak hours in the Year 2020. As such, motorists entering and exiting the project site would be able to do so comfortably, safely, and without undue congestion. Therefore, the proposed project would have a less than significant impact on access to the project site or surrounding properties.

Table 4.6-8
Year 2020 Cumulative Plus Project
Driveway Peak Hour Levels of Service Summary

Driveway	Control Type	Time Period	HCM (s/v)	LOS
A. Cedar Avenue at Project Driveway A	One-Way Stop	a.m. p.m.	9.7 10.8	A B
B. Project Driveway B at Broadway	Uncontrolled Ingress Only	a.m. p.m.	-- --	-- --
C. Chestnut Avenue at Project Driveway C	One-Way Stop	a.m. p.m.	9.0 10.2	A B
D. Chestnut Avenue at Project Driveway D	One-Way Stop	a.m. p.m.	9.2 10.1	A B
E. Cedar Avenue at Project Driveway E	One-Way Stop	a.m. p.m.	9.4 11.0	A B
F. Magnolia Avenue at Project Driveway F	Two-Way Stop	a.m. p.m.	12.0 21.4	B C

Source: LLG, July 2015; see Appendix E for full TIA report.
s/v = seconds per vehicle (delay), LOS = Level of Service

Mitigation Measures. Mitigation would not be required.

Significance After Mitigation. Impacts would be less than significant without mitigation.

b. Cumulative Impacts. Cumulative development within the project area would cause increases in traffic on area roadways. Section 3, Environmental Setting, describes planned and pending projects in the vicinity of the project site. Table 4.6-9 summarizes existing, cumulative, and cumulative plus project intersection capacities. Table 4.6-9 indicates that all ten intersections are forecast to operate at an acceptable LOS D or better during the a.m. and p.m. peak hour with the addition of ambient traffic growth and cumulative development. Therefore, the project's impact to local intersections would be less than significant under Year 2020 cumulative traffic conditions.

Table 4.6-9
Year 2020 Cumulative Plus Project Peak Hour Intersection Capacity Analysis Summary

Key Intersection	Time Period	Existing Conditions		Year 2020 Cumulative (No Project) Conditions		Year 2020 Cumulative Plus Project Conditions		Project Increase	Significant Impact?[1] (< LOSD)
		ICU/ HCM	LOS	ICU/ HCM	LOS	ICU/ HCM	LOS		
1. Magnolia Avenue at Boradway	a.m. p.m.	0.502 0.570	A A	0.523 0.613	A B	0.613 0.684	B B	0.090 0.071	No No
2. Chestnut Avenue at Broadway	a.m. p.m.	0.432 0.553	A A	0.450 0.591	A A	0.644 0.884	B D	0.194 0.293	No No
3. Cedar Avenue at Broadway	a.m. p.m.	0.432 0.531	A A	0.450 0.568	A A	0.600 0.880	A D	0.150 0.312	No No
4. Pacific Avenue at Broadway	a.m. p.m.	0.478 0.663	A B	0.503 0.719	A C	0.527 0.719	A C	0.024 0.000	No No
5. Magnolia Avenue at Ocean Boulevard	a.m. p.m.	0.770 0.730	C C	0.819 0.773	D C	0.836 0.779	D C	0.017 0.006	No No
6. Chestnut Avenue at Ocean Boulevard	a.m. p.m.	0.564 0.595	A A	0.603 0.642	B B	0.623 0.692	B B	0.020 0.050	No No
7. Cedar Avenue at Ocean Boulevard	a.m. p.m.	9.7 s/v 17.2s/v	A C	9.9 s/v 19.4 s/v	A C	15.7 s/v 20.3 s/v	C C	5.8s/v 0.9s/v	No No
8. Pacific Avenue at Ocean Boulevard	a.m. p.m.	0.689 0.559	B A	0.755 0.629	C B	0.761 0.632	C B	0.006 0.003	No No
9. Pacific Avenue at Third Street	a.m. p.m.	0.569 0.430	A A	0.609 0.466	B A	0.638 0.486	B A	0.029 0.020	No No
10. Pacific Avenue at First Street	a.m. p.m.	0.302 0.306	A A	0.313 0.352	A A	0.316 0.352	A A	0.003 0.000	No No

Source: LLG, July 2015; see Appendix E for full TIA report.

s/v = seconds per vehicle, LOS = Level of Service

[1.] According the City of Long Beach, impacts to intersections are considered significant if an unacceptable peak hour Level of Service (LOS) (i.e. LOS E or F) at any of the intersections is projected. The City of Long Beach considers LOS D (ICU = 0.801 - 0.900) to be the minimum acceptable LOS for all intersections. For the City of Long Beach, the current LOS, if worse than LOS D (i.e. LOS E or F), should also be maintained.