TRAFFIC IMPACT ANALYSIS

VILLAGE 605

Los Alamitos, California
October 12, 2016

Prepared for:

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REVISED TRAFFIC IMPACT ANALYSIS

VILLAGE 605

Los Alamitos, California
October 12, 2016

1.0 INTRODUCTION

This traffic impact analysis addresses the potential traffic impacts and circulation needs associated with the proposed Village 605 retail center (hereinafter referred to as Project). The Project site is located at 3131 Katella Avenue and is approximately 9.56 acres. The subject property is currently developed with two office buildings with a total floor area of 150,342 square-feet (SF). The proposed Project includes the demolition of the existing buildings and the construction of a neighborhood retail center with up to 113,880 SF of floor area within seven (7) buildings. The potential mix of uses include retail, commercial, gym/health club and restaurant tenants/land uses, inclusive of a supermarket, personal services, and other retailers that offer a variety of products.

This traffic 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 twenty (20) key study intersections within the project vicinity, estimates the trip generation potential of the proposed Project and forecasts future opening year operating conditions without and with the proposed Project. Where necessary, intersection improvements/mitigation measures are identified.

This traffic report satisfies the traffic impact requirements of the City of Los Alamitos and is consistent with the current *Congestion Management Program (CMP) for Orange County.* The Scope of Work for this traffic study, which is included in ***Appendix A***, was developed in conjunction with City of Los Alamitos Public Works Department staff.

The Project site has been visited and an inventory of adjacent area roadways and intersections was performed. Existing peak hour traffic count information has been collected at twenty (20) key study intersections on a "typical" weekday for use in developing baseline traffic conditions and in the preparation of intersection level of service calculations. With concurrence by the City, baseline traffic condition for this traffic study reflects the full occupancy of the vacant office space by which the potential impacts of the proposed Project can then be assessed. Information concerning related projects (planned and/or approved) in the vicinity of the proposed Project has been researched at the City of Los Alamitos, City of Seal Beach, City of Cypress and City of Hawaiian Gardens. Based on our research, there is one (1) related project in the City of Los Alamitos, one (1) related project in the City of Seal Beach, nine (9) related projects in the City of Cypress, and one (1) related project in the City of Hawaiian Gardens. These twelve (12) planned and/or approved related projects were considered in the Opening Year 2019 traffic analysis for this project.

This traffic report analyzes baseline traffic conditions and future weekday AM peak hour and PM peak hour traffic conditions for a near-term (Year 2019) traffic setting upon completion of the proposed Project. Peak hour traffic forecasts for the Opening Year 2019 horizon year have been projected by increasing existing traffic volumes by an annual growth rate of 1.0% per year and adding traffic volumes generated by twelve (12) related projects.

1.1 Study Area

The twenty (20) key study intersections selected for evaluation were determined based on the approved Traffic Study Scope of Work and discussions with City of Los Alamitos staff. The key study intersections listed below provide both local and regional access to the study area and define the extent of the boundaries for this traffic impact investigation.

Key Study Intersections

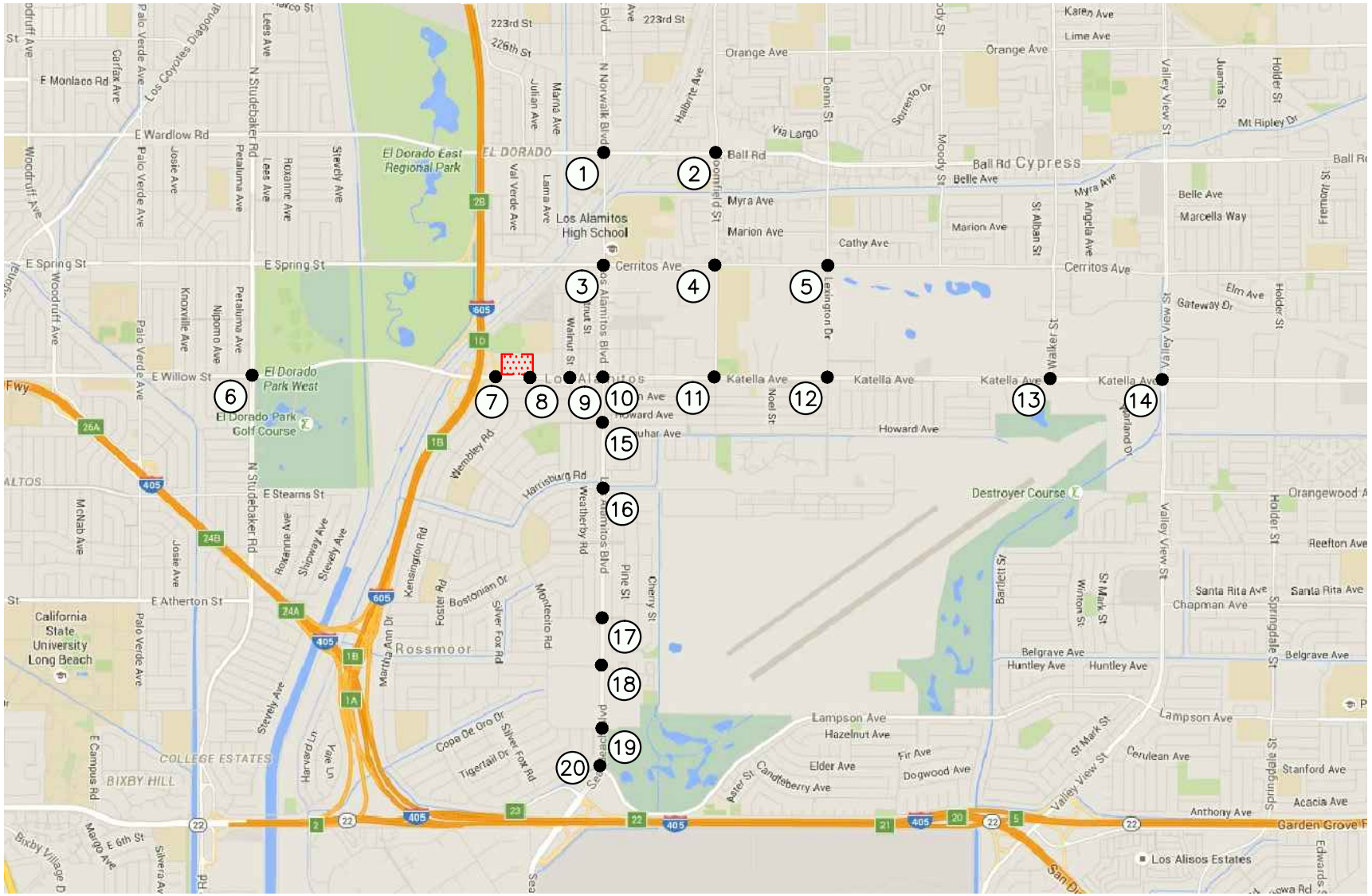
1. Norwalk Boulevard at Wardlow Road (Long Beach)
2. Bloomfield Street at Ball Road (Los Alamitos/Cypress)
3. Los Alamitos Boulevard at Cerritos Avenue (Los Alamitos)
4. Bloomfield Street at Cerritos Avenue (Los Alamitos)
5. Denni Street/Lexington Drive at Cerritos Avenue (Los Alamitos/Cypress)
6. Studebaker Road at Willow Street (Long Beach)
7. I-605 NB Ramps at Katella Avenue (Los Alamitos/Caltrans)
8. Civic Center Drive at Katella Avenue (Los Alamitos)
9. Walnut Street/Wallingsford Road at Katella Avenue (Los Alamitos)
10. Los Alamitos Boulevard at Katella Avenue (Los Alamitos)
11. Bloomfield Street at Katella Avenue (Los Alamitos)
12. Lexington Drive at Katella Avenue (Los Alamitos)
13. Walker Street at Katella Avenue (Los Alamitos/Cypress)
14. Valley View Street at Katella Avenue (Cypress)
15. Los Alamitos Boulevard at Farquhar Avenue (Los Alamitos)
16. Los Alamitos Boulevard at Orangewood Avenue (Los Alamitos)
17. Los Alamitos Boulevard/Seal Beach Boulevard at Bradbury Road (Los Alamitos)
18. Seal Beach Boulevard at Rossmoor Center Way/Plymouth Drive (Seal Beach)
19. Seal Beach Boulevard at St. Cloud Drive (Seal Beach)
20. Seal Beach Boulevard at Lampson Avenue (Seal Beach)

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 Level of Service (LOS) investigations at these key locations were used to evaluate the potential traffic impacts associated with area growth, related projects and the proposed Project. When necessary, this report recommends intersection improvements that may be required to accommodate future traffic volumes and restore/maintain an acceptable Level of Service and/or mitigate the impact of the project.

Included in this Traffic Impact Analysis are:

- Existing traffic counts,
- Estimated project traffic generation/distribution/assignment,
- Estimated cumulative project traffic generation/distribution/assignment,
- AM and PM peak hour analyses for Baseline conditions,

- AM and PM peak hour analyses for Baseline plus Project conditions,
- AM and PM peak hour analyses for Opening Year 2019 conditions without and with Project traffic,
- Area-Wide Traffic Improvements,
- Project-Cumulative Fair-Share Contributions,
- Internal Circulation Evaluation,
- Caltrans Analysis,
- Congestion Management Program (CMP) Analysis,
- Construction Analysis, and
- Caltrans Basic Freeway Segment Analysis.



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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 1-1

VICINITY MAP

VILLAGE 605, LOS ALAMITOS

2.0 PROJECT DESCRIPTION

The Project site is located at 3131 Katella Avenue and is approximately 9.56 acres. The subject property is currently developed with two office buildings with a total floor area of 150,342 square-feet (SF). The City's General Plan designates the Project site as "Retail Business" and is zoned as "General Commercial" with the recent adoption of the *Los Alamitos General Plan Update, dated March 2015*. *The Los Alamitos General Plan Update* assumed development of up to 163,000 square-feet (SF) of retail/commercial floor area on the approximately 13 acre lot that includes the 9.56 acre Project site as well as the two adjacent sites, the Los Alamitos Civic Center and Los Alamitos Recreation & Community Services. Of the 163,000 SF of floor area, the 9.56-acre Project site would have an allocation of approximately 120,766 SF. ***Figure 2-1*** displays the existing site aerial.

The proposed Project includes the demolition of the existing office buildings and construction of a neighborhood retail center with up to 113,880 SF of floor area within seven (7) buildings. The potential mix of uses include retail, commercial, gym/health club and restaurant tenants/land uses, inclusive of a supermarket, personal services, and other retailers that offer a variety of products. The retail/commercials uses would be developed in place of the existing office buildings. The proposed Project's total development floor area is well within the floor area assumed within the City's General Plan Update and is 6,886 SF less than commercial development that was analyzed.

Table 2-1 summarizes the existing development and the anticipated uses/tenant mix and associated floor areas for the Project as identified by the Project Applicant. The proposed Project's uses are allowed under the current zoning and General Plan land use designation for the subject property. The Project is expected to be constructed over the next two years or so and completed by 2018. However, to provide a conservative assessment, Year 2019 has been utilized to assess the Project's potential traffic impacts at full occupancy of the neighborhood retail center within an opening year traffic setting. ***Figure 2-2*** presents the conceptual site plan of the Project, prepared by KTGY Group, Inc.

2.1 Site Access

Access to the Project site is currently provided by one (1) unsignalized right in/out driveway along Katella Avenue and one (1) full access signalized driveway at the intersection of Civic Center Drive at Katella Avenue. This signalized intersection will serve as the primary access for the Project and will continue to provide access to the Los Alamitos Civic Center. Improvements to be completed as a part of the Project at Civic Center Drive and Katella Avenue, subject to review and approval of the City of Los Alamitos, may include the following:

- Modification of the existing median on Katella Avenue at Civic Center Drive to increase to the length of the existing eastbound left-turn lane to accommodate the forecast queue of vehicles and provide the necessary storage/stacking, as well as vehicular turning requirements for outbound left-turning vehicle.
- Modification/widening of Civic Center Drive north of Katella Avenue to provide two (2) exclusive southbound left-turn lanes, an exclusive southbound right-turn lane, and one (1) inbound lane.

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N NO SCALE

SOURCE: GOOGLE

KEY

= PROJECT SITE

FIGURE 2-1

EXISTING SITE AERIAL

VILLAGE 605, LOS ALAMITOS

Oak Middle School

MAJOR C

SHOPS 1

MAJOR B
MARKET

SHOPS 2

MAJOR A

LOADING

LOADING

PLAZA

PAD A

PAD B

28

5

9

46

177

241

KATELLA AVE

(E)

LOS ALAMITOS RECREATION &
COMMUNITY SERVICES

N.A.P.

LOS ALAMITOS CIVIC CENTER

Oak Street

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LINSCOTT
LAW &
GREENSPAN
engineers

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NO SCALE

SOURCE: KTGY GROUP, INC.

FIGURE 2-2

PROPOSED SITE PLAN
VILLAGE 605, LOS ALAMITOS

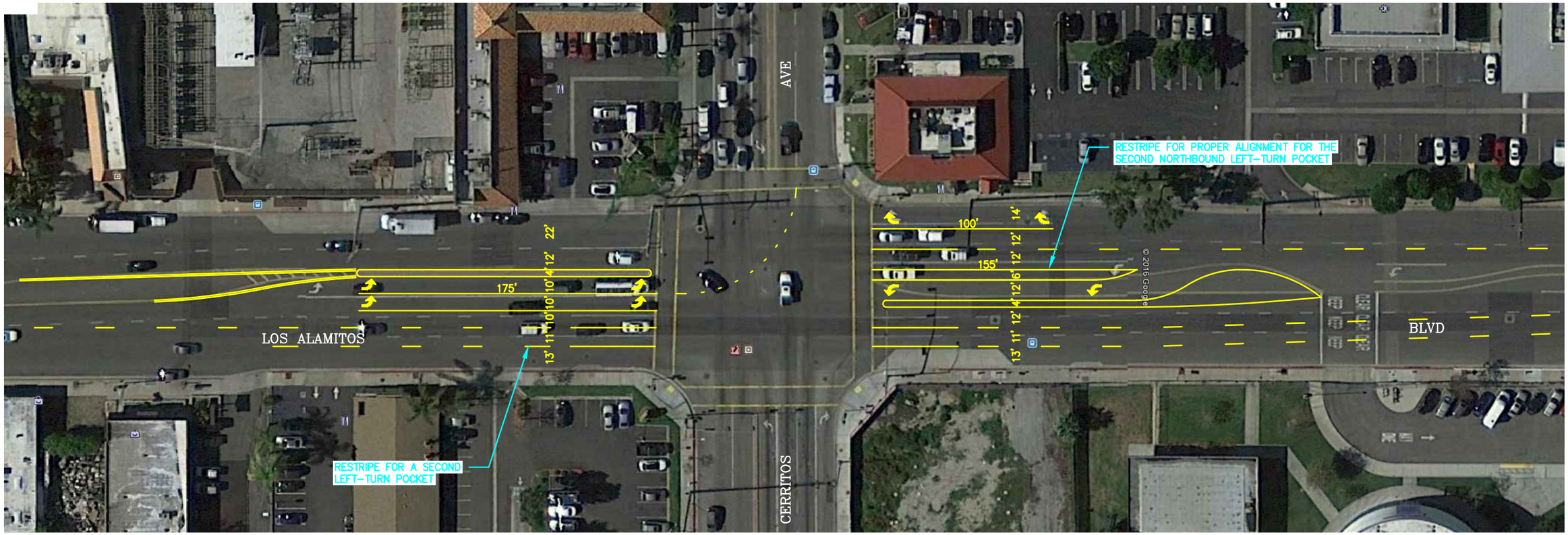
- Modification of the existing curb return on the northeast corner to accommodate turning requirements/movements of large trucks.
- Modification of the existing traffic signal, as well as associated signing and striping layout, subject to the approval of the City of Los Alamitos.
- Relocation of the existing access to Los Alamitos Civic Center to ensure adequate ingress and egress is provided upon completion of the Project.

2.2 Project Design Features

Circulation enhancement improvement to be completed as a part of the Project at the intersection of Los Alamitos Boulevard and Cerritos Avenue, subject to review and approval of the City of Los Alamitos, include the following:

- Modification/restriping of the northbound approach of Los Alamitos Boulevard to provide two (2) exclusive northbound left-turn lanes, two (2) northbound thru lanes, and one (1) northbound shared thru/right-turn lane; and
- Modification of the existing traffic signal, as well as associated signing and striping layout, subject to the approval of the City of Los Alamitos.

Improvements at the intersection of Los Alamitos Boulevard at Cerritos Avenue will be included as a Project Design Feature. ***Figure 2-3*** presents the conceptual improvement plan for Los Alamitos Boulevard at Cerritos Avenue, which have been included for Opening Year 2019 Plus Project traffic conditions. This improvement is consistent with the improvements associated with the proposed Los Alamitos Boulevard Median Improvement Project.



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SCALE: 1"=60'

FIGURE 2-3

CONCEPTUAL IMPROVEMENT PLAN FOR LOS ALAMITOS BOULEVARD AT CERRITOS AVENUE
VILLAGE 605, LOS ALAMITOS

TABLE 2-1

PROJECT DEVELOPMENT SUMMARY[1]

Land Use / Building	Existing Square-Footage (SF)	Proposed Project Square-Footage (SF)
Existing Development		
❑ Building A (Office)	63,708 SF	--
❑ Building B (Office)	86,634 SF	--
Total Existing Floor Area	***150,342 SF***	**--**
Proposed Project		
❑ Major A (General Retail)	--	33,880 SF
❑ Major B (Market)	--	28,000 SF
❑ Major C (General Retail)	--	15,000 SF
❑ Shops 1 (General Retail, inclusive of Food-Related /QSR Uses and Fitness Club) ▪ 5,750 SF High-Turnover Restaurant ▪ 1,250 SF Retail Take-Out ▪ 5,000 SF Health Club	--	12,000 SF
❑ Shops 2/Junior Anchor (General Retail)	--	6,000 SF
❑ Pad A (Fast-Food w/drive-through and General Retail ▪ 4,000 SF High-Turnover Restaurant ▪ 4,000 SF Fast-Food Restaurant with Drive-Thru	--	8,000 SF
❑ Pad B (Fast-Food w/Drive-Thru)	--	3,000 SF
Total Building Floor Area	**--**	***105,880 SF***
❑ Other – To allow for density flexibility (assume 100% Retail)	--	8,000 SF
Total Project Square-Footage	**--**	***113,880 SF***

[1] Source: KTGY Group, Inc. Architecture + Planning and Lincoln Property Group. *Site Plan dated 9/28/2016 and development tabulation dated 9/26/2016.*

3.0 EXISTING CONDITIONS

The San Gabriel Freeway (I-605) provides primary regional access to the proposed Project site. I-605 is located directly west of the Project site. Regional access to the Project site is provided via a full interchange at Katella Avenue. The principal local network of streets serving the Project site consists of Katella Avenue, Los Alamitos Boulevard, Seal Beach Boulevard, Ball Road, and Cerritos Avenue. The following discussion provides a brief synopsis of these key area streets.

3.1 Existing Street System

Katella Avenue is a generally a six-lane, divided roadway oriented in the east-west direction. Directly along the Project frontage, it is an eight-lane, divided roadway. Katella Avenue borders the project site to the south and will provide access to the Project via the intersection at Civic Center Drive and a right in/out only unsignalized driveway. The posted speed limit on Katella Avenue is 40 miles per hour (mph) west of Lexington Drive and 45 mph east of Lexington Drive. On-street parking is generally not permitted in the vicinity of the Project. Katella Avenue becomes Willow Street at its western end. Traffic signals control the intersections of Katella Avenue at I-605 NB Ramps, Civic Center Drive, Walnut Street/Wallingsford Road, Los Alamitos Boulevard, Bloomfield Street, Lexington Drive, Walker Street, and Valley View Street.

Los Alamitos Boulevard is a four-lane, divided roadway north of Katella Avenue and a six-lane, divided roadway south of Katella Avenue, oriented in the north-south direction. On-street parking is generally not permitted in the vicinity of the Project. The posted speed limit on Los Alamitos Boulevard is 40 mph north of Cerritos Avenue, 35 mph between Cerritos Avenue and Orangewood Avenue, and 40 mph south of Orangewood Avenue. Los Alamitos Boulevard becomes Norwalk Boulevard at its northern end and Seal Beach Boulevard at its southern end. Traffic signals control the study intersections of Los Alamitos Boulevard at Cerritos Avenue, Farquhar Avenue, Orangewood Avenue and Bradbury Road.

Seal Beach Boulevard is a six-lane, divided roadway oriented in the north-south direction. On-street parking is not permitted in the vicinity of the Project. The posted speed limit on Seal Beach Boulevard is 40 mph. Seal Beach Boulevard becomes Los Alamitos Boulevard at its northern end. Traffic signals control the study intersections of Seal Beach Boulevard at Bradbury road, Rossmoor Center Way/Plymouth Drive, St. Cloud Drive, and Lampson Avenue.

Ball Road is a four-lane, divided roadway oriented in the east-west direction. On-street parking is not permitted in the vicinity of the Project. The posted speed limit is 40 mph. Ball Road becomes Wardlow Road at its western end. Traffic signals control the study intersections of Ball Road at Bloomfield Street.

Cerritos Avenue is a four lane, divided roadway oriented in the east-west direction. On-street parking is permitted in certain sections of the roadway. The posted speed limit is 35 mph west of Bloomfield Street, 40 mph between Bloomfield Street and Lexington Drive, and 45 mph east of Lexington Drive. Traffic signals control the intersections of Cerritos Avenue at Bloomfield Street and Lexington Drive.

Figure 3-1 presents an inventory of the existing roadway conditions for the arterials and intersections evaluated in this report. This figure identifies the number of travel lanes for key arterials, as well as intersection configurations and controls for the key area study intersections. ***Figure 3-2*** presents the existing roadway classification of the Los Alamitos city network.

3.2 Existing Bicycle and Pedestrian Facilities

Based on the *City of Los Alamitos General Plan Mobility and Circulation Element*, existing bicycle facilities include Class I, Class II, and Class III facilities are present throughout Los Alamitos and Rossmoor. In close proximity to the site a Class I bike path is provided along the southside Katella Avenue between the I-605 Freeway and Walnut Avenue/Wallingsford Road. At Wallingsford Road, the Class I bike path turns south to connect with a Class II bike lane on Hedwig Road/Ford Road within the Rossmoor Community. To the north on Walnut Avenue, a Class III bike route is provided. The bikeways with the City of Los Alamitos are discontinuous.

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 Civic Center Drive at Katella Avenue, as well as the intersections of Walnut Avenue/Wallingsford Road at Katella Avenue and Los Alamitos Boulevard at Katella Avenue.

Figure 3-3 presents the existing bicycle and pedestrian facilities locations in the City of Los Alamitos.

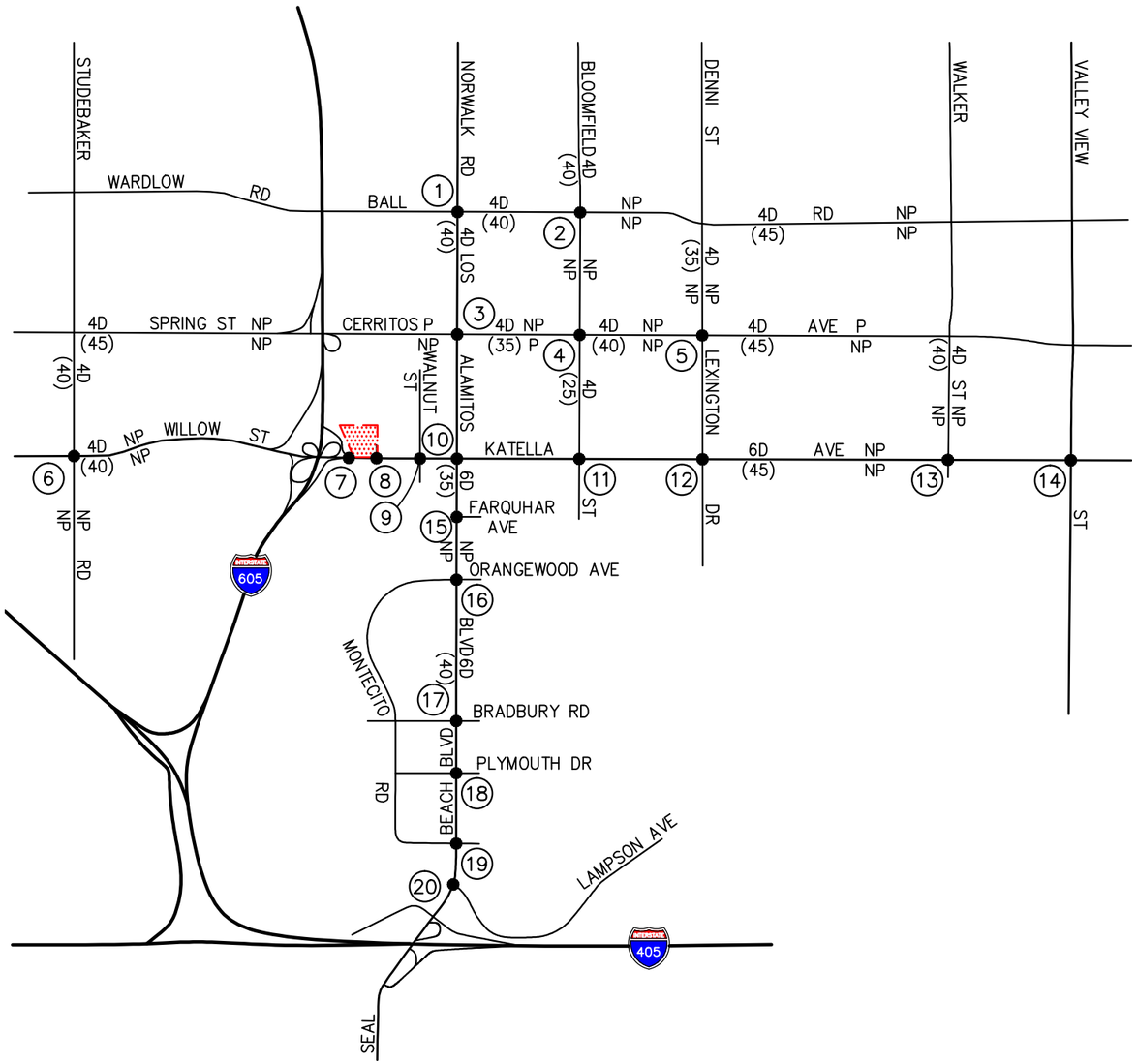
3.3 Existing Transit Facilities

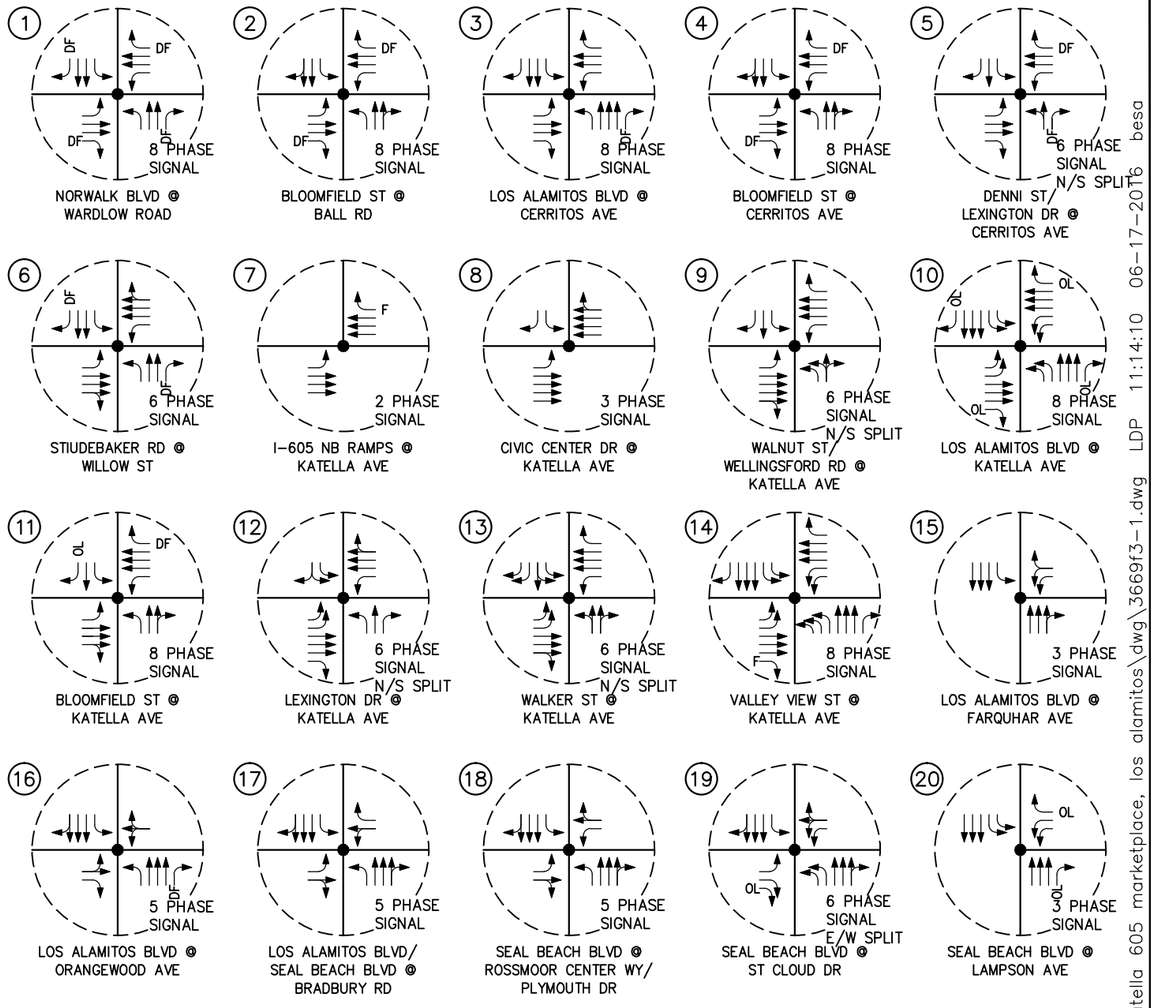
Transit service in Los Alamitos is provided by the Orange County Transportation Authority (OCTA). As can be seen in the *City of Los Alamitos General Plan Mobility and Circulation Element*, local bus routes provide service along Los Alamitos Boulevard, Bloomfield Street, Katella Avenue, and Cerritos Avenue. The five lines servicing the City of Los Alamitos and Rossmoor are as follows:

Route 42/42A: Generally runs east/west, providing service from Seal Beach to Orange. The major streets of service are Los Alamitos Boulevard, Lincoln Avenue, and Tustin Street. Typical headways (the waiting time between buses at a stop) are 20 minutes. The bus stop for Route 42 nearest to the Project site is located at intersection of Los Alamitos Boulevard and Katella Avenue.

Route 46: Generally runs east/west, providing service from Los Alamitos to Orange. The major streets of service are Ball Road and Tustin Street. Within Los Alamitos, Route 46 only provides service in the eastbound direction. Typical headways are 30 minutes.

Route 50: Generally runs east/west, providing service from Long Beach to Orange. The major streets of service are Studebaker Road, Katella Avenue, and Tustin Street. Within the city, Route 50 provides regular service in both directions of travel. Typical headways are 30 minutes. The bus stop





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N NO SCALE

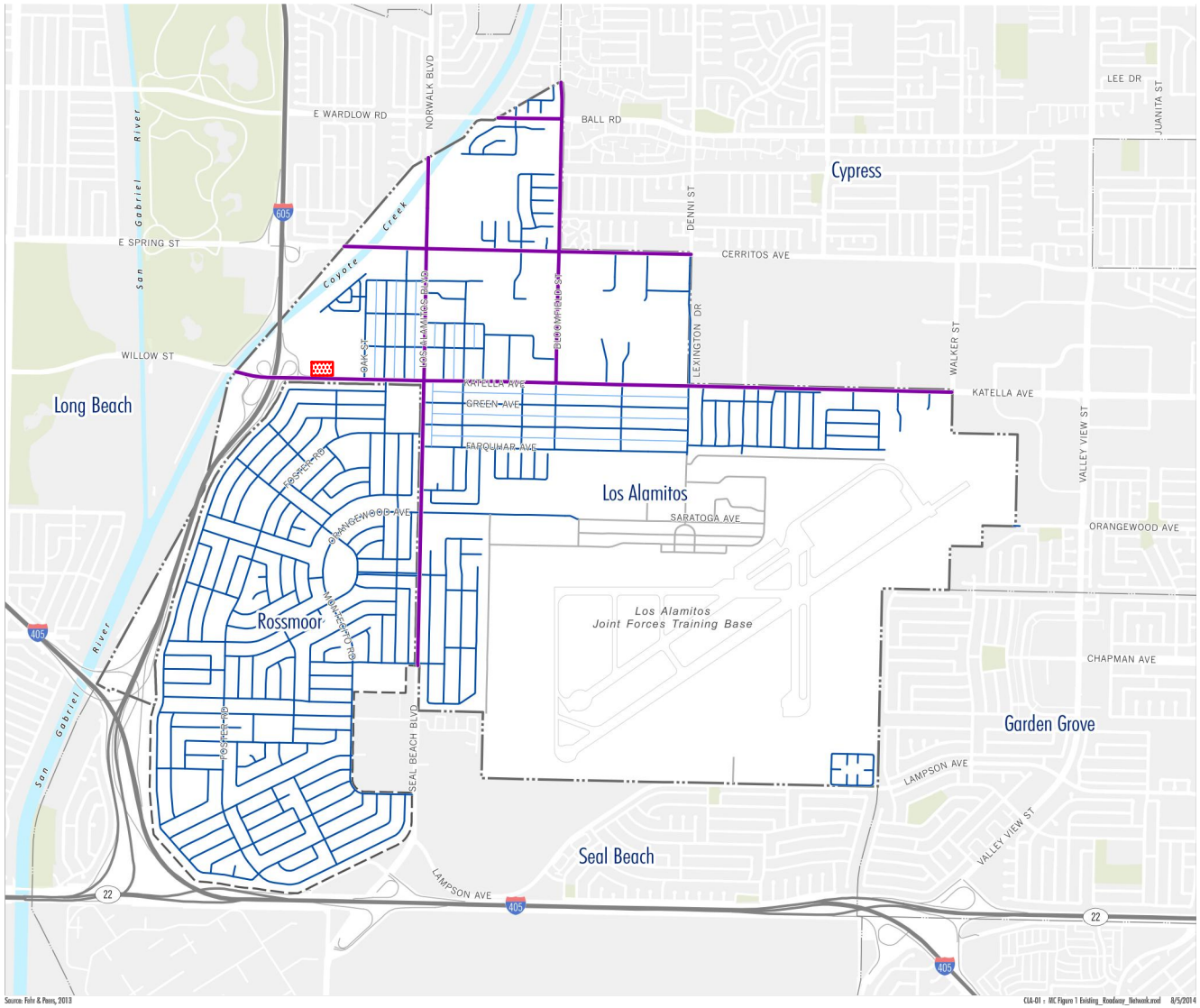
KEY

- ← = APPROACH LANE ASSIGNMENT
- ● = TRAFFIC SIGNAL
- P = PARKING, NP = NO PARKING
- U = UNDIVIDED, D = DIVIDED
- OL = OVERLAP
- DF = DEFACTO RIGHT-TURN
- 2 = NUMBER OF TRAVEL LANES
- (XX)= POSTED SPEED LIMIT (MPH)
- F = FREE RIGHT TURN
- ▭ = PROJECT SITE

FIGURE 3-1

EXISTING CONDITIONS AND INTERSECTION CONTROLS

VILLAGE 605, LOS ALAMITOS



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SOURCE: LOS ALAMITOS GENERAL PLAN

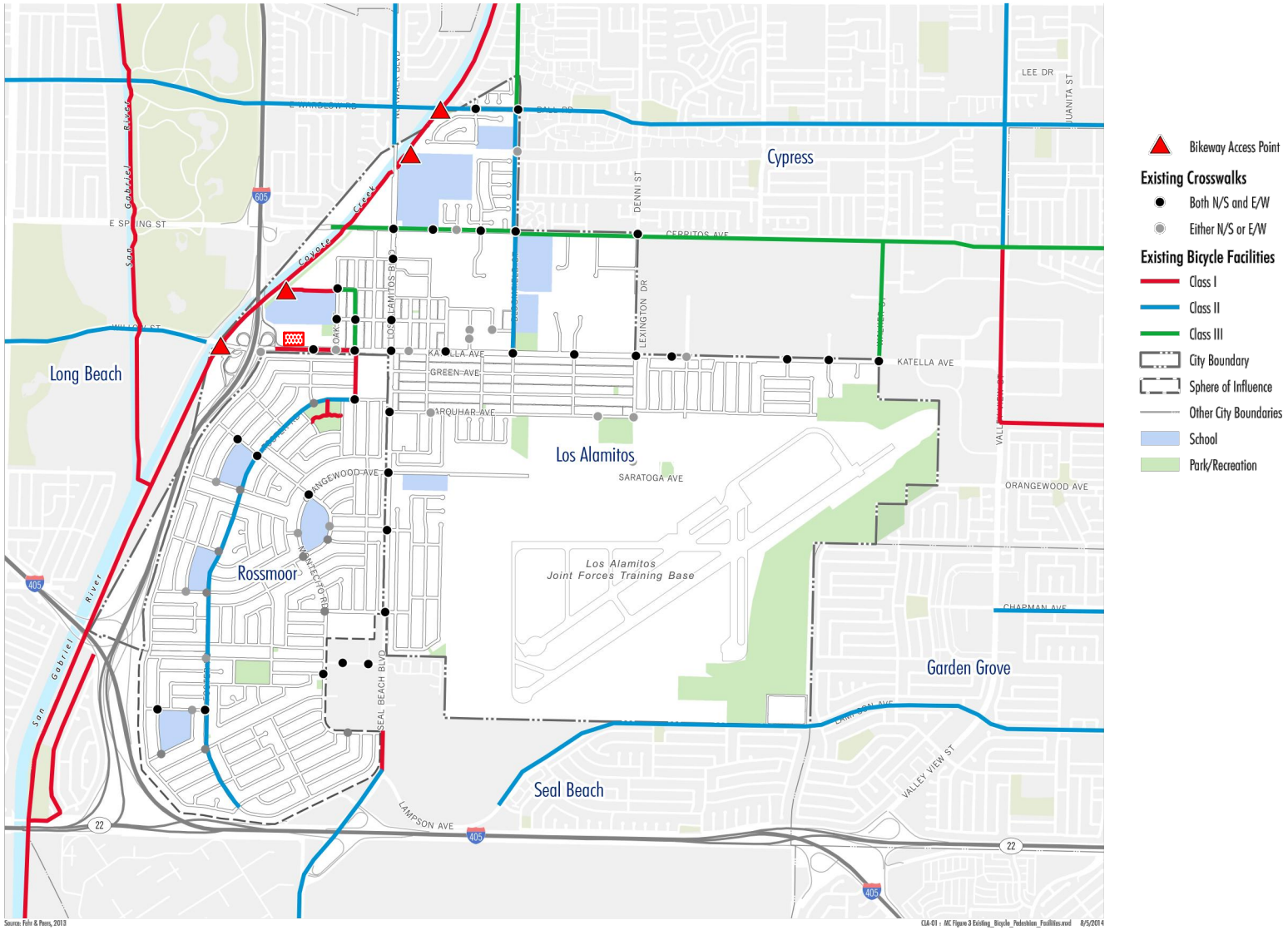
KEY

= PROJECT SITE

FIGURE 3-2

ROADWAY NETWORK CLASSIFICATION

VILLAGE 605, LOS ALAMITOS



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N NO SCALE

SOURCE: LOS ALAMITOS GENERAL PLAN

KEY

= PROJECT SITE

FIGURE 3-3

EXISTING BICYCLE AND PEDESTRIAN FACILITIES

VILLAGE 605, LOS ALAMITOS

for Route 50 nearest to the Project site is located at intersection of Civic Center Drive and Katella Avenue.

Route 211: An express route that generally runs north/south via I-405, providing service between Seal Beach and Irvine. Route 211 travels along Lampson Avenue. Typical headways are 30 minutes.

Route 701: An express route that generally runs north/south via I-405 and I-605, providing service between Huntington Beach and Downtown Los Angeles. Route 701 travels along Lampson Avenue through the city. Typical headways are between 20 and 50 minutes.

Figure 3-4 presents the existing transit facilities located in the City of Los Alamitos.

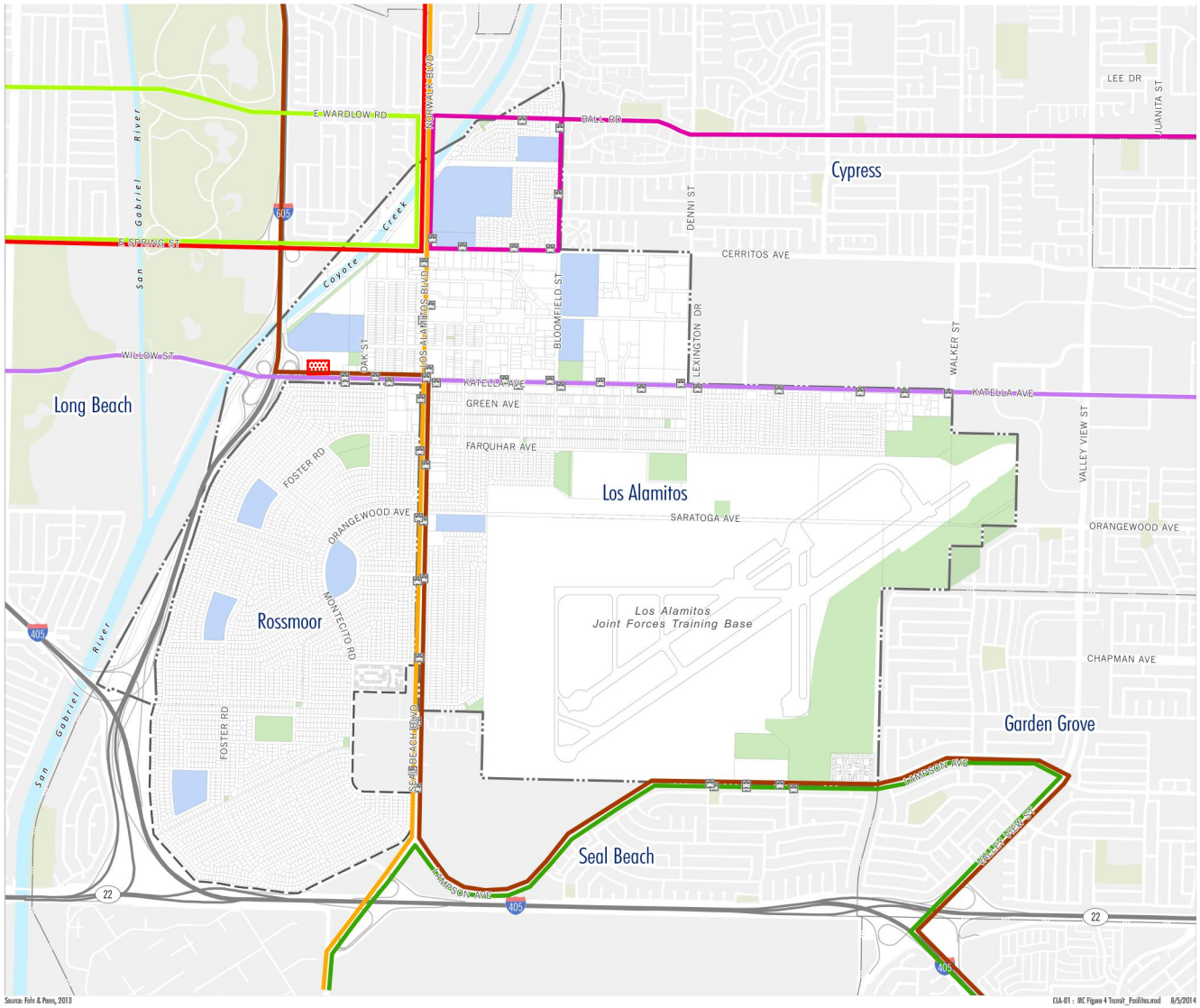
3.4 Existing Traffic Volumes

Twenty (20) key study intersections have been identified as the locations at which to evaluate existing and future traffic operating conditions. Some portion of potential project-cumulative traffic will pass through each of these intersections, and their analysis will reveal the expected relative impacts of the project. These key study intersections were selected for evaluation based on discussions with City of Los Alamitos staff.

Existing AM and PM peak hour traffic volumes for the key study intersections evaluated in this report were obtained from manual morning and evening peak hour turning movement counts conducted by *National Data and Surveying Services* in March 2016. ***Figures 3-5*** and ***3-6*** illustrate the existing AM and PM peak hour traffic volumes at the 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.

3.5 Baseline Traffic Volumes

During the time that traffic counts were collected, the subject property's 150,342 SF of office was vacant. To establish baseline conditions, the existing counts were adjusted to reflect the occupancy of the vacant office space by which the potential impacts of the proposed Project can then be assessed. ***Figures 3-7*** and ***3-8*** illustrate the baseline AM and PM peak hour traffic volumes at the key study intersections evaluated in this report, respectively.



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N NO SCALE

SOURCE: LOS ALAMITOS GENERAL PLAN

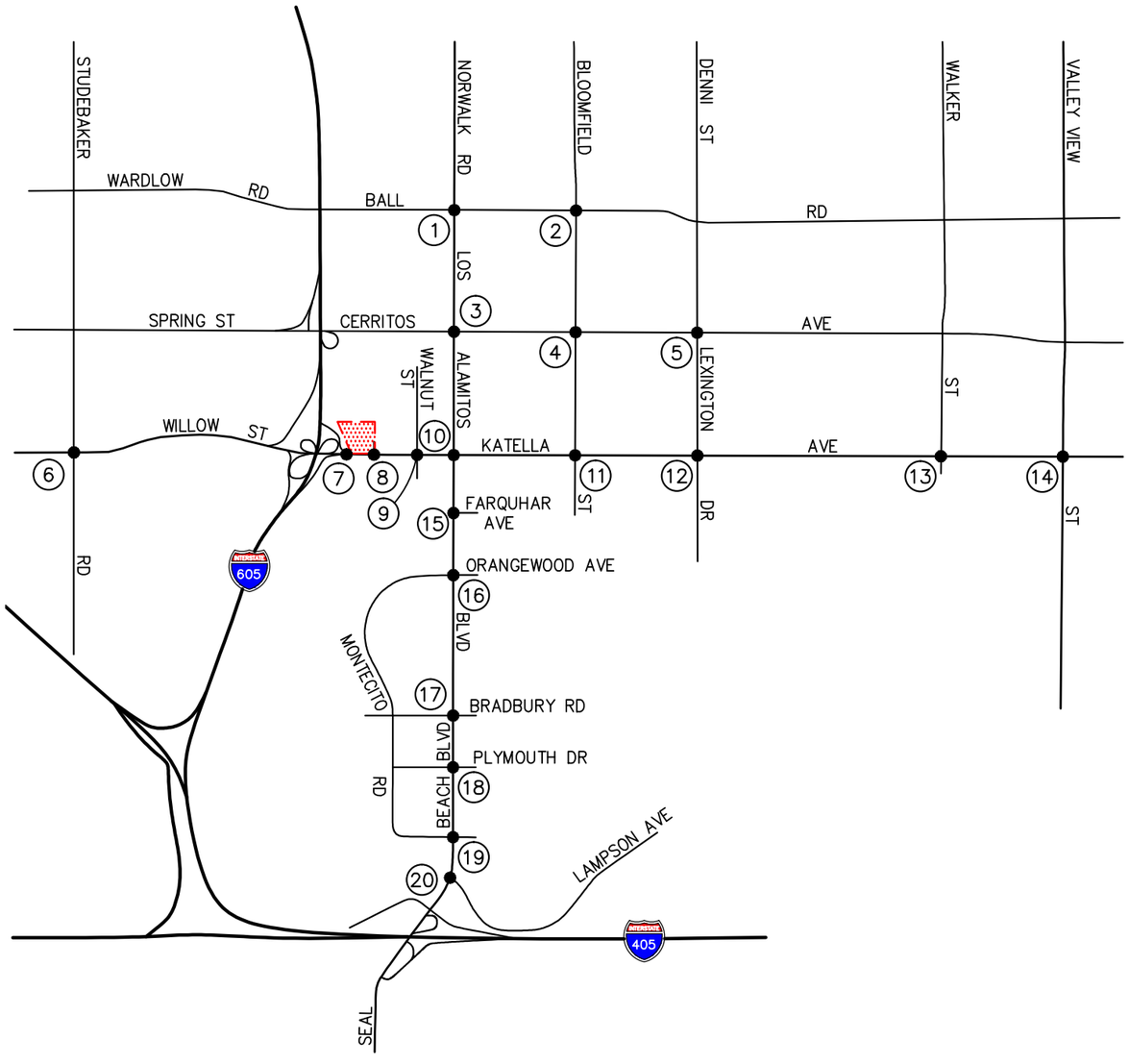
KEY

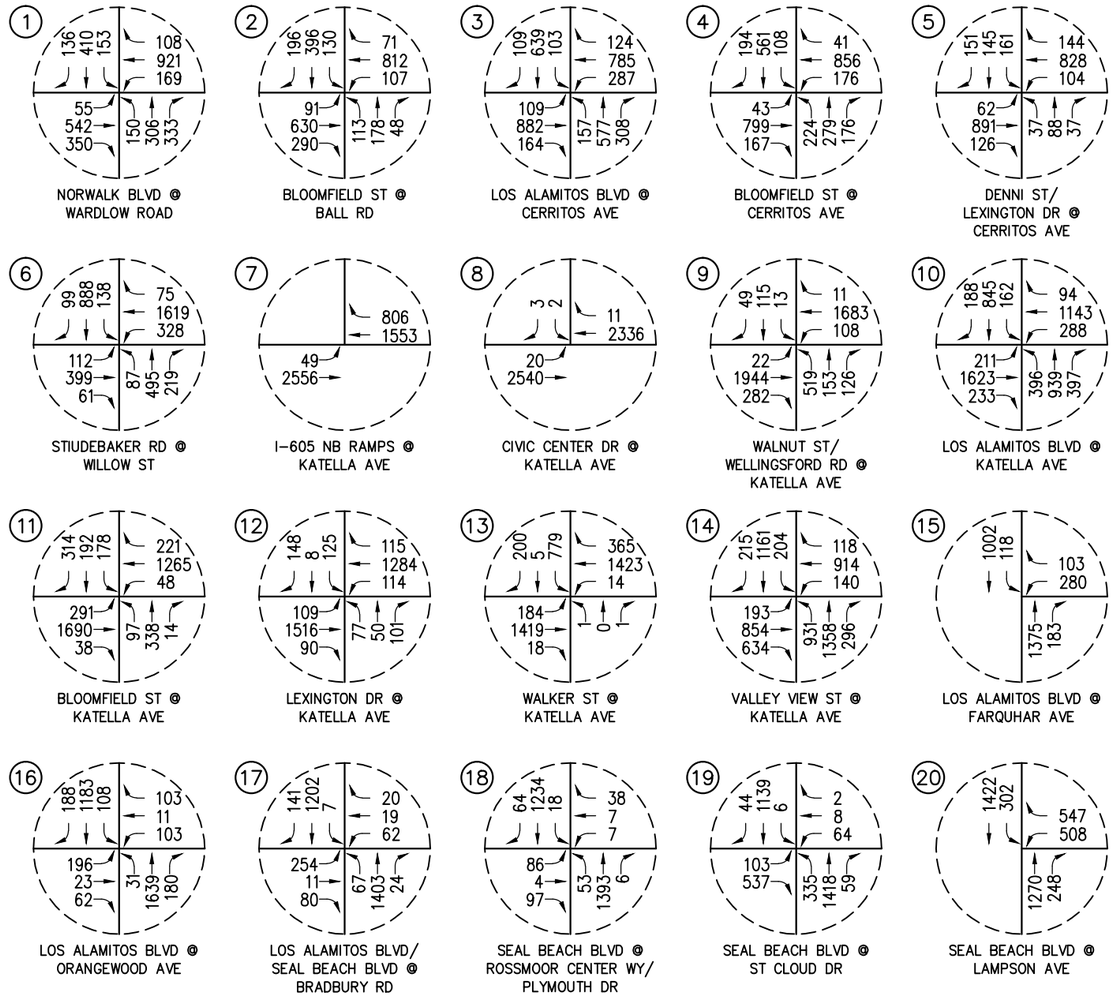
= PROJECT SITE

FIGURE 3-4

EXISTING TRANSIT FACILITIES

VILLAGE 605, LOS ALAMITOS





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LINSCOTT LAW & GREENSPAN engineers

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KEY

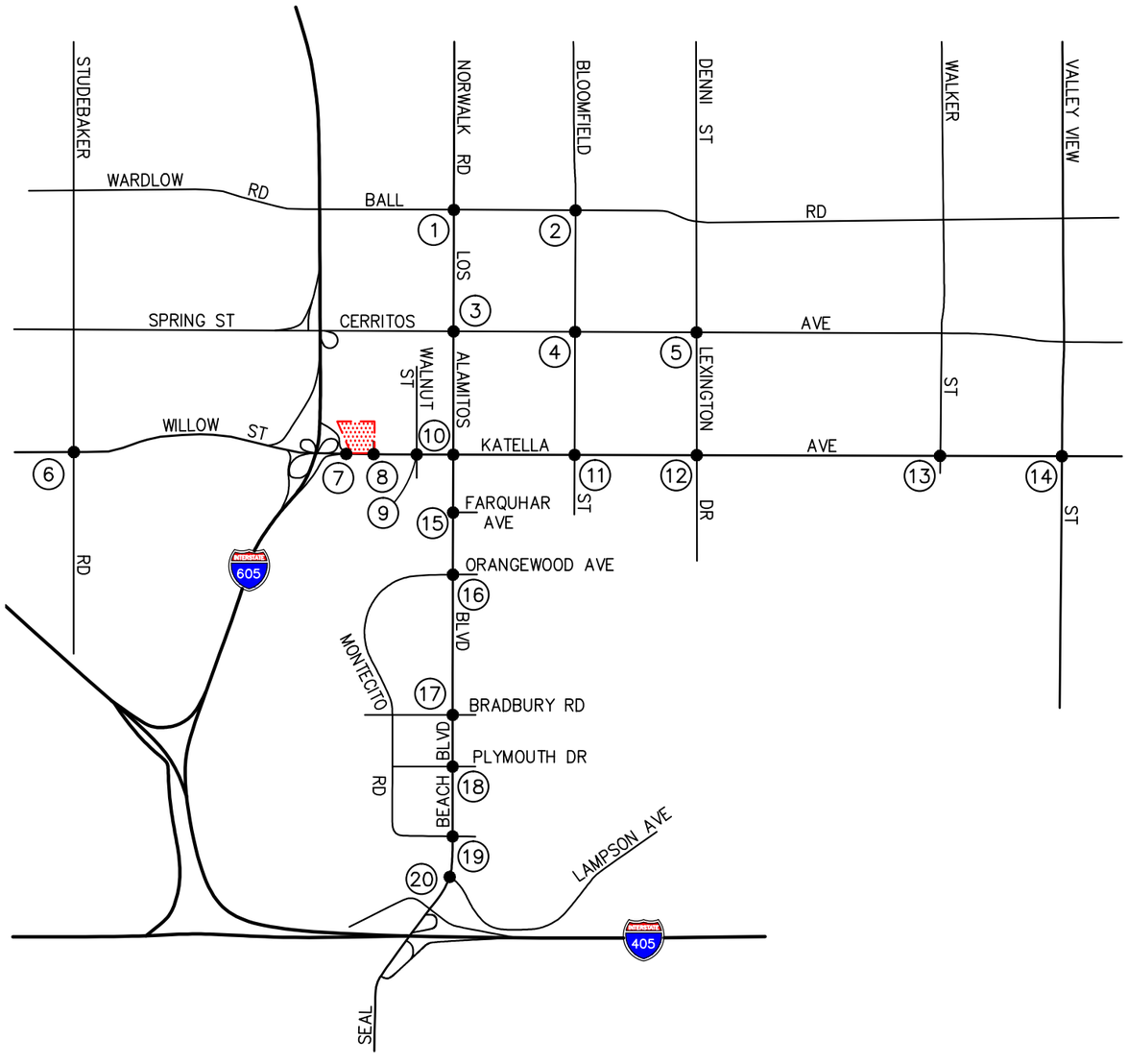
(#) = STUDY INTERSECTION

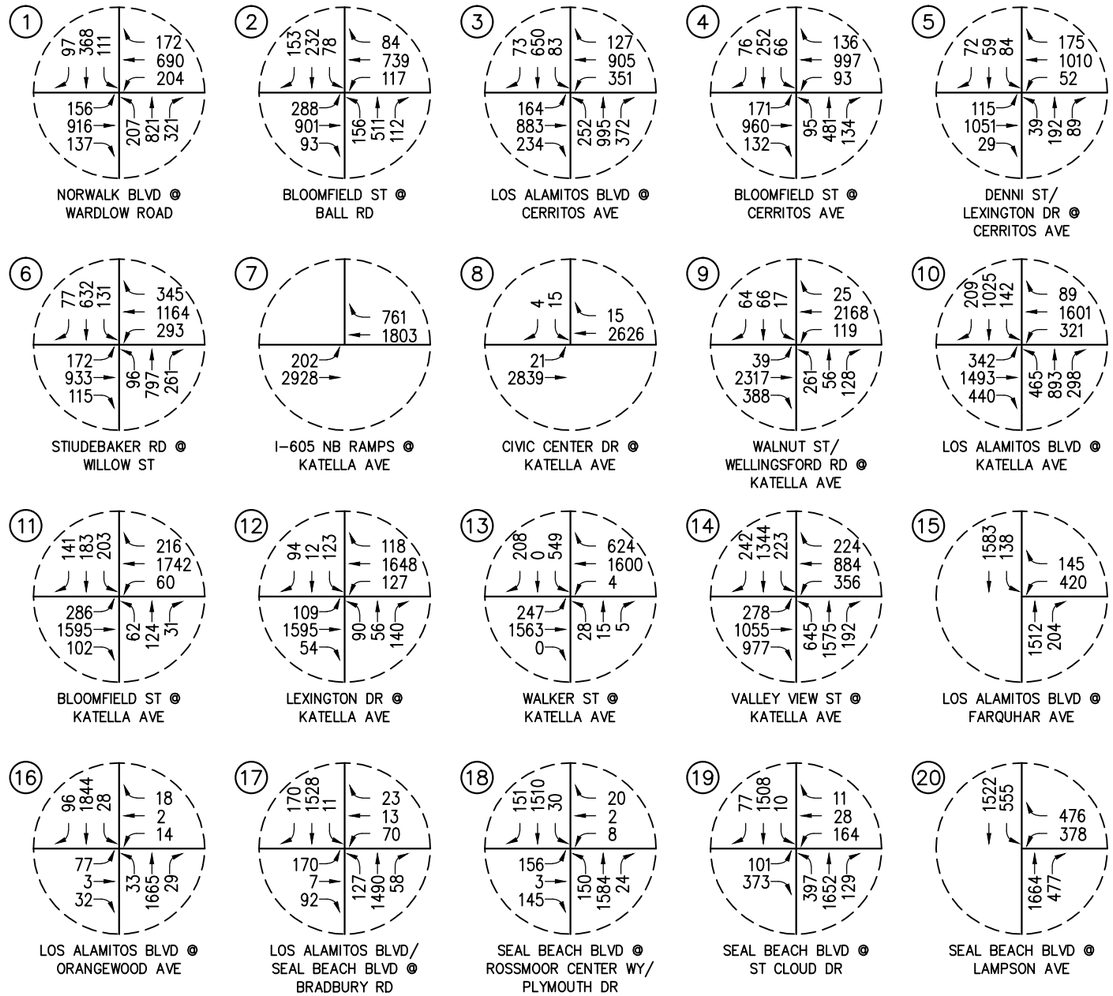
= PROJECT SITE

FIGURE 3-5

EXISTING AM PEAK HOUR TRAFFIC VOLUMES

VILLAGE 605, LOS ALAMITOS





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N NO SCALE

KEY

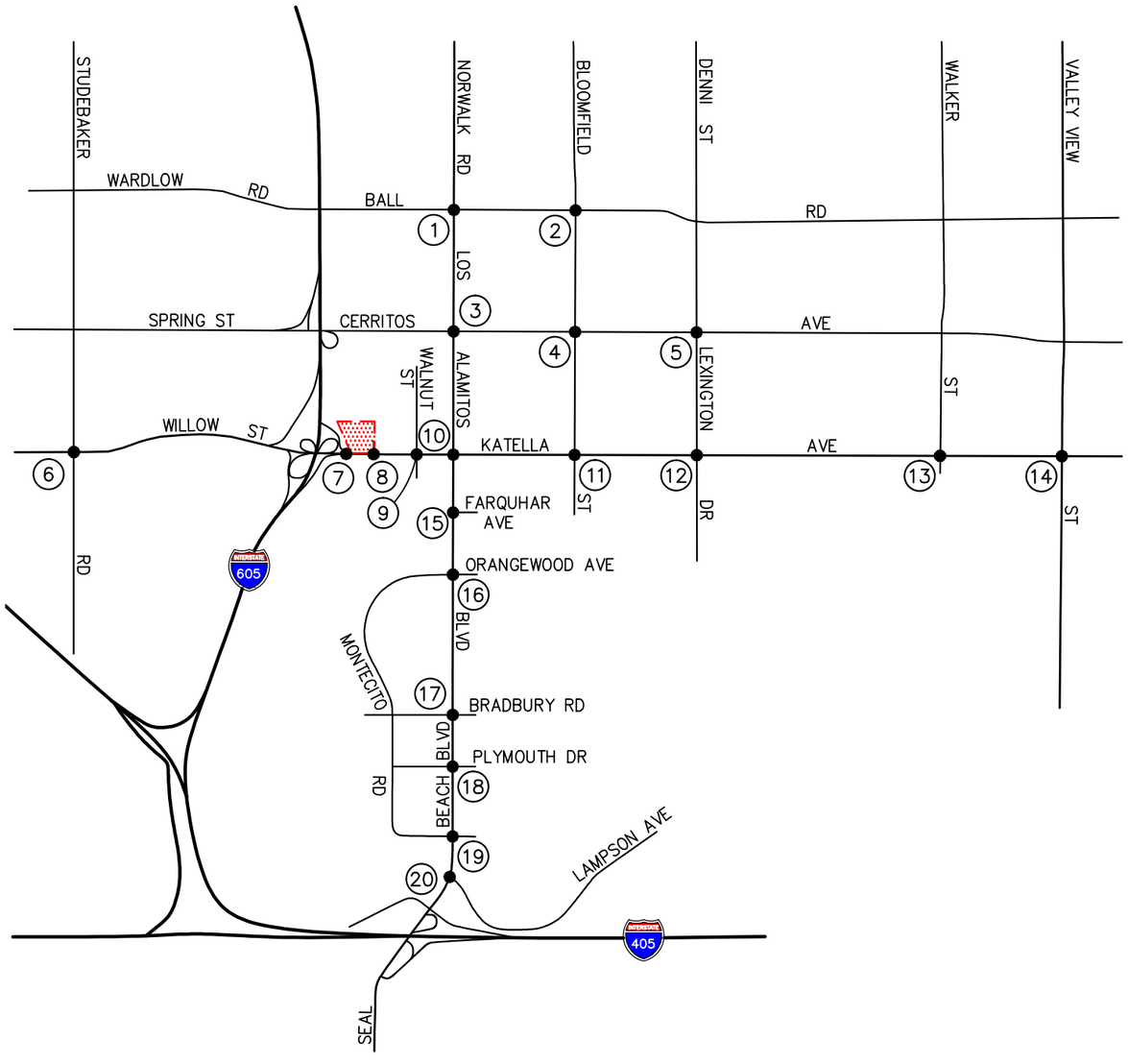
(#) = STUDY INTERSECTION

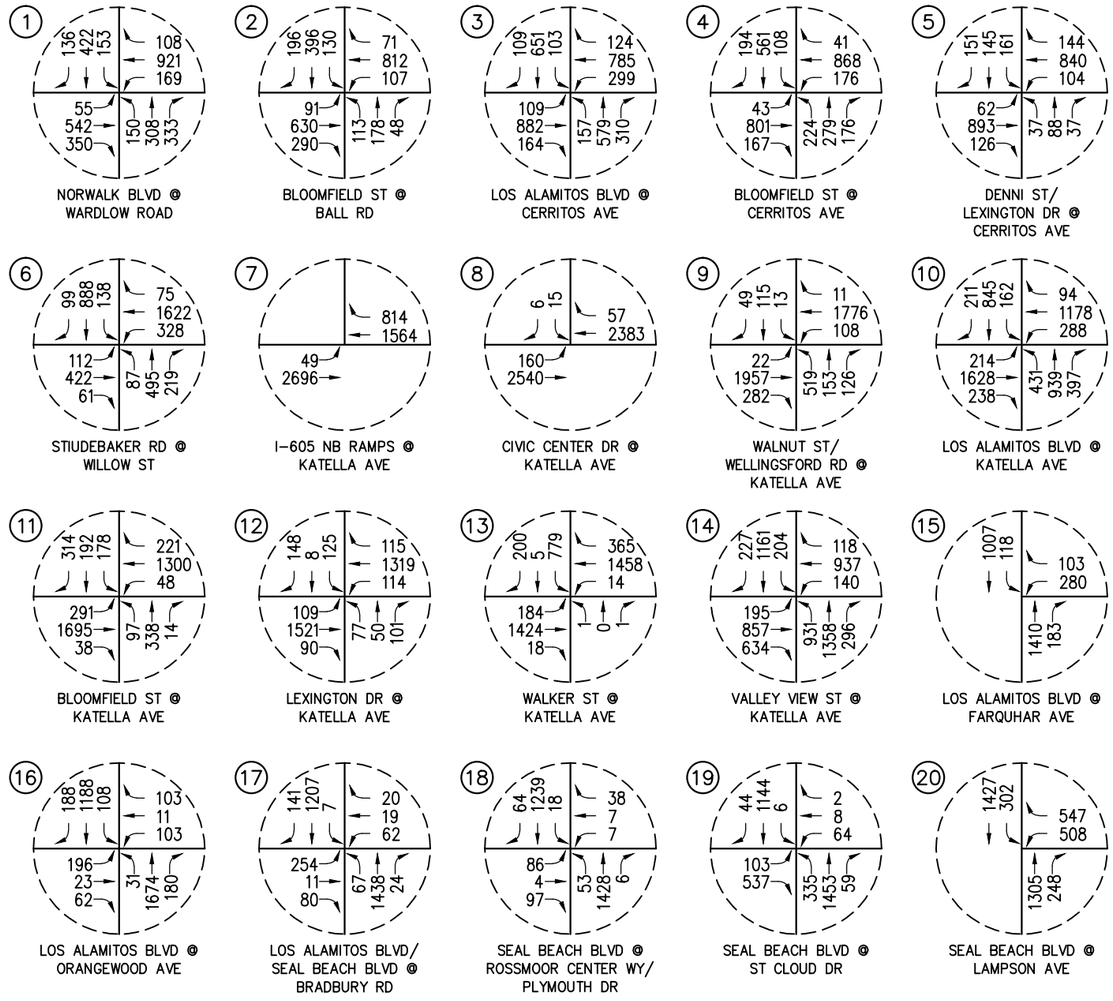
= PROJECT SITE

FIGURE 3-6

EXISTING PM PEAK HOUR TRAFFIC VOLUMES

VILLAGE 605, LOS ALAMITOS





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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

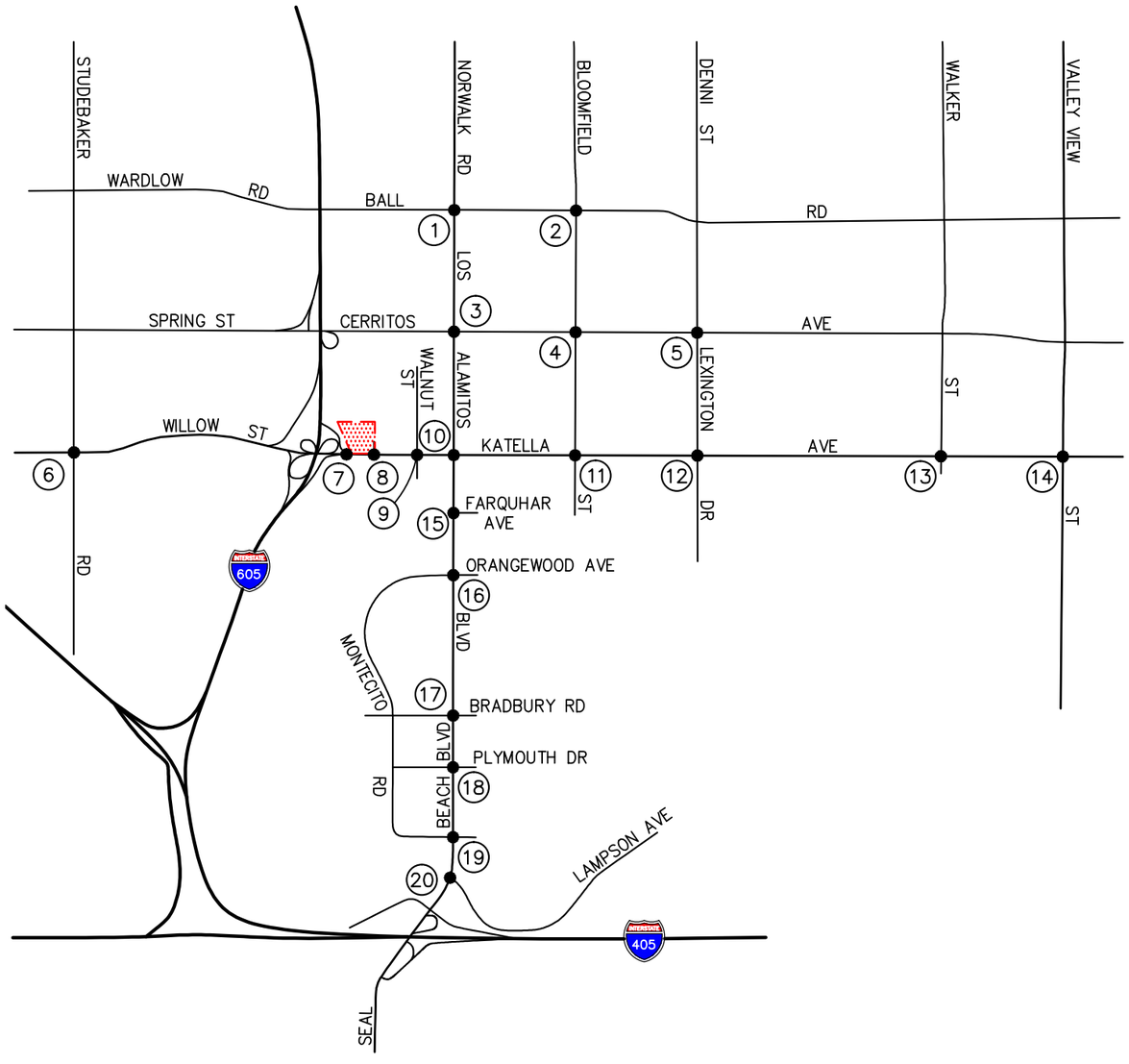
(#) = STUDY INTERSECTION

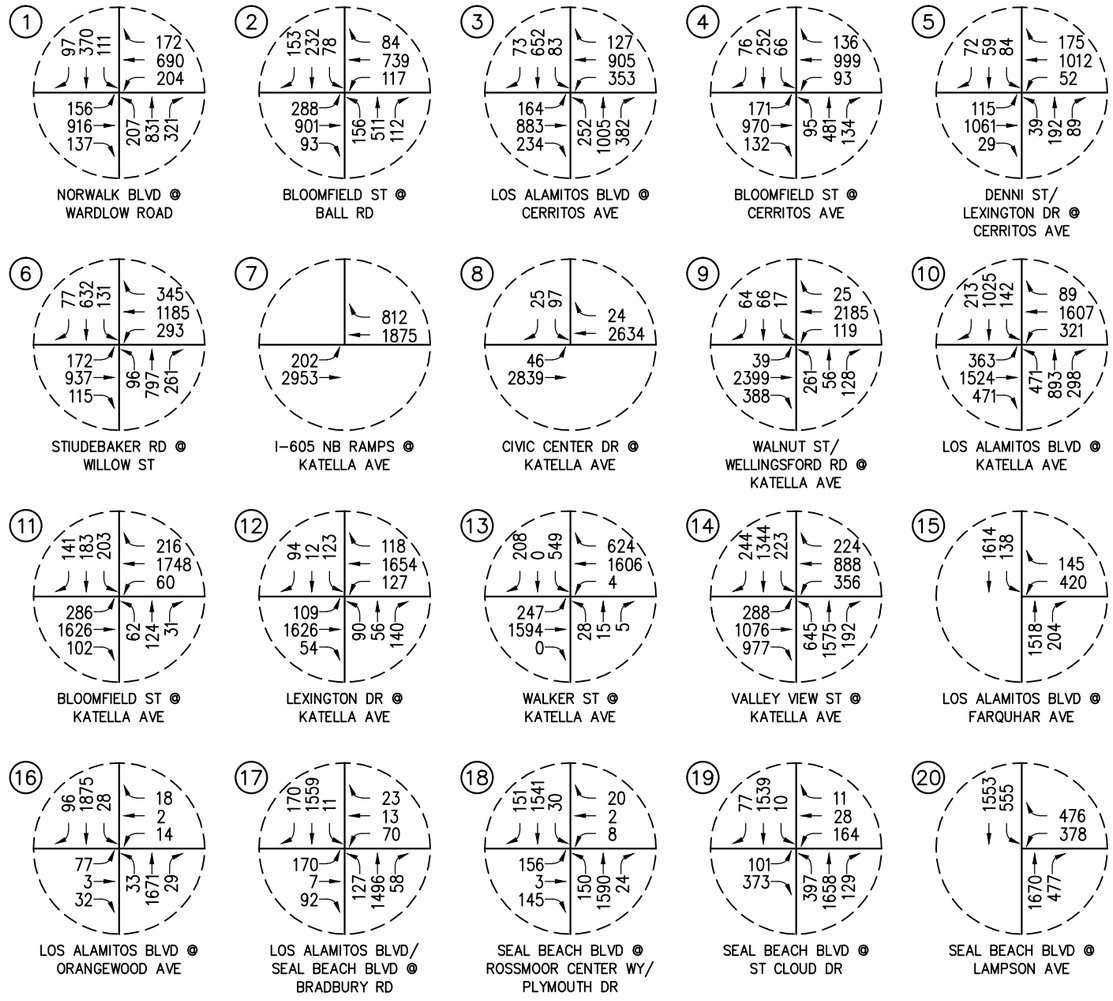
= PROJECT SITE

FIGURE 3-7

BASELINE AM PEAK HOUR TRAFFIC VOLUMES

VILLAGE 605, LOS ALAMITOS





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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 3-8

BASELINE PM PEAK HOUR TRAFFIC VOLUMES

VILLAGE 605, LOS ALAMITOS

3.6 Baseline Intersection Conditions

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

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

In conformance with the City of Los Alamitos, AM and PM 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 City of Los Alamitos requirements, City of Cypress requirements, and Orange County CMP requirements, the ICU calculations use a lane capacity of 1,700 vehicles per hour (vph) for left-turn, through, and right-turn lanes. A clearance adjustment factor of 0.05 was added to each Level of Service calculation.

Per LA County CMP requirements, the ICU calculations use a lane capacity of 1,600 vph for left-turn, through, and right-turn lanes, and dual left turn capacity of 2,880. A clearance interval is also added to each Level of Service 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 3-1*** shows the clearance intervals used in the analysis of the key study intersections with the City of Long Beach.

Per the City of Seal Beach requirements, the ICU calculations use a lane capacity of 1,600 vph for left-turn and shared lanes and 1,700 vph for through and right-turn lanes. A clearance adjustment factor 0.10 was added to each Level of Service calculation.

The ICU value translates to a Level of Service (LOS) estimate, which is a relative measure of the intersection performance. 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. The six qualitative categories of Level of Service have been defined along with the corresponding ICU value range and are shown in ***Table 3-2***.

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

The HCM unsignalized methodology, found in *Chapter 19 of the Highway Capacity Manual (HCM 2010)* for two-way stop-controlled intersections was utilized for the analysis of the unsignalized intersection (i.e. the Project driveway). Two-way stop-controlled intersections are comprised of a major street, which is uncontrolled, and a minor street, which is controlled by stop signs. Level of service for a two-way stop-controlled intersection is determined by the computed or measured control delay. The control delay by movement, by approach, and for the intersection as a whole is estimated by the computed capacity for each movement. LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns. The worst side street approach delay is reported. LOS is not defined for the intersection as a whole or for major-street approaches, as it is assumed that major-street through vehicles experience zero delay. The HCM control delay value range for two-way stop-controlled intersections are shown in ***Table 3-3***.

3.6.3 *Level of Service Criteria*

According to the City of Los Alamitos criteria, LOS D is the minimum acceptable condition that should be maintained during the morning and evening peak commute hours at all intersections, with the following exceptions as stated in the Los Alamitos General Plan, dated March 2015:

A. There is a desire to prioritize pedestrians and/or bicyclists over vehicles
B. Insufficient ROW exists
C. The intersection or roadway is considered built out

Of the study intersections, the following intersections are exempt from the LOS D standard:

9. Walnut Street/Wallingsford Street at Katella Avenue
10. Los Alamitos Boulevard at Katella Avenue

For the study intersections in 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). For the study intersections in the City of Seal Beach, LOS D is the minimum acceptable condition that should be maintained during the peak commute hours. For the study intersections in the City of Cypress, LOS D is considered the minimum acceptable condition.

3.7 Baseline Level of Service Results

Table 3-4 summarizes the baseline peak hour service level calculations for the twenty (20) key study intersections based on existing traffic volumes and current street geometry. Review of *Table 3-4* indicates that nineteen (19) of the twenty (20) key study intersections currently operate at an acceptable level of service during the AM and/or PM peak hours. The one (1) location currently operating at unacceptable level of service is as follows:

	AM Peak Hour		PM Peak Hour	
Key Intersection	ICU/HCM	LOS	ICU/HCM	LOS
1. Norwalk Boulevard at Wardlow Road	---	---	0.923	E

Appendix C presents the ICU/LOS calculations for the twenty (20) key study intersections for the AM peak hour and PM peak hour.

TABLE 3-1

CITY OF LONG BEACH CLEARANCE INTERVALS[2]

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%

[2] Source: *City of Long Beach Guidelines for Signalized Intersection Analysis, 2004.*

TABLE 3-2

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS[3]

Level of Service (LOS)	Intersection Capacity Utilization Value (V/C)	Level of Service Description
A	< 0.61	EXCELLENT. No vehicle waits longer than one red light, and no approach phase is fully used.
B	0.61 – 0.70	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.71 – 0.80	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.81 – 0.90	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	0.91 – 1.00	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.00	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.

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

TABLE 3-3

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS[4]

Control Delay (sec/veh)	Level of Service (LOS)	Level of Service Description
0-10	A	Little or no delay
> 10-15	B	Short traffic delays
> 15-20	C	Average traffic delays
> 25-35	D	Long traffic delays
> 35-50	E	Very long traffic delays
> 50	F	Severe congestion

[4] Source: *Highway Capacity Manual*, Chapter 19: Two-Way Stop-Controlled Intersections. The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole.

TABLE 3-4
BASELINE PEAK HOUR LEVELS OF SERVICE

Key Intersections	Jurisdiction	Minimum Acceptable LOS	Time Period	Control Type	ICU	LOS
1. Norwalk Boulevard at Wardlow Road	Long Beach	D	AM PM	8∅ Traffic Signal	0.808 **0.923**	D **E**
2. Bloomfield Street at Ball Road	Los Alamitos/ Cypress	D	AM PM	8∅ Traffic Signal	0.583 0.666	B B
3. Los Alamitos Boulevard at Cerritos Avenue	Los Alamitos	D	AM PM	8∅ Traffic Signal	0.769 0.857	C D
4. Bloomfield Street at Cerritos Avenue	Los Alamitos	D	AM PM	8∅ Traffic Signal	0.743 0.664	C B
5. Denni Street/Lexington Drive at Cerritos Avenue	Los Alamitos/ Cypress	D	AM PM	6∅ Traffic Signal	0.542 0.601	A B
6. Studebaker Road at Willow Street	Long Beach	D	AM PM	6∅ Traffic Signal	0.875 0.877	D D
7. I-605 NB Ramps at Katella Avenue	Los Alamitos/ Caltrans	D	AM PM	2∅ Traffic Signal	0.385 0.536	A A
8. Civic Center Drive at Katella Avenue	Los Alamitos	D	AM PM	3∅ Traffic Signal	0.512 0.525	A A
9. Walnut Street/Wallingsford Road at Katella Avenue	Los Alamitos	E	AM PM	6∅ Traffic Signal	0.745 0.700	C B
10. Los Alamitos Boulevard at Katella Avenue	Los Alamitos	E	AM PM	8∅ Traffic Signal	0.746 0.811	C D
11. Bloomfield Street at Katella Avenue	Los Alamitos	D	AM PM	8∅ Traffic Signal	0.684 0.726	B C
12. Lexington Drive at Katella Avenue	Los Alamitos	D	AM PM	6∅ Traffic Signal	0.566 0.593	A A
13. Walker Street at Katella Avenue	Los Alamitos/ Cypress	D	AM PM	6∅ Traffic Signal	0.621 0.668	B B

Notes:

- ∅ = Phase
- **BOLD ICU/LOS** indicates unacceptable service level

TABLE 3-4 (CONTINUED)
BASELINE PEAK HOUR LEVELS OF SERVICE

Key Intersections	Jurisdiction	Minimum Acceptable LOS	Time Period	Control Type	ICU	LOS
14. Valley View Street at Katella Avenue	Cypress	D	AM PM	8∅ Traffic Signal	0.701 0.756	C C
15. Los Alamitos Boulevard at Farquhar Avenue	Los Alamitos	D	AM PM	3∅ Traffic Signal	0.544 0.635	A B
16. Los Alamitos Boulevard at Orangewood Avenue	Los Alamitos	D	AM PM	5∅ Traffic Signal	0.685 0.521	B A
17. Los Alamitos Blvd/Seal Beach Blvd at Bradbury Road	Los Alamitos	D	AM PM	5∅ Traffic Signal	0.551 0.613	A B
18. Seal Beach Boulevard at Rossmoor Center Way/Plymouth Drive	Seal Beach	D	AM PM	5∅ Traffic Signal	0.492 0.658	A B
19. Seal Beach Boulevard at St. Cloud Drive	Seal Beach	D	AM PM	6∅ Traffic Signal	0.540 0.687	A B
20. Seal Beach Boulevard at Lampson Avenue	Seal Beach	D	AM PM	3∅ Traffic Signal	0.678 0.719	B C

Notes:

- ∅ = Phase
- **BOLD ICU/LOS** indicates unacceptable service level

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 trip 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 trip distribution, which identifies the origins and destinations of inbound and outbound project traffic. These origins and destinations are typically based on demographics and existing/anticipated 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 proposed 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 and the significance of the project's impacts identified.

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 9th Edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE) [Washington D.C., 2012]. Applicable AM peak hour and PM peak hour pass-by adjustment factors used in the trip generation forecasting for the Project are published in *Trip Generation Handbook, 3rd Edition, an ITE Proposed Recommended Practice,* Institute of Transportation Engineers (ITE), Washington, D.C. (2014).

For the existing development, ITE Land Use 710: General Office Building trip rates were used to forecast the trip generation of the vacant office buildings for which the proposed Project's trip generation can be compared.

For the Project, the trip generation potential was forecast based on the proposed tenant mix using the trip rates from the appropriate ITE Land Use category. Under this approach, trip generation information for ITE Land Use 492: Health/Fitness Club, ITE Land Use 820: Shopping Center, ITE Land Use 850: Supermarket, ITE Land Use 932: High-Turnover (Sit-Down) Restaurant, and ITE Land Use 934: Fast-Food Restaurant with Drive-Through Window was used in forecasting the trip generation potential of the Project.

Table 5-1 displays the trip generation potential of the existing vacant office buildings, which represents the existing "trip budget" for the subject property that the proposed Project can be compared and the Project's trip generation forecast.

Review of the middle portion of *Table 5-1* shows that the existing office development is forecast to generate 1,790 weekday daily trips, with 265 trips (233 inbound, 32 outbound) produced in the AM peak hour and 247 trips (42 inbound, 205 outbound) produced in the PM peak hour. As noted earlier in this report, with concurrence by the City, these trips have been added to the existing traffic data to establish "baseline" traffic conditions for the traffic impact analysis.

The lower portion of *Table 5-1* presents the proposed Project generation which is forecast to generate 10,479 weekday daily trips, with 431 trips (242 inbound, 189 outbound) produced in the AM peak hour and 514 trips (263 inbound, 251 outbound) produced in the PM peak hour.

When the proposed Project is compared to the existing development, the implementation of the Project is forecast to add 8,689 more daily trips, 166 more AM peak hour trips, and 267 more PM peak hour trips within the project study area.

5.2 Project Traffic Distribution and Assignment

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 (i.e. Los Alamitos Boulevard, etc),
- expected localized traffic flow patterns based on adjacent street channelization and presence of traffic signals,
- ingress/egress availability at the project site, and
- input from City staff.

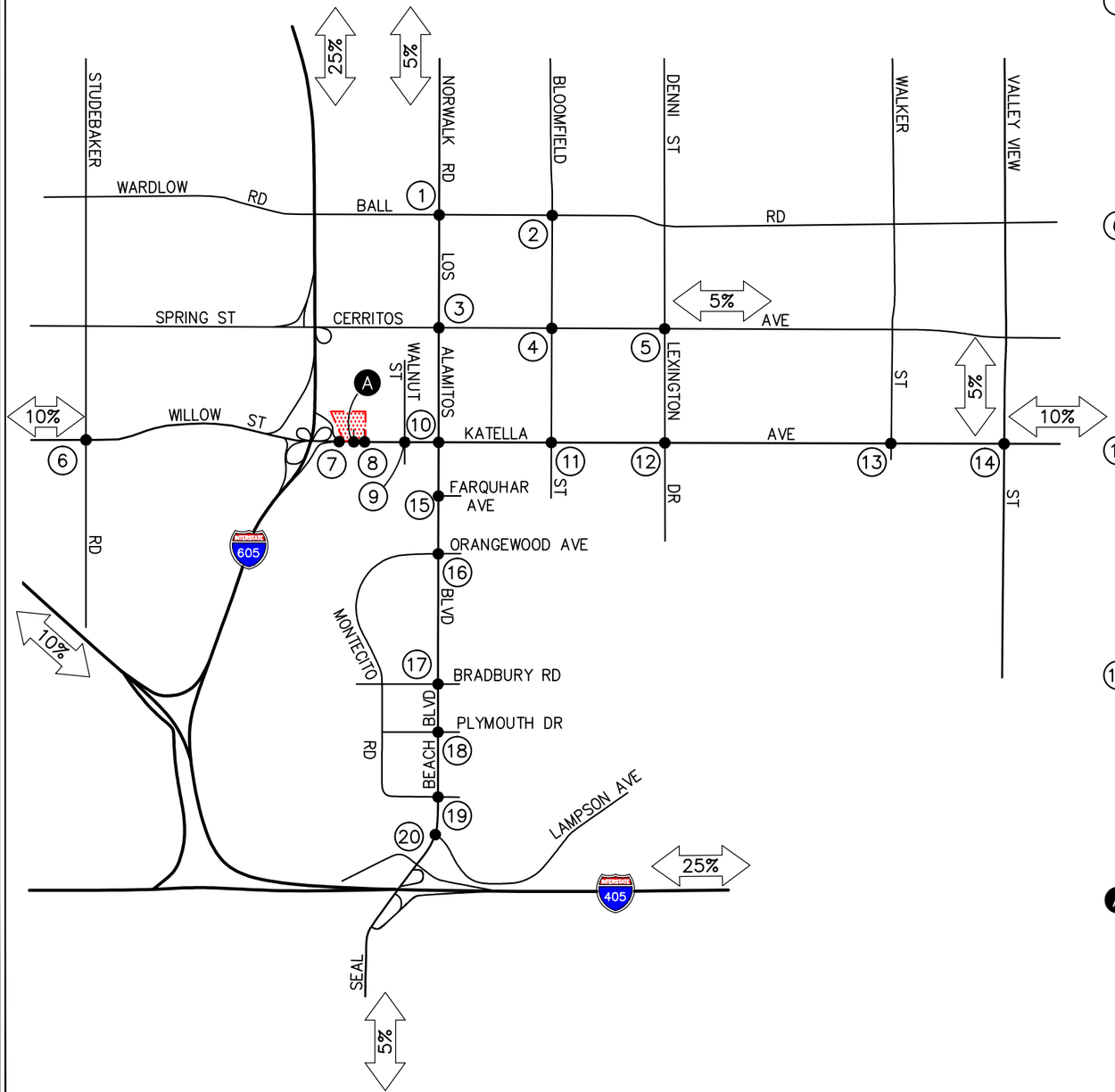
Figure 5-1 illustrates the existing traffic pattern for the office space which is expected to be demolished. The anticipated AM and PM peak hour traffic volumes associated with the closing of this facility are presented in ***Figures 5-2*** and ***5-3***, respectively. The traffic volume assignments presented in *Figures 5-2* and *5-3* reflect the traffic distribution characteristics shown in *Figure 5-1* and the traffic generation forecast of the existing office space presented in *Table 5-1*.

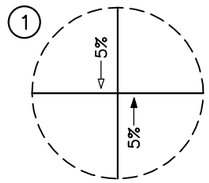
Figure 5-4 illustrates the general, directional traffic distribution pattern for the proposed Project. The anticipated AM and PM peak hour traffic volumes associated with the proposed Project are presented in ***Figures 5-5*** and ***5-6***, respectively. The traffic volume assignments presented in *Figures 5-5* and *5-6* reflect the traffic distribution characteristics shown in *Figure 5-4* and the traffic generation forecast of the proposed Project presented in *Table 5-1*.

5.3 Baseline Plus Project Traffic Conditions

The baseline plus project traffic conditions have been generated based upon existing traffic volumes with the addition of Project related traffic. These forecast traffic conditions have been prepared pursuant to the California Environmental Quality Act (CEQA) guidelines, 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 opening year intersection capacity analyses will identify the roadway improvements necessary to mitigate the direct traffic impacts of the Project, if any.

Figures 5-7 and ***5-8*** present projected AM and PM peak hour baseline traffic volumes at the twenty (20) key study intersections with the addition of the trips generated by the proposed Project to existing traffic volumes, respectively.





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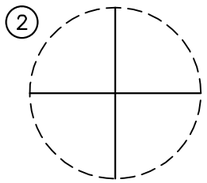
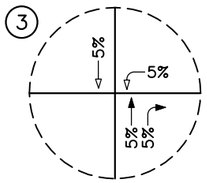
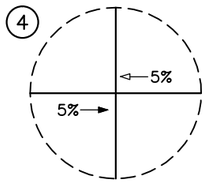


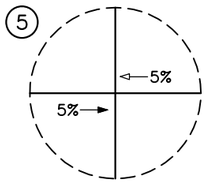
2 BLOOMFIELD ST @ BALL RD



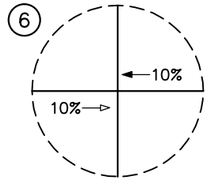
3 LOS ALAMITOS BLVD @ CERRITOS AVE



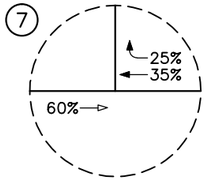
4 BLOOMFIELD ST @ CERRITOS AVE



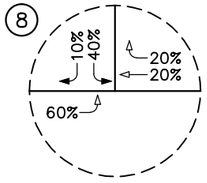
5 DENNI ST/ LEXINGTON DR @ CERRITOS AVE



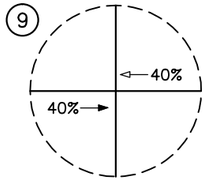
6 STIUDEBAKER RD @ WILLOW ST



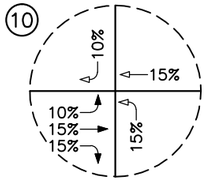
7 I-605 NB RAMPS @ KATELLA AVE



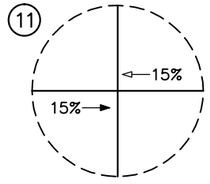
8 CIVIC CENTER DR @ KATELLA AVE



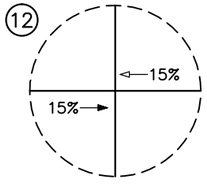
9 WALNUT ST/ WELLINGSFORD RD @ KATELLA AVE



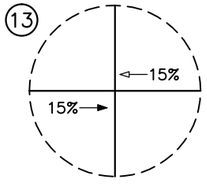
10 LOS ALAMITOS BLVD @ KATELLA AVE



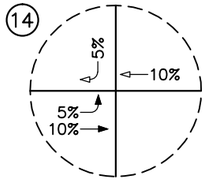
11 BLOOMFIELD ST @ KATELLA AVE



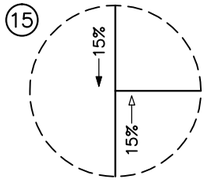
12 LEXINGTON DR @ KATELLA AVE



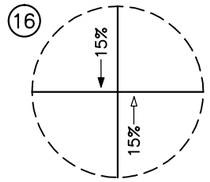
13 WALKER ST @ KATELLA AVE



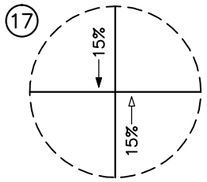
14 VALLEY VIEW ST @ KATELLA AVE



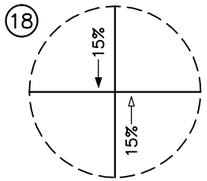
15 LOS ALAMITOS BLVD @ FARQUHAR AVE



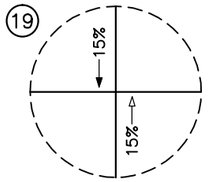
16 LOS ALAMITOS BLVD @ ORANGEWOOD AVE



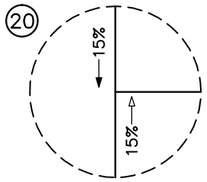
17 LOS ALAMITOS BLVD/ SEAL BEACH BLVD @ BRADBURY RD



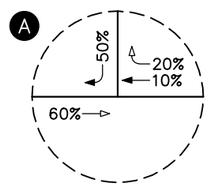
18 SEAL BEACH BLVD @ ROSSMOOR CENTER WY/ PLYMOUTH DR



19 SEAL BEACH BLVD @ ST CLOUD DR



20 SEAL BEACH BLVD @ LAMPSON AVE



PROJECT DWY 1 @ KATELLA AVE

LINSCOTT LAW & GREENSPAN engineers

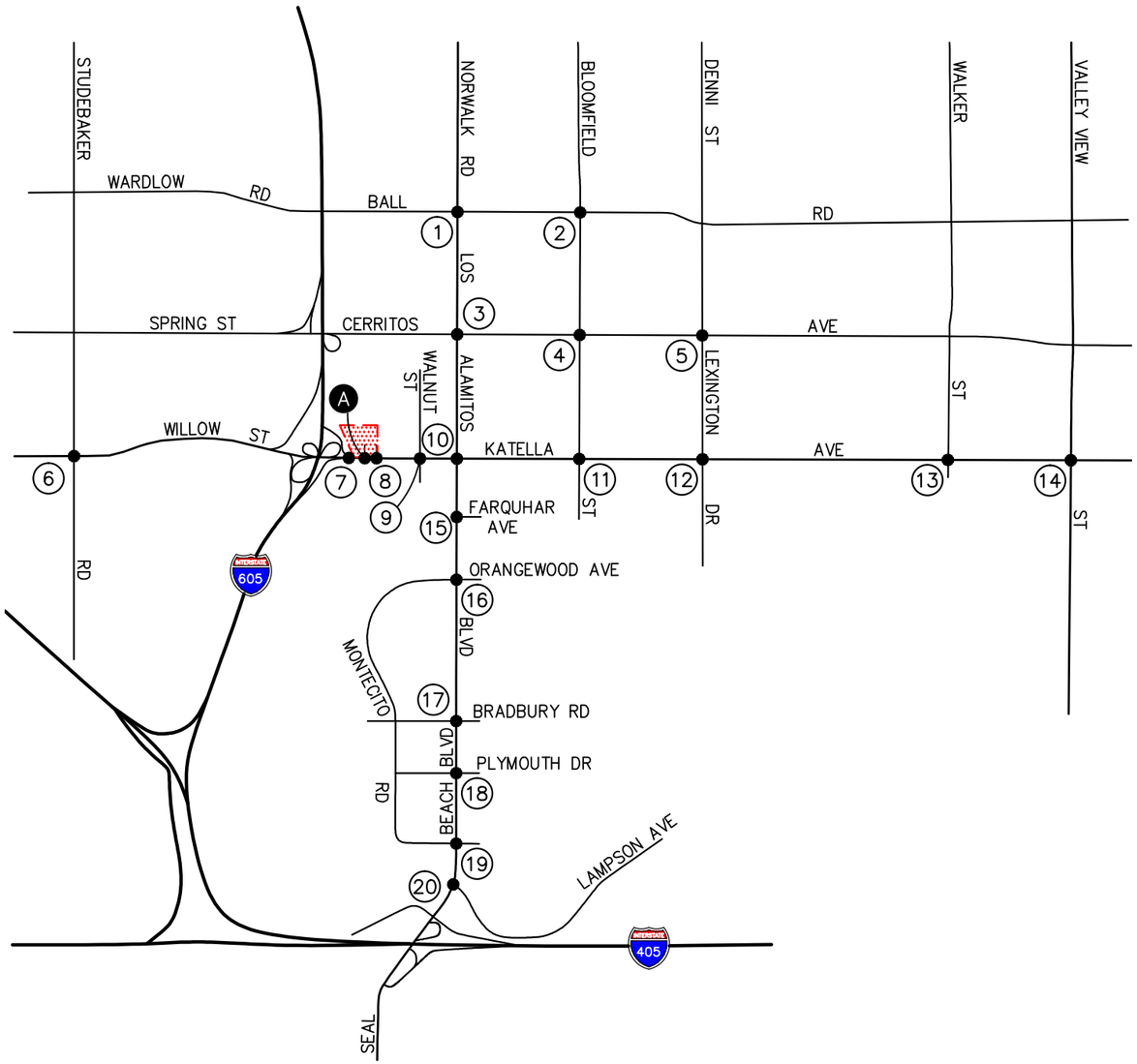
N NO SCALE

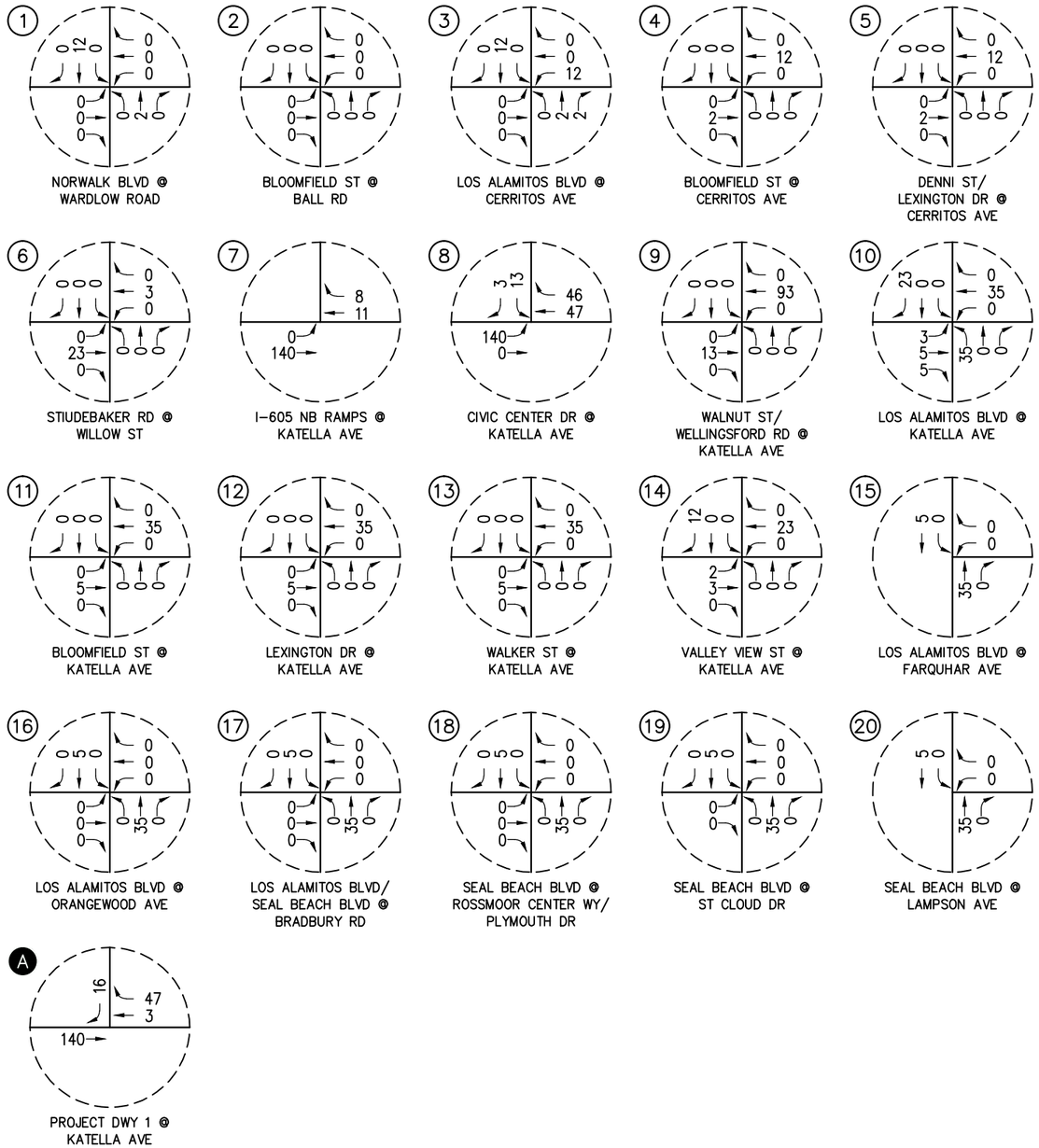
KEY
= INBOUND PERCENTAGE
= OUTBOUND PERCENTAGE
= PROJECT SITE

FIGURE 5-1

EXISTING OFFICE SITE DISTRIBUTION PATTERN

VILLAGE 605, LOS ALAMITOS





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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

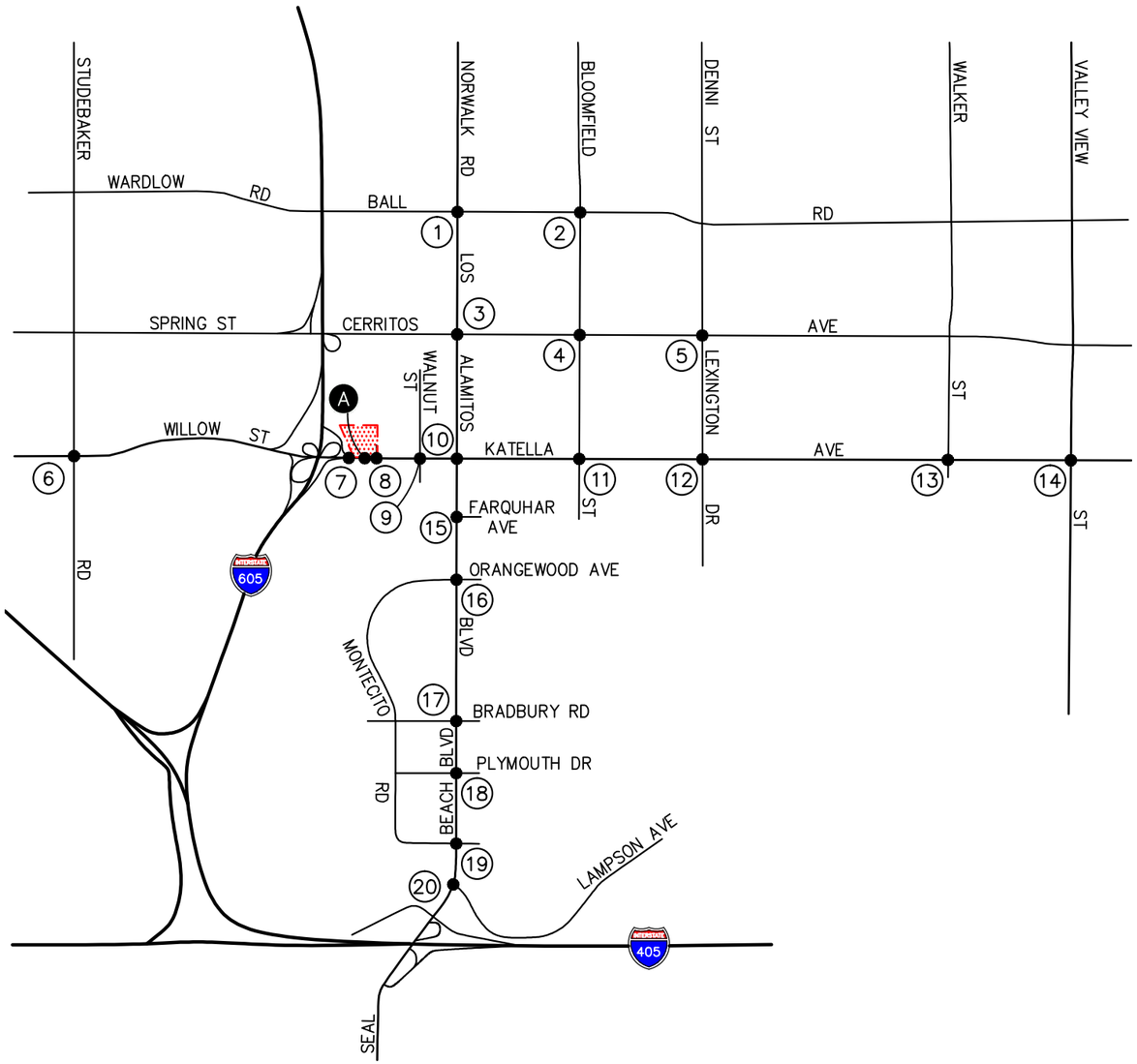
(#) = STUDY INTERSECTION

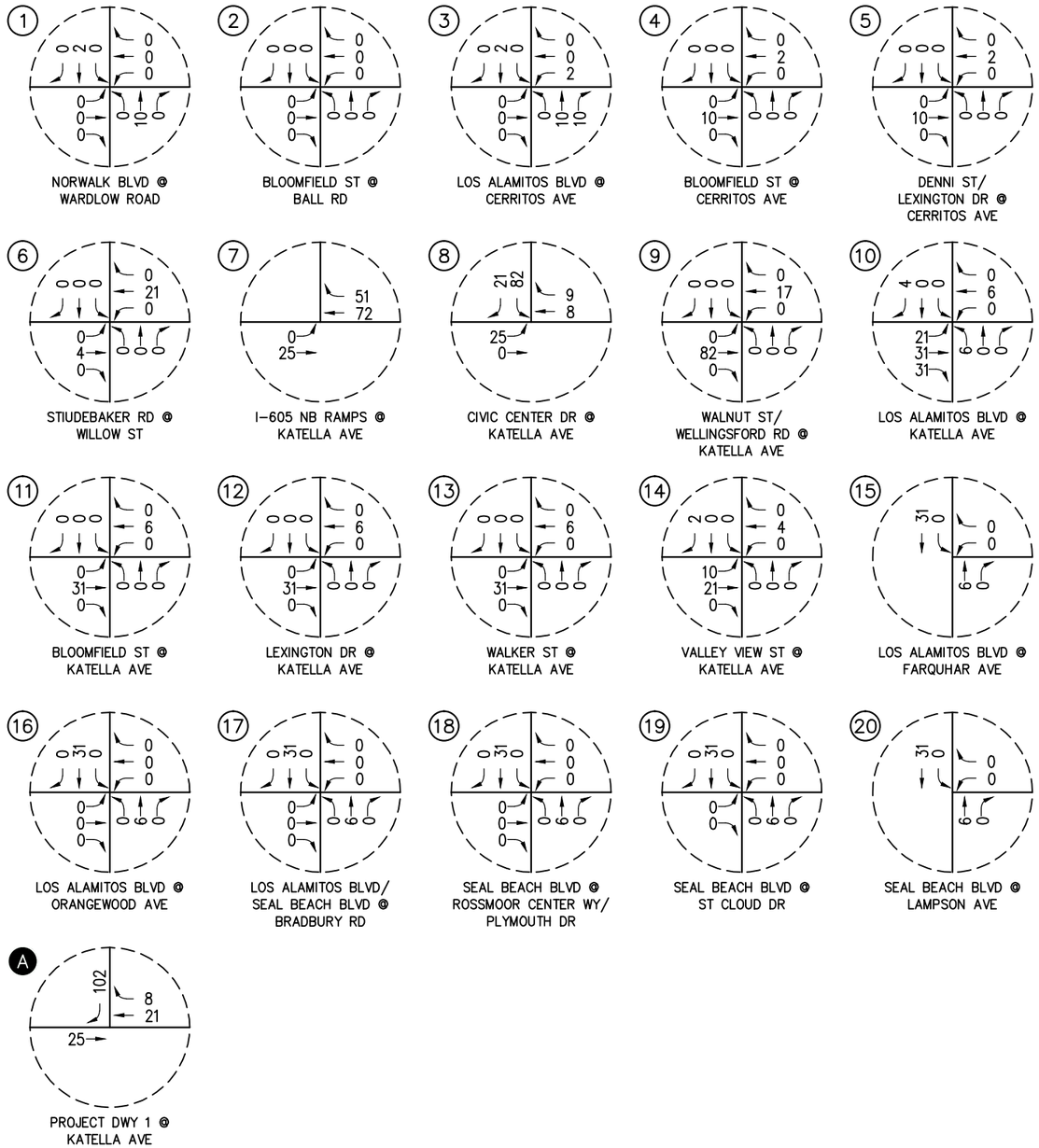
= PROJECT SITE

FIGURE 5-2

EXISTING OFFICE AM PEAK HOUR TRAFFIC VOLUMES

VILLAGE 605, LOS ALAMITOS





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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

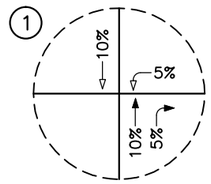
(#) = STUDY INTERSECTION

= PROJECT SITE

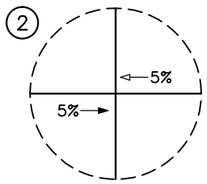
FIGURE 5-3

EXISTING OFFICE PM PEAK HOUR TRAFFIC VOLUMES

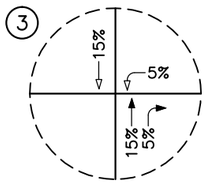
VILLAGE 605, LOS ALAMITOS



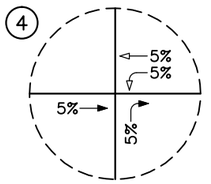
1 NORWALK BLVD @ WARDLOW ROAD



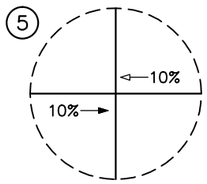
2 BLOOMFIELD ST @ BALL RD



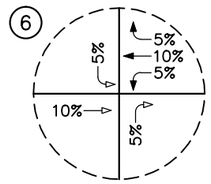
3 LOS ALAMITOS BLVD @ CERRITOS AVE



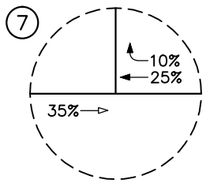
4 BLOOMFIELD ST @ CERRITOS AVE



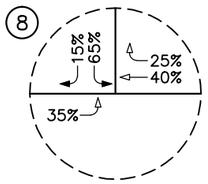
5 DENNI ST/ LEXINGTON DR @ CERRITOS AVE



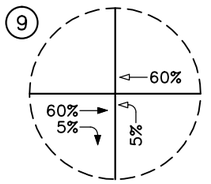
6 STUDEBAKER RD @ WILLOW ST



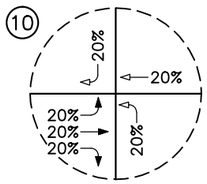
7 I-605 NB RAMPS @ KATELLA AVE



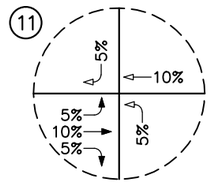
8 CIVIC CENTER DR @ KATELLA AVE



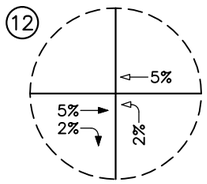
9 WALNUT ST/ WELLINGSFORD RD @ KATELLA AVE



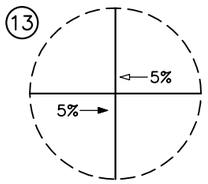
10 LOS ALAMITOS BLVD @ KATELLA AVE



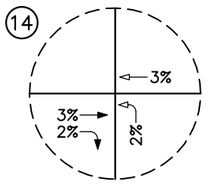
11 BLOOMFIELD ST @ KATELLA AVE



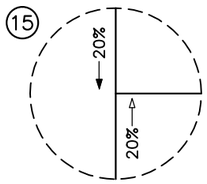
12 LEXINGTON DR @ KATELLA AVE



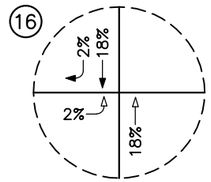
13 WALKER ST @ KATELLA AVE



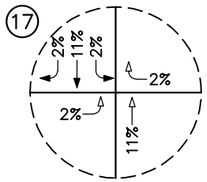
14 VALLEY VIEW ST @ KATELLA AVE



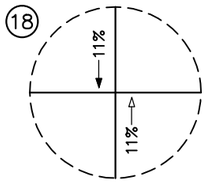
15 LOS ALAMITOS BLVD @ FARQUHAR AVE



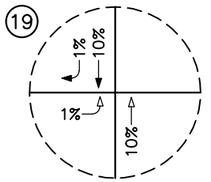
16 LOS ALAMITOS BLVD @ ORANGEWOOD AVE



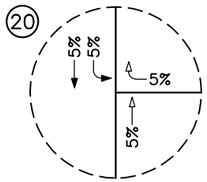
17 LOS ALAMITOS BLVD/ SEAL BEACH BLVD @ BRADBURY RD



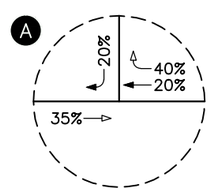
18 SEAL BEACH BLVD @ ROSSMOOR CENTER WY/ PLYMOUTH DR



19 SEAL BEACH BLVD @ ST CLOUD DR



20 SEAL BEACH BLVD @ LAMPSON AVE



PROJECT DWY 1 @ KATELLA AVE

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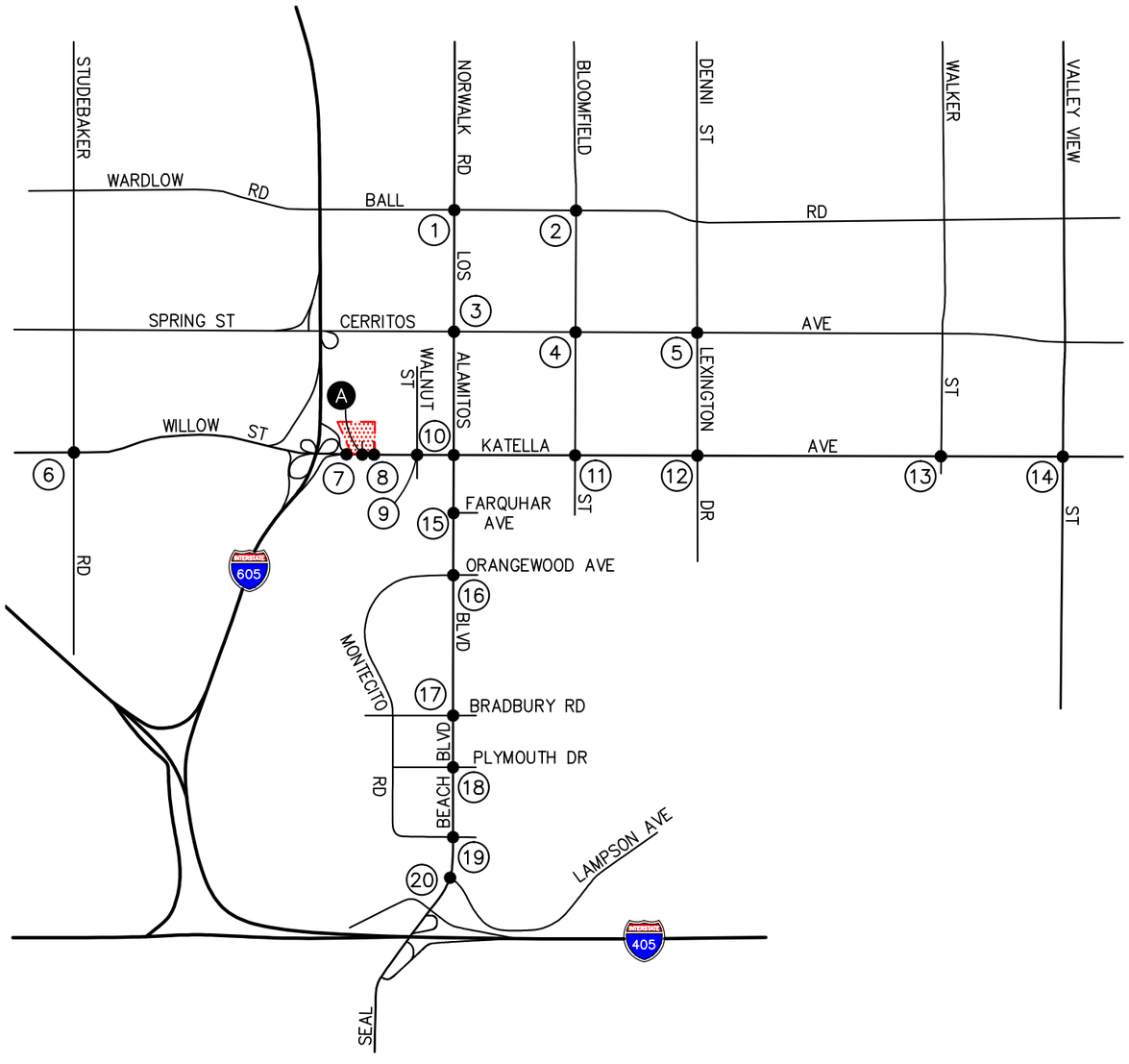
LINSCOTT LAW & GREENSPAN engineers

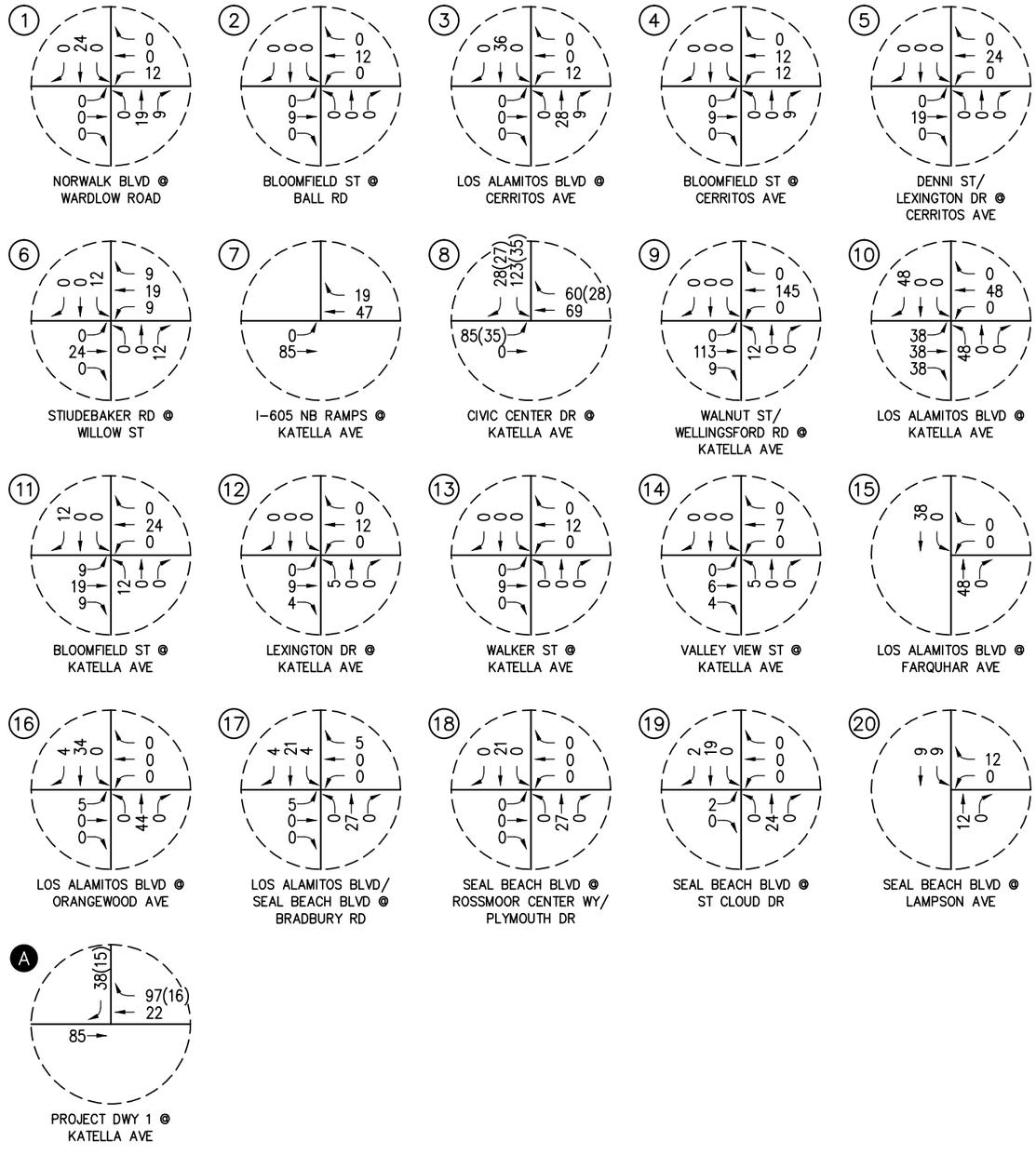
N NO SCALE

KEY
= INBOUND PERCENTAGE
= OUTBOUND PERCENTAGE
= PROJECT SITE

FIGURE 5-4

PROJECT TRIP DISTRIBUTION PATTERN
VILLAGE 605, LOS ALAMITOS





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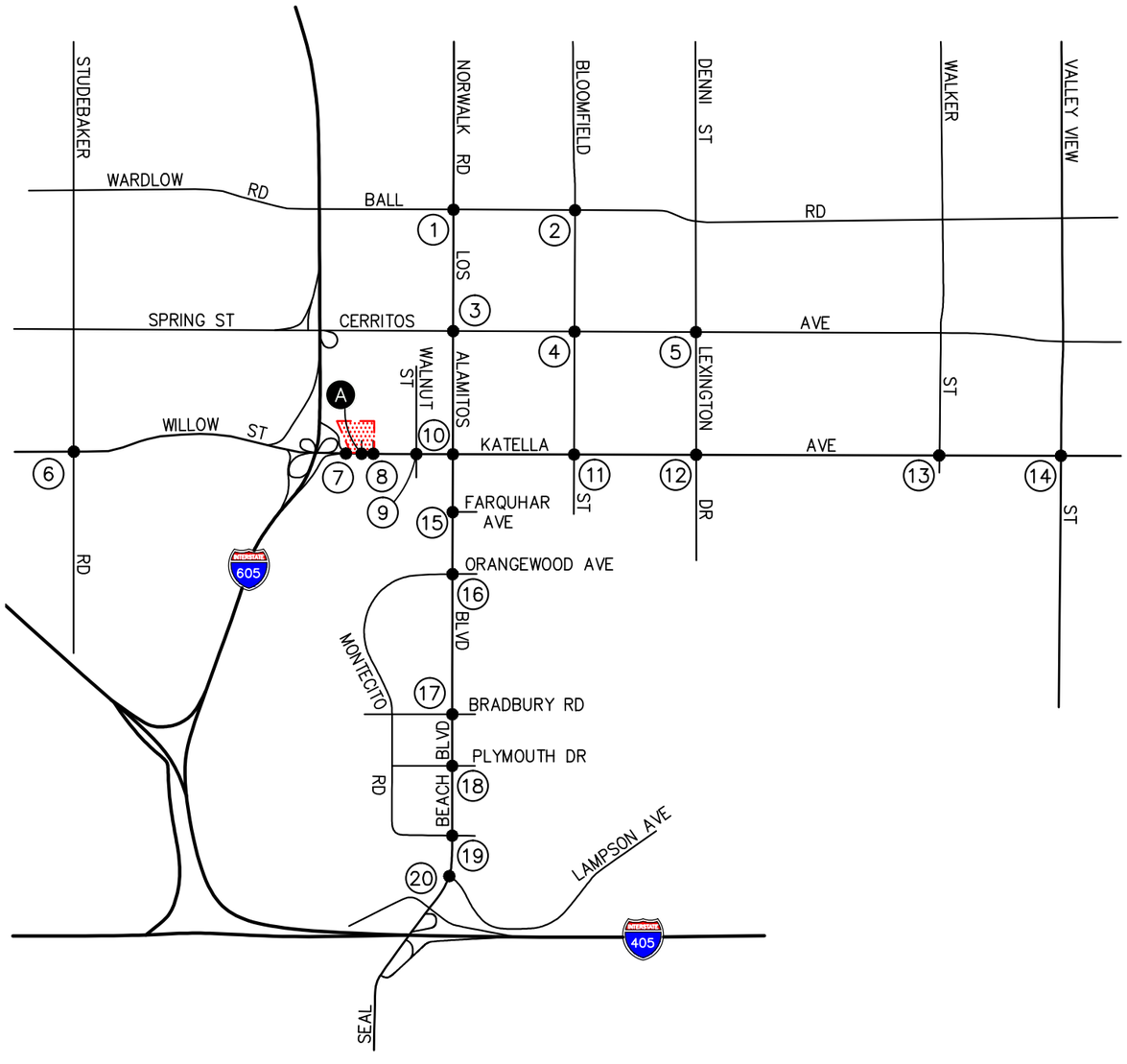
LINSCOTT LAW & GREENSPAN engineers

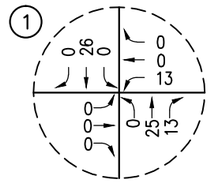
N NO SCALE

KEY
(#) = STUDY INTERSECTION
(XX) = PASS-BY
= PROJECT SITE

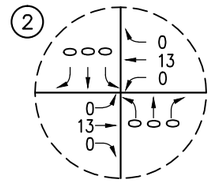
FIGURE 5-5

AM PEAK HOUR PROJECT TRAFFIC VOLUMES
VILLAGE 605, LOS ALAMITOS

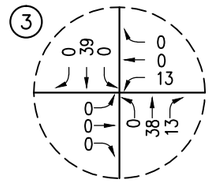




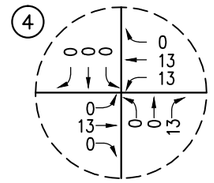
NORWALK BLVD @
WARDLOW ROAD



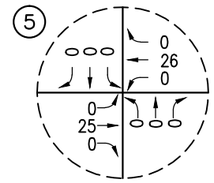
BLOOMFIELD ST @
BALL RD



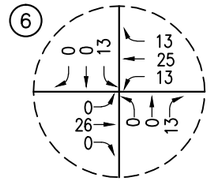
LOS ALAMITOS BLVD @
CERRITOS AVE



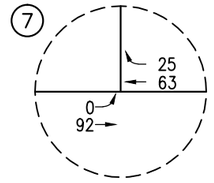
BLOOMFIELD ST @
CERRITOS AVE



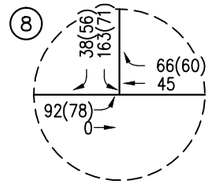
DENNI ST/
LEXINGTON DR @
CERRITOS AVE



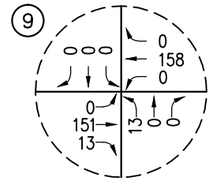
STIUDEBAKER RD @
WILLOW ST



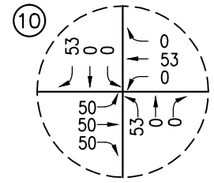
I-605 NB RAMPS @
KATELLA AVE



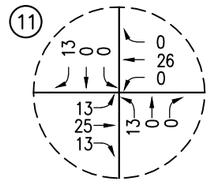
CIVIC CENTER DR @
KATELLA AVE



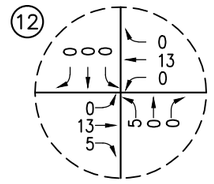
WALNUT ST/
WELLINGSFORD RD @
KATELLA AVE



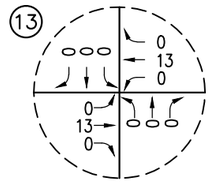
LOS ALAMITOS BLVD @
KATELLA AVE



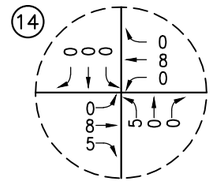
BLOOMFIELD ST @
KATELLA AVE



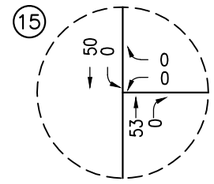
LEXINGTON DR @
KATELLA AVE



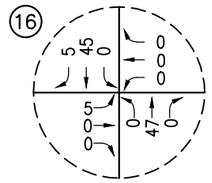
WALKER ST @
KATELLA AVE



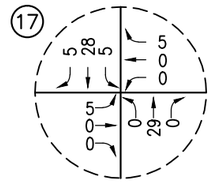
VALLEY VIEW ST @
KATELLA AVE



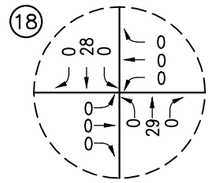
LOS ALAMITOS BLVD @
FARQUHAR AVE



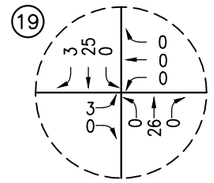
LOS ALAMITOS BLVD @
ORANGEWOOD AVE



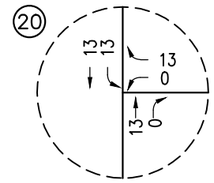
LOS ALAMITOS BLVD/
SEAL BEACH BLVD @
BRADBURY RD



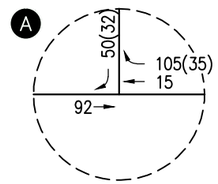
SEAL BEACH BLVD @
ROSSMOOR CENTER WY/
PLYMOUTH DR



SEAL BEACH BLVD @
ST CLOUD DR



SEAL BEACH BLVD @
LAMPSON AVE



PROJECT DWY 1 @
KATELLA AVE

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

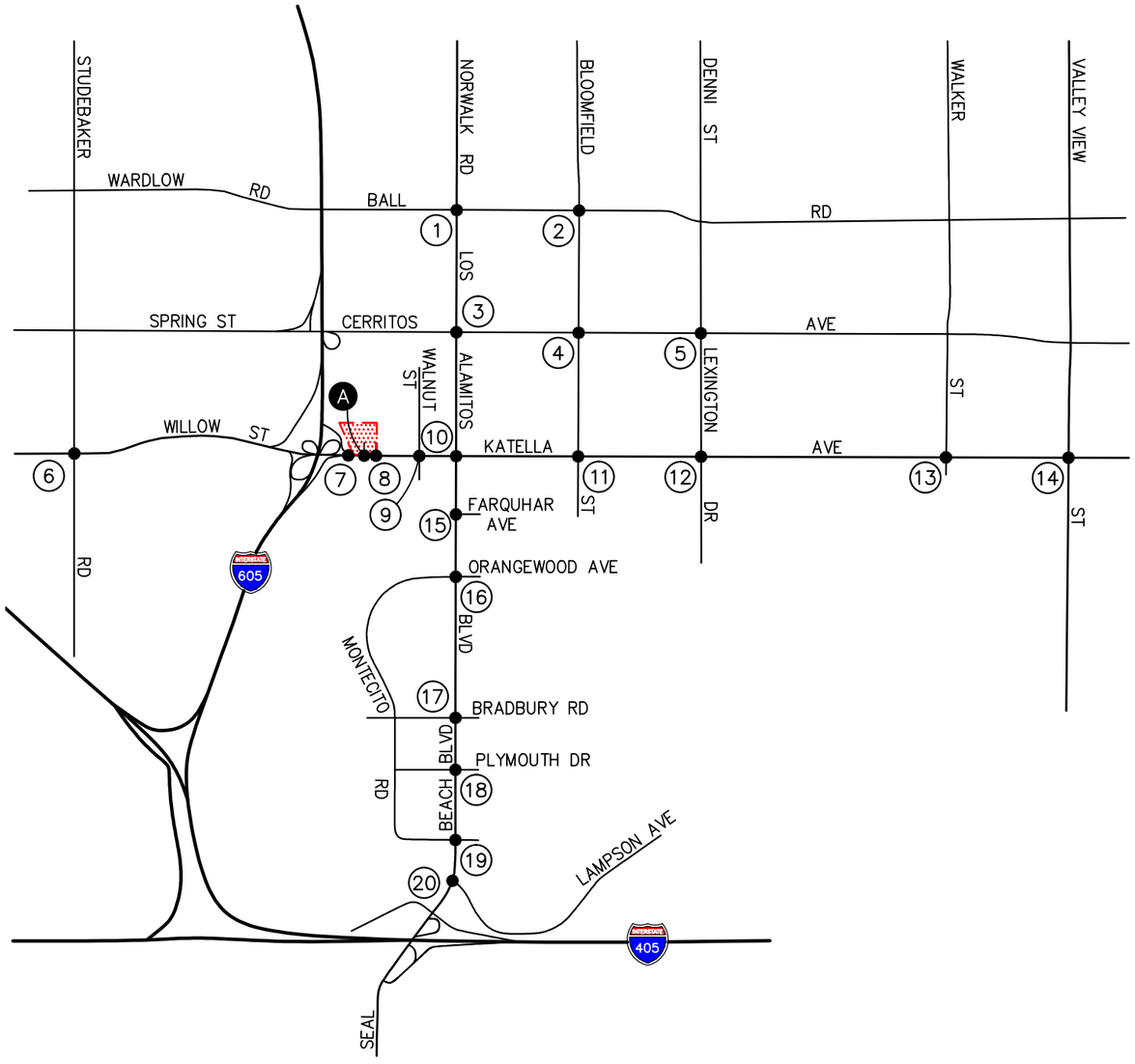
KEY

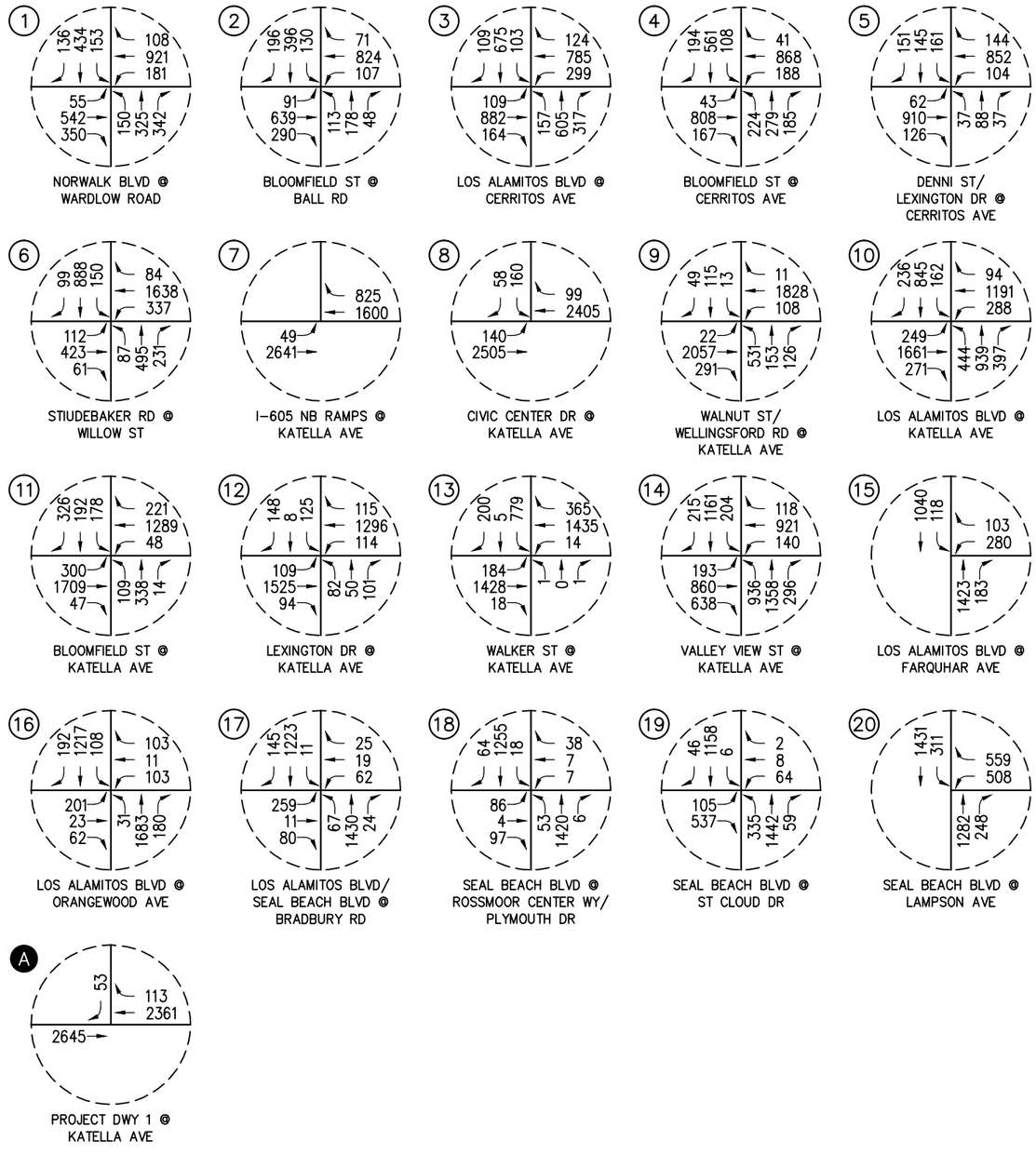
(#) = STUDY INTERSECTION
(XX) = PASS-BY
= PROJECT SITE

FIGURE 5-6

PM PEAK HOUR PROJECT TRAFFIC VOLUMES

VILLAGE 605, LOS ALAMITOS





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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

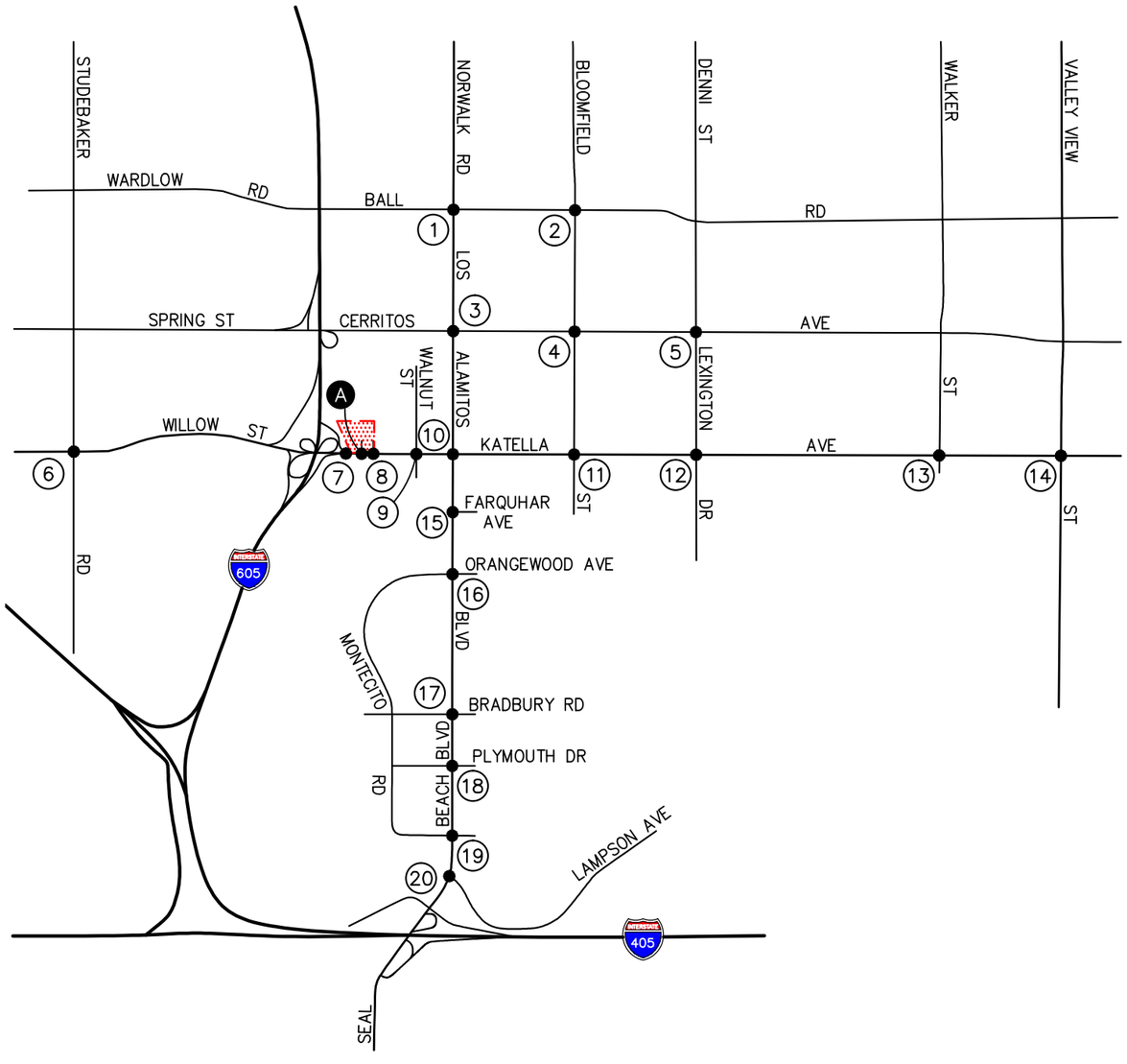
KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 5-7

BASELINE PLUS PROJECT
AM PEAK HOUR TRAFFIC VOLUMES
VILLAGE 605, LOS ALAMITOS



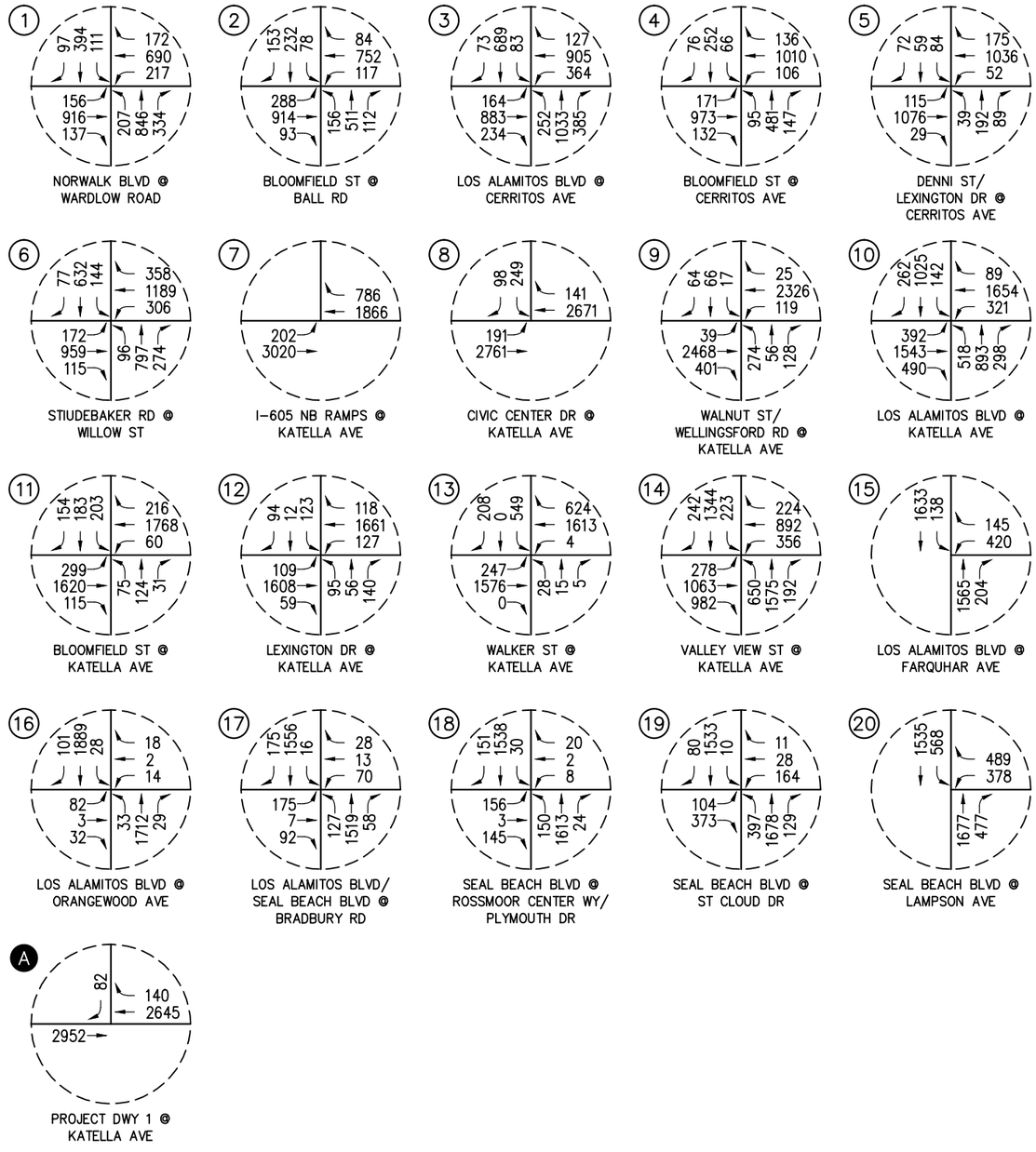


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FIGURE 5-8

BASELINE PLUS PROJECT
PM PEAK HOUR TRAFFIC VOLUMES
VILLAGE 605, LOS ALAMITOS

TABLE 5-1

PROJECT TRAFFIC GENERATION FORECAST[5]

ITE Land Use Code/ Project Description	Daily 2-Way	AM Peak Hour Enter	AM Peak Hour Exit	AM Peak Hour Total	PM Peak Hour Enter	PM Peak Hour Exit	PM Peak Hour Total
Generation Factors:							
• 492: Health/Fitness Club (TE/1000 SF)	32.93	50%	50%	1.41	57%	43%	3.53
• 710: General Office Building (TE/1000 SF) [A]	11.90	88%	12%	1.76	17%	83%	1.64
• 820: Shopping Center (TE/1000 SF)	42.70	62%	38%	0.96	48%	52%	3.71
• 850: Supermarket (TE/1000 SF)	102.24	62%	38%	3.40	51%	49%	9.48
• 932: High-Turnover (Sit-Down) Restaurant (TE/1000 SF)	127.15	55%	45%	10.81	60%	40%	9.85
• 934: Fast-Food Restaurant with Drive-Thru (TE/1000 SF)	496.12	51%	49%	45.42	52%	48%	32.65
Existing Development: [B]							
• Office Buildings (150,342 SF)	1,790	233	32	265	42	205	247
Proposed Project:							
• 820: Retail (64,130 SF)	2,738	38	24	62	114	124	238
Less Pass-by Trips (AM 0%, PM 34%)	--	0	0	0	-39	-42	-81
Subtotal	*2,738*	*38*	*24*	*62*	*75*	*82*	*157*
• 492: Fitness/Gym (5,000 SF)	165	4	3	7	10	8	18
Less Pass-by Trips (AM 0%, PM 0%)	--	0	0	0	0	0	0
Subtotal	*165*	*4*	*3*	*7*	*10*	*8*	*18*
• 850: Market (28,000 SF)	2,863	59	36	95	135	130	265
Less Pass-by Trips (AM 0%, PM 36%)	--	0	0	0	-49	-46	-95
Subtotal	*2,863*	*59*	*36*	*95*	*86*	*84*	*170*
• 932: High-Turnover Restaurant (9,750 SF)	1,240	58	47	105	58	38	96
Less Pass-by Trips (AM 0%, PM 43%)	--	0	0	0	-25	-16	-41
Subtotal	*1,240*	*58*	*47*	*105*	*33*	*22*	*55*
• 934: Fast-Food with Drive-Thru (7,000 SF)	3,473	162	156	318	119	110	229
Less Pass-by Trips (AM 49%, PM 50%)	--	-79	-77	-156	-60	-55	-115
Subtotal	*3,473*	*83*	*79*	*162*	*59*	*55*	*114*
Total Project Trip Generation	**10,479**	**242**	**189**	**431**	**263**	**251**	**514**
Net Project Trip Generation (Proposed Project - Existing Use)	**8,689**	**9**	**157**	**166**	**221**	**46**	**267**

Notes:

[A] - Trip generation rates based on the following equations:

- Daily: Ln(T) = 0.76Ln(X) + 3.68
- AM Peak Hour: Ln(T) = 0.80Ln(X) + 1.57
- PM Peak Hour: T = 1.12(X) + 78.45

[B] Existing Development Trip Generation = Estimated trips that would be generated by the existing site if the buildings were currently occupied. These trips are also added to the existing traffic volumes to establish "baseline" traffic conditions.

[5] Source: *Trip Generation*, 9th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2012). Applicable AM peak hour and PM peak hour pass-by adjustment factors are published in *Trip Generation Handbook, 3rd Edition, an ITE Proposed Recommended Practice*, Institute of Transportation Engineers (ITE), Washington, D.C. (2014).

6.0 FUTURE TRAFFIC CONDITIONS

6.1 Ambient Traffic Growth

Horizon year background traffic growth estimates have been calculated using an ambient traffic growth factor. The ambient traffic growth factor is intended to include unknown and future related 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 (1.0%) per year. Applied to the Year 2016 baseline traffic volumes, this factor results in a 3.0% growth in existing volumes to the near-term horizon year 2019.

6.2 Related 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 (related projects) in the area has been researched at the City of Los Alamitos, City of Seal Beach, City of Cypress and City of Hawaiian Gardens. With this information, the potential impact of the proposed Project can be evaluated within the context of the opening year impact of all ongoing development.

Related 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 these related projects will be developed and operational when the proposed Project is operational. This is the most conservative, worst-case approach, since the exact timing of each related project is uncertain. In addition, impacts for these related projects would likely be, or have been, subject to mitigation measures, which could reduce potential impacts. Under this analysis, however, those mitigation measures are not considered.

Based on our research, there is one (1) related project in the City of Los Alamitos, one (1) related project in the City of Seal Beach, nine (9) related projects in the City of Cypress, and one (1) related project in the City of Hawaiian Gardens. These twelve (12) related projects have been included as part of the background setting.

Table 6-1 provides a brief description for each of the twelve (12) related projects. ***Figure 6-1*** graphically illustrates the location of the twelve (12) related projects. These related projects are expected to generate vehicular traffic, which may affect the operating conditions of the key study intersections.

Table 6-2 summarizes the trip generation rates for the various land uses of the twelve (12) related projects. ***Table 6-3*** summarizes the trip generation potential for all twelve (12) related projects on a daily and peak hour basis for a typical weekday. As shown, the related projects are expected to generate 33,255 daily trips, with 1,165 trips (653 inbound, 512 outbound) anticipated during the AM peak hour and 2,053 trips (1,132 inbound, 921 outbound) produced during the PM peak hour.

The AM and PM peak hour traffic volumes associated with the twelve (12) related projects in the Opening Year 2019 are presented in ***Figures 6-2*** and ***6-3***, respectively.

6.3 Opening Year 2019 Traffic Volumes

Figures 6-4 and ***6-5*** present the AM and PM peak hour related traffic volumes (existing baseline traffic + ambient growth + related projects) at the twenty (20) key study intersections for the Opening Year 2019, respectively. ***Figures 6-6*** and ***6-7*** illustrate the Opening Year 2019 forecast AM and PM peak hour traffic volumes, with the removal of the existing office trips and the inclusion of the trips generated by the proposed Project, respectively.

TABLE 6-1
LOCATION AND DESCRIPTION OF RELATED PROJECTS

No.	Related Project	Address	Description/Size
City of Los Alamitos[6]			
1.	Fairfield Inn Hotel Development	Southeast corner of Los Alamitos Boulevard and Briggeman Drive	108 room hotel
City of Seal Beach[6]			
2.	LA Fitness	12411 Seal Beach Boulevard	37,000 SF health club
City of Cypress[7]			
3.	TTM 17770	4604 Lincoln Avenue	57 condominiums
4.	TTM 17853	9191 Bloomfield Street	19 condominiums
5.	DRC 3036	4552 Lincoln Avenue	67 apartments
6.	Barton Place (TTM 17830)	Northeast corner of Katella Avenue and Enterprise Drive	244 DU single-family senior housing, 47,876 SF retail
7.	City Ventures (TTM 17917)	5300 & 5400 Orange Avenue	52 condominiums
8.	DRC 2007	Northwest corner of Katella Avenue and Winners Circle	146,300 SF retail center
9.	DRC 3030	5001 Cerritos Avenue	6,000 SF office
10.	DRC 3018	4501 Cerritos Avenue	8,561 SF office
11.	DRC 3037	5895 Katella Avenue	13,920 SF restaurant food court
City of Hawaiian Gardens[8]			
12.	Hawaiian Gardens Casino Expansion Project[9]	11871 E Carson Street	Construction of 102,425 SF of gaming floor area, demolition of existing casino facility

6 Source: City of Los Alamitos Planning Department.

7 Source: City of Cypress Planning Department.

8 Source: City of Hawaiian Gardens Planning Department.

9 The Hawaiian Garden Casino Expansion Project was completed in April of 2016. However, the existing counts were collected in March of 2016 prior to the completion of the Hawaiian Garden Casino Expansion Project, therefore, it is included as part of the cumulative setting.

TABLE 6-2

RELATED PROJECTS TRIP GENERATION RATES[10]

ITE Land Use Code	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
▪ 310: Hotel (TE/Room)	8.17	59%	41%	0.53	51%	49%	0.60
▪ 230: Condominiums/Townhomes (TE/DU)	5.81	17%	83%	0.44	67%	33%	0.52
▪ 220: Apartment (TE/DU)	6.65	20%	80%	0.51	65%	35%	0.62
▪ 820: Shopping Center	59.44	62%	38%	1.34	48%	52%	5.28
▪ 710: General Office (TE/1000 SF)	11.03	88%	12%	1.56	17%	83%	1.49
▪ 932: High-Turnover Sit-Down Restaurant (TE/1000 SF)	127.15	55%	45%	10.81	60%	40%	9.85

[10] Source: *Trip Generation, 9th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2012).*

TABLE 6-3
RELATED PROJECTS TRIP GENERATION FORECAST[11]

Related Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
1. Fairfield Inn Hotel Development	882	34	23	57	33	32	65
2. LA Fitness[12]	1,218	26	26	52	75	56	131
3. TTM 17770	331	4	21	25	20	10	30
4. TTM 17853	110	1	7	8	7	3	10
5. DRC 3036	446	7	27	34	27	15	42
6. Barton Place (TTM 17830)[13]	3,256	108	101	209	101	80	181
7. City Ventures (TTM 17917)	302	4	19	23	18	9	27
8. DRC 2007	8,697	122	75	197	371	402	773
Less Pass-By (Daily 4%, AM 0%, PM 34%)	-348	0	0	0	-126	-137	-263
Subtotal	8,349	122	75	197	245	265	510
9. DRC 3030	66	8	1	9	2	7	9
10. DRC 3018	94	11	2	13	2	11	13
11. DRC 3037	1,770	83	67	150	82	55	137
Less Pass-By (Daily 6%, AM 0%, PM 43%)	-106	0	0	0	-35	-24	-59
Subtotal	1,664	83	67	150	47	31	78
12. Hawaiian Gardens Casino Expansion Project[14]	16,537	245	143	388	555	402	957
Related Projects Trip Generation Potential	**33,255**	**653**	**512**	**1,165**	**1,132**	**921**	**2,053**

11 Unless otherwise noted; Source: *Trip Generation, 9th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2012).* Where applicable, pass-by adjustment factors were utilized and are reflected in the cumulative projects trip generation potential.

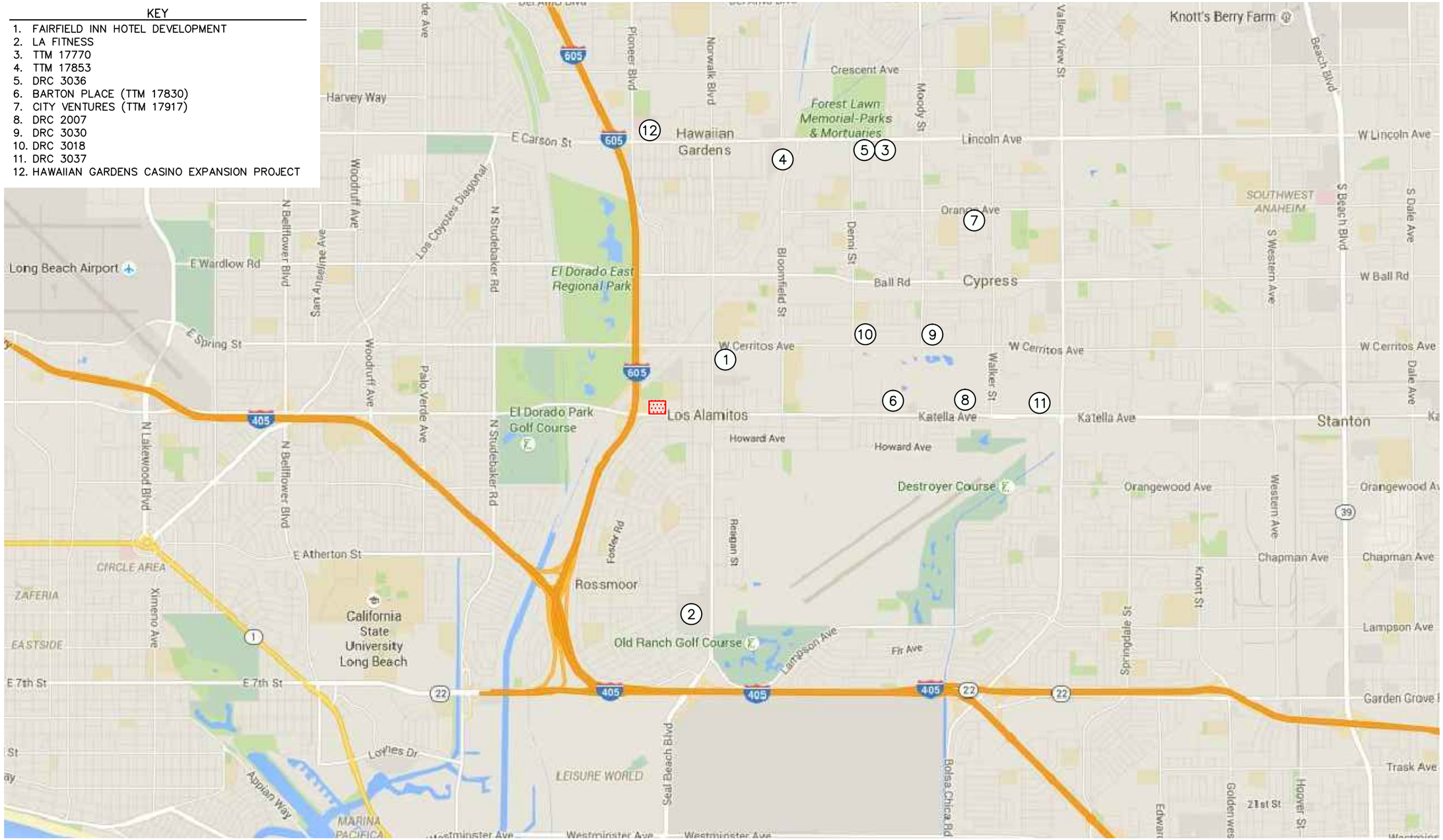
12 *Health Club within the Shops at Rossmoor Traffic Analysis,* prepared by LSA, dated 2015.

13 *Traffic Impact Study for the Barton Place Mixed-Use Project,* prepared by Kimley-Horn and Associates, Inc., dated April 2015.

14 *Traffic Impact Study for the Hawaiian Gardens Casino Expansion Project,* prepared by KOA Corporation, dated September 28, 2012.

KEY

1. FAIRFIELD INN HOTEL DEVELOPMENT
2. LA FITNESS
3. TTM 17770
4. TTM 17853
5. DRC 3036
6. BARTON PLACE (TTM 17830)
7. CITY VENTURES (TTM 17917)
8. DRC 2007
9. DRC 3030
10. DRC 3018
11. DRC 3037
12. HAWAIIAN GARDENS CASINO EXPANSION PROJECT



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N NO SCALE

KEY

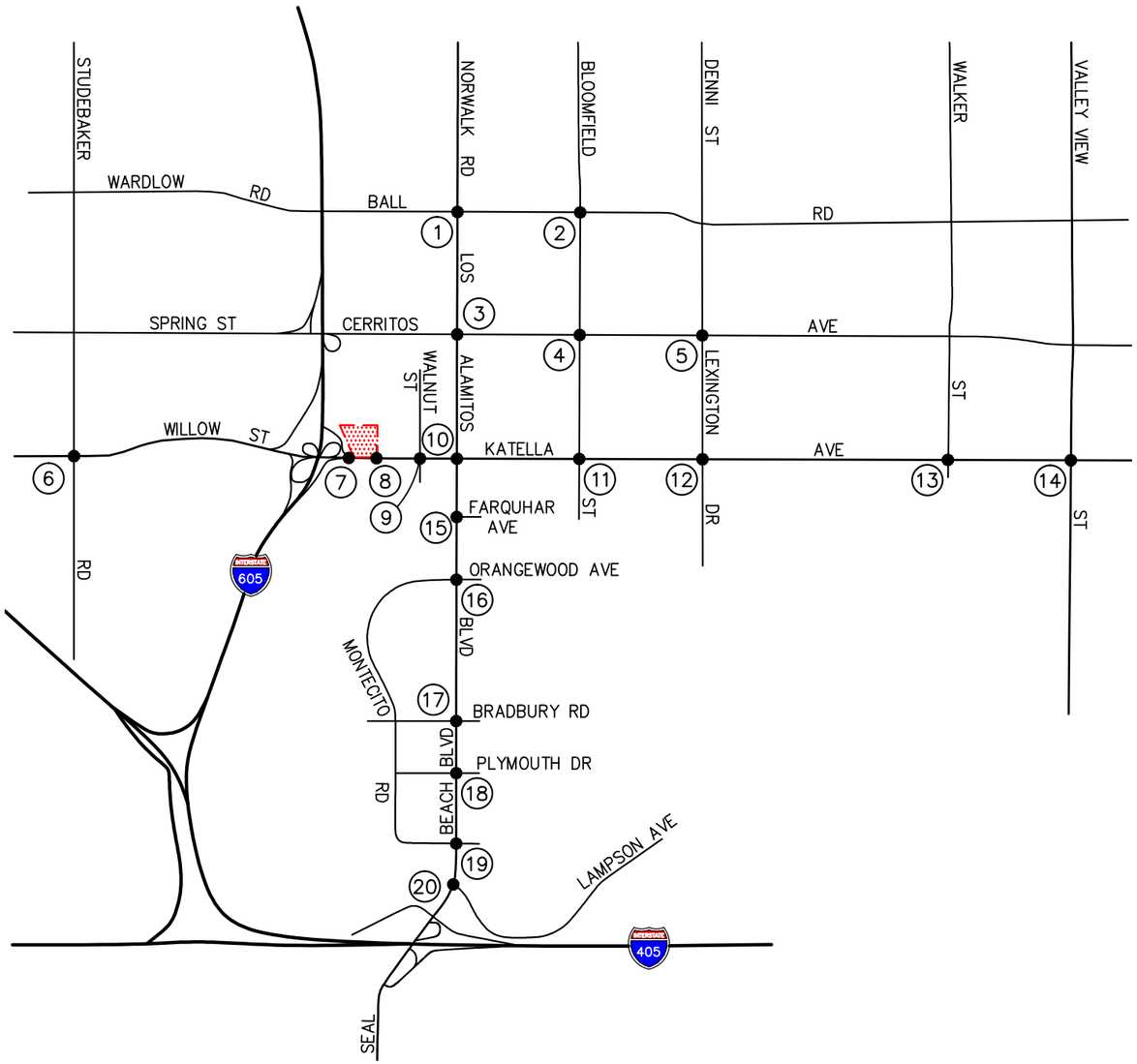
(#) = RELATED PROJECT LOCATION

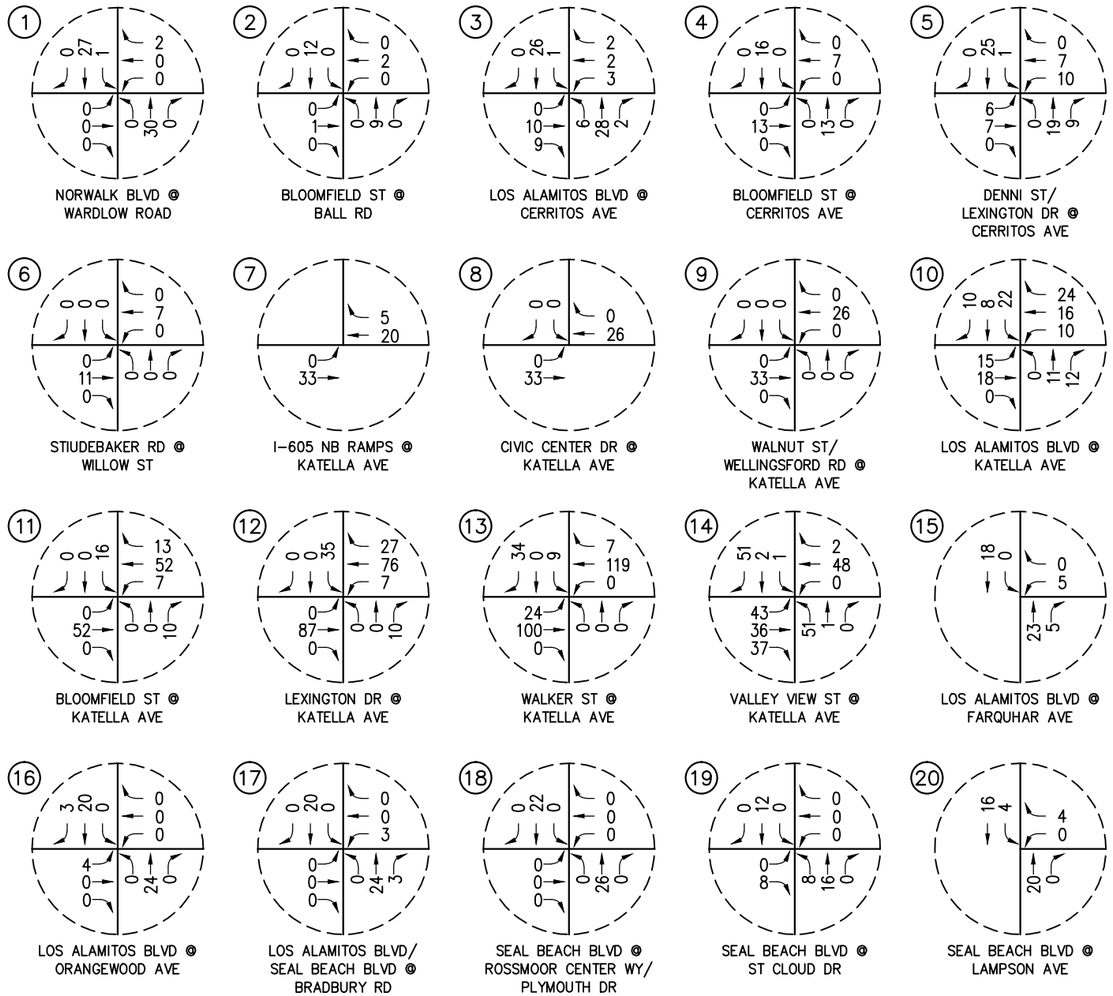
= PROJECT SITE

FIGURE 6-1

LOCATION OF RELATED PROJECTS

VILLAGE 605, LOS ALAMITOS





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(#) = STUDY INTERSECTION

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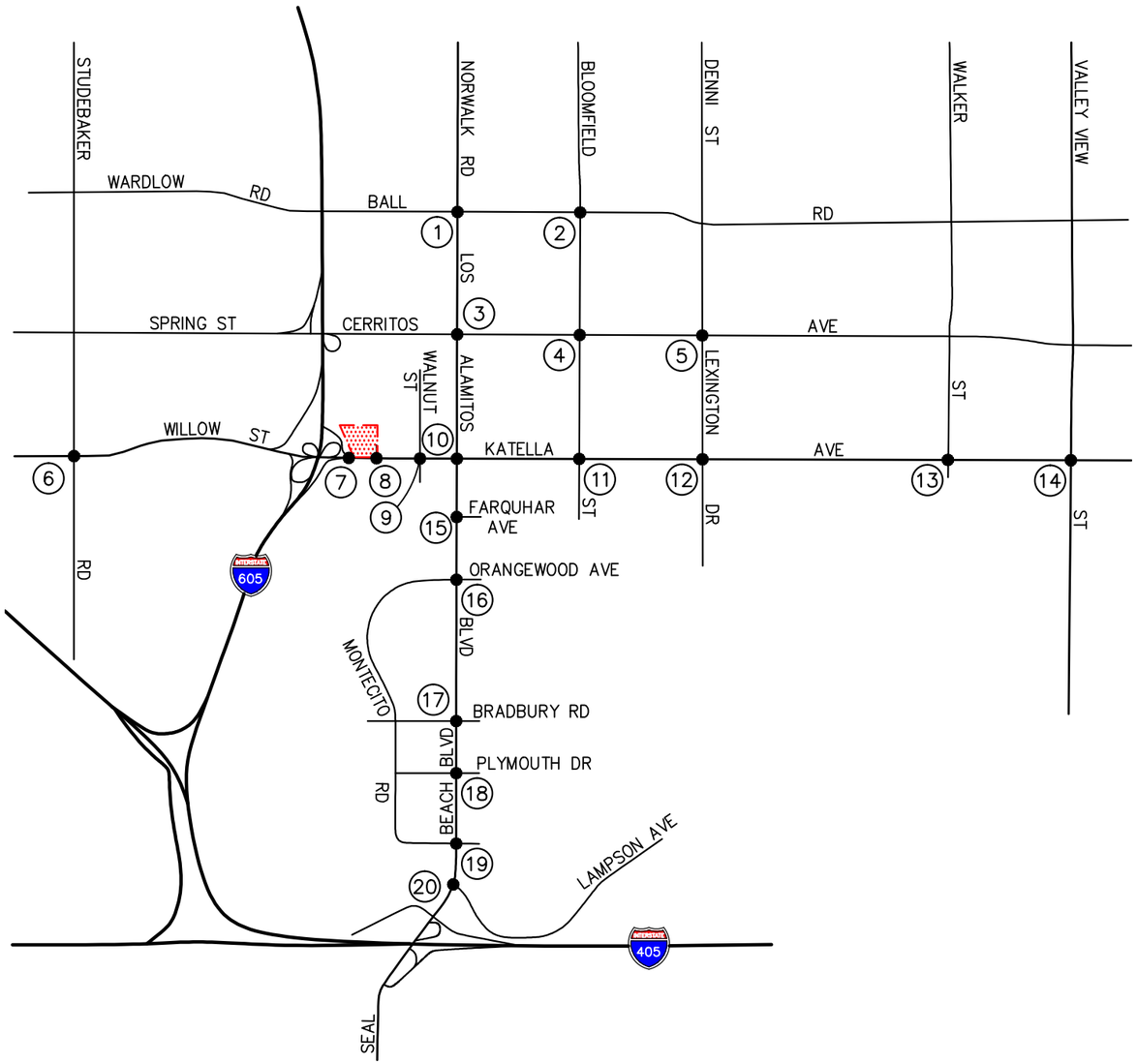
FIGURE 6-2

AM PEAK HOUR RELATED PROJECTS TRAFFIC VOLUMES

VILLAGE 605, LOS ALAMITOS



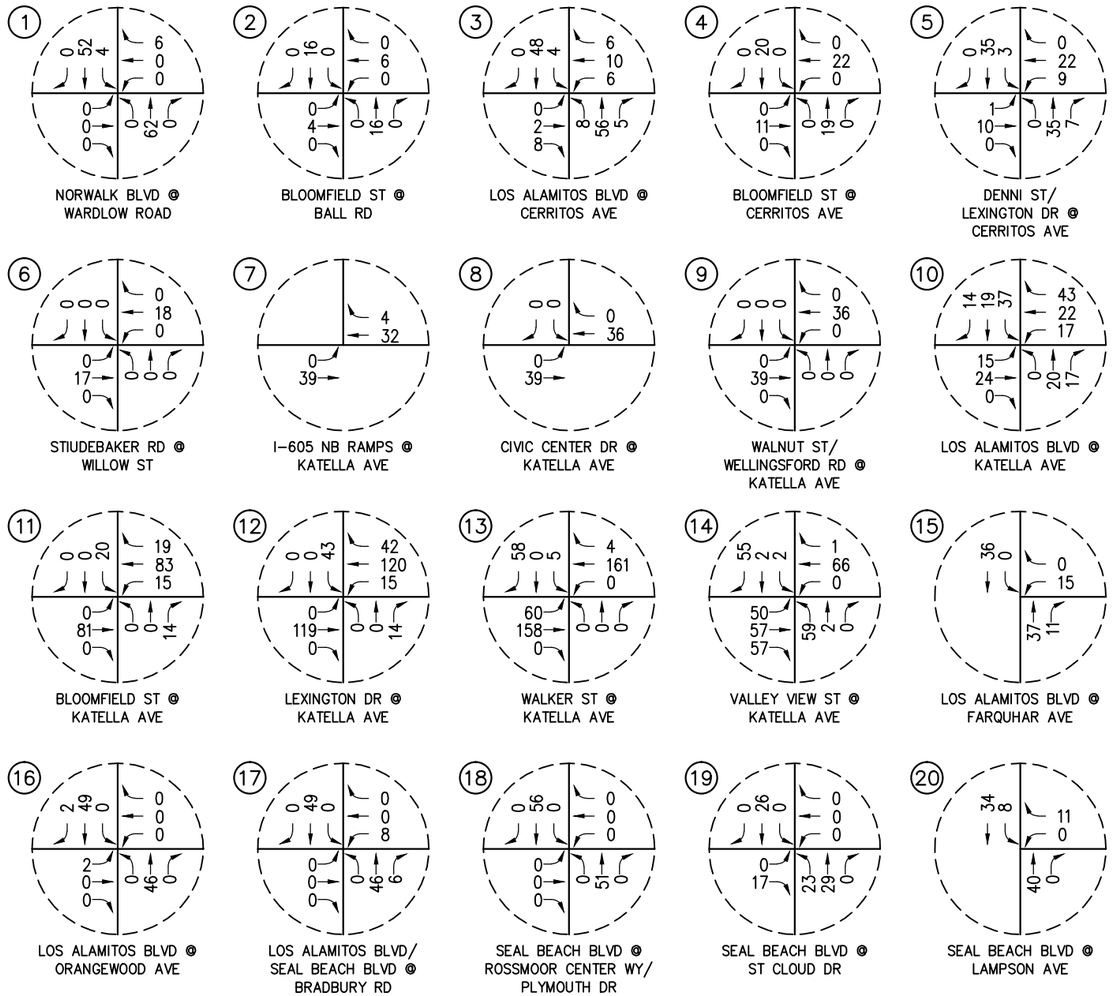


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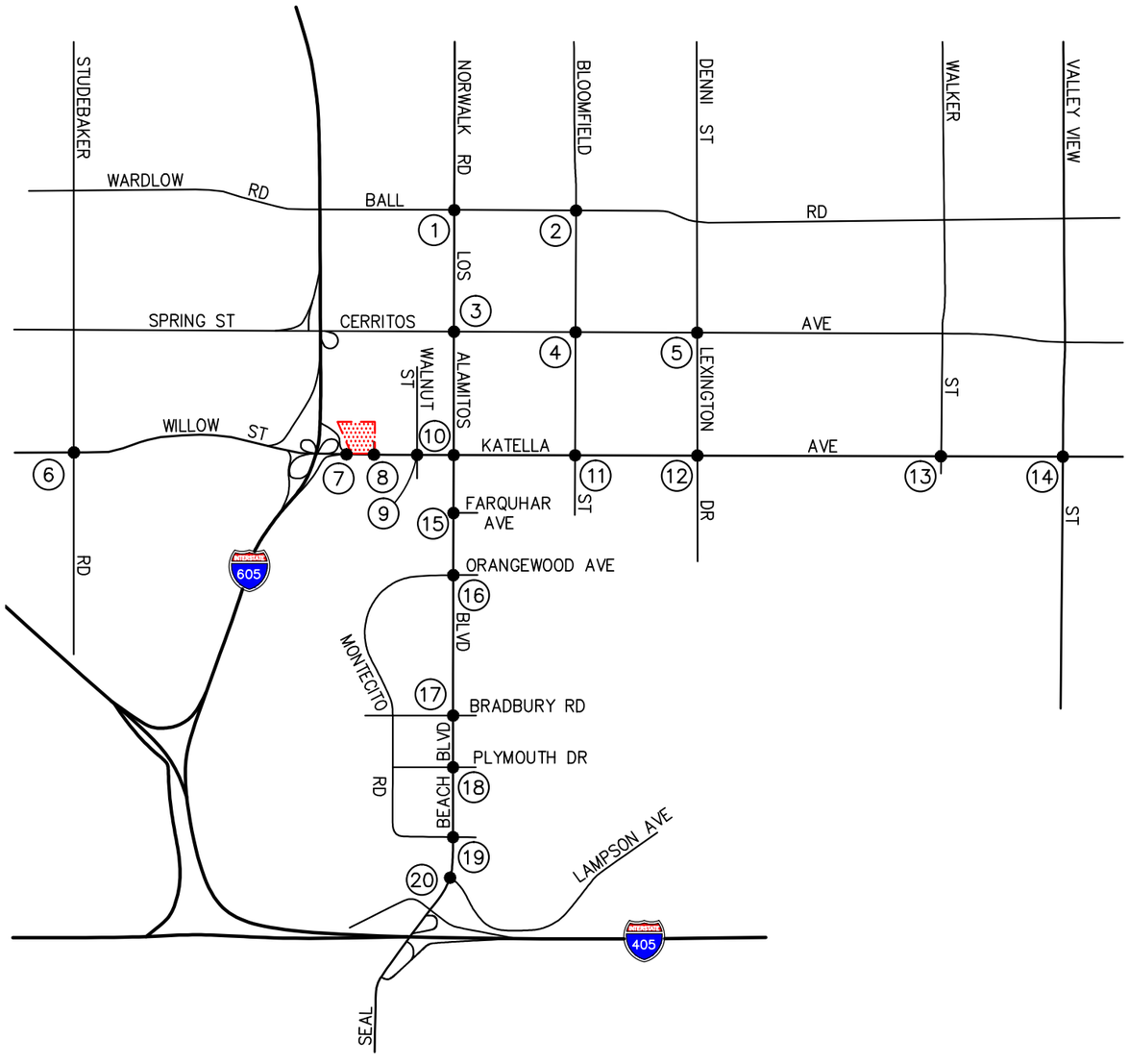
FIGURE 6-3

PM PEAK HOUR RELATED PROJECTS TRAFFIC VOLUMES

VILLAGE 605, LOS ALAMITOS



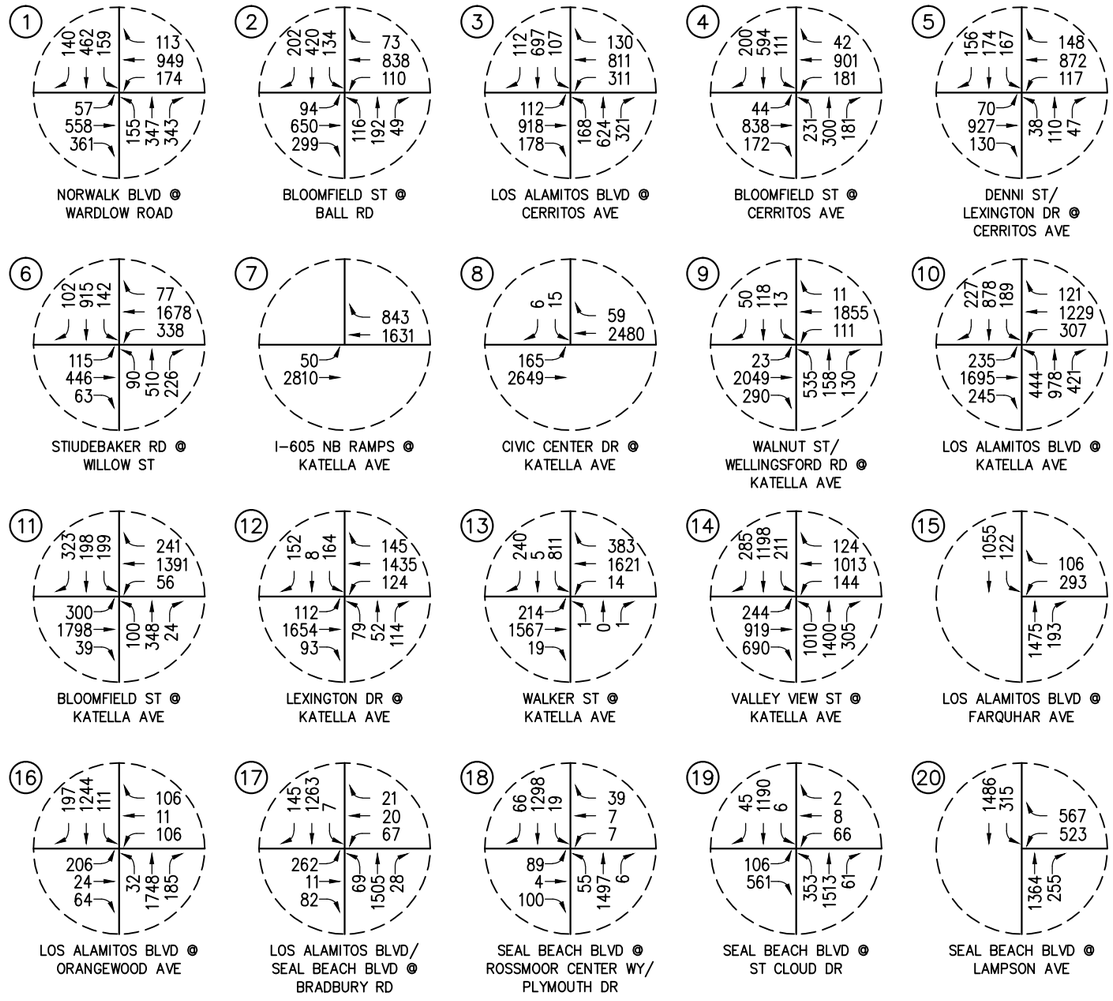


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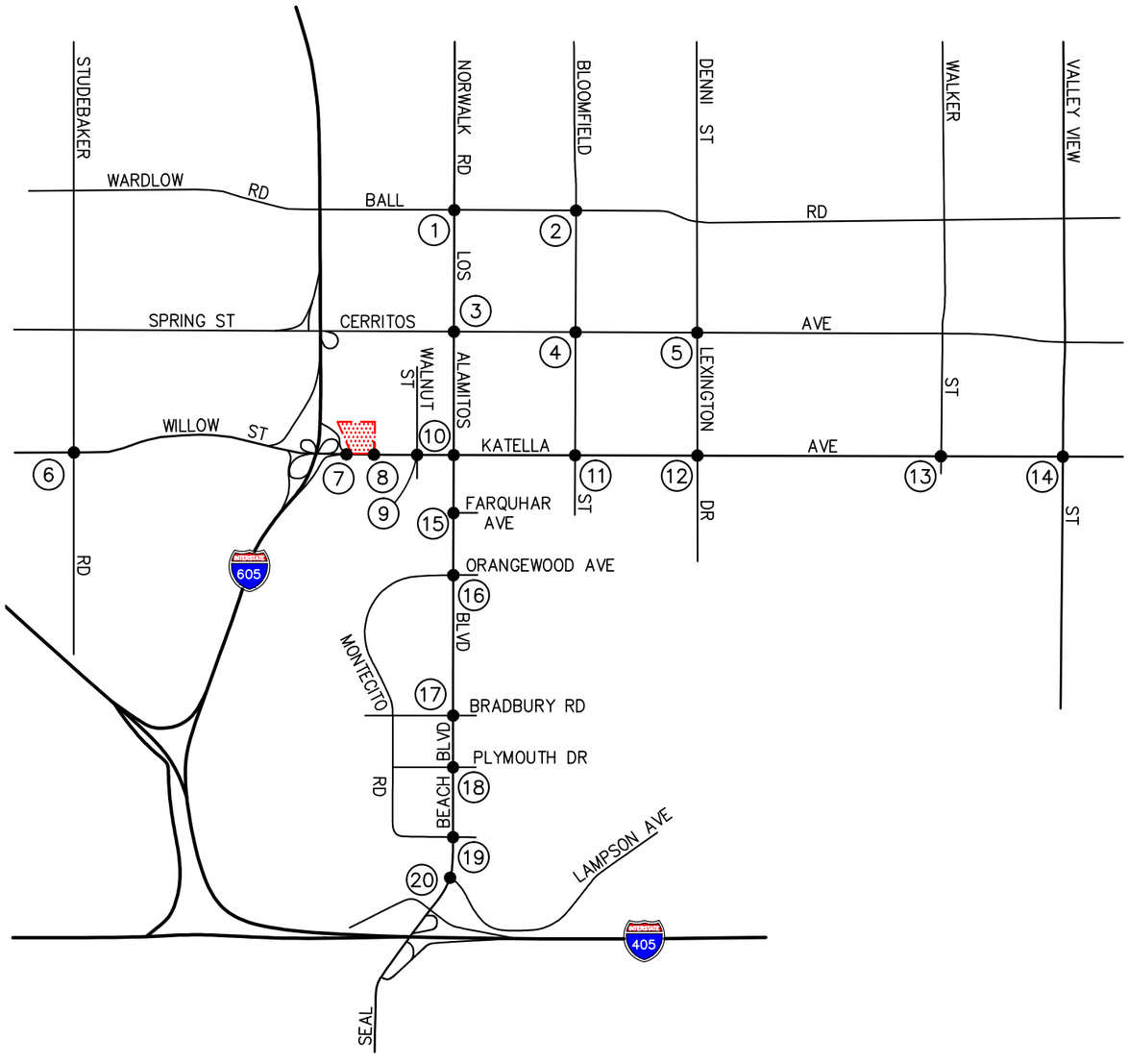
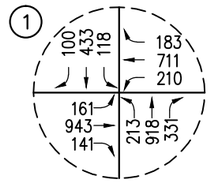
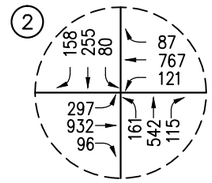
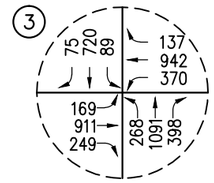
FIGURE 6-4

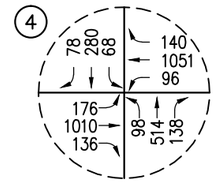
OPENING YEAR 2019 AM PEAK HOUR TRAFFIC VOLUMES
VILLAGE 605, LOS ALAMITOS

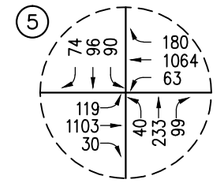


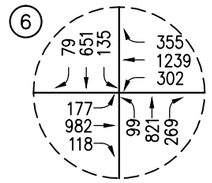


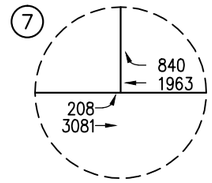


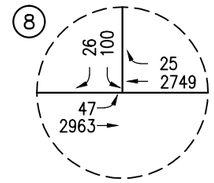


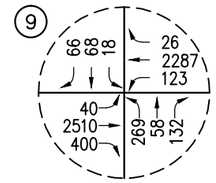


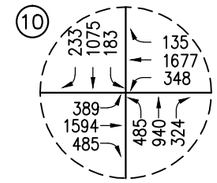


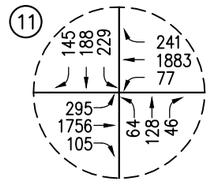


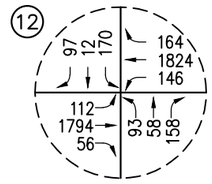


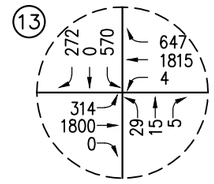


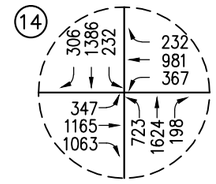


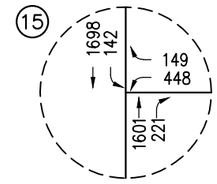


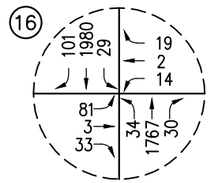


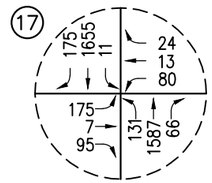


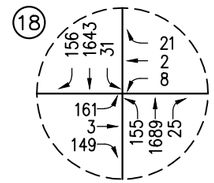


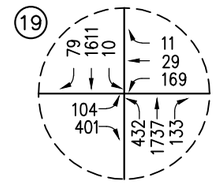


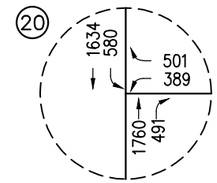












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KEY

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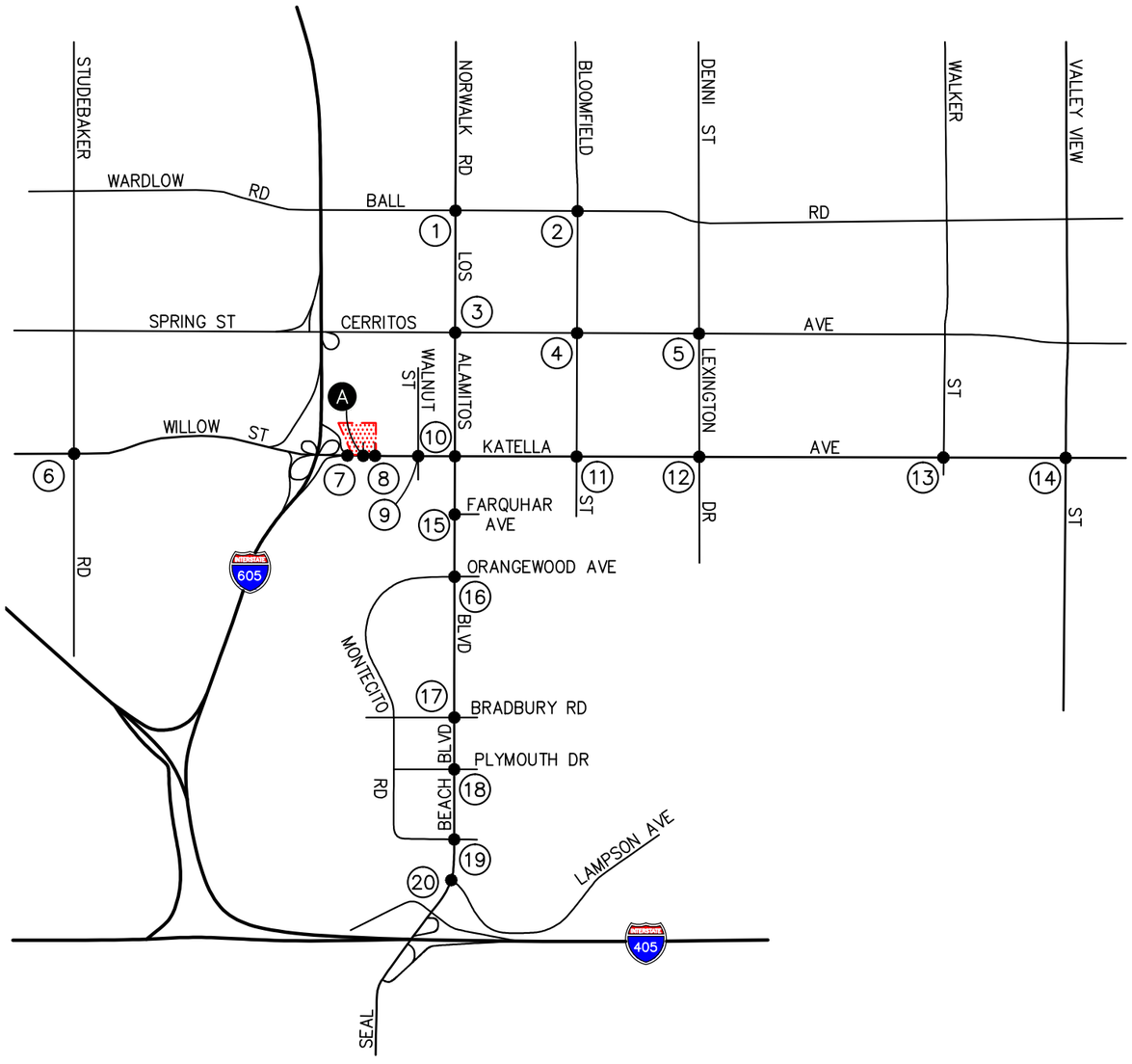
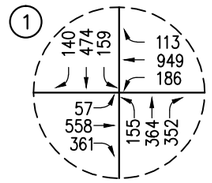
= PROJECT SITE

FIGURE 6-5

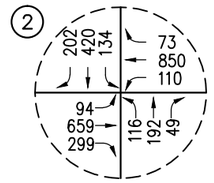
OPENING YEAR 2019 PM PEAK HOUR TRAFFIC VOLUMES

VILLAGE 605, LOS ALAMITOS

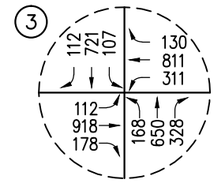




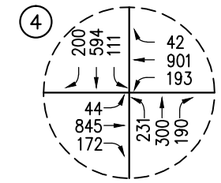
1 NORWALK BLVD @ WARDLOW ROAD



2 BLOOMFIELD ST @ BALL RD



3 LOS ALAMITOS BLVD @ CERRITOS AVE



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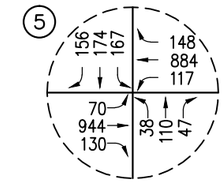
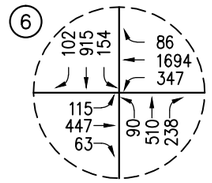
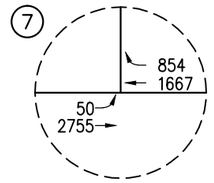


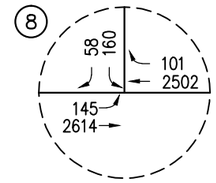
5 DENNI ST/ LEXINGTON DR @ CERRITOS AVE



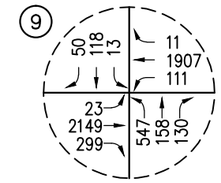
6 STIUDEBAKER RD @ WILLOW ST



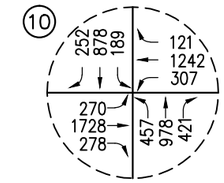
7 I-605 NB RAMPS @ KATELLA AVE



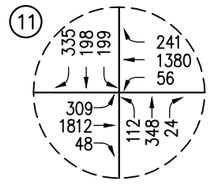
8 CIVIC CENTER DR @ KATELLA AVE



9 WALNUT ST/ WELLINGSFORD RD @ KATELLA AVE



10 LOS ALAMITOS BLVD @ KATELLA AVE



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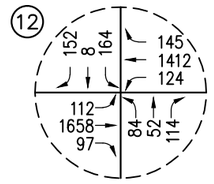
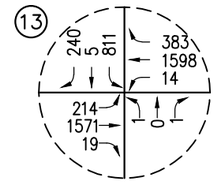
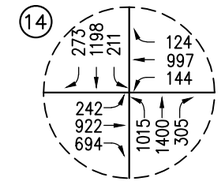


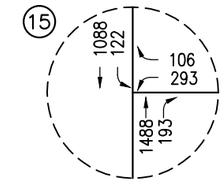
12 LEXINGTON DR @ KATELLA AVE



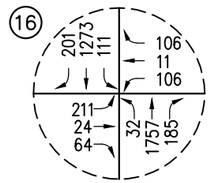
13 WALKER ST @ KATELLA AVE



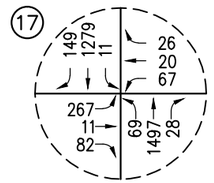
14 VALLEY VIEW ST @ KATELLA AVE



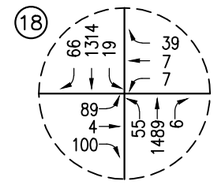
15 LOS ALAMITOS BLVD @ FARQUHAR AVE



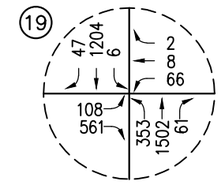
16 LOS ALAMITOS BLVD @ ORANGEWOOD AVE



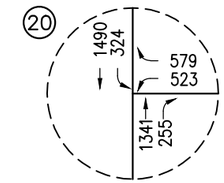
17 LOS ALAMITOS BLVD/ SEAL BEACH BLVD @ BRADBURY RD



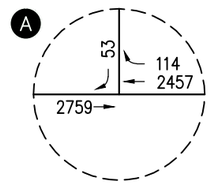
18 SEAL BEACH BLVD @ ROSSMOOR CENTER WY/ PLYMOUTH DR



19 SEAL BEACH BLVD @ ST CLOUD DR



20 SEAL BEACH BLVD @ LAMPSON AVE



PROJECT DWY 1 @ KATELLA AVE

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N NO SCALE

KEY

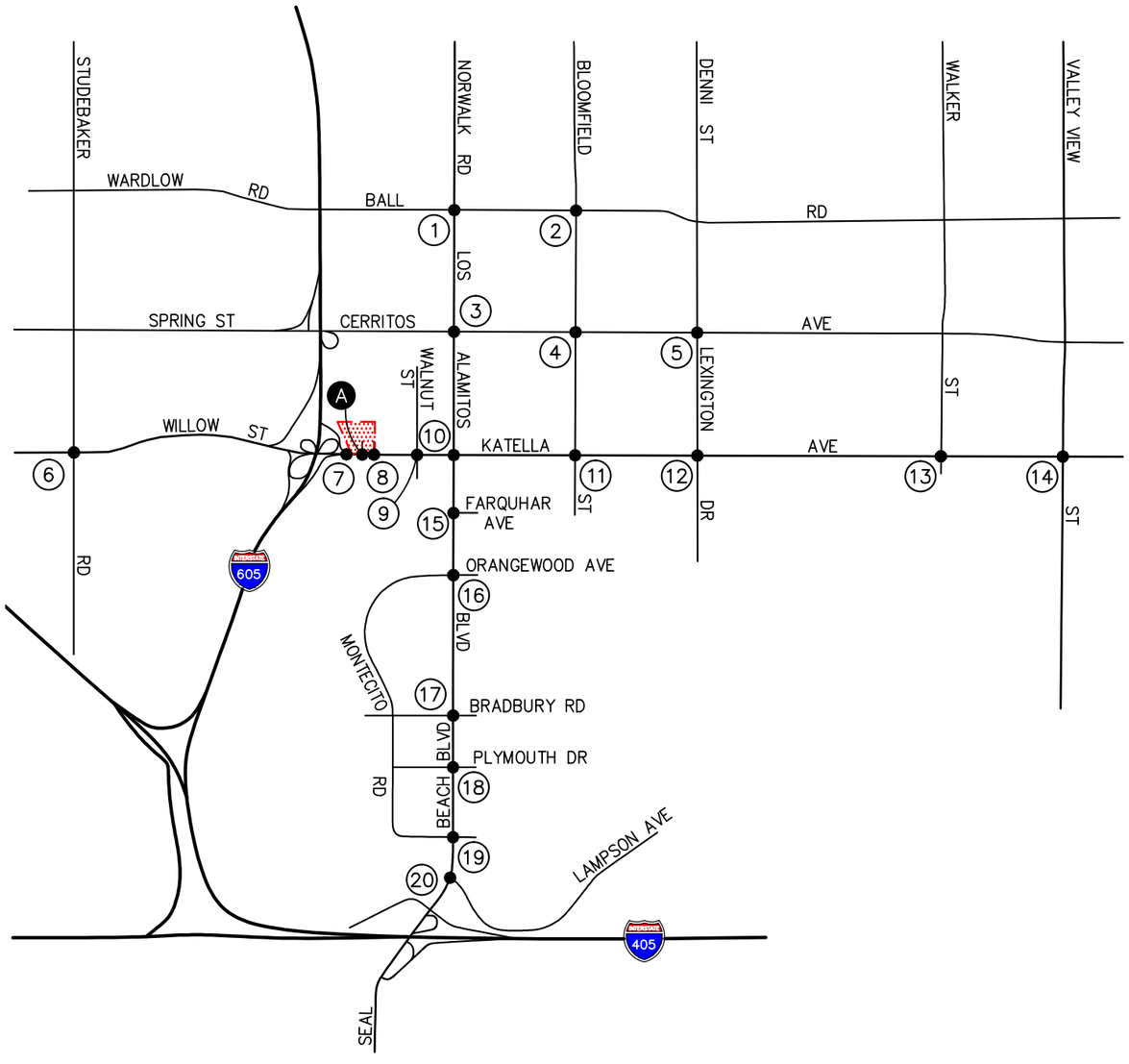
(#) = STUDY INTERSECTION

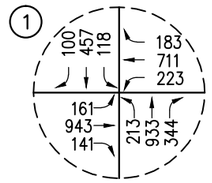
= PROJECT SITE

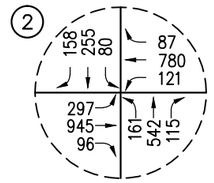
FIGURE 6-6

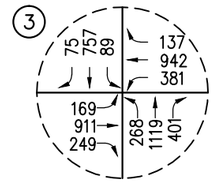
OPENING YEAR 2019 AM PEAK HOUR TRAFFIC VOLUMES WITH PROJECT

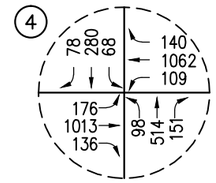
VILLAGE 605, LOS ALAMITOS

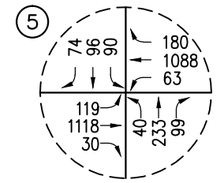


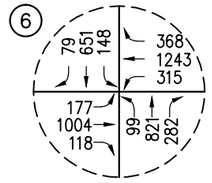


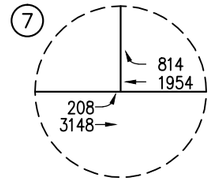


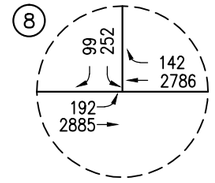


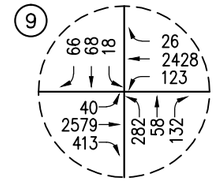


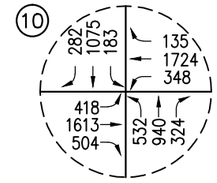


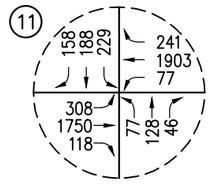


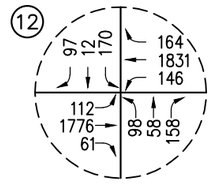


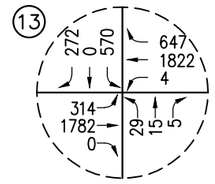


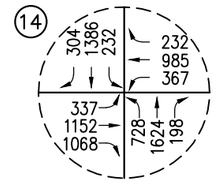


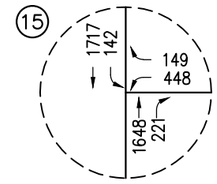


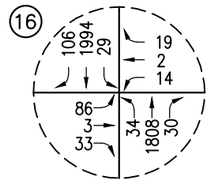


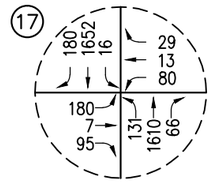


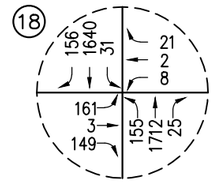


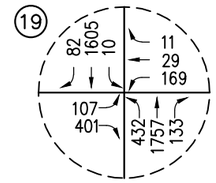


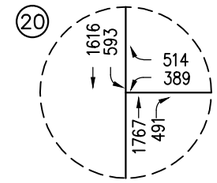


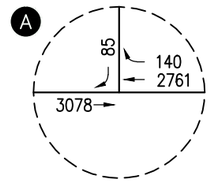












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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 6-7

OPENING YEAR 2019 PM PEAK HOUR
TRAFFIC VOLUMES WITH PROJECT
VILLAGE 605, LOS ALAMITOS

7.0 TRAFFIC IMPACT ANALYSIS METHODOLOGY

The relative impact of the added project traffic volumes generated by the proposed Project during the AM and PM peak hours was evaluated based on analysis of future operating conditions at the twenty (20) 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. The significance of the potential impacts of the project at each key intersection was then evaluated using the each City's LOS standards and significant transportation impact criteria defined below.

7.1 Level of Service Criteria

7.1.1 *City of Los Alamitos*

The City of Los Alamitos considers LOS D to be the minimum acceptable condition that should be maintained during the AM and PM peak hours for all intersections, with the following exceptions as stated in the Los Alamitos General Plan, dated March 2015:

A. There is a desire to prioritize pedestrians and/or bicyclists over vehicles
B. Insufficient ROW exists
C. The intersection or roadway is considered built out

Of the study intersections, the following intersections are exempt from the LOS D standard:

9. Walnut Street/Wallingsford Street at Katella Avenue
10. Los Alamitos Boulevard at Katella Avenue

In order to provide a quantitative basis for determining the significant traffic impact at a specific location, it was necessary to establish the criteria to be used in the analysis of intersections for this study. For this report, impacts to local and regional transportation systems shall be considered significant if the project increases traffic demand at a key study intersection by 1.0% of capacity (ICU increase ≥ 0.01), causing or worsening LOS E or F (ICU > 0.90).

7.1.2 *City of Long Beach*

Impacts to City of Long Beach intersections (i.e. key study intersections 1 and 6) are considered significant if:

- An unacceptable peak hour Level of Service (LOS) (i.e. LOS E or F) at any of the key 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).

7.1.3 *City of Seal Beach*

Impacts to City of Seal Beach intersections (i.e. key study intersections 18, 19 and 20) are considered significant if:

- An unacceptable peak hour Level of Service (LOS) (i.e. LOS E or F) at any of the key intersections is projected. The City of Seal Beach considers LOS D (ICU = 0.801 - 0.900) to be the minimum acceptable LOS for all intersections; and

- Per City of Seal Beach criteria, a significant transportation impact is determined based on a sliding scale that varies with LOS. At LOS A or B, the threshold of significance is an increase of 0.06 or greater in the ICU value. At LOS C or D, the threshold of significance is an increase of 0.04 or greater or 0.02 or greater, respectively, in the ICU value. This is reduced to 0.01 or greater under LOS E and F.

7.1.4 *City of Cypress*

The City of Cypress considers LOS D to be the minimum acceptable condition that should be maintained during the AM and PM peak hours for all intersections. For this report, impacts to local and regional transportation systems shall be considered significant if the project increases traffic demand at a key study intersection by 1.0% of capacity (ICU increase ≥ 0.01), causing or worsening LOS E or F (ICU > 0.90).

7.2 Traffic Impact Analysis Scenarios

The following scenarios are those for which volume/capacity calculations have been performed at the twenty (20) key intersections:

1. Baseline Traffic Conditions;
2. Baseline Plus Project Traffic Conditions;
3. Scenario (2) with Mitigation, if necessary;
4. Opening Year 2019 Traffic Conditions;
5. Opening Year 2019 Plus Project Traffic Conditions; and
6. Scenario (5) with Mitigation, if necessary.

8.0 PEAK HOUR INTERSECTION CAPACITY ANALYSIS

8.1 Baseline Plus Project Traffic Conditions

Table 8-1 summarizes the peak hour Level of Service results at the twenty (20) key study intersections for Baseline plus Project traffic conditions. The first column (1) of ICU/LOS values in *Table 8-1* presents a summary of baseline AM and PM peak hour traffic conditions (which were also presented in *Table 3-4*). The second column (2) lists Baseline plus Project traffic conditions. 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 LOS standards and significant impact criteria defined in this report. The fourth column (4) indicates the anticipated operating conditions with implementation of improvements recommended to mitigate Project traffic and/or achieve an acceptable Level of Service.

8.1.1 *Baseline Plus Project Traffic Conditions*

Review of columns 2 and 3 of *Table 8-1* indicates that traffic associated with the proposed Project will not significantly impact any of the twenty (20) key study intersections, when compared to the LOS standards and significant impact criteria specified in this report. Although one (1) intersection, Norwalk Boulevard at Wardlow Road (in the City of Long Beach), is forecast to operate at LOS E, the added project-related traffic volumes at this location do not significantly impact this intersection.

Appendix C also presents the baseline plus project ICU/LOS calculations for the key study intersections.

8.2 Opening Year 2019 Traffic Conditions

Table 8-2 summarizes the peak hour Level of Service results at the twenty (20) key study intersections for Opening Year 2019 traffic conditions. The first column (1) of ICU/LOS values in *Table 8-2* presents a summary of baseline AM and PM peak hour traffic conditions (which were also presented in *Table 3-4*). The second column (2) lists projected Opening Year 2019 traffic conditions, but without any traffic generated from the proposed Project. The third column (3) presents forecast Opening Year 2019 traffic conditions with the addition of Project traffic. 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 the significant impact criteria defined in this report. The fifth column (5) indicates the anticipated operating conditions with implementation of improvements recommended to mitigate Project traffic and/or achieve an acceptable Level of Service.

8.2.1 *Opening Year 2019 Traffic Conditions*

An analysis of Opening Year 2019 traffic conditions indicates that the addition of ambient traffic growth and related projects traffic will significantly impact three (3) of the twenty (20) key study intersections. The remaining seventeen (17) key study intersections are forecast to continue to operate at an acceptable LOS based on the LOS criteria identified in this report.

The locations projected to operate at LOS E in the Year 2019 is as follows:

	AM Peak Hour		PM Peak Hour	
Key Intersection	ICU/HCM	LOS	ICU/HCM	LOS
1. Norwalk Boulevard at Wardlow Road	---	---	0.967	E
3. Los Alamitos Boulevard at Cerritos Avenue	---	---	0.905	E
6. Studebaker Road at Willow Street	---	---	0.904	E

8.2.2 *Opening Year 2019 Plus Project Traffic Conditions*

Review of columns 3 and 4 of *Table 8-2* indicates that traffic associated with the proposed Project will not cumulatively impact any of the key study intersections when compared to the LOS standards and significant impact criteria specified in this report. Although the intersections of Norwalk Boulevard at Wardlow Road (in the City of Long Beach) and Studebaker Road at Willow Street (in the City of Long Beach) are forecast to operate at LOS E during the AM and/or PM peak hour, respectively, with the addition of project traffic, the proposed Project is expected to add less than 0.020 to the ICU value. The remaining eighteen (18) key study intersections are forecast to continue to operate at an acceptable LOS with the addition of Project generated traffic in the Opening Year 2019.

Appendix C also presents the Opening Year 2019 plus project ICU/LOS calculations for the key study intersections.

TABLE 8-1
BASELINE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Key Intersections	Minimum Acceptable LOS	Time Period	(1) Baseline Traffic Conditions		(2) Baseline Plus Project Traffic Conditions		(3) Significant Project Impact		(4) With Improvements	
			ICU	LOS	ICU	LOS	ICU Increase	Yes/No	ICU	LOS
1. Norwalk Boulevard at Wardlow Road	D	AM	0.808	D	0.821	D	0.013	No	--	--
		PM	**0.923**	**E**	**0.936**	**E**	0.013	No	--	--
2. Bloomfield Street at Ball Road	D	AM	0.583	B	0.586	A	0.003	No	--	--
		PM	0.666	B	0.670	B	0.004	No	--	--
3. Los Alamitos Boulevard at Cerritos Avenue	D	AM	0.769	C	0.776	C[15]	0.007	No	--	--
		PM	0.857	D	0.875	D[15]	0.018	No	--	--
4. Bloomfield Street at Cerritos Avenue	D	AM	0.743	C	0.752	C	0.009	No	--	--
		PM	0.664	B	0.671	B	0.007	No	--	--
5. Denni Street/Lexington Drive at Cerritos Avenue	D	AM	0.542	A	0.547	A	0.005	No	--	--
		PM	0.601	B	0.608	B	0.007	No	--	--
6. Studebaker Road at Willow Street	D	AM	0.875	D	0.881	D	0.006	No	--	--
		PM	0.877	D	0.889	D	0.012	No	--	--
7. I-605 NB Ramps at Katella Avenue	D	AM	0.385	A	0.393	A	0.008	No	--	--
		PM	0.536	A	0.535	A	-0.001	No	--	--
8. Civic Center Drive at Katella Avenue	D	AM	0.512	A	0.548	A[16,17]	0.036	No	--	--
		PM	0.525	A	0.649	B[16,17]	0.124	No	--	--

Notes:

BOLD ICU/LOS indicates unacceptable service level

[15] Includes project design features which are consistent with improvements identified as part of the Los Alamitos Boulevard Median Improvement Project. These improvements consisting of 2 northbound left-turn lanes, 2 northbound thru lanes, and 1 northbound shared thru/right-turn lane.

[16] Civic Center Drive at Katella Avenue (Project Driveway) will implement two outbound left-turn lanes along with an exclusive right-turn lane as part of the Project.

[17] *Synchro 9.0 SimTraffic Animation* simulation results in a delay of 25.1 seconds/vehicle and LOS C in the AM peak hour and 46.2 seconds/vehicle and LOS D in the PM peak hour.

TABLE 8-1 (CONTINUED)

BASELINE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Key Intersections	Minimum Acceptable LOS	Time Period	(1) Baseline Traffic Conditions		(2) Baseline Plus Project Traffic Conditions		(3) Significant Project Impact		(4) With Improvements	
			ICU	LOS	ICU	LOS	ICU Increase	Yes/No	ICU	LOS
9. Walnut Street/Wallingsford Road at Katella Avenue	E	AM	0.745	C	0.765	C	0.020	No	--	--
		PM	0.700	B	0.715	C	0.015	No	--	--
10. Los Alamitos Boulevard at Katella Avenue	E	AM	0.746	C	0.757	C	0.011	No	--	--
		PM	0.811	D	0.843	D	0.032	No	--	--
11. Bloomfield Street at Katella Avenue	D	AM	0.684	B	0.687	B	0.003	No	--	--
		PM	0.726	C	0.738	C	0.012	No	--	--
12. Lexington Drive at Katella Avenue	D	AM	0.566	A	0.567	A	0.001	No	--	--
		PM	0.593	A	0.590	A	-0.003	No	--	--
13. Walker Street at Katella Avenue	D	AM	0.621	B	0.617	B	0.004	No	--	--
		PM	0.668	B	0.668	B	0.000	No	--	--
14. Valley View Street at Katella Avenue	D	AM	0.701	C	0.699	B	-0.002	No	--	--
		PM	0.756	C	0.754	C	-0.002	No	--	--
15. Los Alamitos Boulevard at Farquhar Avenue	D	AM	0.544	A	0.547	A	0.003	No	--	--
		PM	0.635	B	0.644	B	0.009	No	--	--
16. Los Alamitos Boulevard at Orangewood Avenue	D	AM	0.685	B	0.689	B	0.004	No	--	--
		PM	0.521	A	0.528	A	0.007	No	--	--

Notes:

BOLD ICU/LOS indicates unacceptable service level

TABLE 8-1 (CONTINUED)
BASELINE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Key Intersections	Minimum Acceptable LOS	Time Period	(1) Baseline Traffic Conditions		(2) Baseline Plus Project Traffic Conditions		(3) Significant Project Impact		(4) With Improvements	
			ICU	LOS	ICU	LOS	ICU Increase	Yes/No	ICU	LOS
17. Los Alamitos Blvd/Seal Beach Blvd at Bradbury Road	D	AM	0.551	A	0.558	A	0.007	No	--	--
		PM	0.613	B	0.616	B	0.003	No	--	--
18. Seal Beach Boulevard at Rossmoor Center Way/Plymouth Drive	D	AM	0.492	A	0.490	A	-0.002	No	--	--
		PM	0.658	B	0.657	B	-0.001	No	--	--
19. Seal Beach Boulevard at St. Cloud Drive	D	AM	0.540	A	0.544	A	0.004	No	--	--
		PM	0.687	B	0.689	B	0.002	No	--	--
20. Seal Beach Boulevard at Lampson Avenue	D	AM	0.678	B	0.680	B	0.002	No	--	--
		PM	0.719	C	0.724	C	0.005	No	--	--

Notes:

BOLD ICU/LOS indicates unacceptable service level

TABLE 8-2
OPENING YEAR 2019 PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Key Intersections		Minimum Acceptable LOS	Time Period	(1) Baseline Traffic Conditions		(2) Opening Year 2019 Traffic Conditions		(3) Opening Year 2019 Plus Project Traffic Conditions		(4) Significant Project Impact		(5) Opening Year 2019 With Improvements	
				ICU	LOS	ICU	LOS	ICU	LOS	ICU Increase	Yes/No	ICU	LOS
1.	Norwalk Boulevard at Wardlow Road	D	AM	0.808	D	0.828	D	0.841	D	0.013	No	--	--
			PM	**0.923**	**E**	**0.967**	**E**	**0.979**	**E**	0.012	No	--	--
2.	Bloomfield Street at Ball Road	D	AM	0.583	B	0.603	B	0.606	B	0.003	No	--	--
			PM	0.666	B	0.691	B	0.694	B	0.003	No	--	--
3.	Los Alamitos Boulevard at Cerritos Avenue	D	AM	0.769	C	0.807	D	0.764	C[18]	-0.043	No	--	--
			PM	0.857	D	**0.905**	**E**	0.892	D[18]	-0.013	No	--	--
4.	Bloomfield Street at Cerritos Avenue	D	AM	0.743	C	0.772	C	0.781	C	0.009	No	--	--
			PM	0.664	B	0.694	B	0.701	C	0.007	No	--	--
5.	Denni Street/Lexington Drive at Cerritos Avenue	D	AM	0.542	A	0.581	A	0.586	A	0.005	No	--	--
			PM	0.601	B	0.650	B	0.657	B	0.007	No	--	--
6.	Studebaker Road at Willow Street	D	AM	0.875	D	0.900	D	**0.905**	**E**	0.005	No	--	--
			PM	0.877	D	**0.904**	**E**	**0.915**	**E**	0.011	No	--	--
7.	I-605 NB Ramps at Katella Avenue	D	AM	0.385	A	0.399	A	0.406	A	0.007	No	--	--
			PM	0.536	A	0.557	A	0.555	A	-0.002	No	--	--
8.	Civic Center Drive at Katella Avenue	D	AM	0.512	A	0.529	A	0.565	A[19,20]	0.036	No	--	--
			PM	0.525	A	0.545	A	0.668	B[19,20]	0.123	No	--	--

Notes:

BOLD ICU/LOS indicates unacceptable service level

[18] Includes project design features which are consistent with improvements identified as part of the Los Alamitos Boulevard Median Improvement Project. These improvements consisting of 2 northbound left-turn lanes, 2 northbound thru lanes, and 1 northbound shared thru/right-turn lane.

[19] Civic Center Drive at Katella Avenue (Project Driveway) will implement two outbound left-turn lanes along with an exclusive right-turn lane as part of the Project.

[20] *Synchro 9.0 SimTraffic Animation* simulation results in a delay of 44.5 seconds/vehicle and LOS D in the AM peak hour and 45.6 seconds/vehicle and LOS D in the PM peak hour.

TABLE 8-2 (CONTINUED)
OPENING YEAR 2019 PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Key Intersections		Minimum Acceptable LOS	Time Period	(1) Baseline Traffic Conditions		(2) Opening Year 2019 Traffic Conditions		(3) Opening Year 2019 Plus Project Traffic Conditions		(4) Significant Project Impact		(5) Opening Year 2019 With Improvements	
				ICU	LOS	ICU	LOS	ICU	LOS	ICU Increase	Yes/No	ICU	LOS
9.	Walnut Street/Wallingsford Road at Katella Avenue	E	AM	0.745	C	0.771	C	0.790	C	0.019	No	--	--
			PM	0.700	B	0.725	C	0.741	C	0.016	No	--	--
10.	Los Alamitos Boulevard at Katella Avenue	E	AM	0.746	C	0.775	C	0.786	C	0.011	No	--	--
			PM	0.811	D	0.847	D	0.878	D	0.031	No	--	--
11.	Bloomfield Street at Katella Avenue	D	AM	0.684	B	0.726	C	0.729	C	0.003	No	--	--
			PM	0.726	C	0.779	C	0.790	C	0.011	No	--	--
12.	Lexington Drive at Katella Avenue	D	AM	0.566	A	0.610	B	0.610	B	0.000	No	--	--
			PM	0.593	A	0.663	B	0.659	B	-0.004	No	--	--
13.	Walker Street at Katella Avenue	D	AM	0.621	B	0.671	B	0.667	B	-0.004	No	--	--
			PM	0.668	B	0.708	C	0.708	C	0.000	No	--	--
14.	Valley View Street at Katella Avenue	D	AM	0.701	C	0.753	C	0.751	C	-0.002	No	--	--
			PM	0.756	C	0.800	C	0.798	C	-0.002	No	--	--
15.	Los Alamitos Boulevard at Farquhar Avenue	D	AM	0.544	A	0.566	A	0.569	A	0.003	No	--	--
			PM	0.635	B	0.666	B	0.676	B	0.010	No	--	--
16.	Los Alamitos Boulevard at Orangewood Avenue	D	AM	0.685	B	0.710	C	0.715	C	0.005	No	--	--
			PM	0.521	A	0.546	A	0.553	A	0.007	No	--	--

Notes:

BOLD ICU/LOS indicates unacceptable service level

TABLE 8-2 (CONTINUED)
OPENING YEAR 2019 PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Key Intersections		Minimum Acceptable LOS	Time Period	(1) Baseline Traffic Conditions		(2) Opening Year 2019 Traffic Conditions		(3) Opening Year 2019 Plus Project Traffic Conditions		(4) Significant Project Impact		(5) Opening Year 2019 With Improvements	
				ICU	LOS	ICU	LOS	ICU	LOS	ICU Increase	Yes/No	ICU	LOS
17.	Los Alamitos Blvd/Seal Beach Blvd at Bradbury Road	D	AM	0.551	A	0.572	A	0.579	A	0.007	No	--	--
			PM	0.613	B	0.644	B	0.647	B	0.003	No	--	--
18.	Seal Beach Boulevard at Rossmoor Center Way/Plymouth Drive	D	AM	0.492	A	0.509	A	0.508	A	-0.001	No	--	--
			PM	0.658	B	0.687	B	0.686	B	-0.001	No	--	--
19.	Seal Beach Boulevard at St. Cloud Drive	D	AM	0.540	A	0.558	A	0.562	A	0.004	No	--	--
			PM	0.687	B	0.717	C	0.719	C	0.002	No	--	--
20.	Seal Beach Boulevard at Lampson Avenue	D	AM	0.678	B	0.701	C	0.704	C	0.003	No	--	--
			PM	0.719	C	0.748	C	0.753	C	0.005	No	--	--

Notes:

BOLD ICU/LOS indicates unacceptable service level

9.0 AREA-WIDE TRAFFIC IMPROVEMENTS

For the intersections where future traffic volumes are expected to result in poor operating conditions, this report recommends improvements, which change the intersection geometry to increase capacity. These capacity improvements usually involve roadway widening and/or restriping to reconfigure or add lanes to various approaches of a key intersection. The proposed improvements are expected to offset the impact of future traffic, and improve Levels of Service to an acceptable range.

9.1 Recommended Improvements

9.1.1 *Baseline Plus Project Traffic Conditions*

Since none of the intersections are impacted by the Project under the Baseline Plus Project Traffic Conditions, no mitigation measures are recommended or required.

9.1.2 *Opening Year 2019 Plus Project Traffic Conditions*

Since none of the intersections are impacted by the Project under the Opening Year 2019 Plus Project Traffic Conditions, no mitigation measure are recommended or required.

10.0 SITE ACCESS AND INTERNAL CIRCULATION EVALUATION

10.1 Project Access Level of Service Analysis

As previously presented, *Figure 2-2* shows that proposed access to the Project site will be provided via the signalized intersection of Civic Center Drive at Katella Avenue and an unsignalized right in/out driveway along Katella Avenue.

Table 10-1 summarizes the intersection operations for the two (2) Project driveways for Baseline Plus Project and Opening Year 2019 Plus Project traffic conditions. Please note that the values for Civic Center Drive at Katella Avenue are also reported in *Tables 8-1* and *8-2*. Review of *Table 10-1* shows that two (2) project driveways are forecast to operate at LOS C or better during the AM and PM peak hours. ***Appendix D*** presents the *Synchro 9.0 SimTraffic* simulation worksheets for the project driveways.

10.2 Queuing Analysis for Project Access Locations

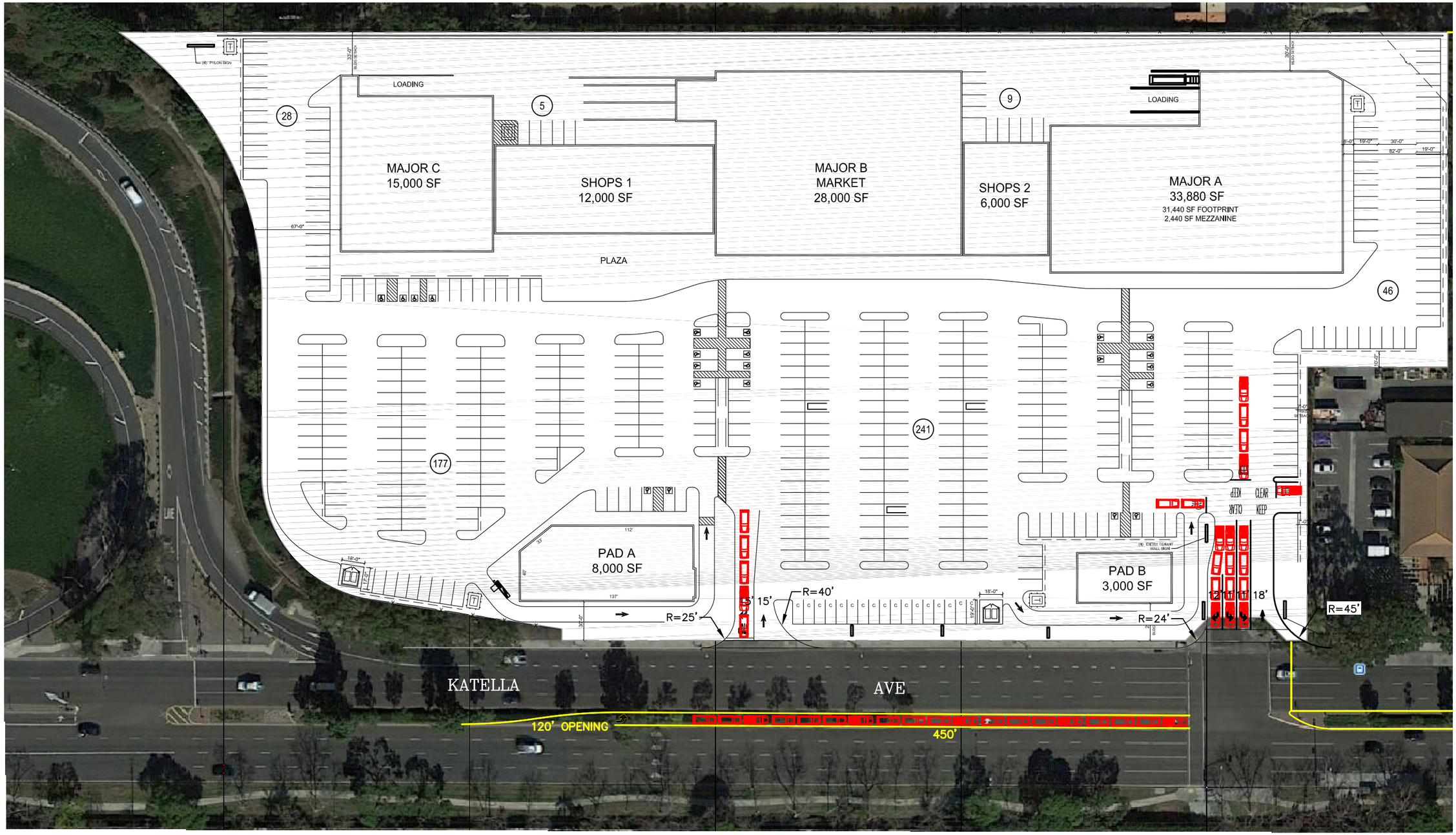
A queuing evaluation was conducted based on Opening Year 2019 Plus Project peak hour traffic volumes. ***Table 10-2*** presents the Project driveway queuing results for Opening Year 2019 Plus Project traffic conditions, respectively.

Review of *Table 10-2* shows that Civic Center Drive at Katella Avenue will provide adequate storage to accommodate the projected queues. However, please note that the southbound right-turn lane provides a 45 foot pocket which will require the utilization of the 40 feet transition. Furthermore, additional storage just north of the "Keep Clear" could accommodate additional queues for the southbound right-turn movement. ***Figure 10-1*** graphically illustrates the stacking results presented in *Table 10-2*. Further review shows that Project Driveway 1 at Katella Avenue has sufficient storage for the forecasted queue lengths.

10.3 Katella Avenue Synchro Assessment

Per the City of Los Alamitos, a *Synchro 9.0* analysis has been performed for a portion of the Katella Avenue corridor. The segment of Katella Avenue that was analyzed includes closely-spaced intersections that create substantial queuing and backup as a result of their proximity to each other. This analysis was used to determine if queue lengths on eastbound Katella Avenue would allow vehicles exiting the northbound I-605 to safely weave into the left-turn lane of the nearby intersection of Civic Center Drive at Katella Avenue in order to enter the Project site. The four (4) key study intersections included in the corridor analysis are as follows:

7. I-605 NB Ramps at Katella Avenue
8. Civic Center Drive at Katella Avenue
9. Walnut Street/Wallingsford Road at Katella Avenue
10. Los Alamitos Boulevard at Katella Avenue



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LINSCOTT LAW & GREENSPAN engineers

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FIGURE 10-1

YEAR 2019 CUMULATIVE PLUS
PROJECT DRIVEWAY QUEUING SUMMARY
VILLAGE 605, LOS ALAMITOS

10.3.1 *Synchro 9.0 Method of Analysis*

Synchro 9.0 analyzes intersection capacity, as well as progression/coordination operations along an arterial street. *Synchro 9.0* provides an alternative method for calculating intersection delays called the Percentile Delay Method. This method provides key benefits over Webster's formula, used by the Highway Capacity Manual, as it is able to model the following situations:

- Signals in coordination
- Actuated and semi-actuated signals
- Near saturation and super saturated signals

In a coordinated arterial network, *Synchro 9.0* optimizes traffic progression along an arterial street, *Synchro 9.0* optimizes splits and offsets to reduce vehicular delays. As such, utilizing the calculated green splits, phase sequences, and coordination offsets, *Synchro 9.0* produces generated solutions with minimal delays and good arterial progression for the given geometric, traffic, and signal control conditions.

10.3.2 *Intersection Queuing Analysis*

This queuing analysis is based on *Synchro 9.0 SimTraffic* and was conducted to ensure that adequate turn pocket storage lengths are provided and that impacts to through traffic on Katella Avenue are minimal at the intersection of Civic Center Drive at Katella Avenue. Existing conditions for the eastbound left turn include an eastbound left-turn pocket length of 170 feet.

For Opening Year 2019 Plus Project traffic conditions, the queue for the eastbound left movement is 394 feet and 398 feet for the AM peak hour and PM peak hour, respectively. In order to provide adequate storage lengths, the Project will incorporate the modification of the existing median on Katella Avenue and lengthen the eastbound left-turn pocket to provide 450 feet of storage with 120 feet of transition. *Figure 10-1* graphically illustrates the recommended pocket length and further depicts the forecasted queue.

Appendix D contains the *Synchro 9.0 SimTraffic* simulation worksheets for the Year 2019 during the AM and PM peak hours.

10.4 Internal Circulation

The on-site circulation layout of the proposed Project as illustrated in *Figure 2-2* on an overall basis is adequate. A circulation evaluation 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. The turning templates were utilized to ensure that a small service/delivery trucks (i.e., UPS, FedEx, and trash trucks), a fire truck, and a large delivery truck could properly access and circulate through the Project site. A small truck (SU-30) turning template, a fire truck, and a large trucks (WB-40 and WB-65) turning template were utilized in this evaluation.

10.4.1 *SU-30, Fire Truck and WB-40 Mid-Size Truck Assessment*

The internal circulation layout for the proposed Project has been reviewed and is adequate to accommodate service/delivery trucks, trash trucks, and fire trucks. ***Figure 10-2*** illustrates the turning movements required of a small service/delivery truck (SU-30) as it circulates throughout the site. ***Figures 10-3*** and ***10-4*** illustrate the turning movements required of a fire truck and mid-size (WB-40) as it circulates throughout the site, respectively.

As shown in these figures, we have confirmed that the turning radii of service/delivery vehicles (SU-30) and the turning radii of a fire truck are met as these vehicles can access the Project site and circulate throughout the property.

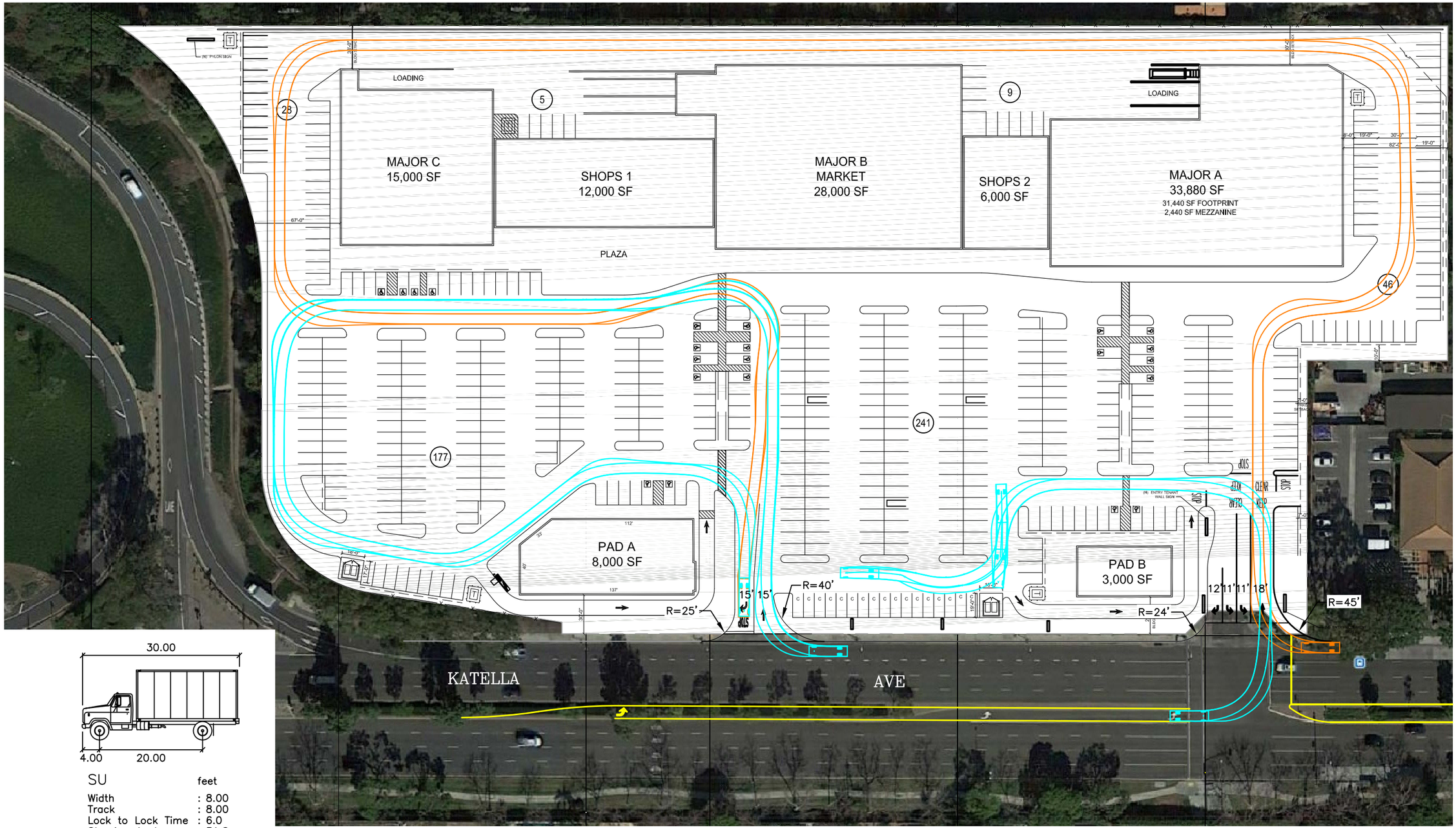
To accommodate the turning requirements of a WB-40 mid-size truck into the Project site, the Project will modify the existing median on the west leg of the intersection of Civic Center Drive at Katella Avenue and set it back 20 feet to accommodate the eastbound left-turn inbound movement. Further, the Project site plan will incorporate a curb return radii of 45 on the northwest corner of Civic Center Drive at Katella Avenue to accommodate the westbound right-turn inbound movement.

Hence, no turn restrictions or delivery hour restrictions are necessary or recommended for small/delivery trucks (SU-30 or equivalent) or mid-size delivery trucks (WB-40 or equivalent) that will service the Project.

10.4.2 *WB-65 Full-Size Trucks Assessment*

Figures 10-5 present the turning movements required for a full-size truck (WB-65) to access and circulate throughout the site. As shown, access to the Project site for large trucks originating from the west (i.e. I-605 Freeway) that are traveling eastbound on Katella Avenue can be accommodated via the eastbound left-turn movement on Katella Avenue at Civic Center Drive. Given the turning requirements of a full-size truck (WB-65) accessing the site that originates from the east traveling westbound on Katella Avenue cannot be accommodated at the Project driveways without infringing on the outbound travel lanes, the Project will restrict westbound right-turn movements for large trucks (WB-65) to non-peak business hours to minimize vehicular conflicts the site entries.

Further, the Project will provided written instructions that require large truck (WB-65) deliveries approach the site from the west via the I-605 Freeway and utilize the eastbound left-turn at Civic



SU feet

Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.8

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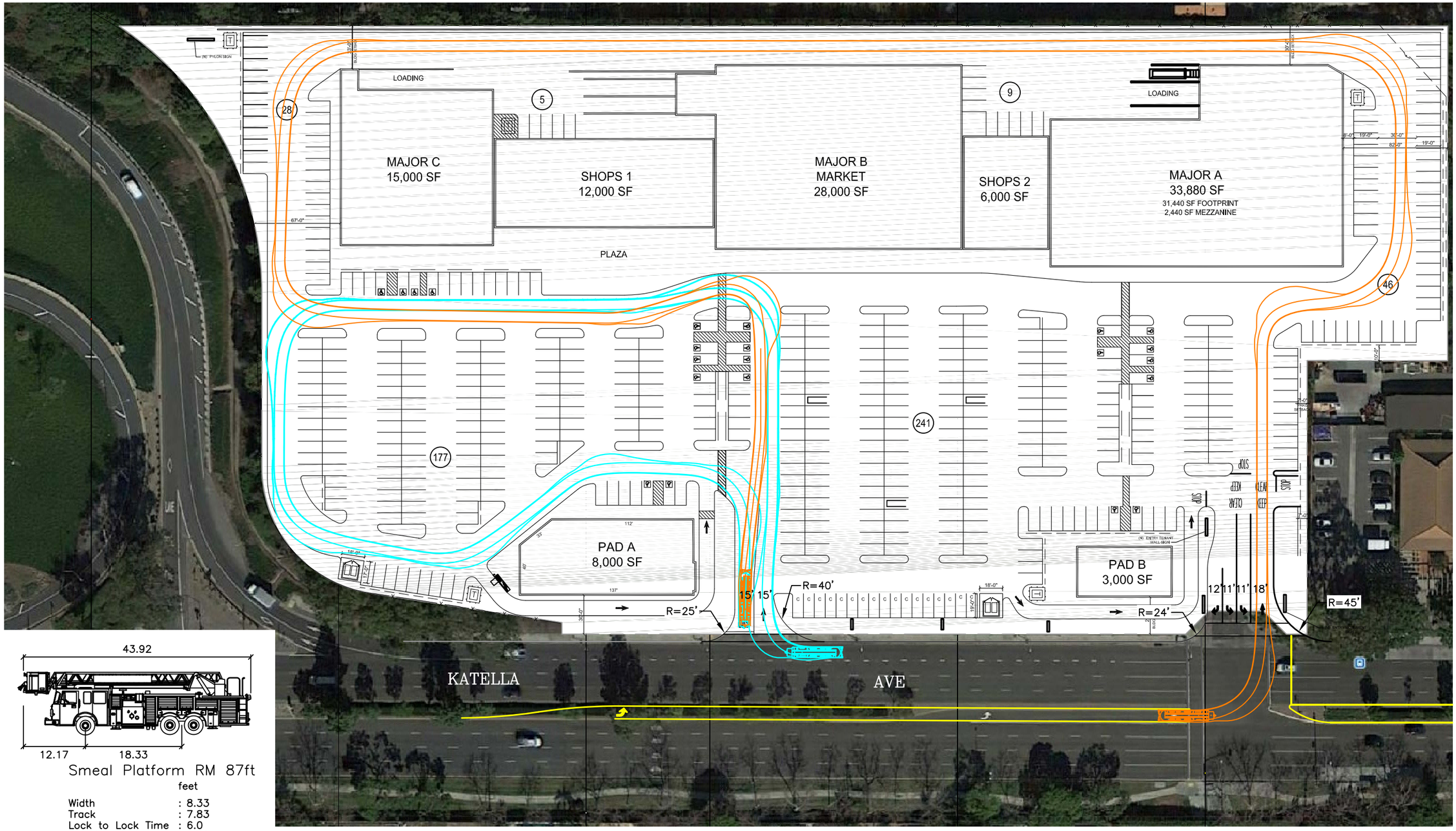
FIGURE 10-2

SU-30 TRUCK TURNING MOVEMENTS

VILLAGE 605, LOS ALAMITOS



Smeal Platform RM 87ft

	feet
Width	: 8.33
Track	: 7.83
Lock to Lock Time	: 6.0
Steering Angle	: 48.0

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FIGURE 10-3

FIRE TRUCK TURNING MOVEMENTS
VILLAGE 605, LOS ALAMITOS

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MAJOR C
15,000 SF

SHOPS 1
12,000 SF

MAJOR B
MARKET
28,000 SF

SHOPS 2
6,000 SF

MAJOR A
33,880 SF
31,440 SF FOOTPRINT
2,440 SF MEZZANINE

PAD A
8,000 SF

PAD B
3,000 SF

LOADING

PLAZA

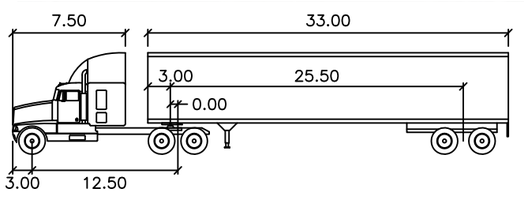
KATELLA AVE

R=25'

R=40'

R=24'

R=45'



WB–40 feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.00	Steering Angle	: 20.3
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.00		

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N NO SCALE

FIGURE 10–4

WB–40 TRUCK TURNING MOVEMENTS
VILLAGE 605, LOS ALAMITOS

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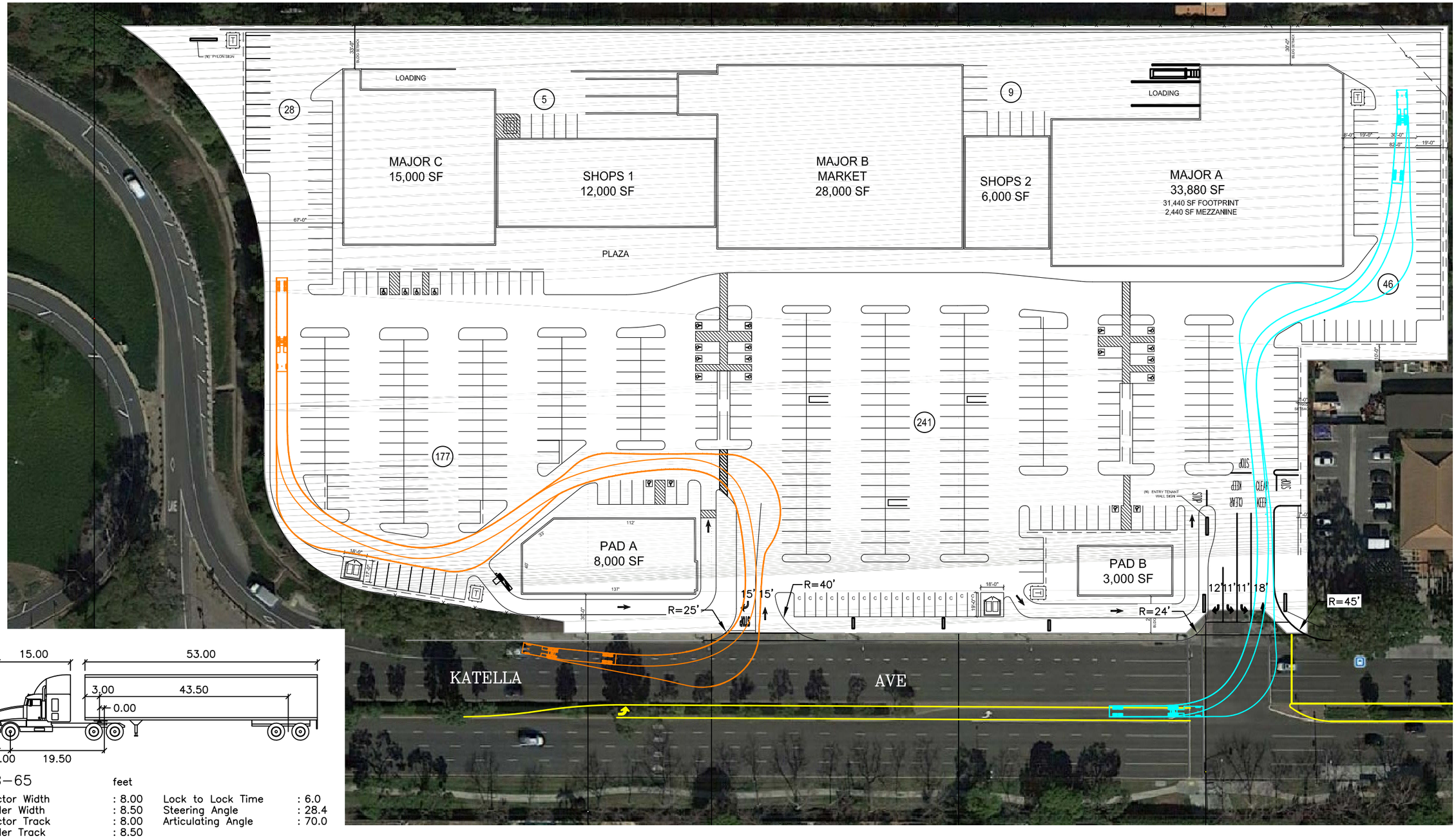

WB–65 feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.50		

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FIGURE 10–5

WB–65 TRUCK TURNING MOVEMENTS
VILLAGE 605, LOS ALAMITOS

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Center Drive and Katella Avenue as the primary access, and exit the site via Project Driveway 1 at Katella Avenue to return to the I-605 Freeway.

10.5 Site 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. A sight distance evaluation has been performed for the unsignalized Project Driveway 1 at Katella Avenue and at Civic Center Drive at Katella Avenue.

The Sight Distance Evaluation prepared for the proposed Projects is based on the criteria and procedures set forth by the California Department of Transportation (Caltrans) in the State's *Highway Design Manual (HDM)*. Per the direction of City staff, corner sight distance was utilized for the evaluation. Corner sight distance is defined in the Caltrans HDM to be the distance required by the driver of a vehicle, traveling at a given speed, to maneuver their vehicle and avoid an object without radically altering their speed. Line of sight for corner sight distance is to be determined from a 3½ foot height at the location of the driver of a vehicle on a minor road to a 4¼ foot object height in the center of the approaching lane of the major road.

Based on the criteria set forth in Table 405.1A - Corner Sight Distance (7½ Second Criteria) of the Caltrans HDM and a posted speed limit of 40 mph along Katella Avenue, a corner sight distance of 440 feet is required for the unsignalized Project driveway.

Figures 10-6 and ***10-7*** present a schematic of the sight distance evaluation performed at the Project Driveway 1 and Civic Center Drive, respectively, which illustrate the actual sight distances and corresponding limited use areas. A review of *Figures 10-5* and *10-6* indicates that the sight lines at the project driveways on Katella Avenue are expected to be adequate provided obstructions within the sight triangles are minimized. Any additional landscaping and/or hardscapes (i.e. monument signs) should be designed such that a driver's clear line of sight is not obstructed.

10.6 Project Specific Improvements

Subject to the review and approval of the City of Los Alamitos Engineering Division, the following improvements will be incorporated in the Project prior to finalization of the Project site plan and/or in conjunction with the development of the proposed Project to ensure that adequate ingress and egress to the project site is provided:

- Widen and restripe Civic Center Drive north of Katella Avenue to provide two (2) exclusive southbound left-turn lanes with 85 feet of storage each, an exclusive right-turn lane with 40 feet of storage with a 40 foot transition, and one (1) inbound lane.
- The internal Civic Center driveway will be relocated to align opposite to the internal shopping center drive aisle.

PLAZA

46

241

177

PAD A
8,000 SF

PAD B
3,000 SF

112'

33'

40'

137'

30'-0"

R=25'

15'

15'

R=40'

18'-0"

19'-0" C

20'-0"
BLOCK/BRICK

R=24'

12'

11'

11'

18'

R=45'

10'-4"

STOP

KEEP CLEAR

(N) ENTRY TENANT WALL SIGN

(N) ENTRY MONUMENT SIGN

440'

KATELLA AVE

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LINSCOTT LAW & GREENSPAN engineers

N

SCALE: 1"=50'

CORNER SIGHT DISTANCE

DESIGN SPEED LIMIT:	40 MPH
REQUIRED CORNER SIGHT DISTANCE:	440 FEET

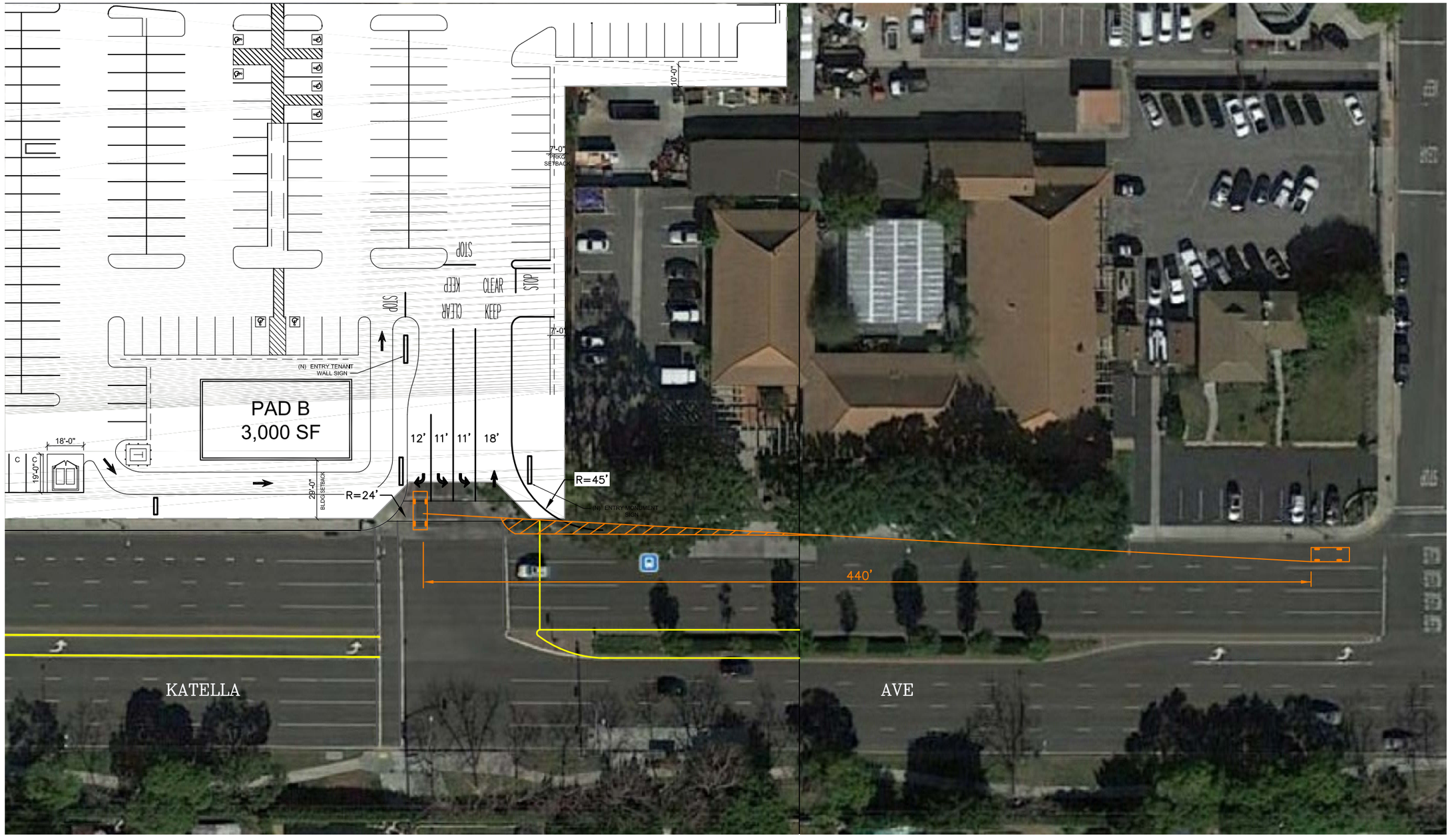
LEGEND

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.

FIGURE 10-6

SIGHT LINE ANALYSIS AT PROJECT DRIVEWAY 2

VILLAGE 605, LOS ALAMITOS



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LINSCOTT LAW & GREENSPAN engineers

N

SCALE: 1"=50'

CORNER SIGHT DISTANCE

DESIGN SPEED LIMIT:	40 MPH
REQUIRED CORNER SIGHT DISTANCE:	440 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.

FIGURE 10-7

SIGHT LINE ANALYSIS AT CIVIC CENTER DRIVE

VILLAGE 605, LOS ALAMITOS

- At the Los Alamitos Civic Center driveway internal intersection, install stop signs and stop bars for the southbound, eastbound, and westbound directions. Stripe "Keep Clear" within the internal intersection to provide adequate access to both the Civic Center and the shopping center.
- Modify the existing median along Civic Center Drive at Katella Avenue to provide a 450 foot pocket with a 120 foot transition. In addition, modify the median to allow for a setback of 20 feet to accommodate the eastbound left-turn inbound movement. In addition, modify median on east side of Civic Center Drive in conjunction with the widening of the driveway and to accommodate outbound left-turn movements.
- Modify the north-east corner of Civic Center Drive at Katella Avenue to provide a curb return radii of 45 feet.
- Install a "STOP" sign, stop bar, and right-turn only sign/marking at Project Driveway 1 on Katella Avenue.
- Maintain adequate sight distance for the Project driveways by minimizing obstructions (i.e. landscaping and/or hardscape) within the "limited use area" on either side of the proposed project driveways. Landscaping and/or hardscapes should be designed such that a driver's clear line of sight is not obstructed and does not threaten vehicular or pedestrian safety, as determined by the City Traffic Engineer.
- Provide written instructions to tenants/vendors that require truck deliveries utilize the eastbound left-turn lane on Katella Avenue at Civic Center Drive for those large delivery trucks (WB-65 or equivalent) approaching the retail center from the west via the I-605 Freeway.
- Since westbound right-turn movements from Katella Avenue at Civic Center Drive and at Project Driveway 1 cannot accommodate the turning requirements of large trucks (WB-65 or equivalent), the Project will install the appropriate"No Truck Access / Over 45 feet Long" signs at the two Project driveways; although a small delivery truck (SU-30) and mid-size truck (WB-40) are both able to make the westbound right-turn from Katella Avenue at both Project driveways.

TABLE 10-1
PROJECT DRIVEWAY PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Key Intersection		Time Period	(1) Baseline Plus Project Traffic Conditions		(2) Opening Year 2019 Plus Project Traffic Conditions	
			ICU/ HCM	LOS	ICU/ HCM	LOS
8.	Civic Center Drive at[21] Katella Avenue	AM	0.548	A[22]	0.565	A[23]
		PM	0.649	B[22]	0.668	B[23]
A.	Project Driveway 1 at[24] Katella Avenue	AM	17.2 s/v	C	23.7 s/v	D
		PM	29.2 s/v	D	29.9 s/v	D

[21] Existing Plus Project and Opening Year 2019 Plus Project traffic conditions consists of restriping the southbound approach to provide 2 exclusive left-turn lanes and 1 exclusive right-turn lane.

[22] *Synchro 9.0 SimTraffic Animation* simulation results in a delay of 25.1 seconds/vehicle and LOS C in the AM peak hour and 46.2 seconds/vehicle and LOS D in the PM peak hour.

[23] *Synchro 9.0 SimTraffic Animation* simulation results in a delay of 44.5 seconds/vehicle and LOS D in the AM peak hour and 45.6 seconds/vehicle and LOS D in the PM peak hour.

[24] Based on *Synchro 9.0 SimTraffic Animation* simulation.

TABLE 10-2
OPENING YEAR 2019 PEAK HOUR PROJECT ACCESS QUEUING ANALYSIS

Project Driveway	(1) Opening Year 2019 Plus Project Traffic Conditions				
		AM Peak Hour		PM Peak Hour	
	Estimated Storage Provided (feet)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes / No)	Max. Queue / Min. Storage Required (feet)	Adequate Storage (Yes / No)
8. Civic Center Drive at Katella Avenue					
Southbound Left-Turn	170’	128’	Yes	167’	Yes
Southbound Right-Turn	45’	63’	Yes	100’	Yes
A. Project Driveway 1 at Katella Avenue					
Southbound Right-Turn	100’	62’	Yes	83’	Yes

11.0 STATE OF CALIFORNIA (CALTRANS) METHODOLOGY

In conformance with the current Caltrans *Guide for the Preparation of Traffic Impact Studies*, existing and projected weekday AM and PM peak hour operating conditions at the one (1) state-controlled study intersection with the study area have been evaluated using the *Highway Capacity Manual 2010* operations method of analysis. The state-controlled location is as follows:

7. I-605 NB Ramps at Katella Avenue

Caltrans "endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities"; it does not require that LOS "D" (shall) be maintained. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. For this analysis, LOS D is the target level of service standard and will be utilized to assess the Project impacts at the state-controlled study intersection. It should be noted that the Caltrans TIA Guidelines does state that if an existing state owned facility operates at less than LOS D, the existing service level should be maintained.

11.1 Highway Capacity Manual (HCM) Method of Analysis (Signalized Intersections)

AM and PM peak hour operating conditions for the state-controlled key study intersection was evaluated using the methodology outlined in *Chapter 18 of the Highway Capacity Manual 2010 (HCM 2010)* for signalized intersections. Based on the HCM operations method of analysis, level of service for signalized intersections and approaches is defined in terms of control delay, which is a measure of the increase in travel time due to traffic signal control, driver discomfort, and fuel consumption. Control delay includes the delay associated with vehicles slowing in advance of an intersection, the time spent stopped on an intersection approach, the time spent as vehicles move up in the queue, and the time needed for vehicles to accelerate to their desired speed. LOS criteria for traffic signals are stated in terms of the control delay in seconds per vehicle. The LOS thresholds established for the automobile mode at a signalized intersection are shown in ***Table 11-1***.

TABLE 11-1

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (HCM METHODOLOGY)[25]

Control Delay (sec/veh)	Level of Service (LOS)	Level of Service Description
≤ 10	A	This level of service occurs when the v/c ratio is low and either progression is exceptionally favorable or the cycle length is very short.
> 10-20	B	This level generally occurs when the v/c ratio is low and either progression is highly favorable or the cycle length is short.
> 20-35	C	Average traffic delays. These higher delays may result when progression is favorable or the cycle length is moderate. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
> 35-55	D	Long traffic delays. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high *v/c* ratios. Many vehicles stop and individual cycle failures are noticeable.
> 55-80	E	Very long traffic delays. This level is considered by many agencies (i.e. SANBAG) to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *v/c* ratios. Individual cycle failures are frequent.
> 80	F	Severe congestion. This level, considered to be unacceptable to most drivers, often occurs with over saturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high *v/c* ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

[25] Source: *Highway Capacity Manual*, Chapter 18: Signalized Intersections.

11.1 Baseline Plus Project Traffic Conditions

Table 11-2 summarizes the baseline plus project peak hour HCM level of service results at the one (1) state-controlled study intersection within the study area. The first column (1) of HCM/LOS values in *Table 11-2* presents a summary of existing traffic conditions. The second column (2) presents baseline plus project traffic conditions. The third column (3) shows the increase in HCM value due to the added peak hour project trips and indicates whether the traffic associated with the Project will have a significant impact. The fourth column (4) indicates the anticipated operating conditions with implementation of improvements recommended to mitigate Project traffic and/or achieve an acceptable Level of Service.

11.1.1 *Baseline Traffic Conditions*

Review of column one (1) of *Table 11-2* indicates that the state-controlled study intersection currently operate at an acceptable LOS A in both the AM and PM peak hours.

11.1.2 *Baseline Plus Project Traffic Conditions*

Review of Columns 2 and 3 of *Table 11-2* indicates that traffic associated with the proposed Project will not significantly impact the one (1) state-controlled study intersection, when compared to the LOS standards and significant impact criteria specified in this report. The one (1) state-controlled study intersection is forecast to continue to operate at an acceptable LOS with the addition of Project generated traffic to existing traffic.

Appendix E presents the baseline and baseline plus project delay calculations for the key study intersection.

11.2 Opening Year 2019 Plus Project Traffic Conditions

Table 11-3 summarizes the peak hour Level of Service results at the one (1) state-controlled key study intersection for Opening Year 2019 traffic conditions. The first column (1) of HCM/LOS values in *Table 11-3* presents a summary of baseline AM and PM peak hour traffic conditions (which were also presented in *Table 11-2*). The second column (2) lists Opening Year 2019 traffic conditions, but without any traffic generated from the proposed Project. The third column (3) presents forecast Opening Year 2019 traffic conditions with the addition of Project traffic. The fourth column (4) shows the increase in HCM value due to the added peak hour project trips and indicates whether the traffic associated with the Project will have a significant impact. The fifth column (5) indicates the anticipated operating conditions with implementation of improvements recommended to mitigate Project traffic and/or achieve an acceptable Level of Service.

11.2.1 *Opening Year 2019 Traffic Conditions*

Review of column two (2) of *Table 11-3* indicates that the state-controlled study intersection currently operate at an acceptable LOS in both the AM and PM peak hours.

11.2.2 *Opening Year 2019 Plus Project Traffic Conditions*

Review of Columns 3 and 4 of *Table 11-3* indicates that traffic associated with the proposed Project will not significantly impact the one (1) state-controlled study intersection, when compared to the LOS standards and significant impact criteria specified in this report. The one (1) state-controlled study intersection is forecast to continue to operate at an acceptable LOS with the addition of Project generated traffic to existing traffic.

Appendix E also presents the Opening Year 2019 plus project delay calculations for the key study intersection.

TABLE 11-2

BASELINE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – CALTRANS

Key Intersections	Minimum Acceptable LOS	Time Period	(1) Baseline Traffic Conditions		(2) Baseline Plus Project Traffic Conditions		(3) Significant Project Impact		(4) With Improvements	
			HCM	LOS	HCM	LOS	HCM Increase	Yes/No	HCM	LOS
7. I-605 NB Ramps at[26] Katella Avenue	D	AM	5.8 s/v	A	5.6 s/v	A	-0.2 s/v	No	--	--
		PM	8.7 s/v	A	13.3 s/v	B	4.6 s/v	No	--	--

Notes:

s/v = seconds per vehicle

[26] Based on *Synchro 9.0 SimTraffic Animation* simulation.

TABLE 11-3

OPENING YEAR 2019 PEAK HOUR INTERSECTION CAPACITY ANALYSIS – CALTRANS

Key Intersections	Minimum Acceptable LOS	Time Period	(1) Baseline Traffic Conditions		(2) Opening Year 2019 Traffic Conditions		(3) Opening Year 2019 Plus Project Traffic Conditions		(4) Significant Project Impact		(5) Opening Year 2019 With Improvements	
			HCM	LOS	HCM	LOS	HCM	LOS	HCM Increase	Yes/No	HCM	LOS
7. I-605 NB Ramps at[27] Katella Avenue	D	AM	5.8 s/v	A	5.8 s/v	A	8.5 s/v	A	2.7 s/v	No	--	--
		PM	8.7 s/v	A	12.8 s/v	B	14.2 s/v	B	1.4 s/v	No	--	--

Notes:

s/v = seconds per vehicle

[27] Based on *Synchro 9.0 SimTraffic Animation* simulation.

12.0 CONGESTION MANAGEMENT PROGRAM (CMP) COMPLIANCE ASSESSMENT

This analysis is consistent with the requirements and procedures outlined in the current *Orange County Congestion Management Program (CMP).* The CMP requires that a traffic impact analysis be conducted for any project generating 2,400 or more daily trips, or 1,600 or more daily trips for projects that directly access the CMP Highway System (HS). As noted in Section 5.0 of this traffic study, the proposed Project is forecast to generate approximately 8,169 daily trip-ends and thus meets the criteria requiring a CMP TIA.

The CMPHS includes specific roadways, which include State Highways and Super Streets, which are now known as Smart Streets. Therefore, the CMP TIA analysis requirements relate to the potential impacts only on the specified CMPHS, which in this case includes Katella Avenue. As described in the "Radius of Development Influence" section of the CMP TIA, the study area (i.e. CMP intersections) is recommended to be defined by the CMP links which have a project impact of three percent, or more, of their daily LOS "E" capacity.

There are two (2) CMP intersections in close proximity to the site which are as follows:

Study Intersection	Location
7	I-605 NB Ramps at Katella Avenue
14	Valley View Street at Katella Avenue

Table 12-1 summarizes the Project percentage impact CMP analysis for eight (8) key roadway segments in the vicinity of the proposed Project along Katella Avenue. Column one (1) of *Table 12-1* shows the CMP LOS “E” Capacity for each roadway segment, column two (2) shows the Project ADT for each roadway segment, column three (3) shows the Project ADT LOS "E" capacity percentages for each roadway segment and column (4) shows whether or not added project traffic meets or exceeds the “three percent” limit.

Review of *Table 12-1* shows that the three percent limit is exceeded on four (4) of eight (8) key roadway segments, thus requiring a CMP analysis. The level of service results and project impacts at the CMP intersections in the vicinity of the Project of I-605 NB Ramps at Katella Avenue and Valley View Street at Katella Avenue are summarized in *Tables 8-1* and *8-2* and indicate that the proposed Project will not have a significant impact at these locations.

TABLE 12-1
PROJECT PERCENTAGE RADIUS OF INFLUENCE CMP ANALYSIS

Roadway Segment	(1) CMP LOS "E" Capacity	(2) Project ADT	(3) Percentage (3) = (2) ÷ (1)	(4) Radius of Influence (Yes/No)
1. Katella Avenue between I-605 NB Ramps and Civic Center Drive	75,000	**5,763**	**6%**	**Yes**
2. Katella Avenue between Civic Center Drive and Walnut Street/Wallingsford Road	75,000	**6,811**	**8%**	**Yes**
3. Katella Avenue between Walnut Street/Wallingsford Road and Los Alamitos Blvd	56,300	**6,287**	**10%**	**Yes**
4. Katella Avenue between Los Alamitos Boulevard and Bloomfield Street	56,300	**2,096**	**3%**	**Yes**
5. Katella Avenue between Bloomfield Street and Lexington Drive	56,300	1,048	1%	No
6. Katella Avenue between Lexington Drive and Walker Street	56,300	524	0%	No
7. Katella Avenue between Walker Street and Valley View Street	56,300	524	0%	No
8. Katella Avenue east of Valley View Street	56,300	314	0%	No

13.0 CONSTRUCTION ASSESSMENT

This section of the report summarizes the potential traffic impacts due to construction activities at the Project site. It is anticipated that construction activities will include demolition, site preparation, grading, building construction, paving, and architectural coating.

13.1 Project Construction Trip Generation

Table 13-1 displays the assumed work schedule for construction activities, the number of workers needed for each phase, and the number of trucks needed for each phase, which were used to forecast the potential construction related trips associated with the each construction phase of the Project. It should be noted that none of the construction phases are expected to overlap.

Table 13-2 provides a summary of the forecast construction peak hour and daily traffic volumes associated with each construction phase based on the work schedule presented in *Table 13-1*. To remain conservative, the truck trips were converted to passenger car equivalents (P.C.E.'s) using a 3.0 P.C.E. conversion factor.

Review of *Table 13-2* shows that on a typical weekday during the demolition phase, construction traffic is expected to generate 72 daily trips with 21 trips (21 inbound, 0 outbound) produced during the AM peak hour and 21 trips (0 inbound, 21 outbound) produced during the PM peak hour. On a typical weekday of the site preparation phase, construction traffic is expected to generate 36 daily trips with 18 trips (18 inbound, 0 outbound) produced in the AM peak hour and 18 trips (0 inbound, 18 outbound) produced during the PM peak hour. On a typical weekday of the grading phase, construction traffic is expected to generate 40 daily trips with 20 trips (20 inbound, 0 outbound) produced in the AM peak hour and 20 trips (0 inbound, 20 outbound) produced during the PM peak hour. On a typical weekday of the building construction phase, construction traffic is expected to generate 538 daily trips with 140 trips (140 inbound, 0 outbound) produced in the AM peak hour and 140 trips (0 inbound, 140 outbound) produced in the PM peak hour. On a typical weekday of the paving phase, construction traffic is expected to generate 30 daily trips with 15 trips (15 inbound, 0 outbound) produced in the AM peak hour and 15 trips (0 inbound, 15 outbound) produced in the PM peak hour. On a typical weekday of the architectural coating phase, construction traffic is expected to generate 48 daily trips with 24 trips (24 inbound, 0 outbound) produced in the AM peak hour and 24 trips (0 outbound, 24 inbound) produced in the PM peak hour.

Based on the expected generated trips, the building construction phase will produce the most trips. Therefore, the Project construction-related traffic analysis will be based off of the building construction traffic.

13.2 Project Construction Traffic Distribution Pattern

Figure 13-1 graphically illustrates the traffic distribution pattern for all construction employee related traffic. ***Figure 13-2*** illustrates the traffic distribution pattern for all construction truck related traffic.

The anticipated AM and PM peak hour construction traffic volumes at the key study intersections and Project driveway are presented in ***Figures 13-3*** and ***13-4***, respectively. The traffic volume assignments presented in *Figures 13-3* and *13-4* reflect the construction traffic distribution characteristics shown in *Figures 13-1* and *13-2* and the construction traffic generation forecast presented in *Table 13-2*.

13.3 Existing Plus Project Construction Traffic Volumes

Figures 13-5 and ***13-6*** present the Existing Plus Project Construction traffic volumes at the key study intersections and Project driveway during the AM and PM peak hours, respectively. Please note that with the start of construction, the existing office will be vacated.

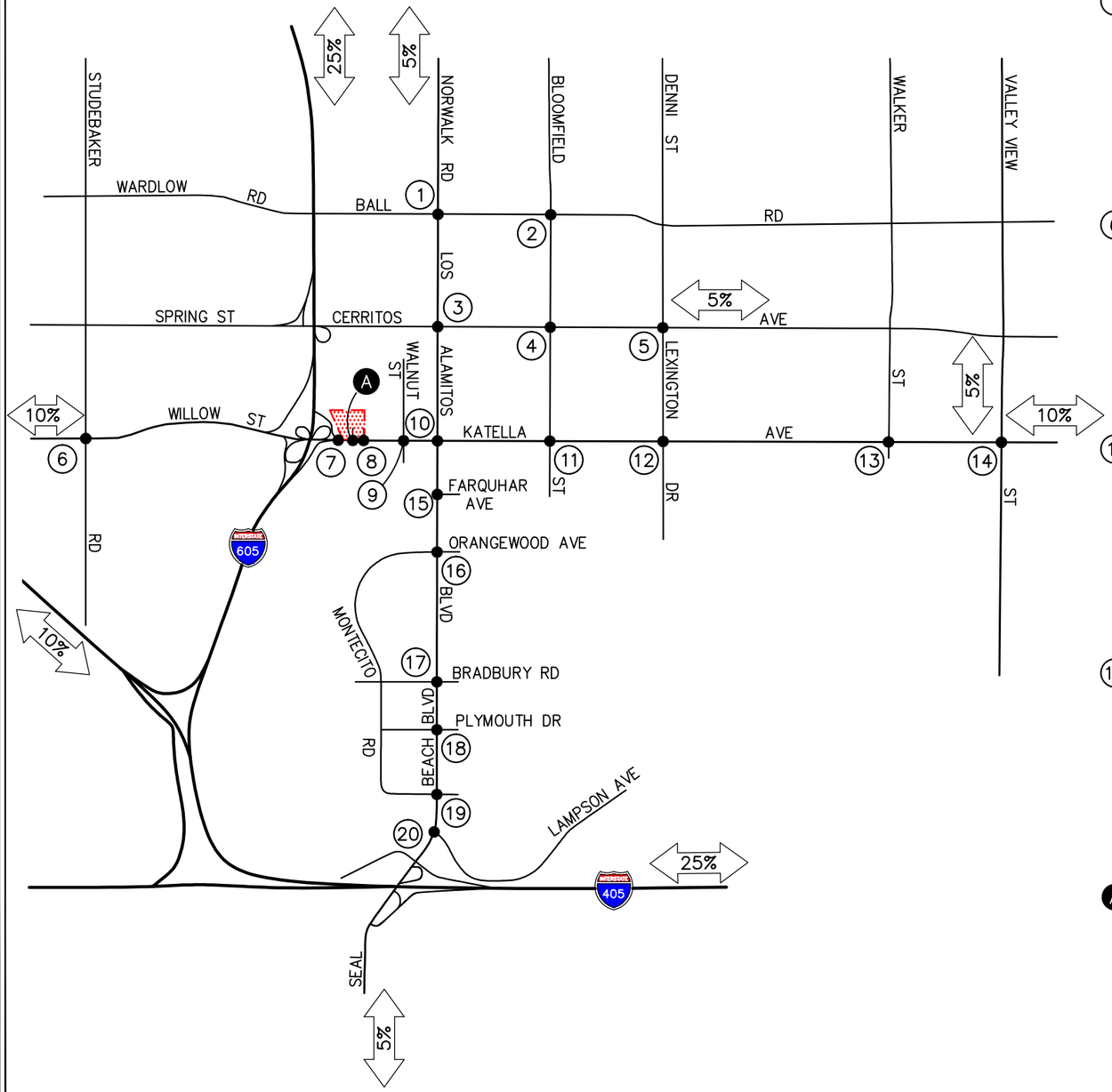
13.4 Existing Plus Project Construction Traffic Level of Service Results

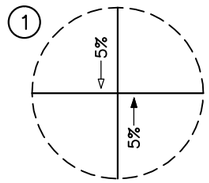
Table 13-3 summarizes the results of the Existing Plus Project Construction traffic level of service analysis at the twenty (20) key study intersections. Column (1) in *Table 13-3* presents a summary of existing AM and PM peak hour traffic conditions with the currently developed office vacated for construction. The second column (2) presents forecast existing with the addition of Project construction traffic. The third column (3) shows the increase in ICU value due to the added peak hour construction trips and indicates whether the traffic associated with the Project construction will have a significant impact based on the LOS standards and the significant impact criteria defined in this report. The fourth column (4) indicates the anticipated operating conditions with implementation of improvements recommended to mitigate Project construction traffic and/or achieve an acceptable Level of Service.

Review of *Table 13-3* shows that although the intersection of Norwalk Boulevard at Wardlow Road (in the City of Long Beach) is forecast to operate at unacceptable LOS E during the PM peak hour, with the addition of construction traffic, the proposed Project is expected to add less than 0.020 to the ICU value. The remaining nineteen (19) study intersections are forecast to operate at acceptable levels of service during the AM and PM peak hours for Existing Plus Project Construction traffic conditions.

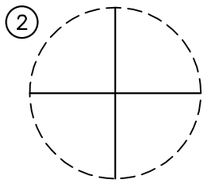
Therefore, aside from the nuisance traffic that will occur as a result of construction-related traffic (e.g., construction materials, construction workers, etc.), impacts resulting from construction traffic would be less than significant.

Appendix F contains the Existing Plus Project Construction Traffic Conditions Intersection ICU calculation worksheets.

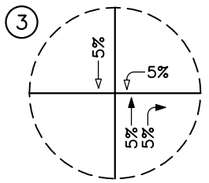




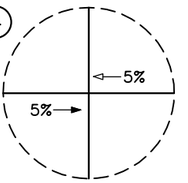
1 NORWALK BLVD @ WARDLOW ROAD



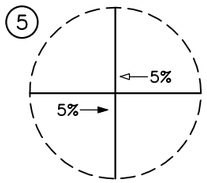
2 BLOOMFIELD ST @ BALL RD



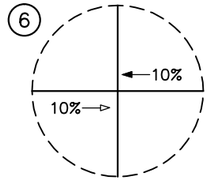
3 LOS ALAMITOS BLVD @ CERRITOS AVE



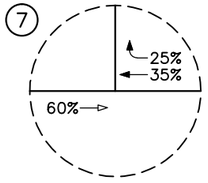
4 BLOOMFIELD ST @ CERRITOS AVE



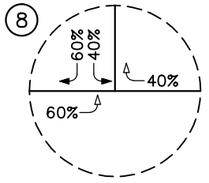
5 DENNI ST/ LEXINGTON DR @ CERRITOS AVE



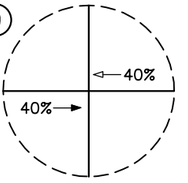
6 STIUDEBAKER RD @ WILLOW ST



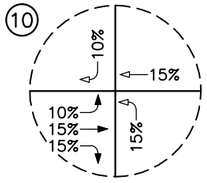
7 I-605 NB RAMPS @ KATELLA AVE



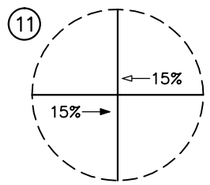
8 CIVIC CENTER DR @ KATELLA AVE



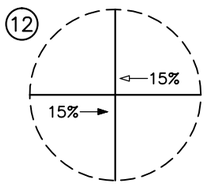
9 WALNUT ST/ WELLINGSFORD RD @ KATELLA AVE



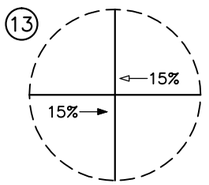
10 LOS ALAMITOS BLVD @ KATELLA AVE



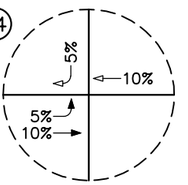
11 BLOOMFIELD ST @ KATELLA AVE



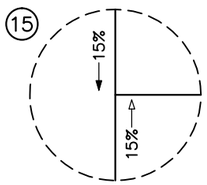
12 LEXINGTON DR @ KATELLA AVE



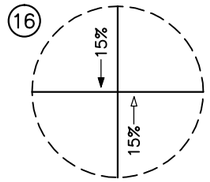
13 WALKER ST @ KATELLA AVE



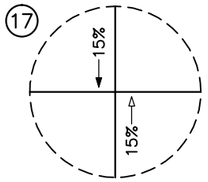
14 VALLEY VIEW ST @ KATELLA AVE



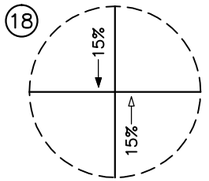
15 LOS ALAMITOS BLVD @ FARQUHAR AVE



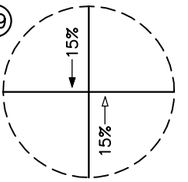
16 LOS ALAMITOS BLVD @ ORANGEWOOD AVE



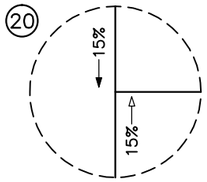
17 LOS ALAMITOS BLVD/ SEAL BEACH BLVD @ BRADBURY RD



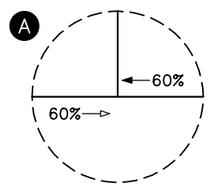
18 SEAL BEACH BLVD @ ROSSMOOR CENTER WY/ PLYMOUTH DR



19 SEAL BEACH BLVD @ ST CLOUD DR



20 SEAL BEACH BLVD @ LAMPSON AVE



PROJECT DWY 1 @ KATELLA AVE

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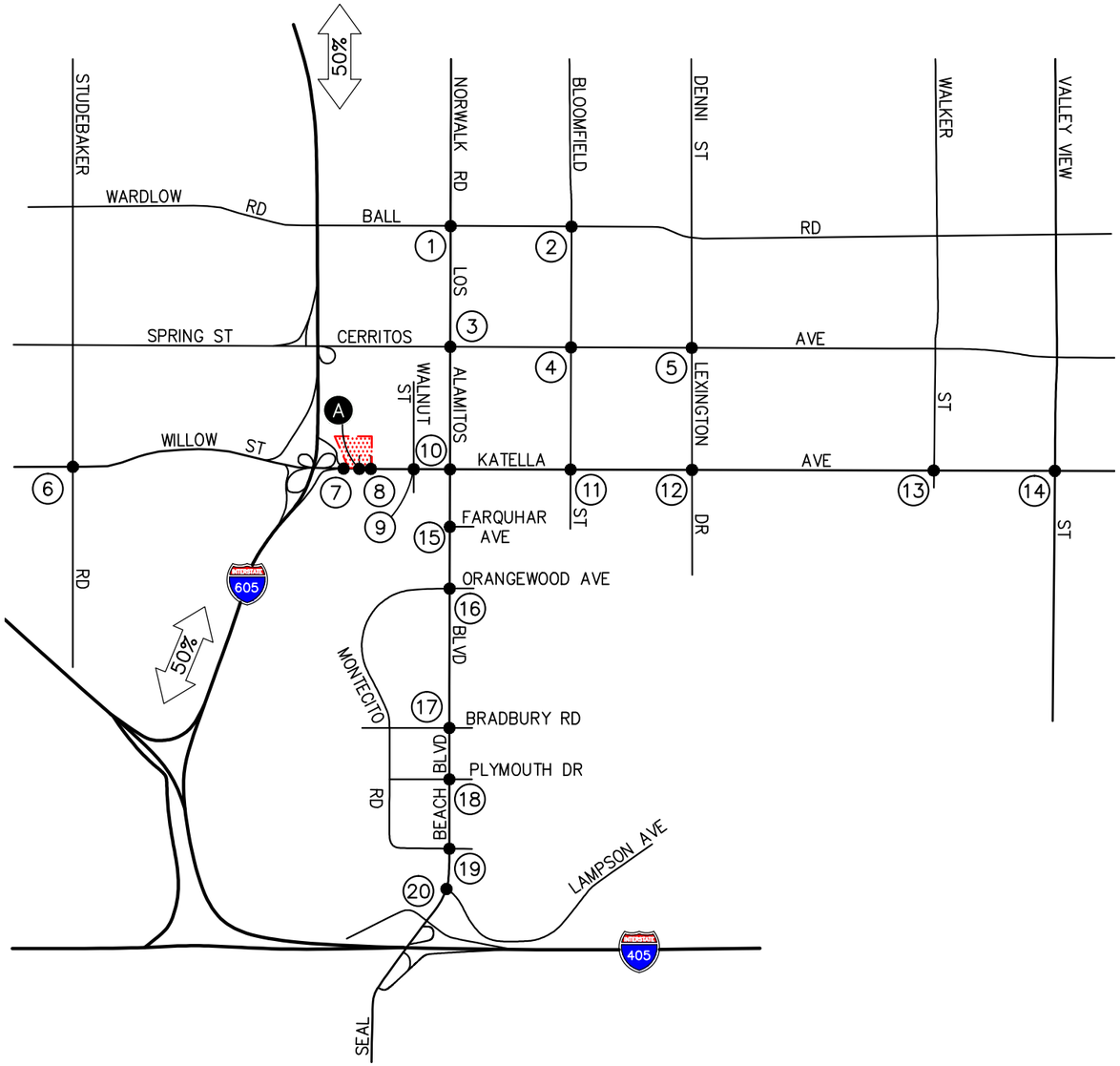
N NO SCALE

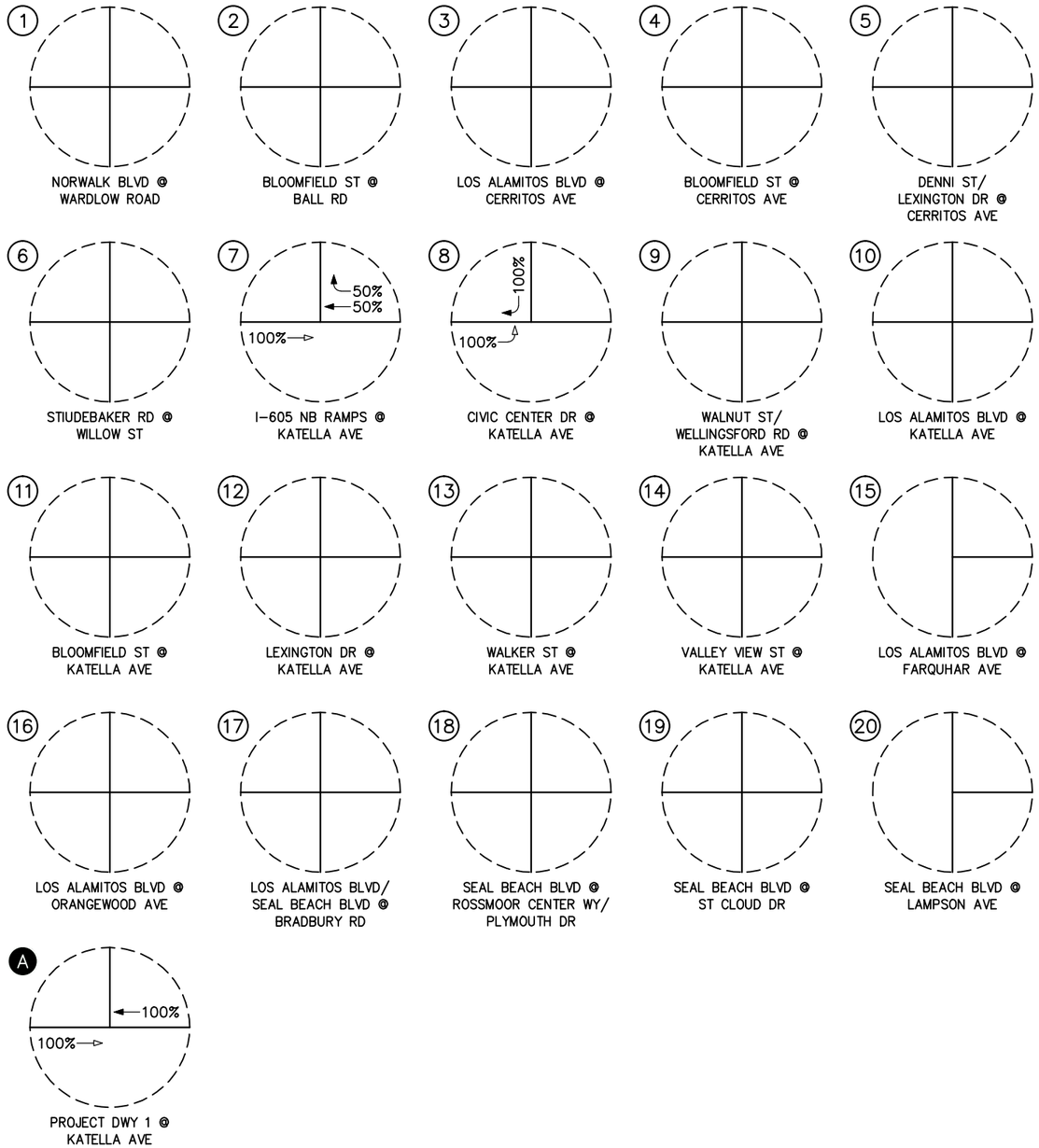
KEY
= INBOUND PERCENTAGE
= OUTBOUND PERCENTAGE
= PROJECT SITE

FIGURE 13-1

PROJECT CONSTRUCTION EMPLOYEE TRAFFIC DISTRIBUTION PATTERN

VILLAGE 605, LOS ALAMITOS





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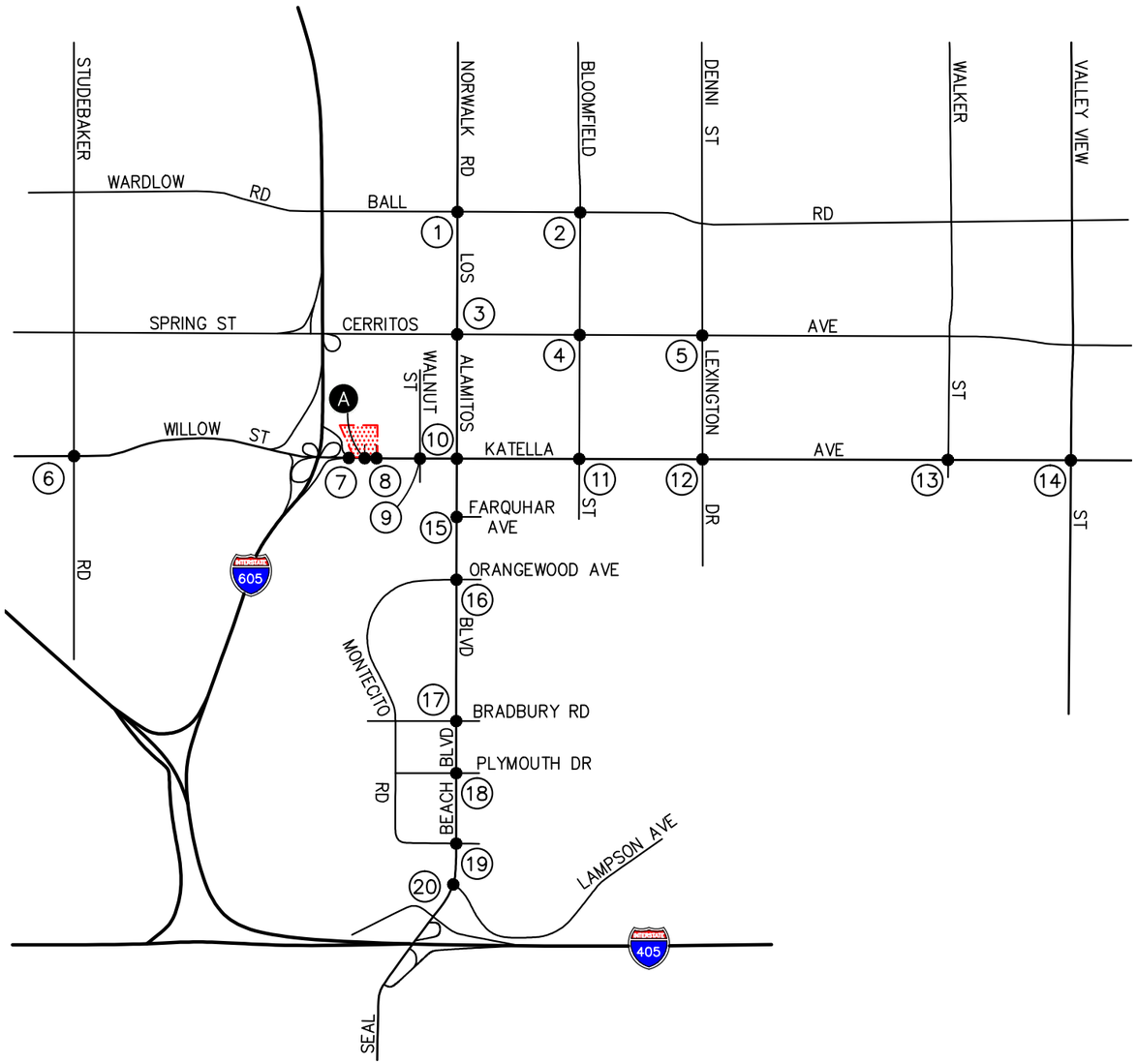
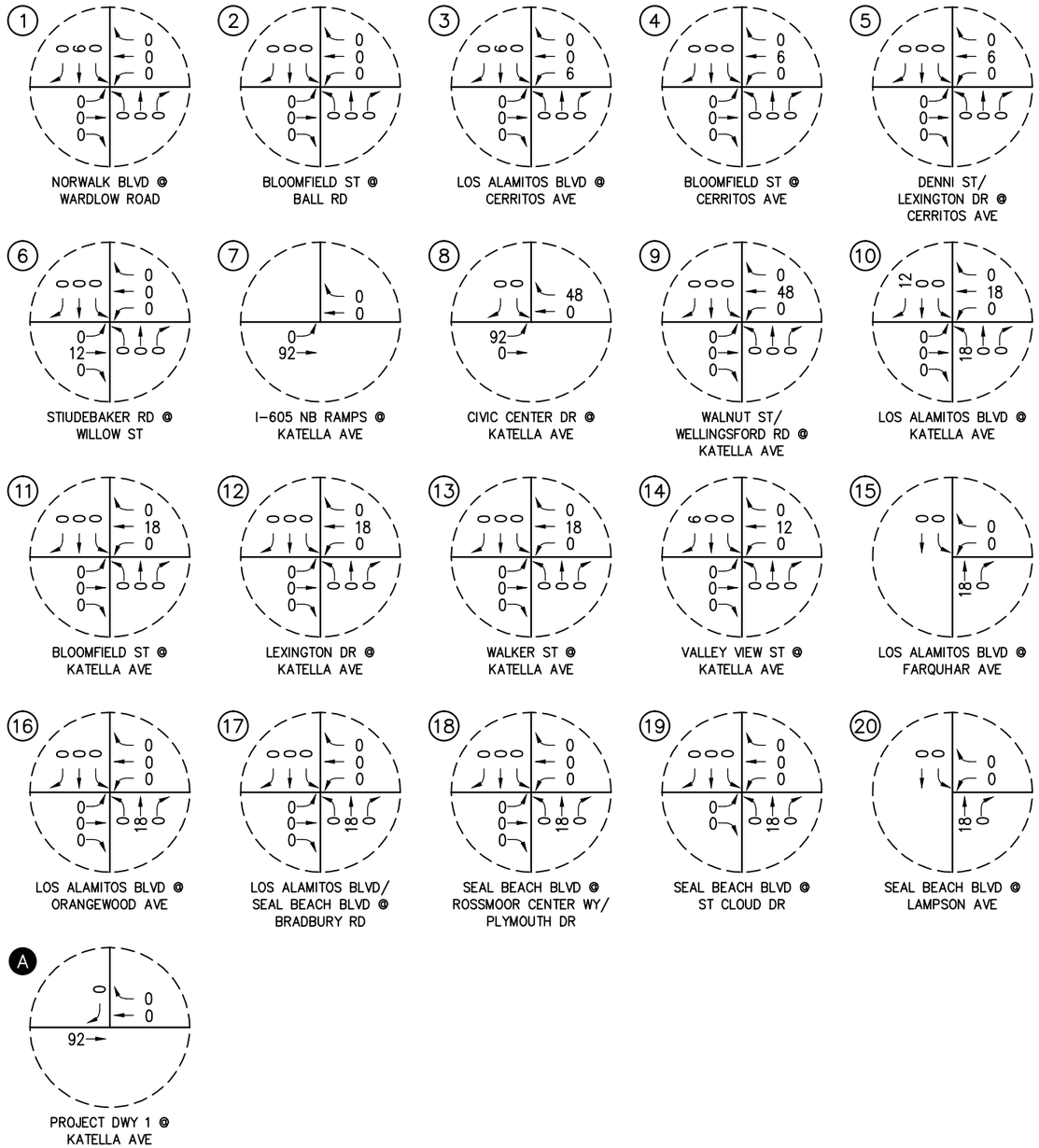
KEY
= INBOUND PERCENTAGE
= OUTBOUND PERCENTAGE
= PROJECT SITE

FIGURE 13-2

PROJECT CONSTRUCTION TRUCK TRAFFIC DISTRIBUTION PATTERN
VILLAGE 605, LOS ALAMITOS





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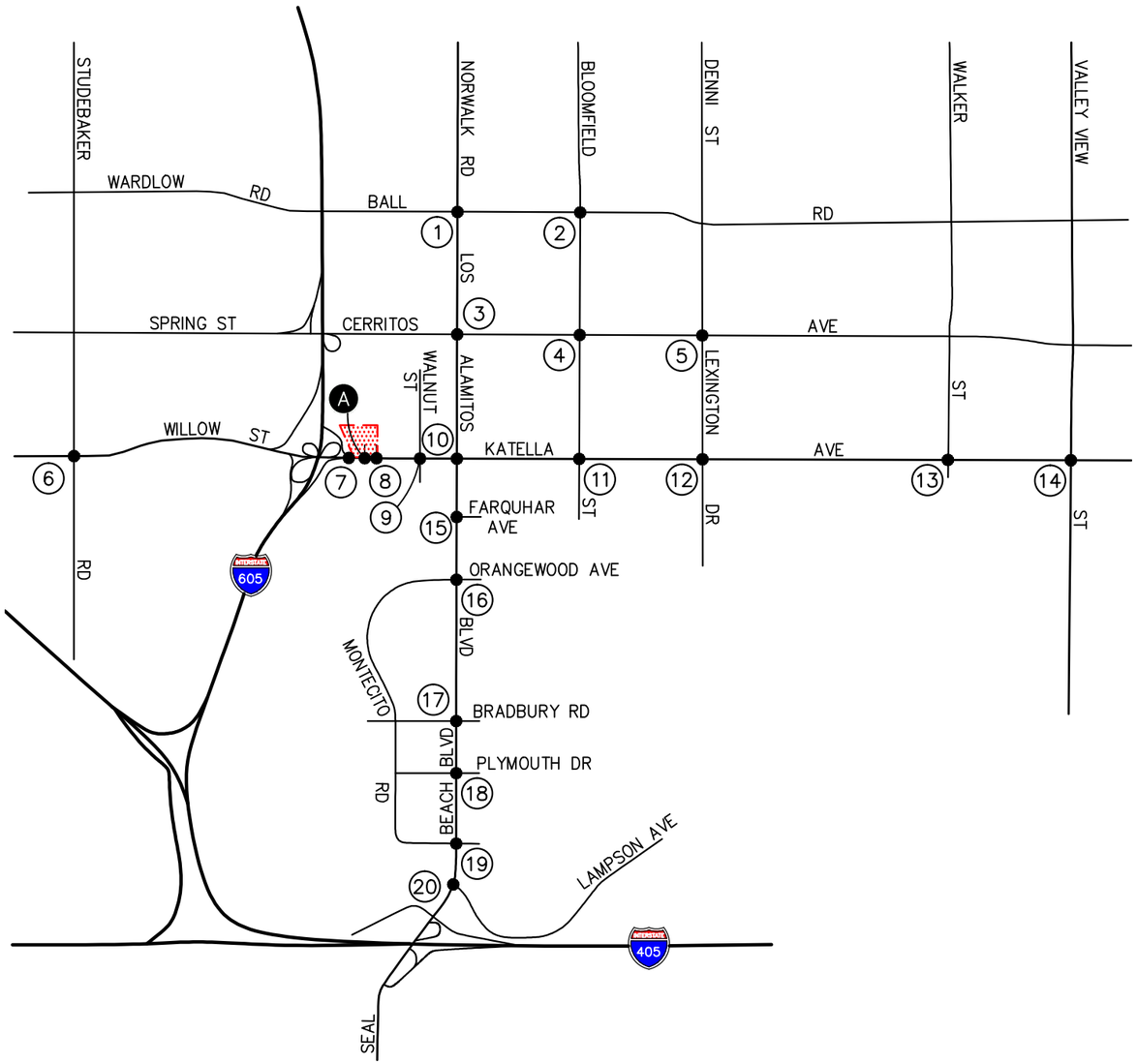
(#) = STUDY INTERSECTION

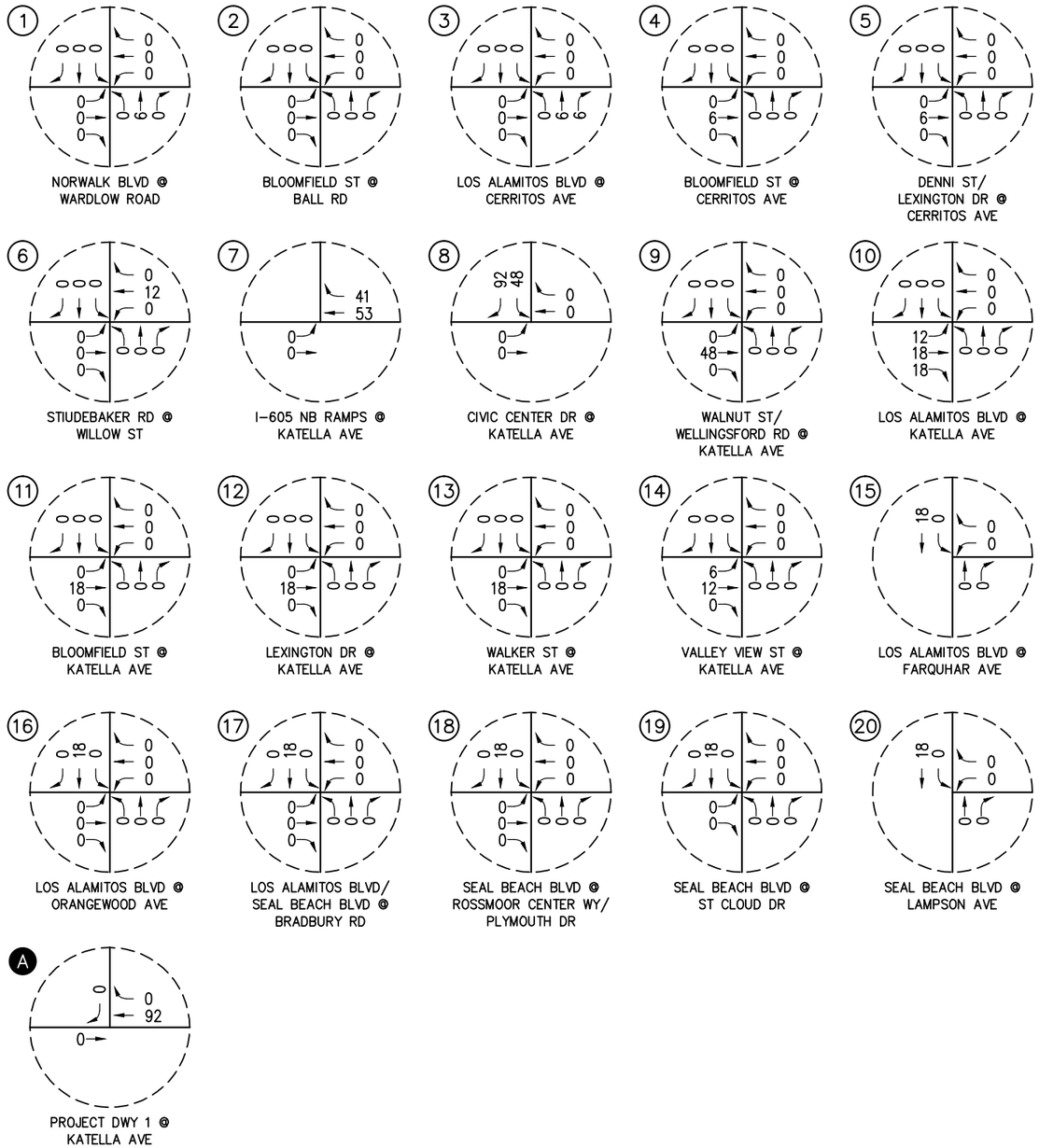
= PROJECT SITE

FIGURE 13-3

AM PEAK HOUR PROJECT CONSTRUCTION TRAFFIC VOLUMES

VILLAGE 605, LOS ALAMITOS





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N NO SCALE

KEY

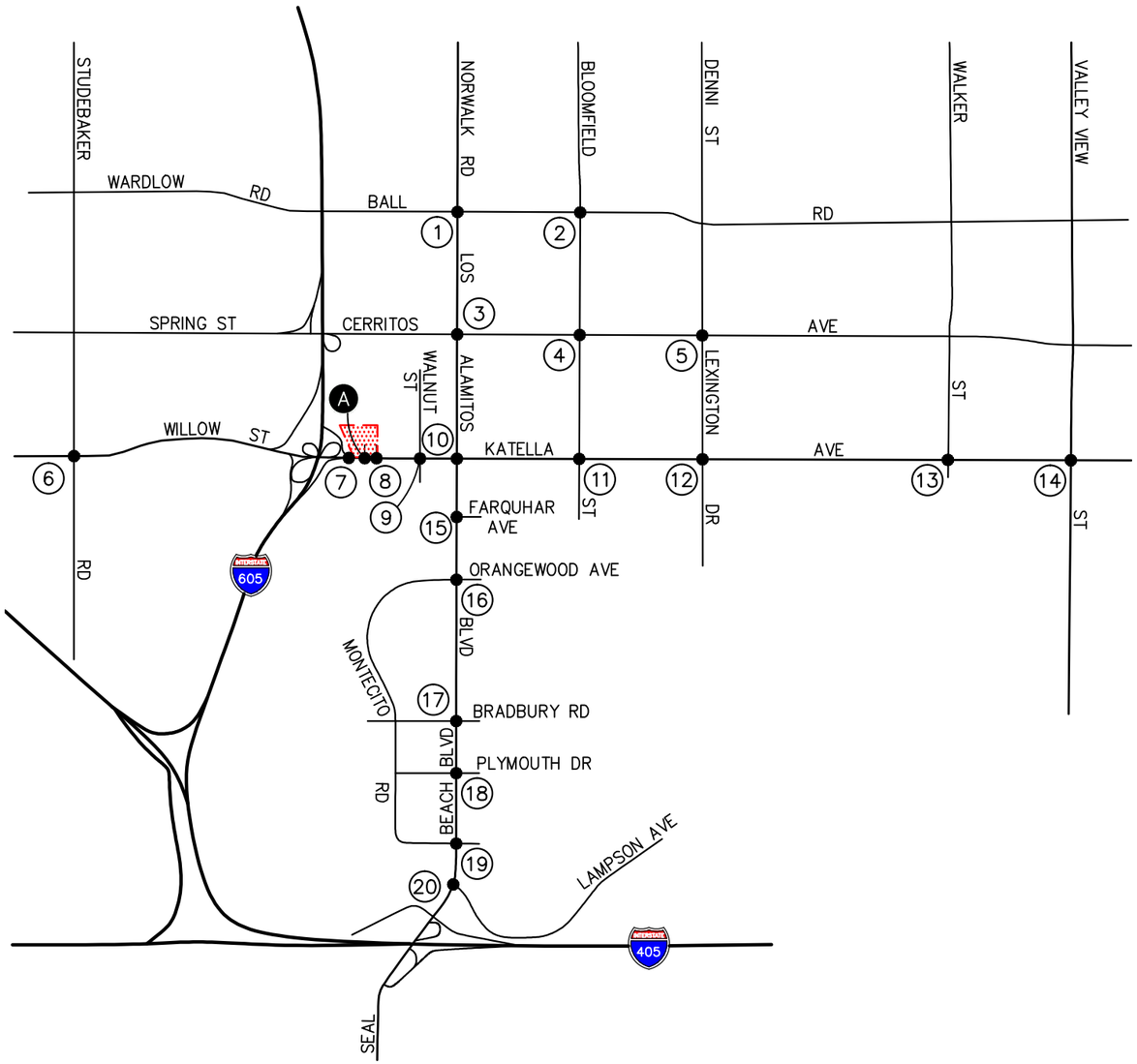
(#) = STUDY INTERSECTION

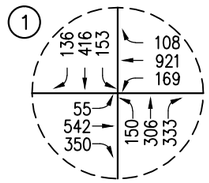
= PROJECT SITE

FIGURE 13-4

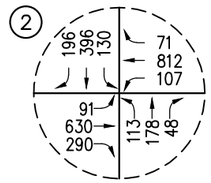
PM PEAK HOUR PROJECT CONSTRUCTION TRAFFIC VOLUMES

VILLAGE 605, LOS ALAMITOS

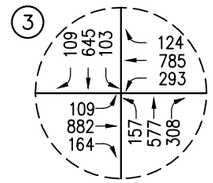




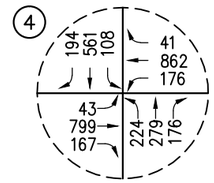
NORWALK BLVD @ WARDLOW ROAD



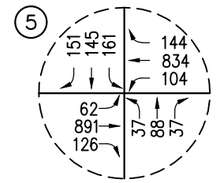
BLOOMFIELD ST @ BALL RD



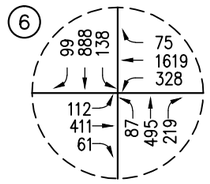
LOS ALAMITOS BLVD @ CERRITOS AVE



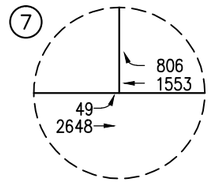
BLOOMFIELD ST @ CERRITOS AVE



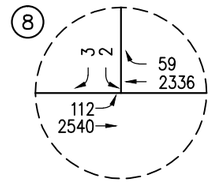
DENNI ST/ LEXINGTON DR @ CERRITOS AVE



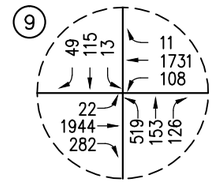
STIUDEBAKER RD @ WILLOW ST



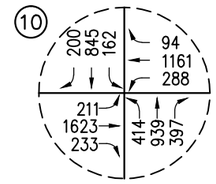
I-605 NB RAMPS @ KATELLA AVE



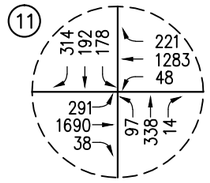
CIVIC CENTER DR @ KATELLA AVE



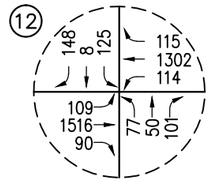
WALNUT ST/ WELLINGSFORD RD @ KATELLA AVE



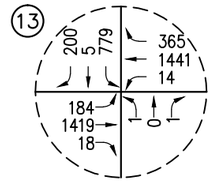
LOS ALAMITOS BLVD @ KATELLA AVE



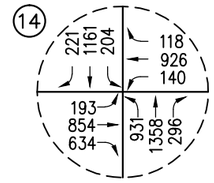
BLOOMFIELD ST @ KATELLA AVE



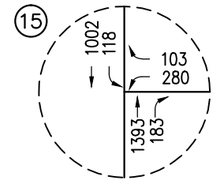
LEXINGTON DR @ KATELLA AVE



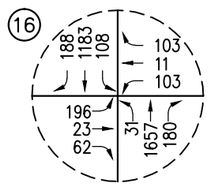
WALKER ST @ KATELLA AVE



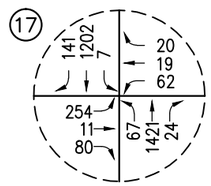
VALLEY VIEW ST @ KATELLA AVE



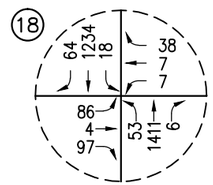
LOS ALAMITOS BLVD @ FARQUHAR AVE



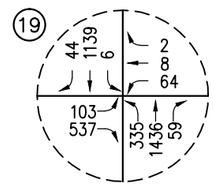
LOS ALAMITOS BLVD @ ORANGEWOOD AVE



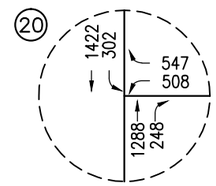
LOS ALAMITOS BLVD/ SEAL BEACH BLVD @ BRADBURY RD



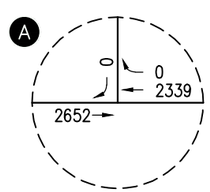
SEAL BEACH BLVD @ ROSSMOOR CENTER WY/ PLYMOUTH DR



SEAL BEACH BLVD @ ST CLOUD DR



SEAL BEACH BLVD @ LAMPSON AVE



PROJECT DWY 1 @ KATELLA AVE

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

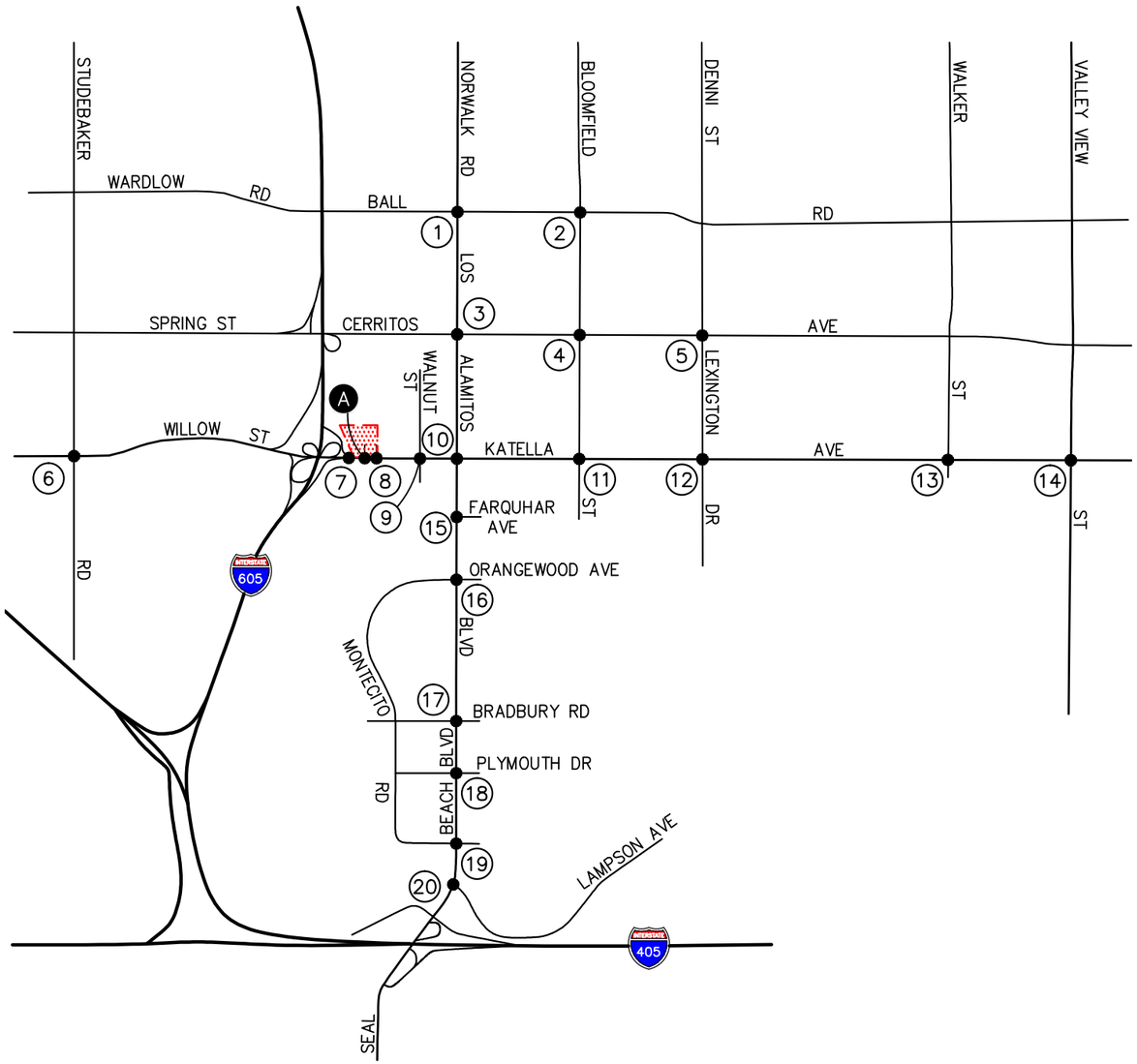
(#) = STUDY INTERSECTION

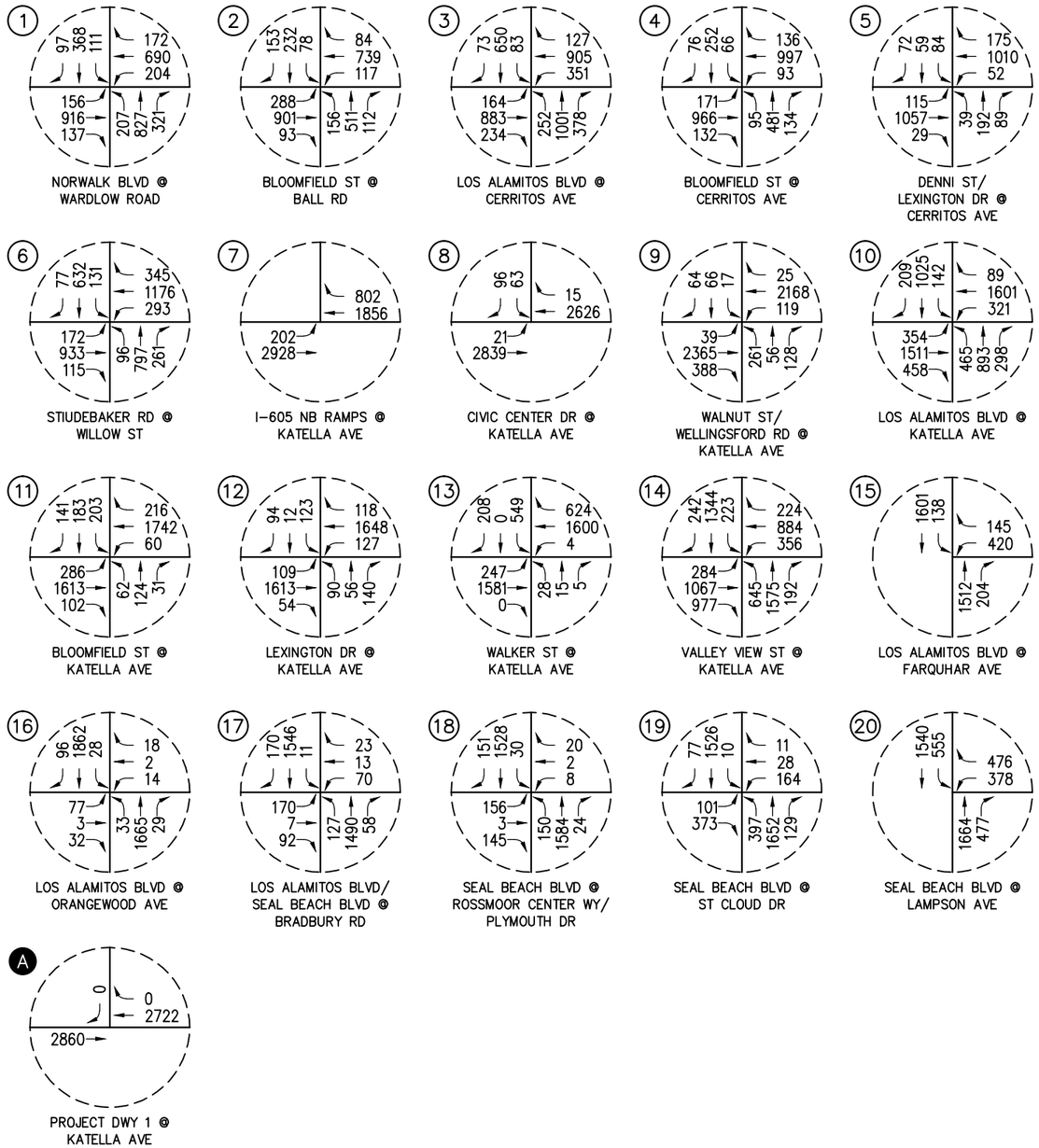
= PROJECT SITE

FIGURE 13-5

EXISTING PLUS PROJECT CONTRUCTION
AM PEAK HOUR TRAFFIC VOLUMES

VILLAGE 605, LOS ALAMITOS





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(#) = STUDY INTERSECTION

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FIGURE 13-6

EXISTING PLUS PROJECT CONSTRUCTION
PM PEAK HOUR TRAFFIC VOLUMES

VILLAGE 605, LOS ALAMITOS

TABLE 13-1

CONSTRUCTION ACTIVITIES WORK SCHEDULE

Construction Phase	Number of Working Days	Worker Trips Per Day	Vendor Truck Trips Per Day	Soil Hauling Truck Trips Per Day
Demolition	50	18	--	6
Site Preparation	10	18	--	--
Grading	20	20	--	--
Building Construction	230	119	50	--
Paving	20	15	--	--
Architectural Coating	20	24	--	--

TABLE 13-2
PROJECT CONSTRUCTION TRIP GENERATION FORECAST

Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Demolition							
▪ Employees	36	18	0	18	0	18	18
▪ Trucks	12	1	0	1	0	1	1
Passenger Car Equivalent Factor[28]	3	3	3	3	3	3	3
Truck Subtotal	*36*	*3*	*0*	*3*	*0*	*3*	*3*
Demolition Total	*72*	*21*	*0*	*21*	*0*	*21*	*21*
Site Preparation							
▪ Employees	36	18	0	18	0	18	18
Grading							
▪ Employees	40	20	0	20	0	20	20
Building Construction							
▪ Employees	238	119	0	119	0	119	119
▪ Trucks	100	7	0	7	0	7	7
Passenger Car Equivalent Factor[28]	3	3	3	3	3	3	3
Truck Subtotal	*300*	*21*	*0*	*21*	*0*	*21*	*21*
Building Construction Total	*538*	*140*	*0*	*140*	*0*	*140*	*140*
Paving							
▪ Employees	30	15	0	15	0	15	15
Architectural Coating							
▪ Employees	48	24	0	24	0	24	24

[28] A Passenger Car Equivalent factor of 3.0 was applied to the truck trips to convert them into passenger car trips.

TABLE 13-3

EXISTING PLUS PROJECT CONSTRUCTION TRAFFIC PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Key Intersections	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Construction Traffic Conditions		(3) Significant Project Impact		(4) With Improvements	
			ICU	LOS	ICU	LOS	ICU Increase	Yes/No	ICU	LOS
1. Norwalk Boulevard at Wardlow Road	D	AM	0.808	D	0.808	D	0.000	No	--	--
		PM	**0.920**	**E**	**0.922**	**E**	0.002	No	--	--
2. Bloomfield Street at Ball Road	D	AM	0.583	A	0.583	A	0.000	No	--	--
		PM	0.666	B	0.666	B	0.000	No	--	--
3. Los Alamitos Boulevard at Cerritos Avenue	D	AM	0.759	C	0.764	C	0.005	No	--	--
		PM	0.856	D	0.856	D	0.000	No	--	--
4. Bloomfield Street at Cerritos Avenue	D	AM	0.742	C	0.742	C	0.000	No	--	--
		PM	0.664	B	0.664	B	0.000	No	--	--
5. Denni Street/Lexington Drive at Cerritos Avenue	D	AM	0.541	A	0.541	A	0.000	No	--	--
		PM	0.600	B	0.600	B	0.000	No	--	--
6. Studebaker Road at Willow Street	D	AM	0.875	D	0.875	D	0.000	No	--	--
		PM	0.873	D	0.875	D	0.002	No	--	--
7. I-605 NB Ramps at Katella Avenue	D	AM	0.383	A	0.383	A	0.000	No	--	--
		PM	0.522	A	0.533	A	0.011	No	--	--
8. Civic Center Drive at Katella Avenue	D	AM	0.425	A	0.470	A	0.045	No	--	--
		PM	0.476	A	0.524	A	0.048	No	--	--

Notes:

BOLD ICU/LOS indicates unacceptable service level

TABLE 13-3 (CONTINUED)
EXISTING PLUS PROJECT CONSTRUCTION TRAFFIC PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Key Intersections		Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Construction Traffic Conditions		(3) Significant Project Impact		(4) With Improvements	
				ICU	LOS	ICU	LOS	ICU Increase	Yes/No	ICU	LOS
9.	Walnut Street/Wallingsford Road at Katella Avenue	E	AM	0.743	C	0.743	C	0.000	No	--	--
			PM	0.688	B	0.695	B	0.007	No	--	--
10.	Los Alamitos Boulevard at Katella Avenue	E	AM	0.735	C	0.740	C	0.005	No	--	--
			PM	0.802	D	0.806	D	0.004	No	--	--
11.	Bloomfield Street at Katella Avenue	D	AM	0.677	B	0.681	B	0.004	No	--	--
			PM	0.725	C	0.725	C	0.000	No	--	--
12.	Lexington Drive at Katella Avenue	D	AM	0.565	A	0.565	A	0.000	No	--	--
			PM	0.587	A	0.591	A	0.004	No	--	--
13.	Walker Street at Katella Avenue	D	AM	0.614	B	0.618	B	0.004	No	--	--
			PM	0.668	B	0.668	B	0.000	No	--	--
14.	Valley View Street at Katella Avenue	D	AM	0.696	B	0.699	B	0.003	No	--	--
			PM	0.752	C	0.754	C	0.002	No	--	--
15.	Los Alamitos Boulevard at Farquhar Avenue	D	AM	0.538	A	0.541	A	0.003	No	--	--
			PM	0.634	B	0.634	B	0.000	No	--	--
16.	Los Alamitos Boulevard at Orangewood Avenue	D	AM	0.678	B	0.681	B	0.003	No	--	--
			PM	0.515	A	0.519	A	0.004	No	--	--

Notes:

BOLD ICU/LOS indicates unacceptable service level

TABLE 13-3 (CONTINUED)
EXISTING PLUS PROJECT CONSTRUCTION TRAFFIC PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Key Intersections		Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Construction Traffic Conditions		(3) Significant Project Impact		(4) With Improvements	
				ICU	LOS	ICU	LOS	ICU Increase	Yes/No	ICU	LOS
17.	Los Alamitos Blvd/Seal Beach Blvd at Bradbury Road	D	AM	0.550	A	0.550	A	0.000	No	--	--
			PM	0.606	B	0.610	B	0.004	No	--	--
18.	Seal Beach Boulevard at Rossmoor Center Way/Plymouth Drive	D	AM	0.485	A	0.488	A	0.003	No	--	--
			PM	0.651	B	0.655	B	0.004	No	--	--
19.	Seal Beach Boulevard at St. Cloud Drive	D	AM	0.539	A	0.539	A	0.000	No	--	--
			PM	0.681	B	0.685	B	0.004	No	--	--
20.	Seal Beach Boulevard at Lampson Avenue	D	AM	0.671	B	0.674	B	0.003	No	--	--
			PM	0.718	C	0.718	C	0.000	No	--	--

Notes:

BOLD ICU/LOS indicates unacceptable service level

13.5 Project Construction Management Plan Criteria

Project construction related trips associated with trucks and employees traveling to and from the Project site in the morning and afternoon during Project construction activities may result in some minor traffic delays; however, potential traffic interference caused by construction vehicles may create a temporary/short-term impact to vehicles using the street system in the immediate area in the morning and afternoon hours. It is anticipated that a majority of the construction-related traffic will utilize Katella Avenue and the I-605 Freeway to gain regional access to the Project site.

To reduce the impact of construction-related traffic, the implementation of a Construction Management Plan is recommended to minimize traffic impacts upon the local circulation system in the area.

To ensure impacts to the surrounding street system are kept a minimum, it is recommended that the Construction Management Plan for the proposed Project be developed in coordination with the City of Los Alamitos City Engineer and at a minimum, address the following:

- Ingress and egress for the construction traffic would be via the site right-turn in/out only driveway located along Katella Avenue with a flagman to assist with right-turn egress from to site to westbound Katella Avenue.
- Traffic control for any street closure, detour or other disruption to traffic circulation.
- Identify the routes that construction vehicles will utilize for the delivery of construction materials (i.e. lumber, tiles piping, windows, etc.), to access the site, traffic controls and detours and proposed construction phasing plan for the Project.
- Identify parking needs and parking areas for construction related equipment and workman support.
- Specify the hours during which transport activities can occur and methods to mitigate construction-related impacts to adjacent streets.
- Require the Applicant to keep all haul routes clean and free of debris including but not limited to gravel and dirt as a result of its operations. The Applicant shall clean adjacent streets, as directed by the City Engineer (or representative of the City Engineer) of any material which may have been spilled, tracked or blown onto adjacent streets or areas.
- Hauling or transport of oversize loads will be allowed between the hours of 8:30 AM and 3:30 PM only, Monday through Friday, unless approved otherwise by the City Engineer (exact hours to be determined by the City Engineer). Hauling or transport may be permitted/required during nighttime hours, weekends or Federal holidays, at the discretion of the City Engineer. All hauling/delivery access to and from the site will be from Katella Avenue. An approved Haul Route Permit will be required from the City.
- Haul trucks entering or exiting public streets shall at all times yield to public traffic.

- If hauling operations cause any damage to existing pavement, street, curb and/or gutter along the haul route, the applicant will be fully responsible for repairs. The repairs shall be completed to the satisfaction of the City Engineer.
- All constructed-related parking and staging of vehicles will be kept out of the adjacent public roadways and parking lots and will occur on-site.
- This Plan shall meet standards established in the current *California Manual on Uniform Traffic Control Device (MUTCD)* as well as City of Los Alamitos requirements.

14.0 CALTRANS BASIC FREEWAY SEGMENT ANALYSIS

Caltrans requires the use of analysis methods provided in the Highway Capacity Manual (*HCM)* for the analysis of basic freeway segments. Caltrans "endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities"; it does not require that LOS "D" (shall) be maintained. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. For this analysis, LOS D is the target level of service standard and will be utilized to assess project impacts at the key study freeway segments.

Basic Freeway Segment Analysis for freeway segments was conducted for the following four (4) Caltrans freeway segments in the vicinity of the proposed Project:

1. I-605 northbound, south of Katella Avenue
2. I-605 northbound, north of Katella Avenue
3. I-605 southbound, north of Katella Avenue
4. I-605 southbound, south of Katella Avenue

14.1 Existing Traffic Conditions Basic Freeway Segment Capacity Analysis

Table 14-1 summarizes the peak hour level of service results at the aforementioned four (4) key freeway segments for Existing traffic conditions. Review of *Table 14-1* indicates that all four (4) of the key freeway segments currently operate at LOS D or better during the AM and/or PM peak hours.

Per Caltrans guidelines, the following is stated in the *Caltrans Guide for the Preparation of Traffic Impact Studies, December 2002*:

> *"The following criterion is a starting point in determining when a TIS is needed. When a project:*
>
> 1. *Generates over 100 peak hour trips assigned to a State highway facility…..*
> 2. *Generates 50 to 100 peak hour trips assigned to a State highway facility and noticeable delay approaching LOS C or D…..*
> 3. *Generates 1 to 49 peak hour trips assigned to a State highway facility and noticeable delay approaching LOS E or F….."*

Based on the Caltrans criteria above and the results of the basic freeway segment analysis for Existing traffic conditions as presented in *Table 14-1,* it is determined that no additional analysis is needed for all four (4) key freeway segments located along the I-605 Freeway since the Project does not generate 50 to 100 peak hour trips assigned to a state highway facility and the four (4) I-605 Freeway segments are forecast to operate at an acceptable LOS D or better during the AM and PM peak hours under Existing traffic conditions. ***Appendix G*** contains the Basic Freeway Segment Analysis calculation worksheets for the four (4) freeway segments for Existing traffic conditions.

TABLE 14-1

EXISTING PEAK HOUR FREEWAY MAINLINE CAPACITY ANALYSIS SUMMARY

	Key Basic Freeway Segment	Time Period	Lanes	Project Trips[29]	(1) Existing Traffic Conditions		
					Peak Hour Volume (pc/h/ln)	Density (pc/mi/ln)	LOS
1.	I-605 northbound *south of* Katella Avenue	AM	5	-45	6,941	22.7	C
		PM		1	7,579	25.0	C
2.	I-605 northbound *north of* Katella Avenue	AM	4	12	6,500	27.2	D
		PM		-28	7,072	30.5	D
3.	I-605 southbound *north of* Katella Avenue	AM	4	-32	5,855	24.1	C
		PM		13	4,510	18.4	C
4.	I-605 southbound *south of* Katella Avenue	AM	5	2	5,448	17.8	B
		PM		-39	4,208	13.8	B

Notes:

- pc/mi/ln = Passenger cars per mile per lane (density)

[29] Project trips are the net difference between the existing office and proposed Project.

15.0 BICYCLE, PEDESTRIAN, AND TRANSIT ASSESSMENT

15.1 Bicycle Facility Assessment

As noted earlier, the existing bicycle facilities within the project vicinity and throughout the City of Los Alamitos are discontinuous. However, per the Los Alamitos General Plan Update, future bike routes and bike lanes will be provided on major arterials and collectors through the City. The OCTA Commuter Bikeways Strategic Plan provides a policy and implementation strategies for enhancing the existing bikeway network. The proposed bicycle facilities will improve overall access throughout the City. The implement of the continuous bicycle network within the City would be beneficial to the Project.

15.2 Pedestrian Facility Assessment

As previously discussed, the existing pedestrian facilities within the City are generally well developed and continuous as sidewalks are present on both sides of the majority of the streets. The availability of existing pedestrian facilities/sidewalks within the vicinity of the Project is beneficial to the Project.

15.3 Transit Assessment

The number of transit trips generated by the project was estimated by taking the AM peak hour trip generation (431 AM peak hour trips) and PM peak hour trip generation (514 PM peak hour trips), multiplying it by 1.4 to convert auto trips to person trips (603 AM peak person trips and 720 PM peak person trips), and assuming that up-to 3.5% of those trips could be transit trips[30]. This results in a total potential of 21 AM peak hour and 25 PM peak hour transit trips generated by the site.

It is anticipated that the existing transit service in the Project area would be able to accommodate the Project generated transit trips. With two transit routes directly serving the site, this would equate to about 13 riders per route. Also, with multiple buses operating on most of the routes during the peak hours, this would result in an estimated 4 riders per transit vehicle. 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 public transit system would not be significantly impacted by the proposed Project.

[30] Estimated Project-generated transit trips forecast based on methodology contained in the *Congestion Management Program of Los Angeles County*.

16.0 SUMMARY OF FINDINGS AND CONCLUSIONS

- ***Project Description*** – The Project site is located at 3131 Katella Avenue and is approximately 9.56 acres. The subject property is currently developed with two office buildings with a total floor area of 150,342 SF. The General Plan designates the Project site as "Retail Business" and is zoned as "General Commercial" with the recent adoption of the *Los Alamitos General Plan Update*, dated March 2015. *The Los Alamitos General Plan Update* assumed development of up to 120,766 SF of retail/commercial floor area on the 9.56 acre Project site in place of the existing office buildings. The proposed Project includes the demolition of the existing buildings and the construction of a neighborhood retail center with up to 113,880 SF of floor area within seven (7) buildings. The potential mix of uses include retail, commercial, gym/health club and restaurant tenants/land uses, inclusive of a supermarket, personal services, and other retailers that offer a variety of products. The proposed Project's total development floor area is well within the floor area assumed within the City's General Plan Update.

  Access to the Project site is currently provided by one (1) unsignalized right in/out driveway along Katella Avenue and one (1) full access signalized driveway at the intersection of Civic Center Drive at Katella Avenue.

- ***Study Scope*** – The following twenty (20) key study intersections were selected for detailed peak hour level of service analyses under Baseline Traffic Conditions, Baseline plus Project Traffic Conditions, Opening Year 2019 Traffic Conditions and Opening Year 2019 plus Project Traffic Conditions:

  Key Study Intersections

  1. Norwalk Boulevard at Wardlow Road (Long Beach)
  2. Bloomfield Street at Ball Road (Los Alamitos/Cypress)
  3. Los Alamitos Boulevard at Cerritos Avenue (Los Alamitos)
  4. Bloomfield Street at Cerritos Avenue (Los Alamitos)
  5. Denni Street/Lexington Drive at Cerritos Avenue (Los Alamitos/Cypress)
  6. Studebaker Road at Willow Street (Long Beach)
  7. I-605 NB Ramps at Katella Avenue (Los Alamitos/Caltrans)
  8. Civic Center Drive at Katella Avenue (Los Alamitos)
  9. Walnut Street/Wallingsford Road at Katella Avenue (Los Alamitos)
  10. Los Alamitos Boulevard at Katella Avenue (Los Alamitos)
  11. Bloomfield Street at Katella Avenue (Los Alamitos)
  12. Lexington Drive at Katella Avenue (Los Alamitos)
  13. Walker Street at Katella Avenue (Los Alamitos/Cypress)
  14. Valley View Street at Katella Avenue (Cypress)
  15. Los Alamitos Boulevard at Farquhar Avenue (Los Alamitos)
  16. Los Alamitos Boulevard at Orangewood Avenue (Los Alamitos)
  17. Los Alamitos Boulevard/Seal Beach Boulevard at Bradbury Road (Los Alamitos)
  18. Seal Beach Boulevard at Rossmoor Center Way/Plymouth Drive (Seal Beach)
  19. Seal Beach Boulevard at St. Cloud Drive (Seal Beach)
  20. Seal Beach Boulevard at Lampson Avenue (Seal Beach)

  The analysis is focused on assessing potential traffic impacts during the morning and evening commute peak hours (between 7:00-9:00 AM, and 4:00-6:00 PM) on a typical weekday.

- ***Baseline Traffic Conditions*** – Nineteen (19) of the twenty (20) key study intersections currently operate at an acceptable level of service during the AM and PM peak hours. The lone exception is the intersection of Norwalk Boulevard at Wardlow Road (in the City of Long Beach) which currently operates at LOS E during the PM peak hour.

- ***Project Trip Generation*** – The existing office development is forecast to generate 1,790 weekday daily trips, with 265 trips (233 inbound, 32 outbound) produced in the AM peak hour and 247 (42 inbound, 205 outbound) produced in the PM peak hour. These trips have been added to the existing traffic data to establish "baseline" traffic conditions for the traffic impact analysis. The proposed Project is forecast to generate 10,479 weekday daily trips, with 431 trips (242 inbound, 189 outbound) produced in the AM peak hour and 514 trips (263 inbound, 251 outbound) produced in the PM peak hour. When the proposed Project is compared to the existing development, the Project is forecast to generate 8,689 more daily trips, 166 more AM peak hour trips, and 267 more PM peak hour trips within the project study area.

- ***Related Projects Traffic Characteristics –*** Twelve (12) related projects were considered as part of the Opening Year 2019 traffic setting. The twelve (12) related projects are expected to generate a combined total of 33,255 daily trips, with 1,165 trips (653 inbound, 512 outbound) anticipated during the AM peak hour and 2,053 trips (1,132 inbound, 921 outbound) produced during the PM peak hour.

- ***Baseline Plus Project Traffic Conditions*** – The results of the "Baseline Plus Project" analysis indicate that the proposed Project will not significantly impact any of the twenty (20) key study intersections, when compared to the LOS standards and significant impact criteria specified in this report.

- ***Opening Year 2019 Plus Project Traffic Conditions*** – The results of the "Opening Year 2019 Plus Project" analysis indicates that the project design feature improvements at the intersection of Los Alamitos Boulevard and Cerritos Avenue will ensure acceptable service levels are maintained at this key intersection. Although the intersections of Norwalk Boulevard at Wardlow Road (in the City of Long Beach) and Studebaker Road at Willow Street (in the City of Long Beach) are forecast to operate at LOS E during the AM and/or PM peak hour, respectively, the added project-related traffic volumes at these locations do not significantly impact these intersections based on the significant impact criteria of the City of Long Beach. The remaining eighteen (18) key study intersections are forecast to continue to operate at an acceptable LOS with the addition of Project generated traffic in the Opening Year 2019.

- ***Project Access Level of Service Analysis*** –The two (2) Project driveways are forecast to operate at LOS D or better during the AM and PM peak hours for Existing Baseline Plus Project and Opening Year 2019 Plus Project traffic conditions. Therefore, project site access is considered adequate.

- ***Queuing Analysis for Project Access Locations*** – A queuing evaluation based on Opening Year 2019 Plus Project peak hour traffic volumes shows that both project driveways have sufficient storage for the forecasted queue lengths.

- ***Katella Avenue Synchro Assessment*** – A *Synchro 9.0* analysis has been performed for a portion of the Katella Avenue corridor that includes closely-spaced intersections that create substantial queuing and backup as a result of their proximity to each other. This analysis was conducted to ensure that adequate turn pocket storage lengths of Civic Center Drive at Katella Avenue, where there is an existing eastbound left-turn pocket length of 170 feet. For Opening Year 2019 Plus Project traffic conditions, the queue for the eastbound left movement is 394 feet and 398 feet for the AM peak hour and PM peak hour, respectively. Hence, the Project will modify the existing median and increase the length of the eastbound left-turn pocket to provide 450 feet of storage with 120 feet of transition.

- ***Internal Circulation*** – The design of the entry/exit points of the project driveways are adequate for expected traffic volumes, and adequate stacking is provided at all project driveways, with implementation of recommended site plan enhancements. Motorists entering and exiting the Project site will be able to do so comfortably, safely, and without undue congestion. The internal circulation layout for the proposed Project has been reviewed and is adequate to accommodate fire trucks and service/delivery/trash trucks, ambulances and large trucks that would service the proposed Project subject to restrictions.

- ***Site Distance Evaluation*** – The site lines at both Civic Center Drive and the unsignalized Project driveway on Katella Avenue are expected to be adequate provided obstructions are minimized. Therefore, any additional landscaping and/or hardscapes (i.e. monument signs) should be designed such that a driver's clear line of sight is not obstructed.

- ***Project-Specific Improvements*** – Subject to the review and approval of the City of Los Alamitos Engineering Division, the following improvements are recommended in conjunction with the development of the proposed Project to ensure that adequate ingress and egress to the project site is provided:
    - Widen and restripe Civic Center Drive north of Katella Avenue to provide two (2) exclusive southbound left-turn lanes with 85 feet of storage each, an exclusive right-turn lane with 40 feet of storage with a 40 foot transition, and one (1) inbound lane.
    - The internal Civic Center driveway will be relocated to align opposite to the internal shopping center drive aisle.
    - At the Los Alamitos Civic Center driveway internal intersection, install stop signs and stop bars for the southbound, eastbound, and westbound directions. Stripe "Keep Clear" within the internal intersection to provide adequate access to both the Civic Center and the shopping center.
    - Modify the existing median along Civic Center Drive at Katella Avenue to provide a 450 foot pocket with a 120 foot transition. In addition, modify the median to allow for a setback of 20 feet to accommodate the eastbound left-turn inbound movement. In addition, modify median on east side of Civic Center Drive in conjunction with the widening of the driveway and to accommodate outbound left-turn movements.
    - Modify the north-east corner of Civic Center Drive at Katella Avenue to provide a curb return radii of 45 feet.

- Install a "STOP" sign, stop bar, and right-turn only sign/marking at Project Driveway 1 on Katella Avenue.
- Maintain adequate sight distance for the Project driveways by minimizing obstructions (i.e. landscaping and/or hardscape) within the "limited use area" on either side of the proposed project driveways. Landscaping and/or hardscapes should be designed such that a driver's clear line of sight is not obstructed and does not threaten vehicular or pedestrian safety, as determined by the City Traffic Engineer.
- Provide written instructions to tenants/vendors that require truck deliveries utilize the eastbound left-turn lane on Katella Avenue at Civic Center Drive for those large delivery trucks (WB-65 or equivalent) approaching the retail center from the west via the I-605 Freeway.
- Since westbound right-turn movements from Katella Avenue at Civic Center Drive and at Project Driveway 1 cannot accommodate the turning requirements of large trucks (WB-65 or equivalent), the Project will install the appropriate"No Truck Access / Over 45 feet Long" signs at the two Project driveways; although a small delivery truck (SU-30) and mid-size truck (WB-40) are both able to make the westbound right-turn from Katella Avenue at both Project driveways.

- ***Project Design Feature*** – Improvements at the intersection of Los Alamitos Boulevard at Cerritos Avenue will be included as a project design feature, which have been included for Opening Year 2019 Plus Project traffic conditions. This improvement is consistent with the improvements identified for the proposed Los Alamitos Boulevard Median Improvement Project. The improvements consist of restriping the south leg to provide two (2) exclusive northbound left-turn lanes, two (2) northbound thru lanes, and one (1) northbound shared thru/right-turn lane.

- ***State of California (Caltrans) Methodology*** – Traffic associated with the proposed Project will not significantly impact the one (1) state-controlled study intersection, I-605 NB Ramps at Katella Avenue, when compared to the LOS standards and significant impact criteria specified in this report for Baseline, Baseline Plus Project, Opening Year 2019, and Opening Year 2019 Plus Project traffic conditions.

- ***CMP Compliance Assessment*** – The three percent limit is exceeded on four (4) of the eight (8) key roadway segments along the CMPHS, which in this case includes Katella Avenue. However, the level of service results and project impacts at the CMP intersections in the vicinity of the Project of I-605 NB Ramps at Katella Avenue and Valley View Street at Katella Avenue indicate that the proposed Project will not have a significant impact at these locations.

- ***Project Construction Traffic Generation*** – Based on the expected generated trips of the six construction phases, the building construction phase will produce the most trips. Therefore, the Project construction-related traffic analysis is based off of the building construction phase. On a typical weekday of this phase, construction traffic is expected to generate 538 daily trips with

140 trips (140 inbound, 0 outbound) produced in the AM peak hour and 140 trips (0 inbound, 140 outbound) produced in the PM peak hour.

- ***Project Construction Traffic Impacts*** – The results of the Baseline Plus Project Construction traffic evaluation indicates that none of the key intersections will have a significant impact with the proposed Project construction traffic.

- ***Caltrans Basic Freeway Segment Analysis*** – All four (4) key freeway segments along I-605 Freeway operate at LOS D or better during the AM and/or PM peak hours. Based on Caltrans criteria, it is determined that no additional analysis is needed for the four (4) key freeway segments since the Project does not generate 50 to 100 peak hour trips assigned to a state highway facility.